

LEGISLATIVE FISCAL DIVISION 2017 BIENNIUM REVENUE ESTIMATE AND COMPARISON TO THE EXECUTIVE

A Report Prepared for the
Revenue & Transportation Interim Committee

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INTRODUCTION

This report provides a summary of the Legislative Fiscal Division revenue estimate recommendations for the upcoming 2017 biennium. The revenue estimates for each source reflect a combination of changes in base year data, revised assumptions, modeling adjustments, and new IHS forecasts since the production of the current official revenue estimate contained in SJ 2. The body of this report is organized into the following main sections:

- 2017 Biennium Revenue: Overview & Comparison with Executive
- 2017 Biennium Revenue Estimate Recommendations
- 2017 Biennium Guarantee Account Estimate
- Standard Error Analysis

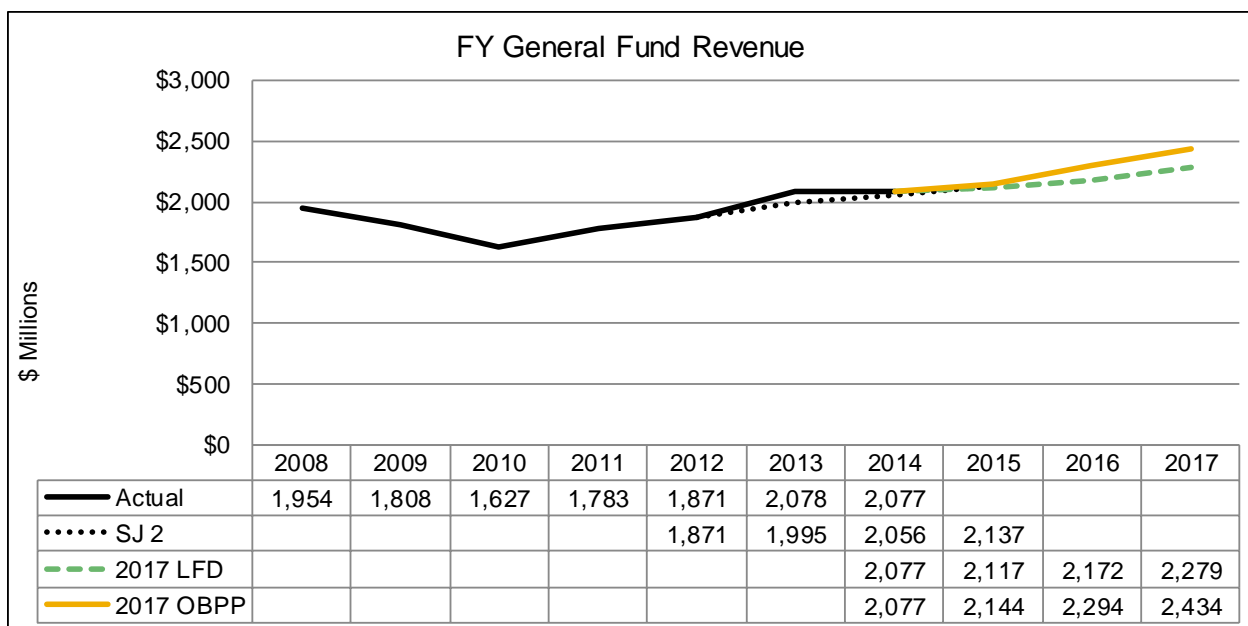
The new data available since the adoption of SJ 2 includes the following sources:

- FY 2013 and FY 2014 revenue collections
- Two additional years of individual and corporate tax return data, and property valuation data
- Two additional years of oil and natural gas production data
- Revised coal and metal mine production estimates from surveys
- Updated IHS forecasts

Changes to modeling methodologies since the production of SJ 2 vary by source, and are typically based on the accuracy of the SJ 2 models for FY 2013 and FY 2014.

2017 BIENNIUM REVENUE: OVERVIEW & COMPARISON WITH EXECUTIVE

The estimate recommendation for annual growth in general fund revenue for FY 2015 is 1.9%, for FY 2016 is 2.6% and for FY 2017 is 4.9%. These growth rates are somewhat lower than the growth rates contained in the [2017 Outlook Revenue Detail](#), primarily due to the lower IHS estimates of oil price and short-term interest rates, and lower property tax reappraisal values. Comparison of actual collections since FY 2008, SJ 2, the LFD 2017 biennium recommendation, and the executive recommendation are shown in the chart below.



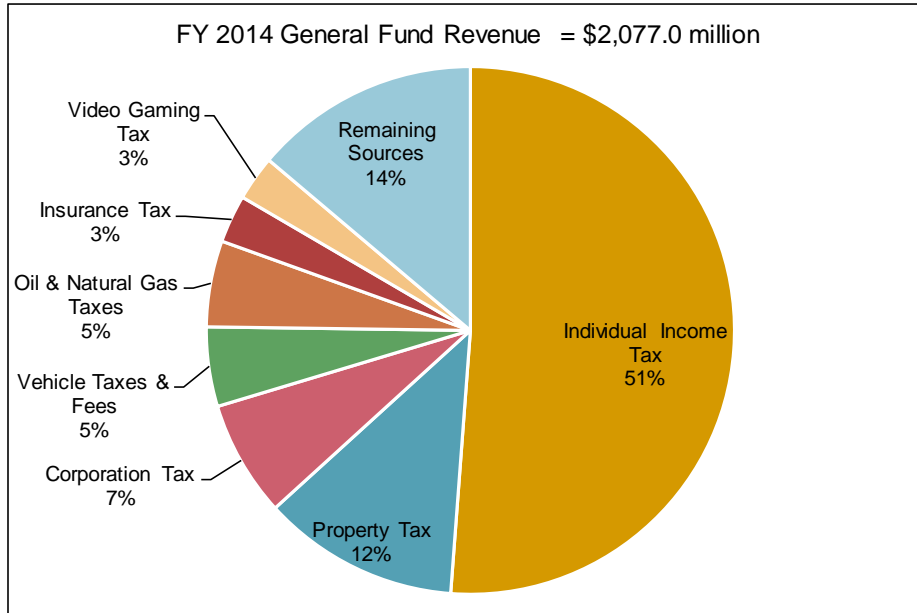
The 2017 biennium revenue estimates produced by the Legislative Fiscal Division (LFD) are summarized by source and compared to the revenue estimates produced by the Governor's Office of Budget and Program Planning (OBPP) in the following table:

General Fund Revenue Estimate Overview & Comparison									
(\$ Millions)									
Revenue Source	Actual FY 2014	OBPP			LFD			3-Year \$ Diff.	3-Year % Diff.
		FY 2015	FY 2016	FY 2017	FY 2015	FY 2016	FY 2017		
Largest Seven Sources									
Individual Income Tax	\$1,063.3	\$1,107.9	\$1,199.2	\$1,295.7	\$1,095.9	\$1,161.3	\$1,229.6	\$115.9	3.3%
Property Tax	250.3	247.9	244.4	253.2	248.6	244.2	254.1	(1.5)	-0.2%
Corporation Tax	147.5	167.4	204.0	201.3	157.7	148.6	152.5	113.9	24.8%
Vehicle Taxes & Fees	101.1	102.2	104.6	107.2	102.3	103.6	104.8	3.4	1.1%
Oil Severance Tax	109.6	101.0	103.0	115.9	94.2	86.2	86.9	52.5	19.7%
Insurance Tax	60.9	63.0	64.9	67.5	63.9	65.4	66.1	(0.0)	0.0%
Video Gaming Tax	57.1	59.8	62.0	64.4	60.4	62.7	66.0	(3.1)	-1.7%
Other Business Taxes									
Drivers License Fee	4.1	3.8	3.9	4.0	4.4	4.1	4.5	(1.2)	-9.2%
Investment Licenses	7.1	7.5	7.7	8.0	7.3	7.4	7.6	0.9	4.2%
Lodging Facilities Sales Tax	17.7	19.4	21.1	22.9	19.2	20.1	21.3	2.8	4.6%
Public Contractor's Tax	0.9	2.9	3.3	3.6	2.8	3.6	3.5	(0.1)	-1.3%
Railroad Car Tax	2.4	3.6	3.8	4.0	3.6	3.7	3.8	0.2	1.6%
Rental Car Sales Tax	3.5	3.7	3.9	4.1	3.7	3.9	4.1	(0.1)	-0.5%
Retail Telecom Excise Tax	19.7	19.5	19.4	19.3	20.2	19.9	19.8	(1.7)	-2.8%
Other Natural Resource Taxes									
Coal Severance Tax	14.7	15.6	15.8	15.6	15.4	16.1	16.6	(1.1)	-2.3%
Electrical Energy Tax	4.3	4.4	4.4	4.5	4.7	4.7	4.7	(0.8)	-5.8%
Metal Mines Tax	7.9	8.1	8.6	8.6	8.0	8.0	7.5	1.7	7.4%
U.S. Mineral Royalties	27.7	30.8	31.7	32.9	26.9	24.7	24.6	19.2	25.2%
Wholesale Energy Trans Tax	3.1	3.2	3.3	3.5	3.7	3.6	3.6	(0.9)	-8.5%
Other Interest Earnings									
Coal Trust Interest Earnings	22.0	20.6	19.9	20.1	20.5	19.8	22.5	(2.3)	-3.7%
TCA Interest Earnings	1.8	1.7	9.9	25.8	1.6	9.2	21.4	5.2	16.1%
Other Consumption Taxes									
Beer Tax	3.0	3.0	3.0	3.1	3.1	3.2	3.2	(0.4)	-4.1%
Cigarette Tax	30.6	30.2	30.6	30.3	28.9	29.5	28.8	3.9	4.5%
Liquor Excise Tax	18.4	19.3	20.2	20.5	19.1	19.7	20.4	0.8	1.3%
Liquor Profits	10.5	10.8	11.0	11.2	10.7	11.2	11.6	(0.6)	-1.7%
Lottery Profits	12.1	12.5	11.6	10.7	12.6	13.4	14.4	(5.6)	-13.9%
Tobacco Tax	5.9	6.2	6.4	6.6	6.2	6.4	6.6	(0.1)	-0.5%
Wine Tax	2.3	2.3	2.4	2.5	2.3	2.4	2.4	0.0	0.5%
Other Sources									
All Other Revenue	37.3	36.3	40.5	37.2	39.5	36.4	36.7	1.4	1.2%
Highway Patrol Fines	4.1	4.4	4.5	4.7	4.2	4.3	4.3	0.9	6.8%
Nursing Facilities Fee	5.0	4.8	4.7	4.6	4.9	4.8	4.7	(0.3)	-2.2%
Public Institution Reimb.	17.3	17.0	17.3	17.8	17.1	17.2	17.3	0.4	0.8%
Tobacco Settlement	3.6	3.3	3.2	3.1	3.2	3.1	3.1	0.2	1.6%
Total General Fund	\$2,077.0	\$2,143.8	\$2,294.0	\$2,433.8	\$2,116.9	\$2,172.4	\$2,278.9	\$303.4	4.6%
Guarantee Account	66.2	49.5	48.2	53.6	62.2	49.7	54.2	(14.7)	-8.8%
Total General Fund & Guarantee	\$2,143.2	\$2,193.3	\$2,342.2	\$2,487.4	\$2,179.0	\$2,222.1	\$2,333.0	\$288.7	4.3%

