Commonwealth of Massachusetts

Capital Debt Affordability Committee

FY 2024 Committee Report

Table of Contents

1. Introduction

Capital Debt Affordability Committee Overview

Enabling Act	➢ The Capital Debt Affordability Committee was established by **Chapter 165 of the Acts of 2012, Section 60B** for the purposes of reviewing on a continuing basis the amount and condition of the Commonwealth's tax-supported debt, as well as the debt of certain state authorities.
Roles and Responsibilities	➢ Responsible for **providing an estimate** of the total amount of new Commonwealth debt that can **prudently** be authorized [i.e., issued] for the next fiscal year, taking into account certain criteria, to the Governor and Legislature on or before December 15 of each year. • Estimates are advisory and not binding on the Governor or the Legislature. • The Legislature is responsible for authorizing Commonwealth debt. • The Governor determines the total amount of capital spending for each fiscal year and the amount of new Commonwealth debt that he considers advisable to finance such spending ➢ Tasked to produce a new report by July 15, 2023 on measures to: (1) Reduce overall debt service paid by the Commonwealth; and (2) Increase bond ratings. • Requirement included in Chapter 140 of the acts of 2022 "AN ACT FINANCING THE GENERAL GOVERNMENTAL INFRASTRUCTURE OF THE COMMONWEALTH", section 14
Membership	➢ The Committee consists of **seven voting members**, including the Secretary of Administration and Finance (who chairs the Committee), the State Treasurer, the Comptroller, the Secretary of Transportation, one appointee of the Governor and two appointees of the State Treasurer. ➢ The 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.

Statutory and Administrative Limits on Direct Debt

Statutory Debt Limit

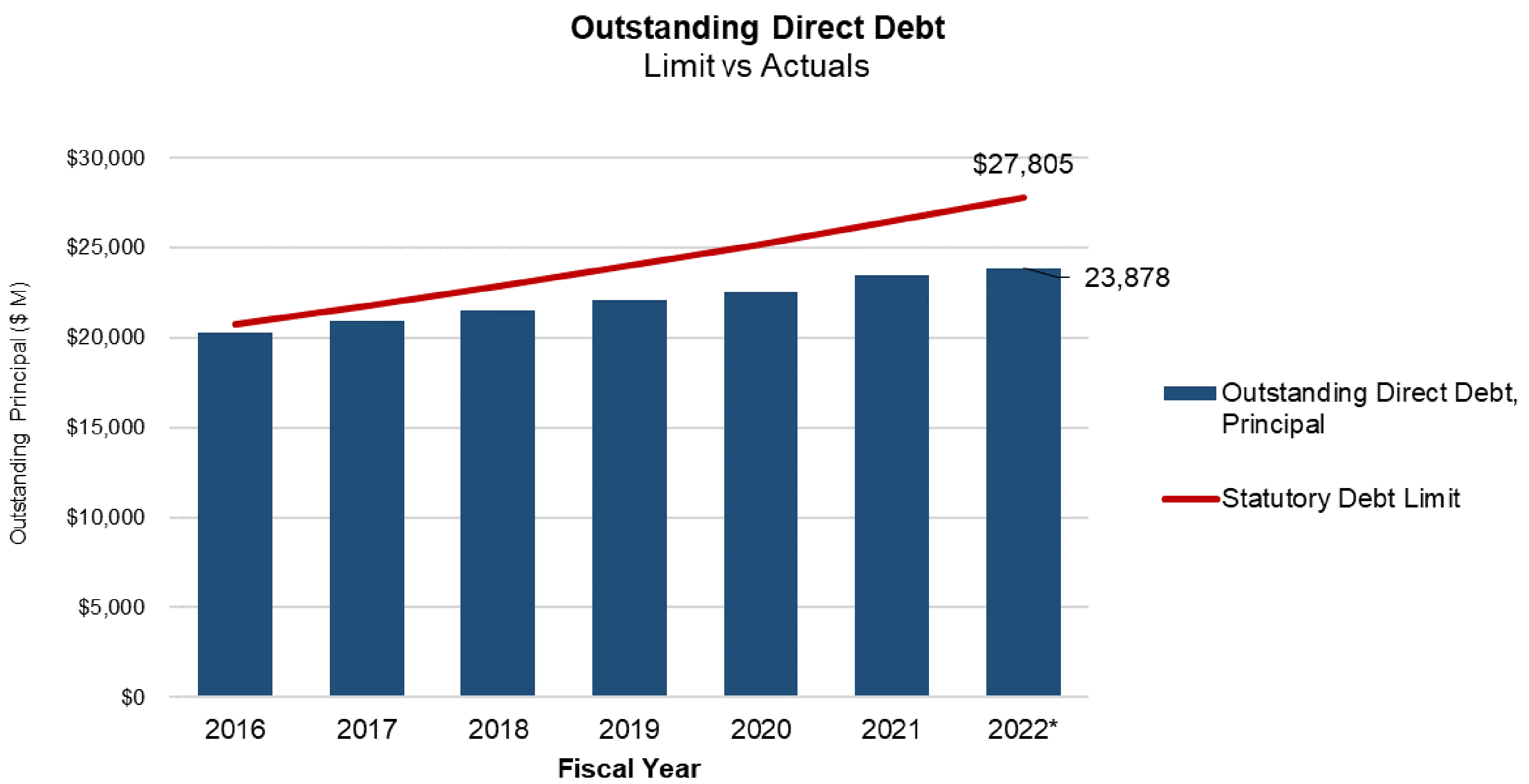
- **Outstanding Debt Limit**: The amount of outstanding principal of Commonwealth "direct" debt is capped at **105%** of the previous fiscal year's limit
  - FY20 Limit: $25.2 billion
  - FY21 Limit: $26.5 billion
  - FY22 Limit*: $27.8 billion
  - FY23 Limit*: $29.2 billion
  - FY24 Limit*: $30.7 billion

Debt Affordability Policy

- **Annual Borrowing Limit:** Annual Debt Service Payments < **8%** of budgeted revenues
  - FY20 Limit: $3.8 billion
  - FY21 Limit: $4.4 billion
  - FY22 Limit: $4.8 billion
  - FY23 Limit: $4.5 billion
- **Growth Limit**: Annual growth in the bond cap ≤ **$125 million**.

SOURCE: Commonwealth Information Statement dated September 21, 2022
** 2022 as of June 30, 2022, preliminary and unaudited*

Historical Statutory Debt Limit vs. Actual Outstanding Direct Debt



SOURCE: Commonwealth Information Statement dated September 21, 2022
** 2022 as of June 30, 2022, preliminary and unaudited*

The Committee Considers the Following to Inform its Estimate (1 of 2)

State Debt Outstanding	➢ Amount of outstanding Commonwealth bonds as of the prior fiscal year, and projected debt service for the current fiscal year
Capital Plan Spending	➢ The Commonwealth's Capital Investment Plan (CIP) prepared by the Secretary of Administration and Finance (A&F)
10 Year Debt Service	➢ Projections of debt service requirements during the next 10 fiscal years, based on different modeling scenarios including projected interest rates, amount of debt outstanding and Commonwealth revenues
Credit Ratings	➢ The criteria that bond rating agencies use to judge the quality of issues of state bonds
Authorization	➢ The effect of authorizations of new state debt on each of the factors in this subsection

The Committee Considers the Following to Inform its Estimate (2 of 2)

Debt Ratios Analysis	➢ Identification of pertinent debt ratios such as debt service to General Fund revenues, debt to personal income, debt per capita and debt as a percentage of state GDP
State Comparisons	➢ A comparison of the debt ratios across other states
Fixed, Variable, and Hedged Debt	➢ A description of the percentage of the state's outstanding general obligation bonds constituting fixed rate bonds, variable rate bonds, and bonds that have effective rates through a hedging contract
Other Tax Supported Debt	➢ The amount of issuances, debt outstanding, and debt service requirement of other classes of Commonwealth tax-supported debt as well as other debt of Commonwealth units

FY24 Recommendation Work Plan

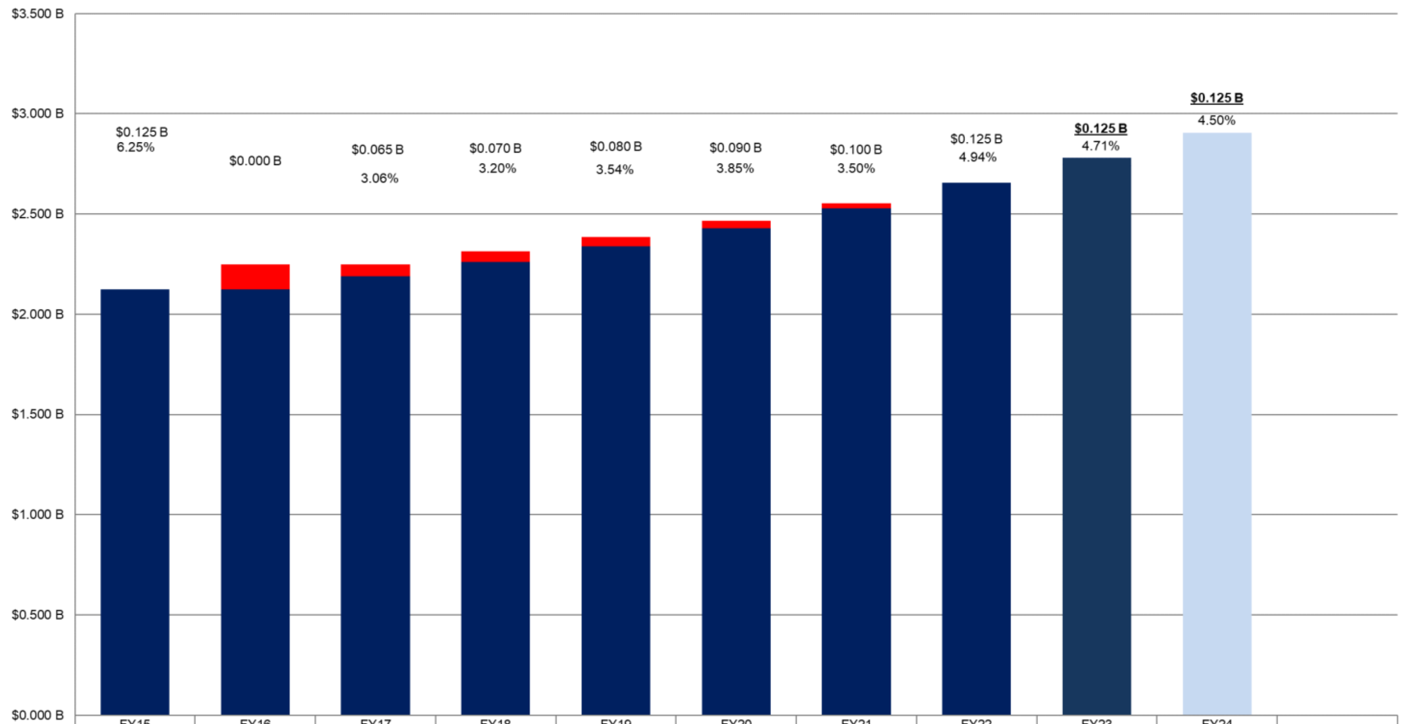
Meeting	Topics	DAC Discussion Areas
September 16 (1pm)	DAC Recap	• Committee Responsibilities • New DAC Requirements • 2022 Workplan

	MA Debt Portfolio Overview	• Direct Debt
		  ○ Outstanding Debt
		  ○ Projected Debt Service
		  ○ Fixed vs. Variable vs. Hedged
		• Other Debt related Obligations

September 30 (1pm)	Credit Factors	• Credit Ratings Review • Debt Ratio Analysis • Comparisons to Peers
October 14 (1pm)	Revenue Update CIP Spending Update	• DOR Revenue Update • Commonwealth's Capital Investment Plan (CIP), Including MassDOT • Credit Ratings Review (cont.).
October 28 (1pm)	Debt Affordability Analysis	• Credit Ratings Review (cont.). • Model Input Review
November 18 (1pm)	Debt Affordability Analysis	• Bond Cap Scenario Review • New DAC Report Section (cont.)
December 2 (1pm)	Debt Affordability Analysis & FY24 Recommendation Approval	• Bond Cap Recommendation Approval • New DAC Report Section Review & Discussion
December 9 (1pm)	Final report review & approval	• New DAC Report Section Review & Discussion
Dec 14 (2pm)	Final report review & approval	• New DAC Report Section Finalization

2. Advisory Recommendation for FY 2024

FY 2024 Bond Cap Recommendation: $125 Million Increase over FY 2023



	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
Increase to Bond Cap	$0.125 B	$0.000 B	$0.065 B	$0.070 B	$0.080 B	$0.090 B	$0.100 B	$0.125 B	$0.125 B	$0.125 B
Annual Cap Growth (%)	6.25%	0.00%	3.06%	3.20%	3.54%	3.85%	3.50%	4.94%	4.71%	4.50%
Recommended Cap vs. $125M Max	$0.000 B	$0.125 B	$0.060 B	$0.055 B	$0.045 B	$0.035 B	$0.025 B	$0.000 B	$0.000 B	$0.000 B
Recommended Bond Cap	$2.125 B	$2.125 B	$2.190 B	$2.260 B	$2.340 B	$2.430 B	$2.530 B	$2.655 B	$2.780 B	$2.905 B

Approved (12/2/22) DAC Recommendation: Vote to recommend to the Governor a bond cap increase of **$125 M** bringing the total recommended bond cap amount for FY24 to **$2.905 B**, and to make the modeling and slide deck publicly available online.

DAC Debt Affordability Model Inputs

	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 – 30 yrs
	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
	FY 2024 projected bond cap (DAC Recommendation)	• Projected new direct debt issued in FY 2024

DAC Debt Affordability Recommendation Modeling

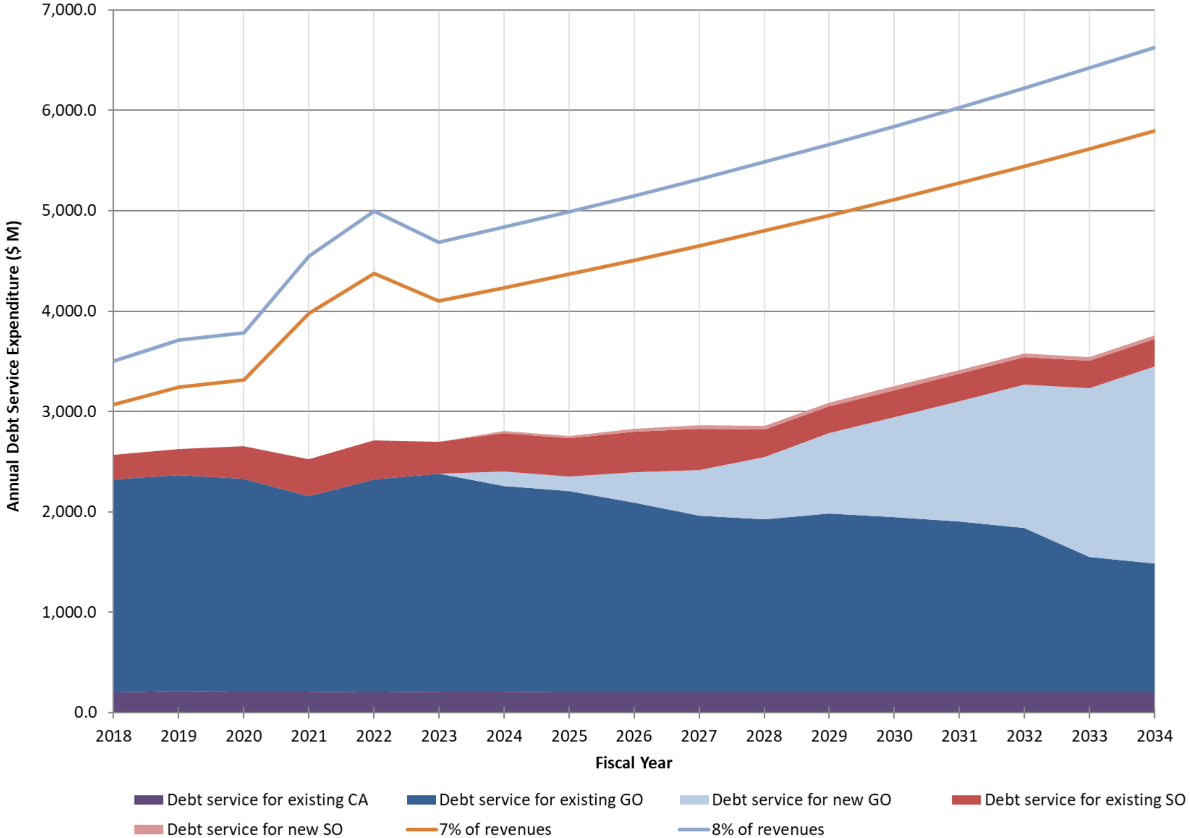
FY24 Recommendation	
FY24 Bond Cap Increase ($)	$125M
FY24 Bond Cap Increase (% increase)	4.5%

Model Input	Scenario 1 (moderate)	Scenario 2 (conservative)	Stress Test Scenario
Assume Interest Rates	**4.1% - 5.2%** Based on Moody's projections	**4.1% - 5.2%** Based on Moody's projections	**4.5% - 6.4%** Used Moody's 2023 rate as base and increases rates by 25 bps
Revenue Growth	**3.2%** Lowest 20-yr tax CAGR	**1.6%** Lowest 10-yr tax CAGR	**1.6%** Lowest 10-yr tax CAGR

Note: Average annual revenue growth since 2001: 4.6%.

