Revenue Forecast

JCA Presentation
February 14, 2023

SOUTH DAKOTA
LEGISLATURE
LEGISLATIVE RESEARCH COUNCIL

Economic Conditions

SUPPLY CHAIN STRESS REMAINS

- Inventories to sales ratios show the relationship of the end-of-month values of inventory to the monthly sales. A ratio of 1.0 would indicate there is enough inventory on hand to cover one months of sales.

- Supply chain disruptions are improving but remain stressed.

- Until these ratios return to near pre-pandemic levels, I would expect inflation to remain evaluated.

Source: U.S. Bureau of Economic Analysis

Source: U.S. Census Bureau
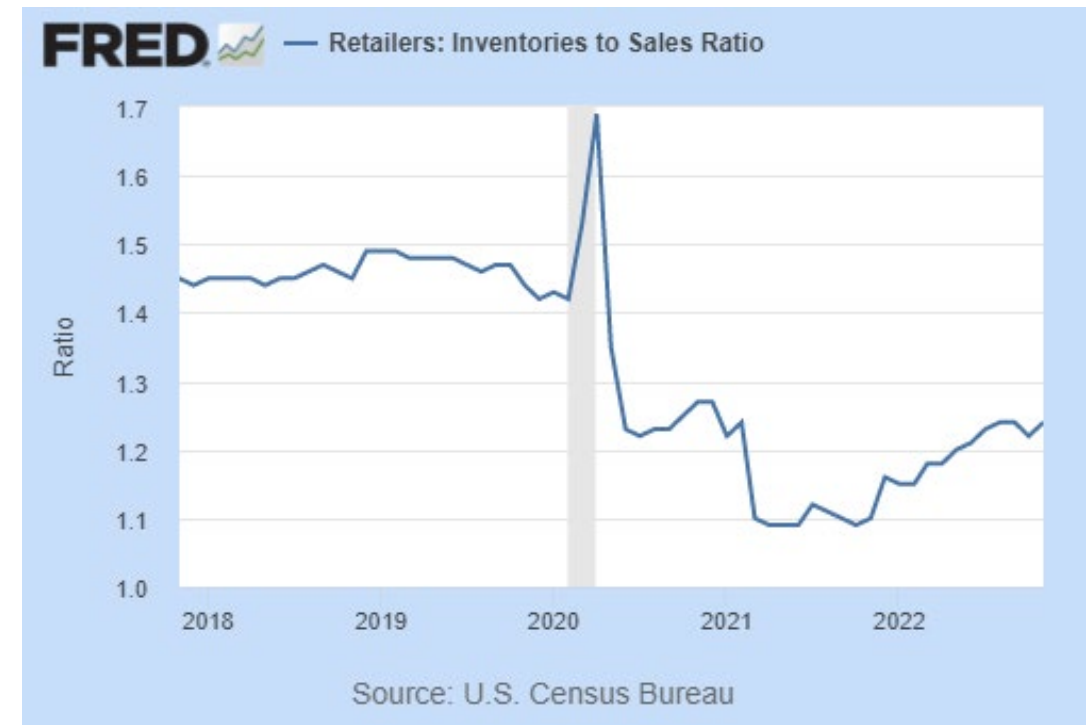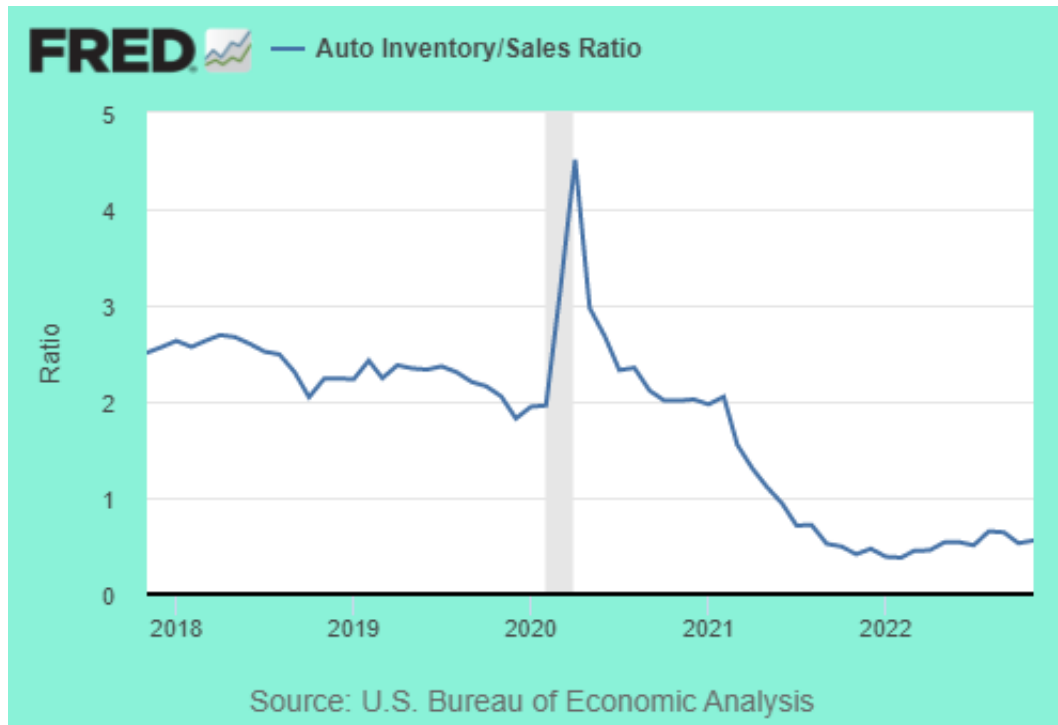
Economic Conditions

INFLATION 2.0

- Core inflation has increased substantially since December 2020 reaching a peak in September 2022.

- The inflation rebound could be driven by the tight labor market, spike in commodity prices, stress on supply chains, and the ongoing conflict between Russia and Ukraine.

- The LRC expects core inflation to be 3.8% for 2023, 4.2% for 2024, and 2.0% for 2025.

- National forecasters estimate core inflation to be 4.0% with a 3.4% to 4.6% range for 2023.

Core CPI: Percent Change from a Year Ago
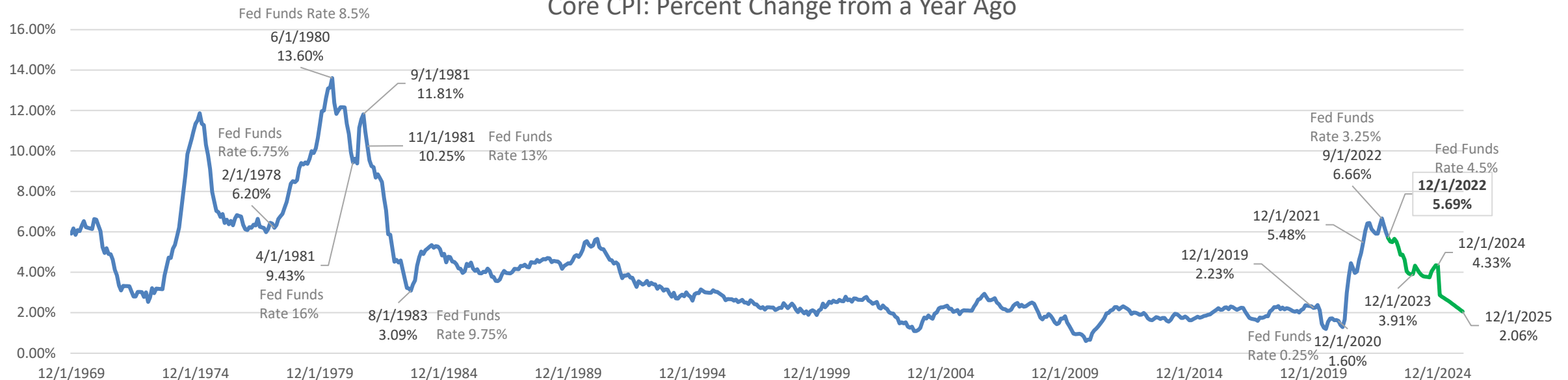
Source: Consumer Price Index for All Urban Consumers: All Items Less Food and Energy in U.S. City Average, U.S. Bureau of Labor Statistics

Economic Conditions

FOOD INFLATION 3.0

- LRC sees concern for prolonged food inflation. This was last seen during the late 1970's and early 1980's. Inflation remained above 5% for multiple years.

- LRC estimates food at home inflation to be 7.5% for 2023, 3.5% for 2024, and 0.8% for 2025.