2017 BIENNIUM REVENUE ESTIMATE RECOMMENDATIONS

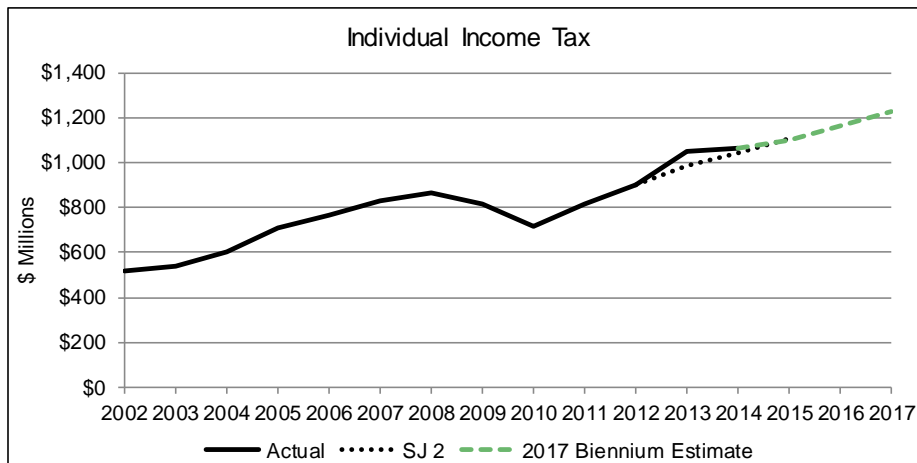
Large Revenue Sources

In FY 2014, the largest seven revenue sources accounted for 86% of total general fund revenue; since 2002, these sources have on average accounted for 82% of total general fund revenue. Due to the relative importance of these sources, particular attention is given to important underlying economic indicators and revenue volatility for each source.



Individual Income Tax

Individual income tax came in above estimate in FY 2013 and FY 2014. The 2017 biennium estimate based on the new data and revised modeling is on par with the estimate contained in SJ 2 for FY 2015, with moderate growth thereafter.



An individual income tax simulation model is used to forecast Montana calendar year individual income tax liability for all residents. The model is updated each year by the Department of Revenue (DOR) to incorporate the changes in federal and state tax law. The accuracy of the model in applying the tax laws correctly can be measured in the most recent year by comparing the output of the model for that year with the line item totals provided by DOR.

The calendar year state tax liability forecast is developed by applying modeled growth rates to each resident taxpayer's income and deduction items. The result is a forecast of calendar year state individual income tax liability for each resident, the sum of which produces a statewide forecast of individual income tax liability for each year. The table below compares the actual income contained on full year resident 2013 tax returns with the amounts estimated in SJ 2.

CY 2013 Income Levels				
(\$ Millions)				
	Actual	SJ 2	\$ Diff	% Diff
Wage Income	\$15,189.8	\$15,068.8	\$121.0	0.8%
Interest Income	294.2	376.4	(82.3)	-21.9%
Dividend Income	550.1	534.8	15.3	2.9%
Taxable Refunds	89.3	93.4	(4.1)	-4.4%
Alimony Received	15.1	15.0	0.0	0.2%
Net Business	820.1	787.7	32.4	4.1%
Cap. Gains	1,314.2	1,353.6	(39.4)	-2.9%
Sup. Gains	87.8	50.1	37.7	75.1%
Rents & Royalties	2,554.8	2,239.8	315.0	14.1%
IRA Income	623.9	721.4	(97.5)	-13.5%
Taxable Pensions	1,945.5	1,944.6	0.9	0.0%
Taxable Soc. Sec.	803.8	697.6	106.2	15.2%
Farm Income	(138.6)	(173.9)	35.2	-20.3%
Other Income	(523.6)	(511.3)	(12.3)	2.4%
Total	\$23,626.3	\$23,198.1	\$428.2	1.8%

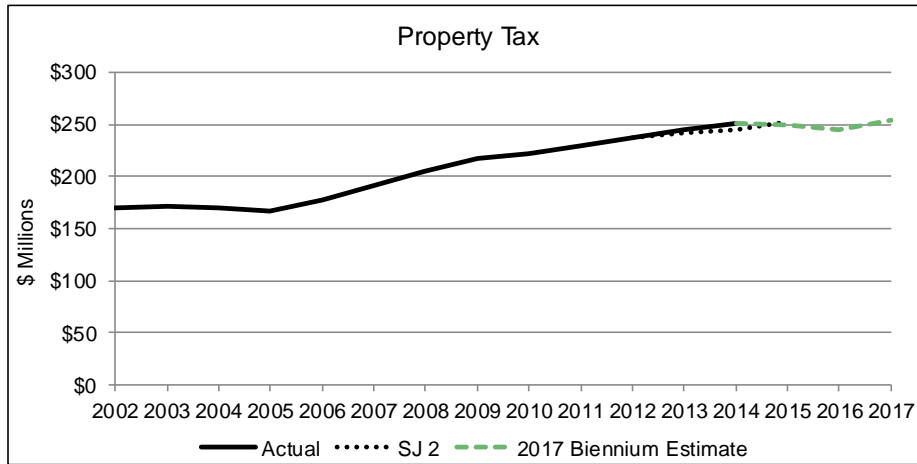
The statewide forecast of resident liability is adjusted for the growth in resident taxpayers, and multiplied by an all-filers percentage to include the tax liability for nonresidents and partial-year residents. This results in a forecast of total calendar year individual income tax liability before credits. An estimate of allowable credits is deducted, producing a calendar year individual income tax liability for each future year.

Fiscal year collections before audit, penalty, and interest income are modeled on total calendar year liability, and forecast fiscal year collections are then augmented by expected future audit, penalty and interest collections to produce the total individual income tax revenue estimate.

Property Tax

The current estimate has property tax collections slightly below SJ 2 for FY 2015. While there is variability in all classes of property, Class 13 telecommunications and electrical generation had a drop in taxable value that accounted for much of this difference. Specifically, there was a decrease in taxable value as a result of telecommunication settlements, and a decrease in taxable value in Class 13 property in Rosebud County.

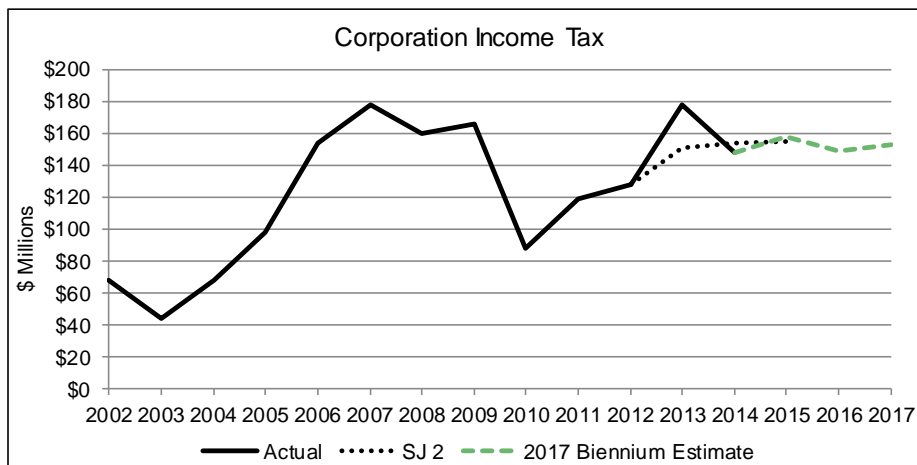
Going forward through FY 2016 and FY 2017 there is limited growth in property tax collections, largely due to reappraisal effects. The preliminary reappraisal shifts cause a decrease in FY 2016 due to properties that lost value; this downward shift is not phased in and all happens in the first year. FY 2017 then increases in value due to normal growth, plus the 1/6th phase-in increase for any reappraised properties that went up in value. The estimate is based on current law and assumes no reappraisal mitigation.