$125 Million Bond Cap
Preliminary Scenario 1 – Moderate

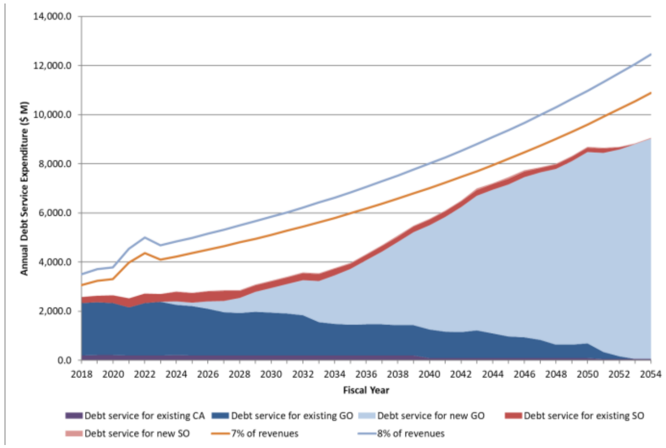
10-Year Snapshot



Modeling Assumptions

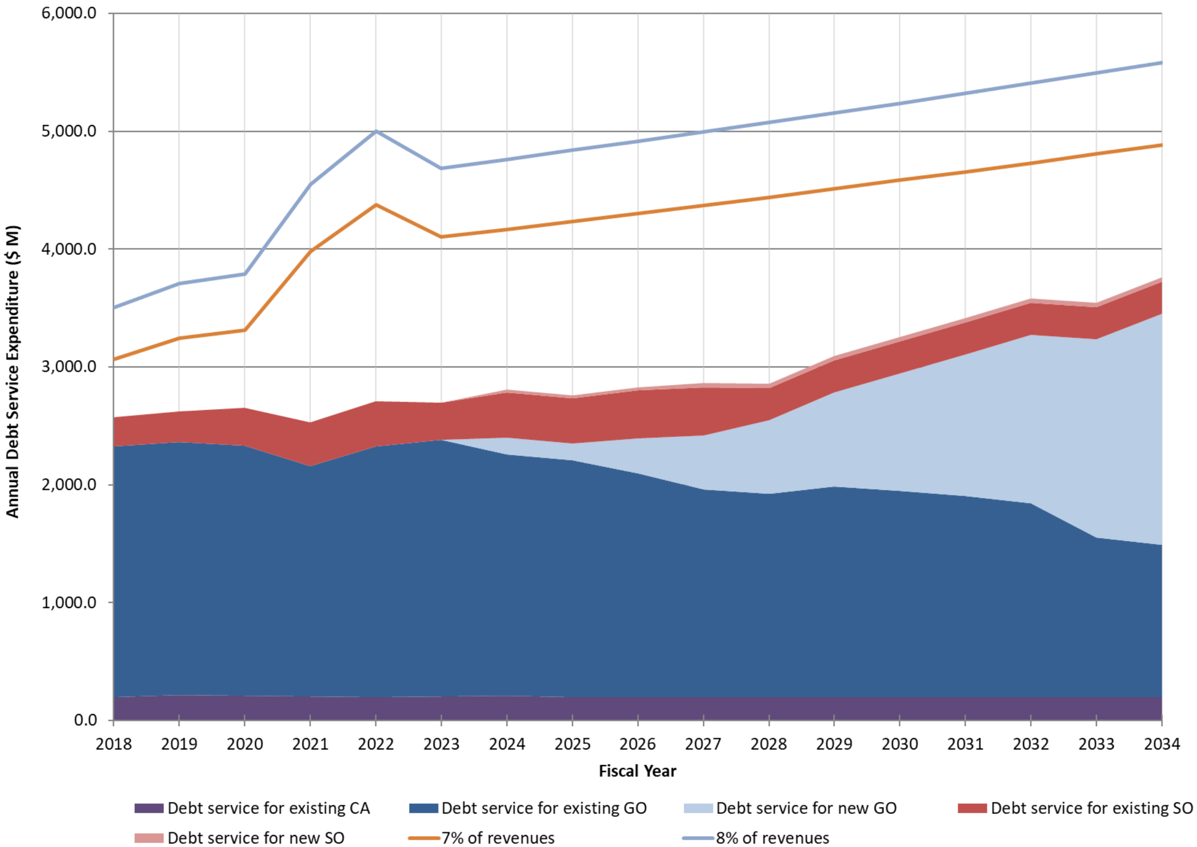
- ❖ Interest Rates: 4.1% – 5.2%
- ❖ Annual Revenue Growth: 3.2%
- ❖ Bond cap continues to increase by +$125 M annually through 2054

30-Year Snapshot



$125 Million Bond Cap
Preliminary Scenario 2 - Conservative

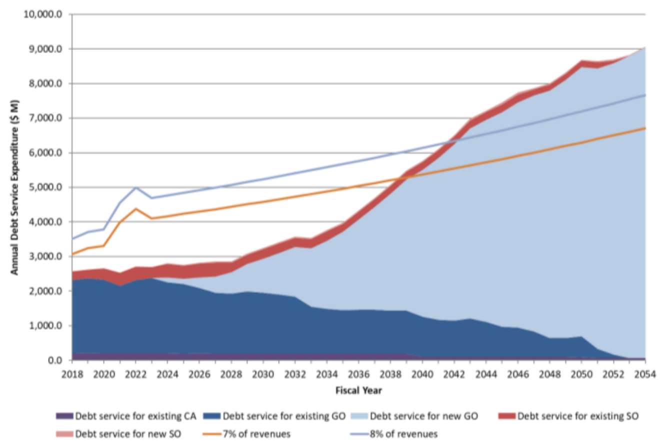
10-Year Snapshot



Modeling Assumptions

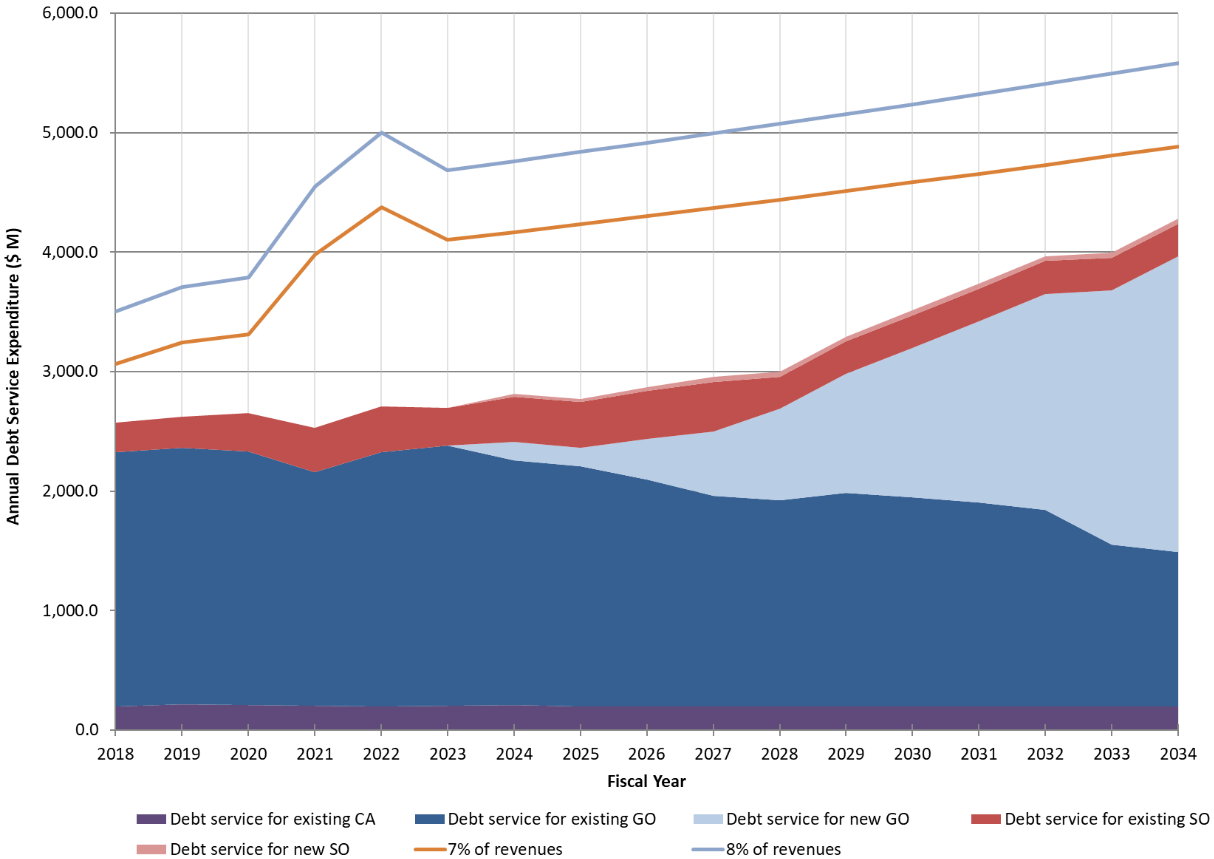
- ❖ Interest Rates: 4.1% – 5.2%
- ❖ Annual Revenue Growth: 1.6%
- ❖ Bond cap continues to increase by +$125 M annually through 2054

30-Year Snapshot



$125 Million Bond Cap
Preliminary Scenario 3 – Stress Test

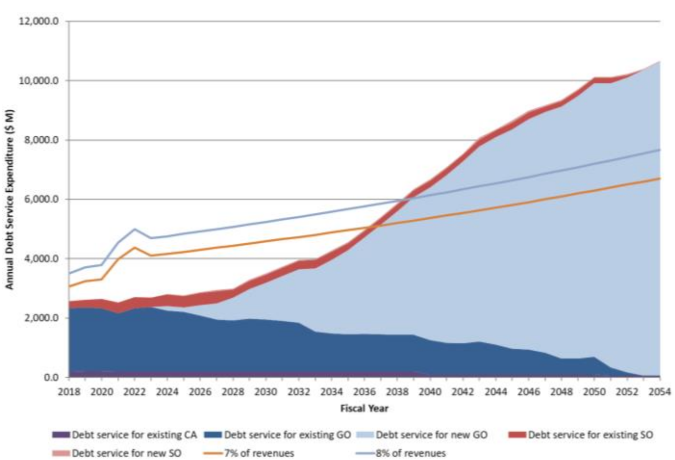
10-Year Snapshot



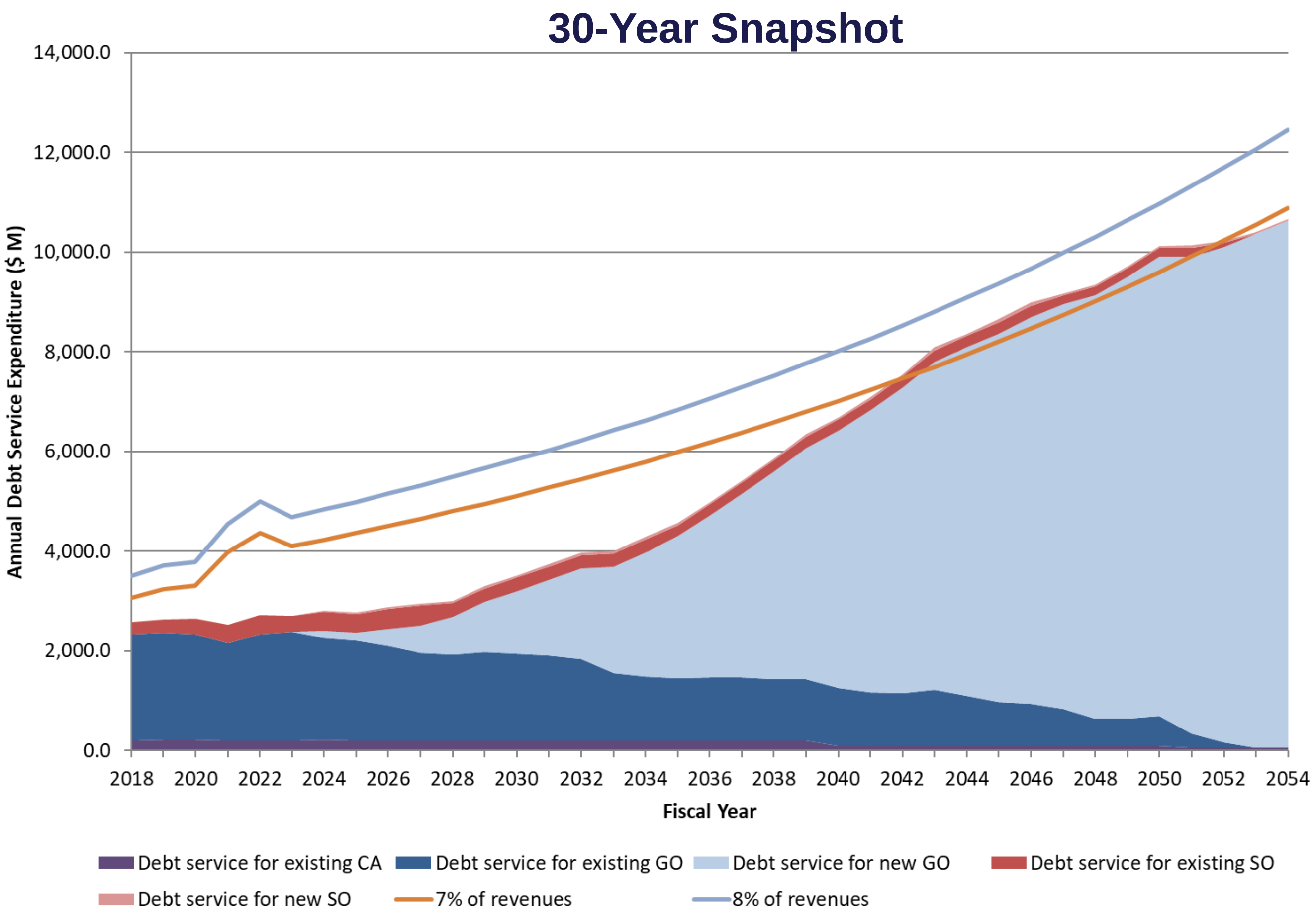
Modeling Assumptions

- ❖ Interest Rates: 4.5% - 6.4%
- ❖ Annual Revenue Growth: 1.6%
- ❖ Bond cap continues to increase by +$125 M annually through 2054

30-Year Snapshot



$125 Million Bond Cap
Preliminary Scenario – Stress Test Alternative



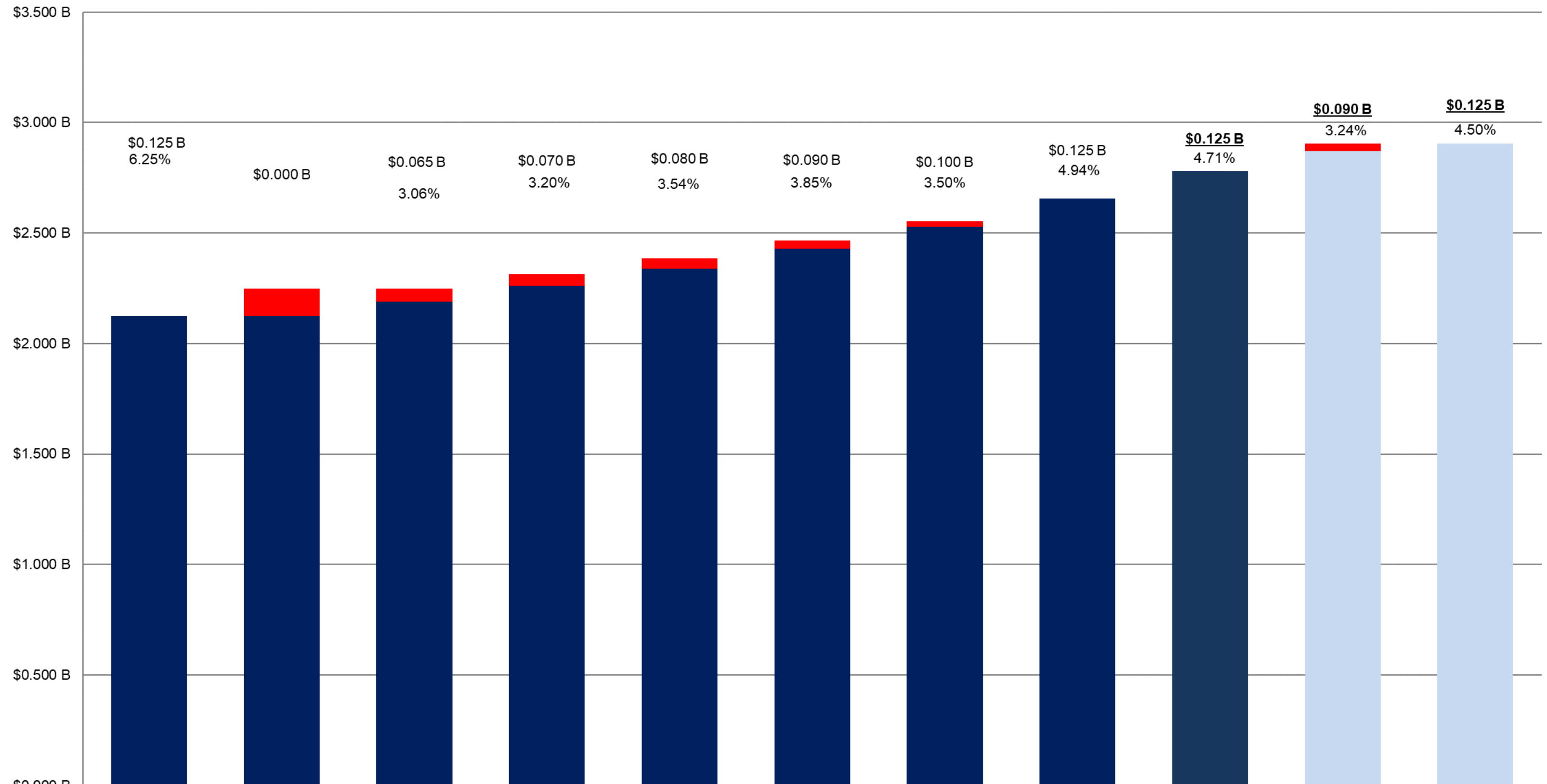
Modeling Assumptions

- Interest Rates: 4.5% - 6.4%
- Annual Revenue Growth: **3.2.%**
  - Assumption is lower than avg annual growth since 2000: 4.4%
- Bond cap continues to increase by +$125 M annually through 2054

3. Additional DAC Modeling

FY 2024 Bond Cap Recommendation Modeling: $90M vs. $125M

Historic Bond Cap vs $90 M vs $125 M Scenarios



	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24(a)	FY24(b)
Increase to Bond Cap	$0.125 B	$0.000 B	$0.065 B	$0.070 B	$0.080 B	$0.090 B	$0.100 B	$0.125 B	$0.125 B	$0.090 B	$0.125 B
Annual Cap Growth (%)	6.25%	0.00%	3.06%	3.20%	3.54%	3.85%	3.50%	4.94%	4.71%	3.24%	4.50%
Recommended Cap vs. $125M Max	$0.000 B	$0.125 B	$0.060 B	$0.055 B	$0.045 B	$0.035 B	$0.025 B	$0.000 B	$0.000 B	$0.035 B	$0.000 B
Recommended Bond Cap	$2.125 B	$2.125 B	$2.190 B	$2.260 B	$2.340 B	$2.430 B	$2.530 B	$2.655 B	$2.780 B	$2.870 B	$2.905 B

DAC Modeling Outcomes Recap: $90 M vs $125M

Model Input	Moderate Scenario	Conservative Scenario	Stress Test Scenario
FY22 Starting Interest Rates *Model assumes interest rates increase 0.5% annually through 2027, based on Moody's projected growth rate for 2022 - 2027*	**4.1% - 5.2%** Based on Moody's projections	**4.1% - 5.2%** Based on Moody's projections	**4.5% - 6.4%** Uses Moody's 2023 rate as base and increases rates by 25 bps
Revenue Growth	**3.2%** Lowest 20-yr tax CAGR	**1.6%** Lowest 10-yr tax CAGR	**1.6%** Lowest 10-yr tax CAGR
Debt Service Target	**Moderate** **Target Met?**	**Conservative** **Target Met?**	**Stress Test** **Target Met?**
10-Year Outlook Annual Debt Service **< 8%** of Revenues	$90 M: √ $125 M: √	$90 M: √ $125 M: √	$90 M: √ $125 M: √
10-Year Outlook Annual Debt Service **< 7%** of Revenues	$90 M: √ $125 M: √	$90 M: √ $125 M: √	$90 M: √ $125 M: √
30-Year Outlook Annual Debt Service **< 8%** of Revenues	$90 M: √ $125 M: √	$90 M: X (2042 and on) $125 M: X (2042 and on)	$90 M: X (2039 and on) $125 M: X (2039 and on)