- For 2023, the USDA estimates food at home inflation to be 8.0% (4.5% to 11.7% range)
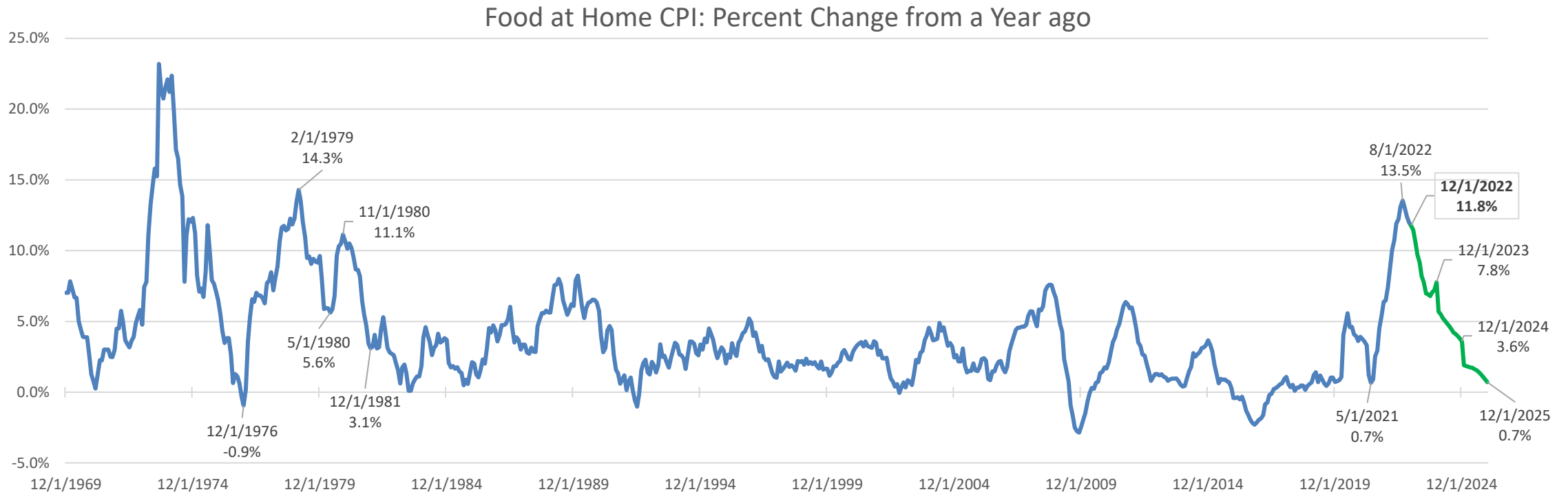
Food at Home CPI: Percent Change from a Year ago

Source: Consumer Price Index for All Urban Consumers: All Items Less Food and Energy in U.S. City Average, U.S. Bureau of Labor Statistics

Economic Conditions

WAGES AND LABOR

- Overall wage and salary growth in South Dakota has been outpacing core inflation.

- In South Dakota and across the U.S., the labor market is very tight, which is keeping pressure on wages.

- There is a correlation between growth in South Dakota wages and salaries and growth in sales tax.

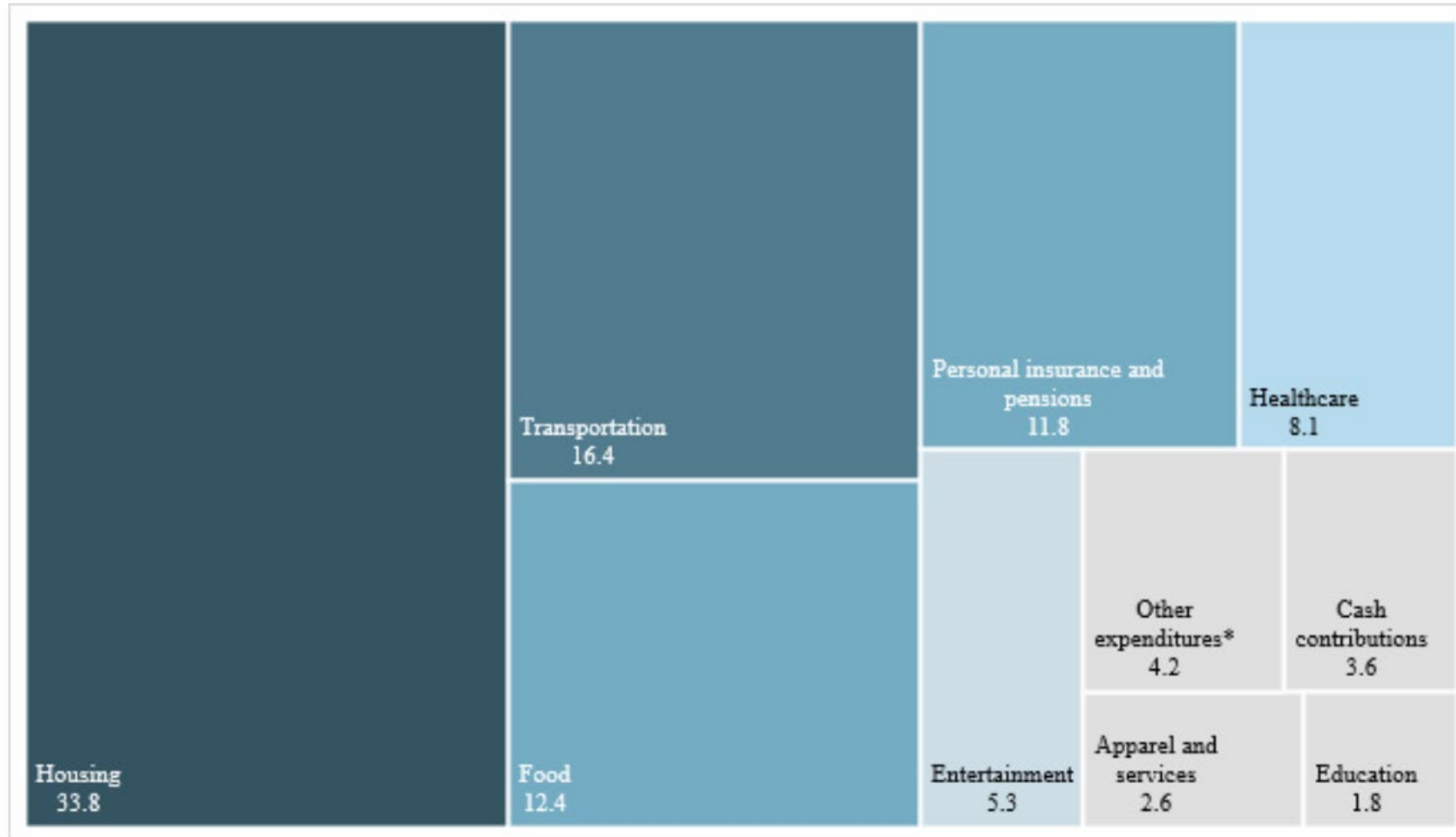South Dakota Wage and Sales Tax Growth
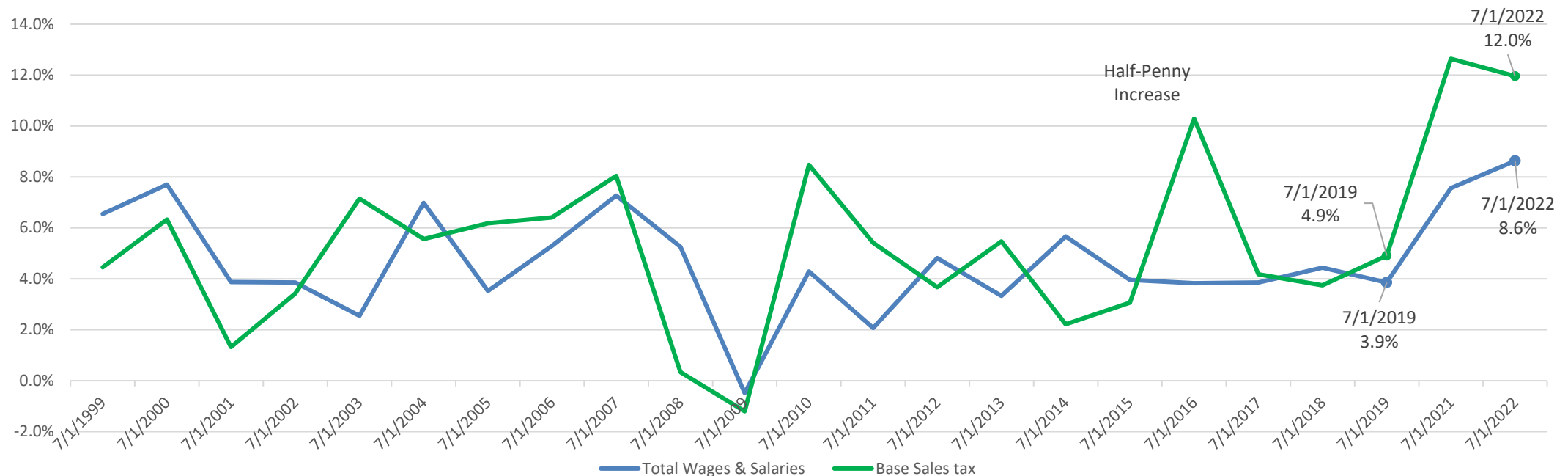
Source: SD Total Wages and Salaries, Bureau of Economic Analysis, U.S. Department of Commence and Yearly Sales Tax data

Economic Conditions

Chart 1. Annual expenditure shares (percentage) by major components, 2021

Economic Conditions

INFLATIONARY GROWTH

Pre-Covid 2020

Consumer makes **$15/ hour** and works 2080 hours in a year, for total income of $31,200.

The consumer spends about 76.5% of income before taxes; however, not everything purchased is taxable.

The consumer spends:

- $2,842 on food
- $1,266 on entertainment
- $2,484 on other taxable goods and services

Consumer generates **$297** of sales tax revenue for the State.

Post-Covid 2021

The same consumer now makes **$16.08/ hour (7.2% increase)** and works 2080 hours in a year, for total income of $33,446, $2,246 more than the previous year.

The cost of goods on average increased 6.9%. The consumer buys the same basket of goods and spends

- $3,038 on food
- $1,353 on entertainment
- $2,655 on other taxable goods and services

Consumer generates **$317** of sales tax revenue for the State, an increase of 6.9% compared to the previous year.

Post-Covid 2022

The same consumer now makes **$17.54/ hour (9.1% increase)** and works 2080 hours in a year, for total income of $36,490, $3,044 more than the previous year.

The cost of goods on average increased 6.3%. The consumer buys the same basket of goods and spends

- $3,342 on food (10% increase)
- $1,438 on entertainment
- $2,823 on other taxable goods and services

Consumer generates **$342** of sales tax revenue for the State, an increase of 7.9% compared to the previous year.

