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INDUSTRY, ECONOMIC AND ENVIRONMENTAL IMPACTS OF EXTENDING THE BIODIESEL BLENDING TAX CREDIT

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Executive Summary

The U.S. biodiesel industry provided significant economic benefits value to the U.S. economy, supporting almost 62,000 jobs and $6.5 billion in annual U.S. GDP through production of almost 1.9 billion gallons across 124 plants in 38 states.

The biodiesel industry also has provided sizable greenhouse gas ("GHG") reductions as it lowers GHGs by approximately 65 percent per gallon relative to petroleum-based diesel. In 2018, biodiesel enabled 17.7 million tons in GHG reductions, equivalent to taking 3.8 million cars off the road.

Renewing the biodiesel blenders tax credit ("BTC") is critical to furthering the biodiesel industry's economic and environmental contributions. FTI Consulting's latest analysis shows that extending the BTC of $1 per gallon by January 2020 would increase biodiesel capacity up to 644 million gallons by 2024 in the highest scenario, resulting in the following incremental socioeconomic benefits over the next five years:

Farm & Crop Processing Revenues	• **$10 billion in additional farm revenues from increased demand and crop prices** o 5.0 percent increase in soybean prices o 2.2 percent increase in corn prices • **$5 billion in additional grain and oil seed processing revenues**
Employment & Labor Income	• **31,400 new jobs on average supported throughout the U.S. economy** • **$1.8 billion per year in additional labor income**
GDP & Capital Investment	• **$15 billion in additional U.S. GDP** • **$1 billion in new capital investment injected into the economy**
Greenhouse Gas Reductions	• **18.4 million tons in additional GHG reductions by 2024** • **Equivalent to taking 800,000 cars off the road, on average**

With the BTC expired since January 1, 2017, cracks are starting to emerge as hope fades for its renewal. In 2019, five producers have publicly announced the closure or idling of 330 million gallons of annual production capacity. This represents a decline from 2.5 billion gallons of capacity in the beginning of 2018 to 2.2 billion gallons today. With the average facility losing approximately 25 cents per gallon of production prior to interest, taxes, depreciation and amortization, current production levels are not sustainable, and further growth untenable, without the BTC.

In addition to the lack of a BTC, other headwinds are facing the biodiesel and broader agricultural industries, such as the current trade war with China that has dampened U.S. crop demand and prices and potentially higher imports of Argentina biodiesel if anti-dumping tariffs are lifted. An extension of the BTC could act as an insurance policy against the negative effects of such policies. A pragmatic approach to stabilizing the industry would be to immediately and retroactively re-instate the BTC and allow it to decline over time, giving the biodiesel fleet enough headroom to transform into a set of producers better situated to face an uncertain market ahead.

Introduction

In November 2018, FTI Consulting issued a report that examined the economic and environmental contributions of the U.S. biodiesel industry and the economic loss to an average biodiesel plant with the biodiesel BTC not in place. In that report, FTI Consulting found that the biodiesel industry generated the following impacts for the U.S. economy and environment in 2017:

- Economic output (economy-wide sales) valued at $21.6 billion across the economy, which translates to U.S. GDP of $6.5 billion;
- Employment for approximately 61,900 workers, 2,300 of which were employed directly in the biodiesel industry;
- Paid wages and benefits totaling $3.8 billion;
- Federal, state and local tax contributions of $1.8 billion; and,
- A 14.8 million ton reduction in GHG emissions, equivalent to taking 3.2 million cars off U.S. roads, and equal to approximately $750 million in social benefits.

This report provides an outlook for the industry, and the subsequent impacts on the economy and environment, *if* the biodiesel BTC were to be extended on or before December 31, 2019. The American Jobs Creation Act of 2004 originally established the BTC, allowing qualified biodiesel producers or blenders to be eligible for an income tax credit of up to $1.00 per gallon for 100 percent biodiesel (B100) or renewable diesel produced or used in the blending process.

The original legislation only provided for the BTC through 2009. Subsequent extensions and retroactive renewals have been required to keep the BTC active on an annual basis thereafter. Congress allowed the biodiesel tax credit to expire at the end of 2009, 2011, 2013 and 2016, which meant that the credit was not initially in place for 2010, 2012, 2014, 2015 and 2017. However, in each of these years, Congress retroactively reinstated the BTC through various pieces of legislation in December or the early months of the following year.[1]

The BTC has not been retroactively reinstated, though, for 2018 and 2019 year to date. As such, biodiesel producers and blenders are currently experiencing the longest duration (22 months as of October 2019) without the BTC since the original legislation was passed in 2004.

In this report, we examine a status quo scenario and five biodiesel and diesel price scenarios under which the BTC is assumed to be extended:

- No biodiesel and diesel price growth
- One percent annual biodiesel and diesel price growth
- One percent annual biodiesel and diesel price decline
- Five percent annual biodiesel and diesel price growth
- Five percent annual biodiesel and diesel price decline

For each scenario, we forecast biodiesel production from 2020 through 2024 using a regression analysis on the five key determinants of biodiesel production. We then feed the regression outputs into the POLYSYS agricultural model to forecast the changes in crop prices, supply and demand for the same forecast horizon. Lastly, we enter the regression and POLYSYS results into the IMPLAN model to show the potential U.S. level macroeconomic impacts of extending the BTC.

[1] https://www.transportpolicy.net/standard/us-fuels-biofuel-tax-credits/

Modeling Methodology and Results

The extensive history of multiple expirations of the BTC make it possible to examine historical biodiesel production in years where: 1) the industry was certain that the BTC would be available, and 2) the industry was uncertain if the BTC would be retroactively reinstated or extended. This historical variation allows us to estimate the effect of an active BTC on biodiesel production after accounting for the other key drivers of biodiesel production, such as feedstock and product prices.

After estimating the historical effects of the BTC and the other drivers of biodiesel production, we constructed future scenarios where the BTC is extended and product prices vary. We then used these production estimates to estimate changes in feedstock demand, biodiesel industry profits, production capacity expansions and biodiesel industry employment and wages. The production estimates also provide insight into additional agricultural demand and how that ripples through the biofuels value chain, creating indirect and induced economic impacts to the U.S. economy.

Biodiesel Production Model

FTI Consulting modeled biodiesel production for the "Status Quo" scenario and the five scenarios using an ordinary least squares regression model fitted on historical data.[2] Several different model specifications were tested and judged by the model's ability to explain historical variability in biodiesel production, the statistical significance of individual independent variables, and the variable's regression parameter being theoretically sound in both magnitude and sign. The selected regression model explains biodiesel production as a function of five key variables, listed in Table 1 below.

Table 1: Linear Regression Independent Variables

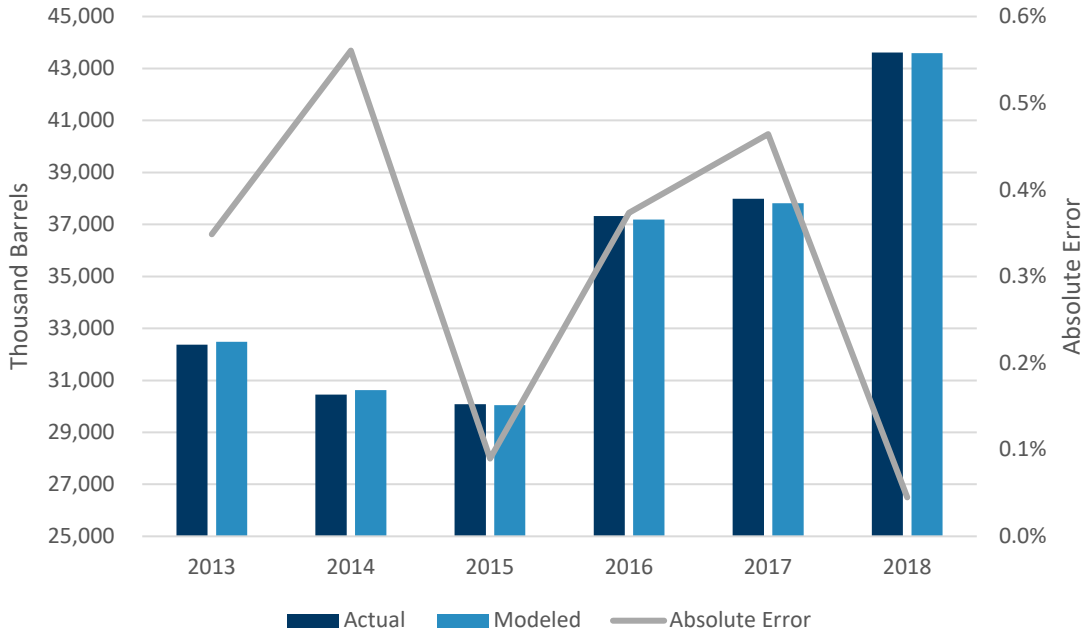
	Variable	Variable Description	Source Data
1.	Feedstock Price	Price for oil inputs to the biodiesel production process, accounting for the historical share of feedstock used by the industry for soybean, corn and canola oil	Feedstock Shares – EIA Monthly Biodiesel Production Report Feedstock Prices – USDA Oil Crops Yearbook
2.	Biodiesel Price	FOB price for wholesale biodiesel (B100)	USDA Bioenergy Statistics
3.	Diesel Price	No. 2 diesel wholesale price by refiners	EIA
4.	BTC	Dummy-variable takes a value of "1" when the BTC was active at the time of production, and "0" otherwise	
5.	Biodiesel Production Capacity	U.S. biodiesel nameplate production capacity throughout time	EIA Monthly Biodiesel Production Report

The regression model was calibrated on 72 months of data, from January 2013 through December 2018. Seasonality in biodiesel production was accounted for using a 12-month lag of biodiesel production, and an ordinal month of year variable.

[2] Our approach to estimating the biodiesel supply curve via a regression analysis was inspired by, but differs from, the following paper: Irwin, Scott Irwin and Good, Darrel, "Revisiting the Estimation of Biomass-Based Diesel Supply Curves, farmdoc daily (7):135, July 26, 2017.

The annual biodiesel production estimates produced by the model differ from the reported annual production figures by an absolute average of 0.3 percent and a maximum of 0.6 percent as shown in Figure 1.

Figure 1: Actual Biodiesel Production vs. Estimated Biodiesel Production



Scenarios Modeled

FTI Consulting examined a total of six scenarios, including a "Status Quo" scenario, and five different scenarios where the BTC is reinstated for 2020 through 2024 under different biodiesel and diesel price growth assumptions, using the previously calibrated regression model.