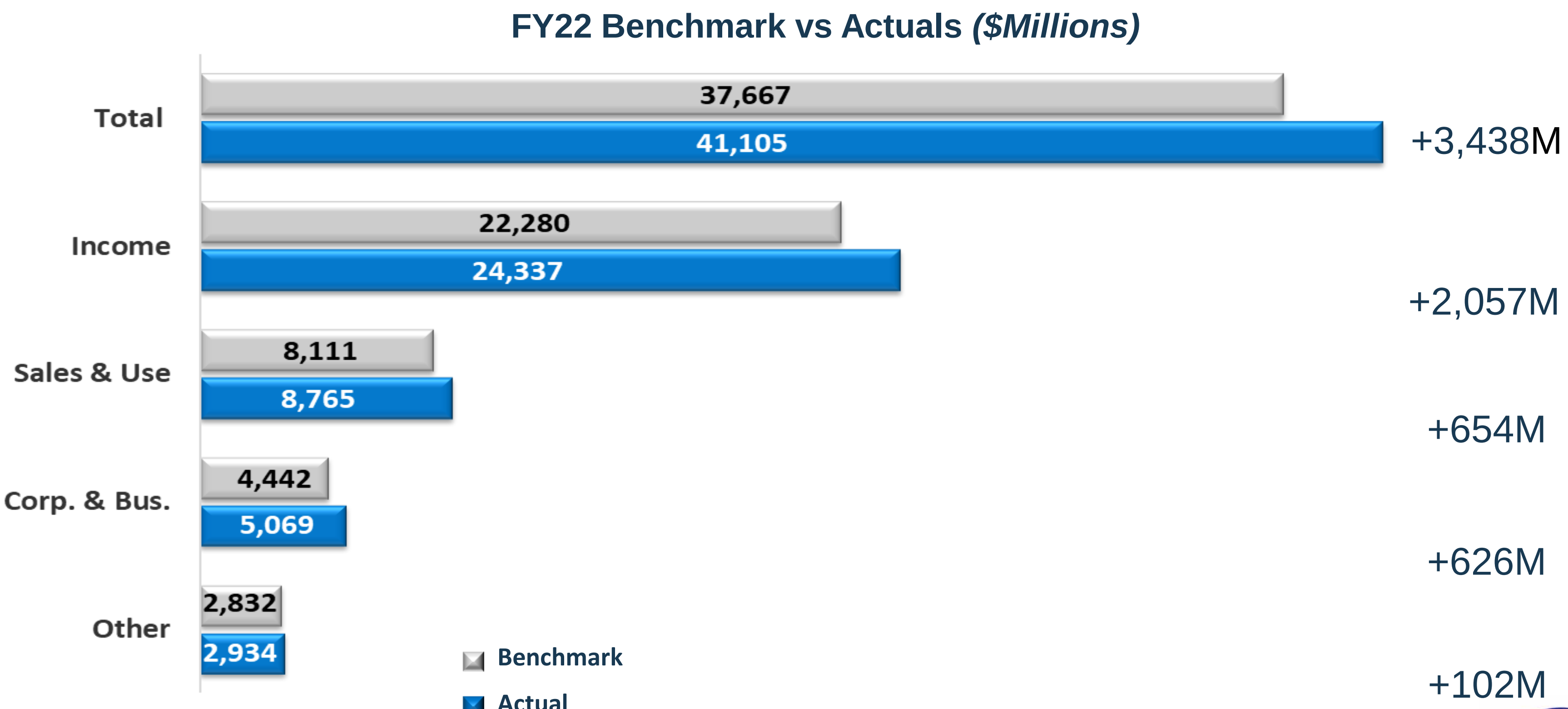
DAC Focus

- Alt Scenario 1 *($125 M, most conservative interest rate assumptions, but 3.2% (20-yr CAGR)* resulted in DS < 8% over 30 yrs)
- Alt Scenario 2 *($80 M increase (2.9%),stress test scenario)* resulted in same general results as $90 and $125 scenarios

4. Revenue & Interest Rate Growth Assumptions

Long Term Tax Revenue Growth: FY22 Revenue Performance

- FY22 revenue totaled $41.105 billion: $3.438 billion more than the benchmark and 20.5% more than FY21 collections.



SOURCE: DOR reports on annual revenue. Analysis for DAC purposes only.

Long Term Tax Revenue Growth: FY23 Year to Date Revenue Performance

- FY23 YTD Revenue as of September ‘22 totaled $9.194 billion, $443 million or 5.1% more than collections in the same period of FY22 and $224 million, or 2.5% above FY23 YTD benchmark.

FY23 Preliminary Revenues as of October 5, 2022

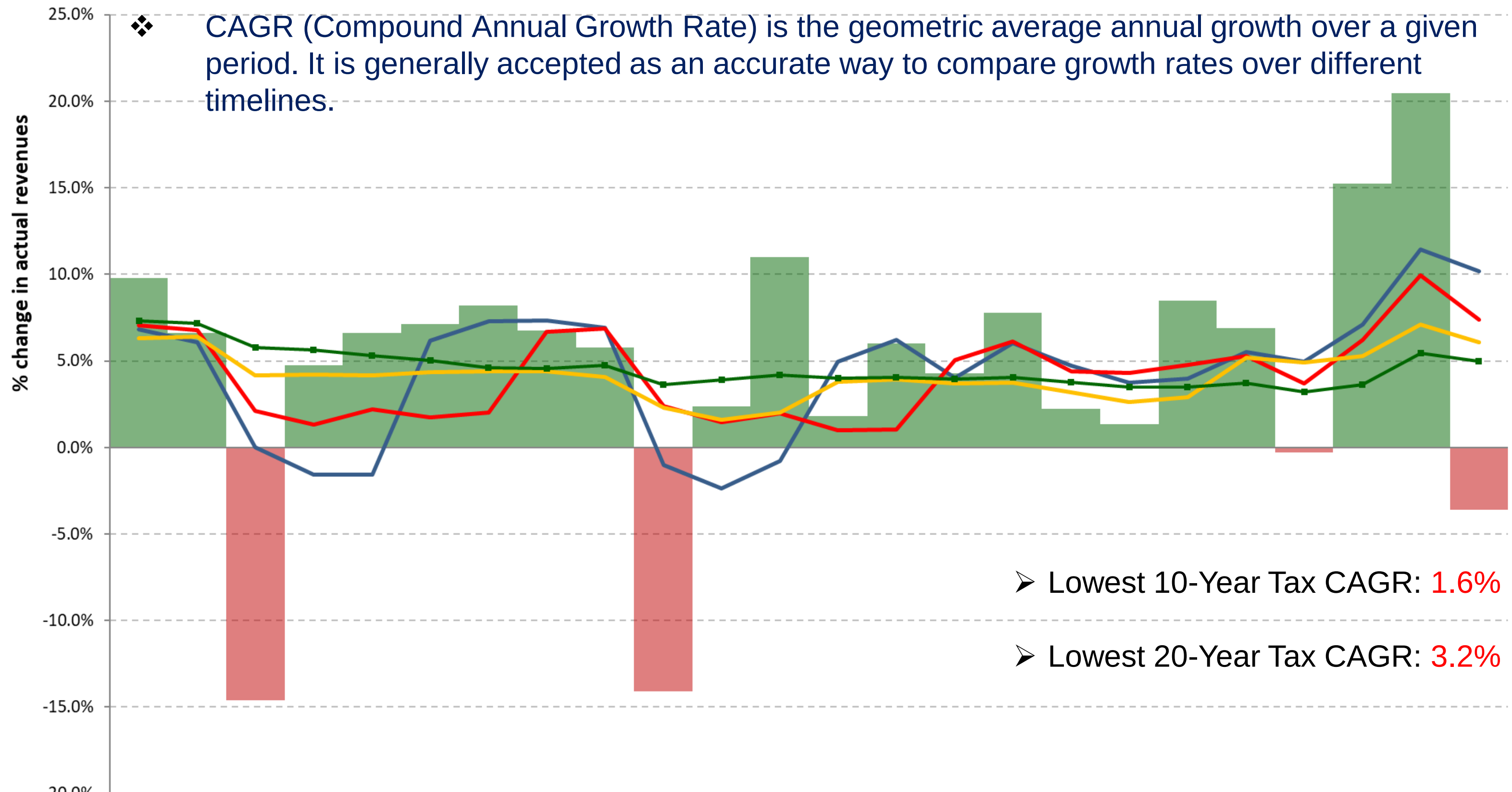
DOR presented to the DAC on October 14, 2022. Below represents DOR preliminary collections for FY23 at the time of the meeting.

	Month of September					**FY23 YTD as of September**				
	09/22 Actual Collections	09/22 v. 09/21 $ Fav/(Unfav)	09/22 v. 09/21 % Fav/(Unfav)	09/22 Actual vs Benchmark $ Fav/(Unfav)	09/22 Actual vs Benchmark % Fav/(Unfav)	**09/22 YTD Actual Collections**	09/22 YTD v. 09/21 YTD $ Fav/(Unfav)	09/22 YTD v. 09/21 YTD % Fav/(Unfav)	09/22 YTD Actual vs Benchmark $ Fav/(Unfav)	09/22 YTD Actual vs Benchmark % Fav/(Unfav)
Income										
Income Withholding	1,280	90	+7.6%	36	+2.9%	3,820	186	+5.1%	39	+1.0%
Income Est. Payments	871	65	+8.1%	107	+13.9%	980	87	+9.7%	107	+12.2%
Income Returns/Bills	166	78	+88.0%	(46)	-21.8%	306	107	+53.8%	(49)	-13.7%
Income Refunds Net (outflow)	(122)	(81)	-196.4%	35	+22.3%	(196)	(107)	-121.6%	35	+15.2%
Subtotal Non-withheld Income	915	62	+7.3%	95	+11.6%	1,091	87	+8.6%	93	+9.3%
Subtotal Income	**2,195**	**152**	**+7.4%**	**131**	**+6.4%**	**4,911**	**272**	**+5.9%**	**132**	**+2.8%**
Sales & Use										
Sales - Regular	529	50	+10.5%	55	+11.6%	1,659	136	+8.9%	54	+3.4%
Sales - Meals	131	11	+9.6%	18	+16.4%	398	46	+13.1%	19	+5.1%
Sales - Motor Vehicles	105	8	+7.8%	7	+7.6%	289	18	+6.7%	7	+2.6%
Subtotal Sales & Use	**766**	**70**	**+10.0%**	**81**	**+11.8%**	**2,346**	**200**	**+9.3%**	**81**	**+3.6%**
Corporate & Business - Total	**973**	**(30)**	**-3.0%**	**28**	**+3.0%**	**1,162**	**(64)**	**-5.2%**	**29**	**+2.5%**
All Other	**254**	**2**	**+0.9%**	**(16)**	**-6.1%**	**776**	**35**	**+4.7%**	**(17)**	**-2.2%**
Total Tax Collections	**4,187**	**194**	**+4.9%**	**224**	**+5.7%**	**9,194**	**443**	**+5.1%**	**224**	**+2.5%**

SOURCE: DOR reports on annual revenue. Analysis for DAC purposes only.

Long Term Tax Revenue Growth: CAGR Method

- 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.



- Lowest 10-Year Tax CAGR: 1.6%
- Lowest 20-Year Tax CAGR: 3.2%

	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23 BM
1-Year Change	9.8%	6.6%	-14.6%	4.7%	6.6%	7.1%	8.2%	6.8%	5.8%	-14.1%	2.4%	11.0%	1.8%	6.0%	4.3%	7.8%	2.2%	1.3%	8.5%	6.9%	-0.3%	15.2%	20.5%	-3.6%
3-Year CAGR	6.8%	6.1%	0.0%	-1.6%	-1.6%	6.1%	7.3%	7.4%	6.9%	-1.0%	-2.4%	-0.8%	5.0%	6.2%	4.0%	6.0%	4.7%	3.7%	4.0%	5.5%	5.0%	7.1%	11.5%	10.2%
5-Year CAGR	7.0%	6.8%	2.1%	1.3%	2.2%	1.7%	2.0%	6.7%	6.9%	2.4%	1.4%	2.0%	1.0%	1.0%	5.0%	6.1%	4.4%	4.3%	4.8%	5.3%	3.7%	6.2%	9.9%	7.4%
10-Year CAGR	6.3%	6.4%	4.2%	4.2%	4.2%	4.3%	4.4%	4.4%	4.1%	2.3%	1.6%	2.0%	3.8%	3.9%	3.7%	3.8%	3.2%	2.6%	2.9%	5.2%	4.9%	5.3%	7.1%	6.1%
20-Year CAGR	7.3%	7.2%	5.8%	5.6%	5.3%	5.0%	4.6%	4.6%	4.7%	3.6%	3.9%	4.2%	4.0%	4.1%	3.9%	4.1%	3.8%	3.5%	3.5%	3.7%	3.2%	3.6%	5.4%	5.0%

SOURCE: DOR reports on annual revenue. Analysis for DAC purposes only.

Interest Rates: Current Yield Curve on Munis

AAA Rated Muni Bonds

Issue	Maturity	Interest Rate (10/26/22)	Last Week's Rate	*Last Year*
National	10 Year	3.40	3.20	*1.20*
National	20 Year	3.80	3.60	*1.50*
National	30 Year	4.00	3.80	*1.70*

AA Rated Muni Bonds

Issue	Maturity	Interest Rate (10/26/22)	Last Week's Rate	*Last Year*
National	10 Year	3.60	3.40	*1.30*
National	20 Year	4.20	4.00	*1.70*
National	30 Year	4.40	4.20	*1.90*

A Rated Muni Bonds

Issue	Maturity	Interest Rate (10/26/22)	Last Week's Rate	*Last Year*
National	10 Year	3.75	3.60	*1.45*
National	20 Year	4.40	4.25	*1.85*
National	30 Year	4.60	4.45	*2.05*

❖ 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.

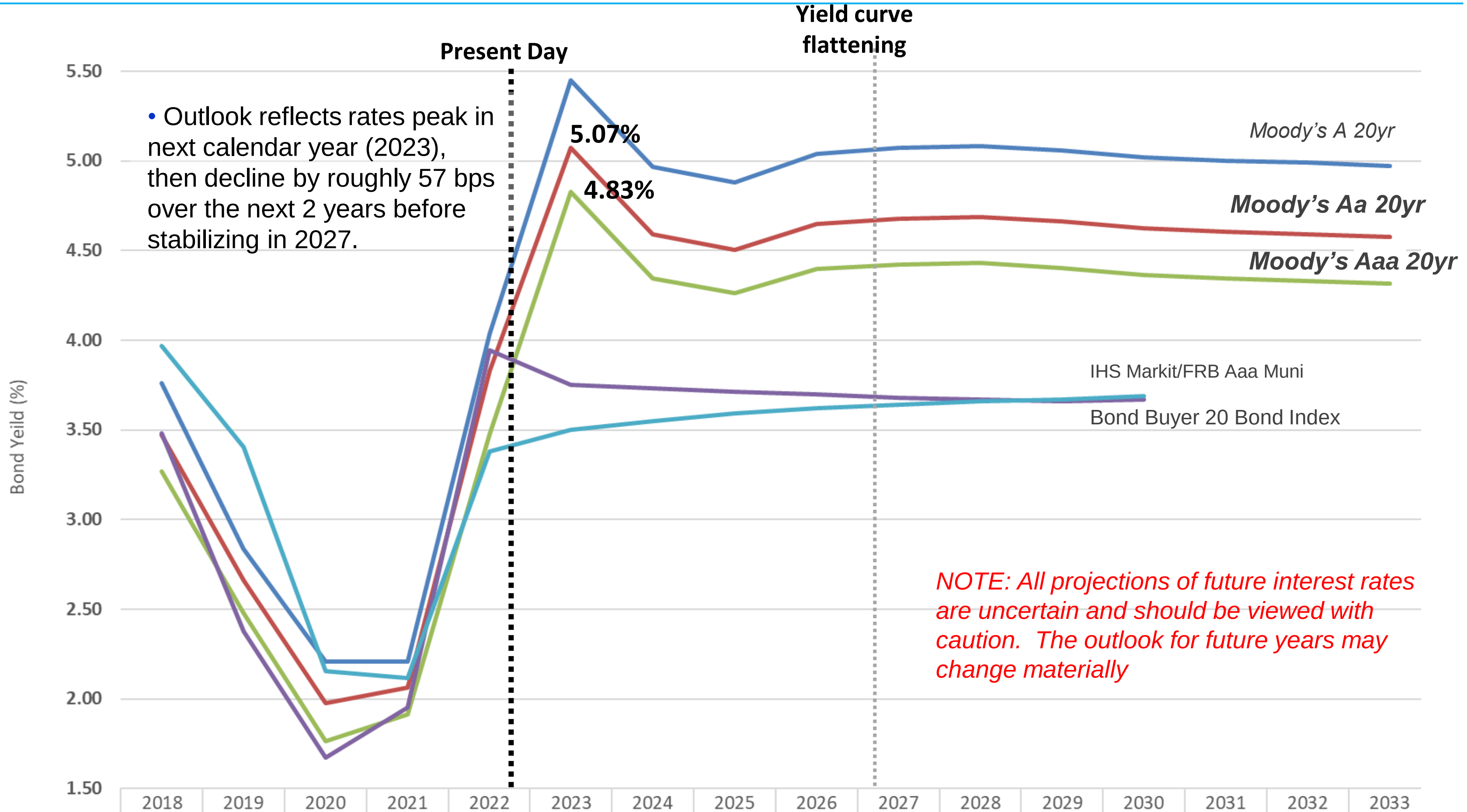
- Current MA GO Ratings: Aa1/AA/AA+

❖ Spread between the maturities ranges 20 – 60 bps

- AAA: 10yr vs 20 yr: 40 bps
- AAA: 20yr vs 30 yr: 20 bps
- AA: 10yr vs 20 yr: 60 bps
- AA: 20yr vs 30 yr: 20 bps

Source: FMS Bonds Inc.