Corporation Income Tax

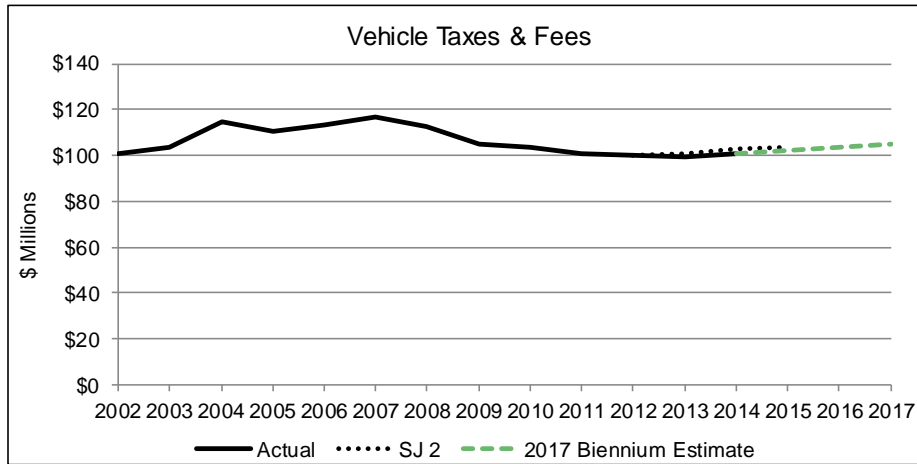
Recently this model has been adjusted in an attempt to minimize the error associated with forecast estimates. Numerous IHS economic variables are used to predict various corporate sectors, and the sectors' estimates are combined to form a final estimate. These variables include, but are not limited to, West Texas Intermediate oil price, Montana median home price, retail sales, and Montana population. Predictive variables were chosen based on their predictive power and historical error. Finally, numerous models' resulting error distributions were compared to choose a model that had narrow confidence bands and higher relative accuracy.

For more information, see the report on the updated methodology here: [Corporation Tax Estimating: Using Confidence Intervals to Minimize Forecasting Error](#).



Vehicle Taxes & Fees

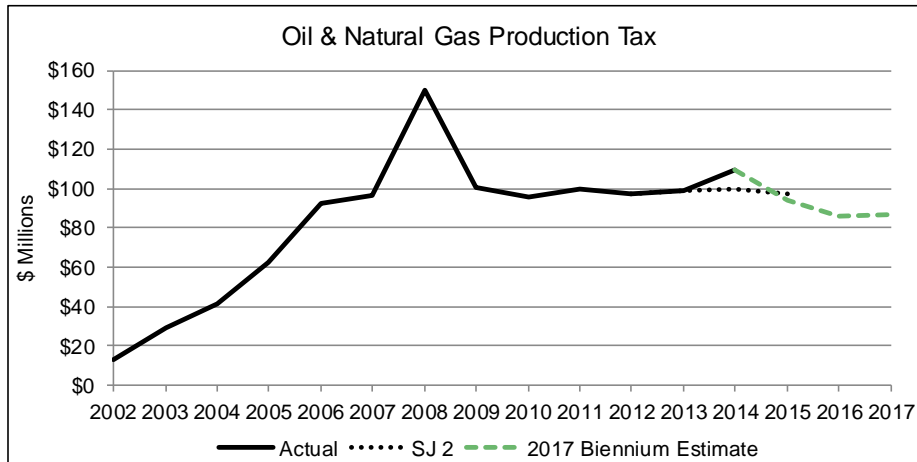
In both FY 2013 and FY 2014, revenue collections from this source were approximately 1.5% below the estimate contained in SJ 2. Due to the accuracy of recent years' estimates, the modeling methodology for this source has remained unchanged.



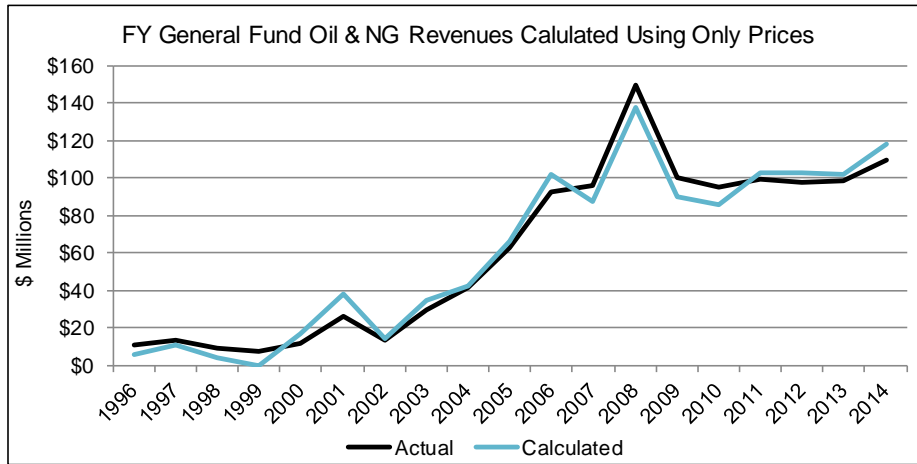
The model uses forecast car sales in the state from IHS to estimate a growth rate. This rate is then applied to current estimates of the vehicle stock in the state and past years' fee revenue to estimate future revenues.

Oil & Natural Gas Severance Tax

Oil and natural gas production tax collections were very close to the SJ 2 estimate in FY 2013, but came in \$10.3 million above the estimate in FY 2014, bolstered by strong prices. The estimate for the biennium declines due to lower prices. IHS has recently updated their CY 2016 and CY 2017 price estimates and assumes continued weakness in price.



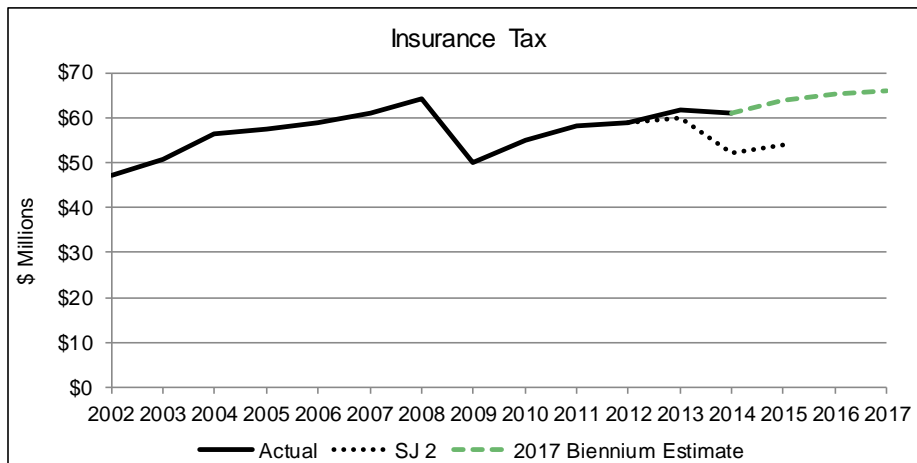
The recent and continued expected weakness in oil prices is the major driver of the decline in oil and natural gas production tax. The following chart illustrates how much the price drives the overall estimate. Using only West Texas Intermediate oil prices and Henry Hub gas prices, the calculated revenues are extremely close to actuals—using already known prices. As prices are never known with such accuracy, the oil and gas model uses historical production data from each well in the state to model forecast production based on an average decline curve. The additional production modeling essentially acts as a buffer against price forecast volatility.



Insurance Tax

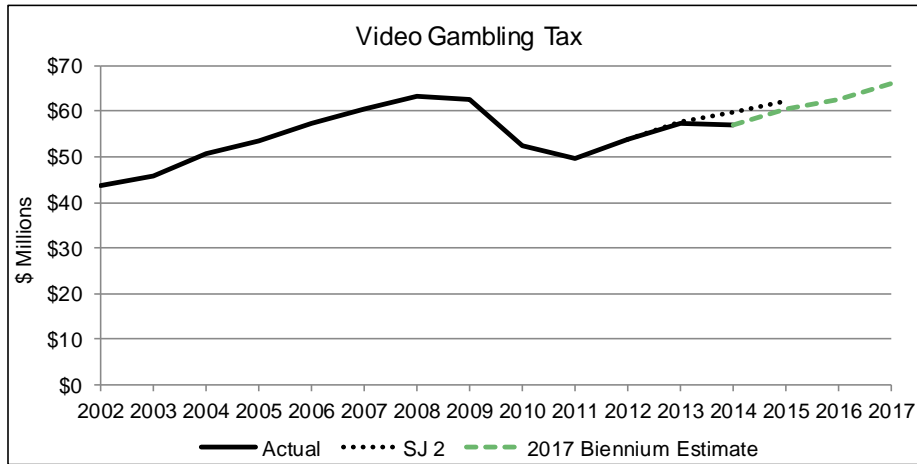
FY 2014 insurance tax came in \$8.9 million or 17% above the official SJ 2 revenue estimate. The difference was attributable to the buyout of Blue Cross Blue Shield and its resulting loss of tax exempt status. The last two of the four payments in FY 2014 included revenue from these newly taxable premiums as well as anticipated increases due to the additional premiums purchased under the Affordable Care Act (ACA). These changes are accounted for in the 2017 biennium estimates.

Insurance premiums are forecast related to long-term interest, the S&P 500 index, and Montana housing sales which are all supplied by IHS. As these measures are anticipated to grow through the 2017 biennium, so are the revenues from this source. Note that although those who became insured during the ACA open enrollment last year are included in these estimates, if there are additional enrollees in the upcoming years, revenues will increase slightly above the forecast.



Video Gambling Tax

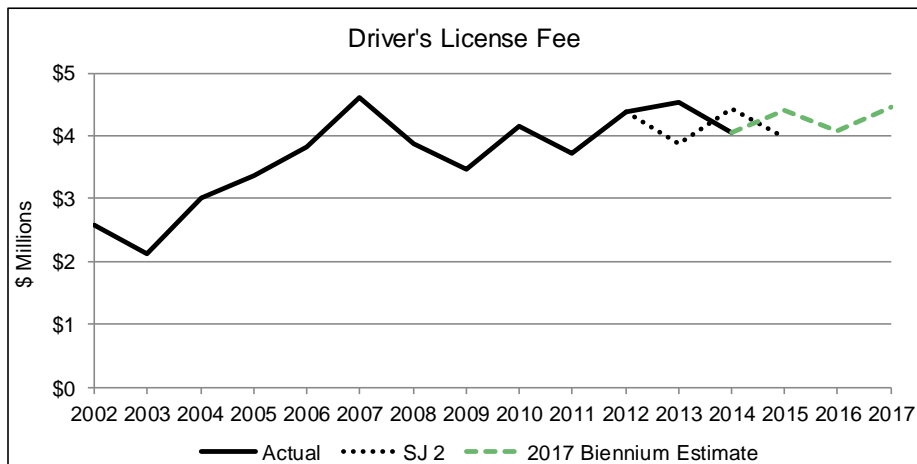
In FY 2013 and FY 2014 revenue collections were \$0.4 million and \$2.8 million less than the estimates contained in SJ 2. Past video gambling tax revenue collections are highly correlated with Montana personal income. As a result, IHS personal income estimates are the primary driver in forecasting future revenues. Even though there was virtually no change in collections from FY 2013 to FY 2014, this revenue source is expected to have moderate growth over the 2017 biennium.



