



**STRESS-TESTING MAINE GENERAL  
FUND REVENUES & RESERVES  
FY19-FY23**

**OCTOBER 1, 2018**

**Consensus Economic Forecasting Commission  
and  
Revenue Forecasting Committee**

# STATE OF MAINE

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October 1, 2018

TO: Governor Paul R. LePage  
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FROM: Eric Stinneford, Chair  
Consensus Economic Forecasting Commission

Michael Allen, Chair  
Revenue Forecasting Committee

In accordance with Title 5, Chapter 151-B, Section 1710-G, the Consensus Economic Forecasting Commission (CEFC) and the Revenue Forecasting Committee (RFC) are pleased to present the first statutorily required stress-test of sales and individual income taxes based on two economic recession scenarios: one a moderate recession, the other a severe recession. Additionally, this report includes an analysis of the sufficiency of the current level of the Maine Budget Stabilization Fund (BSF) and an estimate of the reserves in the BSF necessary to offset the declines in General Fund revenue because of potential economic recession scenarios. Table 1 below provides a summary of the primary macroeconomic parameters defining the two hypothetical recession scenarios, relative to the equivalent assumptions in the CEFC's current baseline forecast.

Table 1

Calendar Years	2018	2019	2020	2021	2022	2023
<b>Wage &amp; Salary Employment (in Thousands)</b>						
CEFC Forecast 02/2018	624.6	627.1	627.1	627.1	627.1	627.1
Hypothetical Moderate Recession	624.6	612.7	607.3	612.1	619.8	627.7
Hypothetical Severe Recession	624.6	606.3	588.8	583.6	585.7	594.9
<b>Personal Income (\$ Millions)</b>						
CEFC Forecast 02/2018	63,300	66,011	68,616	71,153	73,377	75,670
Hypothetical Moderate Recession	63,300	64,300	65,760	68,949	72,500	75,649
Hypothetical Severe Recession	63,300	62,106	63,734	65,869	68,160	70,340
<b>Wage and Salary Income (\$ Millions)</b>						
CEFC Forecast 02/2018	30,052	31,224	32,379	33,513	34,518	35,554
Hypothetical Moderate Recession	30,052	29,708	29,849	31,518	33,504	35,411
Hypothetical Severe Recession	30,052	28,885	29,683	30,481	31,279	32,077
<b>CPI (Annual Percentage Change)</b>						
CEFC Forecast 02/2018	2.5	2.3	2.5	2.4	2.2	2.2
Hypothetical Moderate Recession	2.5	1.9	0.8	2.8	2.9	2.4
Hypothetical Severe Recession	2.5	0.3	0.5	1.7	2.2	2.6

The two forecasting committees estimate that a hypothetical moderate recession beginning in early 2019 would reduce sales and individual income taxes relative to the current baseline revenue forecast such that General Fund revenue would decline by 2.2 percent in FY2019 and approximately 6.0 percent in each year of the FY2020-21 biennium. The current BSF level of \$272.9 million would be sufficient to maintain current FY2019 appropriations and all but \$17 million of the base spending limitation level of appropriations for FY2020. The current BSF would be depleted by the start of FY2021, falling short of the FY2021 base spending limitation appropriations level by \$237 million. We estimate a BSF of 18 percent of FY2018 General Fund revenue (\$646 million), the current statutory maximum and more than double the current level, would be necessary to fully offset the revenue declines from a moderate recession to maintain the base spending limitation level of appropriations for the FY2020-FY2023 period.

The two forecasting committees estimate that a hypothetical severe recession beginning in early 2019 would reduce sales and individual income taxes relative to the current baseline revenue forecast such that General Fund revenue would decline by 4.0 percent in FY2019, 11.0 percent in FY2020, and 13 percent in FY2021 and FY2022. The current BSF level of \$272.9 million would be sufficient to maintain current FY2019 appropriations, but fall short of the base spending limitation level of appropriations for FY2020 by \$254 million. Revenue shortfalls relative to the current baseline forecast would range between \$400 and \$525 million over the FY2020-2023 period. We estimate the BSF would require a prohibitive level of funding to fully offset the reduction in revenue during the budget window studied. However, a BSF equal to the current maximum of 18 percent of FY2018 General Fund revenue would be sufficient to offset the revenue shortfall in FY2019 and FY2020, and offset approximately 25 percent of the revenue decline in FY2021.

During the development of this report both the CEFC and RFC observed that it has been 13 years since enactment of Title 5, Chapter 142: Maine Budget Stabilization Fund. While there have been minor amendments to Chapter 142 since 2005, primarily in 2015, the method of funding and uses of the BSF and its relationship to the General Fund Appropriation Limitation have essentially remained the same. The status of the State's economy and budget may provide policymakers with the opportunity to review Chapter 142 and determine if changes are warranted before the start of the next recession.

Cc: Alexander Porteous, Commissioner, Department of Administrative and Financial Services

Holly Lusk, Chief of Staff, Office of the Governor

Members, Joint Standing Committee on Taxation

Julie Jones, Office of Fiscal and Program Review, Maine Legislature

Grant Pennoyer, Executive Director of the Maine Legislature

## **I: EXECUTIVE SUMMARY**

Since the mid-1990s state revenue bases have become more elastic, magnifying revenue forecasting errors over the course of the business cycle. These forecasting errors have made it difficult for state policymakers, who are required to have balanced budgets, to determine how much incoming revenue during good economic times should be saved to offset the revenue shortfalls that will follow the inevitable onset of the next recession. Led by PEW Charitable Trusts, researchers since the end of the last recession have been evaluating best practices that states can use to guide them in determining the method of funding and uses of “rainy day” funds that will best serve their states in the next recession. One best practice is a regular “stress-test” of a state’s revenue system to estimate the magnitude of revenue reductions during recessionary periods and the reserves necessary to achieve the policy goals of policymakers to offset those shortfalls.

The Governor’s FY2018-19 biennial budget included a proposal that was subsequently enacted in Public Laws of Maine 2017, chapter 284, requiring the CEFC and the RFC to perform a biennial stress-test of General Fund revenues assuming hypothetical moderate and severe recessions and evaluating the sufficiency of the Maine Budget Stabilization Fund (Maine BSF) under each economic scenario

The two forecasting committees estimate that a hypothetical moderate recession beginning in early 2019 would reduce sales and individual income taxes relative to the current baseline revenue forecast such that General Fund revenue would decline by 2.2 percent in FY2019 and approximately 6.0 percent in each year of the FY2020-21 biennium. The current BSF level of \$272.9 million would be sufficient to maintain current FY2019 appropriations and all but \$17 million of the base spending limitation level of appropriations for FY2020. The current BSF would be depleted by the start of FY2021, falling short of the FY2021 base spending limitation appropriations level by \$237 million. We estimate a BSF of 18 percent of FY2018 General Fund revenue (\$646 million), the current statutory maximum and more than double the current level, would be necessary to fully offset the revenue declines from a moderate recession to maintain the base spending limitation level of appropriations for the FY2020-FY2023 period.

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## **II: REVENUE VOLATILITY**

Following the end of the “Great Recession” and the relatively weak recovery, economists, state budget experts and bond rating agencies began to study to what extent state government revenue streams had become increasingly volatile, and what policies could be enacted to stabilize state budgets over the business cycle. The general conclusion of researchers is that state revenue bases have become more elastic since the mid-1990s, particularly taxable sources of the individual income tax, and that there is no reason to believe this will change in the near term.<sup>1</sup>

State revenues have historically increased or decreased consistent with the underlying national economy, and more specifically with changes in the state economies in which they are applied. Recent research has concluded that sometime in the late 1990s the elasticity of state tax revenues to economic conditions increased, making the management of state budgets that are required to be balanced on an annual basis more difficult. The responsiveness of individual income tax receipts has become the primary source of this increased volatility. Sales and corporate income taxes have also contributed to revenue uncertainty, but three studies cited here conclude that changes in sources of income, primarily investment income from capital gains, have made the individual income tax more difficult to forecast over the business cycle.

Mattoon and McGranahan (2012) find that the individual income tax elasticity doubled in the late 90s, and that two-thirds of the increase in cyclical volatility is from the income tax base, primarily from investment income. Structural changes in labor markets, especially at the high end of the income distribution, have made employee compensation more cyclical over the last 20 years as well.

Yolanda Kodrzycki (2014) of the Federal Reserve Bank of Boston focuses on the volatility of each state’s revenue system. Like Mattoon and McGranahan, Kodrzycki finds that individual income taxes are the main source of the increased revenue volatility since the late 1990s, and that the concentration of capital gains and other investment income in the upper-end of the income distribution has increased the elasticity of individual income tax receipts.<sup>2</sup>

Kodrzycki and Zhao (2015) build on prior studies by focusing on the revenue volatility of the six New England states and the size of rainy day funds needed by each state to offset the revenue shortfalls from moderate and severe recessions. The authors calculate the estimated deviation of revenues from trend for the 1988-2013 period for each state, showing that revenue volatility has increased in most of the New England states since the late 1990s, with Maine being an exception. In Maine, the volatility was slightly higher in the 2000s, but its estimated deviation from revenue trend

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<sup>1</sup> Richard Mattoon and Leslie McGranahan, (2012), “Revenue Bubbles and Structural Deficits: What’s a state to do?”, Federal Reserve Bank of Chicago.

Yolanda K. Kodrzycki, (2014), “Smoothing State Tax Revenues over the Business Cycle: Gauging Fiscal Needs and Opportunities”, Federal Reserve Bank of Boston.

Yolanda K. Kodrzycki and Bo Zhao, (2015), “Achieving Greater Fiscal Stability: Guidance for the New England States”, Federal Reserve Bank of Boston.

<sup>2</sup> Kodrzycki’s results show that Maine’s individual income tax is more cyclical than the sales tax, but it is one of seven states where the elasticity decreased in the 2000-2012 period compared to the 1980-1999 period.

during economic expansions and recessions was generally consistent over the 25-year period reviewed.