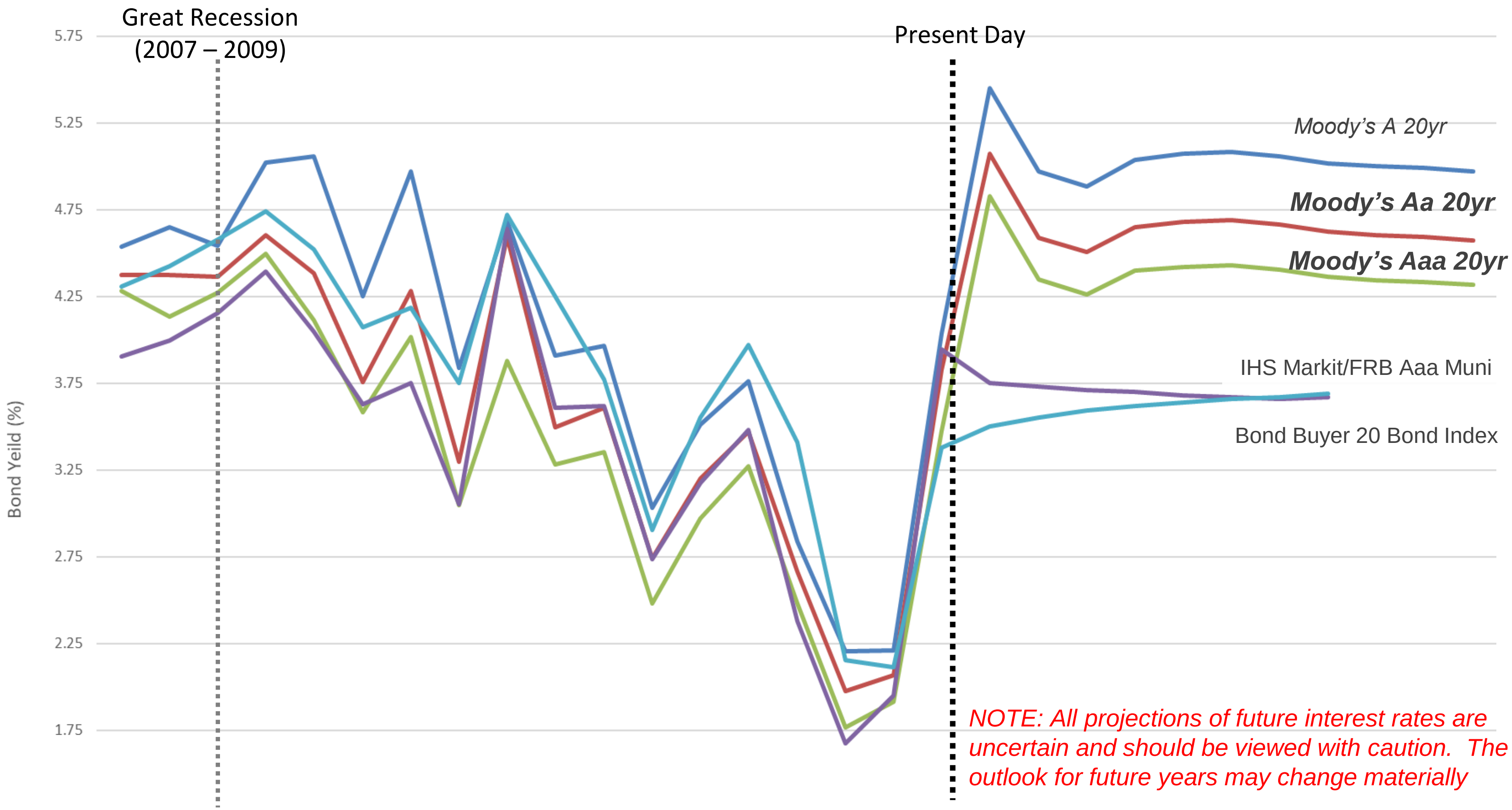
Interest Rates: Yield Curve Outlook



	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Moody's A 20yr Muni	3.76	2.84	2.21	2.21	4.04	5.45	4.97	4.88	5.04	5.07	5.08	5.06	5.02	5.00	4.99	4.97
Moody's Aa 20yr Muni	3.47	2.66	1.97	2.06	3.83	5.07	4.59	4.50	4.65	4.68	4.69	4.66	4.62	4.60	4.59	4.57
Moody's Aaa 20yr Muni	3.27	2.48	1.76	1.91	3.48	4.83	4.35	4.26	4.40	4.42	4.43	4.40	4.36	4.34	4.33	4.31
IHS Aaa Muni Index	3.48	2.38	1.67	1.95	3.94	3.75	3.73	3.71	3.70	3.68	3.67	3.66	3.67			
Bond Buyer 20yr Index	3.97	3.41	2.15	2.11	3.38	3.50	3.55	3.59	3.62	3.64	3.66	3.67	3.69			

Based on data available as of October 2022

Interest Rates: Historic Yield Curve



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Moody's A 20yr Muni	4.54	4.65	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
Moody's Aa 20yr Muni	4.37	4.37	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
Moody's Aaa 20yr Muni	4.28	4.13	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
IHS Aaa Muni Index	3.90	3.99	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
Bond Buyer 20yr Index	4.30	4.43	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

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Moody's A 20yr Muni	2.21	2.21	4.04	5.45	4.97	4.88	5.04	5.07	5.08	5.06	5.02	5.00	4.99	4.97
Moody's Aa 20yr Muni	1.97	2.06	3.83	5.07	4.59	4.50	4.65	4.68	4.69	4.66	4.62	4.60	4.59	4.57
Moody's Aaa 20yr Muni	1.76	1.91	3.48	4.83	4.35	4.26	4.40	4.42	4.43	4.40	4.36	4.34	4.33	4.31
IHS Aaa Muni Index	1.67	1.95	3.94	3.75	3.73	3.71	3.70	3.68	3.67	3.66	3.67			
Bond Buyer 20yr Index	2.15	2.11	3.38	3.50	3.55	3.59	3.62	3.64	3.66	3.67	3.69			

Based on data available as of October 2022

Interest Rates: Establishing Preliminary Baseline Projections for Modeling

1. Estimate 20yr baseline rate using current Moody's Projections

	2023	2024	2025	2026	2027	2028+
Moody's AA 20 yr rate projections	5.07	4.59	4.50	4.65	4.68	4.69
Moody's AAA 20 yr rate projections	4.83	4.35	4.26	4.40	4.42	4.43
MA 20 yr baseline estimate *(Mid-Point btw AAA and AA)*	4.95	4.47	4.38	4.52	4.55	4.56

2. Estimate 10yr and 30yr baseline rates by applying current spreads to 20yr baseline

MA 10 yr baseline estimate ***(-50 bps** from 20 yr, based on current spreads)*	4.45	3.97	3.88	4.02	4.05	4.06
MA 30 yr baseline estimate ***(+20 bps** from 20 yr, based on current spreads)*	5.15	4.67	4.58	4.72	4.75	4.76

Initial baseline rates under proposed approach: Rates range from 2023 peak of 5.2% to 2025 low of 3.9% before stabilizing in 2027 (4.1% – 4.8%)

Notes:
Uses Moody's projections from October 2022
DAC model smooths rates across the first five years based on Moody's projections.

Interest Rates: Establishing Preliminary Conservative Projections for Modeling

Baseline Rates – Moderate scenario based on Moody's Current Projections

	2023	2024	2025	2026	2027	2028+
MA 10 yr baseline	4.45	3.97	3.88	4.02	4.05	4.06
MA 20 yr baseline	4.95	4.47	4.38	4.52	4.55	4.56
MA 30 yr baseline	5.15	4.67	4.58	4.72	4.75	4.76

Conservative Rates - FY23 baseline escalated by 25bps annually

	2023	2024	2025	2026	2027	2028+
MA 10 yr conservative	4.45	4.70	4.95	5.20	5.45	5.70
MA 20 yr conservative	4.95	5.20	5.45	5.70	5.95	6.20
MA 30 yr conservative	5.15	5.40	5.65	5.90	6.15	6.40

Conservative rates under proposed approach: Rates increase by a total 1.25% over the next five years. By 2028 rates range from 5.7% to 6.4%.

5. Capital Spending

Capital Plan FY 2023 Budget Summary

Source	FY23 ($M)
General Obligation Bonds (bond cap)	$2,780
Federal Funds	$1,052
Special Obligation (REP and ABP) Bonds	$465
Other contributions (match, private, etc.)	$265
Pay-as-you go (PAYGO)	$249
Project / Self-Funded	$50
Capital Investment Plan Total ALL SOURCES	**$4,862**

Bond Authorization vs. Bond Cap Spending

- Bond Bills: the vehicle by which authorization to spend bond cap is granted; require 2/3^{rds} 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, which is subject to statutory debt limit requirements.
- The approved CIP assumes the annual bond cap budget remains flat at $2.78 B over the next five years.
- DAC recommendation plays a crucial role in determining how much bond cap Massachusetts can afford.

Capital Plan FY 2023 Budget Summary

(All figures $M)	FY22 Bond Cap	FY23 Bond Cap	YoY Var.	Notes
MassDOT	1,040	1,108	68	Increase primarily driven by: • *Expansion of municipal programs, rail grade crossings, and RTA fleets; state match for Federal BIL funds for bridges & highway*
DCAMM	558	608	50	Increase primarily driven by: • *Expansion of key programs: Surplus Property maint. & demo., Higher Ed. Bldg. Infrastructure, Deferred Maint., and Decarbonization & Energy Efficiency*
HED / DHCD	464	506	42	Increase primarily driven by: • *HED: Revitalizing Underutilized Properties and R&D Matching Fund grants* • *DHCD: Rural & Small Town Development and Regional & Community Planning*
EEA / DCR	309	270	(39)	Decrease primarily driven by: • *Ability of EEA to accelerate some originally programmed FY23 spending into FY22, utilizing available FY22 Capital Reserve*
EOTSS	162	175	13	Increase primarily driven by: • *Planned expansion of Government Performance & Business Applications IT investment, esp. for EOL, EOE, CTR, HHS, and Trial Courts*
A&F	76	61	(15)	Decrease primarily driven by: • *Reduced FY23 Capital Reserve, since over 99% of CIP budget fully programmed*
EOPSS	27	30	3	Increase primarily driven by: • *State police vehicles (cost escalation); Corrections Dept. equipment*
Education	19	22	3	Increase primarily driven by: • *Expansion of Early Education & Out-of-School Time capital grants*
Total	**2,655**	**2,780**	**125**	

5. Credit Factors

Rating Agency Scale Overview

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-

MA General Obligation (GO) Long Term Ratings in Green

Commonwealth Ratings Overview

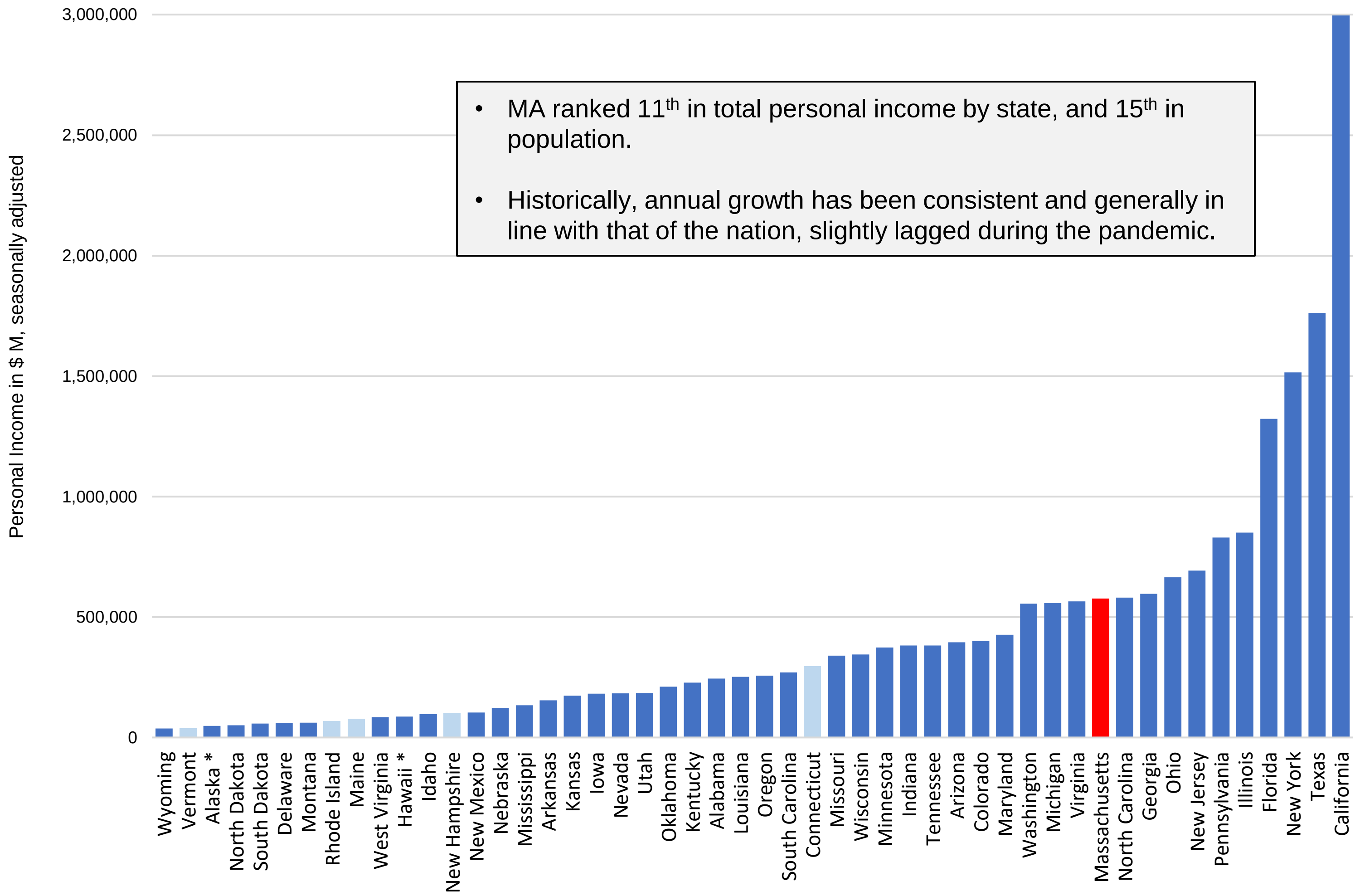
Security	$M Principal Outstanding	Moody's	S&P	Fitch	Kroll
General Obligation Bonds	$24,907	Aa1	AA	AA+	N/A
Commonwealth Transportation Fund Bonds	$3,496	Aa1	AA+	N/A	AAA
Grant Anticipation Notes	$478	Aa2	AAA	N/A	N/A
Convention Center Bonds	$454	A1	A-	N/A	N/A

SOURCE: Commonwealth of Massachusetts Information Statement, September 21, 2022

MA General Obligation (GO) Rating Agency Credit Factor Highlights

Credit Strength Highlights	• Deep and diverse economy, largely focused on knowledge sectors that pay above average wages. • High income levels, with per capita income being one of the highest in the nation. • Exceptional fiscal resilience, with strong gap-closing capacity stemming from a practice of building solid reserve balances and making budget adjustments as needed in response to changing circumstances. • Strong financial, debt, and budget management policies, including annualized formal debt affordability statements, and multiyear capital investment planning.
Credit Offset Highlights	• Elevated debt, pension, and other post-employment benefit (OPEB) liabilities relative to other states. • Aging demographic profile with overall population growth that lags the nation.

Total Personal Income by State (CY 2021)

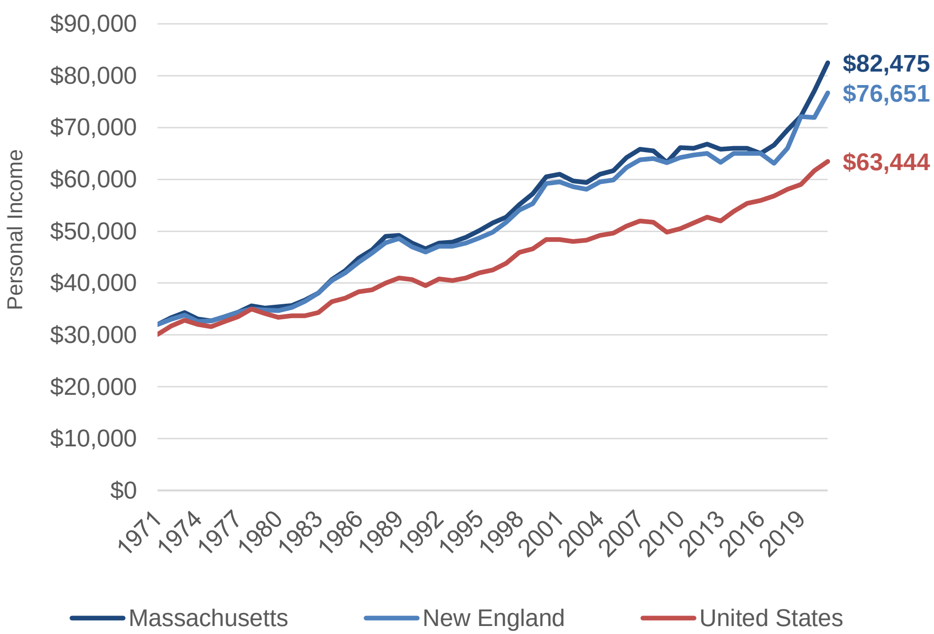


- MA ranked 11th in total personal income by state, and 15th in population.
- Historically, annual growth has been consistent and generally in line with that of the nation, slightly lagged during the pandemic.

