# Implications of Inflation-Adjusted Fuel Taxes on Government Revenue

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# Implications of inflation-adjusted fuel taxes on government revenue

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# Contents

## List of Figures

## List of Tables

# 1 Introduction

State fuel taxes–taxes on gasoline and diesel fuels—make up the largest source of revenue for states to maintain and improve their transportation infrastructure; these funds are complemented by federal transportation funds derived from federal fuel taxes. However, the way these taxes are often structured—as a fixed cost per gallon—leads these sources of revenue to be inadequate and unsustainable for the purpose they are intended. Each state, the District of Columbia, and the federal government all have taxes on fuel; of those, 33 states and the federal government use a fixed unit cost structure that diminishes in relative value every year given inflation and the increase in construction costs [17].

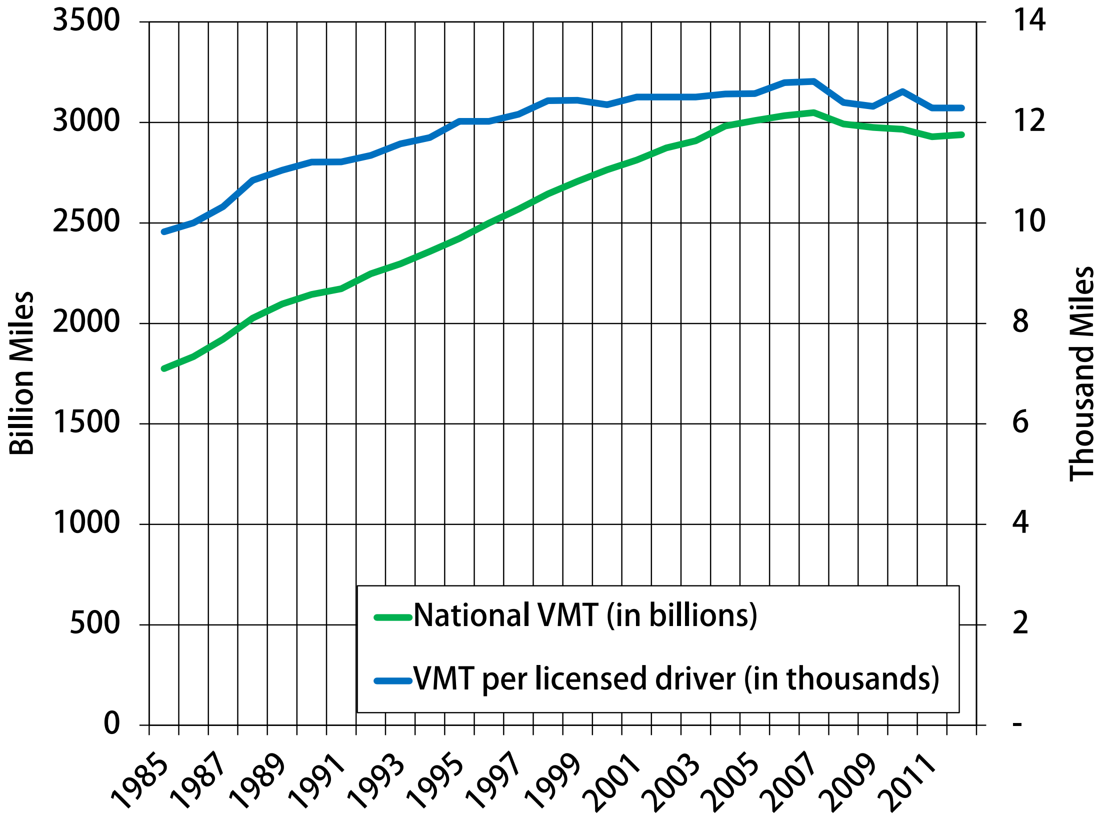
Fully funding transportation obligations is becoming increasingly difficult for states and the federal government alike. An examination of current revenues derived from fuel taxes finds that, in most states, fuel taxes are inadequate to support transportation infrastructure, meaning they do not generate enough revenue to cover the cost of maintaining and improving the transportation network [3, 14]. Some states have chosen to use revenue from other taxes—mostly sales tax revenue—to cover shortfalls in transportation funding; an approach that diminishes the resources available to support other state-provided services and obligations [14]. Other states have engaged in public-private partnerships and increased the use of tolling to generate more revenue. However, these approaches are unlikely to be feasible as a statewide funding approach; nor are they likely to be equitable as this approach asks a segment of all transportation users (those using the toll roads) to finance a broader segment of the transportation system than from which they receive benefit. The inadequacy of fuel taxes most often results in disinvestment in the transportation network across many states, and the condition of the network deteriorates over time [1].