The three papers explore policy options to smooth resources over the business cycle. Policy changes such as increasing (decreasing) income tax rates during recessions (expansions) could be made to offset the increasing volatility of the tax, but there are other tax policy objectives such as consistency, competitiveness, and equity to consider. Shifting to consumption taxes is another option, but most states have a narrow sales tax base that excludes many services that make up much of household spending offsetting the theoretical stability of consumption taxes. Reliance on federal assistance is one way states can limit raising taxes or cutting spending during recessionary periods, but the effectiveness of federal fiscal and monetary policy to offset state revenue shortfalls varies by state and the economic circumstances in which they are being implemented.<sup>3</sup> The general conclusion is that state rainy day funds (RDFs) or budget stabilization funds (BSFs) may be the best approach to smooth resources over the business cycle and act as a countercyclical policy measure.<sup>4</sup>

### **III: BUDGET STABILIZATION FUNDS**

While policies to broaden state tax bases have been suggested to help reduce revenue volatility, most researchers have concluded that changes to the tax base will have a limited impact, and BSFs would be the best insurance against the next recession for states, all of which must balance their budgets. This recommendation has been endorsed from groups across the ideological spectrum.<sup>5</sup>

The PEW Charitable Trusts (PEW) has taken the lead on this topic, publishing numerous reports on the need for state BSFs and best practices around the design of such funds so that they best serve the unique characteristics of each state's economy, revenue structure, and budget needs.<sup>6</sup>

RDFs traditionally have been savings accounts that had little statutory language that directed funds into and out of the fund, or purposes for its use. BSFs have a defined purpose, primarily to smooth spending over the budget cycle so that spending and taxes can remain relatively constant during recessionary purposes. Maine is a good example: it moved from a RDF that had little statutory

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<sup>3</sup> Joe Peek, Eric Rosengren, and Geoffrey M.B. Tootell, (2018), "Some Unpleasant Stabilization Arithmetic", Federal Reserve Bank of Boston.

<sup>4</sup> Many people use the terms "Budget Stabilization Fund" and "Rainy Day Fund" interchangeably, but as this report will show most state budget experts believe there are important differences between the two.

<sup>5</sup> "Managing Uncertainty: How State Budgeting Can Smooth Revenue Volatility", (2014), The PEW Charitable Trusts. Elizabeth McNichol, Iris Lav, and Michael Leachman, (2015), "Better State Budget Planning Can Help Build Healthier Economies", Center on Budget and Policy Priorities.

"A Primer of State Rainy Day Funds", (2015), Institute on Taxation and Economic Policy.

Joseph Henchman, (2013), "Tax Foundation and CBPP Agree: States Need Strong Rainy Day Funds", Tax Foundation.

<sup>6</sup> "Why States Save: Using Evidence to Inform How Large Rainy Day Funds Should Grow", (2015), The PEW Charitable Trusts.

language that set out its purpose, funding, or uses to a BSF that has clear statutory guidance on how and when it can be utilized.<sup>7</sup>

In PEW's "Why States Save" (2015), they recommend states consider three factors in constructing their BSFs: (1) the fund should have an explicit and narrowly defined purpose for its use, (2) states should perform a regular analysis of their revenue system to determine the degree of revenue volatility, and (3) set a target level of funding that is consistent with its stated purpose and guided by the findings of a revenue volatility study. In the December 2015 report PEW judged Maine to have an explicit and narrowly defined purpose for its BSF, but at the time of the report did not engage in a regular study of revenue volatility to estimate the reserves necessary during a recession.

#### **IV: STRESS-TESTING STATE REVENUES AND RESERVES**

Historically the general rule of thumb for RDFs and BSFs was 5 percent of general fund revenue.<sup>8</sup> The experience of state budgets over the last twenty years has demonstrated that for most states 5 percent of previous year's revenues is below what is needed to adequately offset revenue shortfalls, even during a moderate recession. This is particularly true for resource based states where commodity price fluctuations can lead to highly volatile revenue streams even during periods when the national economy is in an expansion phase. For states to estimate the level of reserves best for their budget needs, researchers have recommended a regular review of their revenue volatility over the business cycle.

Two studies have taken different approaches to measuring the volatility of state tax revenues, and applying those measures to provide guidance on the level of reserves that would be necessary to counter recessions of varying magnitudes.<sup>9</sup> These studies conclude that the Maine BSF would need approximately 10 percent of General Fund revenue in reserve to offset a revenue shortfall associated with a moderate recession, and approximately 15 percent during a severe recession.<sup>10</sup>

Kodrzycki and Zhao (2015) utilize a look-back approach to calculate the funds necessary to fully offset a revenue shortfall, which is defined as the difference between "actual revenue for the fiscal year (adjusted for policy changes) and the amount that states would have collected if revenue had been consistent with long-run trends." In this study "fully offset" means sufficient funds to get revenue resources back to the long-run revenue trend and prevent a reduction in services and/or revenue increases during the below trend period. For the 1988-2012 period the authors conclude

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<sup>7</sup> See the next section for a description of Maine's Budget Stabilization Fund and how it is designed to interact with the State's appropriation limitation.

<sup>8</sup> National Conference of State Legislators (1983).

<sup>9</sup> Kodrzycki and Zhao (2015)

Dan White, Bernard Yaros, and Brittany Merollo (2017), "Stress-Testing States", Moody's Analytics

Dan White, Todd Metcalfe, and Sarah Crane (2018), "Stress-Testing States 2018", Moody's Analytics

<sup>10</sup> The Moody's Analytics' reports calculate a "combined fiscal shock" which includes not only the revenue shortfall because of the recession, but the increased spending to fully fund the state's Medicaid program.



that Maine would have needed reserves of 9.6 percent of General Fund revenue to fully offset a period of revenue shortfalls from a “Middle-Case Scenario”, and 14.9 percent for a “Worst-Case Scenario”.

The Moody’s Analytics (2017) analysis uses a forward-looking approach by “stress-testing” each state’s revenues and Medicaid expenditures during moderate and severe recession scenarios occurring in fiscal year 2019. In this study the FY2019 revenue “shortfall” is the estimated revenue during the recession scenario compared to a baseline revenue forecast for FY2019 assuming 2 percent annual revenue growth from actual revenue realized in FY17. An estimate of increased Medicaid costs during fiscal year 2019 is added to the revenue shortfall to project the combined fiscal shock for each state. Moody’s concludes that Maine would experience a revenue shortfall equal to 8.2 percent of FY2017 revenue if a moderate recession occurred during FY2019, and a fiscal shock equal to 9.7 percent of FY2017 revenue. For the severe recession scenario, the percentages are 13.2 percent and 16.4 percent, respectively.

Moody’s (2018) updates the previous year’s report by estimating the combined fiscal shock in FY2020 of a moderate and severe recession. Like the 2017 study, Moody’s estimates a tax revenue shortfall equal to 7.7 percent of FY2018 General Fund revenue from a moderate recession, and a fiscal shock of 10 percent of FY2018 General Fund revenue. A severe recession is estimated to require 12.6 percent of FY2018 revenue to offset the tax revenue shortfall, and 15.6 percent to cover the combined fiscal shock.

## **V: MAINE APPROPRIATION LIMITATION & BUDGET STABILIZATION FUND**

### **General Fund Appropriation Limitation<sup>11</sup>**

As of December 1 of each even-numbered year, a General Fund appropriation limit is established for the ensuing two fiscal years. For the first fiscal year, the General Fund appropriation limit is equal to the “biennial base year appropriation” multiplied by one plus the Growth Limitation Factor. For the second fiscal year, the General Fund appropriation limit is the General Fund appropriation limit of the first year multiplied by one plus the Growth Limitation Factor. As amended in 2015 Chapter 267, “biennial base year appropriation” means the General Fund appropriation enacted for fiscal year 2016-17 as of December 1, 2016, and for subsequent fiscal years, the amount of the General Fund appropriation limit for the current year as of December 1, of even-numbered years. Chapter 267, “biennial base year appropriation” means the General Fund appropriation enacted for fiscal year 2016-17 as of December 1, 2016, and for subsequent fiscal years, the amount of the General Fund appropriation limit for the current year as of December 1, of even-numbered years. The Growth Limitation factor, as amended in 2015 Chapter 267 means "Average personal

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<sup>11</sup> M.R.S. Title 5, Chapter 142, Section 1534

income growth" which is defined as the average for the prior 10 calendar years, ending with the most recent calendar year for which data is available, of the percent change in personal income in this State, as estimated by the United States Department of Commerce, Bureau of Economic Analysis. The average personal income growth is determined by October 1, annually, by the State Economist.

The General Fund appropriation limit applies to all General Fund appropriations, except certain education costs. 2005 Chapter 2 provides that the additional cost for certain essential educational programs and services ("Essential Programs and Services") for kindergarten to grade 12 education ("K-12 Education") over the fiscal year 2004-05 appropriation for general purpose aid for local schools is excluded from the General Fund appropriation limit until the State share of that cost reaches 55 percent of the total State and local cost (the "EPS Costs"). Current law provides that the State will pay 55 percent of the total State and local cost of K-12 Education for fiscal year 2020 and that the General Fund appropriation limit will include the State share of the cost of K-12 Education beginning with fiscal year 2020.