Other Business Taxes

Driver's License Fee

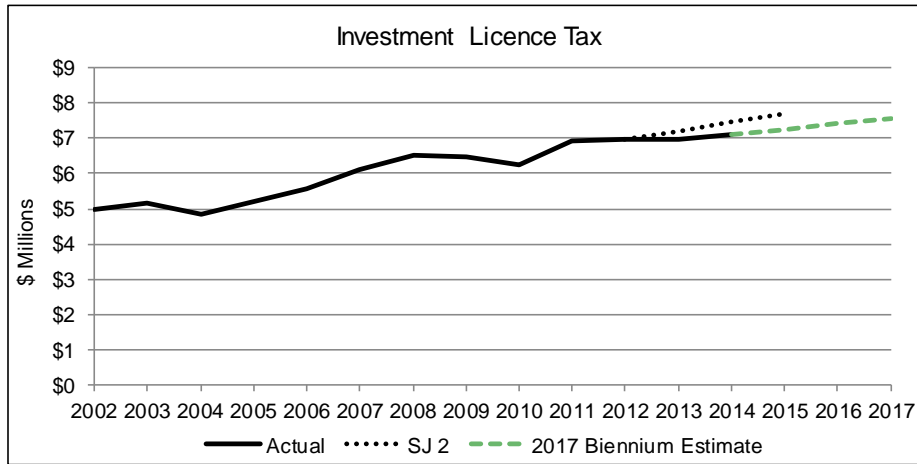
Total driver's license revenue exceeded the estimate contained in SJ 2 by \$0.7 million for FY 2013 and was lower than the estimate by \$0.4 million in FY 2014.



The 2017 outlook is based on forecast population data and historical ratios between licenses and actual populations. Actual ratios from the most recent fiscal years are applied accordingly to forecast years.

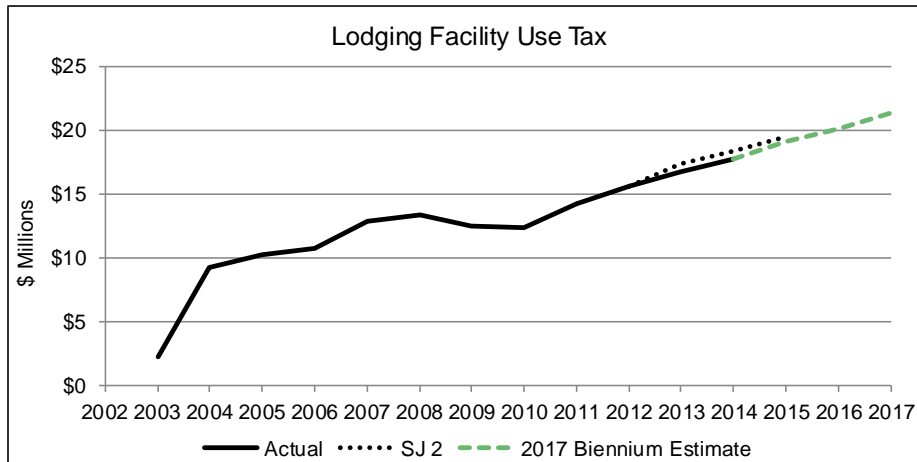
Investment License Fee

Investment license fee collections came in below the estimate in FY 2013 and FY 2014. Based on information from the State Auditor's Office (SAO), modeling for this source has been revised to account for broad changes in the industry: through mergers and acquisitions, the number of large firms is declining, while individual license purchases have slowed, resulting in the lower overall investment fee growth.



Lodging Facilities Sales Tax

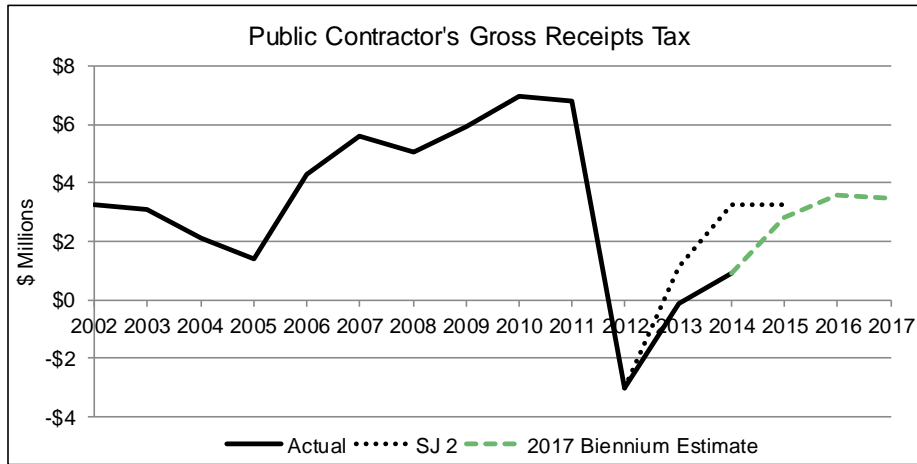
Lodging facilities sales tax collections were below estimate in FY 2013 and FY 2014. The modeling for this source has been revised; rather than modeling on Montana retail sales, it is now based on U.S. personal income.



Public Contractor's Tax

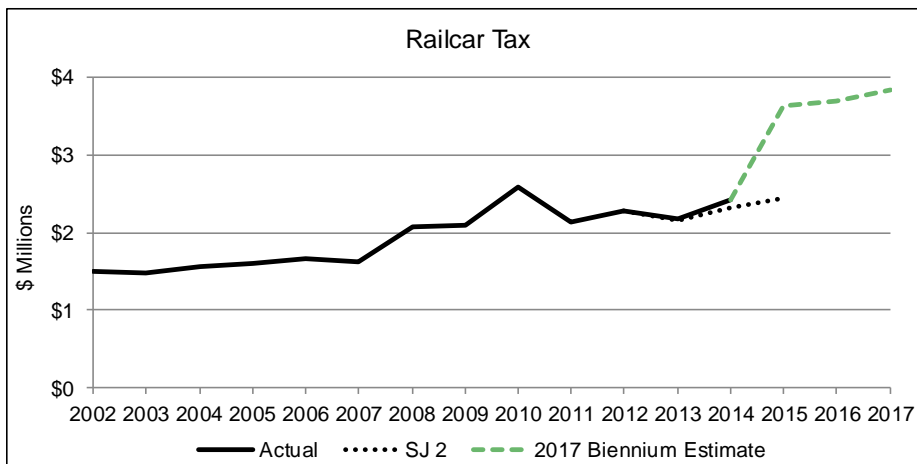
Public contractors' gross receipts tax collections were below estimate in FY 2013 and FY 2014, primarily as a result of the higher levels of credits & refunds due to the increased number of public projects funded through the American Recovery & Reinvestment Act (ARRA) in 2009 and 2010, coupled with the subsequent decrease in publicly funded projects.

For the current modeling, gross payments are disaggregated into two contract classifications: highway payments and all other contracts. Highway payments are forecast on a time trend; all other contracts are forecast as an approximate historical average.



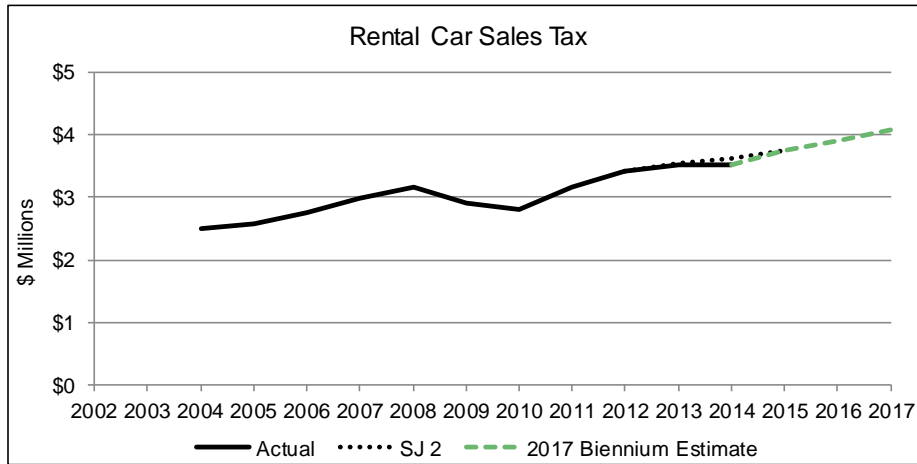
Railroad Car Tax

Railroad car tax revenue had been reasonably consistent for several years; however, this is expected to change significantly in FY 2015. With the new DOR data, the estimate is expected to increase by 50%. This source is modeled on Montana retail sales; future growth is anticipated to continue at historical patterns, but from the elevate level.



Rental Car Sales Tax

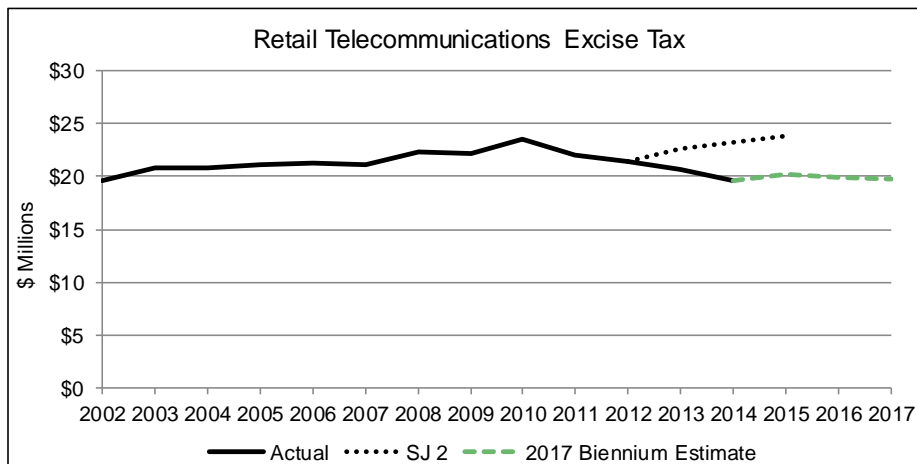
Rental car sales tax collections were very close to the estimate in FY 2013 and FY 2014. Previous modeling was based on Montana retail sales; the modeling method for the current forecast has not changed.