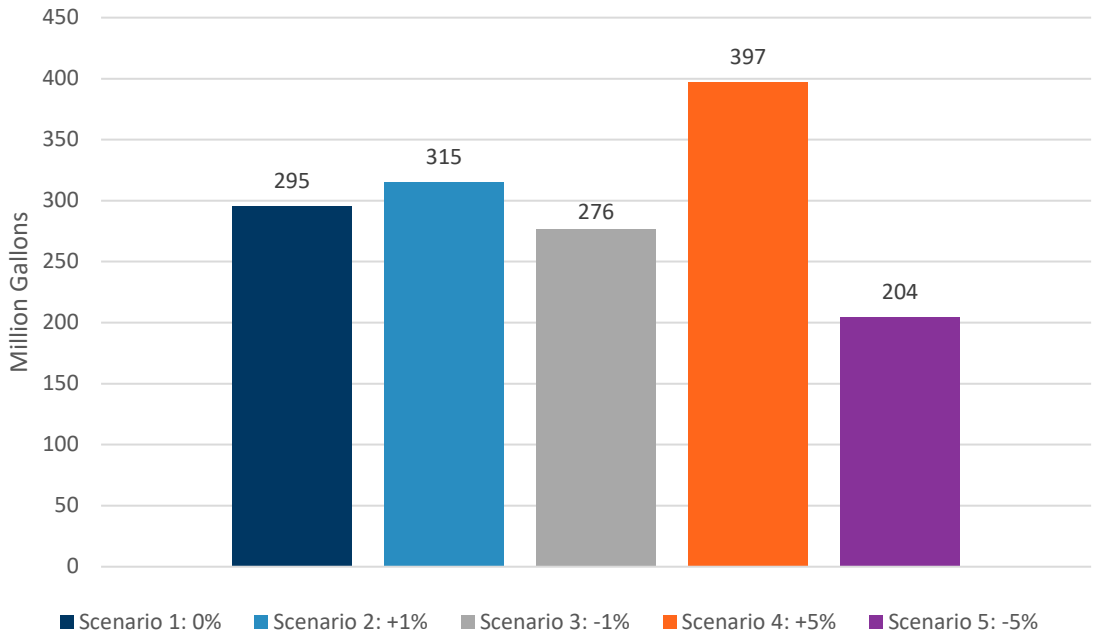
Table 2: Modeling Scenarios

Scenario	BTC Reinstated	Biodiesel and Diesel Prices
Status Quo	No	2019 YTD Average
Scenario 1	Yes	2019 YTD Average
Scenario 2	Yes	+ 1 percent annual growth
Scenario 3	Yes	-1 percent annual decline
Scenario 4	Yes	+5 percent annual growth
Scenario 5	Yes	-5 percent annual decline

Biodiesel Production

Biodiesel production figures for each of the five modeling scenarios, as compared to the Status Quo scenario, are displayed below in Figure 2. The results indicate that biodiesel production would increase by an average of nearly 300 million gallons per year over the Status Quo scenario if the BTC were extended from 2020 through 2024.

Figure 2: Average Incremental Biodiesel Production over Status Quo Scenario (2020 – 2024)



Scenario 5 presents the lowest incremental production gain over the forecast period as significant annual declines (5 percent per year) in the price of biodiesel and diesel negatively impact production economics. Despite the product price decline, we estimate production to average over 200 million gallons per year more than in the Status Quo case because of the BTC. This suggests that not only would the reinstatement of the BTC protect the industry against adverse moves in product prices, but that it could allow the industry to continue to grow against headwinds.

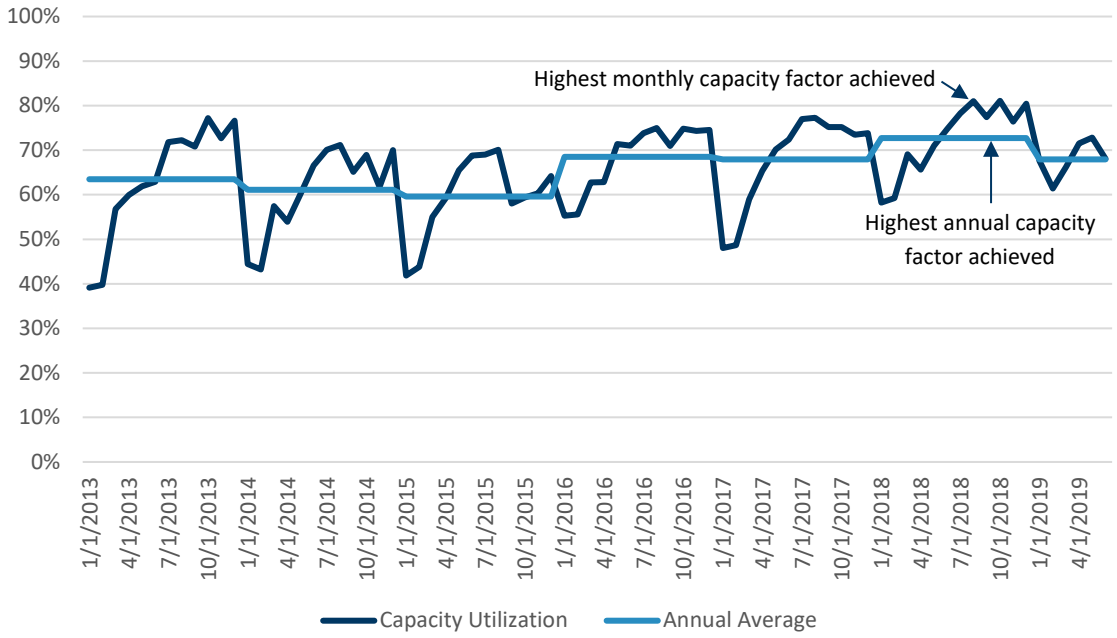
Scenario 4 has the highest incremental production gain over the forecast period, where biodiesel and diesel prices experience significant annual appreciation of 5 percent annually. Coupled with a reinstatement of the BTC, an appreciation in product prices could significantly grow the industry, and support feasibly growing renewable volume obligations ("RVOs").

Biodiesel Production Capacity Utilization and Capacity Additions

Biodiesel production utilization exhibits strong seasonality. Generally, low capacity utilization in the first quarter of each year is due to low ambient temperatures limiting biodiesel blending and consumption while the opposite is true during warmer summer months.

As shown in Figure 3, the highest monthly capacity utilization observed from the EIA data over this time was 81 percent in August 2018, while the highest annual capacity utilization was 73 percent in 2018.

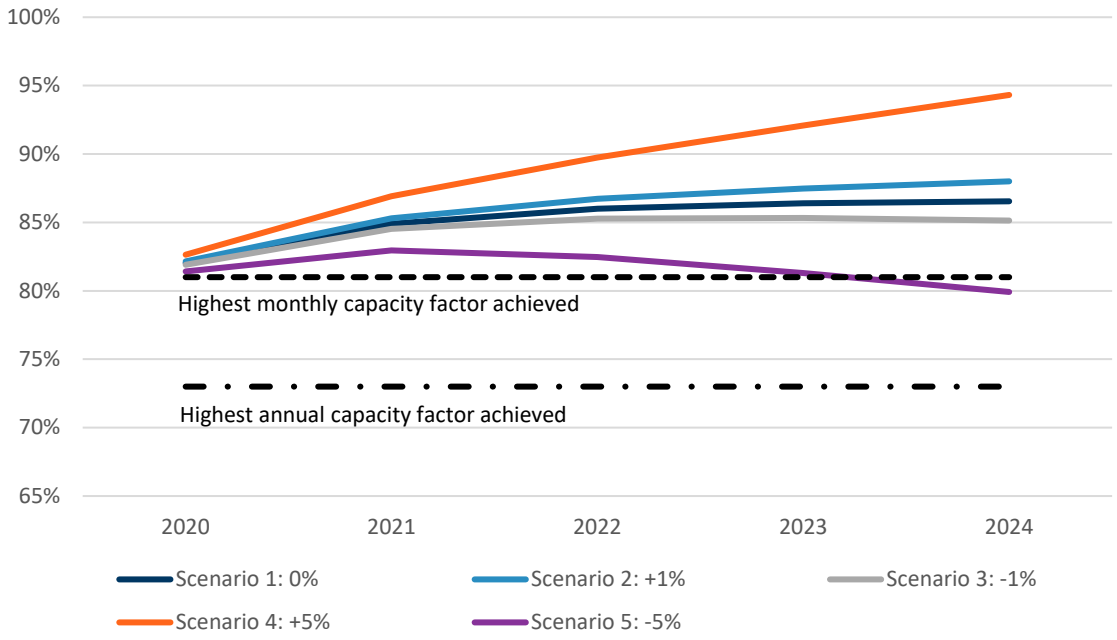
Figure 3: Historical Biodiesel Production Capacity Utilization



Source: FTI Consulting calculation based on EIA's monthly biodiesel production report: https://www.eia.gov/biofuels/biodiesel/production/

If production capacity remained fixed, previously unseen capacity utilization would occur as shown below in Figure 4.

Figure 4: Scenario Biodiesel Production Capacity Utilization before Expansion



To maintain a reasonable level of capacity utilization, we assumed that biodiesel production capacity would grow over time, starting in 2021. An extension of the BTC in late 2019 or early 2020 would not allow enough time for new production capacity to be built in 2020. As such, capacity utilization would rise in 2020. From 2021 through 2024, new capacity would be built to maintain a target capacity utilization of approximately 75 percent based on the preceding year's production. Figure 5 below shows the cumulative change in capacity over the years 2021 through 2024 for each scenario, and Figure 6 shows the recalculated capacity utilization once the new capacity has been brought online.