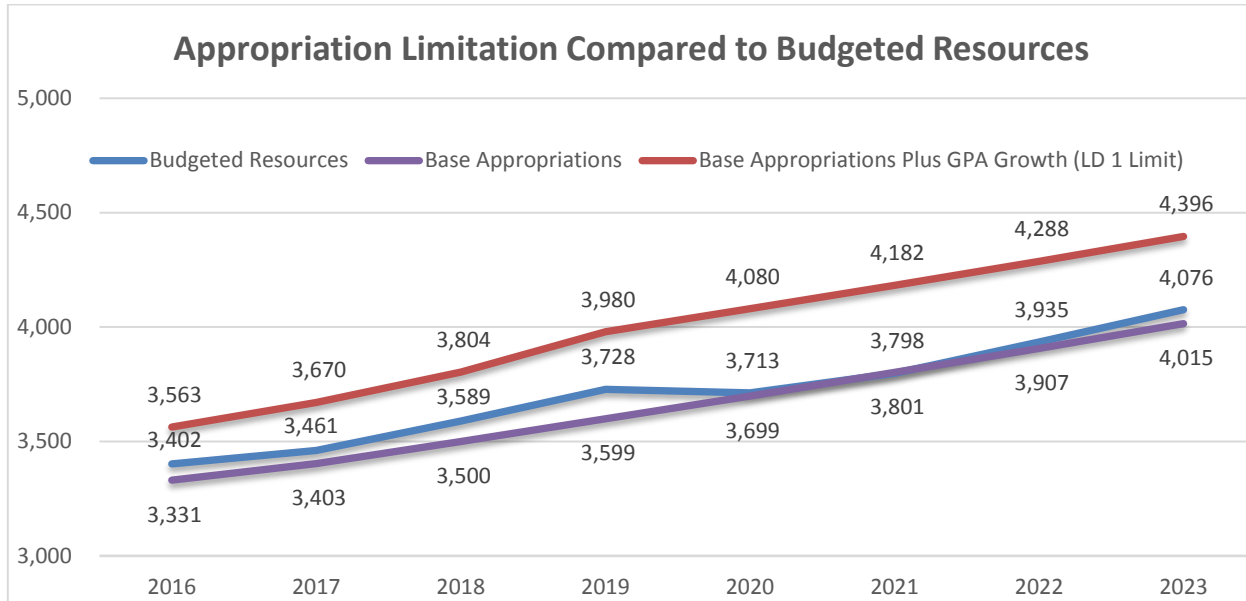
*Table 2: Calculation of the Appropriation Limitation: Fiscal Years 2016-2023*

	2016	2017	2018	2019	2020	2021	2022	2023
Annual Growth Limitation Factor thru 128th 2nd Special Session								
Annual Growth Limitation Factor			2.84%	2.84%	2.77%	2.77%	2.77%	2.77%
Total Base Appropriations	3,331	3,403	3,500	3,599	3,699	3,801	3,907	4,015
Appropriations for General Purpose Aid to Schools	\$967	\$1002	\$1039	\$1116	\$1116	\$1116	\$1116	\$1116
Additional Appropriations for GPA above FY2005 GPA	\$232	\$267	\$304	\$381	\$381	\$381	\$381	\$381
LD 1 Appropriations Limit (Base plus Additional GPA)	\$3,563	\$3,670	\$3,804	\$3,980	\$4,080	\$4,182	\$4,288	\$4,396

*Table 3: Calculation of Budgeted Resources and Total Appropriations: Fiscal Years 2016-2023*

	2016	2017	2018	2019	2020	2021	2022	2023
General Fund Budgeted Resources								
Beginning Budgeted Balance	26	71	57	75	27	-	-	-
Net Transfers/Adjustments to Fund Balance	10	(65)	27	(15)	-	-	-	-
Net General Fund Revenue	3,366	3,455	3,506	3,668	3,686	3,798	3,935	4,076
Total Budgeted Resources	\$ 3,402	\$ 3,461	\$ 3,589	\$ 3,728	\$ 3,713	\$ 3,798	\$ 3,935	\$ 4,076
Amount Budgeted Resources are (below) above the limit	\$ (161)	\$ (209)	\$ (214)	\$ (252)	\$ (367)	\$ (385)	\$ (353)	\$ (320)
Total Appropriations	\$ 3,331	\$ 3,403	\$ 3,514	\$ 3,700	\$ 3,963	\$ 4,051	\$ 4,051	\$ 4,051
Amount Budgeted Appropriations are (below) above the limit	\$ (232)	\$ (267)	\$ (290)	\$ (280)	\$ (117)	\$ (131)	\$ (237)	\$ (345)

The comparison below also considers the General Fund Appropriation limit as it applies to all General Fund appropriations (Base Appropriations), as well as excluding the growth for certain education costs as described in this paragraph.



“Baseline General Fund revenue” and other available budgeted General Fund resources that exceed the General Fund appropriation limit plus the EPS Costs must be transferred to the Maine Budget Stabilization Fund (the “Stabilization Fund”). If the Stabilization Fund is at its limit of 18% of General Fund revenue of the immediately preceding fiscal year, then amounts that would otherwise have been transferred to the Stabilization Fund must be transferred to the Tax Relief Fund for Maine residents. “Baseline General Fund revenue” means the recommended General Fund revenue forecast reported by the Revenue Forecasting Committee in its December 1 report in even-numbered years, increased by the estimated amount of net General Fund revenue decrease, if any, for all enacted changes affecting the state and local tax burden included in that forecast.

The General Fund appropriation limit may be exceeded for certain extraordinary circumstances which must be outside the control of the Legislature, including (a) catastrophic events, such as natural disaster, terrorism, fire, war and riot, (b) unfunded or underfunded State or Federal mandates, (c) citizens’ initiatives or other referendum, (d) court orders or decrees or (e) loss of Federal funding. Extraordinary circumstances do not include changes in economic conditions, revenue shortfalls, increases in salaries or benefits, new programs or program expansions that go beyond existing program criteria and operation. The General Fund appropriation limit may be temporarily increased for such other purposes only by a vote of both Houses of the Legislature in a separate measure that identifies the intent of the Legislature to exceed the General Fund appropriation limit. Finally, 2005 Chapter 2 is subject to modification or repeal at any time by the Legislature.

## **Maine Budget Stabilization Fund<sup>12</sup>**

The Maine Budget Stabilization Fund, formerly known as the “Rainy Day Fund,” was restructured in 2005, Chapter 2, to be expended primarily to offset a general fund revenue shortfall. Amounts in the stabilization fund may not exceed 18 percent, of the total General Fund revenues in the immediately preceding state fiscal year and, except as provided by Title 5, section 1533, may not be reduced below 1 percent of total General Fund revenue in the immediately preceding state fiscal year. If the stabilization fund is at its limit of 18 percent of General Fund revenue of the immediately preceding year, then amounts that would otherwise have been transferred to the stabilization fund must be transferred to the Tax Relief Fund for Maine Residents established in Title 5, section 1518-A.

The Maine Budget Stabilization Fund coupled with both the Reserve for General Fund Operating Capital and the temporary curtailment of allotment in Title 5, section 1668, are important tools in maximizing the fiscal capacity to withstand an operating revenue shortfall and/or a fluctuation in operating expenditures that run counter to the economic cycle, with a policy objective of maintaining a low overall tax burden and a structurally positioned budget. The Maine BSF is integrated with the General Fund Appropriation limitation to provide funding consistent with the economic cycle and additionally receives deposits from available year-end General Fund unappropriated surplus. The following table displays the fund’s deposit and withdrawal history since fiscal year 2005. The General Fund appropriation limitation calculation has not resulted in any deposits to the fund. This is in part due to the calculation of the exclusion of the growth in education costs.

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<sup>12</sup> M.R.S. Title 5, Chapter 142, Section 1532

Table 4: History of Maine Budget Stabilization Fund

Fiscal Year Ending June 30th	Maine Budget Stabilization Fund (Formerly Maine Rainy Day Fund)								Ending Balances as a % of General Fund Revenue	
	Beginning Balance	Deposits: GF Available Year-end, Unappropriated Surplus or "Cascade"	"Specified" Deposits: GF Unappropriated Surplus	Transfer to GF	Transfer to Programs	Interest Earned	Ending Balance	Statutory Cap	General Fund Revenue	
2005	33,158,244	13,121,679					\$46,279,923	\$279,084,505	2,790,845,053	2.5%
2006	46,279,923	30,662,369		-	-	2,960,695	\$79,902,987	\$351,819,082	2,931,825,687	4.1%
2007	79,902,987	-	29,000,000	-	-	6,576,879	\$115,479,866	\$362,351,447	3,019,595,389	5.2%
2008	115,479,866	-	10,000,000	-	(100,000)	3,497,143	\$128,877,009	\$370,538,280	3,087,818,992	5.5%
2009	128,877,009	-		(131,550,969)	(50,000)	2,919,303	\$195,343	\$337,364,195	2,811,368,295	0.0%
2010	195,343	19,626,525	5,597,244	-	(50,000)	15,970	\$25,385,082	\$330,681,900	2,755,682,500	1.3%
2011	25,385,082	46,080,951		-	(50,000)	50,781	\$71,466,814	\$353,394,811	2,944,956,756	3.0%
2012	71,466,814	-	4,000,000	(30,855,982)	(50,000)	247,677	\$44,808,509	\$361,864,587	3,015,538,222	2.1%
2013	44,808,509	55,065,933		(40,253,091)	(50,000)	129,123	\$59,700,474	\$371,326,061	3,094,383,842	2.0%
2014	59,700,426	8,453,337		-	(50,000)	167,728	\$68,271,491	\$373,619,632	3,113,496,933	2.4%
2015	68,271,491	23,854,159	18,803,702		(100,000)	254,141	\$111,083,493	\$599,278,778	3,329,326,547	3.3%
2016	111,083,493	707,300				561,446	\$112,352,239	\$605,914,404	3,366,191,131	3.3%
2017	112,352,239	36,837,024	46,017,246		(50,000)	1,133,541	\$196,290,050	\$621,882,695	3,454,903,862	5.7%
2018	196,290,050	76,247,087	-	(2,000,000)	(200,000)	2,524,023	\$ 272,861,160	\$645,781,652	3,587,675,847	7.6%

## VI: RECESSION SCENARIOS

### **Statute and Background: 5 M.R.S §1710-A**

**Alternative economic scenarios.** No later than February 1st of each even-numbered year the commission shall provide to the State Budget Officer, the State Economist and the Associate Commissioner for Tax Policy at least 2 additional economic forecasts that assume potential economic recession scenarios of varying levels of severity. These additional forecasts must include economic assumptions for the current fiscal biennium and the next 2 fiscal biennia. In each report the commission shall fully describe the methodology employed in reaching its recommendations.

The Governor's biennial budget included a proposal that was subsequently enacted in Public Laws of Maine 2017, chapter 284, requiring the CEFC to provide the State Economist, the State Budget Officer, and the Associate Commissioner for Tax Policy with at least two alternative economic recession scenarios of varying levels of severity. The alternative scenarios are required to be included in the CEFC's report due February 1st of each even-numbered year and must include assumptions for calendar years that encompass the current and next two biennia. It is important to note that these recession scenarios are hypothetical in nature and should not be considered a prediction by the CEFC.

