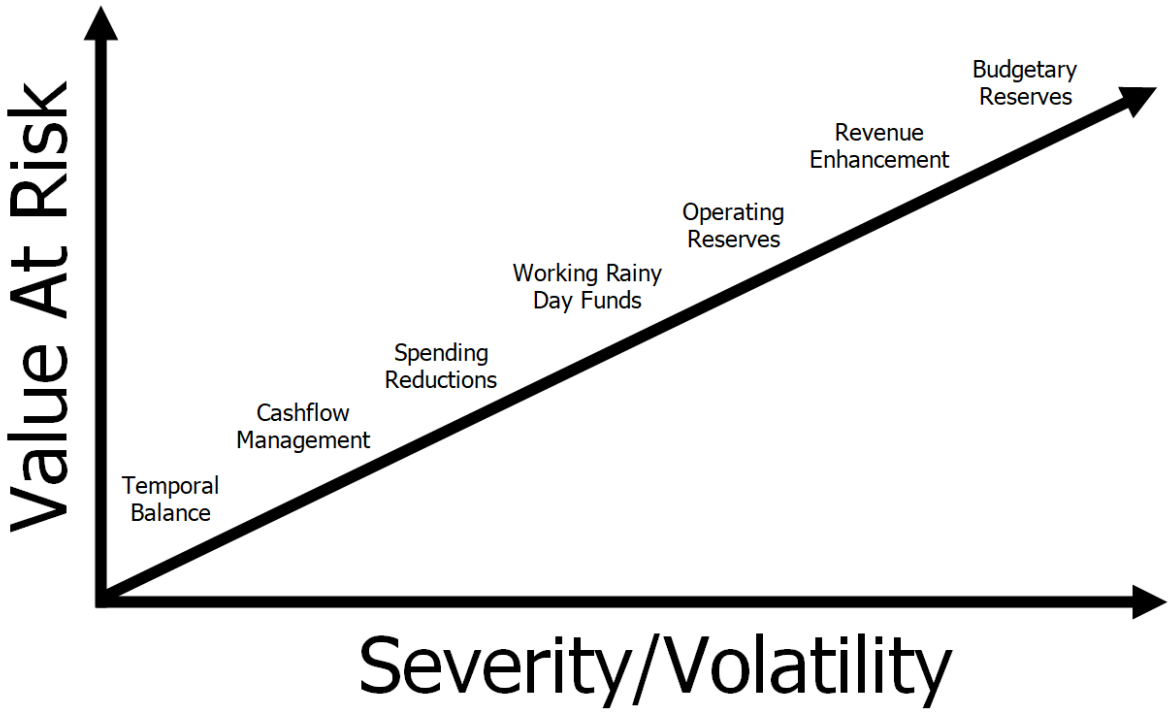
Executive Summary

Building on last year's Long-Term Budget, which seeks to evaluate the overall balance of the state budget under a single, most-likely set of economic conditions over the next five years, this year's follow-on stress testing analysis asks, "What if things turn out worse?" in an effort to evaluate just how well prepared is the state budget to weather such economic storms.

As state appropriators know well, a crucial consideration of the perennial balancing act of the budget process is the sustainability of it – a budget can be balanced today, but will it remain so tomorrow? Next year? In a decade? History may not repeat itself, but it does often rhyme. While the baseline expectation may be for a continuation of stability, recessions do happen, thus the prudent seek to anticipate the adverse and prepare a course of action in the event it may be faced.

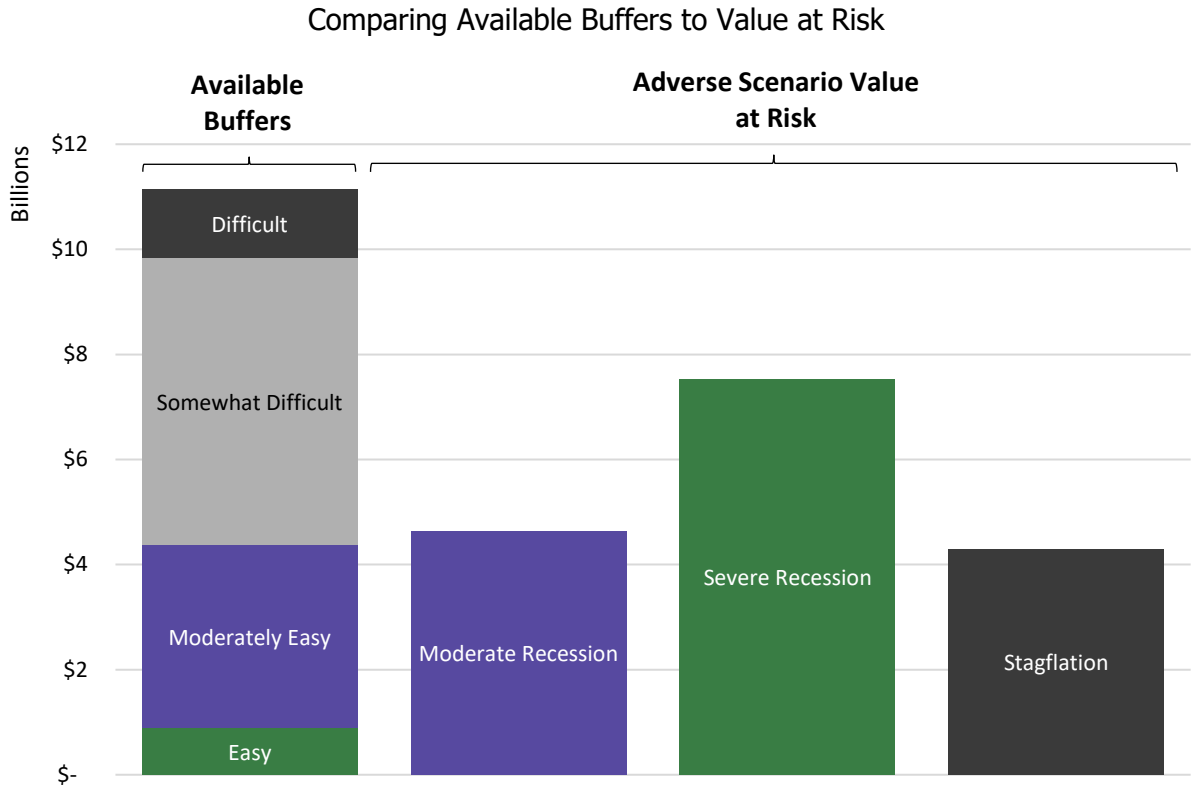
Utah's Fiscal Toolkit



To this end, the ever-forward-looking Utah Legislature has directed the Office of the Legislative Fiscal Analyst to conduct a rigorous sequence of comprehensive fiscal sustainability evaluations on a recurring three-year schedule. This being the third year of the triennial process, the topic of this report is the Budget Stress Test. This report comprises a thorough analysis of key sources of revenue and categories of expenditure under a set of adverse economic conditions to determine the total budget Value at Risk over a five-year period along with a critical evaluation of the extent to which an inventory of the state's available budget buffers may be adequate to address such risk.

Key Findings

As discussed in detail through the pages of this report, this year's analysis finds that the total Five-Year Value at Risk under the Severe Recession scenario conditions, the most adverse case under consideration in this report, may amount to approximately $7.5 billion, due to the combination of revenue decreases and expenditure increases.



Given the higher volatility of its sources, a majority of the estimated *revenue* impacts are anticipated to materialize as losses to the state's Income Tax Fund. Due to the strongly countercyclical nature of enrollment, a majority of the estimated *expenditure* impacts are anticipated to affect the budget by way of increased total costs supporting Medicaid.

The key point of comparison in this analysis is how this amount relates to the state's available buffers which may be used to cover it. This year's report inventoried total available budget buffers up to a level of approximately $11.1 billion over the same five-year window of analysis.

While the amount of buffers has increased overall, the proportion of this total inventory which is from Easy to Access sources has become smaller compared to that found in the previous iteration of this report. This has come about as the amount of cash appropriations into infrastructure, known as working rainy day funds in Fiscal Toolkit parlance, has become smaller.

As a result, while this analysis finds that the Five-Year Available Buffers are more than sufficient to address the estimated Value at Risk over the five-year period, should such adverse conditions emerge during the next five years, more Moderately Easy and Somewhat Difficult to Access funds may need to be utilized than was anticipated in prior analyses.

I. Introduction

Fiscal Sustainability Projects Overview

"The best-laid plans of mice and men go oft awry..." - Robert Burns.

Is it not, nonetheless, better to be the mouse prepared for winter?

To this, the Utah Legislature has responded firmly in the affirmative. It was in this spirit of prudent preparedness that the 62nd Legislature passed House Bill 452 during the 2018 General Session, directing the Office of the Legislative Fiscal Analyst to prepare a set of long-term fiscal sustainability analyses on an ongoing basis.

Additional specifications have been included over the years since, and the current state of the relevant statute directs the office as follows:

UCA 36-12-13(2)

- (e) beginning in 2017 and repeating every three years after 2017, to prepare the following cycle of analyses of long-term fiscal sustainability:
    - (i) in year one, the joint revenue volatility report required under Section 63J-1-205;
    - (ii) in year two, a long-term budget for programs appropriated from major funds and tax types; and
    - (iii) in year three, a budget stress test that, in consultation with the Governor's Office of Planning and Budget:
        - (A) compares estimated future revenue to and expenditure from major funds and tax types under various potential economic conditions;
        - (B) analyzes the economic and policy risks associated with funding for the Medicaid program and expansions of the Medicaid program;
        - (C) measures value at risk; and
        - (D) recommends budgetary actions to manage risk;

Budget Stress Testing Overview

"In a game of chance, you may lose a round, but you only lose the game if you can't afford to keep playing." – Anonymous Economist.

The ones that win in the long run are not those that never lost, they are the ones that anticipated losses and planned to manage through them.

The world of state government and budgets is no game and winning has a very different meaning in this context than in others, but the essence of this idea translates much the same. The ups and downs of the economic tides are inevitable, but the fate of the state's ability to maintain funding for vital government services and obligations through these swings need not necessarily be decided by them: with thoughtful planning and prudent preparation, those who anticipate such adverse events are better positioned to deal with them.

And so, looking into the proverbial crystal ball to imagine what such less-desirable outcomes could mean for the state budget, we now consider the Budget Stress Test. Following the Long-Term Budget report prepared last year, in this third year the office has developed a five-year Value at Risk (VaR) profile for the largest parts of the state budget under a set of four different economic scenarios.

This analysis seeks to assess the extent to which both state revenue and countercyclical state expenditures may decrease or increase in response to the economic conditions under each scenario, with an emphasis on how each scenario differs from a baseline expectation analogous to that presented in the Long-Term Budget. Following these scenario projections, the total revenue change and expenditure change is aggregated and compared to the available budget reserves and buffers to evaluate the adequacy of those reserves to deal with such adverse events.

In the spirit of continual improvement, this year's report features a methodology which aligns this Stress Test with the Long-Term Budget presented last year: rather than assuming a flat baseline in the final three years of the analysis, this iteration includes a forecasted baseline for all five years. As with the Long-Term Budget, we assume the adopted consensus forecasts for the first two years of the test before continuing the projections through the end of the period utilizing a set of "baseline scenario" indicators consistent with the methodology for each of the "adverse scenario" forecasts. These final three years' forecasts are neither consensus forecasts nor should they be assumed to reflect what future consensus forecasts or actuals may be; they are intended only to be a more realistic baseline for the purposes of this Stress Test.

Given the high level of uncertainty inherent in any long-range forecast along with the generally low level of detail that can be reasonably covered in a brief report on such a complex topic, the commentary provided here is only the broad strokes and the projections represent only one plausible outcome under the generalized assumptions given by each scenario. The key focus here is on the magnitude of the anticipated change rather than the exact particular levels of revenue and expenditure. Such projections will inevitably prove inaccurate to some extent in time, but the intent of this exercise nonetheless is to provide policymakers with greater context to inform decisions and better prepare for the future.

II. Analysis

This stress test consists of three primary parts: first, an analysis of the sources of General Fund and Income Tax Fund revenue under a set of economic conditions of varying adversity; second, an analysis of selected categories of expenditure which represent either major budget drivers or costs which respond countercyclical to the economy under the same set of economic conditions of varying adversity; and third, an inventory of the state's available budget buffers and an evaluation of their adequacy to address the budget stress posed under each of the considered economic scenarios.

As they are crucial to all the analysis which follows, we begin with a discussion of the selected economic scenarios included in this report.

Scenarios

For the purposes of this stress testing exercise, our analysis utilized a set of four different economic scenarios purchased from Moody's Analytics which reflect a baseline expectation, a moderate recession expectation, a severe recession expectation, and a stagflation expectation. Using a consistent set of key indicator variables within each of these scenarios, we then modeled key sources and uses of revenue and derived forecasts for each to assess the extent to which each may vary under different conditions. A brief summary of some of the high level assumptions included in each scenario follows.

Charts depicting the key indicators discussed below, for each scenario, can be found in the appendix section at the end of this report.

Baseline: The Equal Probability Outcome

There is assumed to be a 50% chance the economy performs better and a 50% chance it performs worse; this is the mean expectation for the economy over the next five years. This scenario largely reflects a continuation of moderate growth, with Real State GDP growth somewhat below trend through FY 2027 to a level of just 2.4%, but importantly no recession is anticipated to occur during the 5-year window of analysis. Other key state-specific indicators and their associated assumptions include: a slight increase in the unemployment rate to 3.41% through FY 2027 then a gradual decrease; consistent growth in personal income near current levels up to 5.4% by the end of the period; somewhat below trend growth in retail sales increasing back up towards trend to about 4.6% in FY 2030; core CPI remains above trend through FY 2027 before falling to just below 2% by the end of the period.

Moderate Recession: The Moderately Adverse Outcome

There is assumed to be a 90% chance the economy performs better and a 10% chance it performs worse; generally speaking, this case would reflect an approximately 1.6 standard deviations shift below the baseline during the next five years. This scenario indicates a national recession beginning in the second half of FY 2026 and lasting for three quarters; Real State GDP growth falls from current levels to just below 0% through FY 2027 and not recovering until the following year. Other key state-specific indicators and their associated assumptions include: an increase in the unemployment rate to 6.21% through FY 2027 then a gradual decrease to near baseline afterward; decelerating growth in personal income down to just below 1.0%

through FY 2027 before beginning to recover; negative growth in retail sales down to over -0.5% YoY in FY 2027 before increasing back up towards trend for the remainder; core CPI decelerates to just 0.5% through FY 2028 before returning to approximately 2% by the end of the period.

Severe Recession: The Severely Adverse Outcome

There is assumed to be a 96% chance the economy performs better and a 4% chance it performs worse; generally speaking, this case would reflect an approximately 2 standard deviations shift below the mean expectation during the next five years. This scenario indicates a deeper national recession beginning in the second half of FY 2026 and lasting longer, for five full quarters; Real State GDP growth falls from current levels to -2% through FY 2027 and not retaking the baseline growth until FY 2029. Other key state-specific indicators and their associated assumptions include: an increase in the unemployment rate to 6.94% through FY 2027 with a second elevated year at 6.8% in FY 2028 before a more gradual decrease towards the baseline afterward; decelerating growth in personal income down to 0% through FY 2027 before beginning to recover; negative growth in retail sales for two years down to over -3.2% YoY in FY 2027 before increasing back up towards trend for the remainder; core CPI decelerates and ultimately deflates slightly to -0.4% through FY 2028 and remains below 2% through the end of the period.