A 2013 report by the American Society of Civil Engineers [2] finds that governments across the United States will need to invest $1.72 trillion in surface transportation—roads, bridges, and transit systems—by 2020 to make these systems functionally sufficient; only slightly more than half of that funding is expected to be available given current revenue sources. Currently, deficiencies in the transportation system cost Americans $97 billion in increased operating costs and $32 billion in travel time each year, in addition to hindering the economic growth of states and regions. These costs are only projected to increase as the gap in funding widens. Further, as the degree of disrepair in the current transportation system becomes more serious, the cost for eventually bringing these systems back to functional sufficiency only grows more expensive. States eventually, and often begrudgingly, raise fuel taxes or shift resources to cover gaps in financing the maintenance of the transportation system; however, because many states impose fixed-cost levies, these increases prove unsustainable as inflationary pressures continue to drive the cost of everything else up while the fuel tax remains constant in nominal terms [14].

Most taxes are structured in such a way that they naturally adjust to inflation because they are based on a rate (e.g., income taxes are based on a rate of adjusted gross income, sales taxes are based on a rate of the price of goods, etc.); however, as of September 2013, fuel taxes in 33 states and the federal government are not constructed the same way [16]. Instead, these states and the federal government charge a set amount per gallon, which becomes increasingly unsustainable.[1] In some cases, states combine fixed rate and variable rate taxing structures to fund transportation

[1]States that use a variable-rate by tying fuel taxes to either inflation or the price of fuel include: California, Connecticut, Florida, Georgia, Hawaii, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, Nebraska, New York, North Carolina, Vermont, Virginia, and West Virginia.

**Figure 1: Vehicle Miles Traveled (VMT) per licensed driver and national VMT.**



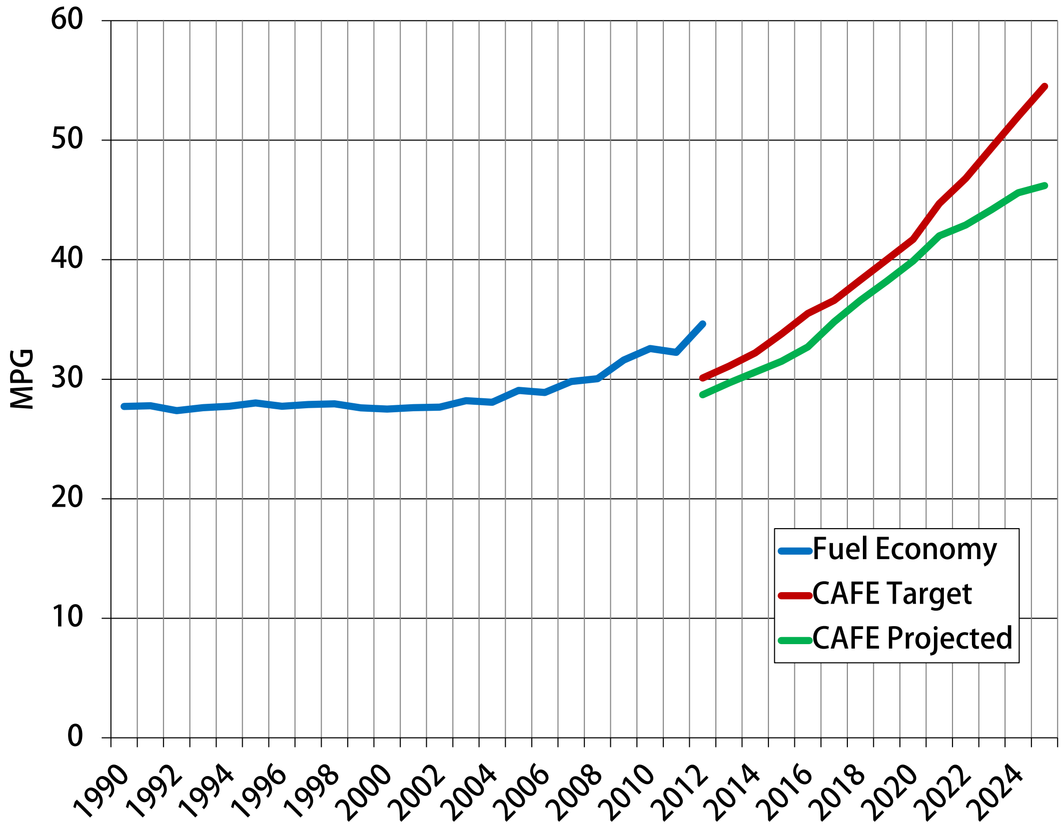

*Notes: The value of the national VMT in billion miles is indicated on the left axis. The VMT per licensed driver is indicated on the right axis.*

infrastructure investments. For example, in its last budget, the State of Indiana continued the collection of fixed amount per gallon fuel taxes and supplemented them by the earmarking variable rate sales taxes derived from fuel purchases to fund transportation improvements.