Figure 5: Change in Biodiesel Production Capacity - Cumulative

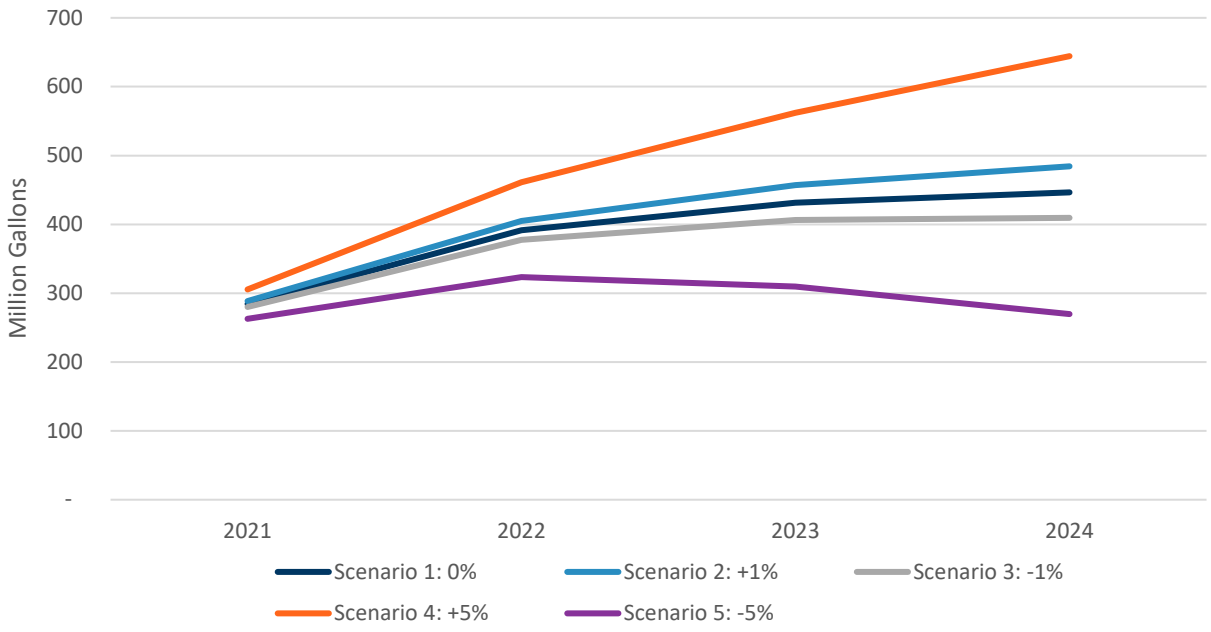
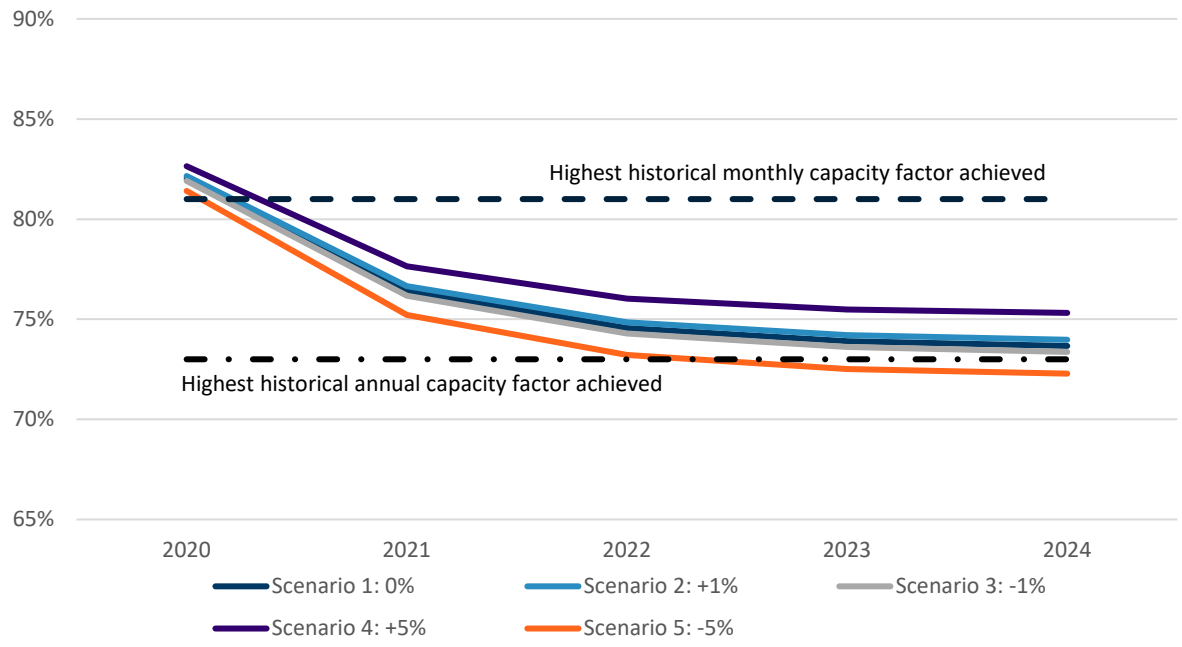


Figure 6: Scenario Biodiesel Production Capacity Utilization after Expansion

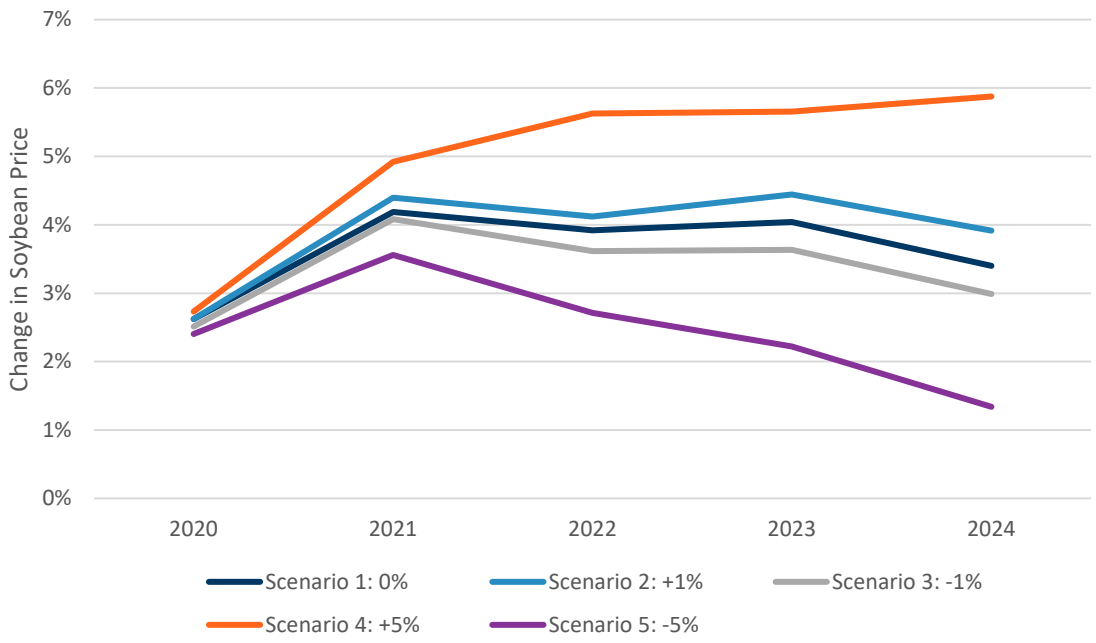


Agricultural Impact

FTI Consulting converted the incremental biodiesel production gains over the Status Quo scenario to millions of pounds of soybean, corn, canola/rapeseed and fats and greases needed as feedstock for the new production based on historical shares of biodiesel feedstock.[3] Incremental soybean demand was then used as an input into the Policy Analysis System (POLYSYS). POLYSYS is a modular economic simulation modeling system of the U.S. agricultural sector. The increased demand for soybeans in the model leads to changes in farm planning and production, crop prices and overall farm incomes, among many other responses.

The POLYSYS model indicates that, with the increased demand for soybeans crushed to produce oil for biodiesel feedstock, prices for soybeans increase by an average of 3.7 percent across all scenarios and years. Scenario 5 generates a minimum average increase in soybean prices of 2.4 percent, and Scenario 4 generates a maximum average increase of 5.0 percent. Figure 7 below shows the increase in soybean prices over the baseline for each scenario in each forecast year.

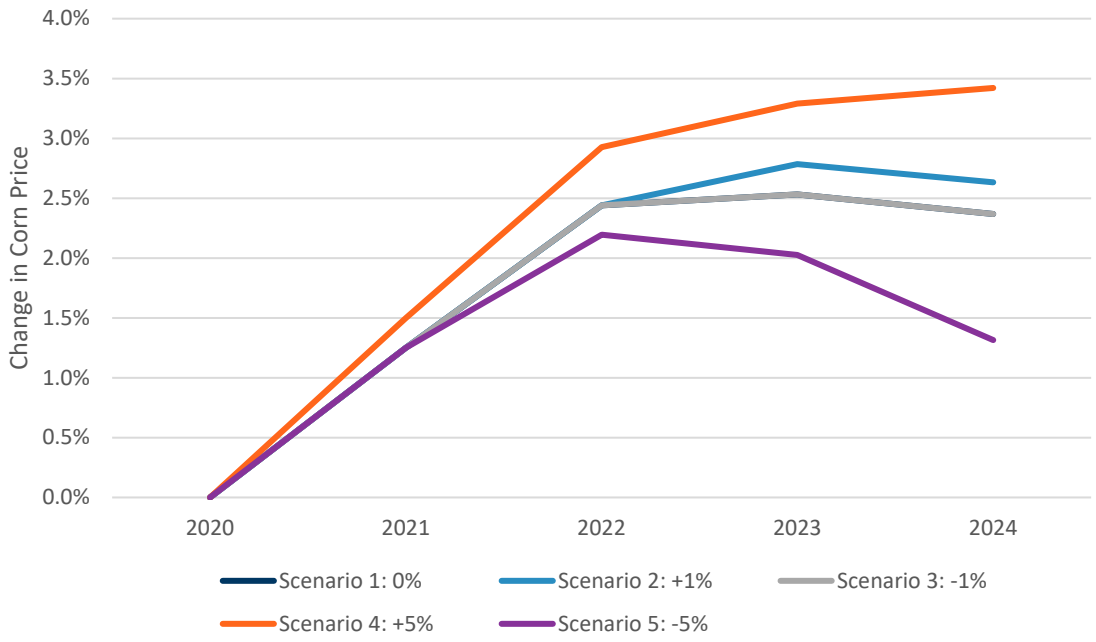
Figure 7: POLYSYS, Change in Soybean Price vs. Baseline



Corn prices also increase under all five scenarios modeled, with an average increase of 1.8 percent across all scenarios and forecast years. Scenario 5 again shows the lowest average annual increase above the baseline at 1.4 percent, while the highest average annual increase above the baseline is modeled for Scenario 4, at 2.2 percent. Figure 8 shows the increase in corn prices above the baseline for each scenario in each year of the forecast period.

