



---

## TREND REVENUE

---

Having lived through the worst economic downturn since the Great Depression, policymakers are understandably concerned about understanding revenue volatility and the economic sustainability of the state budget. However, historical trend revenue estimation paints only part of the budget picture and should not be applied in a strictly mechanistic way. Too rigid an application of this budget tool could undermine the prudent budget management that the review of historical trends, along with other budget management tools, is designed to attain.

Looking only to formula-based historical trends to make key budget decisions risks overemphasizing the past and potentially takes the focus from Utah's desired vibrant economic future and the actions necessary today to create the economic future we want to obtain.

This statutorily-required report: (a) addresses historical economic and revenue trends in the state's major tax types; (b) recommends further exploration of a forward-looking budget stress-testing alternative; and (c) highlights the tools available to manage the state budget.

### **Historical Economic and Revenue Trends**

When analyzing trends, it is essential to understand what underlying data is being examined. An analysis only of combined Education Fund and General Fund revenue ignores the impact of policy decisions made by the legislature that impact the amount of tax

revenues and where such revenues are deposited. It is also important to recognize that the selection of any single trend estimate for budgeting purposes is ultimately a subjective decision. Using many methods for estimating trends provides a range of results (many of which also include subjective parameters that, when changed, alter the results).

**Economic and Policy Trends.** Although tax revenues are clearly impacted by the economic climate, economic factors are not the only driver of tax collections. Revenue volatility is also impacted by policy decisions made by the legislature. Thus, economic trends and policy trends are intermingled in tax revenue collections.

When conducting an analysis of tax revenue trends, it is important to distinguish between economic and policy trends. For example, in the mid-2000s, the legislature made intentional policy choices to reduce tax revenues by roughly \$400 million. Ultimately, the decision impacted state revenues in the midst of the Great Recession. When examining actual tax revenue trends, it is important to recognize that not all of the reduction in tax revenues during the recession was due to economic conditions—a portion of the reduced revenue was tied to intentional policy decisions by the legislature. In addition, actions over the past decade to earmark significant portions of tax revenue historically deposited to the General Fund, distorts the analysis of General

Fund revenues or combined Education Fund / General Fund revenues.

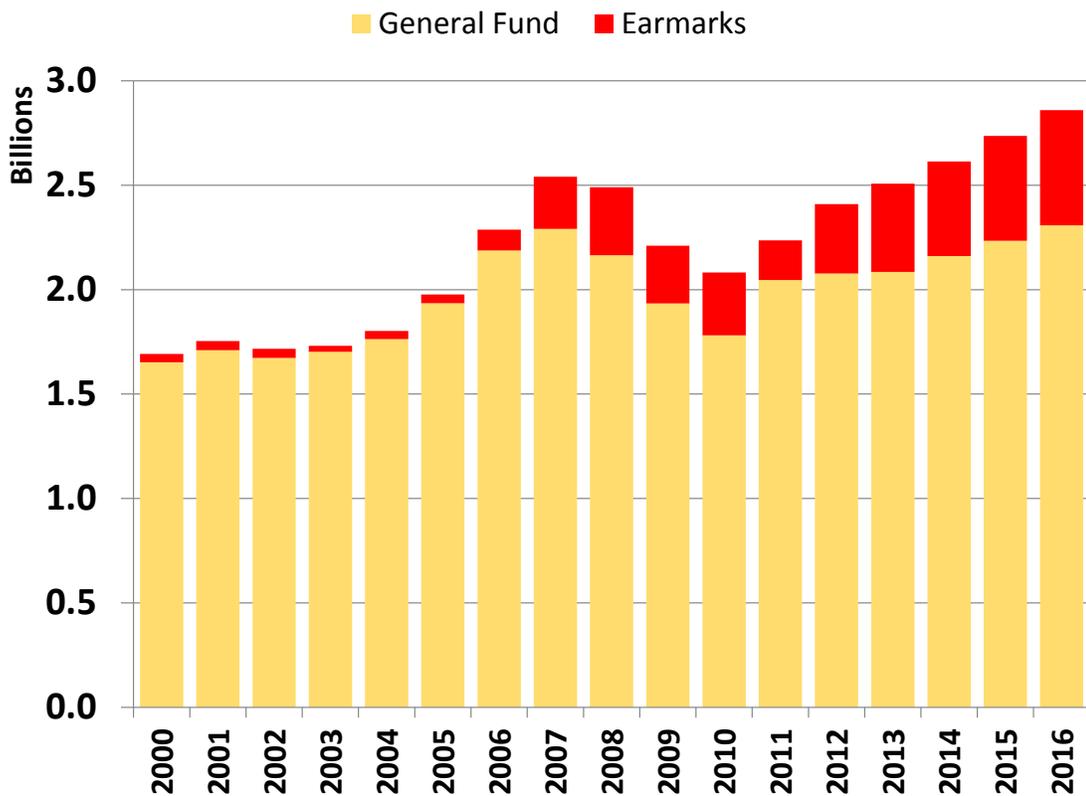
**Figures 1 – 4** illustrate different revenue trends. As the individual income tax and sales and use tax are the state’s two major tax revenue sources, this document analyzes trends for these two sources. In addition, the analysis examines combined state tax revenues for sources that were historically deposited into the General Fund, including both the General Fund portion of sales tax and the earmarked portion, together with Education Fund revenues.