The structural unsustainability of fixed price fuel taxes has been exacerbated in recent years by increasing fuel efficiency standards and flatlining vehicle miles traveled (VMT; see Figure 1). As of 2012, the fuel economy standard for cars and light trucks was 28.7 miles per gallon (MPG); however, that is expected to increase to 41.7 MPG by 2020 and to over 50 MPG by 2025 [8] (Figure 2). Further, after a steady upward trajectory throughout most of the past nearly 100 years, total VMT in the United States peaked in 2007 and has remained relatively flat since.[2] To some degree, this reflects driving habits during the recent economic recession and its aftermath, but data also point to changing driving habits among Americans as contributing to this trend. While fuel efficiency and flatlining VMTs exacerbate the unsustainability of fixed cost fuel taxes, a 2013 analysis by the Institute on Taxation and Economic Policy suggests the bulk of the shortfall of fuel taxes has been their inability to keep up with the rising costs of construction rather than gains in

[2] US Department of Transportation. (2013). Traffic Volume Trends: December 2013. Washington, DC.

**Figure 2: Historic fuel economy (excluding light trucks) and projected fuel economy standards.**

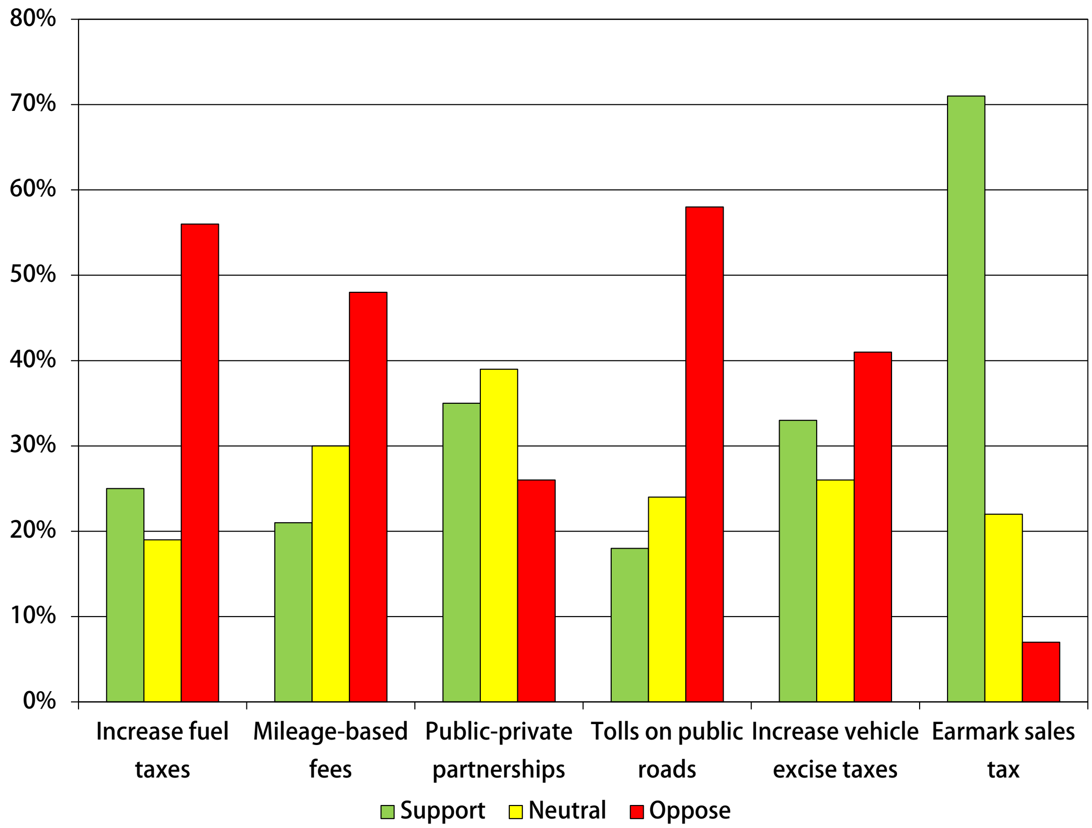



*Note: The CAFE standards are based on calculations including the fuel economy of cars but also the market shares of each manufacturer. This leads to a disconnect between the current fuel economy and the projected/targed CAFE standards.*

fuel efficiency (changes in VMT were not considered) [16].

A survey of local government officials in Indiana suggests that policymakers—at least at the local level—may not be aware of how acute the inadequacy and unsustainability of the current funding structure for maintaining the transportation system is; or, alternatively, there may be a disconnect between their realization of existing challenges and their willingness to pay to upgrade the system. In *Intergovernmental Issues in Indiana: 2012 IACIR Survey* fewer than half of the respondents responsible for making local transportation funding decisions felt like transportation funding was inadequate [13] (Figure 3). Specifically, only 39 percent felt there was not enough investment in bridges and 48 percent thought there was inadequate funding for highways; more than half (60 percent) thought there was inadequate funding for local roads and streets. In considering potential funding mechanisms to support the construction and maintenance of local road infrastructure, increasing fuel taxes was the next to least popular option among all respondents (falling only

**Figure 3: Attitudes of local government officials towards alternative fuel tax policies**




*Source: Indiana Advisory Commission on Intergovernmental Relations 2012 survey results Notes: Attitude towards alternative fuel tax policies. These figures represent a more limited sample than the percentages of all individuals surveyed; these figures represent the responses of those individuals responsible for local transportation funding (county and municipal councils and local administrations).*

behind adopting tolls on local roads). Respondents were more likely to support revenue-neutral options that shifted state spending priorities and expanding local funding options [13]. Duncan and Graham (2014) [6] echo this finding in their national survey results that people are opposed to financing roads with VMT taxes, higher fuel taxes, sales and income taxes, and tolls. They speculate the high level of opposition is due to people's belief that roads are in good condition and a dislike for new (higher) taxes.