## **Methodology**

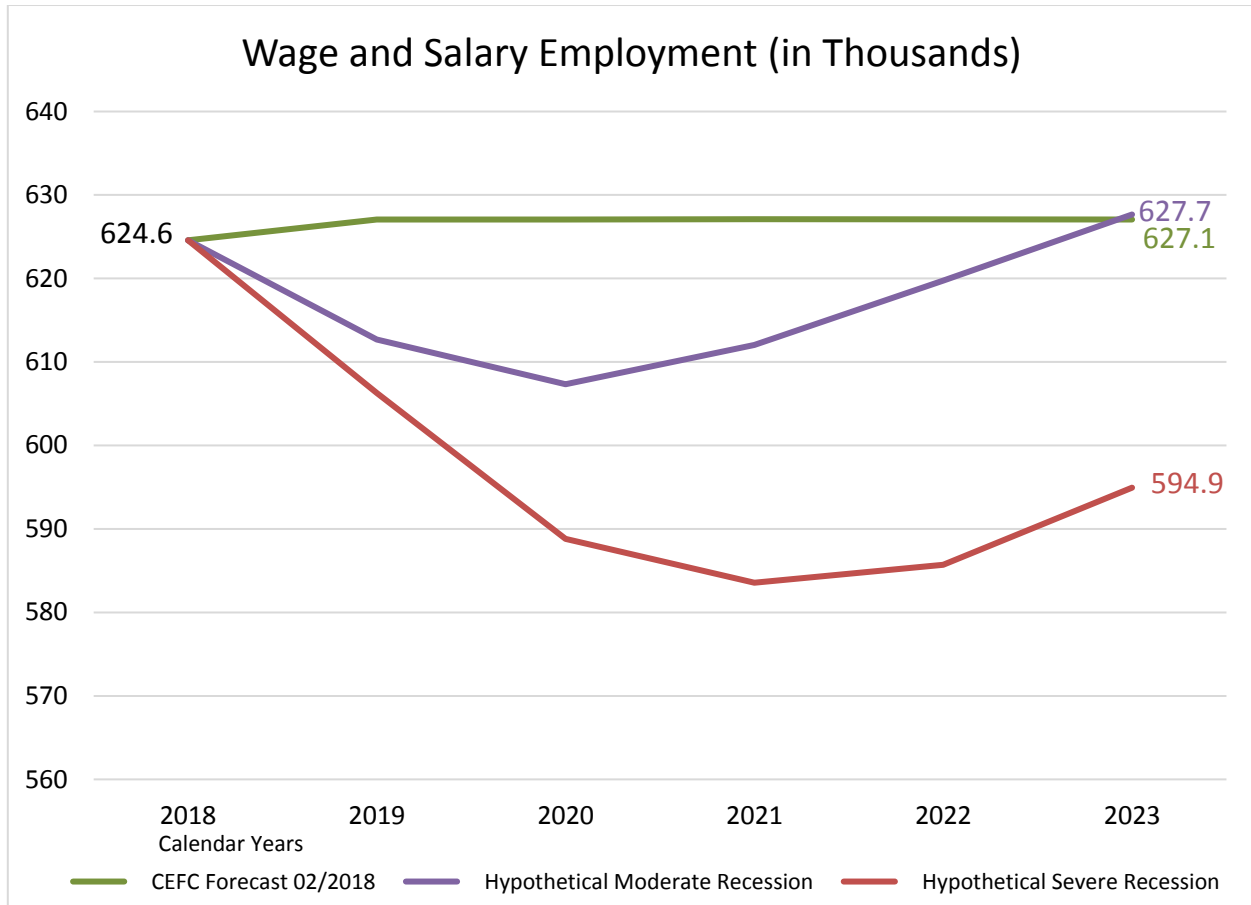
The CEFC spent some time during their January 2018 meeting discussing how best to identify the alternative scenarios for use in the stress-test report described in statute. The Commissioners decided to designate two alternative scenarios provided by Moody's Analytics in January 2018 as the moderate and severe recession scenarios. While the scenarios describe a set of specific events surrounding the recessions, the CEFC does not ascribe to these specifics, instead selecting the scenarios based on the numbers and growth rates that seemed reasonable as generic "moderate" and "severe" recessions. These scenarios provided plausible economic inputs for an analysis of the General Fund revenue projections in both a moderate and severe downturn. These recession scenarios were identified explicitly for the stress-testing required by statute and are not an official economic forecast by the CEFC.

Each alternative scenario was compared to the Moody's Analytics baseline scenario for January 2018 to create a ratio that eliminates any extra variation stemming from the differences between the Moody's baseline and the CEFC forecast. This ensures that the alternative scenarios capture only the differences resulting from the economic conditions and not from a differing baseline. Additionally, the two alternative scenarios originally had the onset of the recession beginning at different points in time; in both cases, the forecasts were adjusted so that the recessions begin in the first quarter of 2019. For 2018, the CEFC forecast was used; the alternative economic scenarios were then used to provide forecasts for 2019-2023.

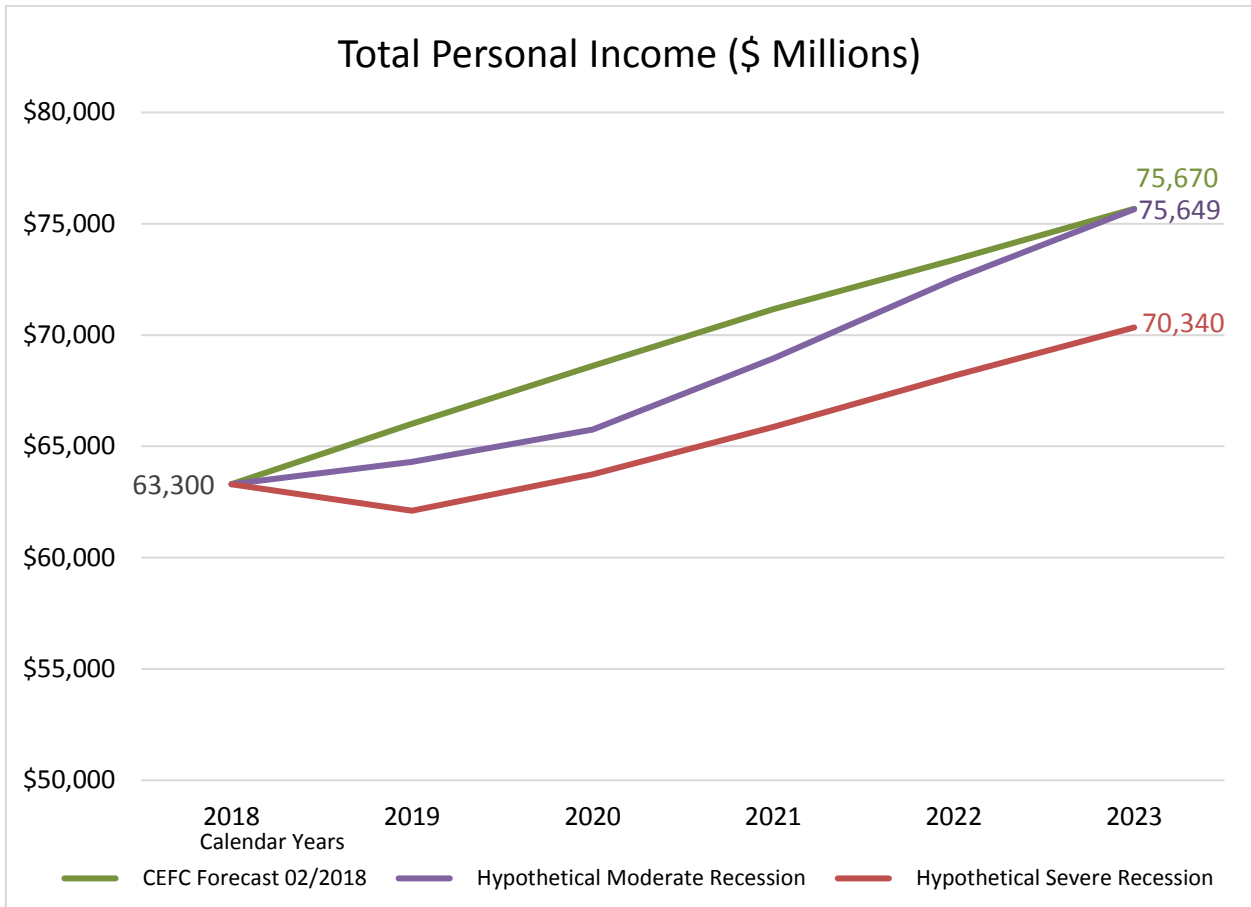
An additional modification was made to the personal income figures in the severe recession scenario. The standard methodology resulted in unrealistic growth rates for wages and salaries and total personal income showing a steep drop-off followed by a sharp up-turn. To mitigate these unreasonable swings in the growth rates, the 2019 and 2023 figures for wage and salary income and supplements to wages and salaries were used as endpoints with the intervening years marked along a trendline. Total personal income was then calculated using these revised figures.

## Key Economic Indicators

Total wage and salary employment in the baseline scenario from the CEFC is forecast to rise through 2019 to 627,100 and then remain at that level through 2023. In the hypothetical moderate recession scenario, employment declines to 607,300 before recovering to 627,700. In the hypothetical severe recession scenario, employment declines to 583,600 and only returns to 594,900 by 2023.