Economic Conditions

FEDERAL DOLLARS

- The amount of federal dollars not been spent will have a stimulating effect on the South Dakota economy. This includes:
  - $1.0+ billion in federal coronavirus funding to be spent over the next 24 months.
  - $2.1 billion in federal infrastructure funding passed by Congress to be spent over the next 5 years.
- As the federal dollars flow through the economy, the state will realize increased revenue through sales tax and contractor's excise tax.
  - Any infrastructure project will require materials and supplies.
  - There is a multiplier effect – inflation increases the costs of materials and supplies, while at the same time stimulus dollars generate more activity, resulting in a multiplier effect for sales tax revenues.

Economic Conditions

GROWTH

- The amount of growth experienced by the State is comprised of three growth components (organic, stimulus, inflation).

- It can be difficult to pinpoint the amount of growth for each component

- The growth in sales tax for FY2022 was 12.0%. The growth of each component could have been 0.2% organic, 8.7% inflation, 3.1% stimulus

Estimated Sales Tax Growth by Component for Typical Year
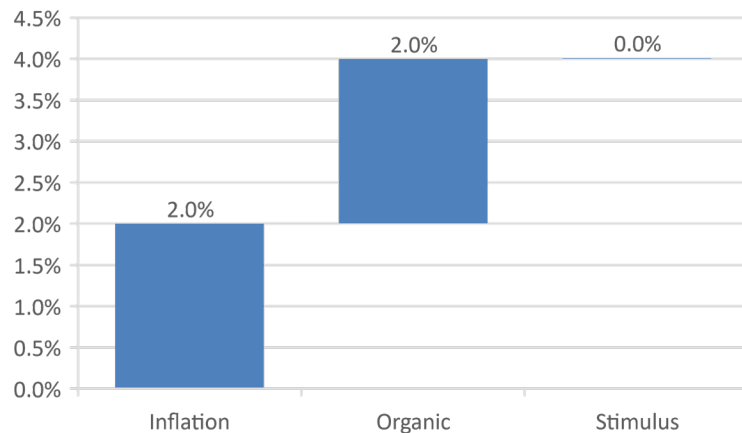
Note: The sales tax growth by component is example of what likely occurred. The data does not exist to specifically identify the growth of each component. The graph is for illustrative purposes.

Estimated Sales Tax Growth by Component for FY2022
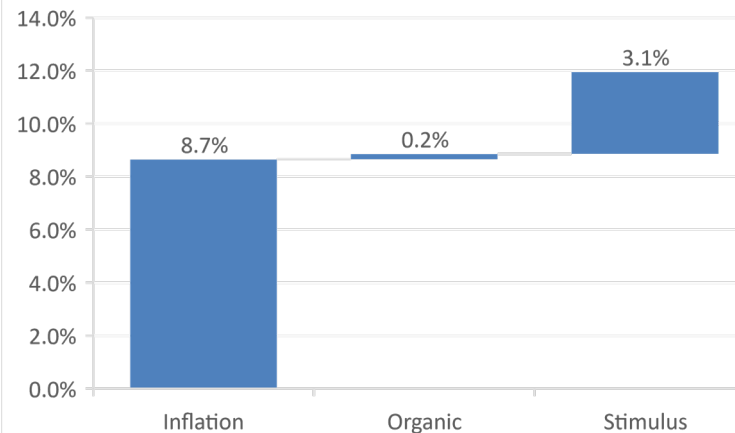
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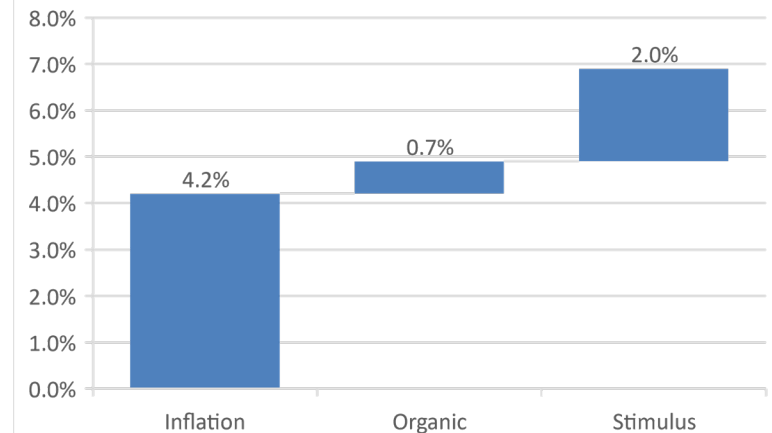
Estimated Sales Tax Growth by Component for FY2024

Note: The sales tax growth by component is example of what likely occurred. The data does not exist to specifically identify the growth of each component. The graph is for illustrative purposes.

Methodology: Model 1

Holt-Winters Model

- A triple exponential smoothing model, known as the Holt-Winters model, is a statistical forecasting model the Legislative Research Council (LRC) utilizes for estimating revenues. The model utilizes historical revenue data and smooths the data with three parameters - value, trend, and seasonality and creates a model fitted to actuals based on historical data. The fitted model is then used to forecast future revenues. More recent values contribute to the forecast more than earlier values, meaning revenues in 2022 will be weighted more than revenues in 1999.

Methodology: Model 1

Decomposition of additive time series
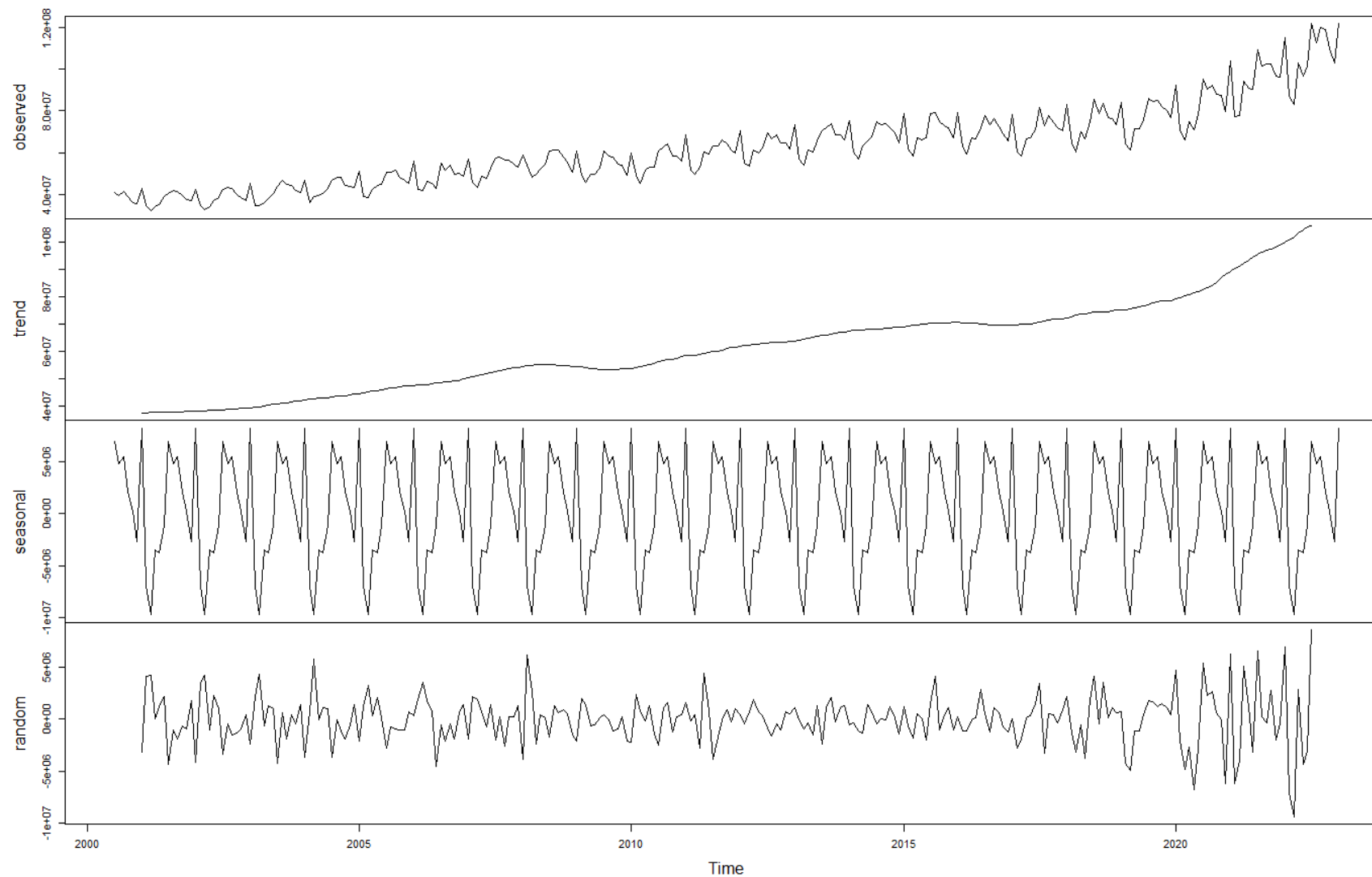
Methodology: Model 2

Auto-Regressive Integrated Moving Average (ARIMA) Model

- The statistical forecasting model of ARIMA is one of the most used approaches to analyzing time series data. The LRC also utilizes this model to estimate revenues. ARIMA uses historical data to create a fitted model by adjusting the correlation, differential, and moving average components within the data. The fitted model is then used to forecast future revenues.