The first gas taxes were adopted to fund a federal budget shortfall; however, at the implementation of the Interstate Highway System, fuel taxes were mostly directed at supporting the construction and maintenance of the highway system, reflecting an adoption of the benefits principle as it relates to transportation [15, 30]. Fixed cost tax structures were relatively easy to administer; however, for the reasons noted above, had to be periodically adjusted upwardly to keep pace with the rising cost of construction. In the recent past, this has become more untenable in political environments where tax increases are often nonstarters. Recently, there has been interest in exploring VMT-based taxes [6, 18, 27] to counteract the effect of increased fuel efficiency (under the current system of taxing fuel at the pump, fuel efficient vehicles pay less than other vehicles because they are able to travel farther on one gallon of fuel); however, the politics of adopting a taxing structure that requires the government to monitor driving habits is unlikely—politically or technologically—to be realistic in the near term [6]. There is also widespread public opposition to the enactment of VMT-based taxes, with reasons including that the taxation is unfair to rural drivers, to people who drive a lot as part of their job, to people who drive fuel-efficient vehicles, and to people who are concerned about privacy issues [6].

Some states have started to adopt some version of variable rates (in many cases, additional to the fixed cost base fuel tax). These taxes are often linked to the price of fuel or some measure of inflation. The price of fuel is quite volatile from year to year; as a result, variable rate structures that are tied to the price of fuel can make it difficult for transportation agencies to accurately project revenue, which therefore creates challenges in budgeting [14]. On the other hand, variable rate structures that are linked to a measure of inflation—such as the Consumer Price Index (CPI), updated monthly by the US Bureau of Labor Statistics—may offer a promising opportunity to address the inadequacy and unsustainability of fixed cost structures in a manner that is relatively simple from an administrative perspective.

This increase in cost is depicted in Figure 4 which shows the evolution of the construction cost index and the Consumer Price Index (CPI) between 1985 and 2012. The CPI more than doubled during the period, meaning that the average consumer good more than doubled in price. The construction cost index shows a strong increase during the period between 2004 and 2006 but decreased between 2008 and 2010. The construction cost index for this report is a combination of the Federal Highway Administration's (FHWA) Bid-Price Index (BPI) (before 2007) and the FHWA's National Highway Construction Cost Index (NHCCI). The index captures the bids submitted by contractors for highway construction contracts.

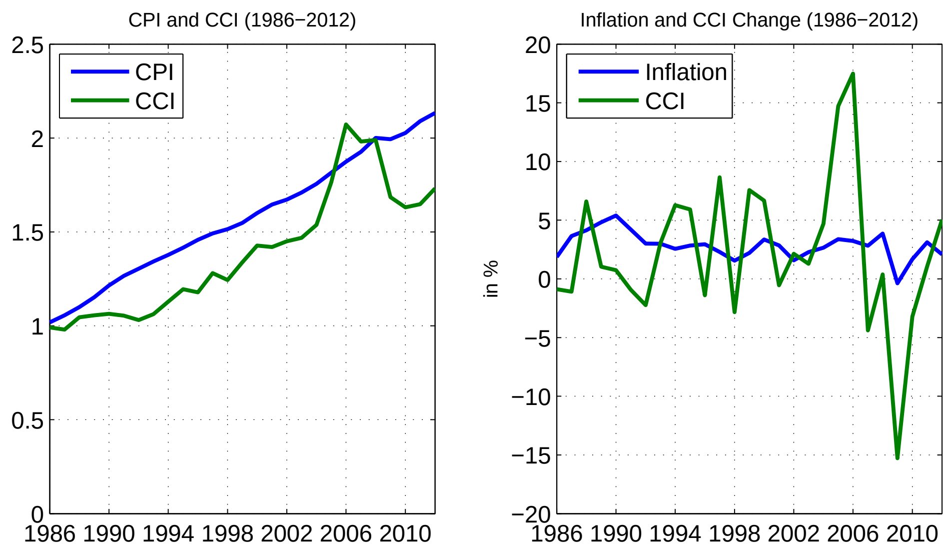
Like other taxes, linking fuel taxes to the cost of inflation would keep the tax rate constant over time; however, because it may be perceived as a tax increase, its adoption may be challenging from a political perspective. To address that political concern, linking fuel taxes to inflation could be coupled with an immediate reduction in the current tax base rate, prior to linking it to inflation. To that end, our analysis examines a variable rate fuel tax structure linked to the CPI for the 12 states within the Soy Transportation Coalition coupled with an immediate one-cent reduction in fuel taxes. Our analysis seeks to project:

- The effect of a one-cent reduction in gasoline and fuel taxes.
- The effect of linking the gasoline and diesel tax to inflation in 2014 in terms of annual state fuel tax revenue through 2025.
- The amount of additional state revenue that could have been generated from linking fuel taxes to inflation the last time each state adjusted fuel taxes.