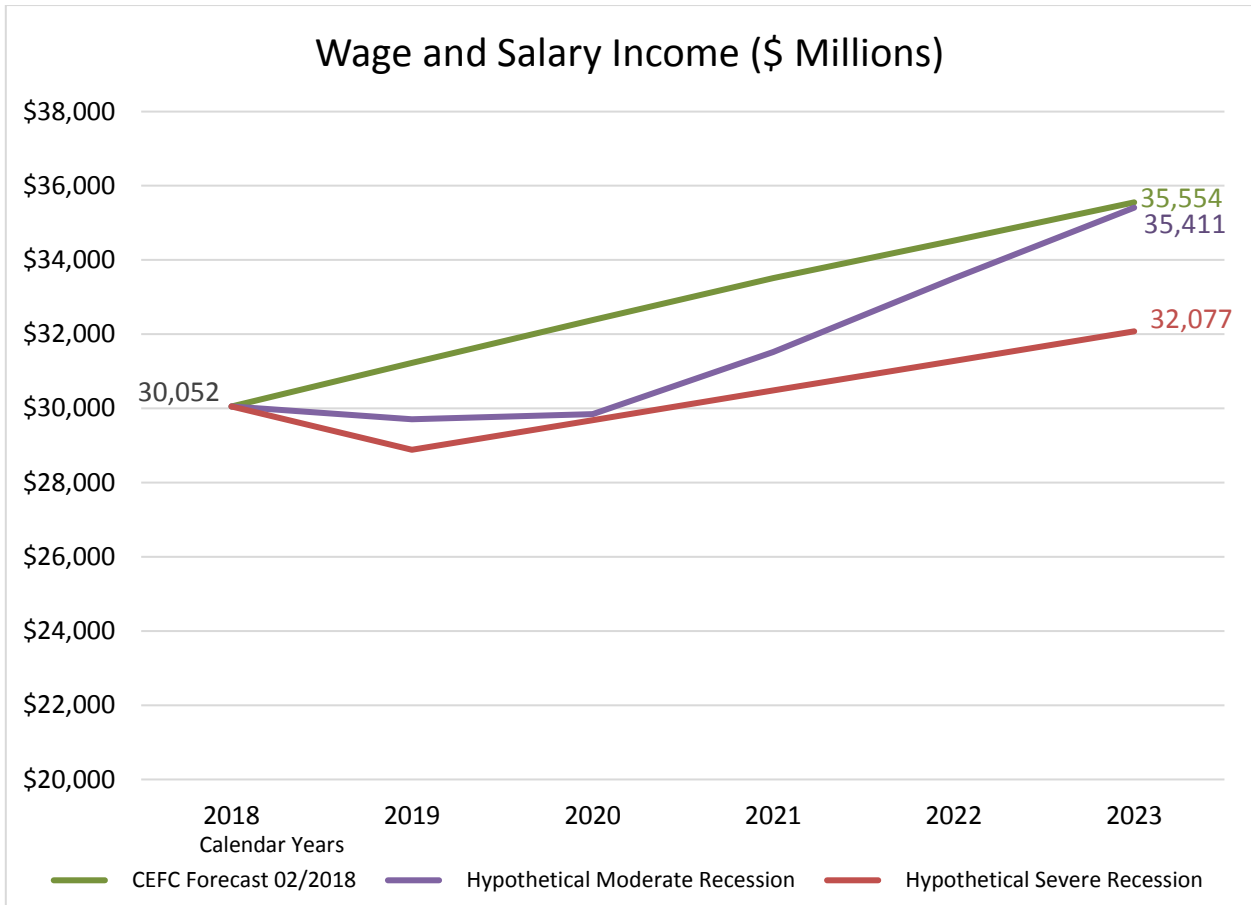


Total personal income rises from \$63.3 billion in 2018 to \$75.7 billion in 2023 in the baseline scenario from the CEFC. The hypothetical moderate recession scenario sees total personal income rise to nearly the same point in 2023, but with a slower growth rate in the early years of the scenario and a faster growth rate in the later year. Total personal income in the hypothetical severe recession scenario falls to \$62.1 billion and only increases to \$70.3 billion in 2023.





Wage and salary income in the baseline scenario increases from \$30.1 billion in 2018 to \$35.6 billion in 2023. In the hypothetical moderate recession scenario, wage and salary income remains nearly unchanged for two years before increasing at a faster rate to \$35.4 billion in 2023. Wage and salary income declines to \$28.9 billion in the hypothetical severe recession scenario and only increases to \$32.1 billion in 2023.



## **VII: REVENUE IMPACT OF RECESSION SCENARIOS**

### **Statute and Background: 5 M.R.S §1710-G**

**Use of Revenue Forecasts.** No later than October 1st of each even-numbered year the commission and committee shall jointly issue a report to the Governor, the Legislative Council and the joint standing committee of the Legislature having jurisdiction over appropriations and financial affairs that uses the alternative economic scenarios recommended by the commission in accordance with section 1710-A, subsection 4. The report must include analyses and findings that detail the stress impact such potential economic recession scenarios would have on the current General Fund revenue projections of sales and income tax revenues. The report must include an analysis of the sufficiency of the current level of the Maine Budget Stabilization Fund and an estimate of the reserves in the Maine Budget Stabilization Fund necessary to offset the declines in revenue because of potential economic recessions of varying level of severity.

Governor LePage's FY2018-19 biennial budget included a proposal that was subsequently enacted in Public Laws of Maine 2017, chapter 284, requiring the CEFC and the RFC to perform a biennial stress-test of General Fund revenues assuming hypothetical moderate and severe recessions, and the sufficiency of the Maine BSF under each economic scenario. The methodology for performing the stress-test is consistent with the approach used in the two Moody's Analytics papers discussed earlier in the report.

### **Methodology**

The moderate and severe recession revenue forecasts were performed using the same methodology as the semiannual revenue forecasting exercises. The State Economist provided the Maine Revenue Services' Office of Tax Policy (OTP) with the CEFC's economic forecasts for the two recession scenarios presented in the Appendix, and an extended baseline forecast for calendar years 2022 and 2023. Additionally, the State Economist provided forecasts of supplemental economic variables consistent with each recession scenario and the baseline that are typically used by OTP in developing their recommended forecasts for tax revenue lines administered by Maine Revenue Services.

The baseline forecast has been updated to account for all actions by the 128<sup>th</sup> Legislature through the Second Special Session. These adjustments had little impact on sales and service provider taxes, but the enactment of income tax conformity to the federal Tax Cuts and Jobs Act (TCJA) did have a relatively small effect on individual income tax receipts. The baseline and recession

scenario forecasts were completed before enactment of the conformity bill, therefore the percentage change in the modeled forecasts was applied to the post-conformity baseline forecast to arrive at the forecast of individual income tax receipts in each recession scenario.

The statute only requires a stress-test of sales and use and individual income taxes.<sup>13</sup> While these tax lines represent approximately 87 percent of General Fund revenue we know that other General Fund revenue lines such corporate income tax, estate tax and other consumption based revenues (e.g. cigarette and tobacco taxes, real estate transfer tax, lottery revenues) will be negatively impacted in recessions as well. The revenue forecasts presented here assume the other revenue lines are not affected by the recession scenarios. This assumption regarding the other revenue lines will understate the revenue shortfall estimated in the stress-test. Finally, unlike the Moody's Analytics reports the stress-test statute does not require an estimate of increased demands on Medicaid or other safety-net programs that historically rise during recessions. The omission of spending programs further understates the "fiscal shock" the budget will experience in a recession.

### **Moderate Recession Scenario**

We estimate that a hypothetical moderate recession will reduce sales and use and service provider taxes by approximately 1.4 percent in FY2019, 3.8 percent in FY2020 and FY2021, 1.6 percent in FY2022 and essentially return to the baseline forecast by FY2023 (See Table 5). These percentage point reductions translate into a loss of \$185 million in revenue over the forecast period, peaking at approximately \$60 million a year in reduced revenue in fiscal years 2020 and 2021. In those peak years of the recession \$14 million of the reduction is from sales taxes paid by businesses on investments in equipment, \$26 million is business purchases on intermediate goods and services, and \$20 million is from consumer purchases of primarily durable and nondurable goods. The relatively robust recovery in employment and personal income beginning in calendar year 2021 results in the sales and use and service provider taxes essentially returning to the current baseline forecast by FY2023.

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<sup>13</sup> We include the service provider tax in this report because the General Fund portion of the tax was originally part of the sales tax base, and the OTP models make no distinction between the two tax bases.

Table 5

Sales & Use and Service Provider Taxes							
Fiscal Years							
		2019	2020	2021	2022	2023	
March 2018 RFC Forecast		\$1,529.9	\$1,598.4	\$1,659.2	\$1,722.3	\$1,787.9	
Next Cycle Recession Forecast		\$1,508.4	\$1,539.0	\$1,595.0	\$1,694.6	\$1,775.6	
Variance		(\$21.5)	(\$59.4)	(\$64.2)	(\$27.7)	(\$12.2)	
Percent Change		-1.4%	-3.7%	-3.9%	-1.6%	-0.7%	

Individual income tax receipts have a similar pattern as sales taxes, a decline of approximately 4 percent in FY2019, followed by a 10 percent decline in FY2020 and FY2021, a 6.3 percent decrease in FY2022, and then a 2.4 percent reduction in FY2023 (See Table 6). The primary impact on individual income tax receipts is through wage and salary income, which typically represent approximately 70 percent or more of Federal Adjusted Gross Income. The significant change in wage and salary growth (+3.9 percent to -1.1 percent) in calendar year 2019 because of the recession has an immediate effect on withholding receipts in FY19. A double digit decline in the capital gains in tax year 2019 combined with an 8 percent decrease in rent, royalties and pass through income bring the total impact on individual income tax liability in tax 2019 to -9 percent. Again, the relatively quick and robust recovery starting in calendar year 2021 results in the individual income tax forecast in the moderate recession scenario to be only \$44 million below the current baseline forecast in FY2023.

Table 6

Individual Income Taxes							
Fiscal Years							
		2019	2020	2021	2022	2023	
March 2018 RFC Forecast		\$1,619.4	\$1,720.4	\$1,754.8	\$1,789.2	\$1,852.8	
Next Cycle Recession Forecast		\$1,558.0	\$1,545.9	\$1,573.0	\$1,676.9	\$1,808.7	
Variance		(\$61.4)	(\$174.6)	(\$181.8)	(\$112.4)	(\$44.1)	
Percent Change		-3.8%	-10.1%	-10.4%	-6.3%	-2.4%	

When the sales, service provider, and individual income tax moderate recession forecasts are added to the baseline forecasts for the rest of General Fund revenues, the total estimated impact of the moderate recession on General Fund revenues is -2.2 percent in FY2019, -6.0 percent in FY2020 and FY2021, -3.4 percent in FY2022, and -1.3 percent in FY2023 (See Table 7). The shortfall in General Fund revenues is between \$220 million and \$230 million at the peak of the

recession. Because of forecasted length of the recession and relatively quick recovery General Fund revenues are estimated to be only \$54 million below the baseline forecast by FY2023. As discussed above, this should be a best-case scenario since the revenue forecast of the moderate recession scenario assumes only sales, service provider and individual income tax revenue are affected by economic slowdown.