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ARIMA(2,0,3)(0,1,0)[12] with drift     : -854.9843
ARIMA(3,0,0)(0,1,0)[12]                : -827.8151
ARIMA(3,0,0)(0,1,0)[12] with drift     : -836.7859
ARIMA(3,0,0)(0,1,1)[12]                : Inf
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ARIMA(3,0,0)(0,1,2)[12]                : Inf
ARIMA(3,0,0)(0,1,2)[12] with drift     : -907.9285
ARIMA(3,0,0)(1,1,0)[12]                : -866.9335
ARIMA(3,0,0)(1,1,0)[12] with drift     : -874.0039
ARIMA(3,0,0)(1,1,1)[12]                : Inf
ARIMA(3,0,0)(1,1,1)[12] with drift     : -908.2121
ARIMA(3,0,0)(2,1,0)[12]                : -875.8735
ARIMA(3,0,0)(2,1,0)[12] with drift     : -883.3629
ARIMA(3,0,1)(0,1,0)[12]                : -838.7751
ARIMA(3,0,1)(0,1,0)[12] with drift     : -843.0533
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ARIMA(4,0,1)(0,1,0)[12]                : -839.7665
ARIMA(4,0,1)(0,1,0)[12] with drift     : -844.1512
ARIMA(5,0,0)(0,1,0)[12]                : -839.6912
ARIMA(5,0,0)(0,1,0)[12] with drift     : -844.1628

Best model: ARIMA(1,0,3)(0,1,1)[12] with drift
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Methodology: GOAL

ARIMA Model Fitted to Base Sales & Use Tax
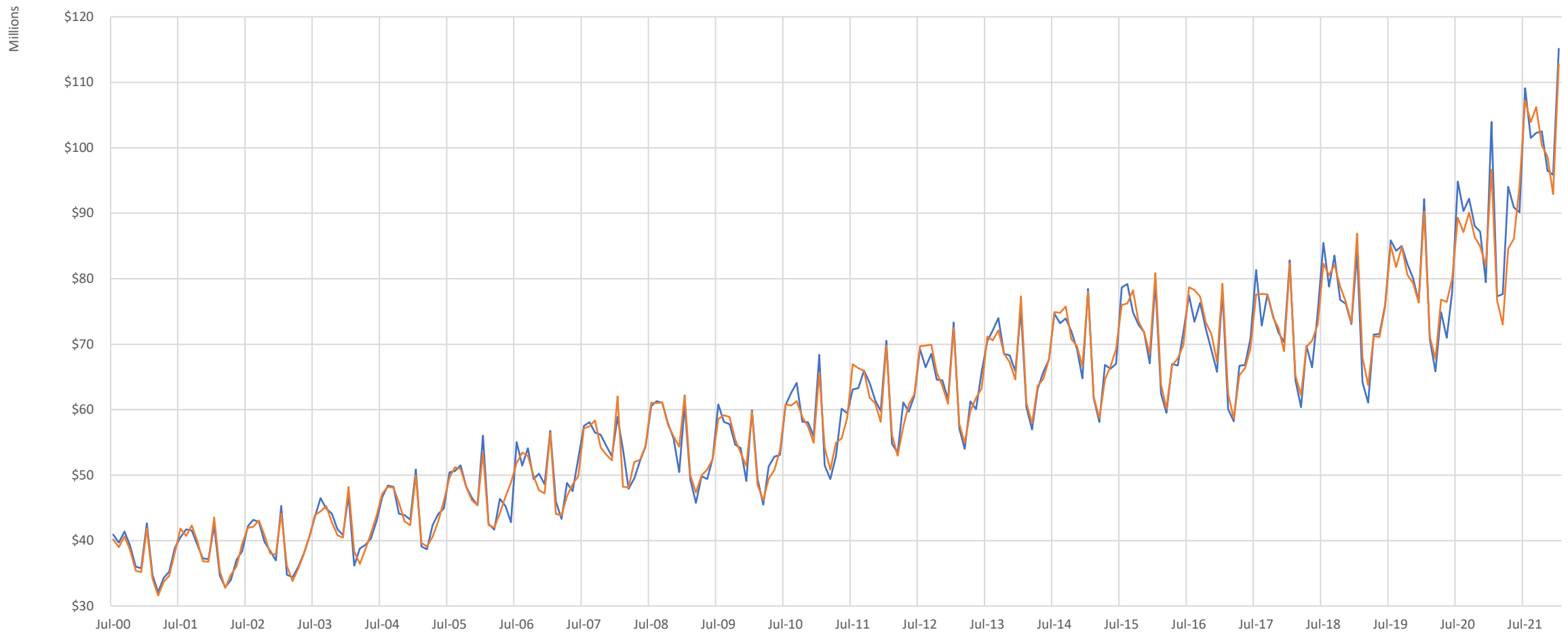
Methodology: OUTCOME

ARIMA Model Fitted to Base Sales & Use Tax with forecast
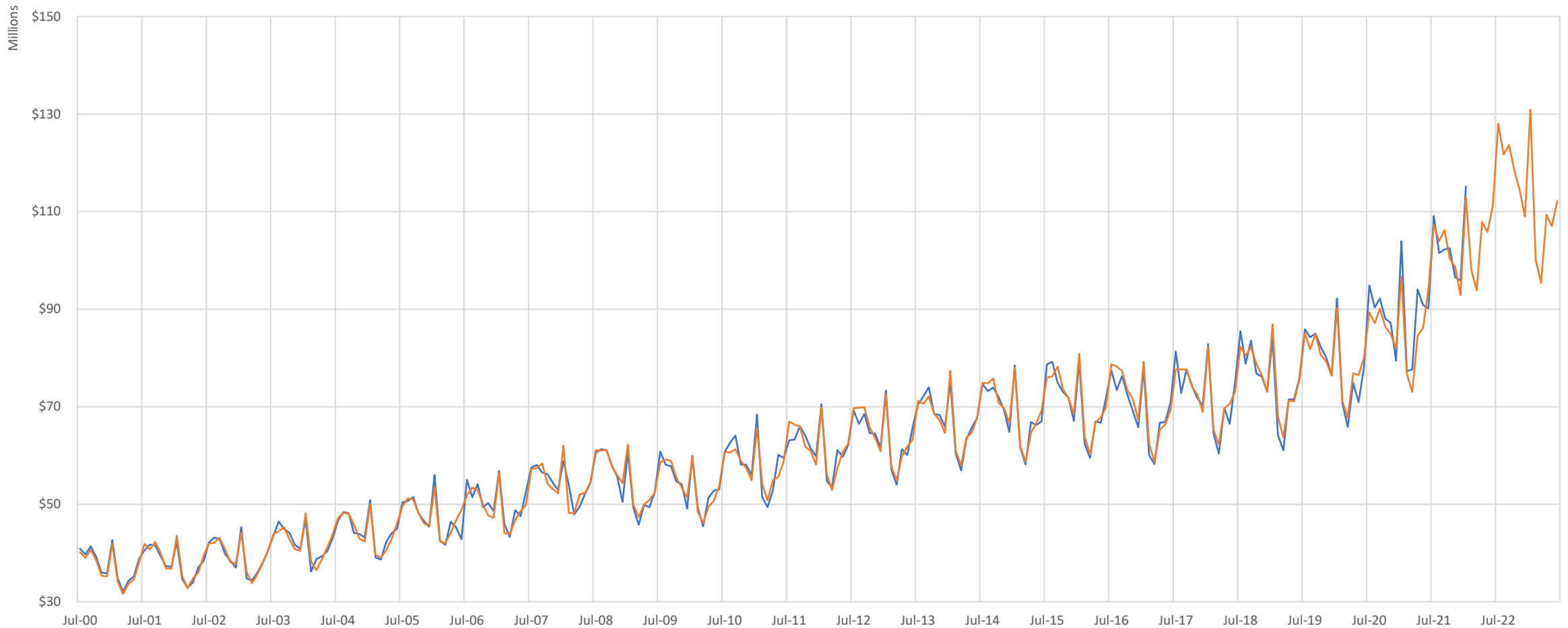
Sales and Use Tax
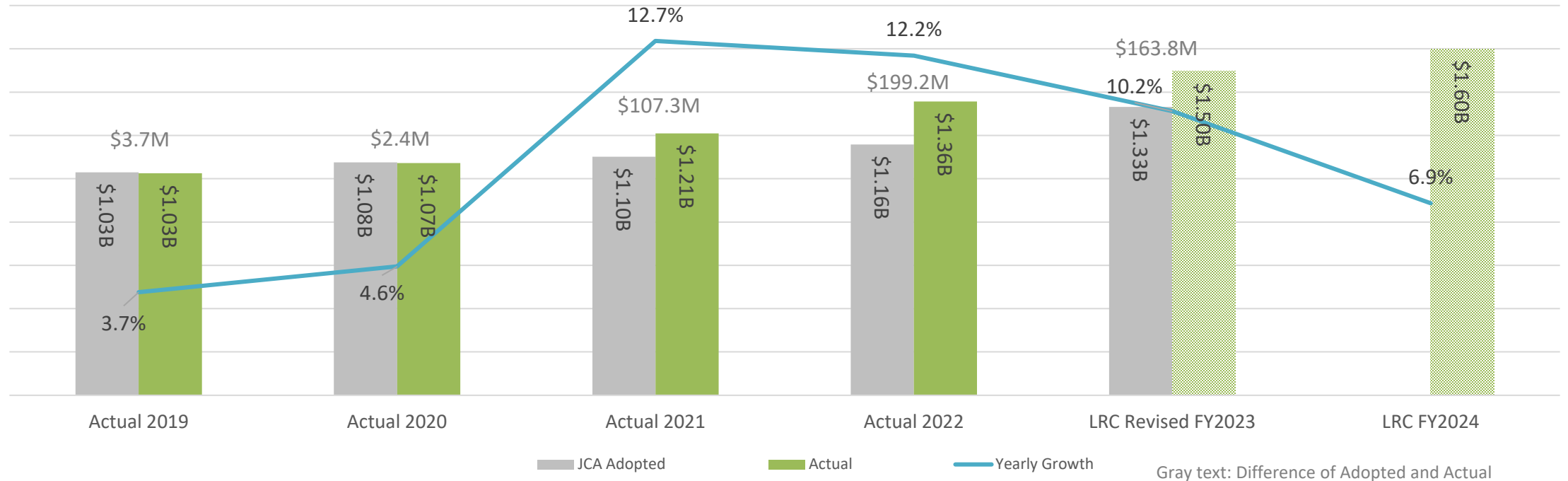
Sales Tax	Actual FY2019	Actual FY2020	Actual FY2021	Actual FY2022	JCA Adopted FY2023	LRC Revised FY2023	LRC FY2024
Total Revenues	1,025,401,209	1,072,830,649	1,209,342,342	1,356,844,793	1,331,550,501	1,495,308,460	1,598,407,725
Dollar Change	36,577,606	47,429,440	136,511,693	147,502,451	(25,294,292)	138,463,667	103,099,265
Percent Change	3.7%	4.6%	12.7%	12.2%	-1.9%	10.2%	6.9%