## 2 Literature Review

An investigation of the existing literature finds a lingering and widespread concern among the academics and affiliated industries regarding the decline of transportation funding over the past

**Figure 4: Construction Cost Index and CPI (1986-2012)**




*Notes: The Consumer Price Index is calculated by the Bureau of Labor Statistics (BLS). The construction cost index was constructed by the Institute on Taxation and Economic Policy (ITEP) from the Federal Highway Administration (FHWA) Bid Price Index (1986-2002) and the National Highway Construction Cost Index (NHCCI) after 2003.*

decade [5, 10, 11, 15, 25, 27, 29, 30]. Despite diverging perspectives and standing, the conclusion that the United States' surface transportation system will gradually deteriorate without a new or additional dedicated source of transportation funding is universal. The numerous options proposed to bridge the financial gap include raising fuel taxes, strategic borrowing, tolling, social cost fees (i.e., congestion pricing, variable parking fees, etc.), VMT-based taxes, public private partnerships, freight-specific strategies as well as repurposing and dedicating general fund revenue for transportation [11, 26, 27].

Within the literature, however, there is a heightened focus on options for revising fuel taxes. It is widely agreed that motor fuel is undertaxed in the United States [5, 11, 15, 16, 27]. Delucchi (2007) [5] compared all expenditures and payments made to maintain and build additional capacity within the US transportation system and indicated that the fuel taxes and fees paid by motor vehicle users fell short of government expenditures (excluding external costs of motor vehicle use); this shortfall is approximately 20 to 70 cents per gallon for all motor vehicle users. Efforts were also made to evaluate the costs, both monetary and non-monetary, of motor vehicle use as well as those not borne by vehicle users. MacKenzie et al. (1992) [20] evaluated the market and external costs of vehicle use and estimated that the annual transportation costs not borne by drivers totaled $300 billion in 1989.[3] This was echoed by Lee's (1995) [19] finding that the unpaid costs of vehicle driving

[3]Market costs include costs in highway construction and repair, highway maintenance, highway services (police, fire, etc.) and free parking. External costs cover costs incurred by air pollution, greenhouse gases, strategic petroleum reserve, military expenditures, accidents, and noise.

were approximately $330 billion in 1991. In an attempt to develop estimates of the full costs of transportation in the United States, Miller and Moffet (1993) [21] considered three categories of costs: personal costs (ownership and maintenance), government subsidies (capital and operating expenses and local government expenses), as well as societal costs. They arrived at the estimated full costs of automobile transportation between $1.1 trillion and $1.6 trillion in 1990, of which $378 to $660 billion was not covered by the vehicle users.

A number of studies compare the motor fuel tax rate in the United States to its industrial counterparts, pointing to the significantly lower level of motor fuel taxation in the United States [18, 24, 29]. It is noted that the US tax rate is the lowest at 40 cents per gallon of gasoline (18 cents federal tax and on average 22 cents state tax) among industrial countries [24, 29]. Parry and Small (2005) [24] calculated the optimal gasoline tax rate in the United States, and after including the external costs of congestion, accidents, air pollution (air and global) as well as a "Ramsey Tax" component,[4] they arrived at the optimal gasoline tax rate of $1.01 per gallon, more than twice the current rate.

Concerns have also been expressed over the eroding purchasing power of the current motor fuel tax dollars, as a result of inflation and improvements in the fuel efficiency of vehicles [11, 15, 16, 25, 30]. It was estimated by the Institute on Taxation and Economic Policy that, after adjusting to account for growth in construction costs, the federal gas tax had its value eroded by 41 percent and the average state's gas rate had effectively fallen by 20 percent since the last increase [15].

Despite the growing calls for higher gas tax, few works examine how and to what extent the gas tax rates can be raised. The Institute on Taxation and Economic Policy has quantified the financial impact, at the federal and state level, if the gas tax had kept up with transportation-related construction costs (Institute on Taxation and Economic Policy, 2012, 2013a, 2013b). However, its analysis focuses on the past, without making any projections for the future.

Our research aims to fill the gap by quantifying the financial impact the nation and certain states would incur from a one-cent reduction in the fuel tax, and then quantify the additional revenue that could be generated by 2025 if fuel taxes were indexed to inflation. Given the fluctuations in the transportation construction costs, we focus on the CPI as the measure of inflation to which fuel taxes would be indexed.