**Figures 1 – 4** also present initial estimates using different approaches that adjust for major policy

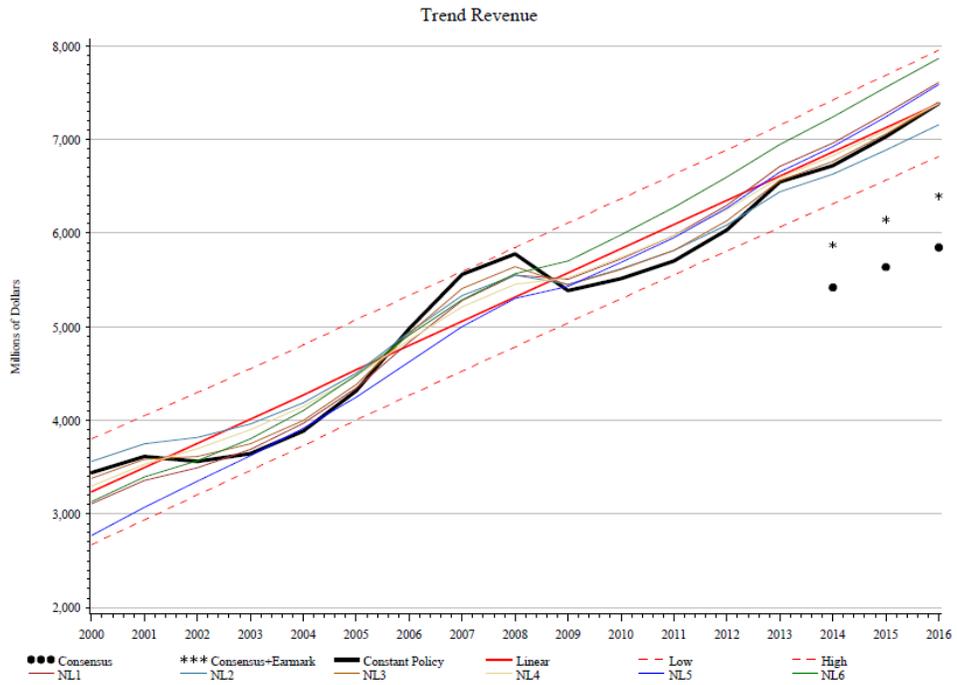
decisions. While acknowledging that these estimates merit further refinement, they do illustrate an important distinction between the sustainability of economic trends, tax policy trends, and state budget maneuvering.

If economic sustainability of the budget is the issue, underlying economic trends should be considered rather than the portion of tax revenues deposited into the General Fund and Education Fund which intermix economic trends with hundreds of millions of dollars (in the neighborhood of a billion dollars) of tax and budget policy changes.