Stagflation: A Uniquely Problematic Outcome

The essence of this scenario assumes a combination of accelerating inflation and a near-severe recession; generally speaking, this case would reflect a period only somewhat below the baseline initially but with significantly higher inflation which is then followed by a period similar to the moderate recession during the next five years. This scenario indicates a national recession beginning near the end of FY 2027 and persisting approximately four quarters; Real State GDP growth falls from current levels to -1.3% through FY 2028 and not retaking the baseline growth until FY 2029. Other key state-specific indicators and their associated assumptions include: an increase in the unemployment rate to 6.27% through FY 2028 before a decrease towards the baseline afterward; decelerating growth in personal income down to 1.2% through FY 2028 before beginning to recover; a period of elevated growth in retail sales through FY 2027 due to inflation followed by a decrease to nearly -1% as the recession takes over before increasing back up towards trend for final two years; core CPI sharply accelerates to 5.3% through FY 2027 then subsequently tracks slightly below baseline from FY 2029 on.

Methodology

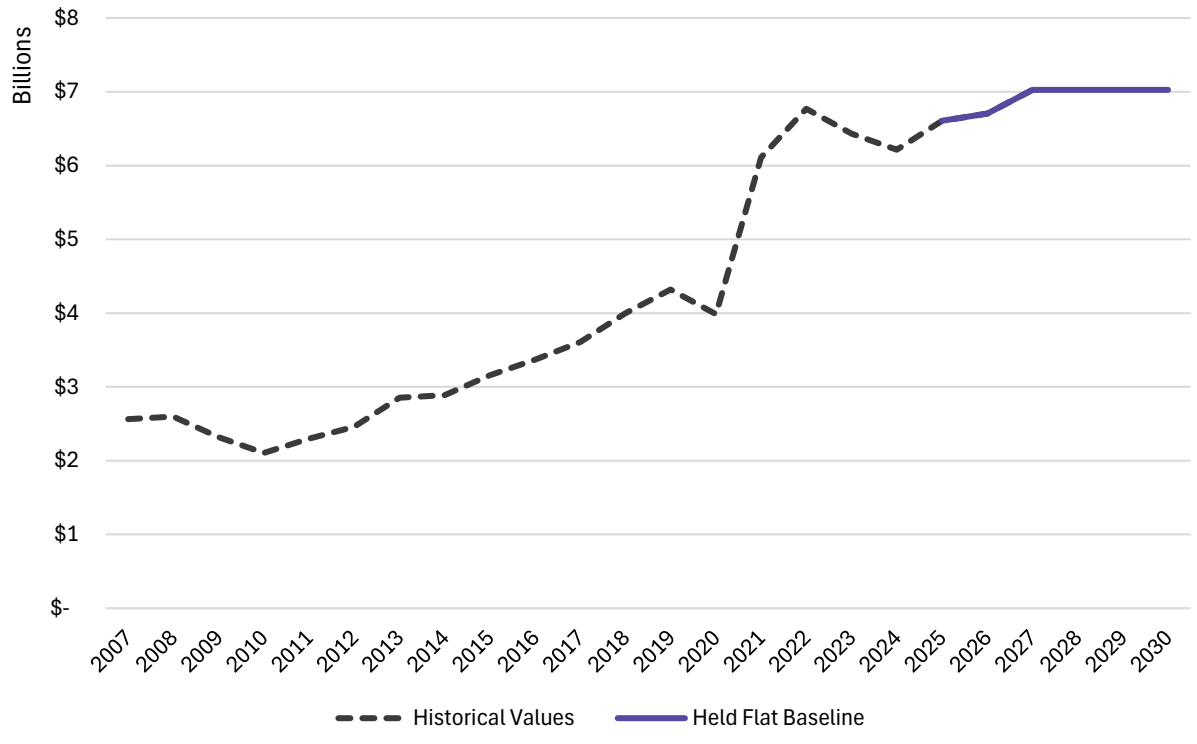
With the economic parameters now defined for each of these included scenarios, the task of evaluating the extent to which those disparate variables impact the state budget, both for revenues and for expenditures, comes next. A discussion of the modeling protocols employed for each side of the budget equation follows.

New This Year

Our commitment with these perennial fiscal sustainability projects is not just to update the numbers from prior iterations, but to strive for continual improvement and to take a critical look at what has been done before and ask how we can make things more objective, accurate, and relevant to better enable our stakeholders to benefit from them.

To that end, one of the key methodological assumptions of prior versions of the stress test has been to construct the baseline scenario as the adopted consensus estimates for the first two years of the 5-year window and then hold that last level flat through the remaining three years. This is illustrated in Figure 1. This was done for various reasons, perhaps the perceived simplicity and the apparent lack of assumptions it seems to imply. However, there are two significant and impactful issues which arise with this methodology that this year's analysis seeks to address.

Figure 1
Example State Revenue: Historical Values and Flat Baseline



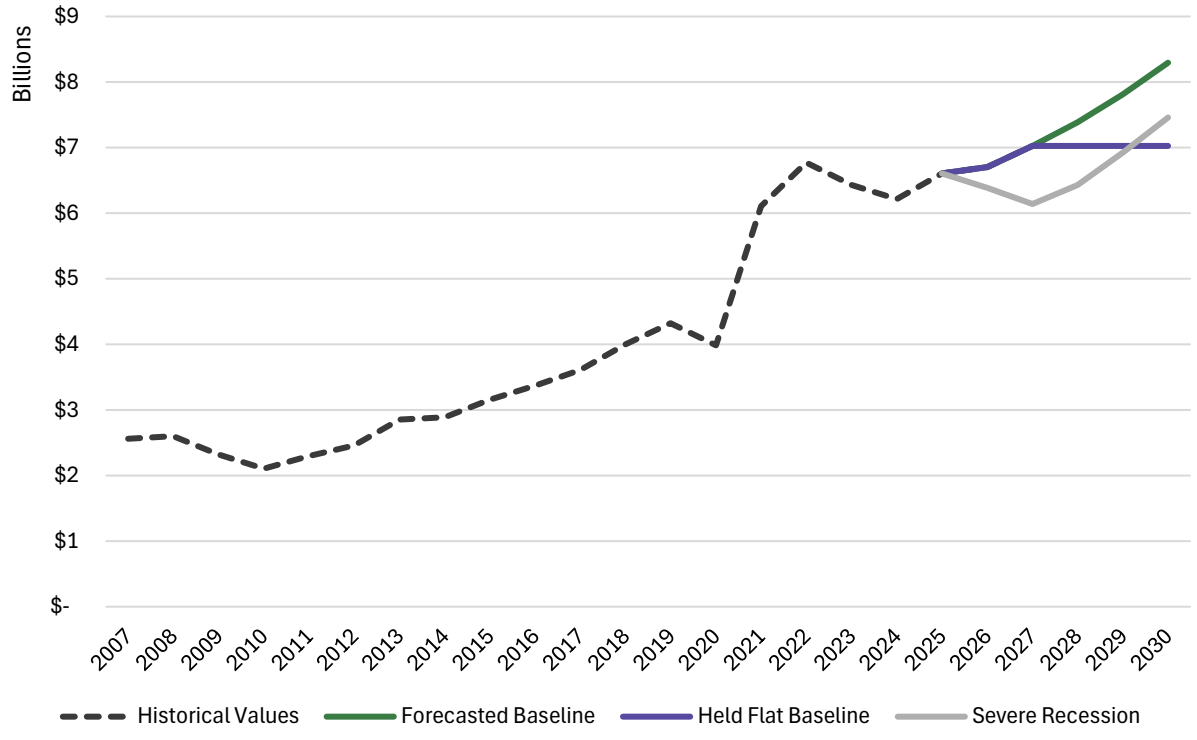
The first is that it is effectively a policy assumption, and a very drastic one at that – the only way that tax collections could behave like this, staying flat year after year in spite of the

economy not doing the same, is if some policy was imposed such that tax collections were somehow shut off at some point each year to hold them level. Aside from the obvious challenges of an actual implementation of such a policy in the real world, our intent with these analyses is to not assume any policy changes at all, let alone one that would be so material.

The second issue is that this policy assumption is only enforced in the baseline scenario - the adverse impact scenarios have all been forecasted exclusively from the scenario indicators and allowed to float as they will for all years of the forecast. What this amounts to is a sort of apples to apple pie comparison, one being natural and the other being processed, and this mismatch introduces a significant bias into the net impacts and ultimately the Value at Risk calculated for each scenario.

To illustrate what this looks like, we will focus on the revenue side for an example, but the issues are all analogous on the expenditures side as well. Instead of imposing this flat baseline policy, we can instead forecast those remaining three years using the same methodology and indicators as we do for the adverse scenarios just with the set of baseline indicator values rather than adverse values, projecting a more consistent and realistic estimate for each year. This can be seen as the green line in Figure 2.

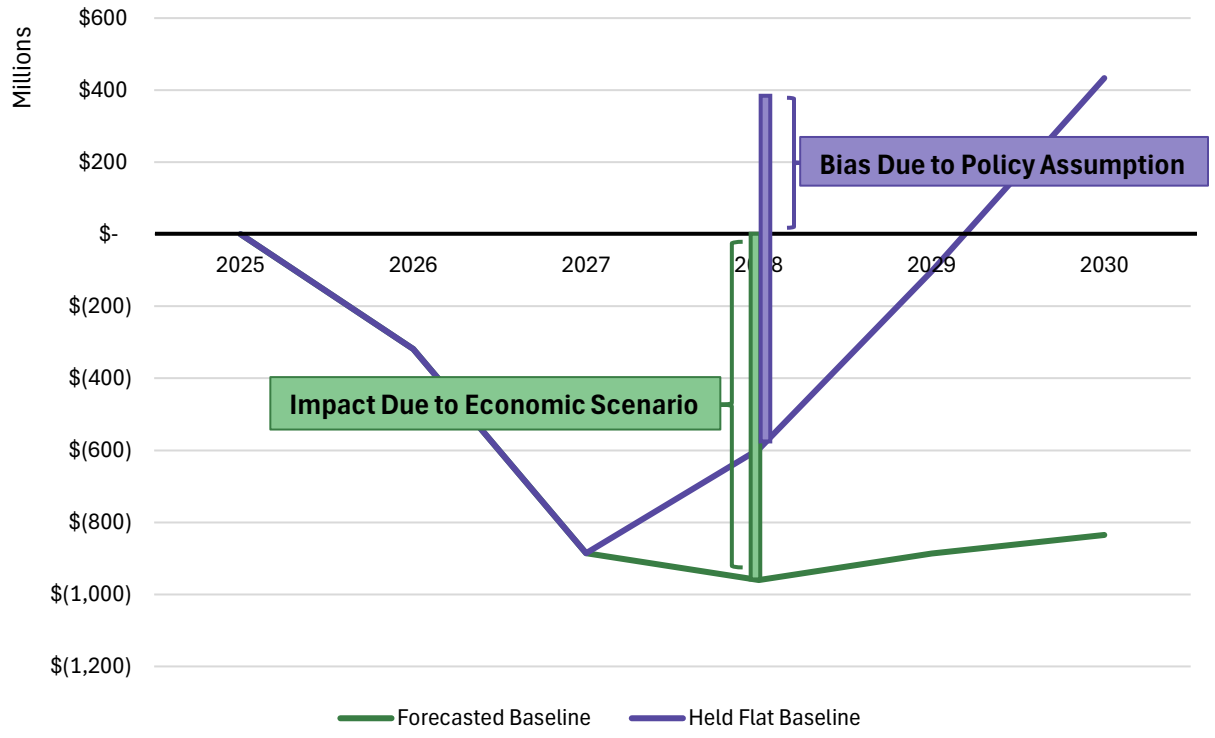
Figure 2
Example State Revenue: Historical Values, Baseline Alternatives, Scenario Results



Now when an adverse scenario's results are viewed by comparison, it can be seen very clearly how the relative change differs from the baseline, both with and without the policy imposed.

Regardless of baseline, the next step is to take the difference between the baseline and the scenario each year to calculate the value at risk. How that looks for both the forecasted baseline and the held flat baseline can be seen in Figure 3.

Figure 3
Example State Revenue: Severe Recession – Difference from Baseline



What can be seen in the green line is exactly the impact on state revenue due to the difference in indicators between the baseline scenario and the severe recession scenario and nothing more. What can be seen in the purple line is that same difference, but because the baseline is modified in this case to be flat for the last three years, this has the effect of offsetting the impact. In this case, and with the revenue side generally, that means it biases the results to appear less adverse than they would otherwise be without this intervention.

By no means was this ever deliberately desired in the results, it was simply an unintended consequence that has gone unnoticed in prior iterations of the analysis. For this year's report, we have modified our methodology to move away from this previous assumption, and all results presented throughout this report are shown in terms of this free-floating baseline rather than one which is held flat.

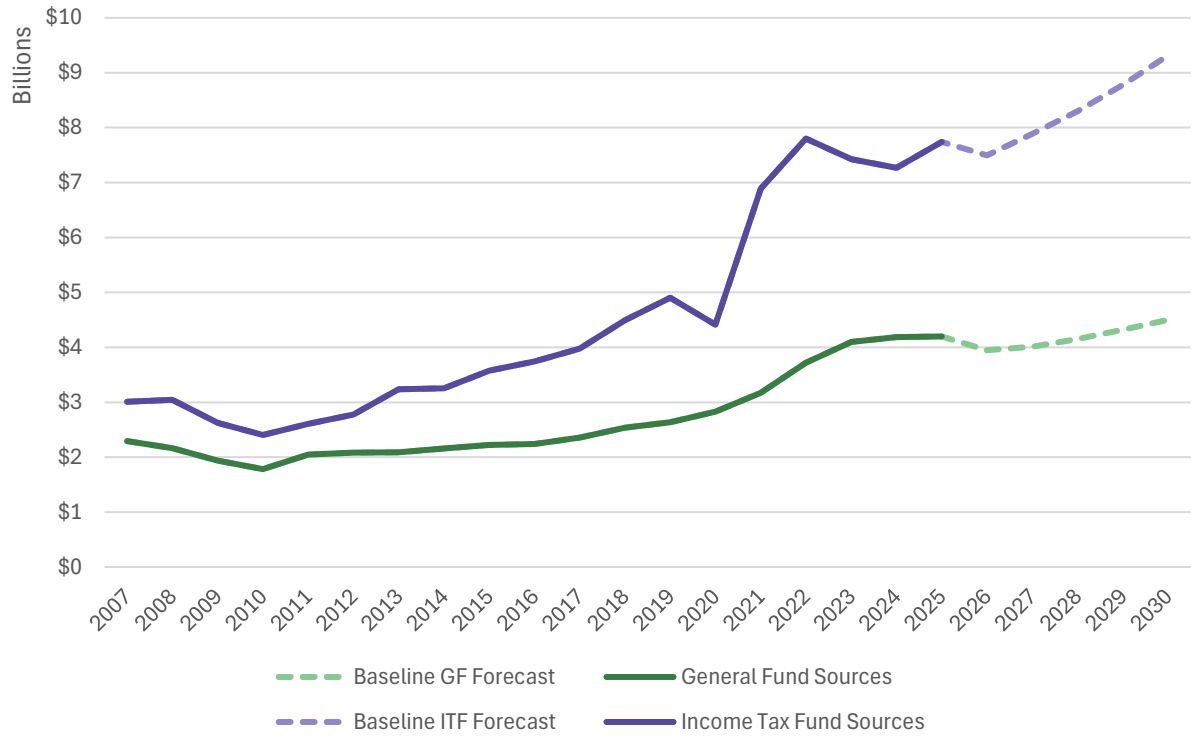
This change also has the benefit of being methodologically consistent with the Long-Term Budget report as well, thus this report now is a direct extension of that analysis in a much more literal sense.