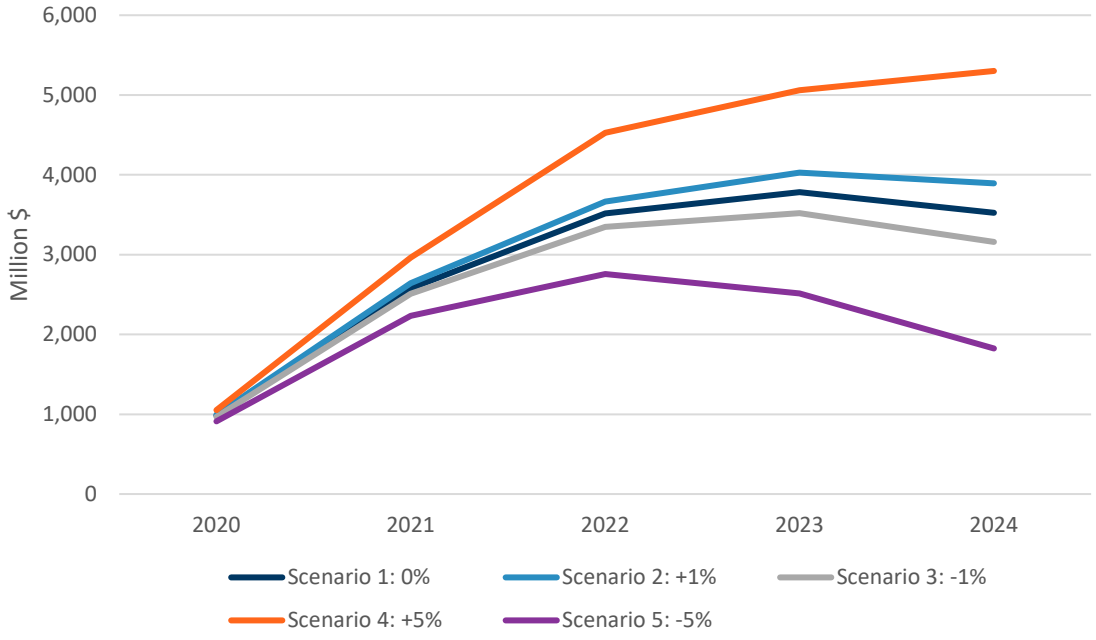
[3] https://www.eia.gov/biofuels/biodiesel/production/

Figure 8: POLYSYS, Change in Corn Price vs. Baseline



Overall, due to increased crop prices and demand for agricultural feedstock, farm incomes grow significantly across all five scenarios, with an average yearly increase of $2.9 billion per year over the Status Quo scenario. The minimum and maximum average annual increases measure $2.0 billion and $3.8 billion for Scenarios 4 and 5 respectively. The increase in total farm incomes for each scenario and each year of the forecast period is shown below in Figure 9.

Figure 9: POLYSYS, Change in Farm Income vs. Baseline



Economic Impact

FTI Consulting applied the IMPLAN model to estimate direct, indirect and induced impacts for the U.S. economy. The IMPLAN model is an input-output modeling system that tracks the movement of money through an economy, looking at linkages between industries along the supply chain, to measure the cumulative effect of an industry's impact. The IMPLAN datasets are derived primarily from data collected by federal agencies.[4]

FTI Consulting analyzed the following six key metrics to estimate the economic impacts of each of the five modeling scenarios:

- **Economic Output** or sales is the value of production, equal to value added plus intermediate expenditures, which consist of the monies spent purchasing goods and services to create an industry's production.
- **GDP** measures the industry's value of production over the cost of its purchasing the goods and services required to make its products. GDP includes wages and benefits paid to employees and profits earned by self-employed individuals (i.e., labor income), monies collected by industry that are not paid into operations (e.g., profits, capital consumption allowance, payments for rent, royalties and interest income), and all payments to government (e.g., excise taxes, sales taxes and customs duties) with the exception of payroll and income taxes.
- **Employment** measures the direct, indirect and induced jobs for full-time, part-time and seasonal employees and self-employed workers created by the industry.
- **Labor Income** is measured by wages and salaries, as well as profits earned by self-employed individuals, attributable to the industry's activity.
- **Federal Taxes** is measured by the payments to the federal government from employer-collected and paid social security taxes on wages, excise taxes, sales taxes, customs duties, property taxes, severance taxes, personal income taxes, corporate profits taxes and other taxes.
- **State and Local Taxes** is measured by the payments to state and local governments from employer-collected and paid taxes on wages, excise taxes, sales taxes, customs duties, property taxes, personal income taxes, corporate profits taxes and other taxes.

To evaluate these metrics, we constructed and utilized four different types of inputs in IMPLAN model:

1. **Feedstock:** Total spending on the production of soybean and canola oil, inclusive of growing and oilseed processing. Corn production and milling were not included, as most corn oil is manufactured as a byproduct to other activities, such as the production of ethanol.
2. **Biodiesel Production:** This category of input contains the costs associated with producing biodiesel such as energy, transportation, chemicals and insurance. Most of these inputs were derived using assumptions contained in a biodiesel profitability calculator developed by Iowa State University.[5]
3. **Biodiesel Facility Construction:** Costs related to the construction of new biodiesel production facilities were estimated based on the Iowa State University model, and translated into IMPLAN sectors, such as real estate, rail transportation, legal services and construction of new manufacturing structures, among others.
4. **Biodiesel Production Profits:** Profits for the newly constructed biodiesel production facilities were estimated using the production costs from (2), and the projected biodiesel wholesale prices by which the scenarios were differentiated.

[4] The 2016 IMPLAN Dataset includes data from the US Bureau of Labor Statistics ("BLS") Covered Employment and Wages program; US Bureau of Economic Analysis ("BEA") Regional Economic Information System program; US BEA Benchmark I/O Accounts of the US; BEA Output estimates; BLS Consumer Expenditure Survey; US Census Bureau County Business Patterns Program; US Census Bureau Decennial Census and Population Surveys; US Census Bureau Censuses and Surveys; and US Department of Agriculture Census.
[5] https://www.extension.iastate.edu/agdm/energy/html/d1-15.html

Appendix D lists the 27 IMPLAN sectors used for the first three categories listed above, labeled accordingly by the input type. For biodiesel production profits, we assumed that the profits will flow back to households via various mechanisms, and that 50 percent of those profits will be spent according to the household spending patterns defined in IMPLAN, leading to increased spending in other sectors of the economy too numerous to list.

Table 3 below shows the average impact for each of the six key economic impact measures across each year of the forecast period for each of the five scenarios. Appendix A provides yearly forecasts for each impact metric by scenario, while Appendix B provides yearly forecasts for each scenario by impact metric.

Table 3: Average Annual Total Economic Impacts by Scenario

	Scenario 1: 0%	Scenario 2: +1%	Scenario 3: -1%	Scenario 4: +5%	Scenario 5: -5%
Economic Output	5,670	6,030	5,345	7,576	4,084
GDP	2,282	2,435	2,143	3,099	8,107
Employment	23,079	24,628	21,665	31,376	16,381
Labor Income	1,371	1,463	1,288	1,862	974
Federal Taxes	143	152	134	194	101
State and Local Taxes	66	70	62	90	47

The magnitude of the impacts is ordered by the amount of biodiesel produced in each scenario, with Scenario 5, the lowest biodiesel production scenario (due to declining biodiesel prices) showing the lowest magnitude of economic impacts, and Scenario 4, the highest biodiesel production scenario showing the highest magnitude of economic impacts.

Importantly, all five scenarios show significant positive economic impacts, with increases to average annual employment ranging from 4,084 to 7,576 FTE jobs, GDP increasing between $3.1 and $8.1 billion per year on average, labor income increasing on an average annual basis between $1.0 and $1.9 billion, and combined federal, state and local taxes increasing by an estimated $148 to $284 million per year on average.

These forecast impacts suggest that the reinstatement of the BTC from 2020 through 2024 would have a robust positive effect on the U.S. economy even with future uncertainty regarding biodiesel prices. In fact, the reinstatement of the BTC could allow the industry to continue to grow, even in the case of strong biodiesel price headwinds, as represented in Scenario 5 where biodiesel prices decline 5 percent annually.

Greenhouse Gas Impact

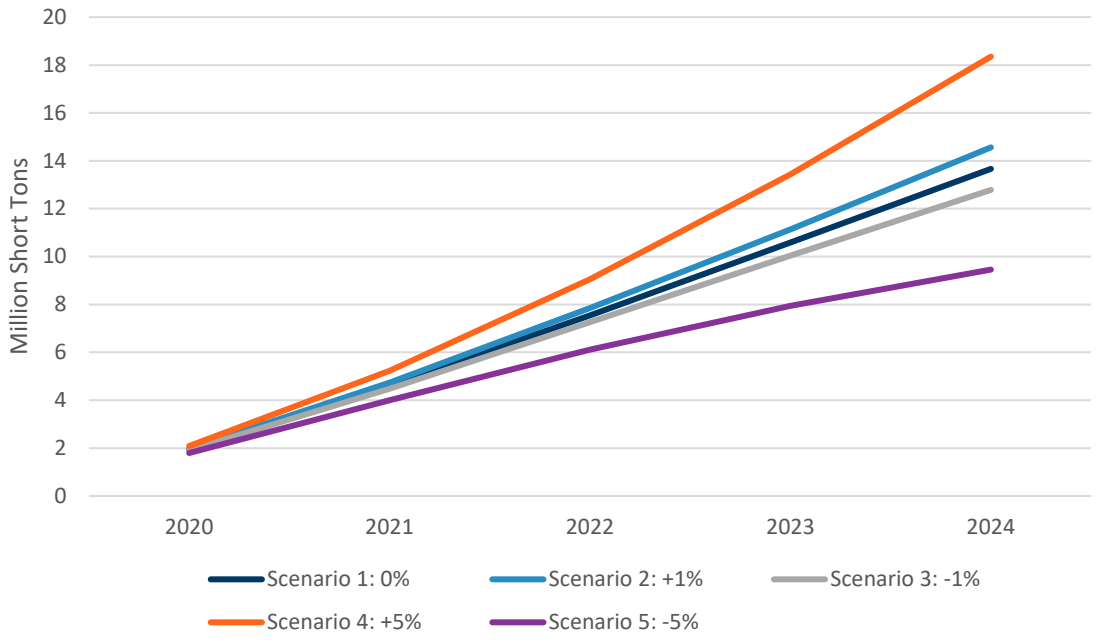
As previously stated, biodiesel emits a significantly lower amount of GHGs per gallon burned when compared to diesel produced from crude oil. Table 4 below shows the per gallon GHG emissions of conventional diesel and biodiesel, a difference of 18.5 lbs./gallon.

Table 4: Biodiesel vs. Diesel GHG Emissions[6]

Conventional Diesel GHG Impact	Biodiesel GHG Impact	GHG Reduction from Displacement
29.3 lbs./gallon	10.8 lbs./gallon	18.5 lbs./gallon

We multiplied this difference by each additional gallon of biodiesel produced under each of the five scenarios, assuming each gallon of biodiesel consumed displaces one gallon of conventional biodiesel. Figure 10 shows the GHG reductions under each of the five modeling scenarios. Again, Scenario 4 shows the largest impact, reducing GHGs by a peak 18.4 million tons in 2024, and a cumulative 48.2 million tons across the five-year forecast period. Scenario 5, the lowest GHG reduction scenario, still reduces GHGs by a maximum 9.5 million tons in 2024, and a cumulative 29.3 million tons over the forecast period.