**Figure 1 – Sales Tax Earmark Trends**



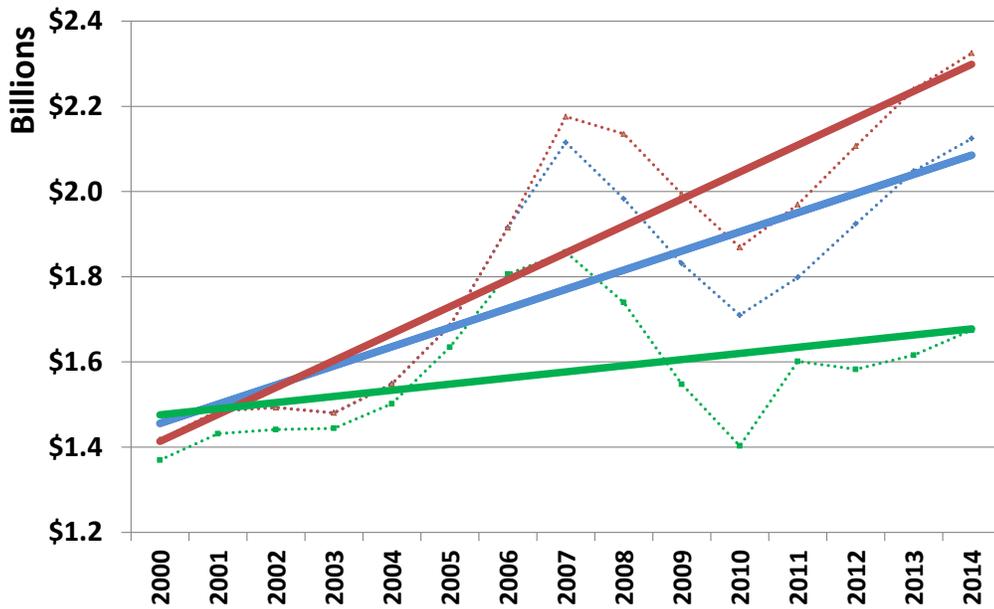
**Figure 2 – Constant Policy Trend Estimates**



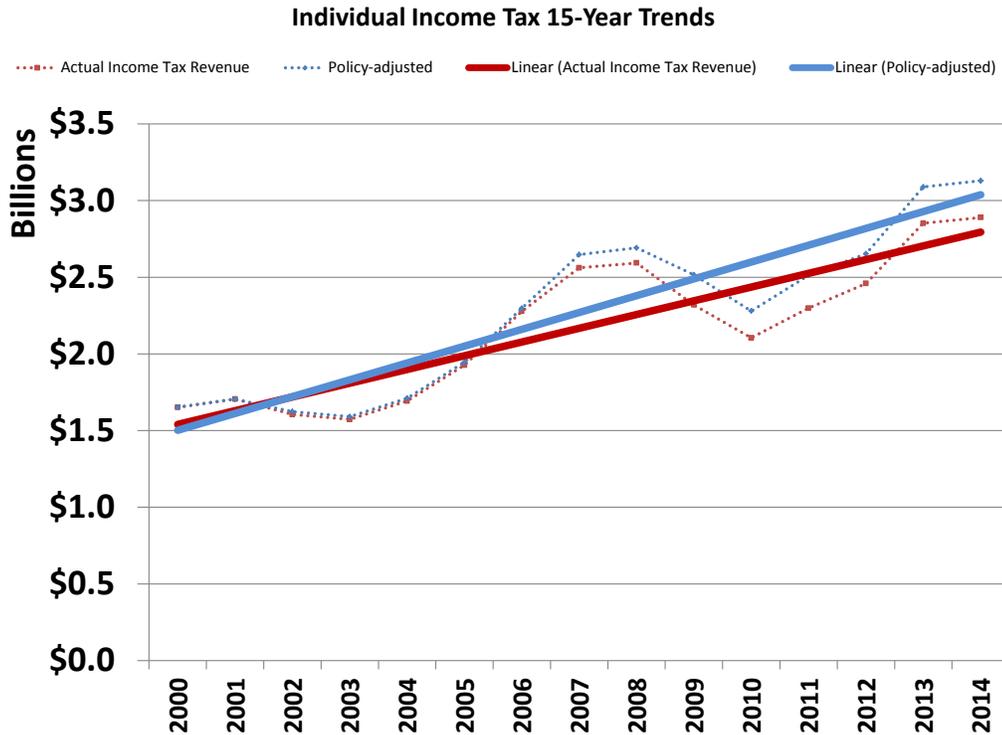
**Figure 3 – Major Tax Type - Sales Tax Trends**

**Sales and Use Tax 15-Year Trends**

●●● Actual Sales Tax Revenue  
 — Linear (Actual Sales Tax Revenue)  
 ●●● Policy-adjusted [Food, Rate, Other]  
 — Linear (Policy-adjusted [Food, Rate, Other])  
 ●●● General Fund Portion of Sales Tax  
 — Linear (General Fund Portion of Sales Tax)



**Figure 4 – Major Tax Type – Individual Income Tax Trends**



Although they use different methodologies, these graphs illustrate the point that the slope of the trend for actual tax collections is lower than the slope of the economic trend (due to tax cuts over the past 15 years) and that the slope of combined Education Fund / General Fund revenues is lower than the slope of the actual tax collection trend (due to a major shift in earmarking policy over the past decade).