Revenue Side Methodology

To determine the potential revenue at risk under the selected scenarios over the next five years, we start by establishing a baseline, or in other words a "most likely outcome" for each of the state's major revenue sources through the end of the period. Consistent with prior analyses, these major revenue sources, which were separately modeled and forecasted, include: Unrestricted State Sales & Use Tax, Individual Income Tax, Corporate Income Tax, and a catch-all for the numerous remaining taxes and revenue sources to either the General Fund or the Income Tax Fund.

As was discussed in general terms in the previous section, for this year's report we constructed these baselines utilizing the latest adopted consensus estimates for the first two years, then extended from there through the remaining three years assuming the baseline scenario indicators. The consensus revenue estimates are by design the "most likely outcome" since these are the official expectations of state economists for the next two years. Beyond this, from the sample of baseline indicators, a model was then developed for each source utilizing those most relevant to that source, which can vary as each is derived from different economic bases. As an example, aggregate Retail Sales is one of the key indicators for State Sales & Use Tax revenue, while aggregate Personal Income is one of the key indicators for Individual Income Tax Revenue. A visual summary of these baseline forecasts, aggregated by fund, can be seen in Figure 4.

Figure 4
State Revenue by Fund: Historical Values with Baseline Forecasts



As stated earlier, these forecasts for the last three years are not official consensus estimates and represent only one possible path analogous to the Long-Term Budget methodology, intended only to be a more realistic baseline for the purposes of this Stress Test.

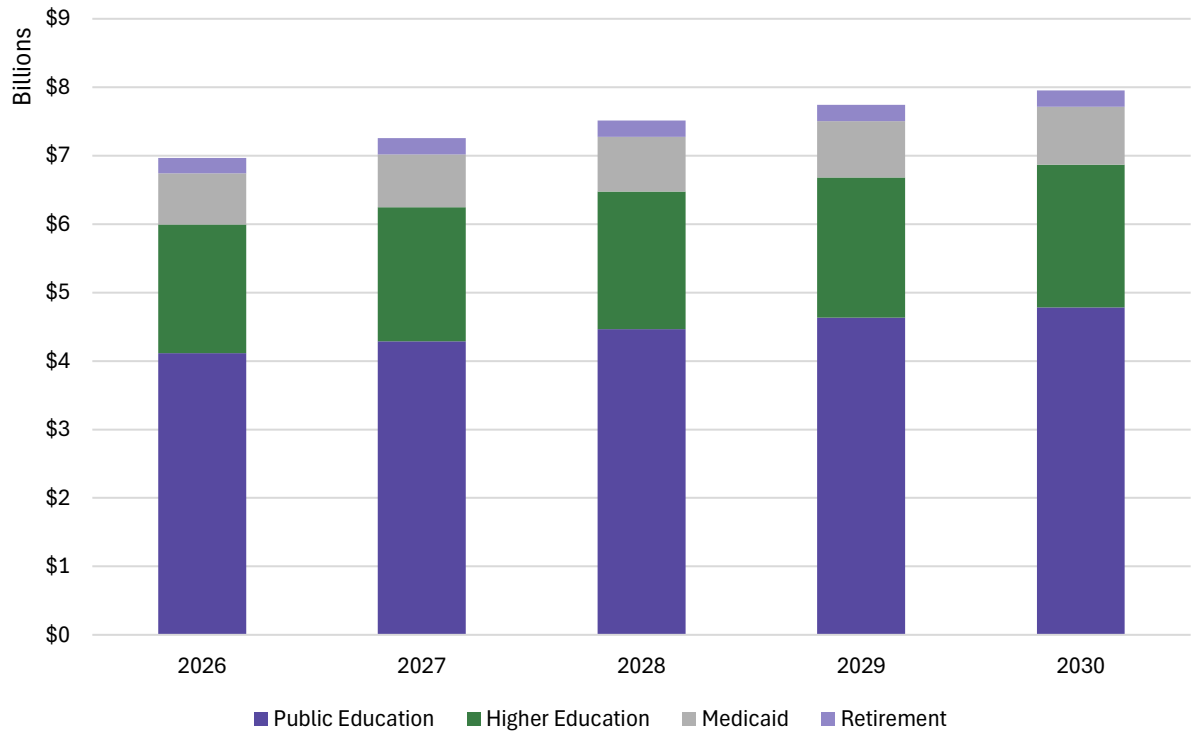
With this baseline in place for each of the four specified sources of revenue to the state, the forecast methodology was then iteratively reapplied for each of the adverse economic scenarios, utilizing each's unique set of expected values over the next five years to construct alternative forecasts for each source. By comparing these alternatives to the expected baseline, the scenario impact was then calculated for each year and ultimately aggregated to derive the expected five-year revenue at risk.

The scenario outcomes and a discussion of the five-year revenue at risk for each source can be found in the Scenario Results section below.

Expenditure Side Methodology

To determine the potential expenditure at risk under the selected scenarios over the next five years, as with revenue, we start by establishing a baseline "most likely outcome" for each of the state's major categories of expenditure through the end of the period. Consistent with prior analyses, these major expenditures, which were separately modeled and forecasted, include: Public Education, Higher Education, Medicaid, and Retirement. A visual summary of these baseline forecasts, aggregated by category, can be seen in Figure 5.

Figure 5
State Expenditures by Category: Baseline Forecasts



These baselines on the expenditures side are in no way intended to prescribe what the state legislature will appropriate in future budgets during this five-year period: just as was the case in the Long-Term Budget, the methodology here as well is to assume no policy changes from the current point in time through the end of the period. This means, while the legislature ultimately has discretion to determine the path of expenditures, this analysis seeks to assess the relative change in selected major categories of expenditure if no change was implemented.

Similar to the revenue baselines, to the extent possible the expenditure baselines incorporated any existing consensus or previously programmed parameters into the first two years of the five-year forecast window. As an example, the latest adopted enrollment forecasts were utilized in the baselines for Public Education and Medicaid where available. Then, as with revenue, the remainder of the period was forecast using models for each category along with the relevant economic indicators from the baseline scenario for each. Again, we then iteratively reapplied the methodology for each adverse scenario, calculated the relative impact compared to the baseline, and derived the expected five-year expenditure at risk.

Note that the expenditures estimated under each of the four categories are not necessarily inclusive of all potential state costs associated with the similarly named program or department. The details of what is included for each category can be found in the following subsection. The scenario outcomes and a discussion of the five-year expenditure at risk for each category can be found in the Scenario Results section below.

Public Education

State expenditures for Public Education were modeled by first forecasting statewide student enrollment under each scenario. This total enrollment was then converted into an estimate of weighted pupil units (WPUs) assuming a conversion factor of 1.34. A forecast of each scenario's WPU value was then modeled, incorporating the five-trailing-year CPI adjustment, which was then multiplied with the number of WPUs to determine the total cost for each year.

Higher Education

State expenditures for Higher Education were modeled by first forecasting the annualized full-time equivalent enrollment (FTE) at all institutions of higher education, both degree-granting and technical, under each scenario. A State Tax Funds (General Fund and Income Tax Fund) per FTE enrollment cost metric was then forecast for each scenario and multiplied by the associated enrollment forecast to determine the total cost for each year.

Medicaid

State expenditures for Medicaid were modeled by first forecasting the total enrollment for each category of enrollment, under each scenario, including both traditional and expansion populations. A per-member-per-month (PMPM) cost metric was then forecast for each enrollment category for each scenario, annualized, and multiplied by the associated enrollment forecast to determine the total cost for each year. Because Medicaid is funded by a mix of state and federal money, the total costs were then adjusted for the current Federal Medical Assistance Percentage (FMAP) to derive the state's costs.

A deeper dive analysis of Medicaid costs under these scenarios is separately available this year in the Medicaid Stress Test, which also features additional scenarios contemplating various changes to the FMAP value and associated state budget impacts.

Retirement

State expenditures for state employee retirement contributions were modeled by first forecasting the employer contribution rates for each category of retirement, under each scenario, based on Utah Retirement Systems analysis. Total wages (paid from General Fund and Income Tax Fund) by category were then forecast for each scenario and multiplied by the associated employer contribution rate forecast to determine the total cost for each year.

Due to significant lags in the effect of changes in retirement portfolio returns on employer contribution rates, marginal impacts for this category of expenditure are relatively minor within the five-year window of analysis. However, the impacts are only lagged, not insignificant; to better reflect this, although no change has been made to the five-year window for the final results of this report, a chart depicting scenario impacts through FY 2033 can be found in the Scenario Results section for this category.

Scenario Results

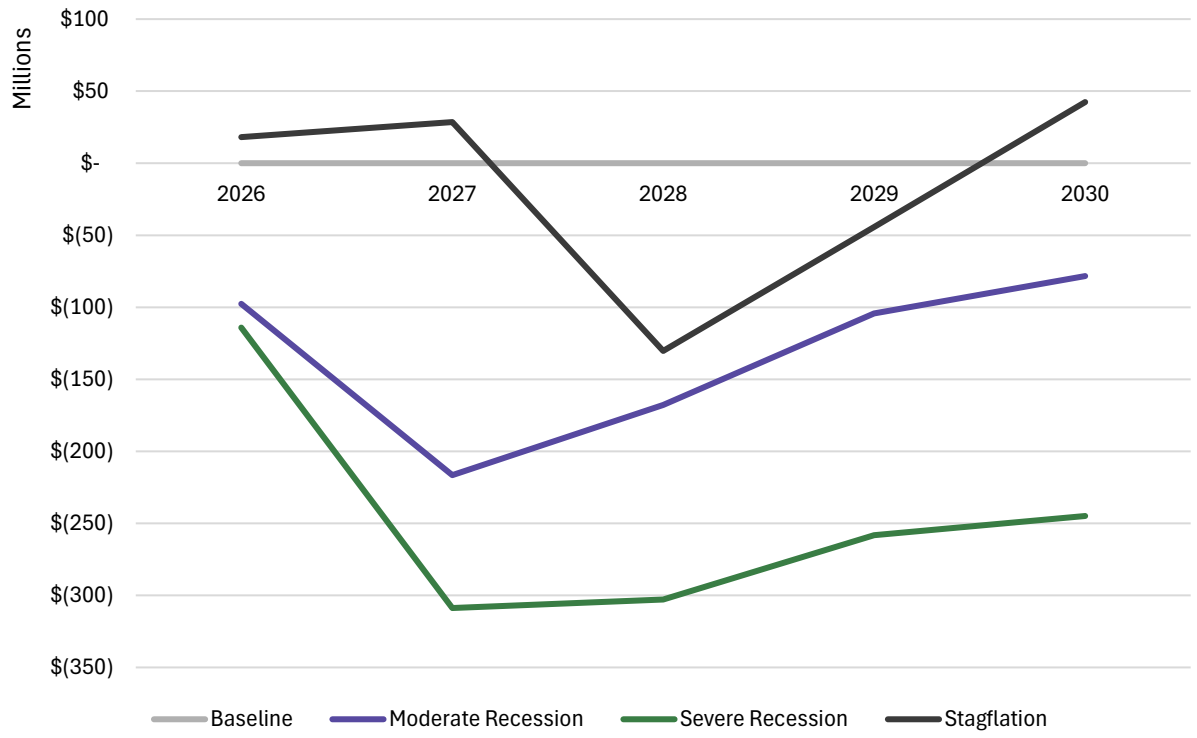
With each selected component of revenue and expenditure modeled and forecasted under each of the four scenarios, we can now assess the extent to which both sides of the budget equation can be expected to deviate as a result of adverse economic conditions.

Revenue at Risk

Sales & Use Tax

Starting with the largest source of revenue to the state's General Fund, a chart of the marginal impacts by year for each scenario for the unrestricted portion of State Sales & Use Tax can be seen in Figure 6 below.

Figure 6
Unrestricted State Sales & Use Tax: Difference from Baseline



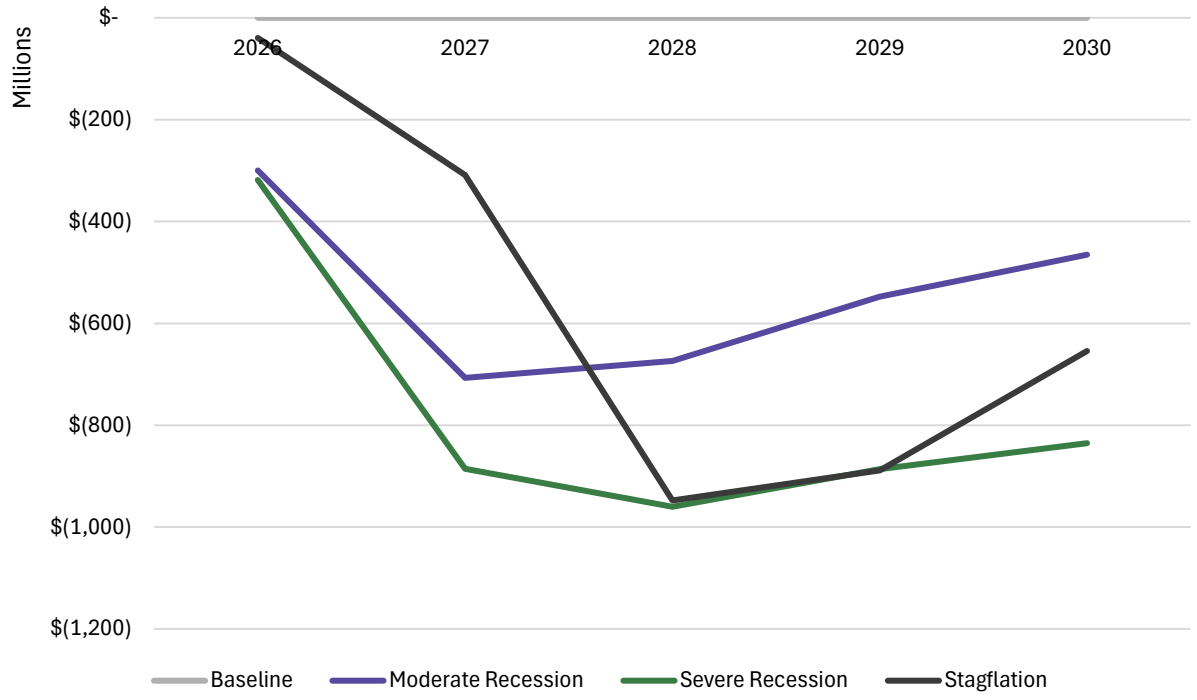
As shown, both the moderate and severe recession scenario result in net losses of revenue compared to the baseline for the duration of the five-year period, peaking at a level of just over $(300) million below the baseline in the second year of the severe recession. The stagflation results are somewhat mixed: the initial period of significantly higher inflation produces a temporary marginal increase in sales tax revenue before the negative pull of the later recessionary period pulls it below baseline.

It should be noted that the amounts shown above are only the unrestricted portion of collections from this revenue source, and the impacts to the related earmarks on this revenue source would be in addition to those shown here. For context, unrestricted collections currently make up only about 64% of total sales tax collections.

Individual Income Tax

Next, we turn to the largest source of revenue to the Income Tax Fund: a chart of the marginal impacts by year for each scenario for Individual Income Tax can be seen in Figure 7 below.