Figure 10: Cumulative GHG Reduction vs. Status Quo



[6] Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program - Final Rule, 40 CFR Part 80, Environmental Protection Agency, March 26, 2010, pp. 14789-14790.

Conclusions

The extension of the BTC would provide substantial benefits to the agricultural value chain and to the U.S. overall.

- **Biodiesel Production Industry:** The biodiesel production industry has been negatively impacted by the expiration of the BTC since the end of 2017. The impacts of this policy decision have already begun to emerge with the idling or closure of 330 million gallons of biodiesel production capacity within the last few months. The industry also faces other potential pressures such as increased imports of biodiesel from Argentina. Our analysis shows that the reinstatement of the BTC would allow the industry to survive, and prosper, even if biodiesel prices were to decrease significantly over the next five years.
- **Farmers:** Farmers, who are also suffering from recent policy changes, stand to gain from a reinstatement of the BTC, with farm incomes rising substantially across all five modeling scenarios due to a combination of higher crop demands, and higher crop prices.
- **Construction & Supporting Industries:** The reinstatement of the BTC would likely spur a new round of biodiesel production capacity expansion, with each million gallons of new capacity added spurring direct capital investment of nearly $1.6 million, and several million dollars more in indirect and induced spending. The construction of new facilities would increase spending across numerous industries, including the obvious construction industries, but also others, such as the legal, insurance and transportation industries.
- **Environment:** Further displacement of conventional diesel produced from crude oil with biodiesel stands to significantly reduce GHG emissions in the U.S., with total GHG abatement estimates over the five-year forecast period ranging from 29.3 million tons to 48.2 million tons.

A BTC extension is necessary to realize the economic and environmental benefits forecasted in this report. While an extension might be too late for some biodiesel producers who have shuttered, timely legislation would stop further capacity retirements and would encourage expansion of the U.S. biodiesel industry and supporting industries. Table 5 below summarizes the estimated benefits for each scenario:

Table 5: Summary of Estimated Effects from Reinstating the BTC relative to "Status Quo"

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Biodiesel & Diesel Price Annual Growth	0%	+1%	-1%	+5%	-5%
Δ Biodiesel Production (Avg. 2020 – 2024, MM gal)	+295	+315	+276	+397	+204
Δ Biodiesel Production Capacity (Cumulative – 2024, MM gal)	+452	+503	+403	+722	+222
Δ Soybean Price (Avg. 2020 – 2024)	+3.6%	+3.9%	+3.4%	+5.0%	+2.4%
Δ Corn Price (Avg. 2020 – 2024)	+1.7%	+1.8%	+1.7%	+2.2%	+1.4%
Δ Farm Income (Annual Avg. 2020 – 2024, $MM)	+2,877	+3,045	+2,701	+3,781	+2,048
Δ GDP (Avg. 2020 -2024, $MM)	+2,282	+2,435	+2,143	+3,099	+1,621
Δ Employment (Number of FTE jobs, Avg. 2020 - 2024)	+23,079	+24,628	+21,655	+31,376	+16,381
Δ Labor Income (Annual Avg. 2020 – 2024, $MM)	+1,371	+1,463	+1,288	+1,862	+974
Δ Federal Taxes (Annual Avg. 2020 – 2024, $MM)	+143	+152	+134	+194	+101
Δ State and Local Taxes (Annual Avg. 2020 – 2024, $MM)	+66	+70	+62	+90	+47
Δ GHG Emissions (Annual Avg. 2020 – 2024, Million Pounds)	-7.7	-8.0	-7.3	-9.6	-5.9

Appendix A – Total Economic Impacts by Scenario

Table 6: Scenario 1: 0% -Total Economic Impacts

	2020	2021	2022	2023	2024
Employment – not cumulative	6,785	23,991	28,070	27,726	28,822
Labor Income ($Million)	399	1,439	1,680	1,640	1,698
Economic Output ($Million)	1,430	5,618	7,065	6,954	7,283
GDP ($Million)	666	2,371	2,797	2,735	2,842
Federal Taxes ($Million)	42	150	175	170	176
State and Local Taxes ($Million)	19	69	81	79	82

Table 7: Scenario 2: +1% - Total Economic Impacts

	2020	2021	2022	2023	2024
Employment – not cumulative	6,903	24,525	29,612	29,806	32,296
Labor Income ($Million)	406	1,470	1,772	1,763	1,905
Economic Output ($Million)	1,454	5,727	7,424	7,423	8,124
GDP ($Million)	678	2,423	2,950	2,937	3,186
Federal Taxes ($Million)	43	153	184	183	198
State and Local Taxes ($Million)	20	71	85	85	92

Table 8: Scenario 3: -1% - Total Economic Impacts

	2020	2021	2022	2023	2024
Employment – not cumulative	6,658	23,438	26,552	25,735	25,941
Labor Income ($Million)	392	1,407	1,590	1,523	1,528
Economic Output ($Million)	1,404	5,505	6,709	6,502	6,606
GDP ($Million)	654	2,318	2,647	2,540	2,559
Federal Taxes ($Million)	41	147	165	158	159
State and Local Taxes ($Million)	19	68	77	73	74

Table 9: Scenario 4: +5% - Total Economic Impacts

	2020	2021	2022	2023	2024
Employment – not cumulative	7,415	27,511	36,286	40,320	45,351
Labor Income ($Million)	436	1,647	2,167	2,386	2,671
Economic Output ($Million)	1,559	6,402	8,960	9,890	11,071
GDP ($Million)	728	2,718	3,605	3,980	4,464
Federal Taxes ($Million)	46	172	226	248	278
State and Local Taxes ($Million)	21	79	104	115	129

Table 10: Scenario 5: -5% - Total Economic Impacts

	2020	2021	2022	2023	2024
Employment – not cumulative	6,161	20,696	21,285	17,955	15,805
Labor Income ($Million)	363	1,244	1,277	1,061	926
Economic Output ($Million)	1,302	4,877	5,491	4,651	4,098
GDP ($Million)	605	2,046	2,127	1,774	1,555
Federal Taxes ($Million)	38	130	133	110	96
State and Local Taxes ($Million)	18	60	61	51	45

Appendix B – Total Economic Impacts by Impact Measure

Table 11: Employment Impact – Not Cumulative

	2020	2021	2022	2023	2024
Scenario 1: 0%	6,785	23,991	28,070	27,726	28,822
Scenario 2: +1%	6,903	24,525	29,612	29,806	32,296
Scenario 3: -1%	6,658	23,438	26,552	25,735	25,941
Scenario 4: +5%	7,415	27,511	36,286	40,320	45,351
Scenario 5: -5%	6,161	20,696	21,285	17,955	15,805

Table 12: Total Labor Income Impact ($Million)

	2020	2021	2022	2023	2024
Scenario 1: 0%	399	1,439	1,680	1,640	1,698
Scenario 2: +1%	406	1,470	1,772	1,763	1,905
Scenario 3: -1%	392	1,407	1,590	1,523	1,528
Scenario 4: +5%	436	1,647	2,167	2,386	2,671
Scenario 5: -5%	363	1,244	1,277	1,061	926

Table 13: Total Economic Output Impact ($Million)

	2020	2021	2022	2023	2024
Scenario 1: 0%	1,430	5,618	7,065	6,954	7,283
Scenario 2: +1%	1,454	5,727	7,424	7,423	8,124
Scenario 3: -1%	1,404	5,505	6,709	6,502	6,606
Scenario 4: +5%	1,559	6,402	8,960	9,890	11,071
Scenario 5: -5%	1,302	4,877	5,491	4,651	4,098

Table 14: Total GDP Impact ($Million)

	2020	2021	2022	2023	2024
Scenario 1: 0%	666	2,371	2,797	2,735	2,842
Scenario 2: +1%	678	2,423	2,950	2,937	3,186
Scenario 3: -1%	654	2,318	2,647	2,540	2,559
Scenario 4: +5%	728	2,718	3,605	3,980	4,464
Scenario 5: -5%	605	2,046	2,127	1,774	1,555

Table 15: Total Federal Tax Revenue Impact ($Million)

	2020	2021	2022	2023	2024
Scenario 1: 0%	42	150	175	170	176
Scenario 2: +1%	43	153	184	183	198
Scenario 3: -1%	41	147	165	158	159
Scenario 4: +5%	46	172	226	248	278
Scenario 5: -5%	38	130	133	110	96

Table 16: Total State and Local Tax Revenue Impact ($Million)

	2020	2021	2022	2023	2024
Scenario 1: 0%	19	69	81	79	82
Scenario 2: +1%	20	71	85	85	92
Scenario 3: -1%	19	68	77	73	74
Scenario 4: +5%	21	79	104	115	129
Scenario 5: -5%	18	60	61	51	45

Appendix C – Status of BTC by Year

Table 17: Status of BTC by Year

Year	BTC Status
2004	Active by original legislation
2005	Active by original legislation
2006	Active by original legislation
2007	Active by original legislation
2008	Active by original legislation
2009	Active by original legislation
2010	Retroactively reinstated
2011	Extended
2012	Retroactively reinstated
2013	Extended
2014	Retroactively reinstated
2015	Retroactively reinstated
2016	Extended
2017	Retroactively reinstated
2018	Unavailable
2019	Unavailable

Appendix D – IMPLAN Sectors Stimulated

Table 18: IMPLAN Sectors Stimulated

Input Category	IMPLAN Sector
Feedstock	Grain farming
Feedstock	Cotton farming
Feedstock	Soybean and other oilseed processing
Biodiesel Production	Rendering and meat byproduct processing
Biodiesel Production	Other basic organic chemical manufacturing
Biodiesel Production	Extraction of natural gas and crude petroleum
Biodiesel Production	Electric power transmission and distribution
Biodiesel Production	Water, sewage and other systems
Biodiesel Production	Rail transportation
Biodiesel Production	Management of companies and enterprises
Biodiesel Production	Other basic organic chemical manufacturing
Biodiesel Production	Maintenance and repair construction of nonresidential structures
Biodiesel Production	Insurance carriers
Biodiesel Production	Monetary authorities and depository credit intermediation
Biodiesel Facility Construction	Metal tank (heavy gauge) manufacturing
Biodiesel Facility Construction	Truck transportation
Biodiesel Facility Construction	Construction of new manufacturing structures
Biodiesel Facility Construction	Industrial process variable instruments manufacturing
Biodiesel Facility Construction	Iron, steel pipe and tube manufacturing from purchased steel
Biodiesel Facility Construction	Electric power transmission and distribution
Biodiesel Facility Construction	Prefabricated metal buildings and components manufacturing
Biodiesel Facility Construction	Prefabricated metal buildings and components manufacturing
Biodiesel Facility Construction	Real estate
Biodiesel Facility Construction	Rail transportation
Biodiesel Facility Construction	Junior colleges, colleges, universities and professional schools
Biodiesel Facility Construction	Legal services
Biodiesel Facility Construction	Construction of new manufacturing structures