Retail Telecommunications Excise Tax

Retail telecommunications excise tax collections came in below estimate in FY 2013 and FY 2014. The revenue has been declining since FY 2011 in part due to the DOR’s loss of the pre-paid wireless case in 2011. The impact of the case was initially estimated to be an annual reduction in revenue of about \$1.0 million. However, the strong growth in the market share of prepaid smartphones was likely underestimated, resulting in an underestimate of the revenue reduction.

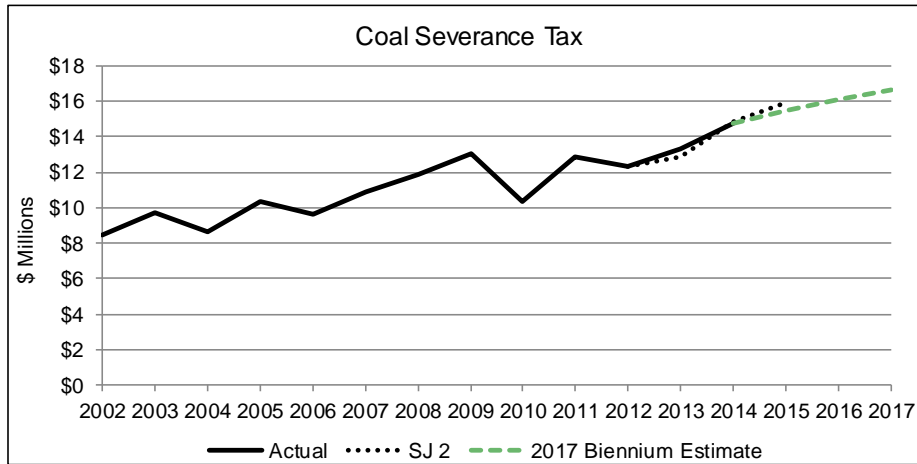
Revised modeling based on U.S. Census Bureau data for landline use decline and cell phone use growth, IDC Mobile Phone Tracker statistics, Google smartphone statistics, and the IHS forecast of Montana population growth suggests continued decline, which is consistent with recent trends.



Other Natural Resource Taxes

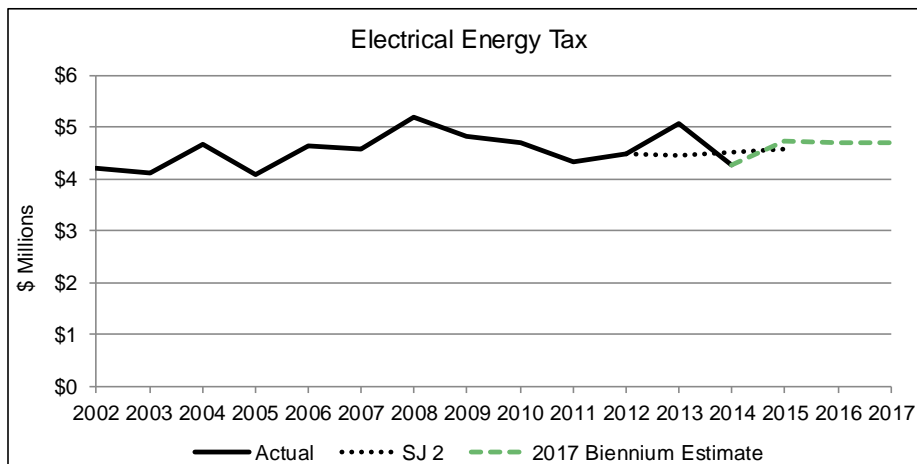
Coal Severance Tax

FY 2013 coal severance tax collections came in slightly above estimate primarily due to increases in price, while FY 2014 collections were just below the estimate. The 2017 biennium estimate based on new surveys of coal producers has collections again slightly below SJ 2 in FY 2015—primarily attributable to a change in allocation as a result of SB 100 (2009 Session), as total coal receipts are expected to stay fairly flat from FY 2014 to FY 2015. In FY 2016 and FY 2017, both price and production are anticipated to increase.



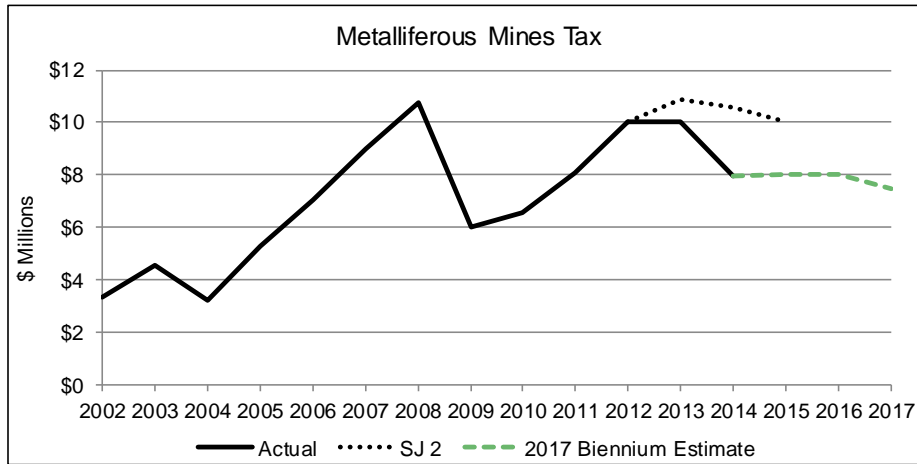
Electrical Energy Tax

Electrical energy tax came in below SJ 2 estimates in FY 2014. During the past few years there have been increases and decreases in electrical energy tax collections that have not been reflected in collected survey data. Due to the continuing inaccuracies of the survey data, the model has been changed to only reflect historic trends.



Metalliferous Mines Tax

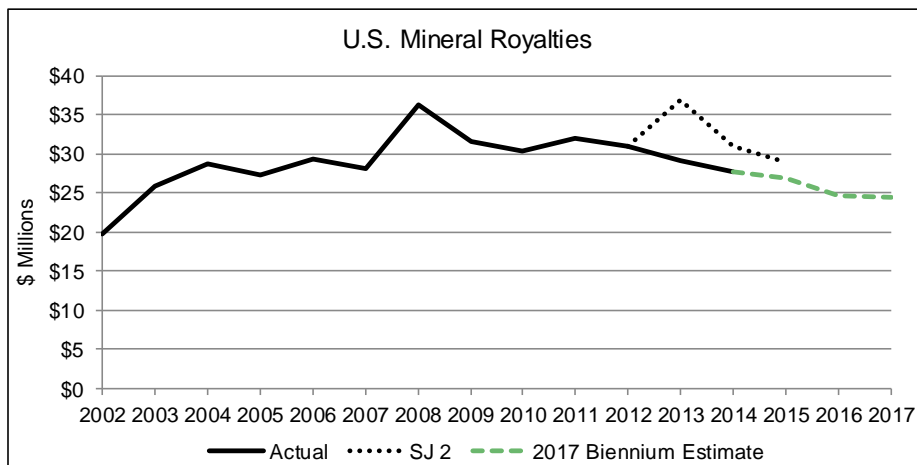
Metal mines tax collections were below the estimate in FY 2013 primarily due to lower prices, and below estimate in FY 2014 due to declines in production.



Based on updated survey information provided by each of the major metal mines producers in the state, overall value will remain relatively stable. The estimate assumes the on average small increases in production will be offset by small declines in commodity prices

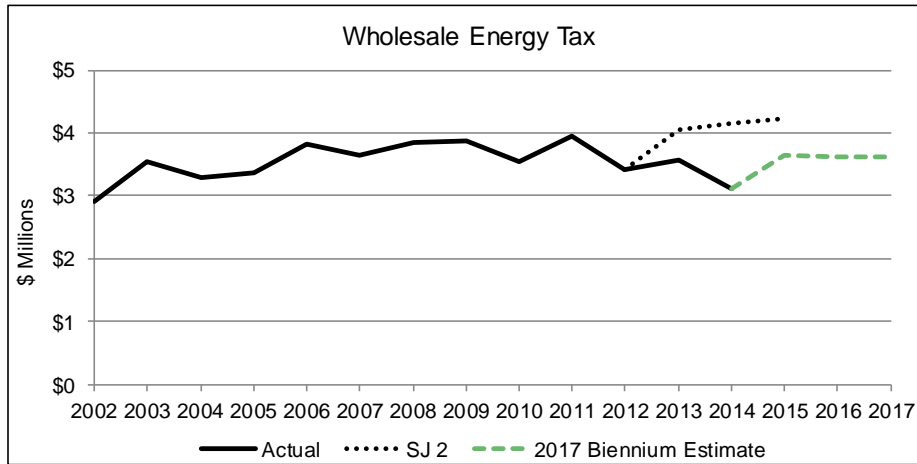
U.S. Mineral Royalties

FY 2013 U.S. mineral royalties came in below SJ 2 due to the federal sequester and a large lease that failed to materialize. FY 2014 continued its biennial trend of coming in below estimate. Detailed federal FY 2014 information is not yet available; however, ongoing estimates have been revised downward based primarily on continued declining oil royalties from federal lands. Current drilling in the state is largely concentrated in the Bakken region on non-federal lands; this pattern is expected to continue through the biennium.