Figure 7
Individual Income Tax: Difference from Baseline



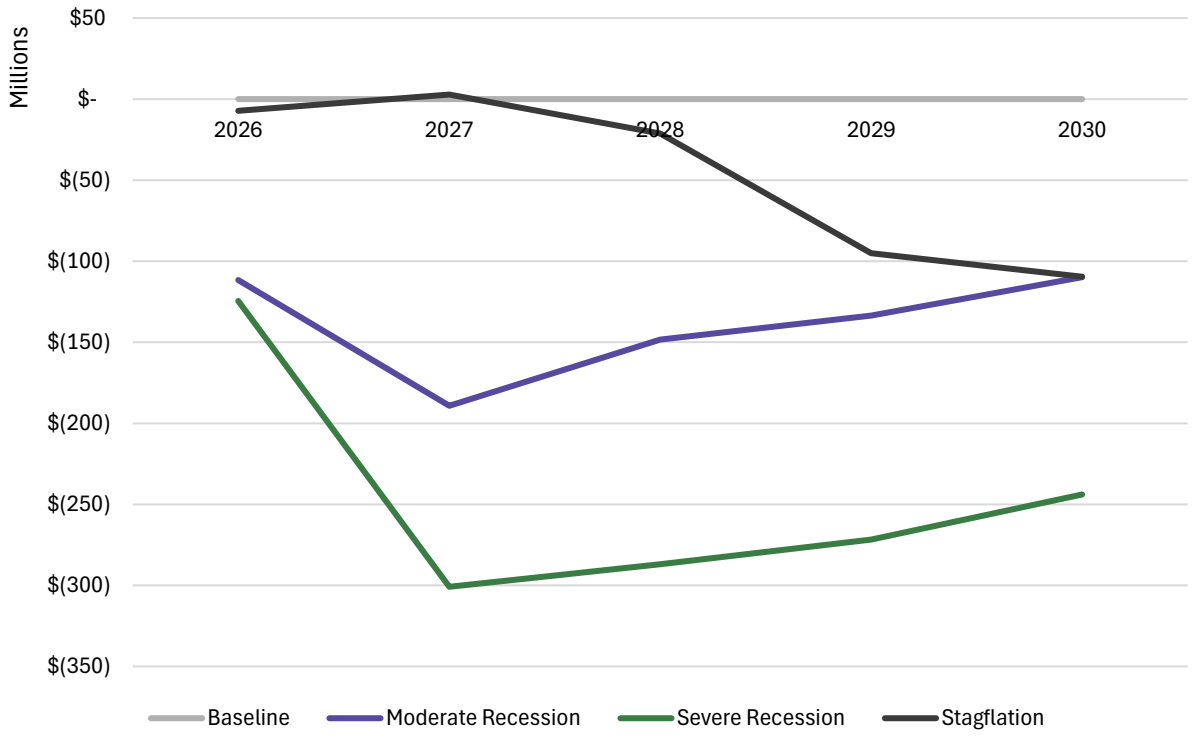
This revenue source effectively has two major parts within it which reflect two different major components of personal income: withholding (reflecting wage income) and final payments (reflecting non-wage income). While the withholding aspect has historically been more stable in general due to similar stability (compared to the nation as a whole) in the state's labor force, the part of Individual Income Tax which is derived from non-wage sources is typically highly responsive to changing economic conditions. The details of this are discussed further in the Revenue Volatility Report. As a result, forecasts under each set of adverse scenario parameters anticipate substantial changes compared to the baseline as shown here. Under the worst-case scenario, the net change peaks at over $(900) million less than baseline in the third year.

Please note that federal income tax changes (which have flow-through impacts to state income tax) due to HR1 were incorporated in all years of the forecasted period. Additionally, no further decreases to the state tax rate were assumed.

Corporate Income Tax

Moving to the second largest source of revenue to the Income Tax Fund, a chart of the marginal impacts by year for each scenario for Corporate Income Tax can be seen in Figure 8 below.

Figure 8
Corporate Income Tax: Difference from Baseline



This revenue source has historically varied widely in response to changing economic conditions, and is empirically the state's most volatile (again, see the discussion in the Revenue Volatility Report for more details); forecasts under each set of adverse scenario parameters similarly exhibit significant deviations from the baseline as shown. Under the severe recession scenario, the net change peaks at approximately $(300) million less than baseline in the second year. Under the stagflation outcome, collections initially appear very similar to the baseline before the offsetting impacts of the later recession and restrictive monetary policy weigh on profitability in spite of the elevated nominal price level.

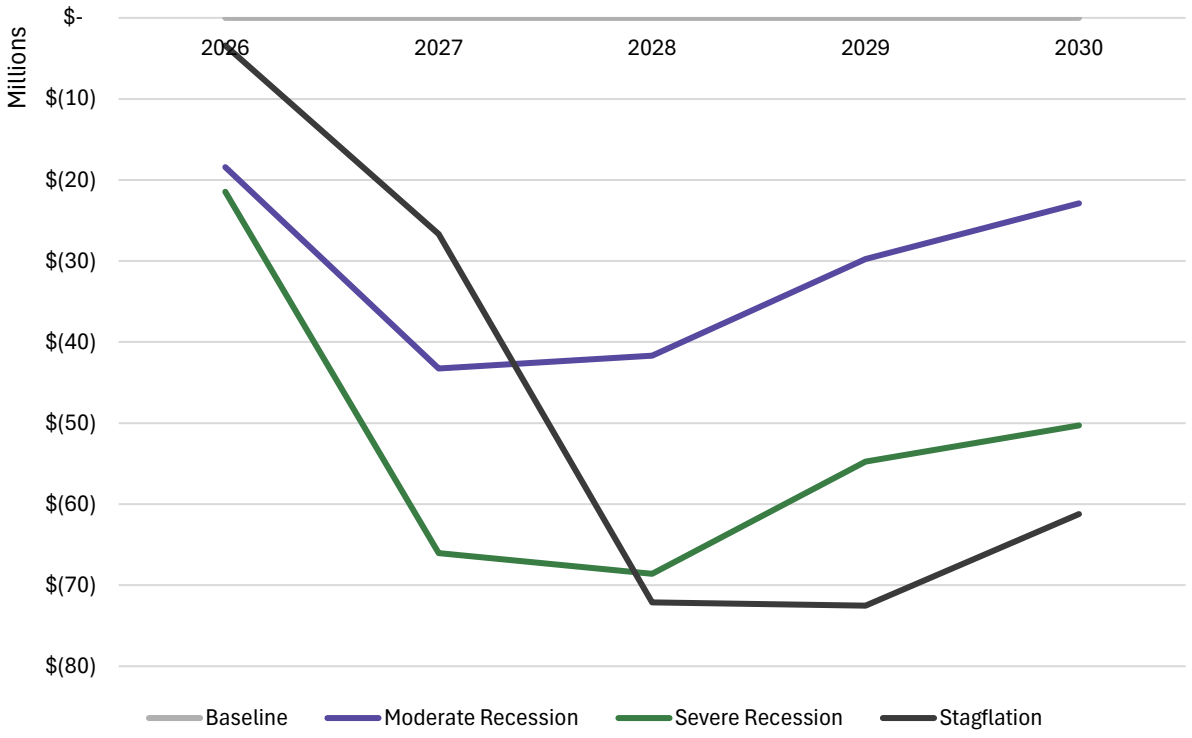
As with the Individual Income Tax, HR1 changes were assumed along with no change to the tax rate.

All Other Revenue

Finally, a catch-all of any other remaining General Fund and Income Tax Fund revenue sources and the marginal impacts by year for each scenario can be seen in Figure 9 below. This aggregate category includes sources to both funds, but it should be noted that the majority of

the amounts shown are attributable to General Fund sources. Included in this category are sources such as Insurance Premiums Tax, Investment Income, and Severance Taxes.

Figure 9
All Other Revenue Sources: Difference from Baseline



Total Revenue at Risk

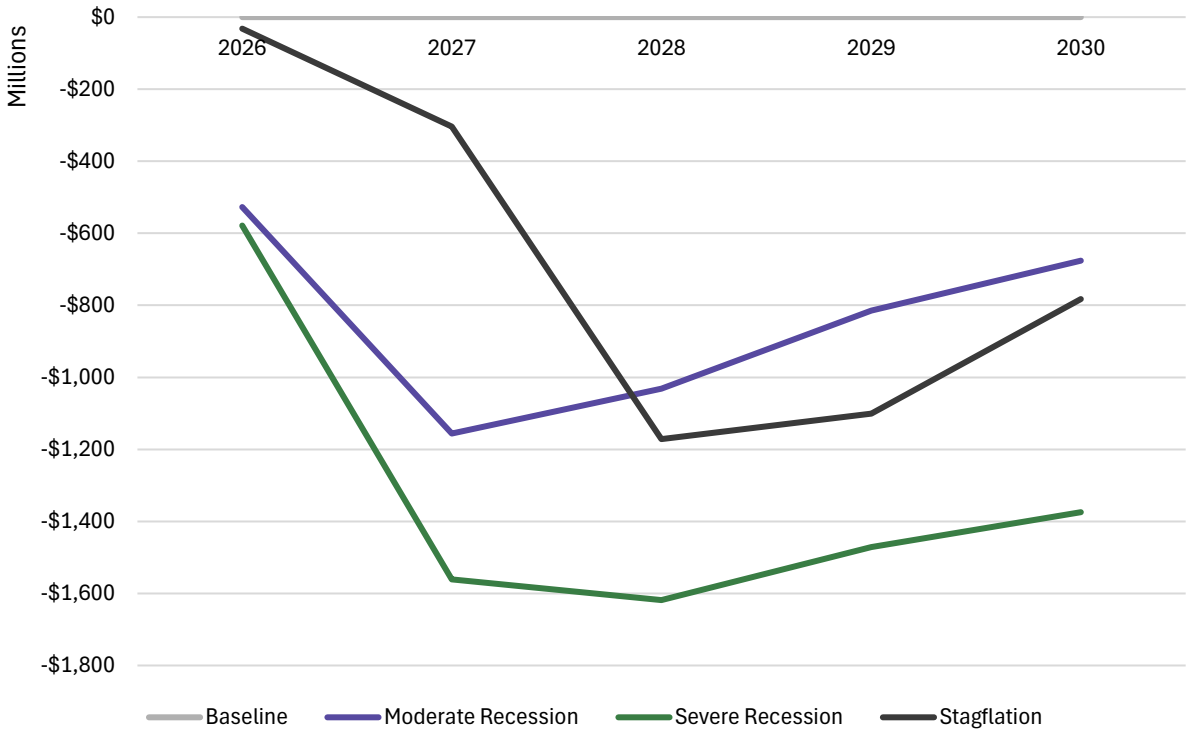
Taking all of the above together, we can view the total marginal revenue impacts by year for each scenario, as can be seen in Figure 10 below.

In the worst-case scenario, the impacts of the deeper and more persistent severe recession have been estimated to result in an approximately $(1.6) billion deviation below the baseline, and as shown, for two fiscal years before reversion back toward the baseline would be anticipated.

Although not explicitly differentiated in the chart as shown, approximately 75% of the anticipated impact under the severe recession conditions is expected to come as a result of losses to Income Tax Fund revenue sources, namely the Individual and Corporate Income Taxes. Due to the relatively highly sensitive nature of non-wage personal income such as capital gains and corporate profits as it relates to variable economic conditions, along with the larger magnitude of the taxable base, the bulk of state revenue impacts under adverse outcomes can be expected to materialize most severely within the Income Tax Fund.

As a consequence, categories of expenditure which are primarily funded from the Income Tax Fund are by extension likely to experience the largest stress and be in greatest need of buffers and reserves as a result.

Figure 10
Total GF/ITF Revenue Sources: Difference from Baseline



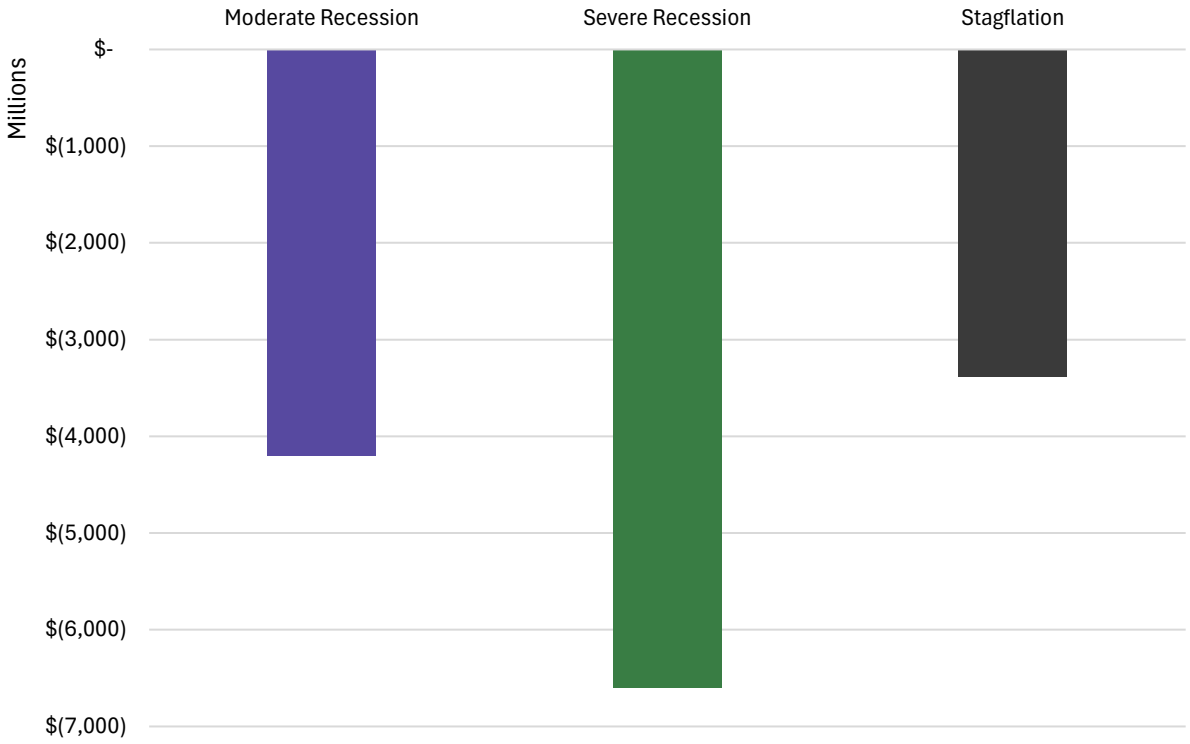
Summing these single year impacts, the total five-year revenue at risk can be seen charted in Figure 11. A table summarizing the total revenue impacts by scenario can be seen here in Table 1. Note that the amounts shown have been rounded.

Table 1
Total GF/ITF Revenue at Risk

Economic Scenario	5-Year Revenue Value at Risk
Moderate Recession	$(4,206,600,000)
Severe Recession	$(6,603,800,000)
Stagflation	$(3,390,800,000)

As shown, the five-year total anticipated impacts to state revenue to the General Fund and Income Tax Fund under the severe recession scenario amount to approximately $(6.6) billion compared to the baseline expectation, approximately $(4.2) billion under the moderate recession, and nearly $(3.4) billion resulting from the stagflation scenario. Total impacts due to stagflation being the smallest of the three adverse scenarios is primarily a consequence of the "offsetting" that results from heightened inflation: taxes are assessed on nominal prices and wages so higher inflation tends to result in greater collections, all else equal.