Over time, actual tax collections will have a tendency to return to the economic trend which has a higher slope. This is not because tax collections are growing at an unsustainable pace. Rather, it is because tax collections are returning to the actual underlying economic trend.

Although statistical analysis of historical tax revenue trends may help explain past tax revenue trends, caution should be exercised in the mechanistic application of this budget tool. For

example, if the state's positive economic climate were to lead to significant in-migration that exceeded the in-migration trend over the past 15 years, the demand for government services such as education and transportation would increase immediately and tax revenues would also likely increase due to increased income and sales in the state. However, the increased income and sales associated with more people in the state would not fully materialize in the revenue trend for 15 years as the analysis would be looking backward to a time where economic conditions were different. Using another example, if the United States were to experience inflation higher than inflation during the 15-year trend period, increases in tax revenue driven only by higher inflation would be considered "above trend," even though the revenue purchasing power may be the same or may have declined. As the economy continues to change, it becomes clearer that strict adherence to the past trends may not

be the best way to determine future budget policy.

#### **Limitations of Different Trend Models.**

Unfortunately, there is no perfect way of determining trends when examining tax revenues. Different trend-estimating models (linear, logarithmic, moving average, Hodrick-Prescott filter, frequency domain filter, etc.) will generate varying results. Each estimating method has its own advantages and disadvantages. Using the same estimating methodology over different time periods will even generate different trend results, as will adjusting the parameters of different models. For example, depending on which particular points in the economic cycle are identified in the time period selected, the trend slope used in one year may differ from the trend slope used in the following year. Moreover, some estimating models may be better suited for data available in one year than another, so trend analysis could result in different models being used each year.

Based on the reasons outlined, the selection of one particular trend estimating methodology and associated parameters will be a subjective, not an objective, decision that carries with it important budget policy implications. By providing important insights into general trends overtime, analyzing long-term trends in tax revenues can be a useful tool for policymakers. However, the subjective limitations inherent in this budgeting tool should be acknowledged and should not be applied in a mechanistic way.

#### **Budget Stress Testing**

The Governor's Office of Management and Budget (GOMB) has preliminarily explored various forward-looking, stress-testing scenarios that examine how the budget may respond over the next several years. GOMB believes these tools merit additional consideration.

The budget stress test approach incorporates forecasts of future downturns in the economic cycle. No recession since the end of World War II has lasted more than two years, with an average of 11 months. During economic expansion, revenue changes skews positive. During recessions, revenue changes skews negative. Considering the time period since 1971 as a whole, declines in nominal tax revenue collections have occurred in only four years (2002 and 2008-10). The observed declines in tax revenues in both instances occurred after a run of years with exceedingly strong revenue growth. In both instances, these changes also corresponded with policy changes in the form of tax reductions—although the 2002 income tax reduction was much smaller than the mid-2000s income tax and sales tax reductions. In both instances, revenue declines would still have occurred even in the absence of tax reductions.

With budget stress-testing, a comparison can be made between possible future revenue declines, current ongoing revenue estimates, and the level of formal and informal available reserves. These scenarios conceptually explain the topic—the types of scenarios examined could be expanded and refined with further thinking into the likelihood and risk associated with each scenario.

In a scenario that incorporates revenue declines but only modest growth during the expansion run-up to recession (as opposed to strong growth in observed revenue declines), combined General Fund and Education Fund revenue peaks at \$6.10 billion in FY 2017 before declining to \$5.98 billion in FY 2018 and 2019, when revenues again begin to increase. Since the trough here is well above the 2016 consensus estimate of \$5.85 billion, all of the estimates in FY 2016 should be considered ongoing, not just the trend portion. Existing formal and informal reserves (detailed later in the document), provide ample coverage for the

scenario revenue decline in future years. Using this scenario, FY 2016 ongoing revenue could be held to \$5.98 billion, the trough of the scenario future recession. In a scenario with stronger revenue growth and a greater decline in revenue, revenue peaks at \$6.65 billion in 2018 before declining to \$6.40 billion in 2019, when revenues again begin to increase. Since the trough is well above the FY2016 consensus estimate of \$5.85 billion, all of the FY2016 estimate should be considered ongoing, not just the trend portion. In this case, FY2016 ongoing revenue could be held to \$6.40 billion, the trough of the scenario future recession.