Wholesale Energy Transaction Tax

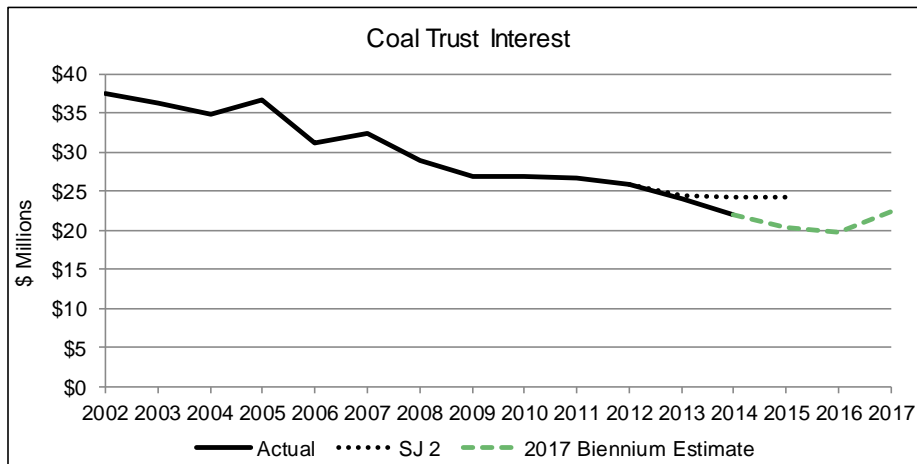
Wholesale energy tax came in below SJ 2 estimates in FY 2013 and FY 2014. During the past few years there have been increases and decreases in wholesale energy tax collections that have not been reflected in collected survey data. Due to the continuing inaccuracies of the survey data, the model has been changed to only reflect historic trends.



Other Interest Earnings

Coal Trust Interest Earnings

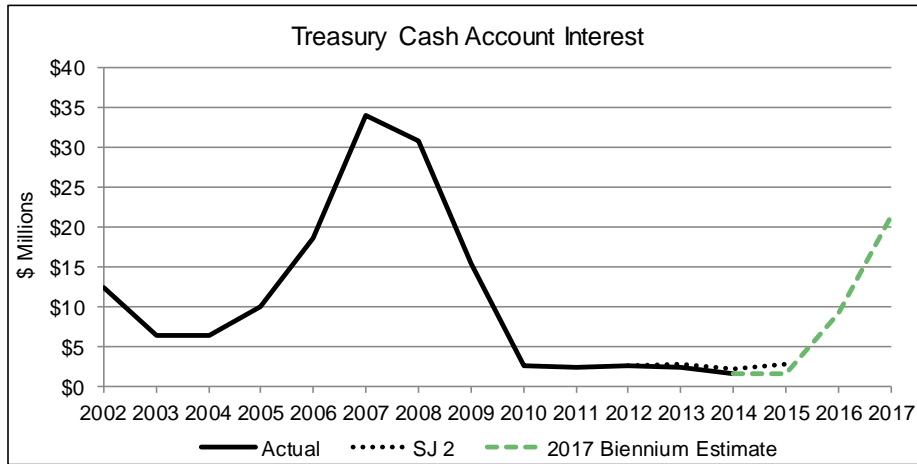
Coal trust earnings were below the estimate contained in SJ 2 by only \$0.3 million and \$2.4 million respectively in FY 2013 and FY 2014. Revenue from this source is generated from fixed-income investments made by the Montana Board of Investments (BOI) in the state's trust funds bond pool (TFBP). Revenue is estimated by applying yield rates based on suggestions from BOI to the estimated coal trust balance.



This estimate is based on the current law sunset of the regional water trust at the beginning of FY 2017 and subsequent reversion of the regional water trust balance to the coal permanent trust.

Treasury Cash Account Interest

In both FY 2013 and FY 2014, interest made off the Treasury Cash Account (TCA) was 12% and 25% lower than the anticipated revenue in SJ 2. Short term interest rates were forecast to return to pre-recession levels; however, they remained near 0%, resulting in a continued low level of revenue.



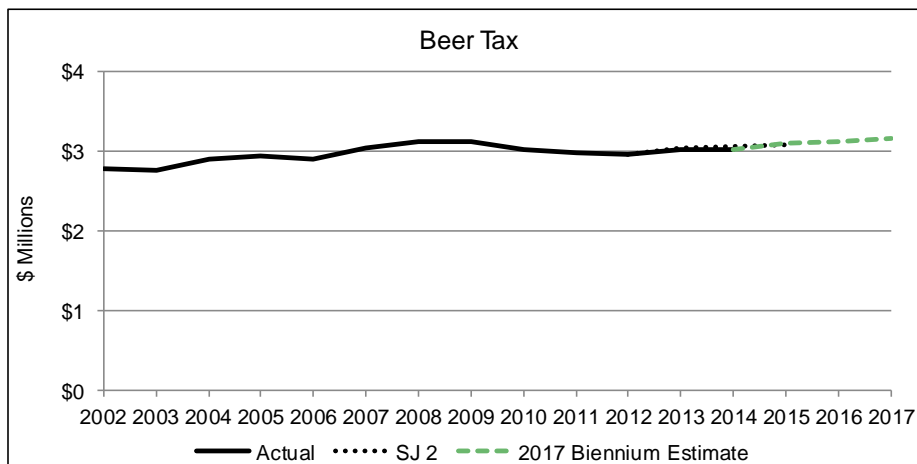
The future revenues are estimated using IHS forecast interest rates applied to the TCA balance. Currently, short-term interest rates are forecast to remain near 0% through the end of FY 2015 before increasing in FY 2016 and FY 2017.

Other Consumption Taxes

Beer Tax

In both FY 2013 and FY 2014, beer tax revenue came in just below the SJ 2 estimate. Although the estimate was low for actual number of barrels sold, it was high for the effective tax rate.

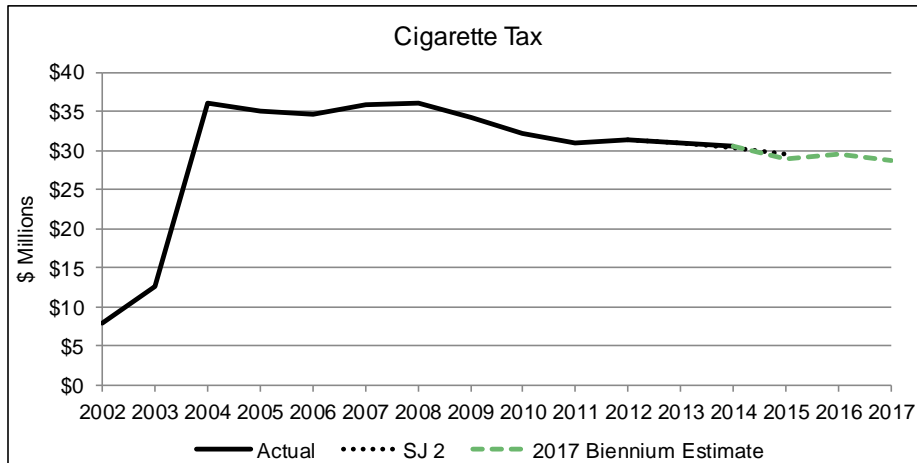
The increase in revenue over the biennium is primarily due to the increase in forecast retail sales and population provided by IHS. The projected increase in sales is tempered somewhat for overall tax collections as the model also builds in a decrease in the effective tax rate. The effective tax rate is on a consistent downward trend; as the number of small brewers increases, there are more barrels sold in the lower tax brackets. This forecast assumes that the decrease in the effective rate continues through the biennium by applying the current rate of change going forward.



Cigarette Tax

In both FY 2013 and FY 2014 cigarette taxes slightly exceeded the SJ 2 estimates. Packs of cigarettes sold are forecast using the ratio of the Consumer Price Index (CPI) for tobacco to consumer spending on tobacco, both of which are forecast by IHS. This ratio is expected to continue to grow and has a negative relationship with number of packs sold in Montana. Additionally, the model uses

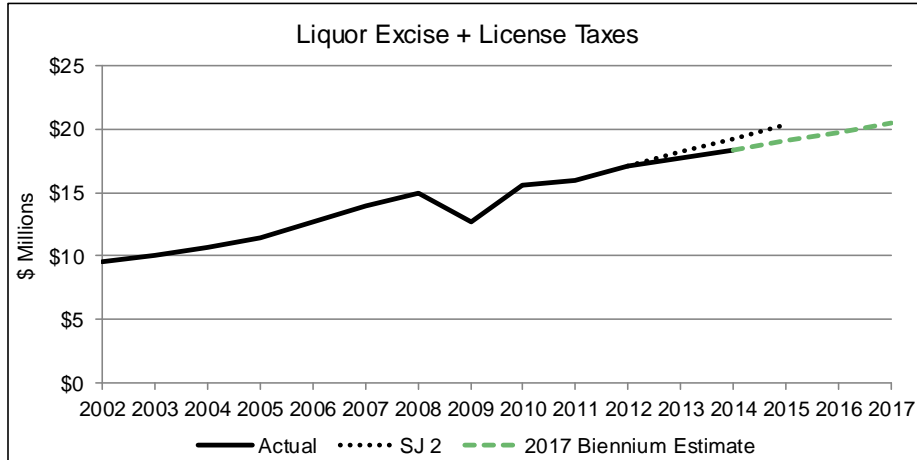
the previous year's packs sold to inform the trend. These factors combine to predict a continued decline in cigarette tax revenue.