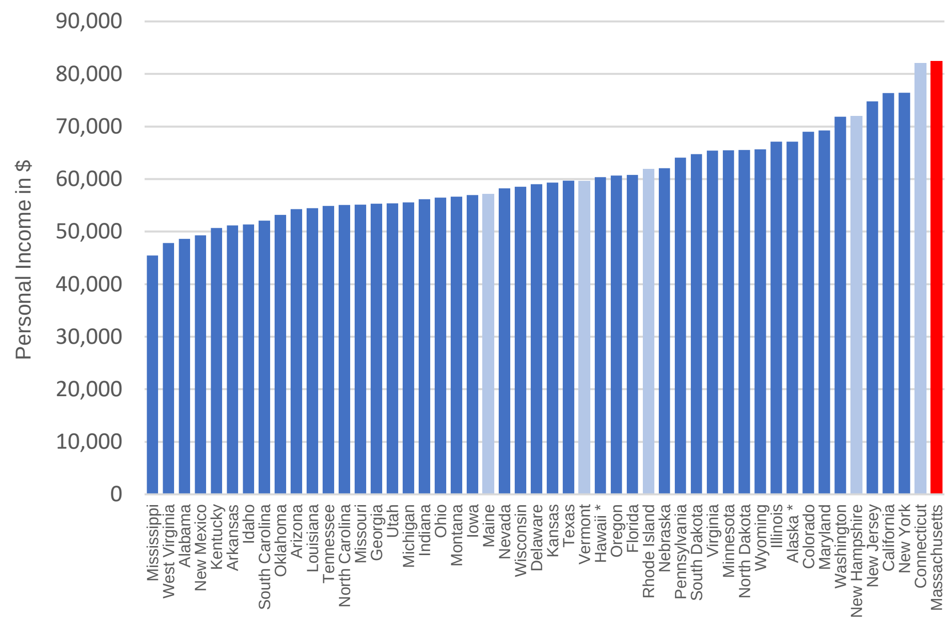
Source: U.S. Bureau of Economic Analysis

Personal Income per Capita (CY 2021)

Real Per Capita Personal Income in Massachusetts, New England, and the United States, 1971-2021



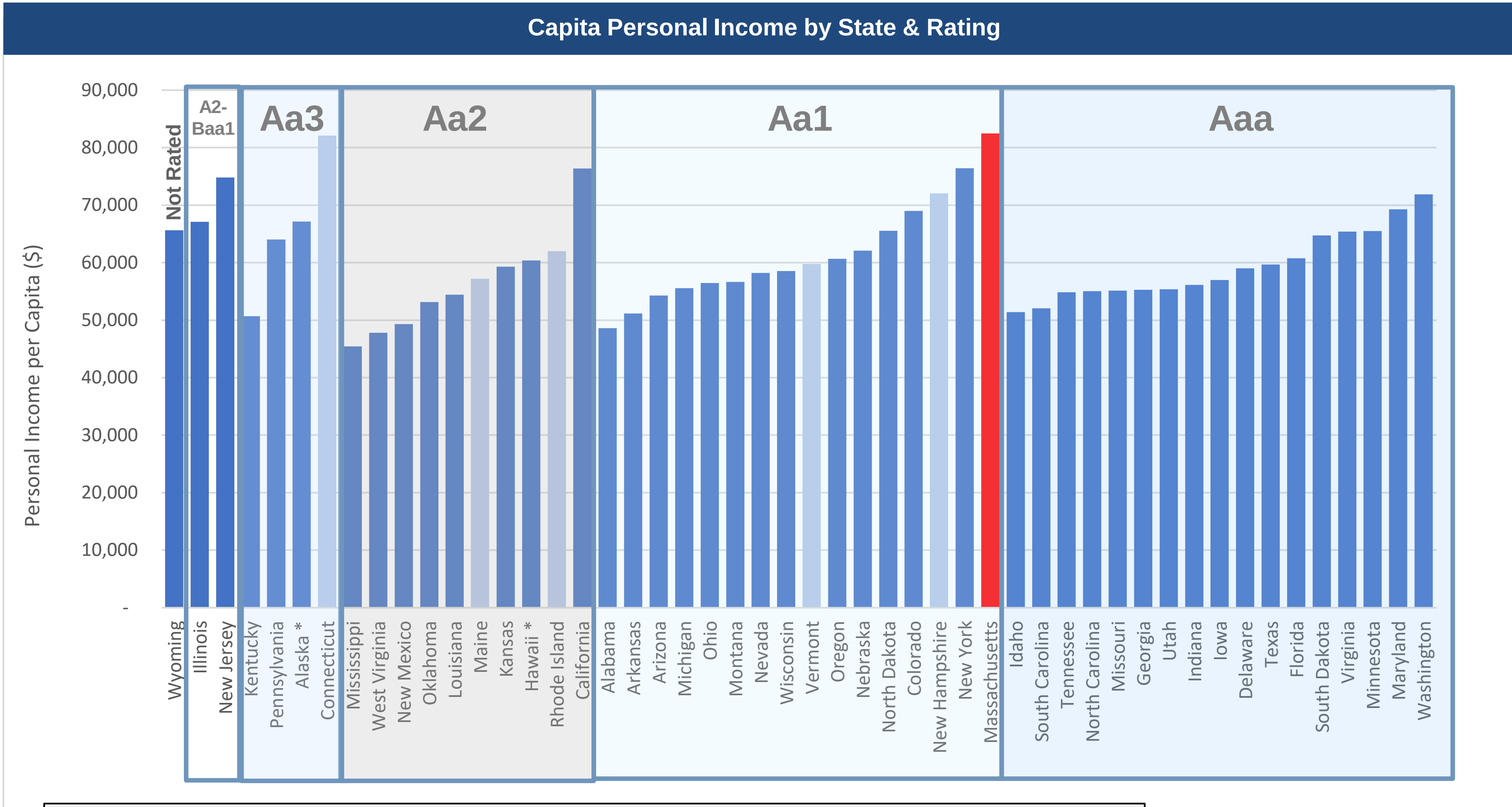
Personal Income per Capita by State, 2021



- MA's economy is supported by a well-trained labor pool, with strong wage growth. Per capita wage growth has typically outpaced the national average.
- These wages supported the commonwealth's consistently high per capita income, which is now more than 130% of the US average and the highest among states.

Source: U.S. Bureau of Economic Analysis

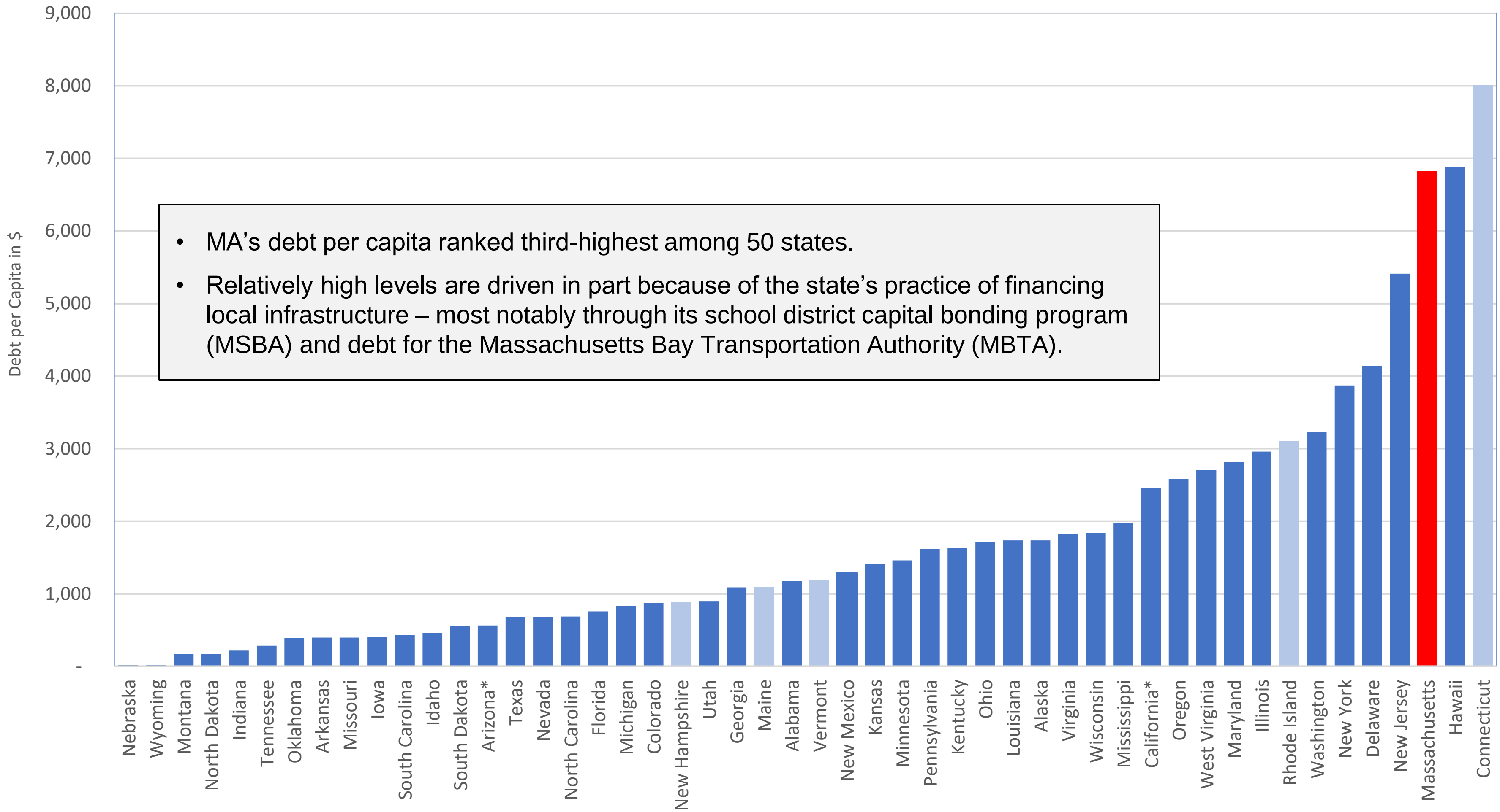
Personal Income per Capita by Rating (CY 2021)



- MA income levels strong compared to Aa1 and Aaa rated states, however ratings distribution suggest other factors are at play

Sources: Moody's Investor's Services

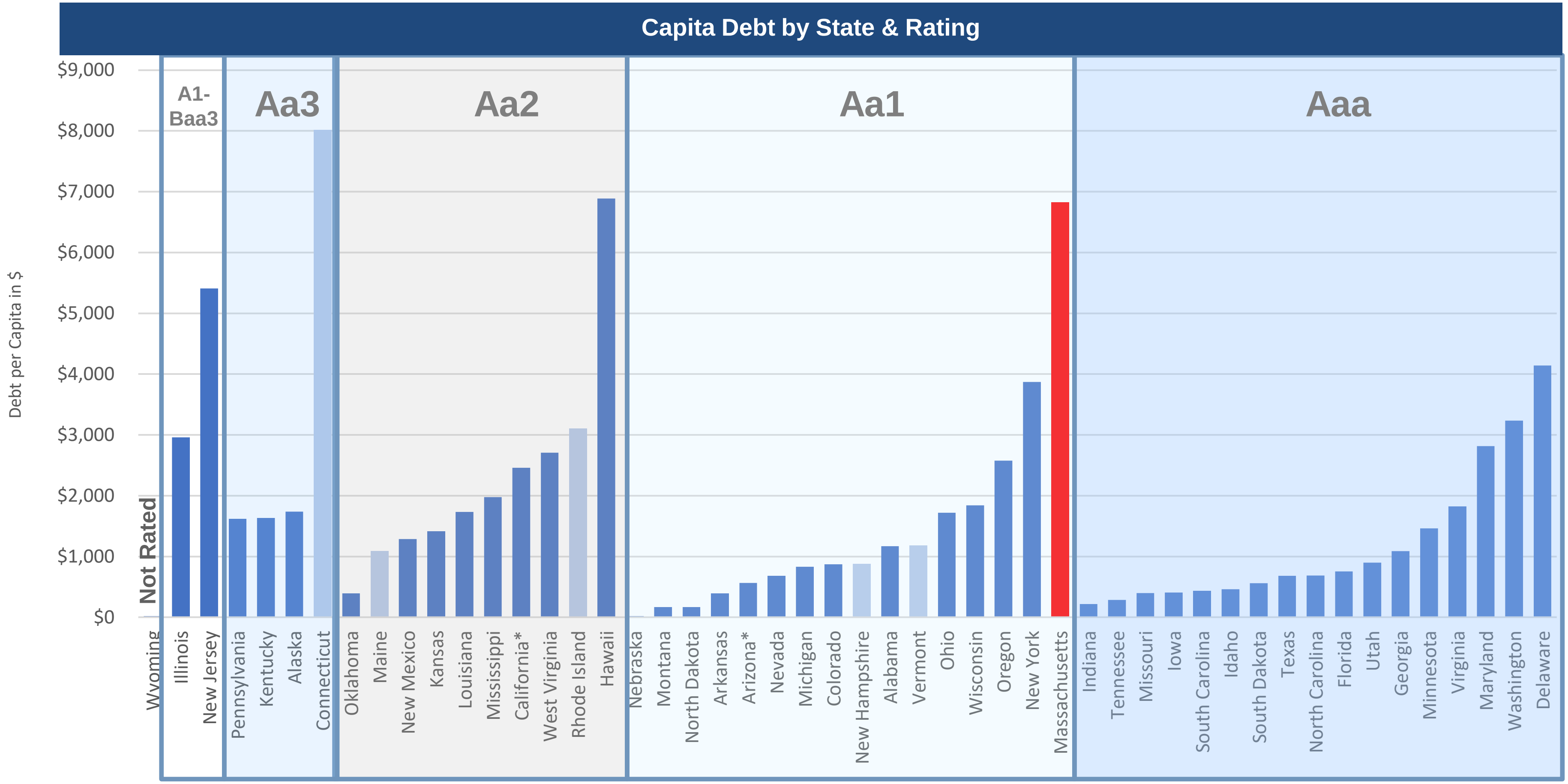
Debt Per Capita by State (FY 2021)



- MA's debt per capita ranked third-highest among 50 states.
- Relatively high levels are driven in part because of the state's practice of financing local infrastructure – most notably through its school district capital bonding program (MSBA) and debt for the Massachusetts Bay Transportation Authority (MBTA).

Sources: Moody's Analytics

Debt Per Capita by State and Rating (FY 2021)

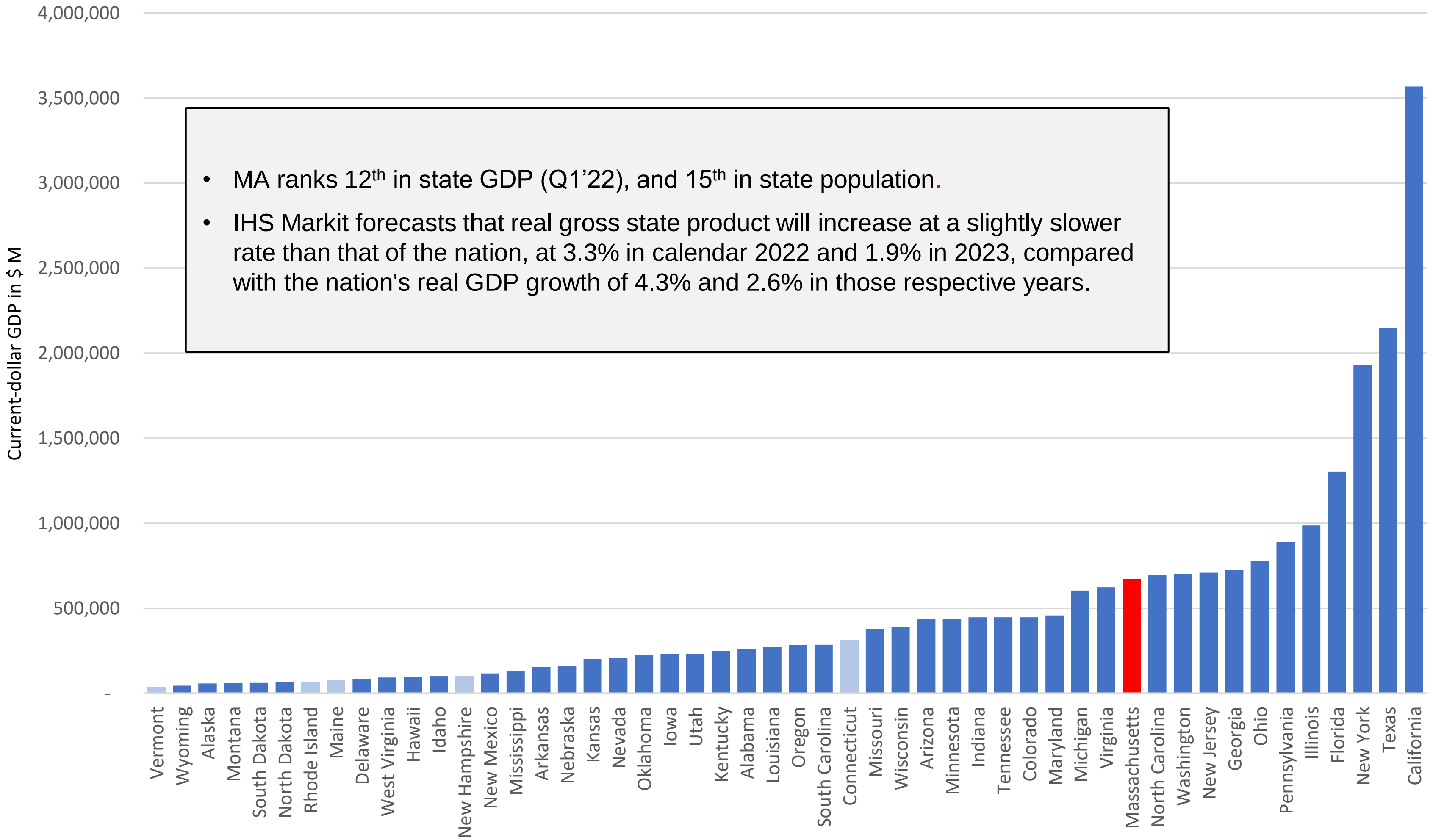


- Ratings distribution demonstrate how high income levels are offset by high debt levels

Sources: Moody's Analytics

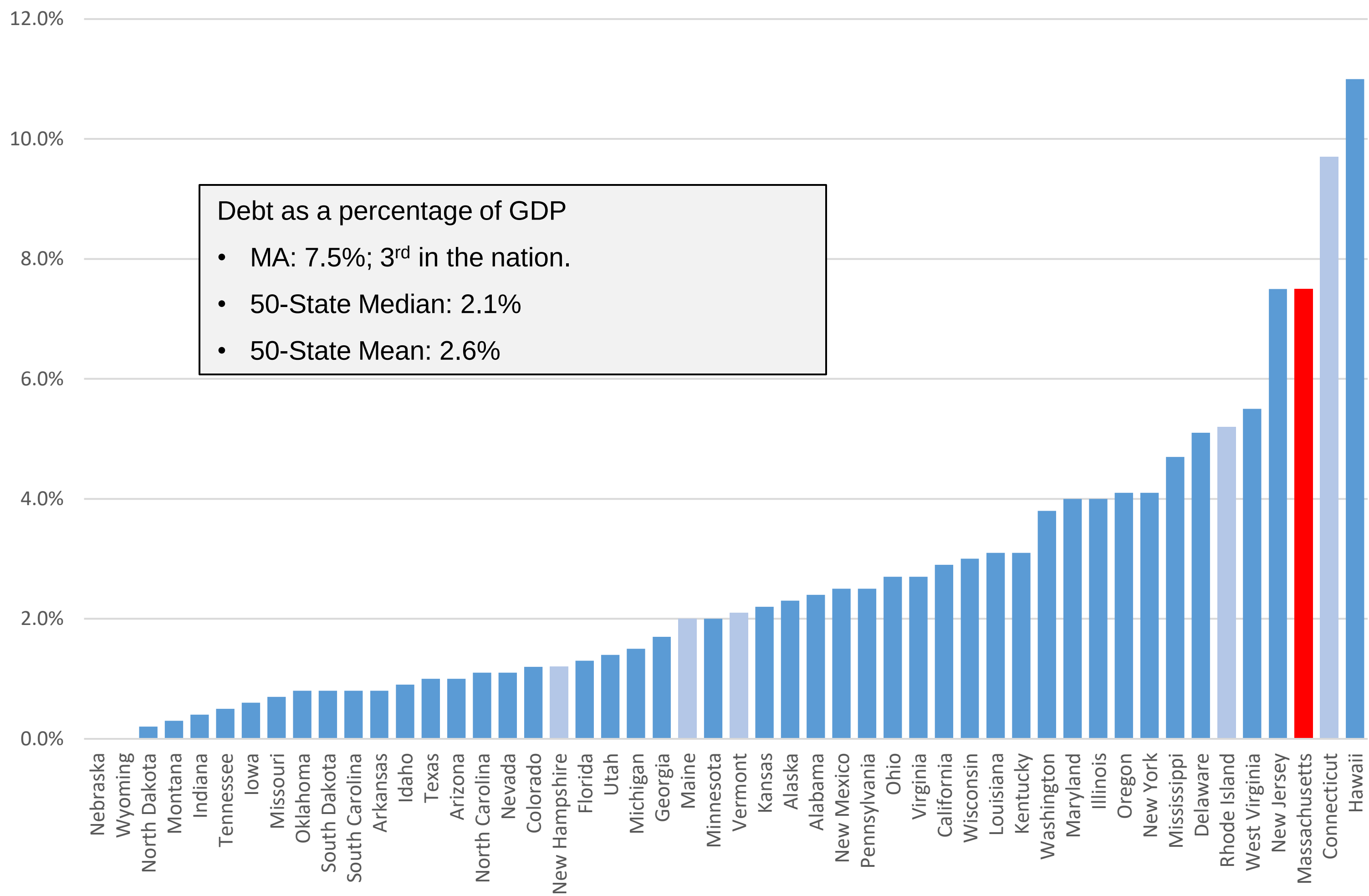
Q1 2022 State Gross Domestic Product (GDP)

- MA ranks 12th in state GDP (Q1'22), and 15th in state population.
- IHS Markit forecasts that real gross state product will increase at a slightly slower rate than that of the nation, at 3.3% in calendar 2022 and 1.9% in 2023, compared with the nation's real GDP growth of 4.3% and 2.6% in those respective years.