Total Sales Tax Revenue

History of Actual Sales Tax Receipts by Fiscal Year	$ Y/Y Growth	% Y/Y Growth
FY2010*	(6.7)	-1.0%
FY2011*	55.6	8.4%
FY2012	34.0	4.8%
FY2013	31.7	4.2%
FY2014	47.3	6.1%
FY2015	12.6	1.5%
FY2016	27.8	3.3%
FY2017*	89.1	10.3%
FY2018	37.5	3.9%
FY2019	36.3	3.6%
FY2020	50.9	4.9%
FY2021*	134.1	12.4%
FY2022*	145.9	12.0%
10-year avg.	61.3	6.2%
Average w/o Outliers	33.0	3.7%
FY2023 JCA Adopted*	(30.9)	-2.3%
FY2023 Forecast*	132.9	9.8%
FY2024 Forecast	103.1	6.9%

*Outlier year

Amounts not adjusted for inflation

Does not include cost of administration

Yearly Growth of Sales Tax Receipts
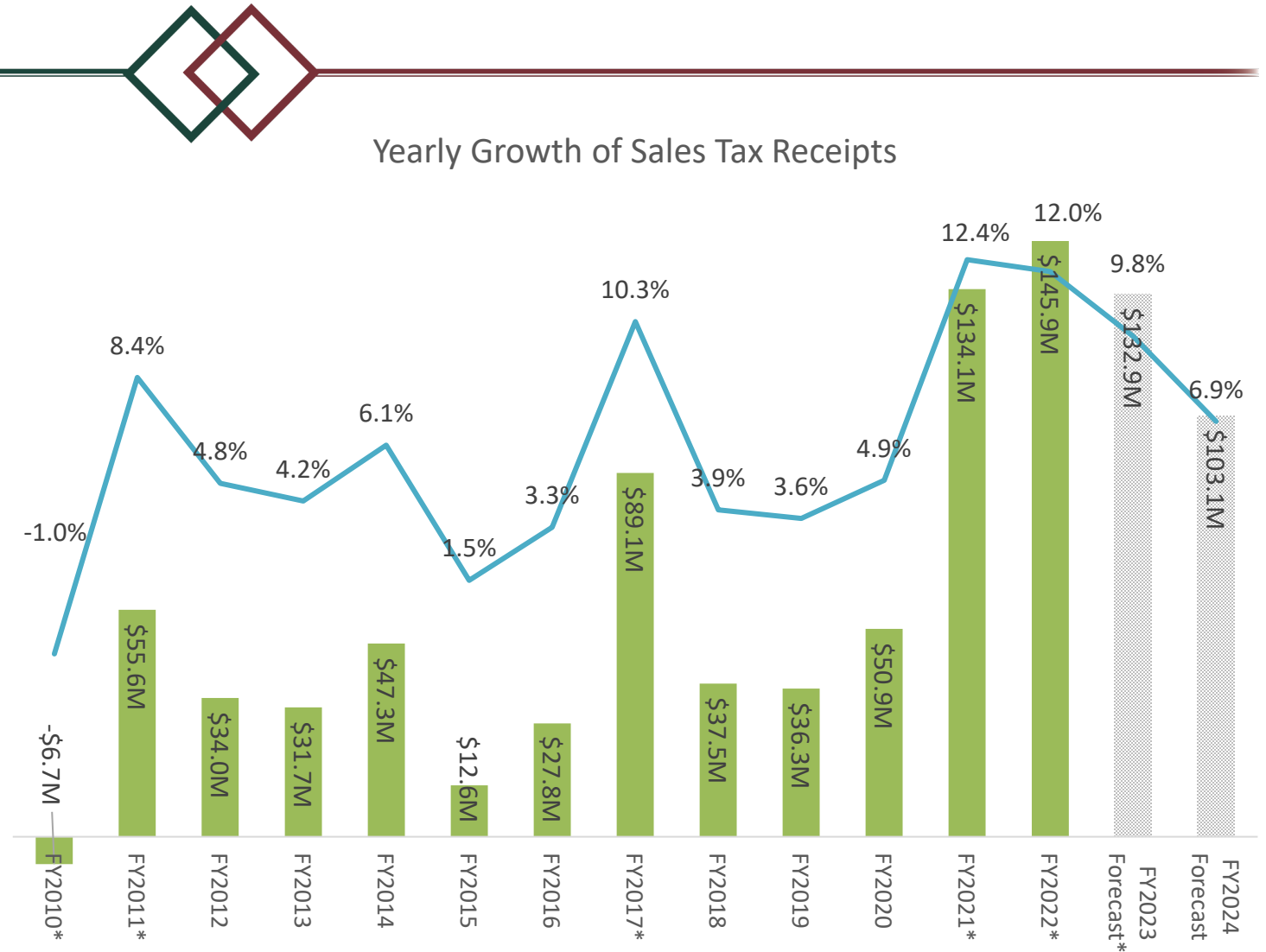
Base Sales Tax Growth Year-over-Year
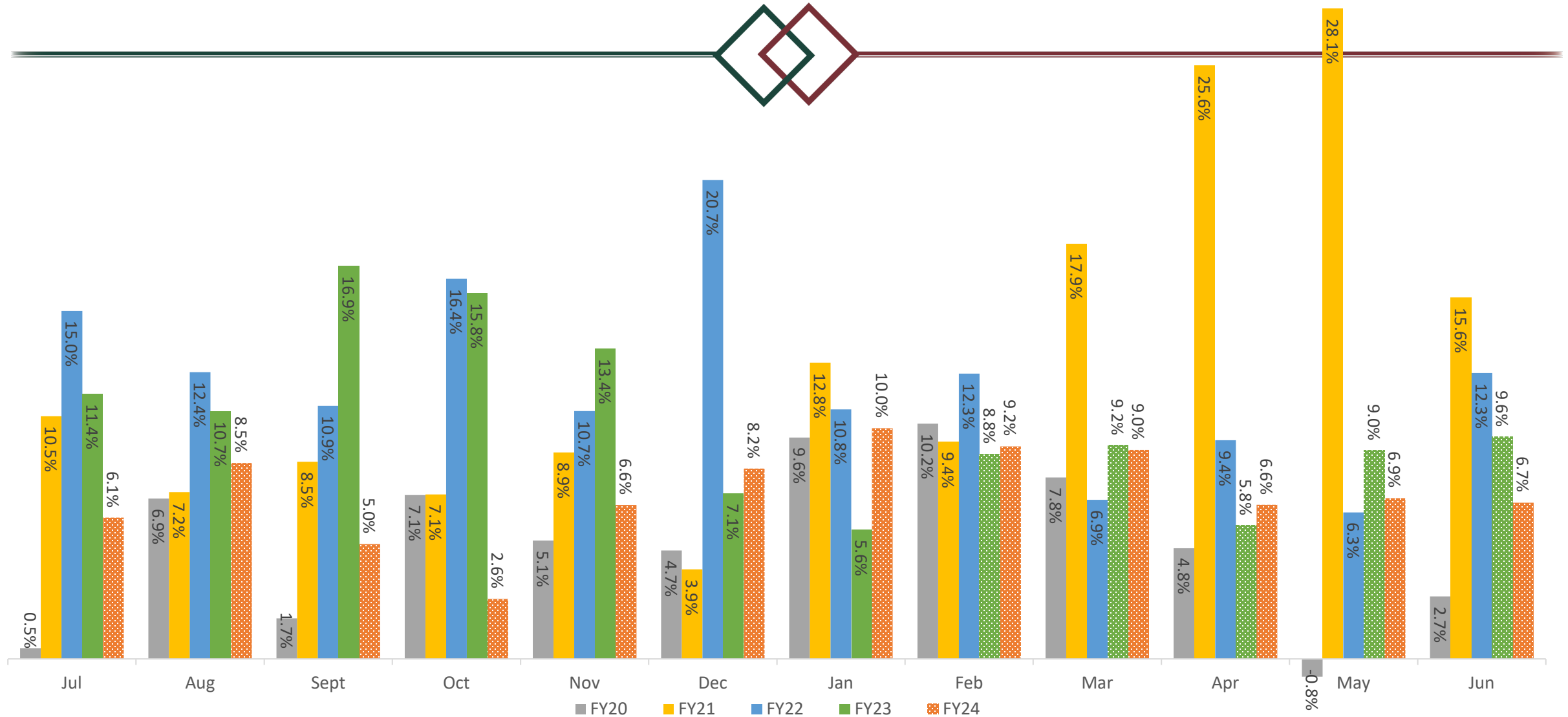
Note: Solid bars represent actual growth, while the shaded bars represent estimated growth based LRC revised estimate