Table 7

Total General Fund							
Fiscal Years			2019	2020	2021	2022	2023
March 2018 RFC Forecast			\$3,668.2	\$3,686.0	\$3,798.0	\$3,934.7	\$4,076.3
Next Cycle Recession Forecast			\$3,587.0	\$3,463.7	\$3,564.3	\$3,801.6	\$4,022.8
Variance			(\$81.2)	(\$222.3)	(\$233.7)	(\$133.0)	(\$53.5)
Percent Change			-2.2%	-6.0%	-6.2%	-3.4%	-1.3%

### Severe Recession Scenario

We estimate that a hypothetical severe recession will reduce sales and use and service provider taxes by approximately 2.6 percent in FY2019, 8.7 percent in FY2020, and 14.0 percent in FY2021 through FY2023 (See Table 8). These percentage point reductions translate into a loss of \$900 million in revenue over the forecast period, peaking at approximately \$250 million a year in reduced revenue in FY2022. In those peak years of the recession \$40 million of the reduction is from sales taxes paid by businesses on investments in equipment, \$70 million is business purchases on intermediate goods and services, and \$140 million is from consumer purchases of primarily durable and nondurable goods. The depth of the recession, and the weak recovery keep General Fund revenues well below the current baseline forecast through the forecast period.

Table 8

Sales & Use and Service Provider Taxes							
Fiscal Years			2019	2020	2021	2022	2023
March 2018 RFC Forecast			\$1,529.9	\$1,598.4	\$1,659.2	\$1,722.3	\$1,787.9
Protracted Slump Forecast			\$1,490.1	\$1,460.1	\$1,433.1	\$1,470.1	\$1,544.7
Variance			\$ (39.8)	\$ (138.3)	\$ (226.0)	\$ (252.2)	\$ (243.2)
Percent Change			-2.6%	-8.7%	-13.6%	-14.6%	-13.6%

Like the 2007-09 recession (Great Recession), the severe recession scenario in this exercise has a deep and lasting impact on individual income tax receipts (See Table 9). Relative to the baseline forecast, individual income tax revenue is projected to decline by an average of 16.5 percent during the FY2020-23 period. Like the moderate recession, the decline in wage and salary growth has a large effect on the income tax receipts during and after the recession ends. Wage and salary growth is projected to decline 3.9 percent in calendar year 2019, a significant change compared to the 3.9 percent increase currently forecasted for 2019. Unlike the moderate recession wage and salary growth never equals or exceeds the baseline forecast during the forecast period. Capital gains are assumed to decline by 60 percent in tax year 2019 and 40 percent in tax year 2020, just as they did in the 2007-09 recession. Even assuming a rebound in capital gains growth starting in tax year 2021, the impact on income tax receipts is negative over the budget period. Pass-through and other business income are also significantly impacted during the recession, and do rebound starting in tax year 2021, but again the deep declines during the recession and early stages of the recovery and the slow recovery keep individual income tax receipts well below the baseline forecast.

*Table 9*

<b>Individual Income Taxes</b>							
<b>Fiscal Years</b>			<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
March 2018 RFC Forecast			\$1,619.4	\$ 1,720.4	\$1,754.8	\$1,789.2	\$1,852.8
Protracted Slump Forecast			\$1,514.0	\$ 1,439.7	\$1,449.8	\$1,492.1	\$1,563.7
Variance			\$ (105.4)	\$ (280.7)	\$ (305.0)	\$ (297.2)	\$ (289.1)
Percent Change			-6.5%	-16.3%	-17.4%	-16.6%	-15.6%

When the sales, service provider, and individual income tax moderate recession forecasts are added to the baseline forecasts for the rest of General Fund revenues, the total estimated impact of the severe recession on General Fund revenues is -4.0 percent in FY2019, -10.8 percent in FY2020 and approximately -13.0 percent in each of the remaining years in the forecast window (See Table 10). The shortfall in General Fund revenue averages \$510 million between FY2021 and FY2023.

Table 10

Total General Fund							
Fiscal Years			2019	2020	2021	2022	2023
March 2018 RFC Forecast			\$3,668.2	\$ 3,686.0	\$3,798.0	\$3,934.7	\$4,076.3
Protracted Slump Forecast			\$3,525.9	\$ 3,287.9	\$3,293.5	\$3,412.8	\$3,570.6
Variance			\$ (142.3)	\$ (398.1)	\$ (504.5)	\$ (521.9)	\$ (505.7)
Percent Change			-3.9%	-10.8%	-13.3%	-13.3%	-12.4%

In looking back at the Great Recession, the percentage declines in sales and service provider taxes relative to the last forecast prior to the start of the recession were like those presented here; -10.1 percent in FY2009 and -16 percent in FY2010. Individual income tax receipts during the Great Recession fell by 12.1 percent in FY2009 and 9.4 percent in FY2010 compared to that same forecast. One explanation for the stronger impact on individual income tax revenue in the severe recession scenario compared to the Great Recession is the reduced reliance on capital gains income in current expansion. In tax year 2007 tax liability from net capital gains income realized by Maine residents was \$178 million; the March 2018 revenue forecast projects only \$122 million in tax liability from capital gains in tax year 2021. The revenue forecast completed in December of 2007 assumed an annual decline in capital gains realizations of 15 percent over the forecast period. This conservative forecast of capital gains growth helped to moderate the impact of a sharp decline in capital gains realizations on the 2007 forecast. While the current revenue forecast continues to be conservative in projecting capital gains realizations, we are assuming positive annual growth in capital gains.

**VIII: BUDGET STABILIZATION FUND SUFFICIENCY AND NEEDS**

As described in Section V, flows into and out of the BSF is based on the difference between General Fund revenues and the General Fund Appropriation Limitation. During periods when the General Fund revenue is forecasted to exceed the spending limitation those excess revenues are to be transferred into the BSF; surplus revenues at the end of the fiscal year are another source of funds to the BSF. Section 1532 provides the statutory authority to use the BSF to offset a General Fund revenue shortfall. A revenue shortfall is defined as “the amount by which the General Fund appropriation limitation established by section 1534 exceeds baseline General Fund revenue and other available resources in each state fiscal year.” The BSF and spending limitation are designed to work together to save during periods when revenues are above the limitation and to dissave during periods of a revenue shortfall. The spending limitation is structured to be a proxy for trend revenue growth to set a spending level that is sustainable relative to the State’s revenue system.

The stress-test results presented here are the first analysis to determine if the current funding level of the BSF is sufficient to provide resources to maintain spending at limitation levels during a period of revenue shortfall. This meets the third criteria of the PEW report that states set a BSF cap based on the unique characteristics of their revenue structure and economy.

*Note, for purposes of determining the sufficiency and needs of the BSF, we calculate the revenue shortfall as the difference between the “base spending limitation” and forecasted General Fund revenues. Because the General Fund appropriation limitation adds the appropriations necessary to achieve 55 percent of K-12 education to the base spending limitation, it consistently exceeds General Fund revenue, regardless of economic conditions (See Graph in Section V). By restricting the analysis to the calculation of the “base spending limitation” the information provided here gives policymakers an estimate of the sufficiency and needs of the BSF to sustain the growth in recent biennial budget appropriations during recessionary periods.*

We estimate that a moderate recession scenario (Next Cycle Forecast) will require \$632 million of BSF resources to offset a revenue shortfall over the FY2019-22 budget period (Table 11). The current BSF level of \$272.9 million is enough to cover the revenue shortfall in FY19, and most of the shortfall in FY20. A BSF at its maximum level of 18 percent of prior year revenues (\$646 million) would provide enough resources to supplement annual revenues to maintain General Fund spending at base spending limitation levels over the FY2019-22 period. At the end of FY2022 \$14 million would remain in the BSF and would begin to be rebuilt by almost \$8 million in FY2023 as General Fund revenues are projected to be above the base spending limitation level in the moderate recession scenario.

Table 11

General Fund Appropriation Limitation and Sufficiency of the Maine Budget Stabilization Fund (Moderate Recession)							
Fiscal Years		2018	2019	2020	2021	2022	2023
Base Appropriations Limitation as of 10/1/18			\$3,701.0	\$3,699.0	\$3,801.0	\$3,907.0	\$4,015.0
Revenues/Resources Minus Appropriations Limitation			(\$54.4)	(\$235.3)	(\$236.7)	(\$105.4)	\$7.8
Budget Stabilization Fund at Fiscal Year End		\$272.9	\$218.5	\$0.0	\$0.0	\$0.0	\$7.8

Kodrzycki and Zhao, and Moody’s Analytics recommends Maine have a BSF of 10 percent of prior year’s revenue to offset a moderate recession. Based on the results of this stress-test study a BSF of 10 percent of FY2018 revenue would be sufficient to cover all the revenue shortfall in FY2019 and FY2020, and approximately 30 percent (\$168 million) of the FY21 shortfall. A BSF of this size would provide the Governor and Legislature 18 months to institute budget savings to bring the FY2021 budget back into balance.



In the hypothetical severe recession scenario (Protracted Slump Forecast) an unreasonable level of BSF resources would be required to fully offset a revenue shortfall over the FY2019-23 budget period (Table 12). The current BSF level of \$272.9 million is enough to cover the revenue shortfall in FY2019, and 38 percent of the shortfall in FY2020. A BSF at its maximum level of 18 percent of prior year revenues (\$646 million) would provide enough resources to supplement annual revenues to maintain General Fund spending at base spending limitation levels over the FY2019-20 period. At the end of FY2020, \$119 million would remain in the BSF and it would cover approximately 25 percent of the FY2021 shortfall. A BSF at its statutory maximum entering a severe recession would provide the Governor and Legislature 18 months to institute budget savings to bring the FY2021 budget back into balance.

*Table 12*

<b>General Fund Appropriation Limitation and Sufficiency of the Maine Budget Stabilization Fund (Severe Recession)</b>						
<b>Fiscal Years</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Base Appropriations Limitation as of 10/1/18		\$3,701.0	\$3,699.0	\$3,801.0	\$3,907.0	\$4,015.0
Revenues/Resources Minus Appropriations Limitation		(\$115.4)	(\$411.1)	(\$507.5)	(\$494.2)	(\$444.4)
Budget Stabilization Fund at Fiscal Year End	\$272.9	\$157.5	\$0.0	\$0.0	\$0.0	\$0.0

Kodrzycki and Zhao, and Moody’s Analytics recommends Maine have a BSF of 15 percent of prior year’s revenue to offset a severe recession. Based on the results of this stress-test study a BSF of 15 percent of FY2018 revenue would be sufficient to cover all the revenue shortfall in FY2019 and FY2020, but leave the BSF with little resource available in FY2021. A BSF of this size would provide the Governor and Legislature 18 months to institute budget savings to bring the FY2021 budget back into balance.