Academic literature suggests that such an analysis should consider the impact that gasoline and diesel demand elasticities have on fuel consumption as prices rise. A meta-analysis found that on average, the demand elasticity of gasoline demand is -0.26 in the short run (defined as one year or less) and -0.58 in the long run [9]. However, since the late 1990s, studies have found a shift in inelasticity, meaning that consumers are less sensitive to price changes [4, 12, 22] and an elasticity of -0.034 in the short run is more appropriate. Other studies found a short-run elasticity of -0.061 and a long-run elasticity of -0.453 [4]. Few recent estimates of diesel fuel price elasticity exist. The long-run elasticity for diesel was found to be -0.4 in the long-run and -0.24 to -0.04 for the short-run [23]. So given the elasticity of gasoline of -0.453, a one percent increase in the cost of gasoline leads to a reduction in the quantity consumed by -0.453 percent. For example, if the price of gasoline increases from $3.50 to $3.60 (a 2.8 percent increase), then the average motorist would decrease gasoline consumption by $0.453 \times 2.8\% = 1.29\%$.

[4]The notion that the government should minimize excess burden in raising revenue when determining an optimal tax rate on a commodity.

# 3 Methods

Projected future fuel tax revenue is a function of the future consumption of gasoline and diesel fuel, and the rate or amount at which that consumption is taxed. For our model, we assume fuel taxes are reduced by one-cent from the present unit tax in each of the 12 states in 2013 and then those fuel taxes are linked to projected inflation. For projections of inflation, we used annualized projections of the Bureau of Labor Statistics' Consumer Price Index calculated by the International Monetary Fund and International Financial Statistics, and made available by the US Department of Agriculture.

To model future fuel consumption, we modified the approach taken by the Washington State Department of Transportation in its Statewide Fuel Consumption Forecast Model (2010) [28].[5] Our modified version uses the following exogenous variables as predictors of the level of state gasoline and diesel consumption (all variables deflated by the CPI). Note that $i$ refers to the fuel and $t$ to the time period.

- Price of gasoline and diesel ($p_{i,t}$): The retail prices for gasoline and diesel are obtained from the Energy Information Administration (EIA). We use the "Regular All Formulations" prices for the Midwest and do not differentiate between the different formulations. The prices for the different grades of gasoline will be highly correlated and thus, we chose the average across those formulations to include in our model. Note that we do not include a cross effect in our model; in other words, the consumption of gasoline does not impact the price of diesel.

- State income ($inc_t$): The per capita personal income at the state level was taken from the Bureau of Economic Analysis (BEA). Future projections of income by state are parameters in our model and can be changed accordingly.

- Population ($pop_t$): Population and population projections at the state level have the advantage of providing us a better time trend than a simple trend variable. We expect that an increase in population increases the demand for gasoline and diesel as well. The future projections of the population are parameters in our model and can be changed accordingly.

- Fuel economy ($mpg_t$): The fuel economy of cars has improved in recent years and is expected to continue to improve through 2025. To capture this effect as well as the future growth, the variable is included in our model.

- Vehicle Miles Traveled ($vmt_t$): The driving behavior of the average licensed driver in the United States has changed over the past decades. In recent years, the average driver is driving less than he or she once did. Furthermore, aggregate vehicle miles traveled (the total of all vehicle miles traveled by all drivers) has remained relatively constant since 2007.

- Lagged gasoline and diesel consumption: The lagged consumption, i.e., the consumption from the previous year, of the fuel in question has proven to be a strong determinant for future consumption. Thus, we include a one year lag of consumption in our regression equations.

[5] This model includes a state's non-agricultural employment, population, and a composite variable of gas prices and fuel efficiency for gasoline consumption. For diesel consumption, this model includes state employment in trade, transportation and utilities, and real personal income. Those independent variables each have their own unique forecast, used to project fuel consumption.

These variables were the independent variables and fuel consumption was the dependent variable in a simple regression analysis, which was run separately for gasoline and diesel consumption to establish a baseline. Consumption of both fuels were adjusted for elasticity in the scenario linking fuel taxes to inflation, assuming increased costs relative to the baseline analysis would marginally impact vehicle miles traveled.

$$\ln(c_{i,t}) = \beta_0 + \beta_1 \ln(c_{i,t-1}) + \beta_2 \ln(p_{i,t}) + \beta_3 \ln(inc_t) + \beta_4 \ln(pop_t) + \beta_5 \ln(mpg_t) + \beta_6 \ln(vmt_t)$$

where $c_{i,t}$ represents consumption. Note that results of a simulation model are sensitive to assumptions in the functional form of the simulation, parametrization, updating historical data, etc. For example, using a linear projection for gasoline and diesel consumption into the future leads to a different result than using a projection such as shown in the equation in which population and income grow exponentially (based on a constant growth rate over the projection period). However, those differences are small especially when the focus is on the difference the baseline and the scenario.