Figure 11
Five-Year Total GF/ITF Revenue at Risk

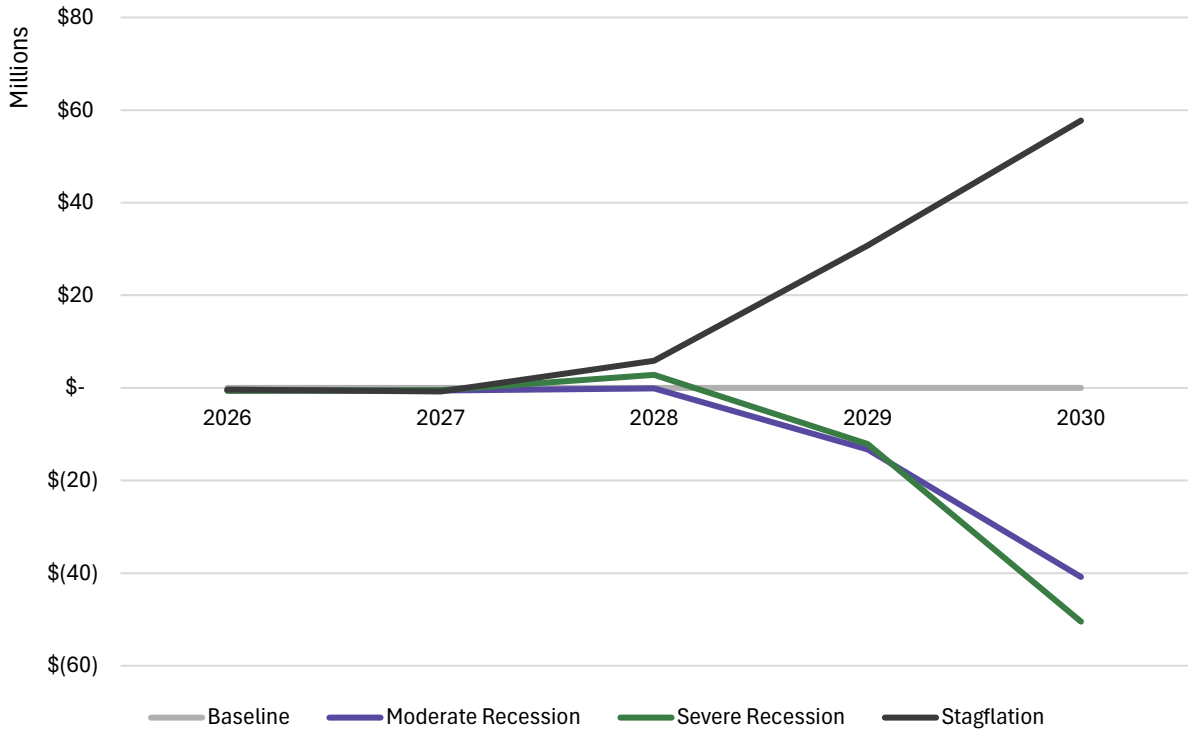


Expenditures at Risk

Public Education

Starting with the largest single category of state expenditure, a chart of the marginal impacts by year for each scenario for Public Education costs can be seen in Figure 12 below.

Figure 12
State Expenditures for Public Education: Difference from Baseline



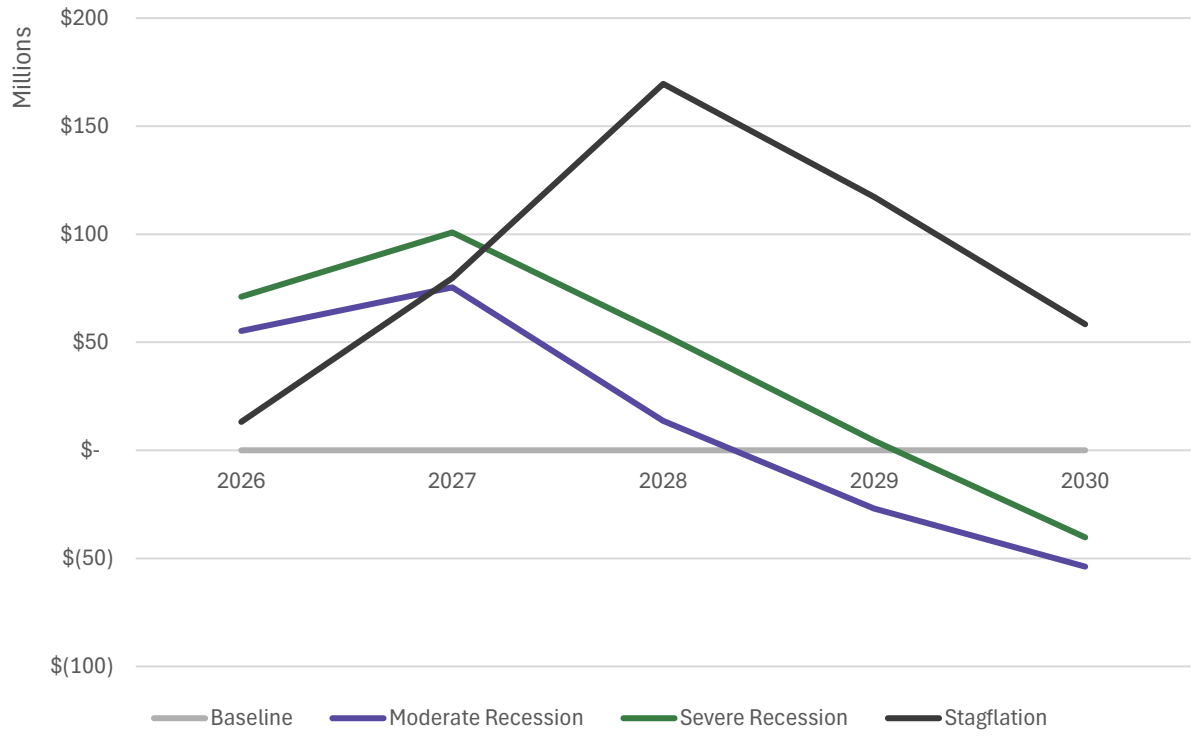
As shown, both the moderate and severe recession scenarios result in net decreases in expenditure compared to the baseline in the latter half of the five-year period, peaking at a level of just over $(50) million below the baseline in the final year of the severe recession. The stagflation results are starkly contrary to those of the recessions: the initial period of significantly higher inflation results in increasing year over year WPU values in the later years as the trailing-five-year average CPI factor begins to incorporate those earlier years. Opposite this, the two typical recession scenarios result in net decreases due to relatively lower inflation than that of the baseline.

It should be noted that the amounts shown above are primarily the net impacts of differences in inflation between the scenarios – because the state is in a period of declining student enrollment due to demographics, the enrollment growth factor was not anticipated to significantly influence state costs during the five-year window of analysis.

Higher Education

Moving on to the next category of state expenditure under consideration, a chart of the marginal impacts by year for each scenario for Higher Education costs can be seen in Figure 13 below.

Figure 13
State Expenditures for Higher Education: Difference from Baseline



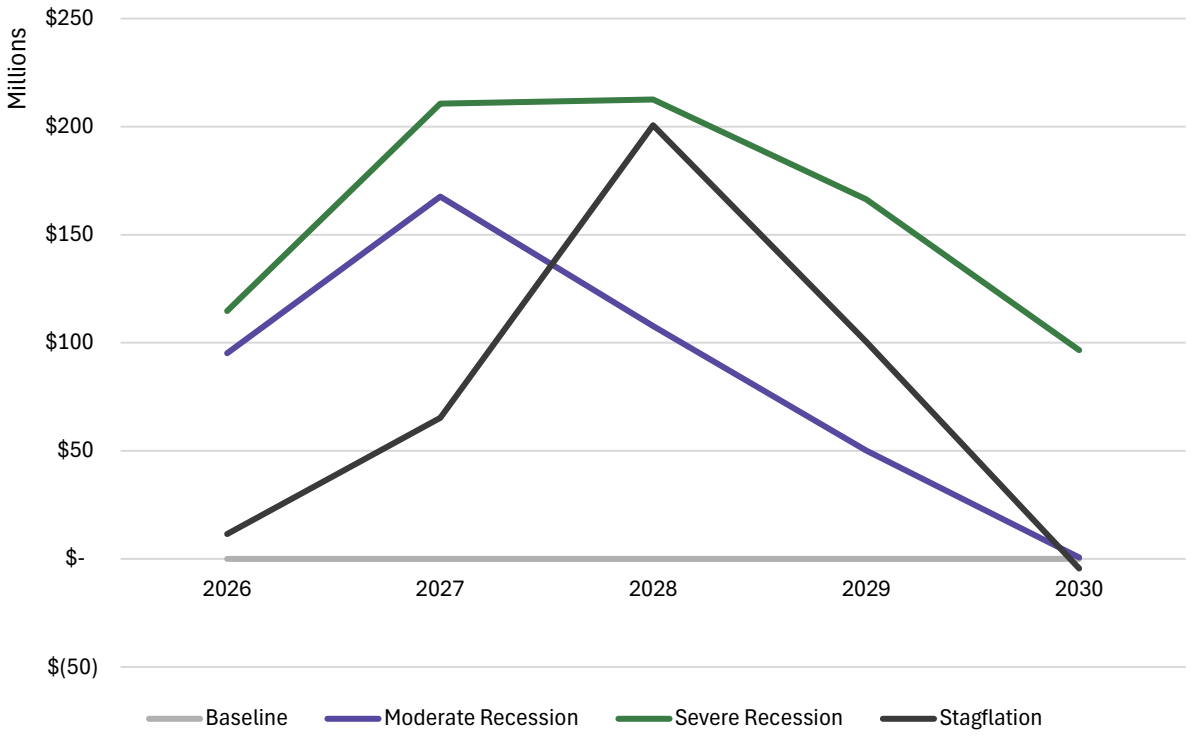
As shown, all three scenarios result in net increases in expenditure compared to the baseline for most of the five-year period, peaking at a level of approximately $170 million above the baseline in the stagflation scenario. While all scenarios are impacted by countercyclical enrollment increases (which are responsible for most of the initial increases in expenditure), the disinflation/deflationary effects of the recessions become the more dominant force later in the period. Because the stagflation scenario retains higher inflation for most of the period, costs are anticipated to remain above baseline for the entire period.

An important point to note about this category of expenditure is that we have implicitly assumed no change to per student state funding, consistent with the overall methodological precept of not assuming any policy changes. However, as has typically been the case through prior adverse periods, and as can be intuitively expected as a result of enrollment increases, the level of tuition statewide institutions would receive may increase to an extent that this assumption becomes unrealistic.

Medicaid

Next, we consider what is perhaps the largest countercyclical category of state expenditure under consideration - a chart of the marginal impacts by year for each scenario for state Medicaid costs can be seen in Figure 14 below.

Figure 14
State Expenditures for Medicaid: Difference from Baseline



As can be seen, all three scenarios result in net increases in expenditure compared to the baseline for the entirety of the five-year period, peaking at a level of approximately $213 million above the baseline in the severe recession scenario. All scenarios are impacted by countercyclical enrollment increases, with the increase being relatively proportional to the severity of the scenario. Because the recessionary period occurs later in the stagflation scenario, Medicaid cost impacts would be anticipated to increase somewhat later compared to the more typical recession.

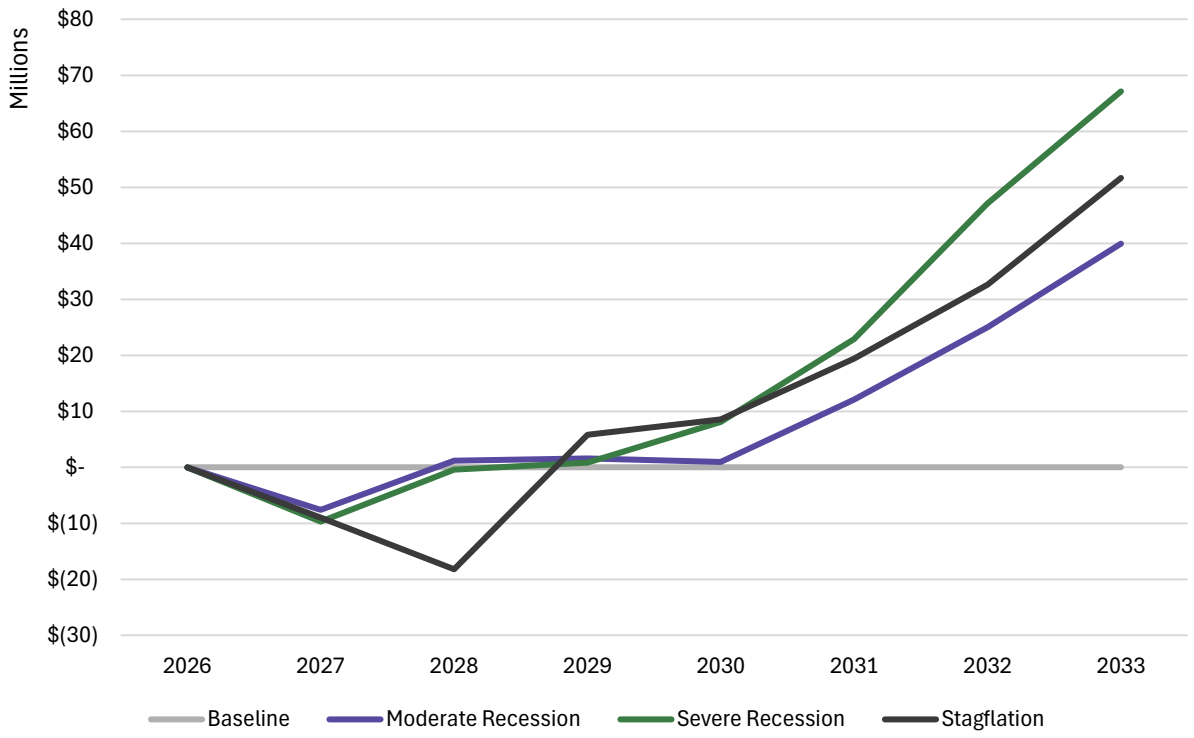
Note that the results for Medicaid expenditures presented in this Stress Test are only those under the current FMAP level. As mentioned previously in the methodology section, a more comprehensive analysis of Medicaid with variable federal policy alternatives can be found in the Medicaid Stress Test Report.

Retirement

The last of the expenditure side of the analysis, another of the key countercyclical categories of state expenditure under consideration, a chart of the marginal impacts by year for each scenario for state Retirement contribution costs can be seen in Figure 15 below.

As was discussed in the corresponding Methodology section of this report, the impacts to the state funded Retirement contributions exhibit a significant lag which puts the majority of anticipated adverse impacts beyond the scope of the five-year window utilized in this test. To better reflect this, the chart shown here is extended through FY 2033 rather than FY 2030.

Figure 15
State Expenditures for Employee Retirement Contributions: Difference from Baseline



As expected, the initial impacts across all scenarios are initially relatively minor. As shown, the bulk of the small changes charted above are due only to the forecasted scenario impacts on total wages, with no marginal change in contribution rates between scenarios through FY 2029. It is only in the last year of the Stress Test window that the variable impacts of differential contribution rates can be seen; however, the total impacts on state retirement costs should not be expected to stop at those initially muted levels. These long-lagged impacts can be seen accumulating as amortized losses are expected to begin to factor in more significantly further out in time.