## **IX: CONCLUSIONS**

As the national and state economies continue their recovery and expansion from the 2007-09 recession, Maine, like many states, is preparing for the next recession. The FY2018-19 biennial budget included a provision (Title 5, Chapter 151-B, Section 1710-G) to inform policymakers on the estimated impact of a moderate and severe recession on sales and individual income tax revenues, and the sufficiency and needs of the Maine Budget Stabilization Fund in each of the recession scenarios. This joint biennial report by the Consensus Economic Forecasting Commission and the Revenue Forecasting Committee fulfills that statutory charge.

The two forecasting groups conclude that the current BSF of \$273 million is not sufficient to fully offset the revenue shortfalls estimated as the result of a moderate and severe recession. However, the BSF is at a level that will provide the Governor and Legislature time during the early stages of the next recession to make the changes necessary to bring the budget back into balance.

The statutory maximum for the BSF of 18 percent of prior year General Fund revenues (currently \$646 million) would be sufficient to fully offset a moderate recession modeled in this report. This means that estimated revenues during a moderate recession combined with drawdowns of the BSF would allow a level of spending equal to the base appropriation limitation for the duration of a revenue shortfall. While a BSF at its statutory cap would not be sufficient to fully offset a revenue shortfall because of a severe recession, it would provide enough resource to maintain spending at the base appropriations limitation for approximately 18 months.

During the development of this report both the CEFC and RFC observed that it has been 13 years since enactment of Title 5, Chapter 142: Maine Budget Stabilization Fund. While there have been minor amendments to Chapter 142 since 2005, primarily in 2015, the method of funding and uses of the BSF and its relationship to the General Fund Appropriation Limitation have essentially remained the same. The status of the State's economy and budget may provide policymakers with the opportunity to review Chapter 142 and determine if changes are warranted before the start of the next recession.

## **APPENDIX**

## Baseline Scenario

The baseline economic scenario is the CEFC forecast from February 1, 2018. This scenario does not forecast a recession. Employment in Maine increases through 2019. Wage and salary income rises each year along with total personal income, with the strongest growth in the near term of the forecast.

Maine Consensus Economic Forecasting Commission						
February 2018 Forecast	Forecast - Calendar Years					
	2018	2019	2020	2021	2022	2023
CPI-U* (Annual Change)	2.5%	2.3%	2.5%	2.4%	2.2%	2.2%
CPI for Energy Prices** (Annual Change)	6.1%	2.3%	2.1%	2.6%	2.6%	2.6%
CPI for New Vehicles** (Annual Change)	-0.6%	0.0%	-0.3%	0.2%	0.3%	0.1%
New Vehicle Registrations** (Annual Change)	-7.0%	-2.3%	-1.4%	-1.8%	-1.8%	0.0%
Personal Savings Rate**	4.3%	5.3%	5.5%	5.8%	5.9%	5.8%
Maine Unemployment Rate**	3.3%	3.2%	3.3%	3.5%	3.7%	3.8%
3-Month Treasury Bill Rate**	1.69%	2.28%	2.78%	3.10%	3.10%	2.98%
10-Year Treasury Note Rate**	3.01%	3.54%	3.72%	3.72%	3.69%	3.67%
Before-Tax Corporate Profits* (Annual Change)	6.0%	4.8%	3.2%	3.5%	3.7%	2.7%
Maine Wage & Salary Employment* (thousands)	624.6	627.1	627.1	627.1	627.1	627.1
Natural Resources	2.4	2.4	2.4	2.5	2.5	2.5
Construction	28.3	28.4	28.8	29.1	29.3	29.5
Manufacturing	51.0	51.1	51.2	51.2	51.1	51.1
Trade/Trans./Public Utils.	121.2	121.6	120.9	120.4	119.3	118.1
Information	7.4	7.4	7.4	7.4	7.4	7.4
Financial Activities	30.6	30.7	30.6	30.4	30.2	30.1
Prof. & Business Services	67.6	68.1	68.5	69.2	70.4	71.7
Education & Health Services	129.0	129.7	129.4	129.6	129.7	129.8
Leisure & Hospitality Services	66.2	66.4	66.2	66.3	66.2	66.1
Other Services	21.2	21.3	21.0	20.8	20.5	20.3
Government	99.6	100.0	100.8	100.2	100.4	100.5
Maine Wage & Salary Employment* (Annual Change)	0.4%	0.4%	0.0%	0.0%	0.0%	0.0%
Natural Resources	1.1%	0.5%	0.2%	1.0%	1.1%	0.4%
Construction	-1.6%	0.6%	1.3%	1.2%	0.7%	0.6%
Manufacturing	0.9%	0.2%	0.2%	0.0%	-0.1%	0.0%
Trade/Trans./Public Utils.	0.0%	0.3%	-0.6%	-0.4%	-0.9%	-1.0%
Information	-1.2%	0.2%	-0.1%	0.6%	0.3%	0.0%
Financial Activities	0.1%	0.2%	-0.4%	-0.4%	-0.7%	-0.5%
Prof. & Business Services	3.2%	0.7%	0.5%	1.0%	1.8%	1.8%
Education & Health Services	0.9%	0.5%	-0.2%	0.2%	0.1%	0.1%
Leisure & Hospitality Services	0.0%	0.3%	-0.3%	0.2%	-0.2%	-0.2%
Other Services	-0.2%	0.3%	-1.5%	-1.0%	-1.1%	-1.3%
Government	-0.6%	0.4%	0.8%	-0.6%	0.2%	0.1%
	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Personal Income* (\$ million)	63,300	66,011	68,616	71,153	73,377	75,670
Wages & Salaries*	30,052	31,224	32,379	33,513	34,518	35,554
Supplements to Wages & Salaries*	7,503	7,820	8,139	8,400	8,645	8,911
Nonfarm Proprietors' Income*	4,785	4,993	5,153	5,308	5,440	5,576
Farm Proprietors' Income**	12	54	73	70	68	69
Dividends, Interest, & Rent*	11,036	11,588	11,959	12,318	12,601	12,878
Dividends	2,947	3,082	3,160	3,215	3,274	3,309
Interest	5,168	5,412	5,704	6,060	6,351	6,622
Rent	2,925	3,092	3,097	3,044	2,977	2,949
Personal Current Transfer Receipts*	13,848	14,402	15,137	15,909	16,624	17,373
Less: Contributions for Social Ins.**	4,911	5,090	5,284	5,465	5,661	5,874
Adjustment for Residence**	974	1,019	1,059	1,102	1,141	1,183
Personal Income* (Annual Change)	4.4%	4.3%	3.9%	3.7%	3.1%	3.1%
Wages & Salaries*	4.3%	3.9%	3.7%	3.5%	3.0%	3.0%
Supplements to Wages & Salaries*	4.0%	4.2%	4.1%	3.2%	2.9%	3.1%
Nonfarm Proprietors' Income*	6.5%	4.4%	3.2%	3.0%	2.5%	2.5%
Farm Proprietors' Income**	***	365.8%	35.0%	-4.5%	-2.8%	2.0%
Dividends, Interest, & Rent*	5.0%	5.0%	3.2%	3.0%	2.3%	2.2%
Dividends	2.3%	4.6%	2.5%	1.7%	1.8%	1.1%
Interest	6.2%	4.7%	5.4%	6.2%	4.8%	4.3%
Rent	5.8%	5.7%	0.2%	-1.7%	-2.2%	-0.9%
Personal Current Transfer Receipts*	2.9%	4.0%	5.1%	5.1%	4.5%	4.5%
Less: Contributions for Social Ins.**	2.9%	3.6%	3.8%	3.4%	3.6%	3.8%
Adjustment for Residence**	4.1%	4.6%	4.0%	4.0%	3.6%	3.7%

\*CEFC Forecast

\*\*From IHS Economics (Jan. 2018), DAFS Low Emp Scenario and Moody's Analytics Baseline (Jan. 2018)

Remaining lines derived from CEFC forecast by CEFC staff and reviewed by CEFC

\*\*\*Farm Proprietors' income was negative in 2015 - 2017

## Moderate Recession Scenario

The moderate recession scenario selected by the Commission is the “S7” Next-Cycle Recession scenario. On a macroeconomic level, this recession lasts a full year, which is comparable to the postwar average of recessions. The national unemployment rate peaks at 8 percent and real gross domestic product declines around 2 percent. Employment in Maine declines around 2.5 percent over the course of the recession. Wage and salary income in Maine declines around 2.8 percent, while total personal income continues to grow but at a slower pace.