Lottery
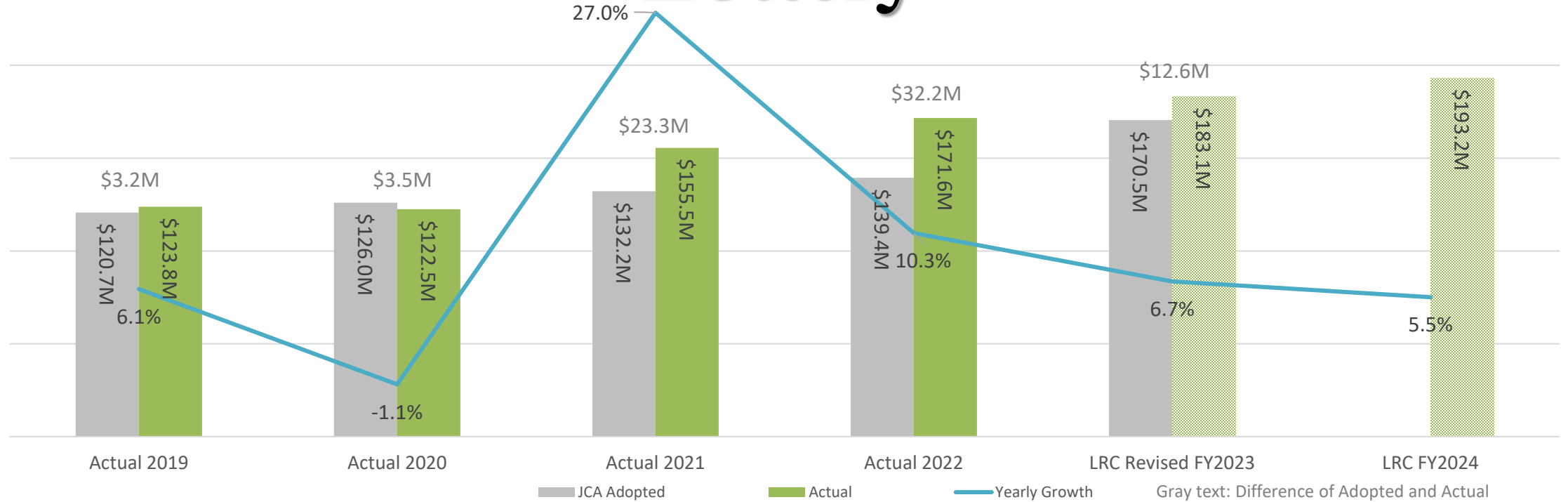
Lottery	Actual FY2019	Actual FY2020	Actual FY2021	Actual FY2022	JCA Adopted FY2023	LRC Revised FY2023	LRC FY2024
Total Revenues	123,815,501	122,489,001	155,527,049	171,609,682	170,540,000	183,097,729	193,185,381
Dollar Change	7,140,061	(1,326,500)	33,038,048	16,082,633	(1,069,682)	11,488,047	10,087,652
Percent Change	6.1%	-1.1%	27.0%	10.3%	-0.6%	6.7%	5.5%

Contractor's Excise Tax

Gray text: Difference of Adopted and Actual
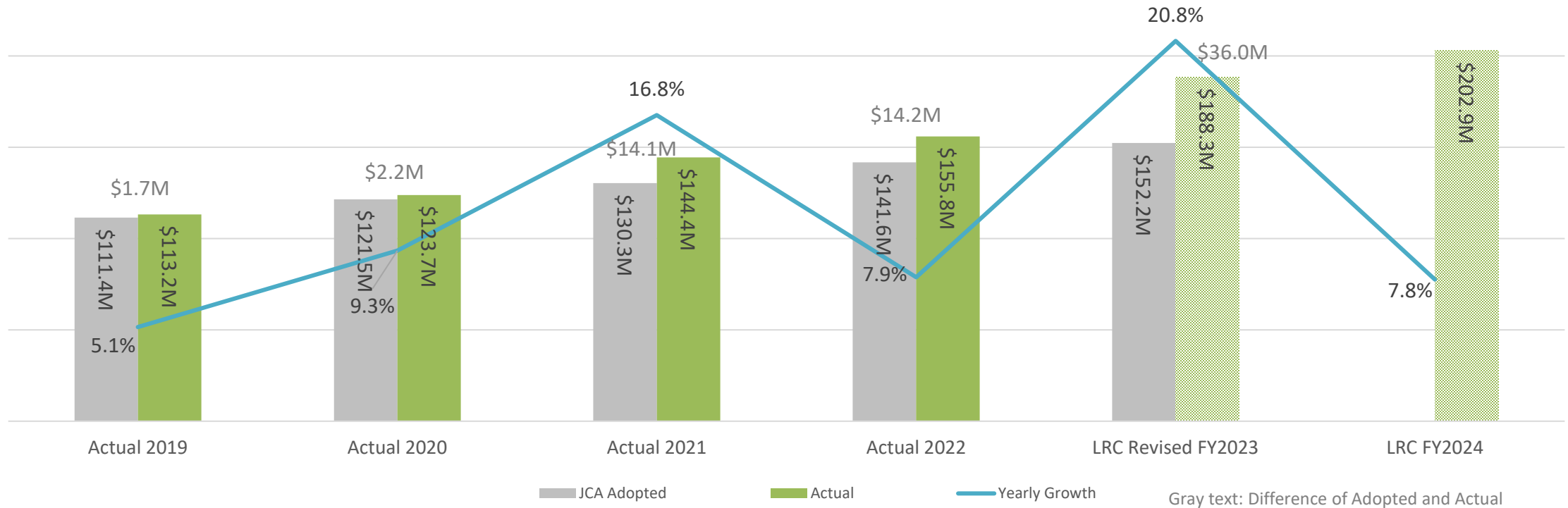
Contractor's Excise Tax	Actual FY2019	Actual FY2020	Actual FY2021	Actual FY2022	JCA Adopted FY2023	LRC Revised FY2023	LRC FY2024
Total Revenues	113,163,617	123,723,519	144,448,267	155,823,772	130,300,000	188,258,421	202,864,979
Dollar Change	5,536,989	10,559,902	20,724,748	11,375,505	(25,523,772)	32,434,649	14,606,558
Percent Change	5.1%	9.3%	16.8%	7.9%	-16.4%	20.8%	7.8%

Insurance Company Tax

Gray text: Difference of Adopted and Actual
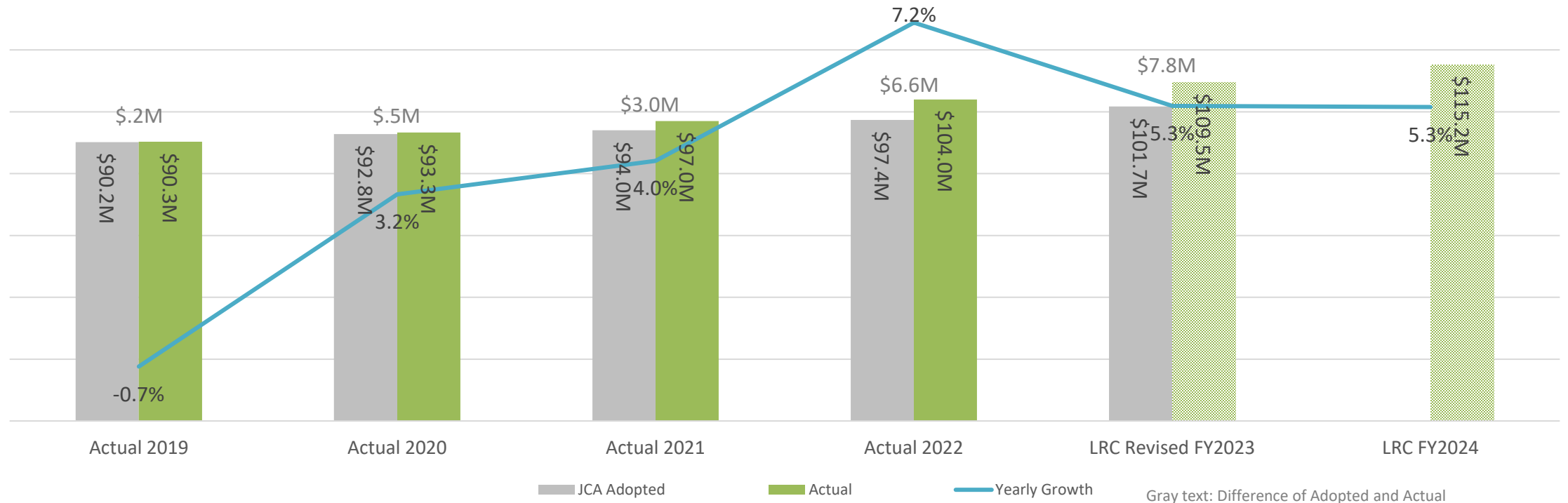
Insurance	Actual FY2019	Actual FY2020	Actual FY2021	Actual FY2022	JCA Adopted FY2023	LRC Revised FY2023	LRC FY2024
Total Revenues	90,347,541	93,271,112	97,010,439	103,995,420	101,685,257	109,487,583	115,238,315
Dollar Change	(674,302)	2,923,571	3,739,327	6,984,981	(2,310,163)	5,492,163	5,750,732
Percent Change	-0.7%	3.2%	4.0%	7.2%	-2.2%	5.3%	5.3%