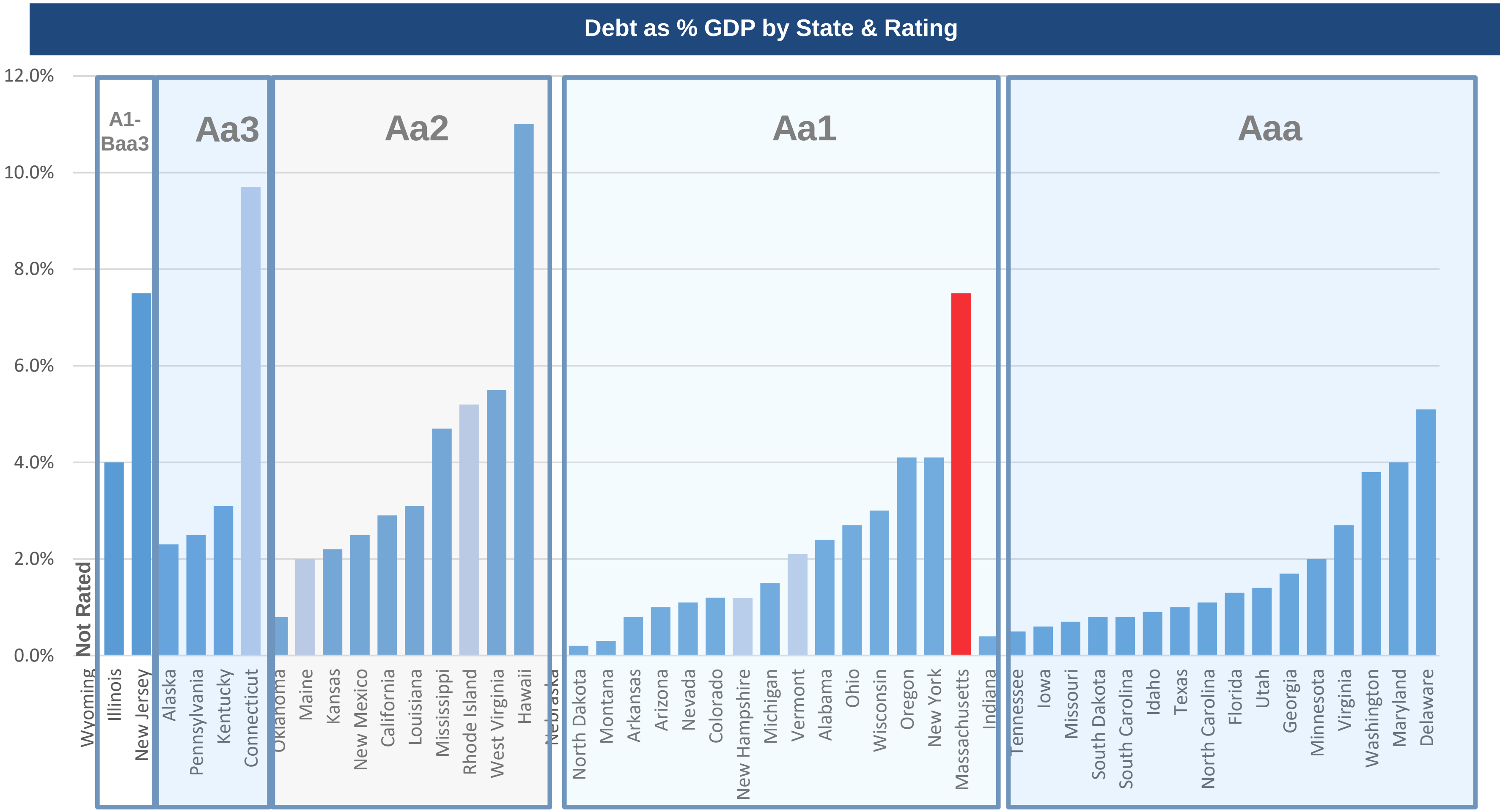
Sources: U.S. Bureau of Economic Analysis; S&P Global Ratings (January 2022)

Debt as a Percentage of State GDP (FY 2021)



Sources: Moody's Analytics

Debt as a Percentage of State GDP by Rating (FY 2021)

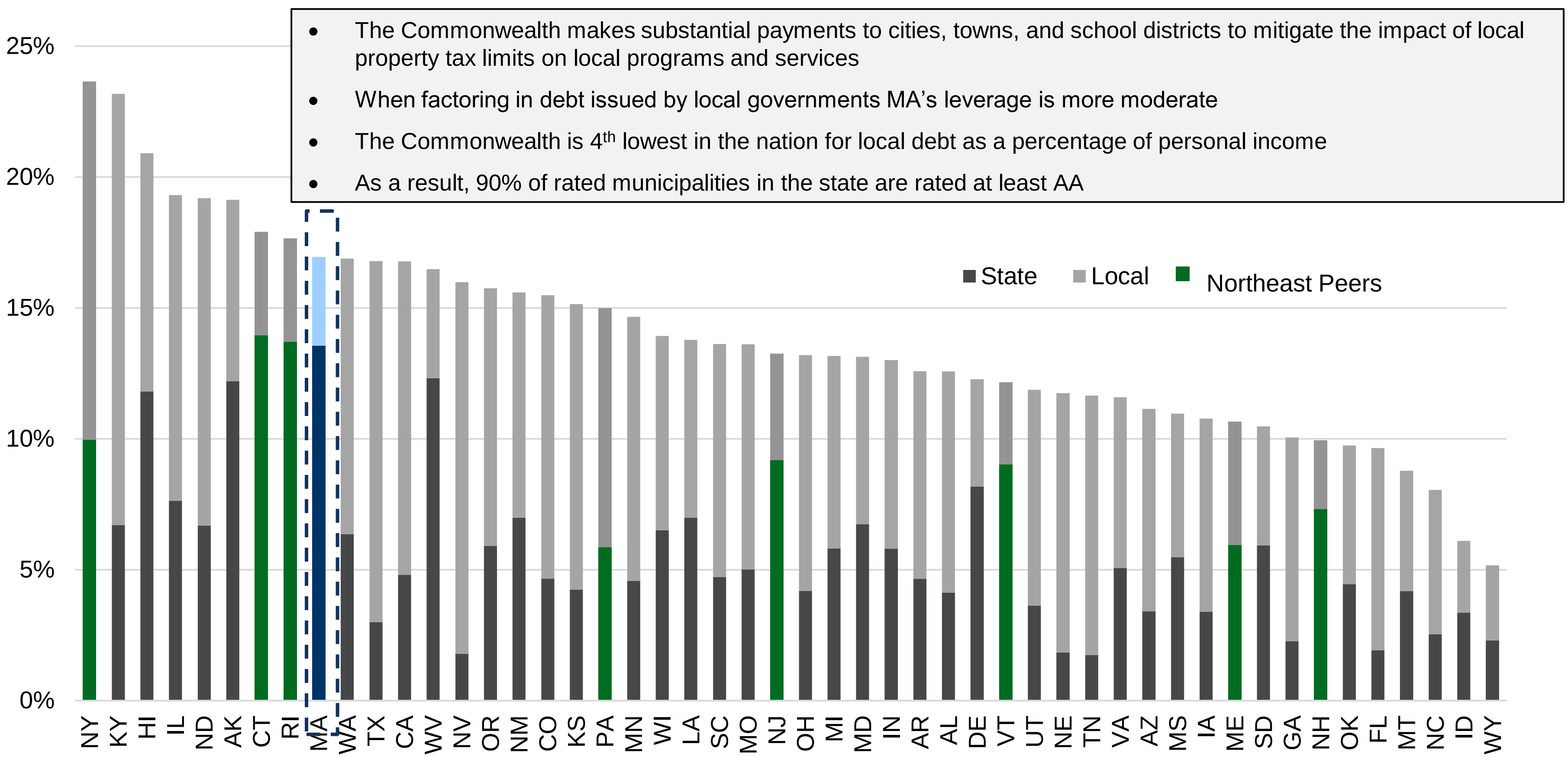


Sources: Moody's Analytics

Combined State and Local Government Debt

State & Local Debt as a Percentage of State Personal Income

- 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
- When factoring in debt issued by local governments MA's leverage is more moderate
- The Commonwealth is 4th lowest in the nation for local debt as a percentage of personal income
- As a result, 90% of rated municipalities in the state are rated at least AA



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

6. Commonwealth Debt Overview

Debt Affordability and Revenue Analysis Approach

Debt Service Included in Affordability Analysis	➢ For the purposes of the debt affordability analysis, **debt service includes** programs expected to be funded both within and outside of the bond cap, including: ✓ Principal and interest payments on all general obligation debt; ✓ Special obligation bonds secured by a specified portion of the motor fuels excise tax; ✓ Special obligation bonds issued to fund the Accelerated Bridge Program and the Rail Enhancement Program; ✓ Special obligation bonds secured by the Convention Center Fund; ✓ General obligation contract assistance payment obligations; and ✓ Budgetary contract assistant payment obligations on certain capital lease financings.
Budgeted Revenues Included in Affordability Analysis	➢ **Budgeted revenue includes** all Commonwealth taxes and other revenues available to pay Commonwealth operating expenses, including debt service, pensions and other budgetary obligations. ➢ It does not include off-budget revenues dedicated to the MBTA, the MSBA and the Massachusetts Convention Center Authority (MCCA). ❖ *This inclusive definition ensures that while some programs are expected to be funded outside of the bond cap, the related debt service costs of the programs should be fully accounted for under the debt affordability policy in recommending the bond cap at appropriate limits.*

Commonwealth Debt Overview

Debt Type	Revenue Pledged	Description	Included in Debt Limit Calculation	Included in DAC Debt Affordability Analysis?
General Obligation (GO) Debt	Debt that can be repaid with all available Commonwealth revenues	Primarily used to fund the Commonwealth's Capital Improvement Plan (CIP). Also supports the UPlan Prepaid College Tuition Program. Amounts also include bonds related to the Central Artery Statewide Road & Bridge Infrastructure and Massachusetts School Building Assistance Fund	YES	YES
Special Obligation Debt	Debt repaid from specific pledged revenues: • Commonwealth Transportation Fund (CTF) • Convention Center Fund (CCF)	• CTF funds the Accelerated Bridge Program (ABP) and Rail Enhancement Program (REP) bonds. • CCF funded convention centers in Boston, Springfield and Worcester.	NO YES YES	YES YES YES
Federal Highway Grant Anticipation Notes ("GANs")	Debt paid by Federal Highway Reimbursements	Funds the Accelerated Bridge Program (ABP) and prior transportation program debt service.	NO	YES

Commonwealth Outstanding Debt

Commonwealth Debt ($ in millions)	FY22 Outstanding Debt	FY23 Projected Debt Service*
General Obligation (GO)	$24,907.4	$2,190.5
Special Obligation (SO)	3,949.7	267.9
Federal Grant Anticipation Notes (GANS)	478.2	62.3
Total	**$29,335.4**	**$2,520.7**

** As of June 30, 2022. Unaudited, subject to change*

Outstanding GO Debt

- Outstanding Debt: $24.9 billion
- Fixed Rate Debt: $23.9 billion (96%)
- Variable Rate Debt: $1.0 billion (4%)

Commonwealth Debt-Related Obligations

Debt Type	Revenue Pledged	Description	Included in Direct Debt Limit Calculation?	Included in Debt Affordability Analysis?
GO Contract Assistance	Debt-related payments by the Commonwealth to: • MA Clean Water Trust • MassDOT • MassDevelopment • Social Innovation Financing Trust Fund	Payments are used by these agencies to fund: • A portion of the debt service on certain outstanding bonds • Social Innovation Financing Trust Fund's "Pay for Success" contracts	No	Yes
Contingent Liabilities	Debt obligations of certain independent authorities and agencies of the Commonwealth that are expected to be paid without Commonwealth assistance, but for which the Commonwealth has some liability if expected payment sources do not materialize.	Agencies in which the Commonwealth's credit has been pledged include: • MBTA • MassDevelopment • Steamship Authority • Regional Transit Authorities • UMass Building Authority	No	No

General Obligation Contract Assistance Requirements

Commonwealth Contract Assistance ($ in millions)	Contract Assistance End Date	FY23 Payment
MassDOT (1)	2050	$125.0
MA Clean Water Trust	2051	63.4
MassDevelopment	2050	10.6
Social Innovation Financing Trust	2023	7.0
Total		**$206.0**

(1) In out-years, represents $25 million per year for fiscal years 2027 to 2050, inclusive, and $100 million per year for fiscal years 2027 to 2039, inclusive.

SOURCE: Massachusetts Clean Water Trust, Office of the Treasurer and Receiver-General, MassDOT, MassDevelopment and the Executive Office for Administration and Finance.

Commonwealth Contingent Liabilities

Commonwealth Contingent Liabilities	Description	Outstanding Debt ($ M)
Mass. Bay Transportation Authority (MBTA)	MA is contingently liable for MBTA bonds and notes, as well as other MBTA payment obligations issued or entered into prior to July 1, 2000. Because the Commonwealth has agreed to pay 90% of the debt service on these bonds (via contract assistance); the remaining 10% of these bonds represents the contingent liability. Outstanding bonds are scheduled to mature annually through 2030.	$110.2*
UMass Building Authority (UMBA)	UMBA is authorized to have up to $200 million in Commonwealth-guaranteed debt. In addition to guaranty, bonds are secured by certain UMBA revenues including dormitory rental income and student fees.	-
Regional Transit Authorities (RTAs)	The Commonwealth has 15 RTAs that provide fixed route and paratransit service in communities across the state. MA is subject to a guaranty pursuant to statutory provisions requiring MA to provide an RTA with funds sufficient to meet the principal and interest on its revenue anticipation notes as they mature to the extent that funds sufficient for this purpose are not otherwise available.	n/a
Steamship Authority	MA is subject to a guaranty pursuant to statutory provisions requiring MA to provide the Steamship Authority with funds sufficient to meet the principal of and interest on their bonds and notes as they mature to the extent that funds sufficient for this purpose are not otherwise available.	$65.9**
MassDevelopment	MA is contingently liable to meet debt service reserve and debt service payment requirements for MassDevelopment bonds issued to fund nonprofit hospital and health centers. No such bonds have been issued to date.	-

** As of March 1, 2022*
*** As of August 31, 2022*

- Contingent liabilities relate to debt of certain independent authorities and agencies that are expected to be paid without Commonwealth assistance, but for which the Commonwealth has some kind of liability if expected payment sources do not materialize. <u>At this time there is no expectation that the Commonwealth will be required to provide such assistance.</u>

Reducing Debt Service Costs & Improving Credit Ratings

DAC New Report Requirement

DAC New Requirement: Chapter 140 of the acts of 2022 “AN ACT FINANCING THE GENERAL GOVERNMENTAL INFRASTRUCTURE OF THE COMMONWEALTH”, section 14 tasked the committee to produce a new report by July 15, 2023 on measures to:

1. Reduce overall debt service paid by the Commonwealth; and
2. Increase bond ratings

Actual Legislation:
SECTION 14. Notwithstanding any general or special law to the contrary, the capital debt affordability committee established in section 60B of chapter 29 of the General Laws shall submit to the governor and the clerks of the senate and house of representatives a report on measures to: reduce overall debt service paid by the commonwealth; (ii) increase bond ratings not later than July 15, 2023.

DAC Approach:

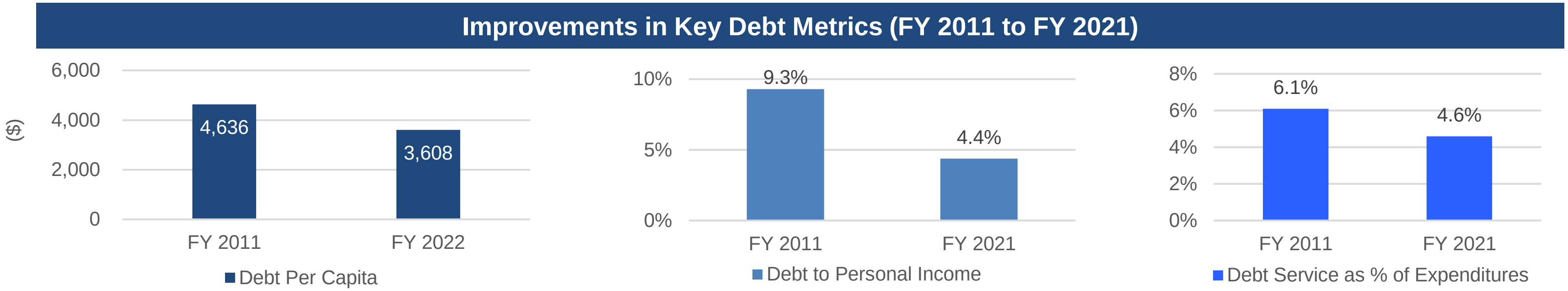
- For each of the 2 report topics (reducing debt service and improving credit ratings), the DAC has provided a fact-based, high-level discussion on the measures.