In recession scenarios where there is an occurrence of inflation higher than in recent history, the budget would likely increase in nominal terms. Since the state budgets in nominal terms rather than inflation-adjusted terms, budget “cuts” would come in the form of decreased purchasing power, not actual nominal budget cuts. This is the economic climate the state experienced during the 1970s.

These scenarios are presented as basic examples of a possible approach for considering the impacts of a future recession on the state budget. Such an analysis would ideally incorporate consideration of the timing, likelihood, and magnitude of different downturn scenarios. One important question to be considered is whether all future recessions are likely to be of a similar magnitude to the financial collapse of the Great Recession or if a recession of this magnitude is a relatively rare event. As it is not prudent to build up reserves against any conceivable scenario, another important question to consider is at what level the state should protect currently budgeted amounts against future risk and to what extent the state is willing to adjust future budgets.

Further development of budget stress-testing models merits additional consideration. However, as with long-term trend revenue estimates, such tools should not be applied mechanically. Use of such tools should be one within the appropriate context to prudently to manage the budget.

### **Tools for Managing the State Budget**

Economic downturns can create significant state budgeting challenges. The following points briefly describe several tools used to manage the state budget:

- **Revenue System Structure.** Policymakers control both what is taxed and actual tax rates. To the extent the state’s revenue portfolio is deemed too volatile for budgeting purposes, one available option is to change tax policy, including the relative weighting of each tax in the state’s revenue portfolio and the breadth of each tax. In addition to taxes, policymakers also control fees.
- **Revenue Estimating Process.** Revenue estimates consider many different current economic factors that may influence the state’s tax revenue collections. Four separate revenue estimates are made for each fiscal year. A consensus estimating process tends to result in a more conservative revenue forecast.
- **Revenue Monitoring.** Revenues are closely monitored on a regular basis, including informal revenue monitoring by executive branch and legislative budget staff, monthly reports from the Tax Commission, and updated range forecasts between official revenue estimates. This allows necessary actions to be taken on a timely basis if actual revenues are not meeting projections.
- **One-time Solutions.** Unallocated year-end surpluses, rainy day funds, restricted fund balances, and nonlapsing balances are all potential sources of one-time funding during

dire fiscal circumstances. In addition, one-time options such as a change in the timing of expenditures (deferral) and revenues (acceleration) can provide one-time budget solutions.

- **Capital Budgeting.** Budgeting for capital items such as roads and buildings are another budget management mechanism. The state often funds many capital items with cash. During an economic downturn, capital expenses may be postponed or the state may borrow to fund necessary capital expenses.
- **Budget Stress-Testing.** As previously outlined, a useful tool that should be further explored is budget stress-testing that examines how different aspects of the budget would respond under different scenarios moving forward.
- **Budget Reprioritization.** Although clearly a difficult process, economic downturns force reprioritization of state funding so that resources are targeted to the programs of highest priority. If economic changes create a new long-term economic reality, the state should likely adjust its ongoing budget to the new ongoing economic reality.

During the Great Recession—the worst economic downturn in the 80 years since the Great Depression—about fifty percent of the total of the two formal budget reserve accounts was utilized. Other budget management tools were instrumental in weathering the storm.

### **Comparison to Household Budget**

Using a comparison of the household budget of a young couple (Tom and Jane) is an effective metaphor to illustrate the issues at hand. Tom and Jane both work to generate income for their household and deposit most of their income into a checking account (Checking Account 1) to cover day-to-day expenses (food, housing, utilities, gas, and transportation). When times were good, Jane

voluntarily reduced her income by working fewer hours. As their income grew, Tom and Jane decided to open a second checking account (Checking Account 2) and deposited a sizable portion of the new income into the additional account and shifted payment of some of their expenses (transportation and water) to the second account.

The couple also holds a savings account that they drew down by about half when Tom took a pay cut several years back during the recession. As conditions have improved and both their salaries have increased, Tom and Jane have been adding money to the account to replenish their savings. The savings account balance is now above the amount on hand before Tom took a cut in pay. The couple has agreed that a sizable portion of any year-end bonus will automatically be deposited into the savings account.

As the economy stabilized, Tom and Jane each received a pay increase and there is now a choice to be made. They can invest in going back to college, which will ultimately result in better jobs with increased future incomes years down the road. This decision would mean an ongoing, immediate increase in education spending. Other alternatives are to deposit the additional income into their savings account or make a sizable one-time purchase of a car.