No change was made to the Stress Test methodology to expand the scope of the analysis to include additional years, but these longer-run potential budget impacts under these scenario outcomes are included here for better context.

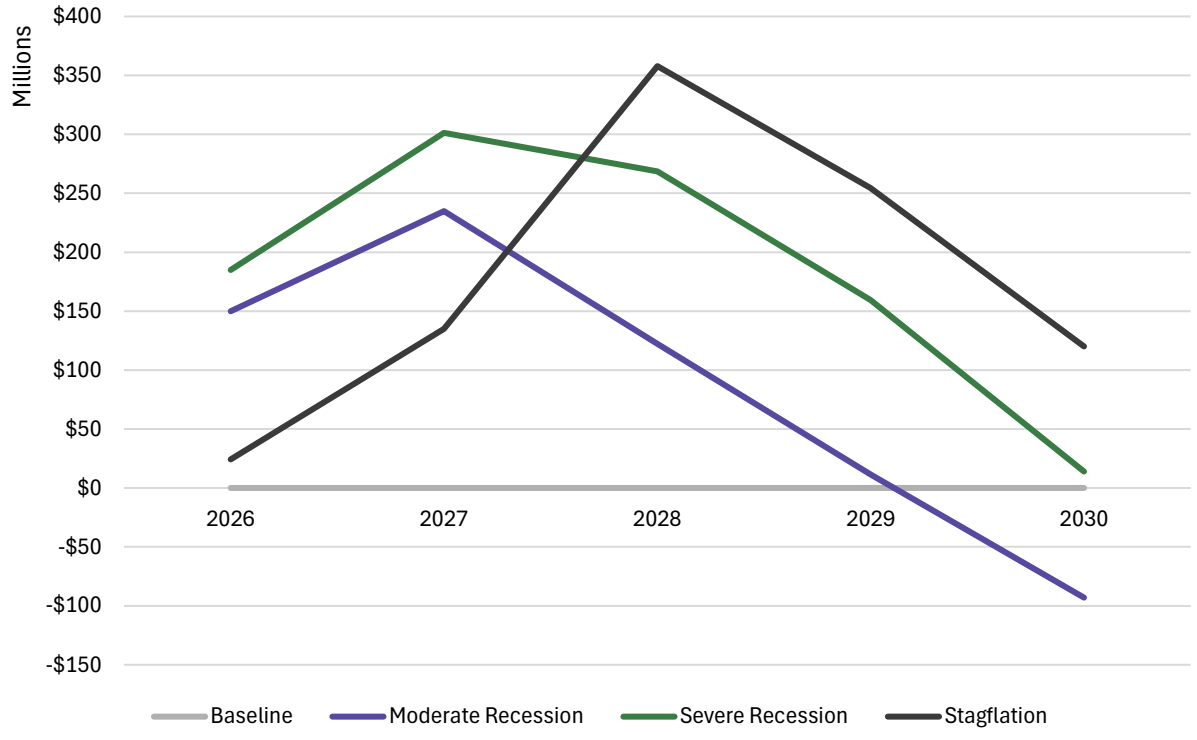
Total Expenditures at Risk

Taking all of the above together, we can view the total marginal expenditures impacts by year for each scenario, as can be seen in Figure 16 below.

In the worst-case scenario, which in terms of single-year impacts is under stagflation on the expenditures side of the budget, the combined effects of the somewhat delayed recession in tandem with elevated inflation have been estimated to result in an approximately $300 million deviation above the baseline. Due to subsequent relatively muted inflation resulting from the recessionary periods along with gradual returns to baseline levels of enrollment, each scenario proceeds generally back towards the baseline in the latter half of the period.

As was shown above, the largest component of the expenditure side scenario impacts is attributable to anticipated increases in Medicaid enrollment during the heights of the recessionary periods. Because Medicaid is funded through a mix of Federal money and state General Fund appropriations, these expenditure-specific scenario impacts would manifest most severely within the General Fund. However, it should be noted that two of the state's buffers, to be discussed in a subsequent section, are specifically reserved for the purpose of addressing such increased costs within the Medicaid program; more details are available in the Medicaid Stress Test.

Figure 16
Total Included Expenditure Categories: Difference from Baseline



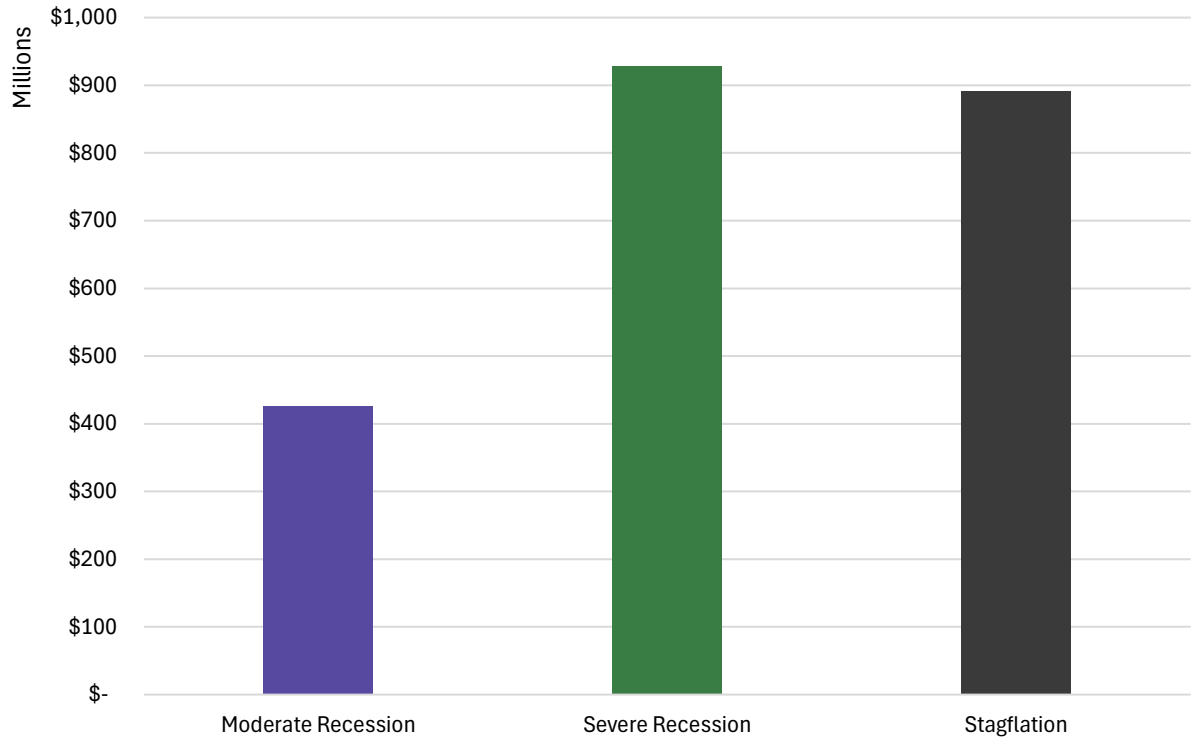
Summing these single year impacts, the total five-year expenditures at risk can be seen charted in Figure 17. A table summarizing the total expenditure impacts by scenario can be seen here in Table 2. Note that the amounts shown have been rounded.

Table 2
Total Included Categories Expenditure at Risk

Economic Scenario	5-Year Expenditure Value at Risk
Moderate Recession	$425,400,000
Severe Recession	$928,400,000
Stagflation	$891,700,000

As shown, the five-year total anticipated impacts to state expenditures from the General Fund and Income Tax Fund under the severe recession scenario amount to approximately $930 million compared to the baseline expectation, approximately $425 million under the moderate recession, and just over $890 million resulting from the stagflation scenario. Total impacts due to stagflation are anticipated to be much closer to those of the severe recession on the expenditure side of the budget primarily as a consequence of the inflation indexing that effectively builds in increased expenditures under such circumstances.

Figure 17
Five-Year Total Included Categories Expenditure at Risk



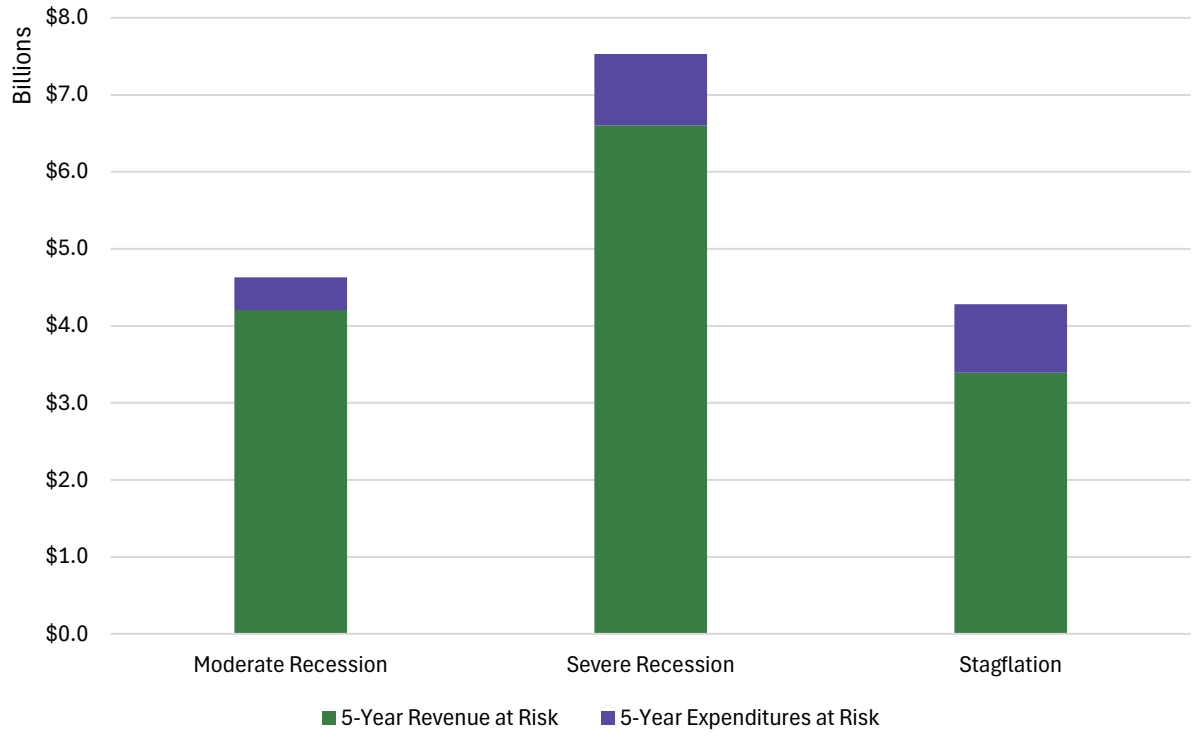
Total Five-Year Value at Risk

Finally, by combining the total Revenue at Risk with the total Expenditure at Risk from above, we estimate a total Value at Risk for the state budget across the five-year window of analysis. Although the revenue impacts as shown previously are net decreases, revenue values have here been inverted to make them positive for the purpose of accumulating them with the total expenditures. These results can be seen charted in Figure 18. A table summarizing the total five-year Value at Risk by scenario can be seen here in Table 3. Note that the amounts shown have been rounded.

Table 3
Total Five-Year Value at Risk

Economic Scenario	5-Year Value at Risk
Moderate Recession	$4,632,000,000
Severe Recession	$7,532,100,000
Stagflation	$4,282,500,000

Figure 18
Five-Year Value at Risk



As shown, the total estimated value at risk under the considered adverse scenarios amounts to between approximately $4.3 billion and $7.5 billion in total across the five-year period.

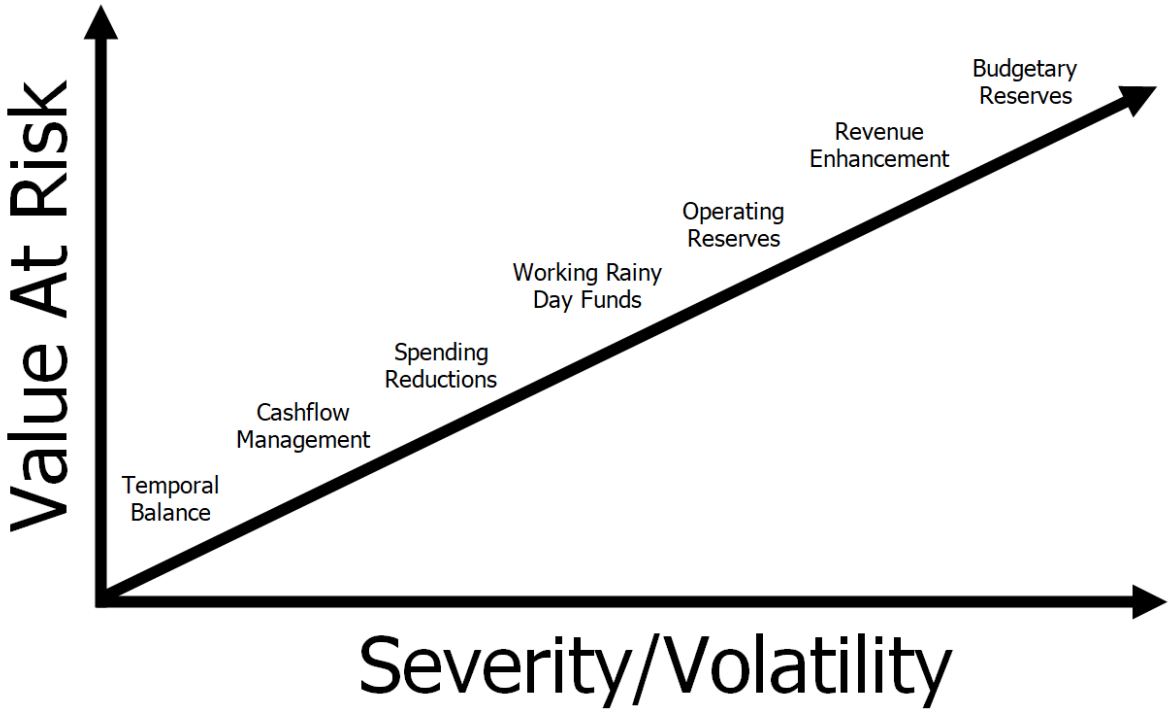
Bringing It All Together

The state is required by law to pass a balanced budget each year. In reality, the state passes a budget *in advance* of actual collections and the expenditure of appropriations, thus the budget passed is balanced between *estimated* revenue and *estimated* expenditures. While state economists make their best attempt to forecast state revenues twice each year through a consensus process among the Tax Commission, the Governor's Office of Planning and Budget, and the Office of the Legislative Fiscal Analyst, such estimates are all but inevitably wrong, at least to some, hopefully small, extent. As a consequence, the hypothetically balanced budget, too, is ultimately either actually in surplus or deficit at year-end.

Under the adverse conditions assumed for each of the scenarios considered in this analysis, it is clear to see that significant decreases in revenue and increases in countercyclical expenditures would ultimately result in budget deficits relative to the baseline. This is precisely as intended within the scope of this analysis: the stress test is designed to anticipate the extent to which the budget could come out of alignment under strained economic conditions in order to evaluate the state's available buffers' ability to "bridge the gap" during such times.