- **The DAC <u>is not endorsing any one of these measures</u> and acknowledges that there are policy trade-offs and considerations that policy makers will have to evaluate in more detail should they be further explored.**

Reducing Debt Service Overview

Reducing debt service payments on <u>existing</u> debt

- Once bonds are issued to support CIP spending, debt service is fixed and cannot be changed.
- Refunding opportunities (to take advantage of a lower interest rate environment) are limited and driven by financial markets.
- Refunding savings are typically realized in equal amounts over the life of the refunded bonds (on average over 20 years).
- TRE actively manages the debt portfolio and takes advantage of savings opportunities as they arise.
- Over the past 10 years, key debt service metrics have been improving.



Strategies when thinking about <u>future</u> debt costs

- Cost of debt service is driven by the amount of bonds issued and the interest rates at the time of issuance.
- The amount of bonds issued is based on the approved CIP which is guided by the DAC recommendation on how much debt can prudently be afforded by the Commonwealth each year.
- In general, if the Commonwealth would like to limit relative debt service costs going forward, it would need to issue relatively less debt and find other sources of funding for capital projects.

Commonwealth GO Ratings Update

❖ All three rating agencies released new ratings report for the Commonwealth's General Obligation (GO) Bonds in the Fall 2022

❖ All ratings were affirmed
- S&P: AA
- Moody's: Aa1
- Fitch: AA+

❖ S&P updated its credit outlook from stable to positive:
- " The positive outlook reflects our view that Massachusetts' underlying economy and currently very strong reserves could support a higher rating if sustained. We believe that there is a one-in-three chance that the we could raise the rating over the next two years if future budgets show continued commitment to maintaining reserves at very strong levels and a goal of structural balance as it progresses to fully funding its pensions.

❖ Moody's & Fitch affirmed their stable outlooks

Commonwealth Ratings By the Numbers

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
- **Opportunity to improve scoring limited**
  - **No or limited upward mobility in most areas given Commonwealth's already existing high score.**

Agency	Rating Factors Framework	Commonwealth Scoring	Opportunity for Score Improvement
S&P Scoring 1 = strongest 4 =weakest	Government Framework	Score: **1.5** *(indicative of AAA)*	Limited
	Financial Management	Score: **1.0** *(indicative of AAA)*	None
	Economy	Score: **1.4** *(indicative of AAA)*	Limited
	Budget Performance	Score: **1.7** *(indicative of AA+)*	Some opportunity
	Debt & Liability Profile	Score: **3.5** *(indicative of BBB)*	Some opportunity
Moody's	Economy (30%)	Score: **Aaa**	None
	Finances (20%)	Scores: **Aa/Baa/Aa**	Some opportunity
	Governance (20%)	Score: **Aa**	Some opportunity
	Leverage (30%)	Score: **A**	Some opportunity
	ESG Consideration	Score: **CIS-2 Neutral to low**	Limited
Fitch	Economic Base	Score: **Strong**	Limited
	Revenue Framework	Score: **aaa**	None
	Expenditure Framework	Score: **aaa**	None
	Long Term Liability Burden	Score: **aa**	Some opportunity
	Operating Performance	Score: **aaa**	None

Ratings Upgrade: What it Takes According to the Rating Agencies

Moody's (Aa1/stable)

- Factors that could lead to an upgrade:
  - Sustained growth of reserves and establishment of stronger constraints on their use.
  - Moderated debt and pension burdens, especially relative to peers.
  - NOTE: Massachusetts' Aa1 rating is one notch higher than its scorecard-indicated outcome ("raw score"), because Moody's incorporates the long-term economic growth that has provided the commonwealth with a strong base for paying its outsized liabilities into its final rating.

Fitch (AA+/stable)

- Factors that could, individually or collectively, lead to positive rating action/upgrade:
  - Continued progress in budget management during times of economic recovery, including rapid rebuilding of financial flexibility, even as the commonwealth faces rising carrying costs.
  - A sustained reduction in the long-term liability burden closer to, or below, 10% of personal income, accompanied by a reduction in carrying costs.

S&P (AA/positive)

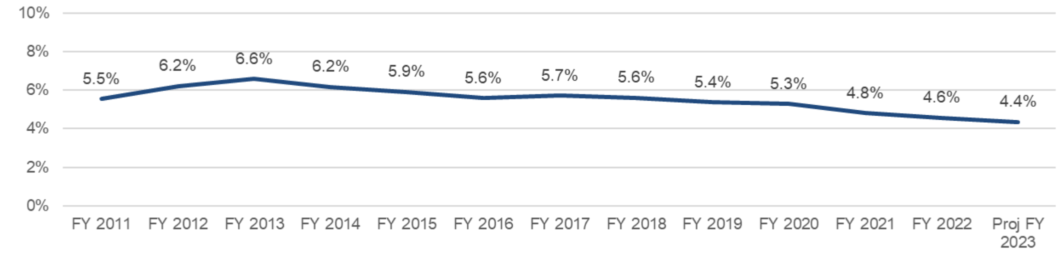
- **Downside scenario:** We could return the outlook to stable if we believe Massachusetts will fail to make budget adjustments to maintain structural balance or maintain strong reserves if revenue growth weakens. Other factors that could reverse the outlook back to stable include overly optimistic revenue projections, significant increases in debt or other fixed costs, or a significant decline in pension-funded levels due to the commonwealth falling significantly behind static pension funding contribution levels.
- **Upside scenario** If Massachusetts' budget in the next two years reflects continued commitment to maintaining reserves at strong levels as a matter of budgetary policy, especially during periods of strong economic activity, we could raise the rating. While we understand that the BSF reserves could be drawn in periods of economic contraction, we expect the commonwealth to demonstrate commitment to rebuilding reserves as the economy recovers to maintain a higher rating

Current Long-Term Liabilities in Context

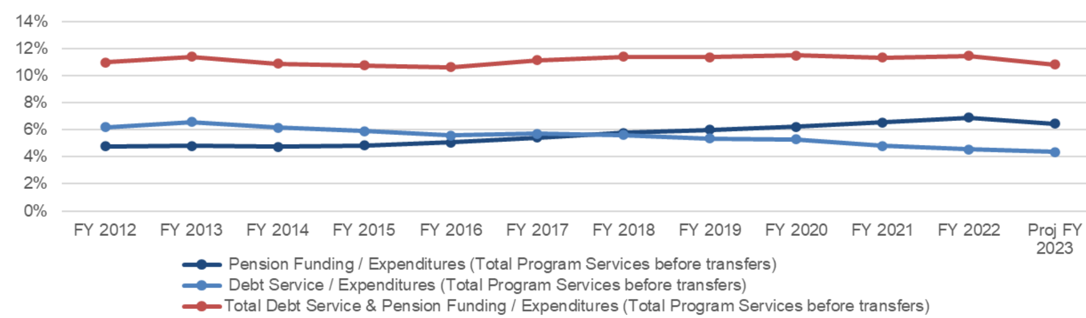
Rating agencies give Commonwealth high marks across all credit factors, except existing long-term liabilities (debt & pension/OPEB).

- 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
- Debt per capita improved from $4,636 in FY 2011 to $3,608 in FY 2022
- Debt to personal Income improved from 9.3% in FY 2011 to 4.4% in FY 2022
- 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 remained relatively flat

Debt Service as % of Expenditures (Total Program Services Before Transfers)



Pension Funding and Debt Service as % of Expenditures (Total Program Services Before Transfers)

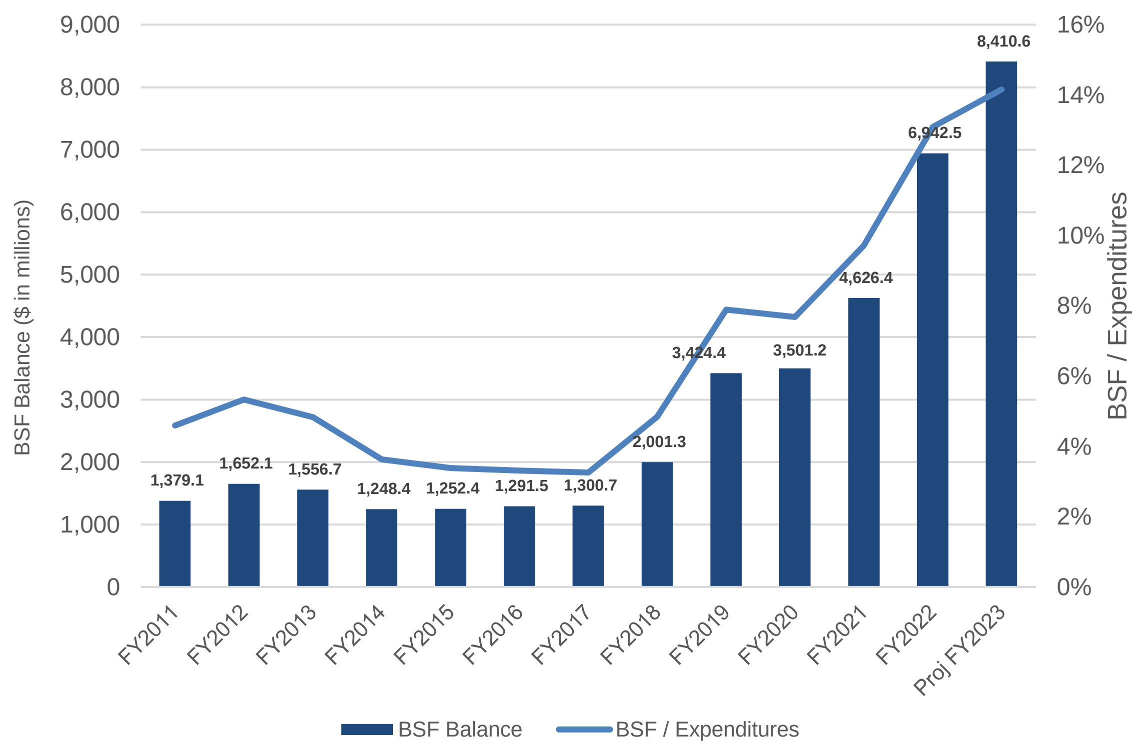


Key Credit Strengths: Continued Commitment to Maintaining Strong Reserves

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 13.1% of expenditures.
- FY 2023 BSF balance projected to total $8.4 billion.
- The state has demonstrated its commitment to rebuild its reserves as stipulated through its own 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.
- **Continued commitment to maintaining very strong reserves will continue to be a key credit factor.**

Massachusetts Stabilization Fund Balance



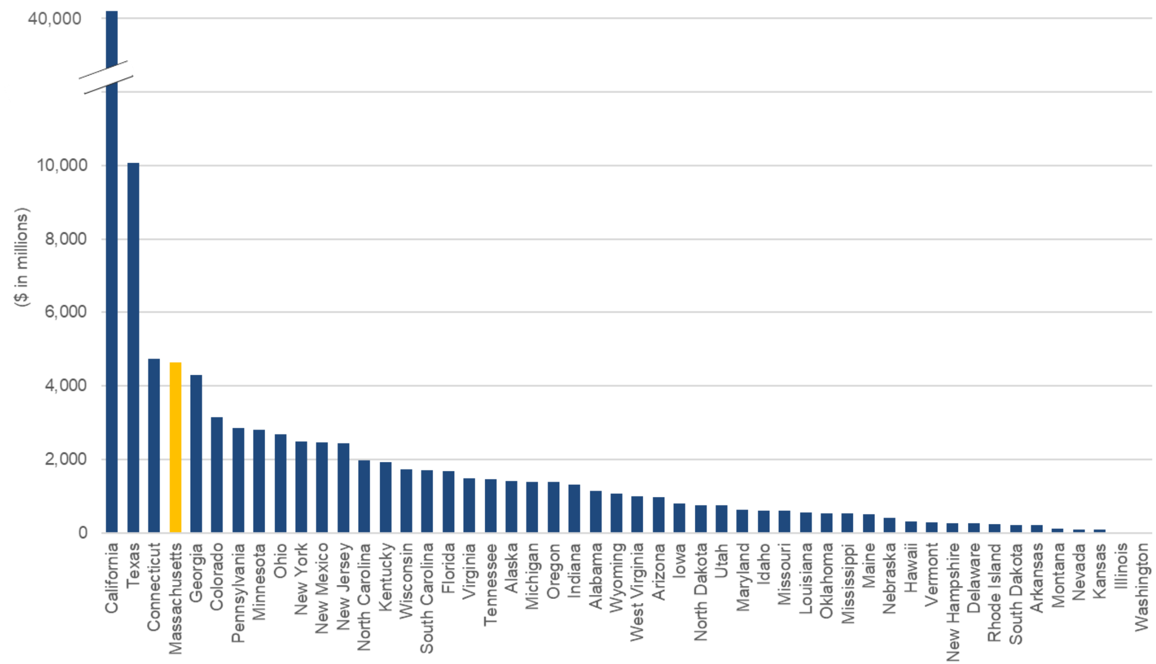
SOURCE: ***Commonwealth Information Statement**, September 21, 2022*

Key Credit Strengths: Budget Stabilization Fund Balance Relative to Peers

Key Takeaways

- Massachusetts' BSF balance at the end of FY 2021 totaled $4.6 billion placing it as the 4th largest BSF
- With a FY 2022* BSF balance of $6.9 billion, Massachusetts BSF balance will continue to be ranked as one of the top 5 states
- **Massachusetts' above-national economic growth has allowed the build-up of its BSF which, although not ultimately needed, provided insulation to the state during the uncertainty of the COVID-19 pandemic, and will continue to insulate from an economic slowdown or other outside uncertainties**

Budget Stabilization Fund (BSF) Balance in FY 2021



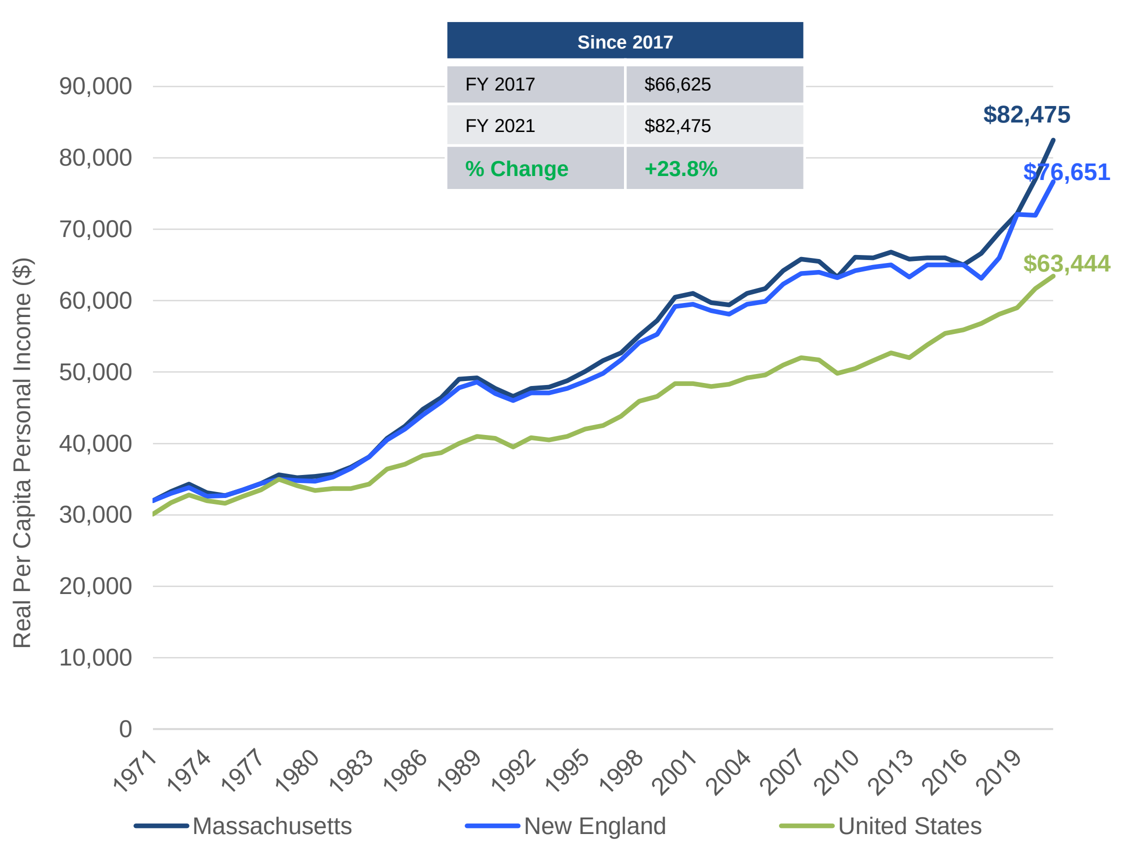
SOURCE: *PEW Fiscal Survey of States, May 10th, 2022*
**Unaudited financials*

Key Credit Strengths: Consistent per Capita Income, Outpacing the Country

Key Takeaways

- Massachusetts has consistently been near the top of the nation in resident income and is currently #2 based off mean household income and per capita income.
- The Commonwealth's real per capita personal income was approximately $82,475 in FY 2021, **the second highest in the United States.**
- **Strong income levels help support relatively high debt levels.**

Real Per Capita Personal Income in Massachusetts, New England, and the United States, 1971-2021



Since 2017	
FY 2017	$66,625
FY 2021	$82,475
% Change	+23.8%

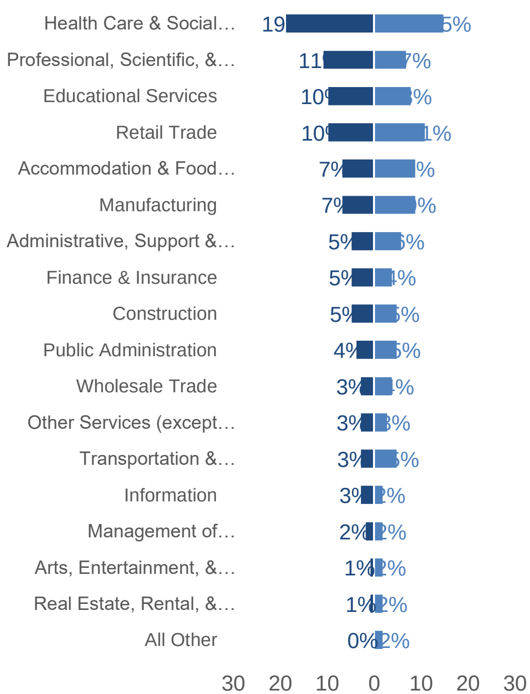
Sources: U.S. Department of Commerce, Bureau of Economic Analysis, Commonwealth of Massachusetts Information Statement, September 21, 2022, World Population Review, Per Capita Income by State 2022

Key Credit Strengths: Strong, Diverse and Resilient Economy

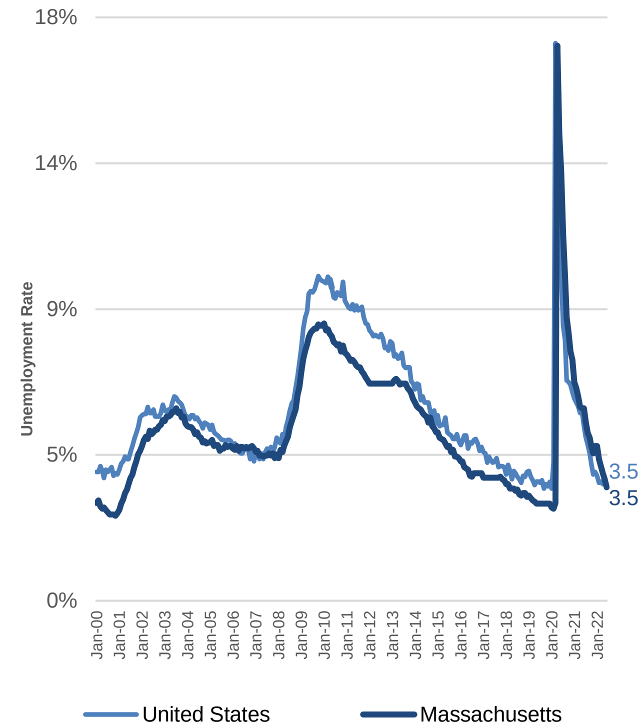
Key Takeaways

- 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 59% of the United States labor force.
- Two of the three largest sectors in Massachusetts (Health Care & Social Assistance and Educational Services) are 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 July 2022, 65.8% of Massachusetts working-age residents were included in the workforce, consistent with pre-pandemic levels of 66.3% in January 2020.