Liquor Excise & License Tax

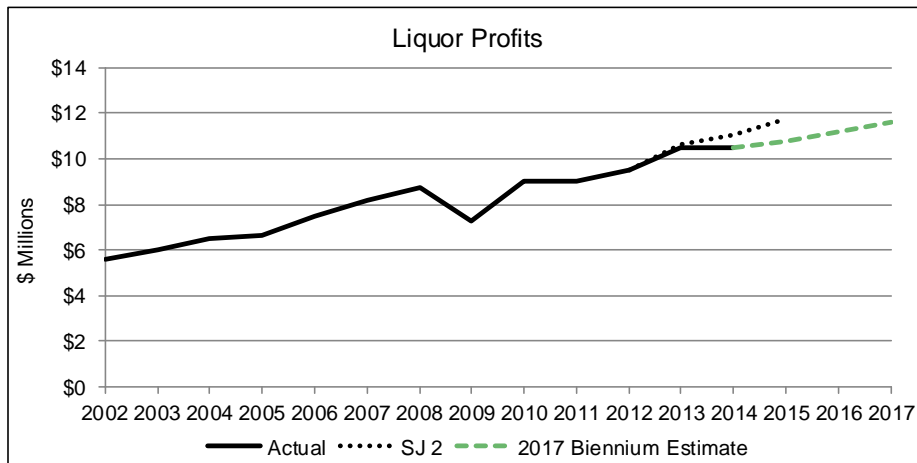
In each of the last two fiscal years, total liquor excise and license tax revenue came in under the SJ 2 estimate. The difference was 2.6% or \$0.5 million in FY 2013 and 5.2% or \$0.9 million in FY 2014.

Historically, the model has relied solely on the year-over-year percent change in the Consumer Price Index (CPI) as forecast by IHS such that when the CPI was forecast to increase more quickly than it did in actuality, the forecast was high. The model has now been modified slightly to incorporate a dependence on the previous year's actuals.



Liquor Profits

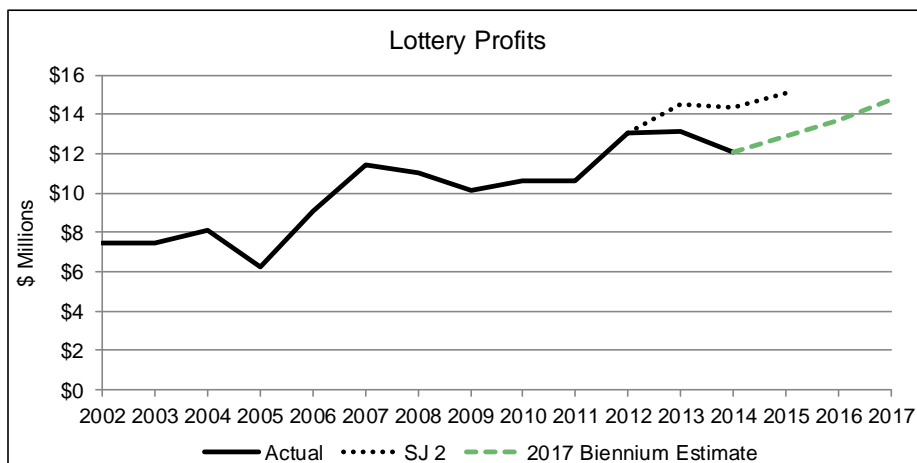
In each of the last two fiscal years, liquor profits came in under the SJ 2 estimate. The difference was 1.0% or \$0.1 million in FY 2013 and 5.2% or \$0.6 million in FY 2014. Liquor profits use the same model as excise and license tax which is discussed briefly above.



Liquor Profits

In each of the last two fiscal years, lottery profits came in under the SJ 2 estimate. The difference was 9.6% or \$1.4 million in FY 2013 and 15.7% or \$2.3 million in FY 2014.

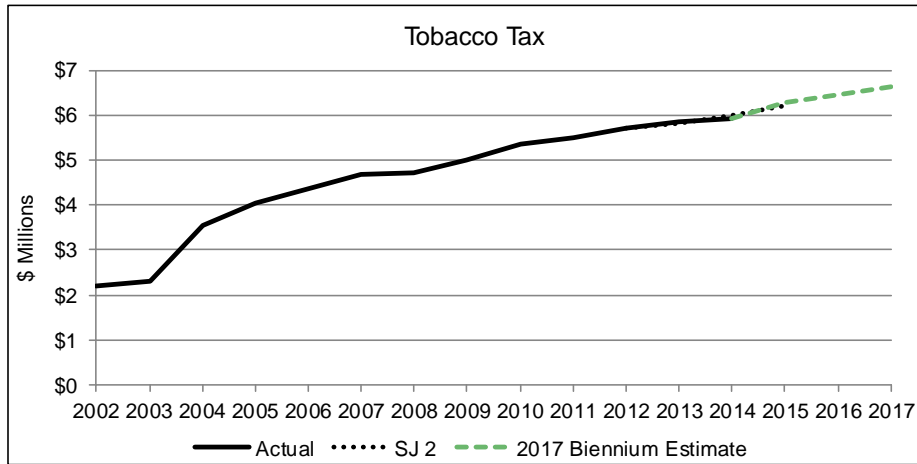
Lottery profits vary mostly due to the number of jackpots won in a given year. The decline is primarily due to lower advertised jackpots which results in fewer ticket sales. The number of winners varies; so the methodology remains the same going into the 2017 biennium with profits expected to increase.



Lottery Profits

Tobacco tax revenue came in 0.5% or \$0.0 million over the SJ 2 estimate in FY 2013 and 1.3% or \$0.1 million below the SJ 2 estimate in FY 2014.

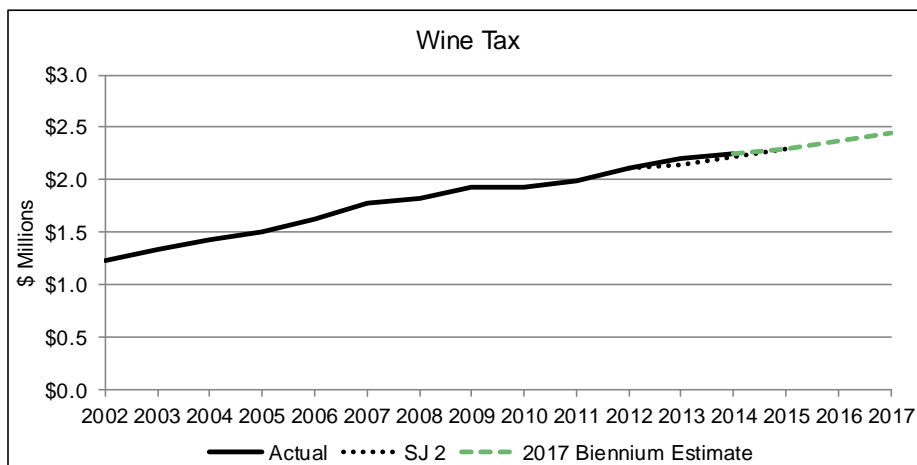
This revenue source is forecast using Montana retail sales and the Montana over-18 population, both of which are provided by IHS. Both have positive relationships with tobacco sales, and are expected to increase over the 2017 biennium which leads to a forecast of increased tobacco tax revenue.



Wine Tax

In both FY 2013 and FY 2014 wine tax slightly exceeded the SJ 2 estimates. The difference was 2.4% or \$0.1 million in FY 2013 and 1.5% or \$0.0 million in FY 2014.

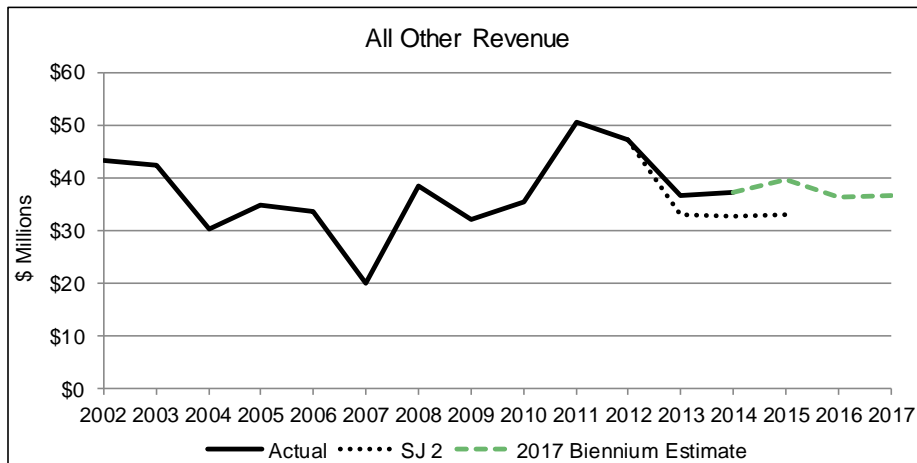
Wine tax is forecast using the Montana over-21 population as provided by IHS. Sales of wine have a steady historic relationship with that population that is assumed to continue through the 2017 biennium with increased wine sales and tax.



Other Sources

All Other Revenue

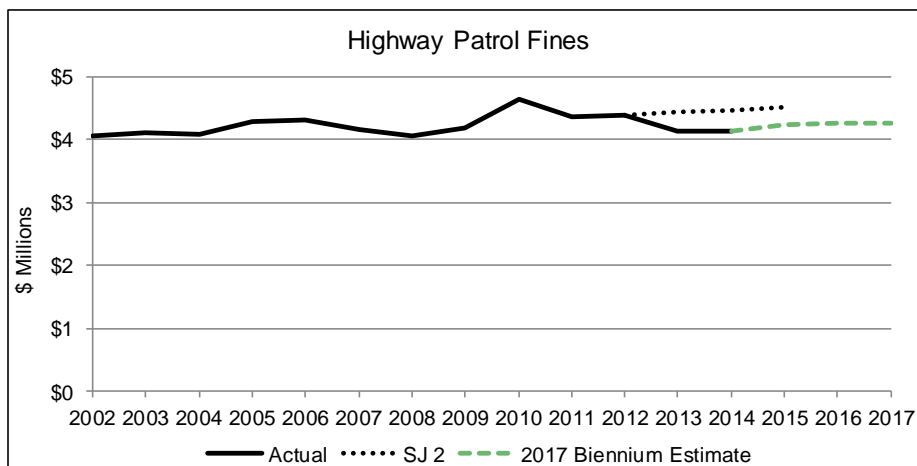
Combined revenue from all other general fund sources exceeded the SJ 2 estimate by \$3.7 million in FY 2013 and \$4.8 million in FY 2014. The increases in revenue compared to SJ 2 estimates were primarily due to larger-than-expected abandoned property collections.



The current model estimates sources earning less than \$1.0 million aggregately. The remaining seven sources that typically earn over \$1.0 million are still estimated on an individual basis using a three-year moving average.