There are various means by which this bridging can be done. These are known collectively as the state's Fiscal Toolkit; the major "tools" available for use are presented in Figure 19. These are not formally organized sequentially as shown in the figure, but they nonetheless are generally utilized along a continuum as a function of the severity of the variance between the budget and actuals, with the relatively minor amounts generally experienced in any given year being addressed by timing and cashflow management means.

Figure 19
Utah's Fiscal Toolkit



Similarly, putting this continuum of budgetary tools into dollar terms, we can consider the various actual budget reserves and buffers as falling into broad categories based on the relative ease of accessibility during an adverse period. The full set of these available buffers can be seen in Table 4 below.

Table 4
Utah's Inventory of Budget Buffers

Source	One-Time	Ongoing	5 Year Total	Allowable Use as Buffer
Easy to Access				
Cash Funded Buildings	-	62,039,200	310,196,000	Some Any, Some Income Tax Fund
Offset for debt service	-	-	*(244,923,490)*	
Cash Funded Transportation	-	3,660,000	18,300,000	Any
Offset for debt service	-	-	*(7,526,714)*	
Cash Funded Water	-	-	-	Any
Offset for debt service	-	-	-	
Medicaid ACA Fund	341,064,217	-	341,064,217	Medicaid Expansion Costs
Medicaid Budget Stabilization Restricted Account	107,897,614	-	107,897,614	Medicaid Costs
Capital Improvements at 0.9% to 1.4%	(63,200,000)	86,365,200	368,626,000	Some Any, Some Income Tax Fund
Debt Service Above Required Amount	-	-	-	Any
Easy to Access Total	***385,761,830***	***152,064,400***	***893,633,626***	
Moderately Easy to Access				
Unclaimed Property	322,448,375	-	322,448,375	Uniform School Fund
Nonlapsing Balances	974,866,400	-	974,866,400	Any
General Fund State Infrastructure Banks	98,150,000	15,440,000	175,350,000	Any
Public Education Economic Stabilization Restricted Account	(440,640,400)	440,640,400	1,762,561,600	Public Education Costs
Outdoor Adventure Infrastructure Restricted Account	12,808,715	47,085,000	248,233,715	Any
Moderately Easy to Access Total	***967,633,090***	***503,165,400***	***3,483,460,090***	
Somewhat Difficult to Access				
Transportation Investment Fund of 2005 (50% of Earmark)	-	566,500,500	2,832,502,500	Any
General Fund Restricted Fund Balances	675,953,400	-	675,953,400	Any
Capital Improvements up to 0.9%	-	168,975,300	844,876,500	Some Any, Some Income Tax Fund
Water Loan Fund Cash Balances	413,245,600	136,925,000	1,097,870,600	Any
Somewhat Difficult to Access Total	***1,089,199,000***	***872,400,800***	***5,451,203,000***	
Difficult to Access				
Income Tax Fund Budget Reserve Account	904,035,330	-	904,035,330	Income Tax Fund
General Fund Budget Reserve Account	333,793,559	-	333,793,559	Any
Disaster Recovery Account	68,065,149	-	68,065,149	Any
Difficult to Access Total	***1,305,894,038***	***-***	***1,305,894,038***	
Total Buffers	**3,748,487,959**	**1,527,630,600**	**11,134,190,754**	

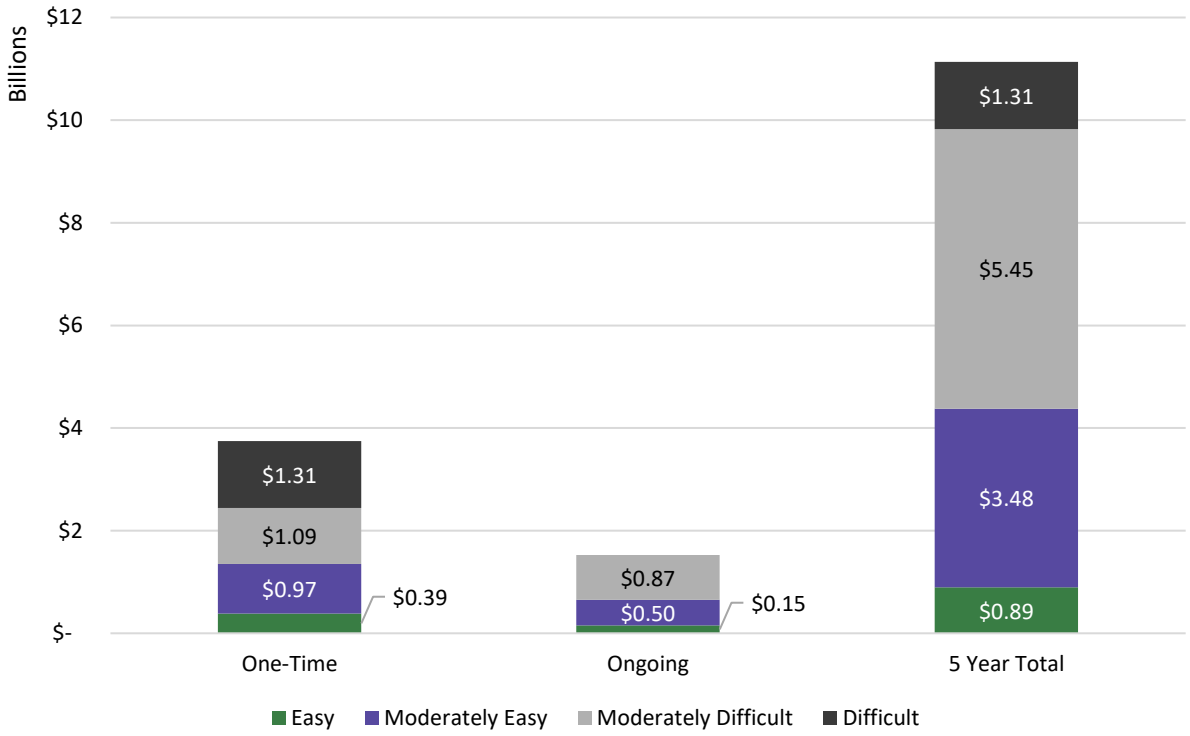
If we then further summarize these buffers into just the four high level categories of ease of access, in total for the five-year period of analysis, we can then make the final evaluation of the extent to which these buffers may be adequate to offset the budgetary impacts resulting from each of the considered adverse scenarios. This can be seen in Table 5 and charted in Figure 20. Note that the table amounts shown have been rounded from their values shown above.

In total, the identified currently available buffers are estimated at a maximum amount of approximately $11.1 billion over the five-year period. This total available for offsetting any budgetary impacts due to adverse economic conditions is a combination of approximately $3.75 billion in one-time fund balances along with nearly $1.53 billion which may be made available as ongoing reallocations.

Table 5
Total Five-Year Available Budget Buffers

Ease of Accessibility	5-Year Total Funds Available
Easy to Access	$893,600,000
Moderately Easy to Access	$3,483,500,000
Somewhat Difficult to Access	$5,451,200,000
Difficult to Access	$1,305,900,000
Total	**$11,134,200,000**

Figure 20
Potential Reserves by Availability



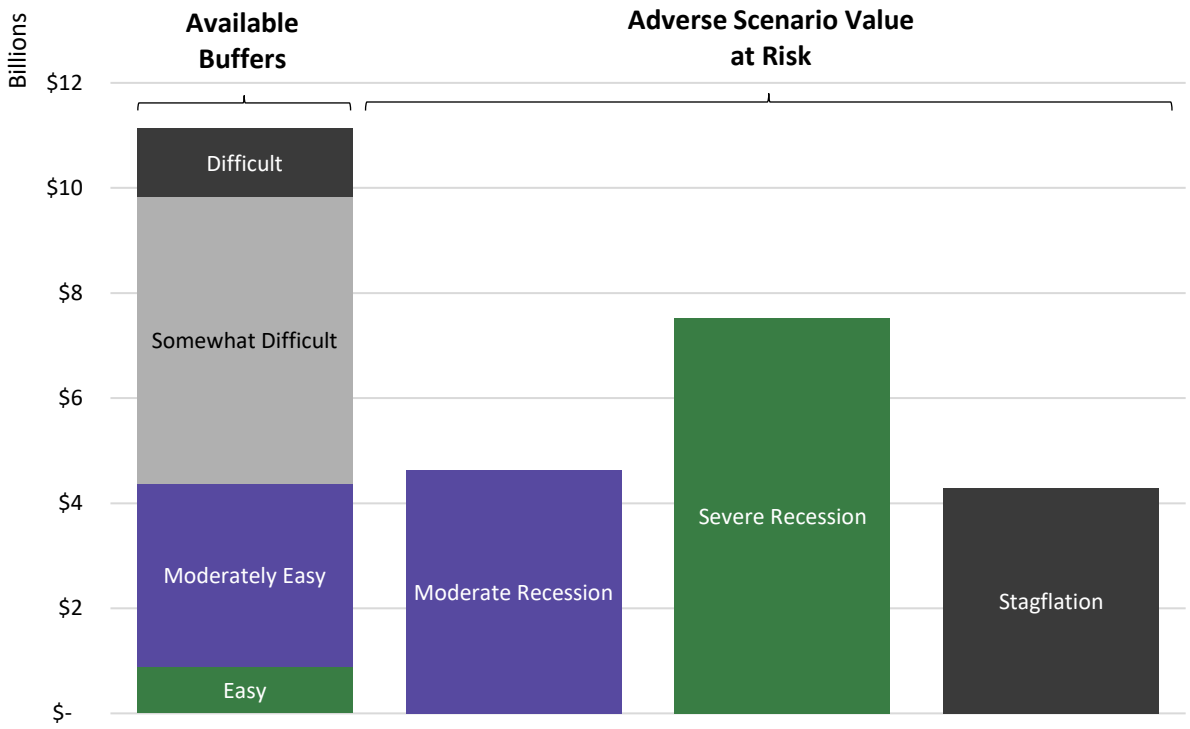
Comparing these totals to the previous Stress Test, it can be seen that the total amount of available buffers has increased by nearly $2 billion. However, it should be noted that the proportion of this total which is categorized as Easy to Access has decreased since the last report.

Due to the significant uncertainty at the time and the influx of funds that were seen in the immediate period following the pandemic, large cash appropriations for infrastructure, which get categorized as "working rainy day funds" within the Fiscal Toolkit, helped to bolster the Easy category in the previous assessment. As the budget has evolved over the intervening years, such appropriations now make up a relatively smaller amount of the total available buffers.

As a result, the degree to which appropriators may need to reach into the Fiscal Toolkit should such an adverse outcome face the state during the next five years may be relatively greater than it was three years ago.

Nonetheless, this analysis finds that the five-year total of Available Buffers is more than sufficient at current levels to cover the five-year total Value at Risk even under the Severe Recession scenario conditions. A chart directly comparing these two can be seen in Figure 21.

Figure 21
Comparing Available Buffers to Value at Risk



With this greater context as can be seen in Figure 21, this analysis finds that the total Value at Risk under the Moderate Recession and Stagflation outcomes would be approximately equal to the sum of Easy and Moderately Easy to Access budget buffers; approximately half of the Somewhat Difficult to Access budget buffers may be needed in addition in the event of a Severe Recession.

III. Conclusion

Key Takeaways

The ultimate purpose of this Stress Test analysis is not to try to anticipate the precise *levels* of revenue collections or program expenditures over the next five years, rather it is to evaluate the *relative change* the budget may be reasonably expected to exhibit given the set of adverse economic conditions considered. From this, the key analytical question this report seeks to address is whether or not, or more correctly to what extent, the state's suite of currently available budget buffers may be adequate as alternative sources of funding given those anticipated deviations, both from revenue decreases and expenditure increases. In concert with the other two of the triennial fiscal sustainability analyses, the Revenue Volatility Report and the Long-Term Budget, this analysis seeks to provide context and insights to the state's policymakers, with the overarching aim of providing an ever better guide to evaluating and managing the financial risks to the state.

As discussed in detail through the preceding pages of this report, this year's analysis finds that the total Five-Year Value at Risk under the Severe Recession scenario conditions, the most adverse case under consideration in this report, may amount to approximately $7.5 billion, due to the combination of revenue decreases and expenditure increases.

Given the variable volatility of the state's largest sources of revenue, a majority of the estimated revenue impacts are anticipated to materialize as losses of revenue to the state Income Tax Fund. Further, due to the strongly countercyclical nature of enrollment within the state's Medicaid program, a majority of the estimated expenditure impacts are anticipated to impact the budget as increases in total costs supporting that program.

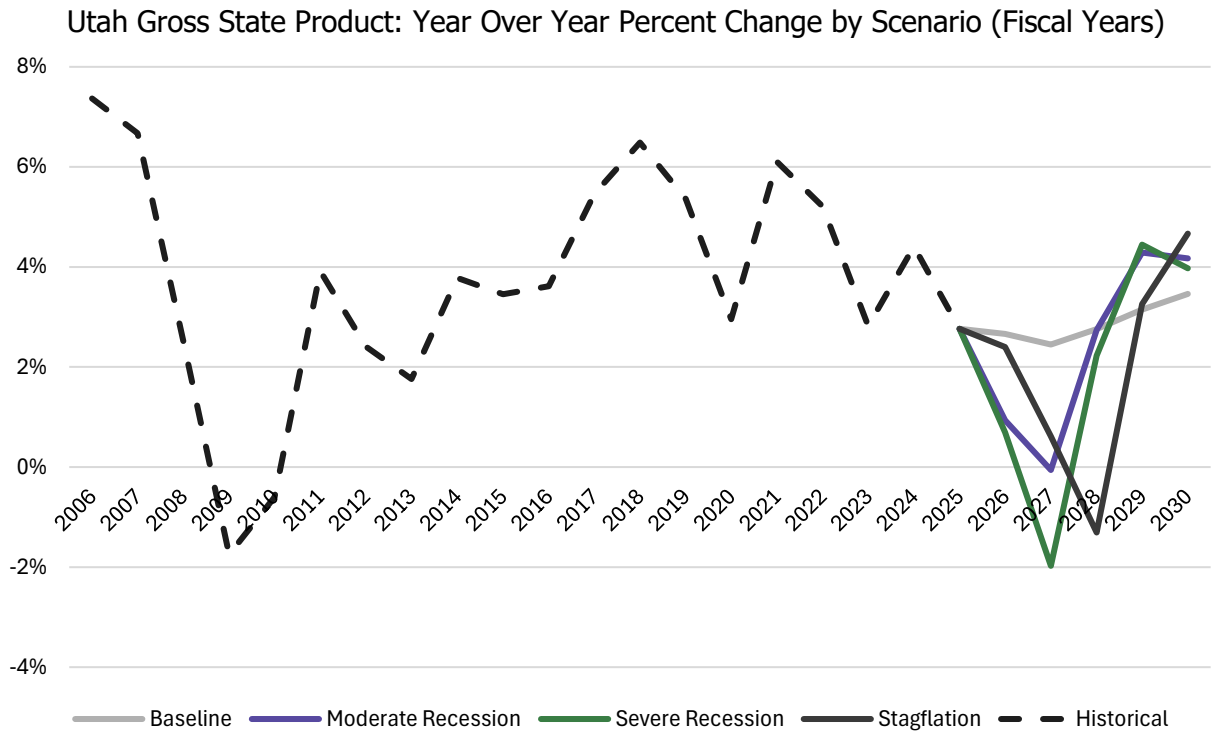
While this total Value at Risk is substantial, the key point of comparison in this analysis is how this amount relates to the state's available buffers which may be used to cover it. This year's report inventoried total available budget buffers up to a level of approximately $11.1 billion over the same five-year window of analysis.