Moody's January 2018 S7 - Next Cycle Recession						
HYPOTHETICAL MODERATE RECESSION	Forecast - Calendar Years					
	2018	2019	2020	2021	2022	2023
CPI-U* (Annual Change)	2.5%	1.9%	0.8%	2.8%	2.9%	2.4%
CPI for Energy Prices** (Annual Change)	6.1%	-0.7%	-7.9%	9.0%	5.6%	3.5%
Avg. Price of New Vehicles** (Annual Change)	-0.6%	-0.5%	-0.1%	0.3%	0.4%	0.3%
New Vehicle Registrations** (Annual Change)	-7.0%	-5.2%	19.7%	12.8%	-6.9%	-5.3%
Personal Savings Rate**	4.3%	5.5%	3.3%	2.2%	4.0%	8.0%
Maine Unemployment Rate**	3.3%	4.2%	4.3%	3.8%	3.6%	3.4%
3-Month Treasury Bill Rate**	1.69%	1.20%	0.44%	0.67%	1.25%	1.39%
10-Year Treasury Note Rate**	3.01%	2.43%	1.93%	2.33%	2.31%	2.36%
Before-Tax Corporate Profits* (Annual Change)	6.0%	-5.2%	-6.3%	2.7%	11.3%	12.2%
Maine Wage & Salary Employment* (thousands)	624.6	612.7	607.3	612.1	619.8	627.7
Natural Resources	2.4	2.4	2.4	2.4	2.4	2.5
Construction	28.3	26.1	25.2	26.1	27.7	29.0
Manufacturing	51.0	49.6	49.1	49.6	50.4	51.3
Trade/Trans./Public Utils.	121.2	118.6	116.8	117.2	117.8	118.4
Information	7.4	7.2	7.1	7.2	7.3	7.5
Financial Activities	30.6	30.4	30.2	30.2	30.2	30.2
Prof. & Business Services	67.6	64.9	63.9	65.6	68.3	71.1
Education & Health Services	129.0	127.7	126.8	127.5	128.7	130.1
Leisure & Hospitality Services	66.2	64.7	64.0	64.7	65.3	66.0
Other Services	21.2	20.8	20.3	20.2	20.3	20.3
Government	99.6	100.2	101.7	101.2	101.2	101.2
Maine Wage & Salary Employment* (Annual Change)	0.4%	-1.9%	-0.9%	0.8%	1.3%	1.3%
Natural Resources	1.1%	-2.8%	-0.5%	1.0%	2.7%	1.7%
Construction	-1.6%	-7.6%	-3.6%	3.9%	6.0%	4.7%
Manufacturing	0.9%	-2.7%	-1.1%	1.2%	1.6%	1.8%
Trade/Trans./Public Utils.	0.0%	-2.1%	-1.6%	0.4%	0.5%	0.5%
Information	-1.2%	-2.0%	-1.2%	1.3%	1.6%	1.5%
Financial Activities	0.1%	-0.6%	-0.7%	-0.1%	-0.1%	0.1%
Prof. & Business Services	3.2%	-4.1%	-1.5%	2.7%	4.1%	4.2%
Education & Health Services	0.9%	-1.0%	-0.8%	0.6%	1.0%	1.1%
Leisure & Hospitality Services	0.0%	-2.2%	-1.2%	1.1%	1.0%	1.0%
Other Services	-0.2%	-2.2%	-2.4%	-0.2%	0.4%	0.1%
Government	-0.6%	0.6%	1.5%	-0.5%	0.0%	0.0%
	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Personal Income* (\$ million)	63,300	64,300	65,760	68,949	72,500	75,649
Wages & Salaries*	30,052	29,708	29,849	31,518	33,504	35,411
Supplements to Wages & Salaries*	7,503	7,531	7,652	8,012	8,436	8,858
Nonfarm Proprietors' Income*	4,785	4,741	4,934	5,190	5,395	5,531
Farm Proprietors' Income**	12	52	70	67	65	67
Dividends, Interest, & Rent*	11,036	11,576	11,539	11,918	12,300	12,621
Dividends	2,947	3,079	3,049	3,111	3,196	3,243
Interest	5,168	5,406	5,504	5,864	6,200	6,489
Rent	2,925	3,089	2,998	2,946	2,906	2,890
Personal Current Transfer Receipts*	13,848	14,551	15,589	16,330	17,176	17,826
Less: Contributions for Social Ins.**	4,911	4,848	4,878	5,146	5,498	5,851
Adjustment for Residence**	974	988	1,005	1,059	1,122	1,186
Personal Income* (Annual Change)	4.4%	1.6%	2.3%	4.9%	5.2%	4.3%
Wages & Salaries*	4.3%	-1.1%	0.5%	5.6%	6.3%	5.7%
Supplements to Wages & Salaries*	4.0%	0.4%	1.6%	4.7%	5.3%	5.0%
Nonfarm Proprietors' Income*	6.5%	-0.9%	4.1%	5.2%	3.9%	2.5%
Farm Proprietors' Income**	***	345.8%	35.0%	-4.3%	-2.6%	2.2%
Dividends, Interest, & Rent*	5.0%	4.9%	-0.3%	3.3%	3.2%	2.6%
Dividends	2.3%	4.5%	-1.0%	2.0%	2.7%	1.5%
Interest	6.2%	4.6%	1.8%	6.5%	5.7%	4.7%
Rent	5.8%	5.6%	-3.0%	-1.7%	-1.4%	-0.5%
Personal Current Transfer Receipts*	2.9%	5.1%	7.1%	4.8%	5.2%	3.8%
Less: Contributions for Social Ins.**	2.9%	-1.3%	0.6%	5.5%	6.8%	6.4%
Adjustment for Residence**	4.1%	1.4%	1.7%	5.5%	5.9%	5.7%

\*\*\*Farm Proprietors' income was negative in 2017

## Severe Recession Scenario

The severe recession scenario selected by the Commission is the “S4” Protracted Slump scenario. On a macroeconomic level, this deep recession lasts over a year and a half. The national unemployment rate peaks near 10 percent and real gross domestic product declines around 4.5 percent.

Employment in Maine declines around 5.5 percent over the course of the recession. Wage and salary income in Maine declines around 6.6 percent and total personal income declines around 1.9 percent.

Moody's January 2018 S4 - Protracted Slump						
HYPOTHETICAL SEVERE RECESSION	Forecast - Calendar Years					
	2018	2019	2020	2021	2022	2023
CPI-U* (Annual Change)	2.5%	0.3%	0.5%	1.7%	2.2%	2.6%
CPI for Energy Prices** (Annual Change)	6.1%	-7.6%	3.3%	6.9%	8.1%	7.4%
Avg. Price of New Vehicles** (Annual Change)	-0.6%	-0.4%	-0.3%	0.2%	0.4%	0.2%
New Vehicle Registrations** (Annual Change)	-7.0%	-6.2%	19.7%	12.8%	-6.9%	-5.3%
Personal Savings Rate**	4.3%	3.9%	4.3%	5.9%	7.9%	9.3%
Maine Unemployment Rate**	3.3%	4.6%	5.6%	6.0%	5.9%	5.5%
3-Month Treasury Bill Rate**	1.69%	0.17%	0.10%	0.16%	0.16%	0.39%
10-Year Treasury Note Rate**	3.01%	3.18%	2.01%	1.70%	2.20%	2.95%
Before-Tax Corporate Profits* (Annual Change)	6.0%	-11.8%	-11.4%	1.0%	11.5%	8.6%
Maine Wage & Salary Employment* (thousands)	624.6	606.3	588.8	583.6	585.7	594.9
Natural Resources	2.4	2.3	2.3	2.3	2.3	2.4
Construction	28.3	25.1	23.3	23.0	23.8	25.5
Manufacturing	51.0	50.1	48.4	48.0	48.3	49.4
Trade/Trans./Public Utils.	121.2	116.5	112.6	111.2	110.6	111.2
Information	7.4	7.2	6.9	6.9	7.0	7.1
Financial Activities	30.6	30.2	29.7	29.4	29.2	29.3
Prof. & Business Services	67.6	65.9	62.4	61.5	62.9	66.1
Education & Health Services	129.0	126.9	124.3	124.0	124.2	125.5
Leisure & Hospitality Services	66.2	62.9	60.7	60.4	60.5	61.3
Other Services	21.2	20.4	19.4	19.1	18.9	19.0
Government	99.6	98.8	98.9	97.8	97.9	98.1
Maine Wage & Salary Employment* (Annual Change)	0.4%	-2.9%	-2.9%	-0.9%	0.4%	1.6%
Natural Resources	1.1%	-3.6%	-2.4%	-0.2%	2.4%	2.8%
Construction	-1.6%	-11.2%	-7.2%	-1.3%	3.8%	7.2%
Manufacturing	0.9%	-1.8%	-3.4%	-0.8%	0.6%	2.2%
Trade/Trans./Public Utils.	0.0%	-3.9%	-3.4%	-1.2%	-0.6%	0.5%
Information	-1.2%	-2.7%	-3.2%	-0.1%	0.6%	1.6%
Financial Activities	0.1%	-1.4%	-1.7%	-0.8%	-0.6%	0.1%
Prof. & Business Services	3.2%	-2.6%	-5.4%	-1.4%	2.2%	5.2%
Education & Health Services	0.9%	-1.6%	-2.1%	-0.2%	0.2%	1.0%
Leisure & Hospitality Services	0.0%	-5.0%	-3.4%	-0.6%	0.2%	1.5%
Other Services	-0.2%	-3.8%	-4.8%	-1.9%	-0.7%	0.4%
Government	-0.6%	-0.9%	0.1%	-1.1%	0.1%	0.2%
	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Personal Income* (\$ million)	63,300	62,106	63,734	65,869	68,160	70,340
Wages & Salaries*	30,052	28,885	29,683	30,481	31,279	32,077
Supplements to Wages & Salaries*	7,503	7,393	7,613	7,833	8,054	8,274
Nonfarm Proprietors' Income*	4,785	4,814	4,865	4,958	5,209	5,539
Farm Proprietors' Income**	12	50	71	68	66	67
Dividends, Interest, & Rent*	11,036	10,448	9,583	9,704	10,111	10,468
Dividends	2,947	2,779	2,532	2,533	2,627	2,690
Interest	5,168	4,879	4,571	4,774	5,096	5,383
Rent	2,925	2,788	2,490	2,398	2,388	2,397
Personal Current Transfer Receipts*	13,848	14,226	15,540	16,524	17,329	18,087
Less: Contributions for Social Ins.**	4,911	4,683	4,590	4,695	4,926	5,273
Adjustment for Residence**	974	972	968	996	1,038	1,100
Personal Income* (Annual Change)	4.4%	-1.9%	2.6%	3.4%	3.5%	3.2%
Wages & Salaries*	4.3%	-3.9%	2.8%	2.7%	2.6%	2.6%
Supplements to Wages & Salaries*	4.0%	-1.5%	3.0%	2.9%	2.8%	2.7%
Nonfarm Proprietors' Income*	6.5%	0.6%	1.1%	1.9%	5.1%	6.3%
Farm Proprietors' Income**	***	***	40.9%	-4.5%	-2.9%	1.9%
Dividends, Interest, & Rent*	5.0%	-5.3%	-8.3%	1.3%	4.2%	3.5%
Dividends	2.3%	-5.7%	-8.9%	0.0%	3.7%	2.4%
Interest	6.2%	-5.6%	-6.3%	4.4%	6.7%	5.6%
Rent	5.8%	-4.7%	-10.7%	-3.7%	-0.4%	0.4%
Personal Current Transfer Receipts*	2.9%	2.7%	9.2%	6.3%	4.9%	4.4%
Less: Contributions for Social Ins.**	2.9%	-4.6%	-2.0%	2.3%	4.9%	7.1%
Adjustment for Residence**	4.1%	-0.2%	-0.5%	2.9%	4.2%	5.9%

\*\*\*Farm Proprietors' income was negative in 2017 - 2018