Appendix E – State Level Economic Impact Results by Scenario

Table 19: Average State Employment Increase from 2020–2024 by Scenario

State	Scenario 1: 0%	Scenario 2: +1%	Scenario 3: -1%	Scenario 4: +5%	Scenario 5: -5%
Alabama	248.5	266.2	232.2	341.8	174.5
Alaska	10.1	11.0	9.3	15.2	6.5
Arizona	100.0	109.0	91.4	150.1	63.5
Arkansas	872.2	926.6	823.0	1,156.4	630.7
California	1,315.9	1,416.1	1,222.6	1,869.6	892.6
Colorado	108.6	117.8	100.1	161.4	71.5
Connecticut	242.9	259.7	227.9	334.1	171.3
Delaware	13.2	14.3	12.2	19.7	8.7
District of Columbia	10.8	11.8	9.8	16.8	6.7
Florida	517.6	561.2	476.5	764.3	337.6
Georgia	317.7	342.7	294.0	449.3	214.8
Hawaii	59.7	63.9	55.7	83.0	41.1
Idaho	53.4	57.2	49.8	74.7	37.5
Illinois	1,506.6	1,601.6	1,421.7	2,013.0	1,090.7
Indiana	894.0	950.2	843.2	1,192.1	648.5
Iowa	2,341.8	2,481.4	2,218.2	3,073.0	1,717.1
Kansas	147.7	157.5	139.0	200.6	108.0
Kentucky	571.8	608.6	537.0	768.6	404.9
Louisiana	123.6	133.2	114.5	175.5	84.8
Maine	22.4	24.3	20.6	33.2	14.7
Maryland	104.6	113.6	96.1	156.0	67.3
Massachusetts	145.4	158.1	133.4	217.4	93.6
Michigan	224.0	241.2	208.2	320.4	153.1
Minnesota	666.1	708.4	627.9	892.2	482.0

State	Scenario 1: 0%	Scenario 2: +1%	Scenario 3: -1%	Scenario 4: +5%	Scenario 5: -5%
Mississippi	753.8	801.1	711.0	999.6	544.0
Missouri	1,601.6	1,701.1	1,512.5	2,124.9	1,161.6
Montana	36.6	38.8	34.8	48.5	27.9
Nebraska	505.0	535.5	477.6	666.7	369.1
Nevada	90.4	97.2	84.0	128.4	61.4
New Hampshire	45.2	48.6	42.2	64.1	31.1
New Jersey	405.3	434.5	378.2	566.0	279.3
New Mexico	28.4	31.0	25.9	42.7	18.5
New York	280.7	307.0	256.0	433.1	175.6
North Carolina	361.0	387.8	335.3	507.7	246.3
North Dakota	573.5	607.1	544.1	749.3	423.9
Ohio	688.4	735.4	645.4	941.7	489.5
Oklahoma	286.0	305.5	268.0	389.3	202.7
Oregon	168.5	180.5	157.5	234.4	117.5
Pennsylvania	838.2	895.4	785.6	1,147.2	592.1
Rhode Island	39.8	42.8	37.1	56.2	27.8
South Carolina	321.4	343.1	301.3	437.7	226.4
South Dakota	53.8	56.8	51.4	70.1	41.9
Tennessee	403.4	431.0	378.2	549.4	285.6
Texas	3,299.4	3,517.9	3,100.2	4,439.6	2,352.9
Utah	231.9	247.7	217.5	317.2	164.0
Vermont	8.2	9.0	7.5	12.8	5.1
Virginia	263.0	283.1	243.9	374.5	176.3
Washington	784.2	834.7	738.7	1,053.9	562.4
West Virginia	28.8	31.1	26.6	41.8	18.9
Wisconsin	347.6	371.7	325.4	478.2	246.6
Wyoming	15.8	17.1	14.6	23.2	10.6
United States	**23,078.9**	**24,628.3**	**21,665.0**	**31,376.5**	**16,380.5**

Table 20: Total Labor Income Increase from 2020–2024 by Scenario

State	Scenario 1: 0%	Scenario 2: +1%	Scenario 3: -1%	Scenario 4: +5%	Scenario 5: -5%
Alabama	$70,691,853	$75,642,670	$66,124,325	$96,735,293	$49,860,644
Alaska	$3,232,440	$3,514,479	$2,967,546	$4,838,243	$2,083,495
Arizona	$28,715,859	$31,274,449	$26,262,239	$42,915,802	$18,327,764
Arkansas	$243,266,499	$258,050,411	$229,942,738	$320,062,558	$176,899,029
California	$423,061,979	$455,339,709	$392,987,085	$601,208,240	$287,025,892
Colorado	$32,535,514	$35,297,312	$29,966,147	$48,297,615	$21,366,550
Connecticut	$80,556,167	$86,210,956	$75,474,335	$111,333,926	$56,517,220
Delaware	$4,261,616	$4,626,249	$3,922,288	$6,340,402	$2,791,011
District of Columbia	$4,575,654	$5,007,987	$4,167,784	$7,070,623	$2,868,968
Florida	$140,785,999	$152,424,813	$129,812,688	$206,336,036	$92,615,793
Georgia	$93,709,643	$101,016,942	$86,810,964	$132,068,420	$63,625,664
Hawaii	$2,282,972	$2,470,005	$2,155,744	$3,560,131	$1,510,788
Idaho	$14,405,868	$15,443,373	$13,434,321	$20,137,121	$10,100,340
Illinois	$458,403,082	$487,592,928	$432,177,775	$613,881,072	$330,600,527
Indiana	$260,271,143	$276,601,308	$245,528,152	$346,540,275	$188,822,406
Iowa	$690,767,544	$730,885,999	$655,525,482	$899,290,458	$509,641,212
Kansas	$41,517,882	$44,292,486	$39,007,819	$56,557,668	$30,164,979
Kentucky	$160,529,350	$170,821,823	$150,741,323	$215,530,632	$113,552,607
Louisiana	$36,470,121	$39,343,353	$33,732,034	$52,045,534	$24,819,163
Maine	$6,078,369	$6,586,420	$5,609,049	$8,950,046	$4,024,725
Maryland	$31,039,898	$33,724,703	$28,474,676	$46,427,190	$19,885,998
Massachusetts	$49,138,075	$53,420,031	$45,061,426	$73,537,809	$31,668,759
Michigan	$63,712,127	$68,698,539	$59,100,506	$91,627,112	$43,176,705
Minnesota	$202,780,042	$215,664,896	$191,122,520	$271,475,296	$146,548,003
Mississippi	$204,353,548	$216,774,179	$193,135,757	$268,547,421	$148,540,524
Missouri	$454,507,385	$482,427,523	$429,489,638	$600,875,060	$330,315,004

State	Scenario 1: 0%	Scenario 2: +1%	Scenario 3: -1%	Scenario 4: +5%	Scenario 5: -5%
Montana	$8,999,243	$9,557,638	$8,531,588	$12,065,083	$6,739,747
Nebraska	$152,698,993	$161,775,511	$144,565,081	$200,504,130	$111,994,993
Nevada	$25,708,238	$27,613,051	$23,944,749	$36,226,381	$17,616,312
New Hampshire	$13,824,754	$14,854,148	$12,892,084	$19,507,102	$9,527,834
New Jersey	$132,128,869	$141,702,645	$123,252,087	$184,732,592	$90,916,724
New Mexico	$7,958,631	$8,674,910	$7,275,909	$11,879,017	$5,205,376
New York	$97,950,666	$107,126,147	$89,296,009	$151,027,725	$61,372,679
North Carolina	$105,326,142	$113,094,187	$97,901,441	$147,676,587	$72,135,380
North Dakota	$167,941,941	$177,742,509	$159,341,633	$218,995,832	$123,979,119
Ohio	$197,744,225	$211,350,952	$185,214,142	$270,962,342	$140,215,121
Oklahoma	$83,289,238	$88,953,291	$78,083,445	$113,134,986	$59,106,370
Oregon	$49,273,563	$52,751,903	$46,100,749	$68,214,097	$34,525,349
Pennsylvania	$259,902,549	$277,641,596	$243,609,148	$355,427,068	$183,778,798
Rhode Island	$12,075,898	$12,978,076	$11,248,902	$16,983,679	$8,450,149
South Carolina	$89,730,306	$95,688,559	$84,217,119	$121,541,855	$63,502,121
South Dakota	$14,483,827	$15,320,868	$13,798,820	$18,989,197	$11,184,398
Tennessee	$117,012,117	$124,995,458	$109,659,379	$159,547,129	$82,684,764
Texas	$1,016,500,974	$1,083,561,556	$955,323,148	$1,366,243,421	$725,421,103
Utah	$64,883,945	$69,214,562	$60,934,630	$88,088,220	$46,188,089
Vermont	$2,242,475	$2,454,688	$2,043,286	$3,471,716	$1,405,490
Virginia	$77,777,570	$83,690,691	$72,137,118	$110,654,989	$52,164,700
Washington	$245,114,611	$260,858,603	$230,907,328	$329,116,838	$175,780,135
West Virginia	$8,523,408	$9,205,651	$7,860,856	$12,333,894	$5,615,813
Wisconsin	$99,844,969	$106,799,965	$93,393,356	$137,426,995	$70,633,375
Wyoming	$4,829,457	$5,227,875	$4,452,831	$7,047,696	$3,235,816
United States	**$6,857,417,239**	**$7,315,988,585**	**$6,438,719,198**	**$9,307,988,552**	**$4,870,733,526**