As Tom and Jane begin to analyze expenses related to Checking Account 1 over the past few years, they are concerned about the relatively flat income trends reflected in the account and wonder if they should spend ongoing money on college.

What factors should Tom and Jane consider in making their decision? It is clear that rather than just focusing on what has happened over the past few years with Checking Account 1, they should

comprehensively examine all factors impacting their household budget as they make decisions about the future, including Checking Accounts 1 and 2 and their accumulated savings account level, current income and expenses, and long-term potential future incomes.

### **Summary**

In summary, understanding the state's long-term revenue trends should include a review of the many tools available to manage the state budget. Trend analysis should be viewed as one piece of information among the many available to be taken into consideration as part of the annual decision-making process. Rigidly following historic revenue trends represents a major policy decision with profound budgetary implications that should be thoroughly understood.

In addition, policymakers should be concerned with the increasing use of formula-driven budgeting. Formula-driven earmarks are one step

down the path and formulaic revenue trend budgeting appears to be another step down the formula-driven path. Experience shows that states like California and Colorado that have followed the formula-driven budgeting path have found it difficult to prudently manage their state's budget. Well-intended practices have resulted in major unintended, negative consequences.

Utah has a long history and is nationally recognized for prudent fiscal management. Both the executive branch and legislature are strongly committed to maintaining a prudent fiscal management process. Caution should be exercised when altering the state's successful budgeting approach. The budgeting process should be flexible enough to assure that the state is responsive to the real long-term needs of a growing population, while still being able to appropriately manage the ups and downs of the economic cycle.

**2016 Trend Revenue Constant Policy since 2000  
90 % Confidence Interval**

Revenue Source	Budget	Trend Level			Trend less Budget		
		High	Mid	Low	High	Mid	Low
Total Sales and Use Tax	2,342	3,085	2,909	2,733	743	567	391
Cable/Satellite Excise Tax	26	35	29	23	9	3	-3
Liquor Profits	97	101	92	83	5	-4	-13
Insurance Premiums	96	104	97	91	8	1	-6
Beer, Cigarette, and Tobacco	105	60	51	43	-45	-54	-62
Oil and Gas Severance Tax	97	92	81	70	-5	-16	-27
Metal Severance Tax	19	32	21	9	13	2	-10
Investment Income	6	55	10	-34	49	5	-40
General Fund Other	79	103	87	70	24	8	-9
Property and Energy Credit	-6	-6	-7	-7	0	0	-1
Individual Income Tax	3,110	3,594	3,295	2,997	484	185	-113
Corporate Tax & Gross Receipts	370	712	609	506	342	239	136
Mineral Production Withholding	36	49	43	38	14	8	2
Education Fund Other	23	38	28	18	15	5	-5
<b>EF/GF/Earmark Total</b>	<b>6,398</b>	<b>8,054</b>	<b>7,346</b>	<b>6,639</b>	<b>1,656</b>	<b>948</b>	<b>241</b>

**2016 Trend Revenue Recession Dummies  
90 % Confidence Interval**

Revenue Source	Budget	Trend Level			Trend less Budget		
		High	Mid	Low	High	Mid	Low
Unrestricted Sales and Use Tax	1,790	2,029	1,779	1,529	239	-11	-261
Cable/Satellite Excise Tax	26	35	28	21	9	2	-5
Liquor Profits	97	102	95	88	6	-1	-9
Insurance Premiums	96	105	99	93	9	2	-4
Beer, Cigarette, and Tobacco	105	122	113	103	17	8	-2
Oil and Gas Severance Tax	97	121	95	69	24	-2	-28
Metal Severance Tax	19	32	21	10	14	3	-9
Investment Income	6	66	16	-34	60	10	-40
General Fund Other	79	91	81	71	12	2	-8
Property and Energy Credit	-6	-6	-7	-7	1	0	-1
Individual Income Tax	3,110	3,505	3,143	2,781	395	33	-329
Corporate Tax & Gross Receipts	370	547	393	240	177	23	-130
Mineral Production Withholding	36	44	36	27	9	0	-8
Education Fund Other	23	36	26	16	13	3	-7
<b>EF/GF Total</b>	<b>5,847</b>	<b>6,831</b>	<b>5,918</b>	<b>5,007</b>	<b>984</b>	<b>72</b>	<b>-840</b>