Besides evaluating the scenario of reduced fuel taxes and the subsequent linkage to inflation, we evaluate the possibility of raising revenue through an annual special registration fee on newly sold battery electric vehicles, plug-in hybrid vehicles, and conventional hybrids. Those three vehicle categories are expected to grow fastest between now and 2040 [7]. We take the projected vehicle sales by technology type after 2014 from the EIA Annual Energy Outlook [7] and transform the regional EIA data to state data based on the current vehicle stock by state. This allows us to evaluate the potential for additional revenue from fees on those vehicles.

## 4 Results

The cost of a one-cent reduction is not insignificant in terms of the resources available to fund and maintain the transportation infrastructure. A one-cent reduction in fuel taxes prior to indexing those fuel taxes to inflation will cost the 12 states that comprise the Soy Transportation Coalition nearly \$32.5 million[6] on average (see Table 1 for state by state results) in the first year. In total, a one-cent reduction in the fuel taxes would cost the 12 states more than \$389.6 million. For the federal government, the reduction in revenue amounts to \$1.74 billion.

The cost of a one-cent reduction in fuel taxes coupled with indexing those taxes to inflation, however, would eventually result in new revenue that exceeds the cost of foregoing the one-cent reduction. Most states would see the revenue from fuel taxes indexed to inflation but reduced by one cent exceed revenue under the status quo for those states by 2017; by 2020 all states will have recovered the cumulative losses realized by reducing the fuel tax by one cent through increased revenue. Nebraska is the exception in both cases because the state already has a growing fuel tax over time.

If fuel taxes in the 12 Soy Transportation Coalition states were indexed to inflation in 2014, assuming a one-cent reduction in the current fuel tax, by 2025 each state would have considerable additional resources to support the construction and maintenance of their surface transportation system. In 2025, an additional \$118.5 million in revenue would be derived on average by the 12 states from the new fuel tax formula (see Table 1 for state by state totals); in total this would represent more than \$1.42 billion across the 12 states. With the fuel tax remaining constant in real dollars, the projected revenue growth is a result of increased population, income, and vehicle miles traveled that will offset the foregone revenue from increased fuel economy.

[6] All figures throughout the document are in 2013 dollars unless otherwise noted.

**Table 1: Effect of the one-cent reduction on state and federal revenue for the 12 states in 2014 and 2015 in 2013 million dollars**

| | Revenue difference (in Mil. $) | | Price increase in 2025 (in $/gal.) | | Average Revenue | Break-even years | |
|---|---|---|---|---|---|---|---|
| | 2014 | 2025 | Gasoline | Diesel | 2014-2025 | Annual | Cumulative |
| Illinois | -58.2 | 195.1 | 0.028 | 0.033 | 70.6 | 2017 | 2020 |
| Indiana | -41.7 | 125.9 | 0.026 | 0.022 | 42.1 | 2017 | 2020 |
| Iowa | -21.9 | 90.9 | 0.032 | 0.034 | 33.8 | 2016 | 2019 |
| Kansas | -17.0 | 75.3 | 0.037 | 0.041 | 30.1 | 2016 | 2018 |
| Kentucky | -29.4 | 95.1 | 0.025 | 0.033 | 29.7 | 2017 | 2020 |
| Michigan | -53.1 | 164.0 | 0.028 | 0.020 | 57.2 | 2017 | 2020 |
| Minnesota | -34.2 | 116.2 | 0.050 | 0.002 | 48.1 | 2016 | 2019 |
| Nebraska | -15.6 | 28.0 | 0.020 | 0.020 | 6.3 | 2018 | 2023 |
| North Dakota | -7.8 | 31.2 | 0.035 | 0.035 | 12.3 | 2016 | 2019 |
| Ohio | -63.6 | 340.5 | 0.045 | 0.045 | 140.7 | 2016 | 2018 |
| South Dakota | -6.7 | 25.9 | 0.034 | 0.034 | 9.9 | 2016 | 2019 |
| Tennessee | -40.3 | 133.6 | 0.030 | 0.024 | 48.2 | 2017 | 2020 |
| Total | -389.6 | 1,421.5 | - | - | - | - | - |
| Federal | -1,736.9 | 6,177.0 | 0.026 | 0.038 | 1,142.8 | 2017 | 2019 |

*Note: Break-even years are when the annual tax revenue is equivalent to before the policy-change and the break-even year when the cumulative revenue is higher than before the policy change.*

Detailed results for each of the 12 states considered in this analysis as well as the effect at the federal level from the proposed policy in the 12 states are reported in the state and federal government specific sections.