Table 21: Total Economic Output Increase from 2020–2024 by Scenario

State	Scenario 1: 0%	Scenario 2: +1%	Scenario 3: -1%	Scenario 4: +5%	Scenario 5: -5%
Alabama	$302,821,269	$323,143,947	$284,249,953	$409,535,772	$215,896,296
Alaska	$12,061,916	$13,077,569	$11,109,142	$17,800,677	$7,880,725
Arizona	$98,219,123	$106,826,464	$89,947,840	$146,029,003	$63,053,551
Arkansas	$1,077,908,344	$1,141,585,875	$1,021,095,925	$1,407,458,563	$789,178,949
California	$1,562,736,201	$1,675,405,869	$1,458,673,714	$2,177,632,321	$1,080,496,677
Colorado	$101,611,632	$110,155,768	$93,697,801	$150,358,178	$67,238,812
Connecticut	$348,547,609	$370,755,162	$328,864,198	$466,711,954	$250,847,050
Delaware	$14,898,027	$16,156,413	$13,727,045	$22,053,011	$9,801,792
District of Columbia	$11,974,001	$13,100,027	$10,910,662	$18,456,014	$7,541,185
Florida	$509,909,655	$550,498,361	$471,773,584	$736,808,240	$340,306,244
Georgia	$366,081,110	$393,396,012	$340,456,880	$509,310,684	$252,006,615
Hawaii	$71,384,177	$76,142,937	$66,990,653	$97,086,000	$50,214,977
Idaho	$52,715,269	$56,459,003	$49,219,184	$73,351,718	$37,180,305
Illinois	$1,930,705,668	$2,046,790,421	$1,828,325,317	$2,540,317,060	$1,414,444,210
Indiana	$1,124,360,678	$1,192,304,547	$1,063,850,109	$1,480,171,693	$823,164,634
Iowa	$3,106,446,047	$3,282,596,945	$2,953,003,283	$4,016,315,562	$2,303,476,838
Kansas	$159,107,759	$169,420,345	$149,879,778	$214,844,777	$116,855,412
Kentucky	$667,611,702	$709,309,144	$628,423,003	$889,002,596	$476,285,191
Louisiana	$135,239,492	$145,684,483	$125,321,082	$191,985,672	$92,614,465
Maine	$23,863,391	$25,747,091	$22,134,762	$34,395,976	$16,121,797
Maryland	$101,600,854	$110,202,391	$93,362,525	$150,707,502	$65,632,747
Massachusetts	$156,145,464	$169,347,076	$143,559,345	$230,890,563	$101,803,950
Michigan	$243,314,842	$261,625,901	$226,505,224	$345,050,105	$167,254,951
Minnesota	$803,534,037	$852,381,793	$759,909,293	$1,061,250,811	$587,503,943
Mississippi	$931,113,678	$986,173,331	$881,953,554	$1,214,962,852	$681,304,147
Missouri	$1,993,643,794	$2,111,183,215	$1,889,789,521	$2,603,867,961	$1,463,599,069

State	Scenario 1: 0%	Scenario 2: +1%	Scenario 3: -1%	Scenario 4: +5%	Scenario 5: -5%
Montana	$33,008,584	$34,949,026	$31,431,420	$43,613,500	$25,198,210
Nebraska	$631,313,953	$667,878,498	$598,885,450	$822,641,894	$466,056,802
Nevada	$102,451,084	$109,647,928	$95,856,661	$141,713,511	$71,427,810
New Hampshire	$58,630,383	$62,613,232	$55,062,690	$80,172,285	$41,478,983
New Jersey	$513,360,850	$547,814,886	$481,966,078	$699,253,885	$362,136,665
New Mexico	$27,486,985	$29,954,213	$25,137,034	$41,077,439	$18,023,426
New York	$297,252,264	$324,727,913	$271,303,958	$455,675,124	$187,481,626
North Carolina	$405,230,954	$434,304,051	$377,560,361	$563,046,442	$279,830,127
North Dakota	$762,806,059	$805,519,534	$725,998,358	$982,887,427	$569,055,618
Ohio	$818,795,738	$872,737,919	$769,675,262	$1,106,443,772	$587,144,107
Oklahoma	$339,380,921	$361,286,436	$319,504,730	$453,941,331	$244,226,876
Oregon	$197,331,814	$210,518,941	$185,453,914	$268,223,633	$140,525,304
Pennsylvania	$1,027,678,956	$1,094,316,392	$967,203,782	$1,382,234,318	$737,038,979
Rhode Island	$48,285,490	$51,662,624	$45,218,549	$66,428,763	$34,333,739
South Carolina	$384,650,136	$409,199,501	$362,212,447	$514,587,041	$275,342,830
South Dakota	$58,637,300	$61,867,052	$56,047,765	$75,893,175	$45,832,530
Tennessee	$479,319,339	$510,395,242	$451,078,656	$643,298,951	$343,532,168
Texas	$4,183,671,463	$4,445,638,813	$3,947,946,807	$5,543,190,017	$3,025,991,182
Utah	$277,199,960	$294,907,608	$261,225,791	$371,105,064	$199,582,046
Vermont	$7,579,191	$8,293,122	$6,909,767	$11,712,907	$4,762,828
Virginia	$295,160,823	$316,539,612	$274,894,480	$412,800,013	$201,355,581
Washington	$1,045,855,856	$1,109,761,266	$988,977,459	$1,382,363,245	$760,111,405
West Virginia	$31,454,356	$33,952,936	$29,026,584	$45,388,007	$20,770,110
Wisconsin	$400,025,770	$426,905,553	$375,324,766	$544,207,346	$285,765,873
Wyoming	$15,986,563	$17,317,071	$14,736,224	$23,428,809	$10,715,173
United States	**$28,350,110,531**	**$30,152,179,458**	**$26,725,372,372**	**$37,881,683,161**	**$20,419,424,530**

Table 22: Total State GDP Increase from 2020–2024 by Scenario

State	Scenario 1: 0%	Scenario 2: +1%	Scenario 3: -1%	Scenario 4: +5%	Scenario 5: -5%
Alabama	$117,406,042	$125,638,367	$109,832,483	$160,874,652	$82,755,488
Alaska	$6,631,877	$7,196,114	$6,099,898	$9,826,683	$4,294,609
Arizona	$48,934,964	$53,282,877	$44,767,488	$73,179,304	$31,235,707
Arkansas	$404,824,458	$429,476,755	$382,697,796	$533,095,599	$294,349,242
California	$707,237,803	$761,337,959	$656,941,511	$1,006,287,069	$479,432,271
Colorado	$52,616,816	$57,117,140	$48,431,574	$78,349,291	$34,460,122
Connecticut	$126,121,631	$134,982,240	$118,191,940	$174,383,580	$88,480,106
Delaware	$7,923,121	$8,603,534	$7,288,438	$11,803,828	$5,166,846
District of Columbia	$7,271,783	$7,955,784	$6,625,903	$11,209,936	$4,578,332
Florida	$239,446,886	$259,329,207	$220,724,204	$351,595,506	$157,250,654
Georgia	$159,562,539	$172,010,347	$147,827,705	$225,375,571	$108,253,218
Hawaii	$13,676,124	$14,687,074	$12,784,832	$19,496,585	$9,327,543
Idaho	$23,612,836	$25,324,774	$22,007,650	$33,084,526	$16,501,803
Illinois	$779,075,002	$828,366,858	$735,124,882	$1,041,308,433	$563,457,255
Indiana	$433,583,826	$460,764,815	$409,190,272	$577,161,252	$314,861,955
Iowa	$1,134,789,211	$1,200,833,188	$1,077,086,172	$1,478,181,037	$837,477,280
Kansas	$69,542,390	$74,192,620	$65,341,016	$94,781,776	$50,524,545
Kentucky	$264,732,258	$281,709,026	$248,647,676	$355,453,968	$187,353,857
Louisiana	$60,810,443	$65,612,874	$56,240,696	$86,965,345	$41,280,499
Maine	$10,258,548	$11,121,966	$9,460,620	$15,144,889	$6,773,091
Maryland	$52,639,745	$57,199,180	$48,286,841	$78,780,189	$33,712,993
Massachusetts	$80,577,627	$87,580,809	$73,909,588	$120,448,628	$51,994,539
Michigan	$106,906,440	$115,290,252	$99,166,661	$153,876,773	$72,401,438
Minnesota	$325,153,988	$345,735,564	$306,618,219	$434,803,200	$235,357,320
Mississippi	$344,192,224	$365,106,618	$325,408,570	$452,373,498	$250,329,493
Missouri	$757,293,519	$803,743,428	$715,913,820	$1,000,697,836	$550,912,443

State	Scenario 1: 0%	Scenario 2: +1%	Scenario 3: -1%	Scenario 4: +5%	Scenario 5: -5%
Montana	$15,339,649	$16,282,092	$14,555,550	$20,514,386	$11,529,127
Nebraska	$251,835,608	$266,810,914	$238,464,806	$330,710,792	$184,810,236
Nevada	$44,855,685	$48,210,720	$41,756,005	$63,425,012	$30,637,000
New Hampshire	$22,164,602	$23,820,502	$20,667,195	$31,314,861	$15,254,036
New Jersey	$208,911,973	$224,132,837	$194,846,211	$292,651,157	$143,579,814
New Mexico	$13,616,481	$14,842,487	$12,449,280	$20,381,550	$8,867,537
New York	$169,784,601	$185,623,020	$154,842,710	$261,342,358	$106,476,137
North Carolina	$178,575,231	$191,829,039	$165,922,144	$251,016,707	$122,038,735
North Dakota	$282,944,811	$299,329,271	$268,722,041	$368,141,573	$209,596,953
Ohio	$338,908,684	$362,232,675	$317,497,527	$464,473,287	$240,246,618
Oklahoma	$136,243,532	$145,441,707	$127,828,340	$184,730,989	$96,895,100
Oregon	$81,417,634	$87,201,152	$76,158,022	$112,959,392	$56,954,960
Pennsylvania	$421,794,066	$450,628,804	$395,406,892	$577,135,924	$298,245,039
Rhode Island	$19,564,998	$21,026,751	$18,229,652	$27,536,010	$13,658,005
South Carolina	$149,126,887	$159,064,179	$139,967,730	$202,236,265	$105,494,323
South Dakota	$25,228,773	$26,677,653	$24,045,212	$33,023,040	$19,490,379
Tennessee	$192,333,600	$205,385,819	$180,380,193	$261,794,214	$136,189,117
Texas	$1,683,241,191	$1,793,900,520	$1,582,790,646	$2,261,633,280	$1,202,689,840
Utah	$108,622,752	$115,920,940	$101,982,483	$147,789,319	$77,178,187
Vermont	$3,815,636	$4,175,913	$3,477,461	$5,901,790	$2,393,174
Virginia	$130,448,228	$140,434,828	$120,930,374	$186,059,267	$87,299,172
Washington	$409,959,599	$436,462,820	$386,128,953	$551,495,103	$293,678,334
West Virginia	$14,673,328	$15,851,736	$13,530,423	$21,262,740	$9,652,069
Wisconsin	$164,762,237	$176,251,936	$154,133,847	$226,905,717	$116,477,305
Wyoming	$8,232,304	$8,919,133	$7,584,295	$12,074,692	$5,484,472
United States	**$11,411,224,192**	**$12,174,656,819**	**$10,716,914,444**	**$15,495,048,379**	**$8,107,338,316**