Industry Mix in MA and the US 2021 (Percent of Total Jobs)



Unemployment Rates in Massachusetts and the United States as of July 2022 (Seasonally Adjusted)



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

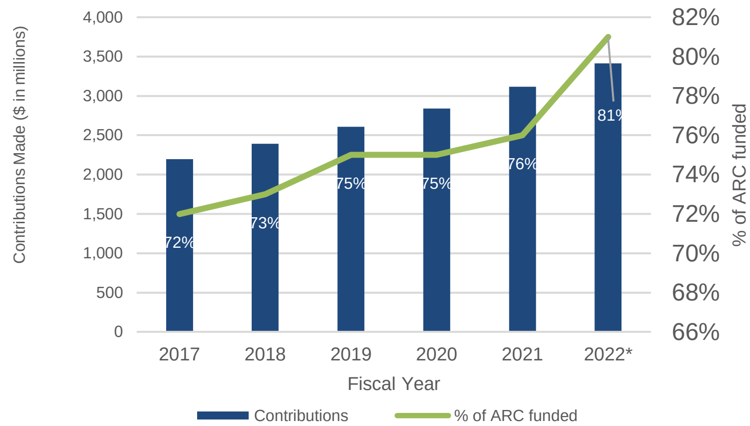
Sources: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW), UMDI Analysis, Commonwealth of Massachusetts Information Statement, September 21, 2022

Key Credit Offsets: Pension Liabilities

Key Takeaways

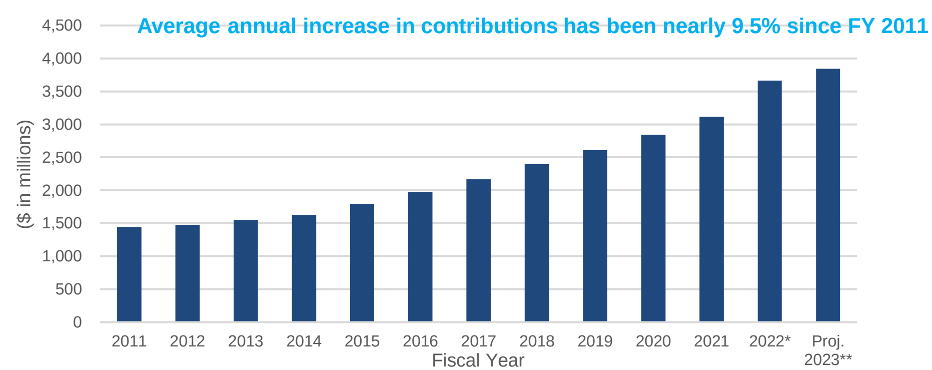
- A major credit offset: high unfunded liability driven in part by contributing less than actuarily required contribution (ARC)
- **The Commonwealth has taken a number of steps to strengthen its pension system:**
  - Established budgeting discipline to fund pension funding contribution and debt service prior to considering other spending
  - Increased its contributions as a percentage of its ARC since 2017
  - Consistently reduced its investment return assumptions from 8.25% in the January 1, 2012 valuation to 7.00% for the January 1, 2022 valuation
  - Is increasing its annual pension contributions by 9.63% to fully amortize unfunded liabilities by FY 2036 (in advance of the requirement to fully fund by FY 2040)
  - Utilized budget surplus to make supplemental transfers to the pension fund (FY22 $250M, FY23: $100M
- **Continued fiscal discipline around maintaining pension contribution schedule will be key to upgrade.**

Massachusetts Annual Required Contributions and Other Pension Contributions



Change in % of ARC Funded Since 2017	
FY 2017	72%
FY 2022*	81%
% Change	+9%

Massachusetts Total Pension Funding**



SOURCE: Commonwealth of Massachusetts Information Statements Dated September 21, 2022, and October 28, 2020
*Unaudited financials

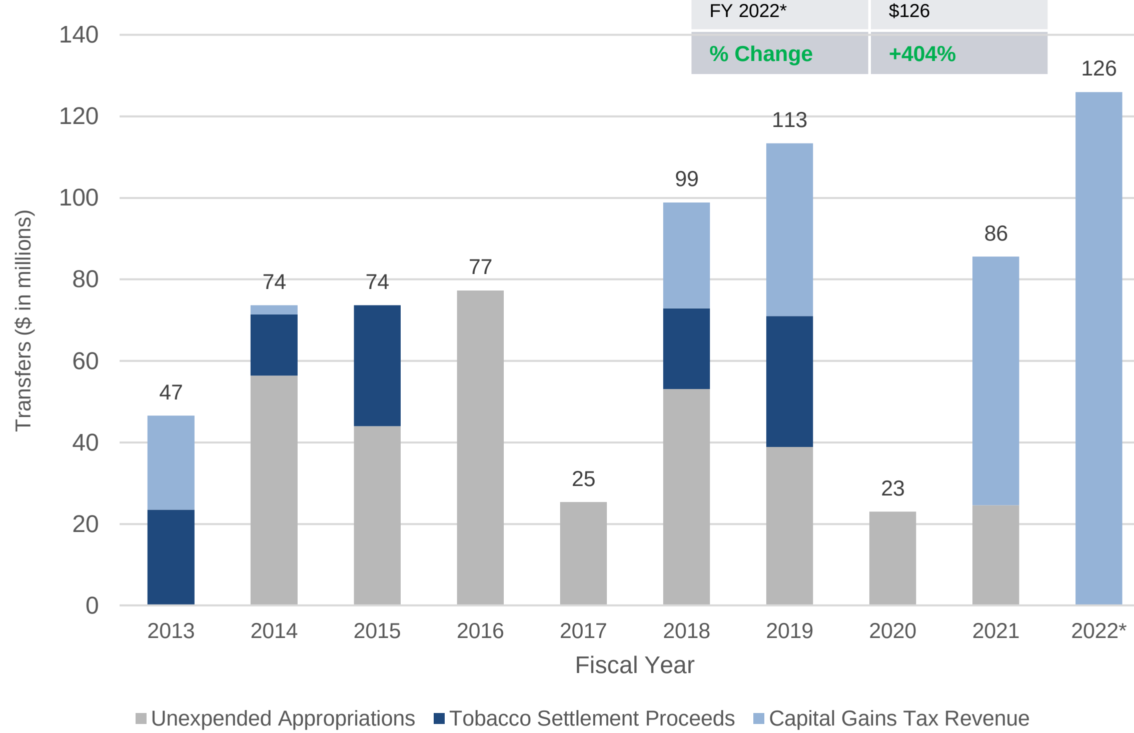
Key Credit Offsets: OPEB Liabilities

Key Takeaways

- A major credit offset: High OPEB liabilities
- State finance law provides for 5% of capital gains income to be transferred into each of the Pension Liability Fund and State Retiree Benefits Trust Fund
- Aggregate transfers (including unexpended appropriations, tobacco settlement proceeds, and capital gains tax revenue) totaled $126 million in FY 2022*, a 404% increase since FY2017

Transfers to State Retiree Benefits Trust Fund

Change Since 2017	
FY 2017	$25
FY 2022*	$126
% Change	**+404%**



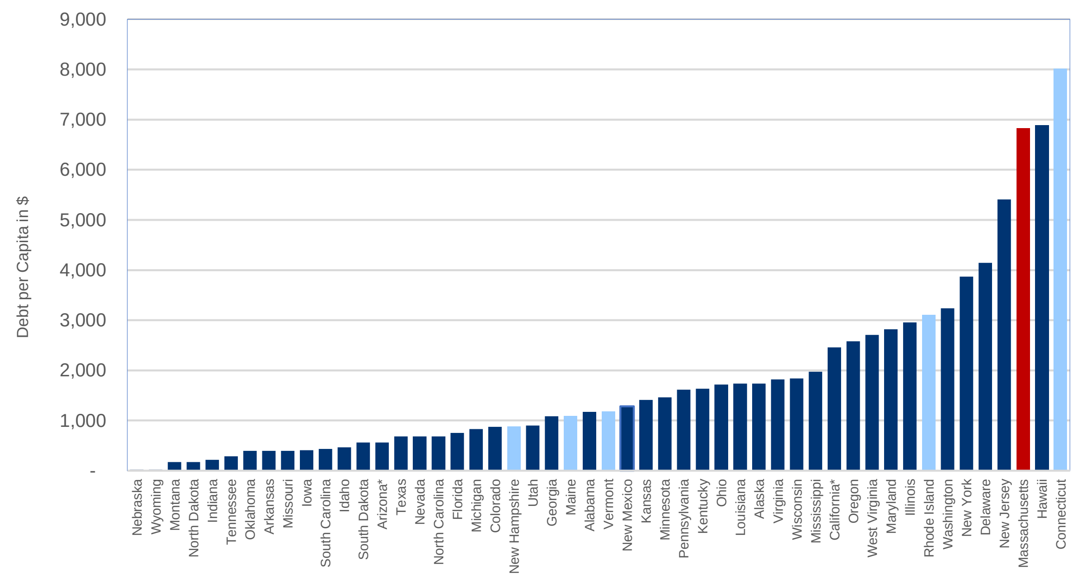
Source: Commonwealth of Massachusetts Information Statement Dated September 21, 2022
*Unaudited financials

Key Credit Offsets: Elevated Long-Term Liabilities

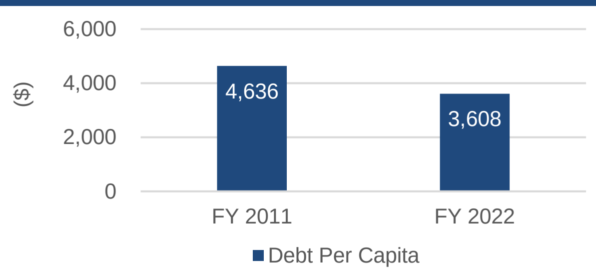
Key Takeaways

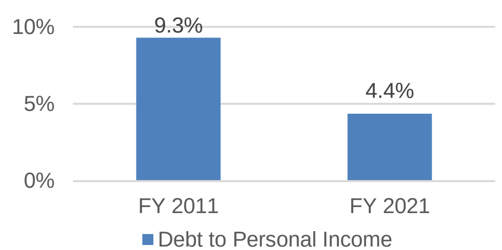
- A major credit offset: Relatively high long-term debt liabilities
- MA ranks 3rd in nation for Debt per Capita
- Over past 10 years has shown improvement in key debt metrics.

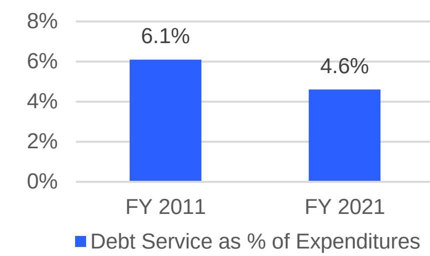
Debt per Capita



Improvements in Key Debt Metrics (FY 2011 to FY 2021)







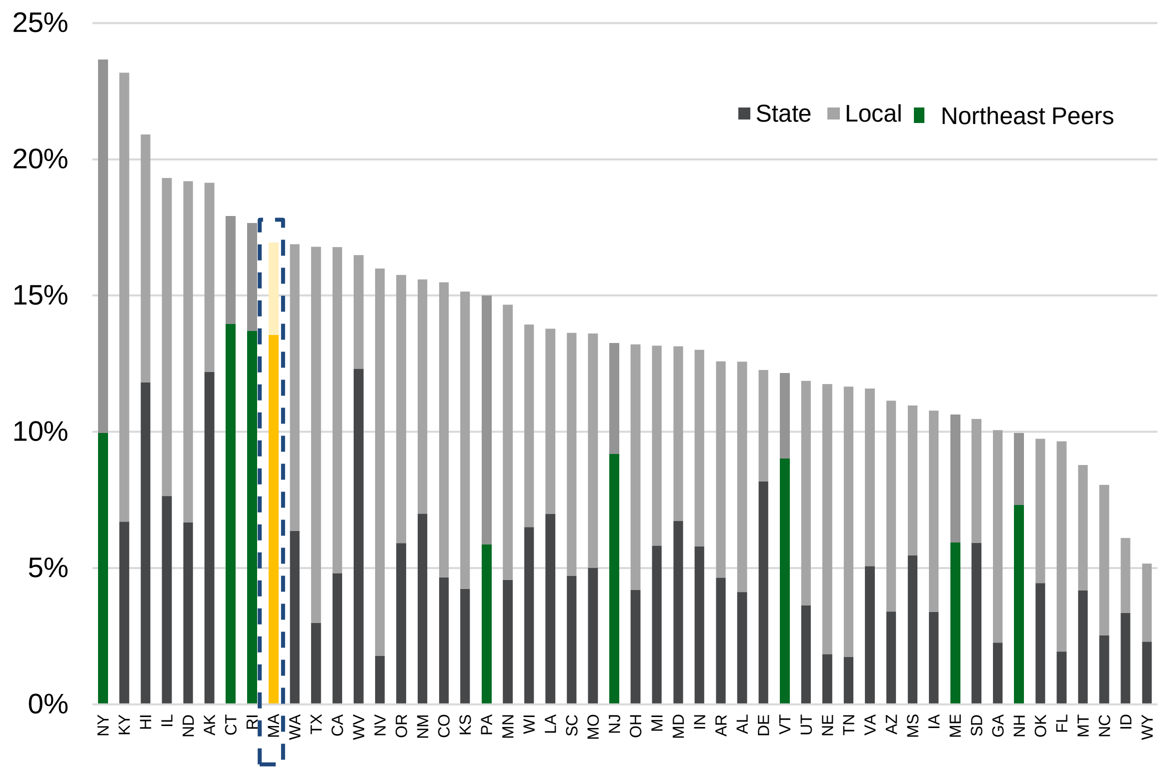
Source: Commonwealth of Massachusetts Information Statement Dated September 21, 2022
*Unaudited financials

Key Credit Offsets: Elevated Long-Term Liabilities

Key Takeaways

- Unlike many other state GO credits, Massachusetts issues debt for state-level and local level purposes
- 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
- 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**

State & Local Debt as a Percentage of State Personal Income



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

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

Improving Credit Ratings: Potential Measures

Potential Measure #1: Limit Future General Obligation Debt

<table>
<tr><th>Potential Strategy</th><th>Policy Considerations</th></tr>
<tr><td>Reduce future annual capital budgets
• Decreasing investment in state owned facilities and infrastructure
• Decreasing investment in community grant programs funded through the CIP</td><td>Decreases in CIP funding for state-owned assets could have negative consequences, which could be further compounded when considering future inflation:
(1) Increased backlog of deferred maintenance and increased costs due to lack of preventative maintenance and emergency repairs
(2) Outdated facilities that do not meet the needs of those who work or receive services there
(3) Increased vulnerabilities/risk related to climate change and/or risk of not meeting environmental targets for reducing green house gases (GHG)

The Commonwealth could consider reducing the amount of debt it issues to support programs directly benefiting local communities, although policy makers will need to determine whether the potential benefits of reducing debt outweigh the potential hardship this may cause communities and/or loss of economic benefits those investments generate, and whether certain disadvantaged communities are impacted disproportionately.</td></tr>
</table>

Improving Credit Ratings: Potential Measures

Potential Measure #1: Limit Future General Obligation Debt (continued)

Potential Strategy	Policy Considerations
Identify other non-bond cap funding sources to support capital	Alterative funding sources for capital could include state operating revenue and/or federal grants. Use of operating funds would require policy makers to evaluate whether the benefits associated with capital investments are greater than other operating needs that would have otherwise been funded. It is also worth noting that debt financing helps spread the cost of capital to users over the life of the asset, helping to ensure that those who are paying are those who can/are benefitting from the infrastructure. Using operating revenues to fund assets with longer useful lives is less effective at spreading costs out to current and future users. The Commonwealth has processes in place for tracking federal funding opportunities and incorporating federal funding into the CIP (~22% of FY 23 CIP is funded with federal funds). The recent passage of key Federal legislation (IIJA/BIL, Inflation Reduction Act) could help relieve pressure on bond cap budget through increased federal support. Additional federal funding may result in a higher state match contribution upfront, but could ultimately reduce overall debt service costs that otherwise would have occurred without federal support. The approved FY23 CIP includes increased state support to fund the state match requirement associated with IIJA/BIL. The Commonwealth could also explore increasing capacity under existing special obligation debt such as the Commonwealth Transportation Fund, by identifying and or increasing pledged revenue streams. This would still result in increased debt service costs, but the payments would be made with secured revenues, rather than general funds. Additionally, the Commonwealth could explore the possibility of establishing other special obligation credits, which would involve pledging specific revenue streams for capital. In either case, the Commonwealth would need to evaluate the trade-offs associated with pledging specific revenue streams that could be used for other purposes.

Improving Credit Ratings: Potential Measures

Potential Measure #2: Reduce unfunded pension & OPEB liabilities

Potential Strategy	Policy Considerations
• Continue to increase annual pension contributions to fully amortize unfunded liabilities by FY 2036 (per schedule) • Continue to maintain state finance law requiring 5% of capital gains income to be transferred into each of the Pension Liability Fund and State Retiree Benefits Trust Fund (i.e. do not suspend law) • Appropriate budget surplus (when available) to pension & OPEB funds.	The Commonwealth has already made (and continues to take) significant steps to increase strengthen its pension and OPEB systems. Under the current pension funding schedule the Commonwealth is expected to eliminate its unfunded pension liability by 2036 - *see slides 65 and 66 for details.* Increases in pension/OPEB contributions will decrease the amount of discretionary funding available for other purposes. Policy makers will need to determine whether funding the current outstanding pension/OPEB liabilities above current levels (i.e. reducing the future unfunded liability faster than currently plan) will have more benefit than using those funds for other purposes.