Unclaimed Property
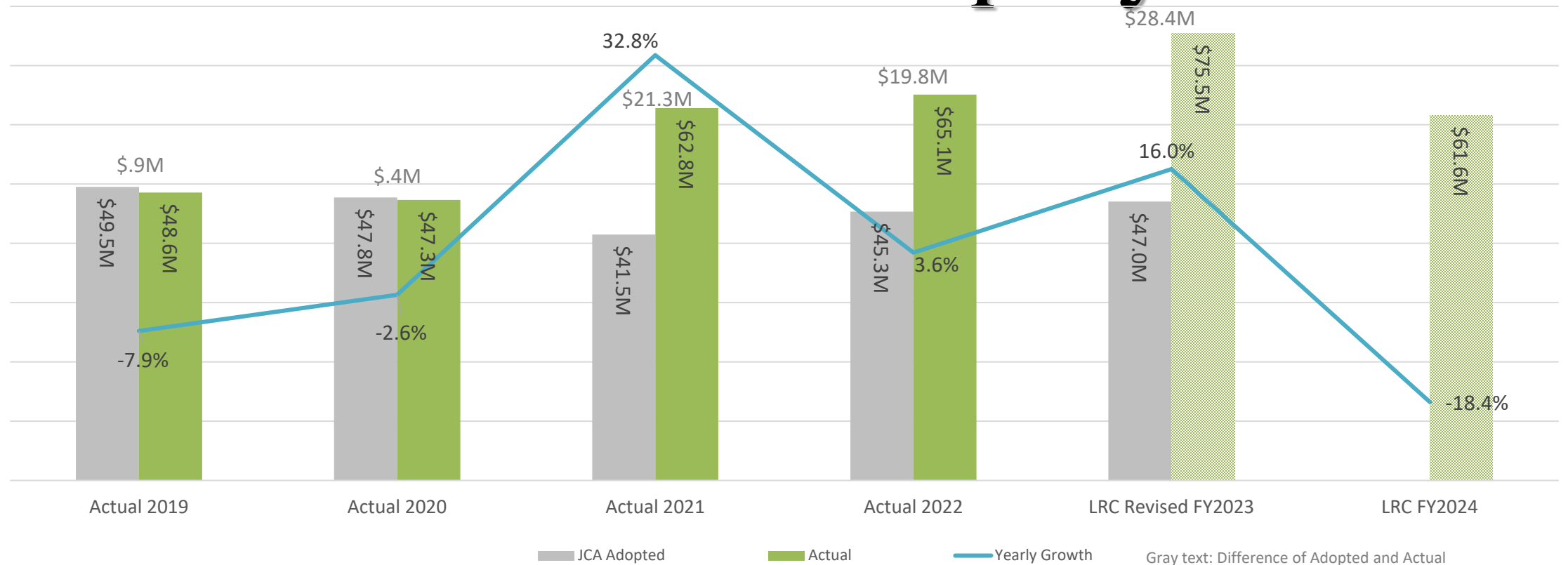
Unclaimed Property	Actual FY2019	Actual FY2020	Actual FY2021	Actual FY2022	JCA Adopted FY2023	LRC Revised FY2023	LRC FY2024
Total Revenues	48,573,600	47,308,472	62,809,930	65,097,628	41,500,000	75,491,797	61,585,732
Dollar Change	(4,192,431)	(1,265,128)	15,501,458	2,287,698	(23,597,628)	10,394,169	(13,906,065)
Percent Change	-7.9%	-2.6%	32.8%	3.6%	-36.2%	16.0%	-18.4%

Licenses, Permits, Fees
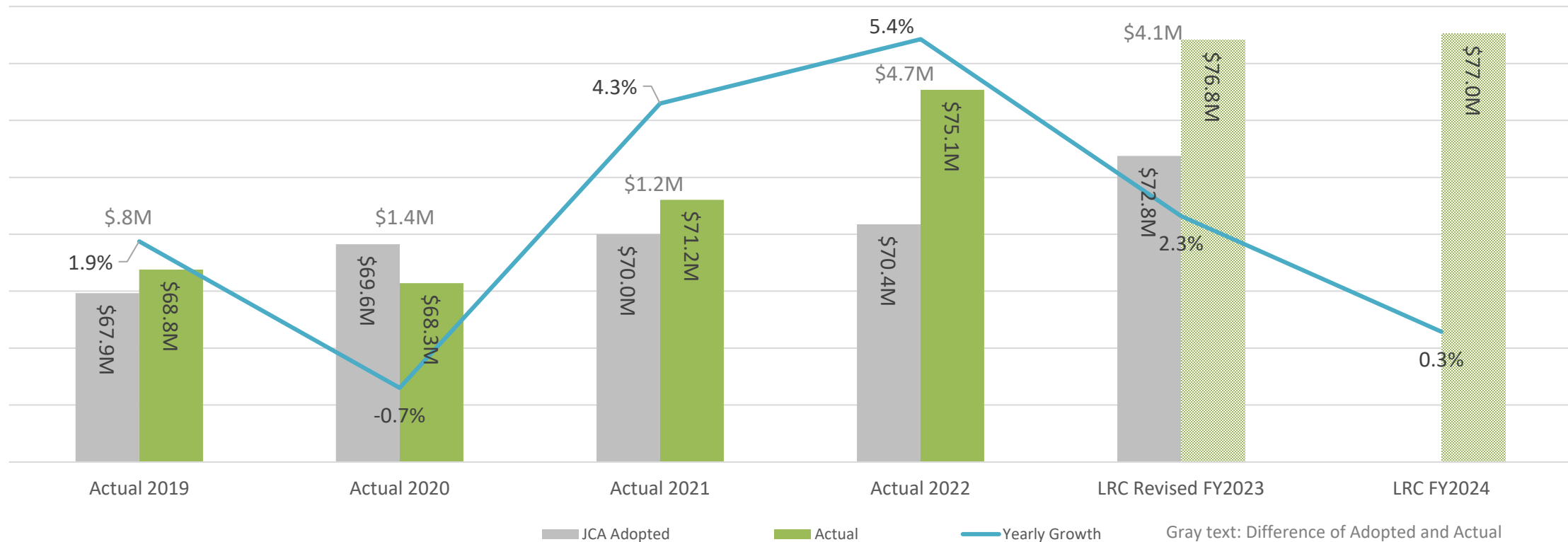
Licenses, Permits, Fees	Actual FY2019	Actual FY2020	Actual FY2021	Actual FY2022	JCA Adopted FY2023	LRC Revised FY2023	LRC FY2024
Total Revenues	68,758,069	68,278,839	71,212,896	75,077,171	70,000,000	76,820,106	77,041,973
Dollar Change	1,266,018	(479,230)	2,934,057	3,864,275	(5,077,171)	1,742,935	221,867
Percent Change	1.9%	-0.7%	4.3%	5.4%	-6.8%	2.3%	0.3%

Total On-Going Revenue

Gray text: Difference of Adopted and Actual

Legend: JCA Adopted — Actual — Yearly Growth
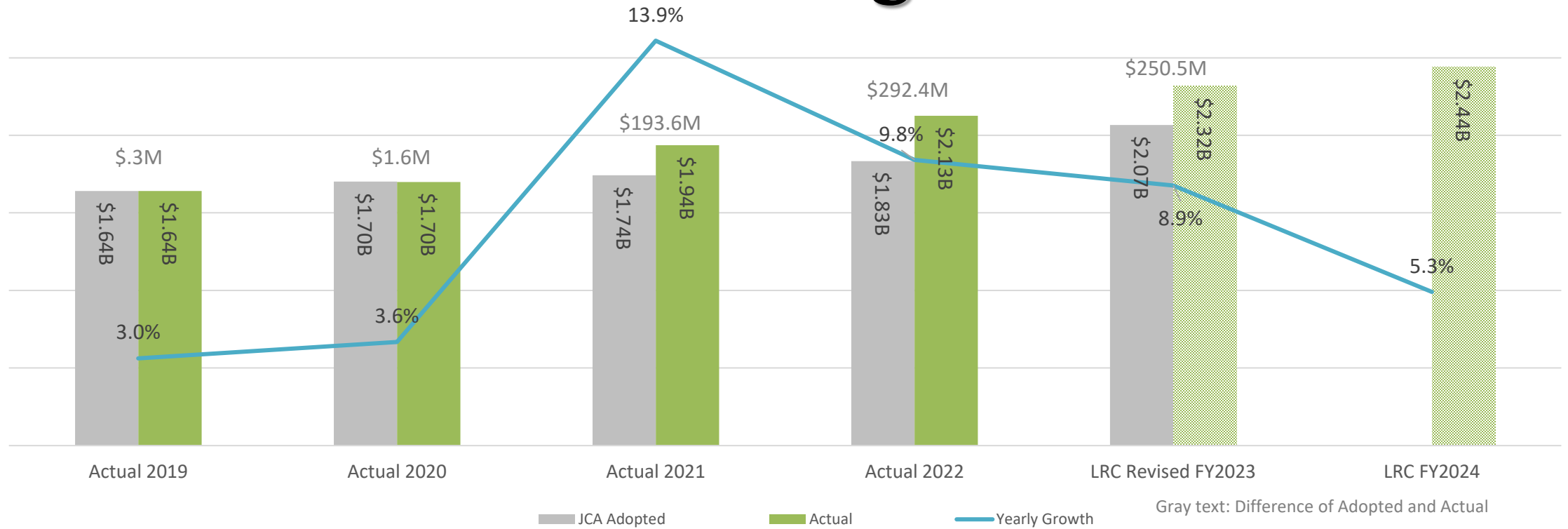
On-going Total	Actual FY2019	Actual FY2020	Actual FY2021	Actual FY2022	JCA Adopted FY2023	LRC Revised FY2023	LRC FY2024
Total Revenues	1,641,203,288	1,699,623,137	1,936,198,459	2,126,409,366	2,066,144,668	2,316,618,071	2,438,969,407
Dollar Change	47,797,427	58,419,849	236,575,322	190,210,907	(60,264,698)	190,208,705	122,351,336
Percent Change	3.0%	3.6%	13.9%	9.8%	-2.8%	8.95%	5.3%

Total On-Going Revenue

History of Actual On-going General Fund Receipts	$ Y/Y Growth	% Y/Y Growth
FY2010*	(30.8)	-2.7%
FY2011	53.7	4.8%
FY2012	72.9	6.3%
FY2013	22.3	1.8%
FY2014*	95.6	7.6%
FY2015	27.6	2.0%
FY2016	57.0	4.1%
FY2017*	102.4	7.1%
FY2018	52.6	3.4%
FY2019	47.8	3.0%
FY2020	58.4	3.6%
FY2021*	236.6	13.9%
FY2022*	190.2	9.8%
10-year avg.	89.1	5.6%
Average w/o Outliers	49.0	3.6%
FY2023 JCA Adopted*	(60.3)	-2.8%
FY2023 Forecast*	190.2	9.0%
FY2024 Forecast	122.4	5.3%