Table 23: Total Federal Tax Revenue Increase by State from 2020–2024 by Scenario

State	Scenario 1: 0%	Scenario 2: +1%	Scenario 3: -1%	Scenario 4: +5%	Scenario 5: -5%
Alabama	$5,117,995	$5,477,292	$4,786,848	$7,012,787	$3,604,934
Alaska	$243,648	$264,799	$223,749	$363,874	$157,202
Arizona	$3,055,760	$3,322,833	$2,798,847	$4,539,831	$1,962,080
Arkansas	$35,303,606	$37,406,166	$33,418,923	$46,161,981	$25,797,122
California	$41,034,008	$44,177,857	$38,099,234	$58,396,281	$27,797,015
Colorado	$3,172,815	$3,443,154	$2,920,173	$4,713,115	$2,079,838
Connecticut	$10,302,811	$11,004,383	$9,678,848	$14,093,021	$7,302,101
Delaware	$1,047,608	$1,137,286	$963,600	$1,557,309	$683,689
District of Columbia	$675,992	$738,201	$616,990	$1,030,062	$433,997
Florida	$18,175,560	$19,670,714	$16,761,168	$26,579,966	$11,977,037
Georgia	$10,581,385	$11,410,938	$9,794,980	$14,963,715	$7,154,218
Hawaii	$494,693	$530,160	$463,127	$697,637	$339,863
Idaho	$1,452,770	$1,558,533	$1,352,387	$2,036,919	$1,008,445
Illinois	$52,372,143	$55,694,649	$49,404,375	$70,049,212	$37,857,096
Indiana	$24,887,384	$26,440,059	$23,493,337	$33,077,971	$18,094,003
Iowa	$46,027,837	$48,611,739	$43,799,382	$59,330,990	$34,290,828
Kansas	$4,834,375	$5,165,113	$4,530,885	$6,634,477	$3,467,405
Kentucky	$17,194,101	$18,294,821	$16,139,072	$23,079,420	$12,128,019
Louisiana	$4,290,638	$4,630,348	$3,965,710	$6,143,918	$2,901,817
Maine	$527,270	$571,577	$486,261	$777,641	$348,538
Maryland	$3,809,068	$4,132,209	$3,498,674	$5,649,492	$2,460,603
Massachusetts	$7,383,672	$8,018,044	$6,777,321	$10,980,532	$4,790,550
Michigan	$6,800,324	$7,340,796	$6,298,955	$9,833,738	$4,578,484
Minnesota	$37,834,635	$40,237,839	$35,658,978	$50,647,743	$27,330,935
Mississippi	$11,743,053	$12,440,231	$11,118,198	$15,321,360	$8,585,682
Missouri	$53,377,517	$56,595,183	$50,525,696	$70,144,215	$39,032,386

State	Scenario 1: 0%	Scenario 2: +1%	Scenario 3: -1%	Scenario 4: +5%	Scenario 5: -5%
Montana	$700,338	$745,380	$661,761	$947,728	$517,474
Nebraska	$18,497,368	$19,592,953	$17,512,608	$24,260,580	$13,560,372
Nevada	$2,018,979	$2,168,952	$1,880,057	$2,847,071	$1,382,169
New Hampshire	$1,242,779	$1,334,881	$1,159,612	$1,750,435	$858,585
New Jersey	$20,500,583	$21,972,897	$19,143,338	$28,569,677	$14,164,448
New Mexico	$522,854	$569,357	$478,487	$778,854	$341,938
New York	$12,245,622	$13,369,099	$11,182,294	$18,699,672	$7,758,105
North Carolina	$11,098,617	$11,919,853	$10,308,817	$15,586,007	$7,567,711
North Dakota	$10,915,957	$11,523,120	$10,397,814	$14,037,187	$8,177,293
Ohio	$27,468,480	$29,380,641	$25,705,854	$37,787,362	$19,398,315
Oklahoma	$8,142,422	$8,693,044	$7,637,612	$11,040,719	$5,786,712
Oregon	$4,031,000	$4,317,561	$3,770,748	$5,592,749	$2,822,627
Pennsylvania	$28,750,207	$30,723,108	$26,940,541	$39,381,163	$20,313,079
Rhode Island	$1,840,321	$1,978,666	$1,713,454	$2,593,523	$1,285,618
South Carolina	$6,235,689	$6,648,462	$5,853,502	$8,438,344	$4,412,337
South Dakota	$1,480,089	$1,568,712	$1,406,095	$1,959,230	$1,128,170
Tennessee	$13,577,484	$14,508,588	$12,720,294	$18,543,990	$9,576,475
Texas	$95,967,868	$102,265,829	$90,256,152	$128,734,969	$68,656,554
Utah	$4,978,318	$5,310,978	$4,676,216	$6,760,131	$3,546,787
Vermont	$233,610	$255,487	$213,025	$359,706	$147,525
Virginia	$8,630,515	$9,279,892	$8,008,234	$12,230,776	$5,802,163
Washington	$21,341,584	$22,696,581	$20,129,168	$28,547,327	$15,371,788
West Virginia	$634,114	$684,546	$585,056	$915,437	$418,323
Wisconsin	$10,374,233	$11,103,128	$9,695,976	$14,321,348	$7,307,737
Wyoming	$409,408	$442,641	$377,875	$593,418	$275,270

Table 24: Total State and Local Tax Revenue Increase by State from 2020–2024 by Scenario

State	Scenario 1: 0%	Scenario 2: +1%	Scenario 3: -1%	Scenario 4: +5%	Scenario 5: -5%
Alabama	$3,118,664	$3,337,602	$2,916,879	$4,273,260	$2,196,676
Alaska	$110,260	$119,832	$101,255	$164,668	$71,140
Arizona	$1,705,654	$1,854,728	$1,562,251	$2,534,028	$1,095,187
Arkansas	$12,510,065	$13,255,121	$11,842,215	$16,357,801	$9,141,380
California	$23,208,402	$24,986,530	$21,548,525	$33,028,321	$15,721,698
Colorado	$1,686,505	$1,830,203	$1,552,214	$2,505,249	$1,105,535
Connecticut	$4,640,269	$4,956,249	$4,359,243	$6,347,336	$3,288,783
Delaware	$208,734	$226,603	$191,996	$310,292	$136,224
District of Columbia	$188,367	$205,702	$171,926	$287,029	$120,934
Florida	$7,171,954	$7,761,932	$6,613,845	$10,488,276	$4,726,059
Georgia	$4,401,185	$4,746,227	$4,074,091	$6,223,957	$2,975,701
Hawaii	$526,418	$564,159	$492,828	$742,377	$361,658
Idaho	$844,489	$905,969	$786,137	$1,184,052	$586,205
Illinois	$24,508,190	$26,062,998	$23,119,387	$32,780,393	$17,715,695
Indiana	$10,909,627	$11,590,257	$10,298,533	$14,500,050	$7,931,682
Iowa	$28,548,037	$30,150,662	$27,165,874	$36,799,107	$21,268,343
Kansas	$2,288,577	$2,445,147	$2,144,905	$3,140,738	$1,641,458
Kentucky	$8,797,598	$9,360,797	$8,257,778	$11,808,903	$6,205,468
Louisiana	$1,857,448	$2,004,511	$1,716,784	$2,659,746	$1,256,217
Maine	$479,372	$519,654	$442,088	$707,000	$316,876
Maryland	$2,095,836	$2,273,636	$1,925,051	$3,108,480	$1,353,880
Massachusetts	$2,947,872	$3,201,140	$2,705,792	$4,383,890	$1,912,589
Michigan	$3,471,292	$3,747,181	$3,215,363	$5,019,728	$2,337,132
Minnesota	$11,565,061	$12,299,658	$10,900,020	$15,481,694	$8,354,354
Mississippi	$11,253,800	$11,921,931	$10,654,979	$14,683,023	$8,227,975
Missouri	$18,482,269	$19,596,404	$17,494,810	$24,287,833	$13,515,185

State	Scenario 1: 0%	Scenario 2: +1%	Scenario 3: -1%	Scenario 4: +5%	Scenario 5: -5%
Montana	$504,200	$536,627	$476,427	$682,305	$372,549
Nebraska	$7,065,547	$7,484,034	$6,689,393	$9,266,955	$5,179,734
Nevada	$1,299,854	$1,396,410	$1,210,414	$1,832,995	$889,865
New Hampshire	$679,437	$729,791	$633,970	$956,977	$469,396
New Jersey	$7,970,144	$8,542,545	$7,442,479	$11,107,218	$5,506,804
New Mexico	$505,744	$550,725	$462,829	$753,367	$330,748
New York	$7,857,888	$8,578,812	$7,175,562	$11,999,386	$4,978,296
North Carolina	$5,366,634	$5,763,735	$4,984,734	$7,536,470	$3,659,297
North Dakota	$9,839,568	$10,386,860	$9,372,517	$12,653,022	$7,370,955
Ohio	$9,994,503	$10,690,250	$9,353,166	$13,749,065	$7,058,145
Oklahoma	$3,472,617	$3,707,449	$3,257,324	$4,708,697	$2,467,943
Oregon	$2,270,757	$2,432,185	$2,124,152	$3,150,528	$1,590,053
Pennsylvania	$13,396,941	$14,316,267	$12,553,677	$18,350,723	$9,465,431
Rhode Island	$733,166	$788,282	$682,623	$1,033,235	$512,178
South Carolina	$4,342,670	$4,630,134	$4,076,507	$5,876,647	$3,072,848
South Dakota	$630,693	$668,456	$599,163	$834,863	$480,734
Tennessee	$4,673,079	$4,993,545	$4,378,053	$6,382,444	$3,296,017
Texas	$38,858,851	$41,408,992	$36,546,091	$52,126,749	$27,800,084
Utah	$2,681,553	$2,860,739	$2,518,827	$3,641,320	$1,910,464
Vermont	$188,698	$206,368	$172,070	$290,551	$119,162
Virginia	$4,026,690	$4,329,666	$3,736,356	$5,706,443	$2,707,082
Washington	$9,957,712	$10,589,936	$9,392,014	$13,319,820	$7,172,280
West Virginia	$650,955	$702,726	$600,594	$939,749	$429,433
Wisconsin	$5,396,230	$5,775,370	$5,043,430	$7,449,349	$3,801,171
Wyoming	$290,129	$313,680	$267,783	$420,529	$195,071