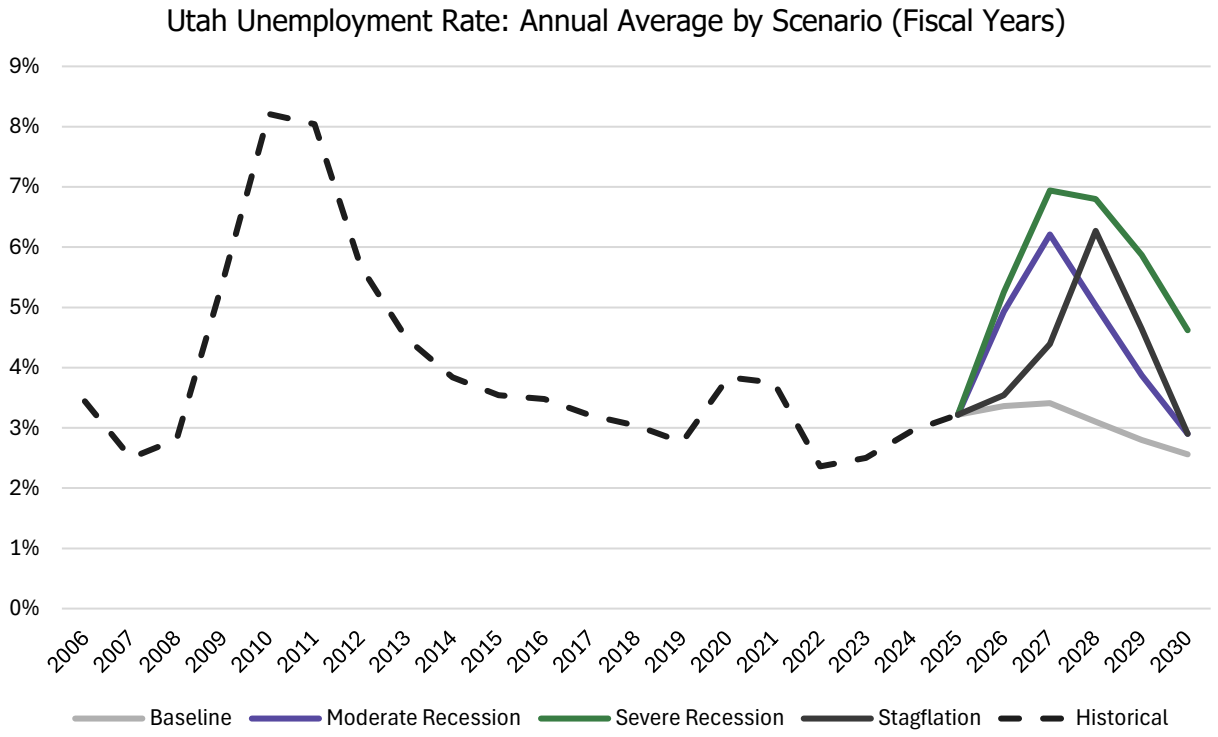
As discussed in the previous section, while the amount has increased overall, the proportion of this total buffer inventory which is from "Easy to Access" sources has become smaller compared to that found in the previous iteration of this report. This has come about as the amount of cash appropriations into infrastructure, known as working rainy day funds in Fiscal Toolkit parlance, has become smaller.

As a result, while this analysis finds that the Five-Year Available Buffers are more than sufficient to address the estimated Value at Risk over the five-year period, should such adverse conditions materialize during the next five years, more Moderately Easy and Somewhat Difficult to Access funds may need to be utilized than was anticipated in prior analyses.

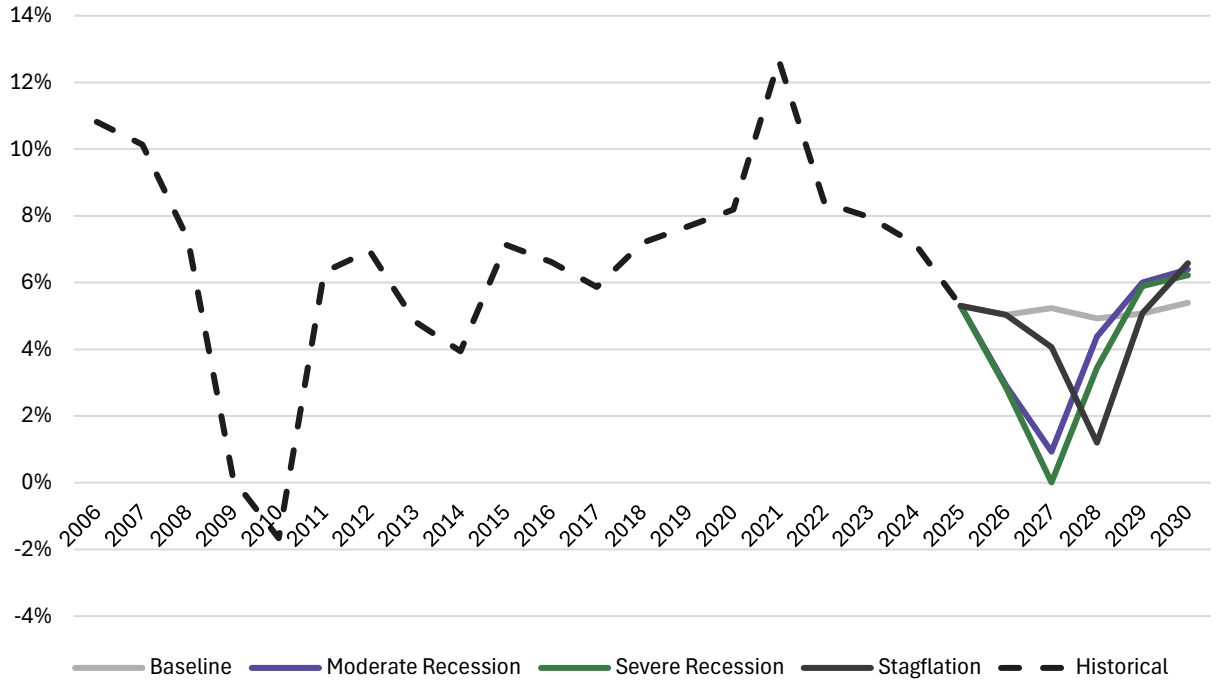
IV. Appendix

Key Economic Data by Scenario

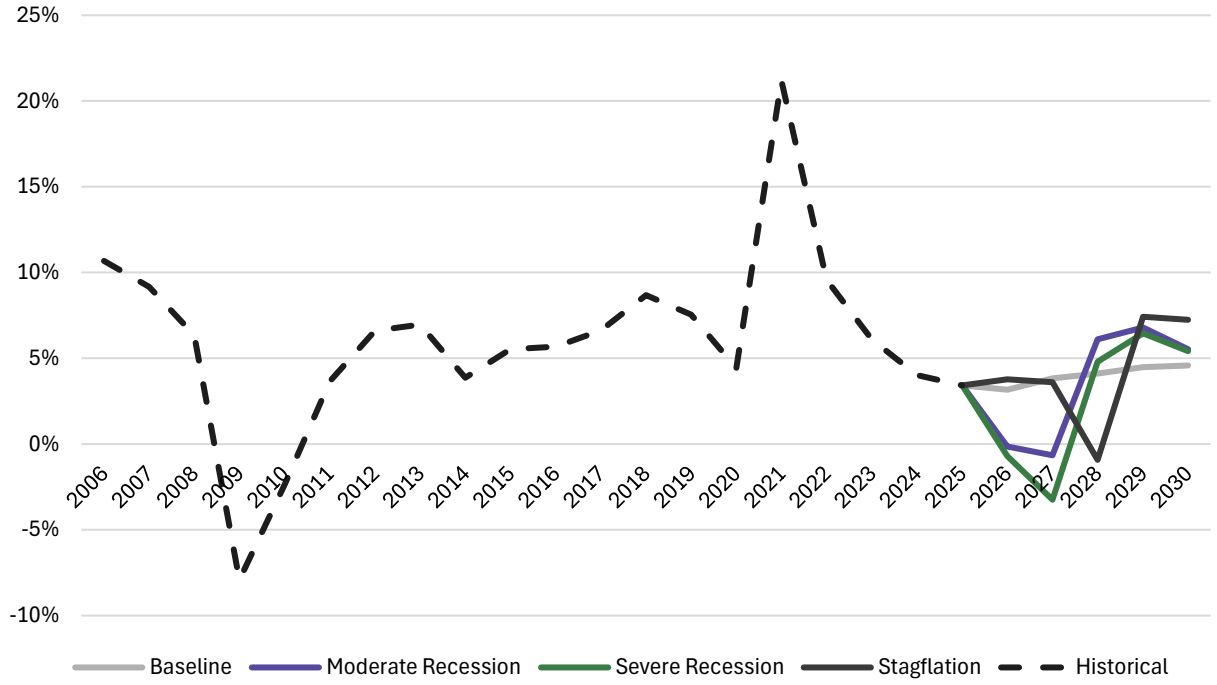


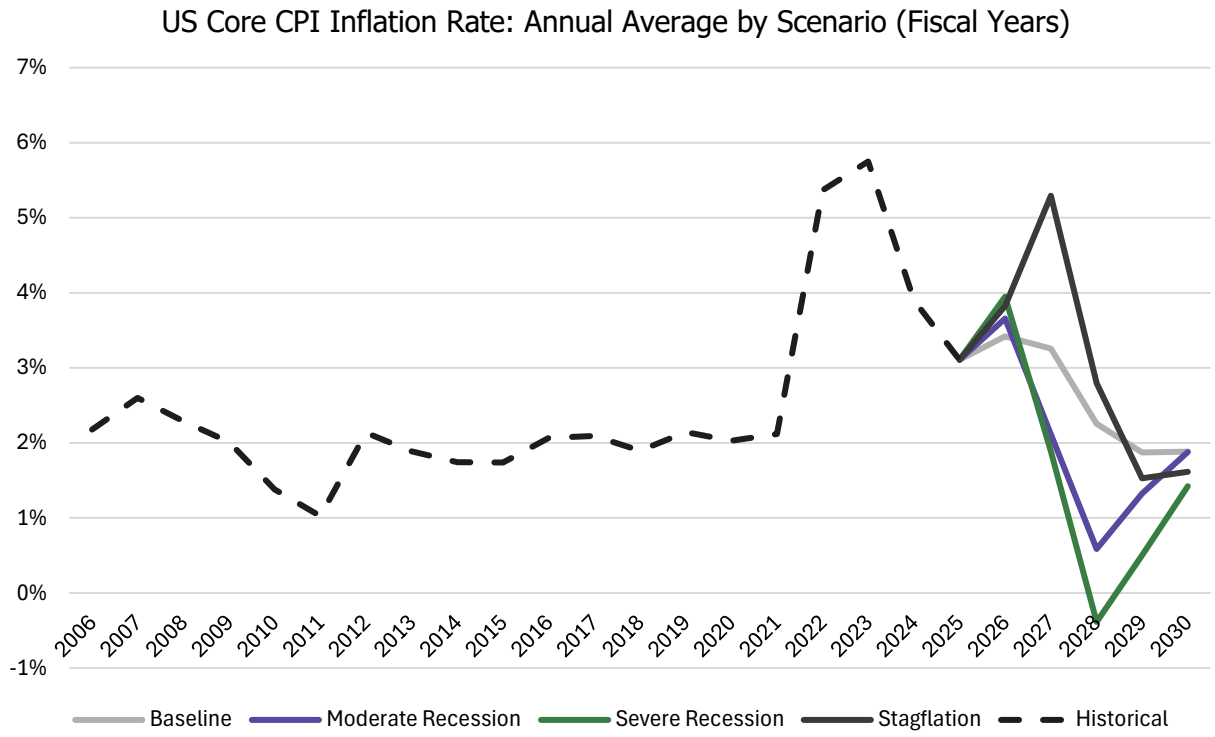


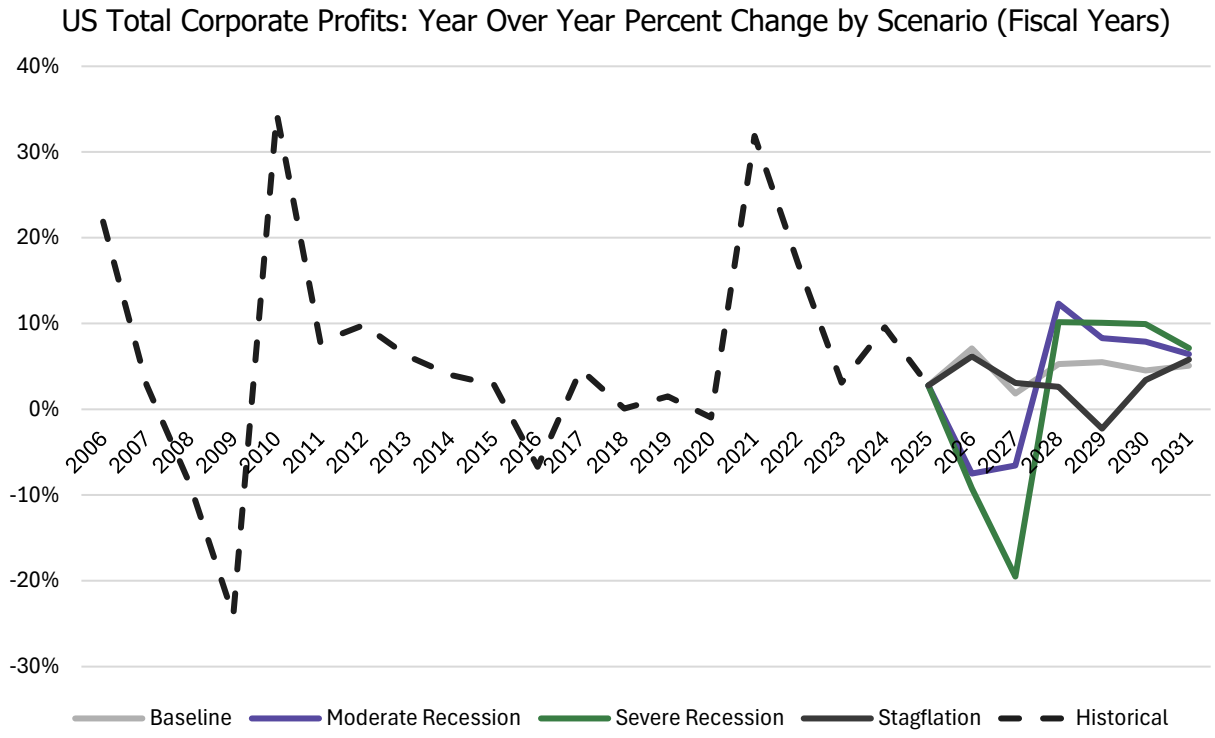
Utah Total Personal Income: Year Over Year Percent Change by Scenario (Fiscal Years)



Utah Total Retail Sales: Year Over Year Percent Change by Scenario (Fiscal Years)




US Core CPI Inflation Rate: Annual Average by Scenario (Fiscal Years)
7%
6%
5%
4%
3%
2%
1%
0%
-1%
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030
Baseline
Moderate Recession
Severe Recession
Stagflation
Historical


US Total Corporate Profits: Year Over Year Percent Change by Scenario (Fiscal Years)
40%
30%
20%
10%
0%
-10%
-20%
-30%
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031
Baseline
Moderate Recession
Severe Recession
Stagflation
Historical