Highway Patrol Fines

Revenue generated from highway patrol fines was \$0.3 million less than the estimate provided in SJ 2 for both FY 2013 and FY 2014. This revenue source is predicted using a time trend with random fluctuations; actual collections are likely to be close to forecast values, but not exact.



Nursing Facilities Fee

In both FY 2013 and FY 2014 nursing facility revenue exceeded the SJ 2 estimates. The difference was 1.1% or \$0.1 million in FY 2013 and 4.7% or \$0.2 million in FY 2014.

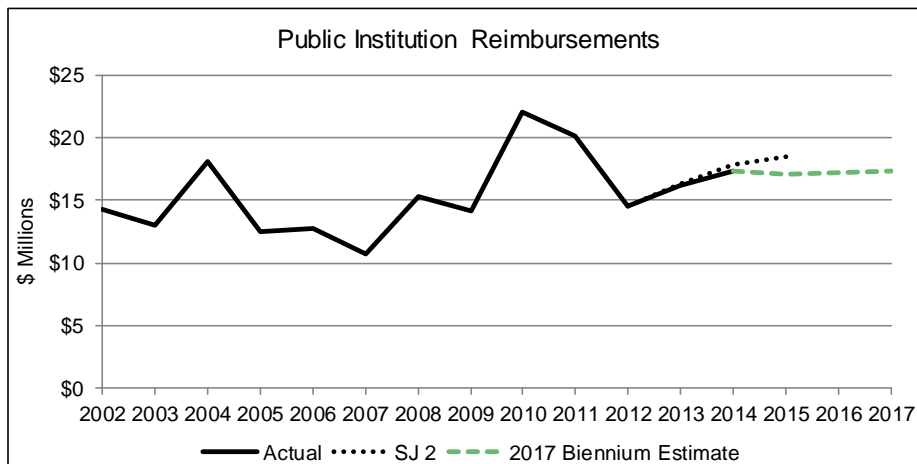
Nursing facility bed days increased in FY 2014 for the first time since 2007. The current model assumes that the prior trend of decreasing bed days will resume for the 2017 biennium resulting in slowly declining revenue.



Public Institution Reimbursements

In both FY 2013 and FY 2014 public institution reimbursements came in below the SJ 2 estimates. The difference was 0.7% or \$0.1 million in FY 2013 and 2.8% or \$0.5 million in FY 2014.

Bed days for various institutions are forecast using different variables, all of which are expected to increase over the coming biennium. At all facilities but the Montana Developmental Center (MDC), and the Montana State Hospital (MSH) bed days are expected to increase. However, the Federal Medical Assistance Percentage (FMAP) which determines Medicaid reimbursement is likely to decrease over the 2017 biennium, which leads to a somewhat flat forecast for this revenue source.

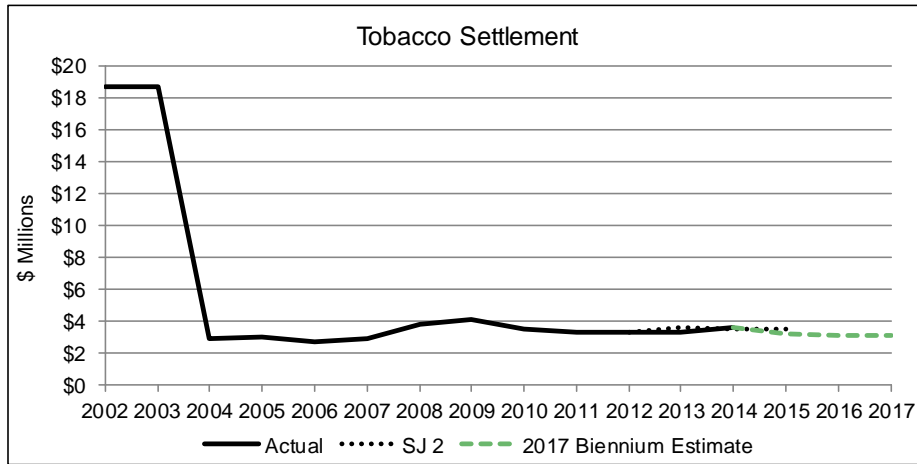


Tobacco Settlement

Tobacco settlement revenue was below the SJ 2 estimate in FY 2013 by 6.5% or \$0.2 million. In FY 2014, revenue was above the SJ 2 estimate by 3.6% or \$1.0 million.

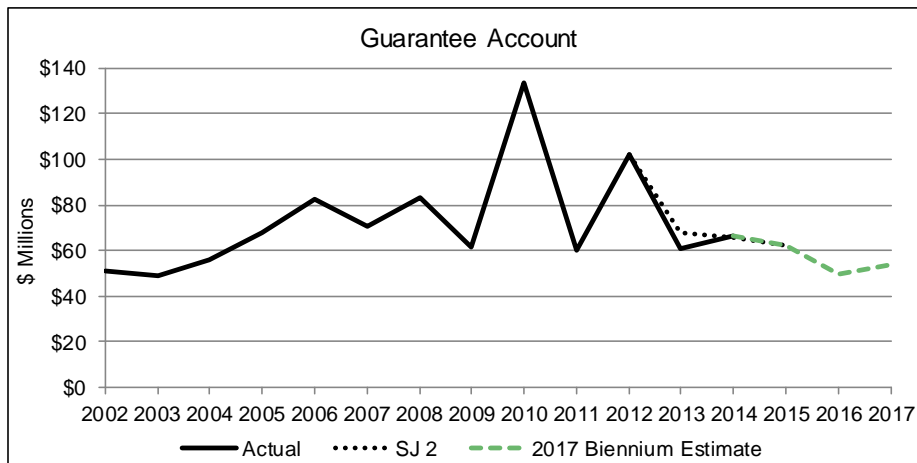
Fluctuation from the estimate in this source is largely due to this size of protested payments in a given year. FY 2014 saw the first protested payments come through litigation and realized revenue owed in FY 2003. The timing and amounts of the protests and payments is not able to be determined through forecasting mechanisms.

It is expected that as volume of cigarettes sold continues to decline nationally, the amount owed will continue to decrease; this continued reduction in revenue is anticipated to continue through the 2017 biennium.



2017 BIENNIUM GUARANTEE ACCOUNT REVENUE ESTIMATE

The guarantee account is a state special revenue account dedicated as the first source of school funding. Since the available funds from the guarantee account directly offset general fund spending, the revenue estimate is included for informational purposes. The guarantee account primarily receives revenue generated from common school state land and the subsequent interest on the common school trust account.



Guarantee account revenues are anticipated to be lower in the 2017 biennium as a result of fewer lease bonus payments and transfers into the account.

STANDARD ERROR ANALYSIS

LFD revenue analyst Sam Schaefer has extended his rigorous [standard error analysis](#)—undertaken to better understand the source of estimate volatility and to direct data and model changes that would minimize the estimating error—to all top seven general fund revenue sources, as well as TCA interest earnings.

Each of the revenue estimates below is calculated using a source-specific model. In any given year it is highly unlikely that the model will estimate the actual revenues perfectly. A model may overestimate actual revenues one year, while underestimating revenue the next. Since the direction and magnitude of errors may vary widely from one year to the next, it is difficult to assign a level of certainty to an error term in any specific future year. As a result, to study the overall accuracy of any one model it makes sense to study the model’s average error. Studying the average error gives insight into the long-term efficiency of any specific model, and allows for accurate model comparison.

For each revenue source below, a corresponding 95% confidence interval for an estimate of the average error is listed for the estimates one, two, and three years into the biennium. Note that the actual error in a given year will almost always be larger or smaller than the average error, and could fall outside the confidence interval for the average error.

Intervals of Average Error by Estimate Year with 95% Confidence Interval							
Revenue Source	Year 1		Year 2		Year 3		Analysis Notes
	Low	High	Low	High	Low	High	
Individual Income Tax	-10.0%	13.1%	-15.0%	14.6%	-18.2%	13.0%	Represents maximum bound Based on historical estimates
Property Tax	0.0%	1.4%	-1.6%	1.7%	-1.3%	3.8%	
Corporation Income Tax	-5.1%	23.4%	-5.3%	23.9%	-11.7%	27.8%	Based on a proxy model
Vehicle Taxes & Fees	-5.5%	-0.6%	-8.3%	-1.9%	-11.4%	-3.7%	
Oil & Natural Gas Taxes	-5.8%	15.9%	-11.6%	23.4%	-16.5%	28.1%	
Insurance Tax	-3.7%	8.0%	-5.4%	6.8%	-3.3%	10.4%	
Video Gambling Tax	-0.8%	6.5%	-0.9%	7.1%	-4.9%	5.6%	Lower bound of \$0
Treasury Cash Account Interest	0.3%	50.0%	-195.5%	29.8%	-550.8%	-15.8%	

Key Takeaways

The standard error analysis of the top seven general fund revenue sources, along with TCA, allows for the following:

- Comparison of model efficiency which allows for more focused research in the future
 - Comparison of model types
 - Currently applied to corporation income tax and oil taxes
 - Future application to individual income and others
 - Comparison of IHS forecast accuracy
- Insight into a particular model’s tendency to overestimate or underestimate revenue
- Understanding of long-term model accuracy

Note of Caution

The inquisitive reader may wish to construct an aggregate confidence interval for the sources listed above by simply applying the interval bounds to the corresponding estimate and summing them. This would result in a maximum average error interval. An interval this large, however, is highly unlikely as these revenue sources have an inherent relationship with one another. This relationship often causes estimate error from different sources to partially offset each other. As an example, lower oil prices result in less oil taxes; however, reduced oil prices may actually stimulate other parts of the economy—especially consumer spending—by increasing disposable income.

Future Work

Currently, data limitations prevent understanding revenue offsetting relationships fully enough to create the average error interval for an aggregate revenue estimate of the sources listed above. As more data becomes available in the coming years, the plan is to extend these confidence intervals to a revenue estimate for the entire general fund. Furthermore, more data may provide a means to begin understanding the error term associated with any one year's revenue estimate, as opposed to analyzing its average error.