*Outlier year

Amounts not adjusted for inflation

Yearly Growth of On-going General Fund Receipts
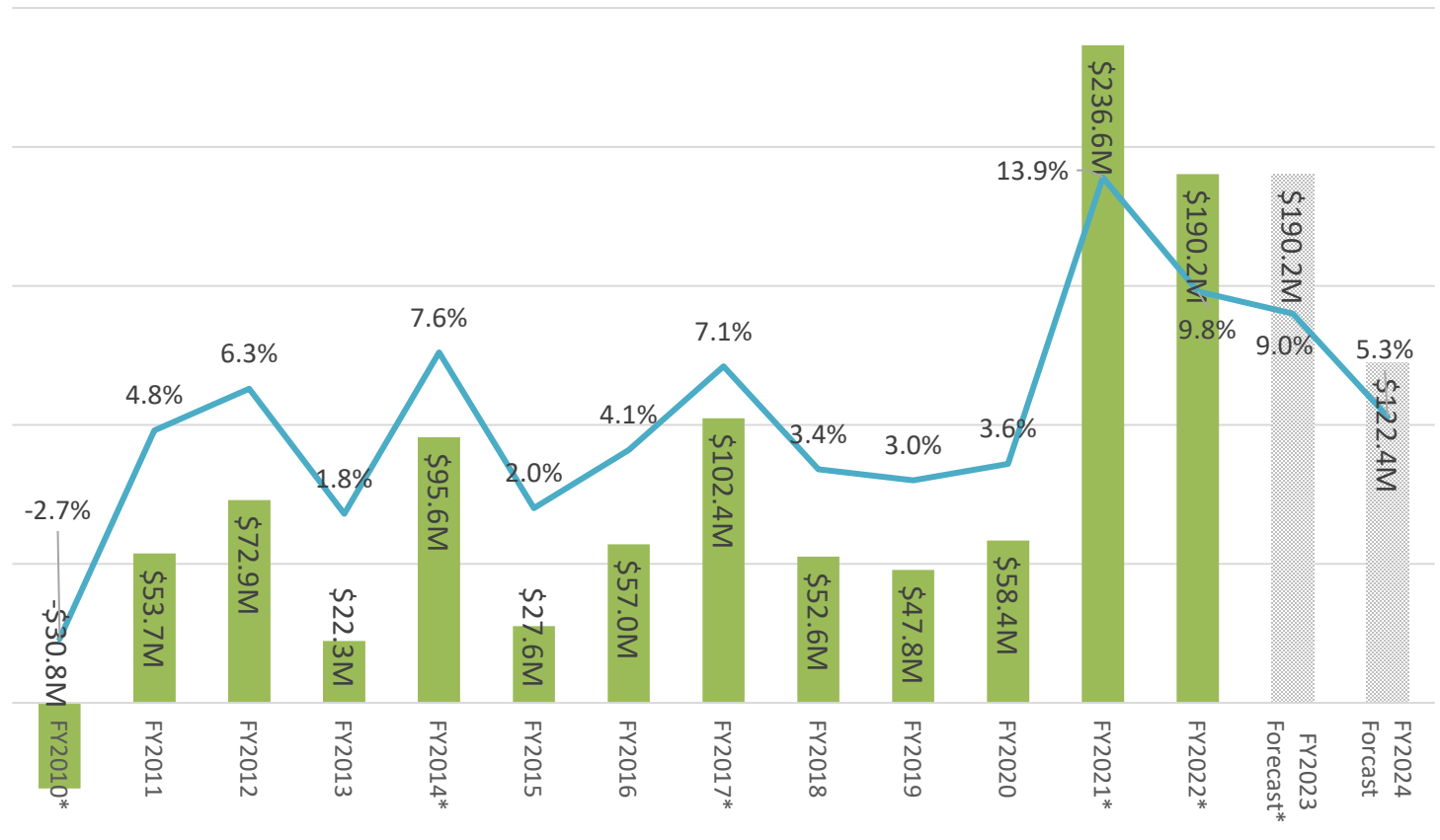
FY2023 General Fund Revenues

February 14, 2023

On-going Receipts	LRC Original FY23 2/14/2022	Legislature Adopted FY23	Governor's Dec. Revised FY23	LRC Revised FY23	$ Change from Governor's Revised	$ Change from Legislature Adopted FY22	% Growth over FY22 Actual
Sales & Use Tax	1,381,932,829	1,331,550,501	1,467,482,227	1,495,308,460	27,826,233	163,757,959	10.2%
Lottery	175,951,443	170,540,000	175,756,231	183,097,729	7,341,498	12,557,729	6.7%
Contractor's Excise Tax	157,219,785	152,237,105	177,624,072	188,258,421	10,634,349	36,021,316	20.8%
Insurance Company Tax	101,667,734	101,685,257	110,099,755	109,487,583	(612,172)	7,802,326	5.3%
Unclaimed Property	54,098,774	47,049,387	70,678,824	75,491,797	4,812,973	28,442,410	16.0%
Licenses, Permits, and Fees	73,252,503	72,756,235	75,729,924	76,820,106	1,090,182	4,063,871	2.3%
Tobacco Taxes	51,861,093	50,781,051	47,618,873	48,043,012	424,139	(2,738,039)	-2.7%
Trust Funds	46,255,321	46,397,822	46,307,322	46,540,322	233,000	142,500	7.0%
Net Transfers In	24,354,780	22,655,333	24,052,525	24,354,780	302,255	1,699,447	-3.7%
Alcohol Beverage Tax	8,950,464	9,013,182	9,237,650	8,875,647	(362,003)	(137,535)	-3.6%
Bank Franchise Tax	16,863,763	17,007,625	21,848,429	19,110,103	(2,738,326)	2,102,478	-15.1%
Charges for Goods & Services	15,549,763	15,460,833	15,644,481	14,866,510	(777,971)	(594,323)	0.4%
Telecommunications Tax	2,347,707	2,601,188	2,419,644	2,363,947	(55,697)	(237,241)	-12.1%
Mineral Severance Taxes	8,111,495	7,625,358	7,464,373	6,939,293	(525,080)	(686,065)	-13.6%
Interest Income & Interest	15,645,108	15,967,250	13,931,725	13,970,769	39,044	(1,996,481)	-28.9%
Alcohol Bev. 2% Wholesale Tax	2,796,726	2,816,541	3,048,237	3,089,592	41,355	273,051	6.2%
Subtotal On-going Receipts	**2,136,859,288**	**2,066,144,668**	**2,268,944,292**	**2,316,618,071**	**47,673,779**	**250,473,403**	**8.95%**
One-Time Receipts							
Obligated Cash Carried Forward			115,478,433	115,478,433	-		
Bank Franchise Tax Prior Year Revenue			14,625	692,349	677,724		
Unexpended Carryovers & Specials			8,364,225	8,364,225			
Subtotal One-Time Receipts		-	123,857,283	124,535,007	677,724		
GRAND TOTAL		**2,066,144,668**	**2,392,801,575**	**2,441,153,078**	**48,351,503**	**375,008,410**	

FY2024 General Fund Revenues

February 14, 2023

On-going Receipts	Governor's Dec. FY24	LRC Revised FY23	LRC FY24 Estimate	$ Change from Governor's Rec.	$ Change from LRC Revised FY23	% Change from LRC Revised FY23
Sales & Use Tax	1,511,313,943	1,495,308,460	1,598,407,725	87,093,782	103,099,265	6.9%
Lottery	178,452,976	183,097,729	193,185,381	14,732,405	10,087,652	5.5%
Contractor's Excise Tax	178,191,414	188,258,421	202,864,979	24,673,565	14,606,558	7.8%
Insurance Company Tax	114,227,770	109,487,583	115,238,315	1,010,545	5,750,732	5.3%
Unclaimed Property	51,705,829	75,491,797	61,585,732	9,879,903	(13,906,065)	-18.4%
Licenses, Permits, and Fees	76,828,720	76,820,106	77,041,973	213,253	221,867	0.3%
Tobacco Taxes	46,423,628	48,043,012	47,537,716	1,114,088	(505,296)	-1.1%
Trust Funds	48,628,510	46,307,322	48,475,153	(153,357)	1,934,831	4.2%
Net Transfers In	24,165,364	24,354,780	24,354,780	189,416	-	0.0%
Alcohol Beverage Tax	9,689,739	8,875,647	9,020,694	(669,045)	145,047	1.6%
Bank Franchise Tax	19,634,848	19,110,103	20,685,011	1,050,163	1,574,908	8.2%
Charges for Goods & Services	15,742,669	14,866,510	15,213,315	(529,354)	346,805	2.3%
Telecommunications Tax	2,343,231	2,363,947	1,762,794	(580,437)	(601,153)	-25.4%
Mineral Severance Taxes	8,026,540	6,939,293	7,875,676	(150,864)	936,383	13.5%
Interest Income & Interest	13,288,500	13,970,769	12,564,277	(724,223)	(1,406,492)	-10.1%
Alcohol Bev. 2% Wholesale Tax	3,264,117	3,089,592	3,155,886	(108,231)	66,294	2.1%
Subtotal On-going Receipts	**2,301,927,798**	**2,316,618,071**	**2,438,969,407**	**137,041,609**	**122,351,336**	**5.3%**
One-Time Receipts			-	-		
GRAND TOTAL	**2,301,927,798**		**2,438,969,407**	**137,041,609**	**122,351,336**	**5.3%**