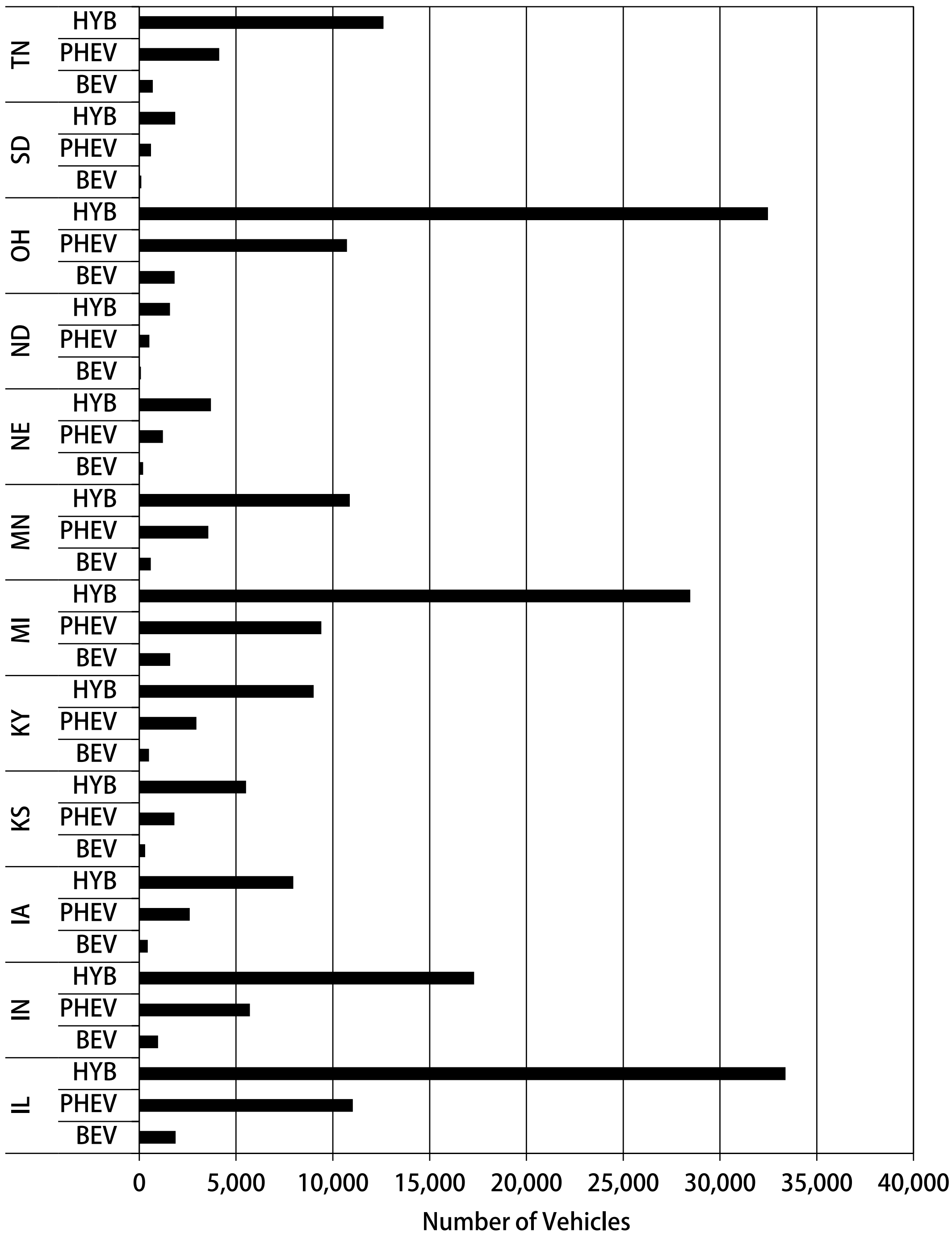
## 4.1 Alternative Policies for Alternative Fuel Vehicles

Concerns have been raised about the increase of alternative fuel vehicles and their effect on state and federal revenue. Alternative fuel vehicles such as conventional hybrids, plug-in electric, and battery electric vehicles contribute little to nothing to the revenue raised via fuel taxes. Some states such as North Carolina have discussed or implemented additional vehicle fees for high fuel economy vehicles. This section of our report aims to address those issues and provide an estimate about the size of the problem.

We focus on the three technologies that are expected to grow the fastest according to the EIA Annual Energy Outlook 2014 [7]: conventional hybrids (HYB), plug-in electric (PHEV), and battery electric vehicles (BEV). To calculate the potential revenue from imposing a a fee on those three vehicles, we first take the sales projections from the 2014 EIA Annual Energy Outlook of those three vehicle technologies and break them down by state.[7] Figure 5 summarizes projected

[7]The 2014 EIA Annual Energy Outlook provides a regional breakdown. We take the proportionate vehicle stock by state as an approximation on how many vehicles of a particular type will be sold in a state.

**Figure 5: Projected sales of alternative fuel vehicles in 2025**




*Notes: Number of conventional hybrids (HYB), plug-in electric (PHEV), and battery electric vehicles (BEV) sold. (Source: EIA Annual Energy Outlook 2014)*

**Figure 6: Revenue (in Million Dollars) from Additional Registration Fee for Alternative Fuel Vehicles in 2025**

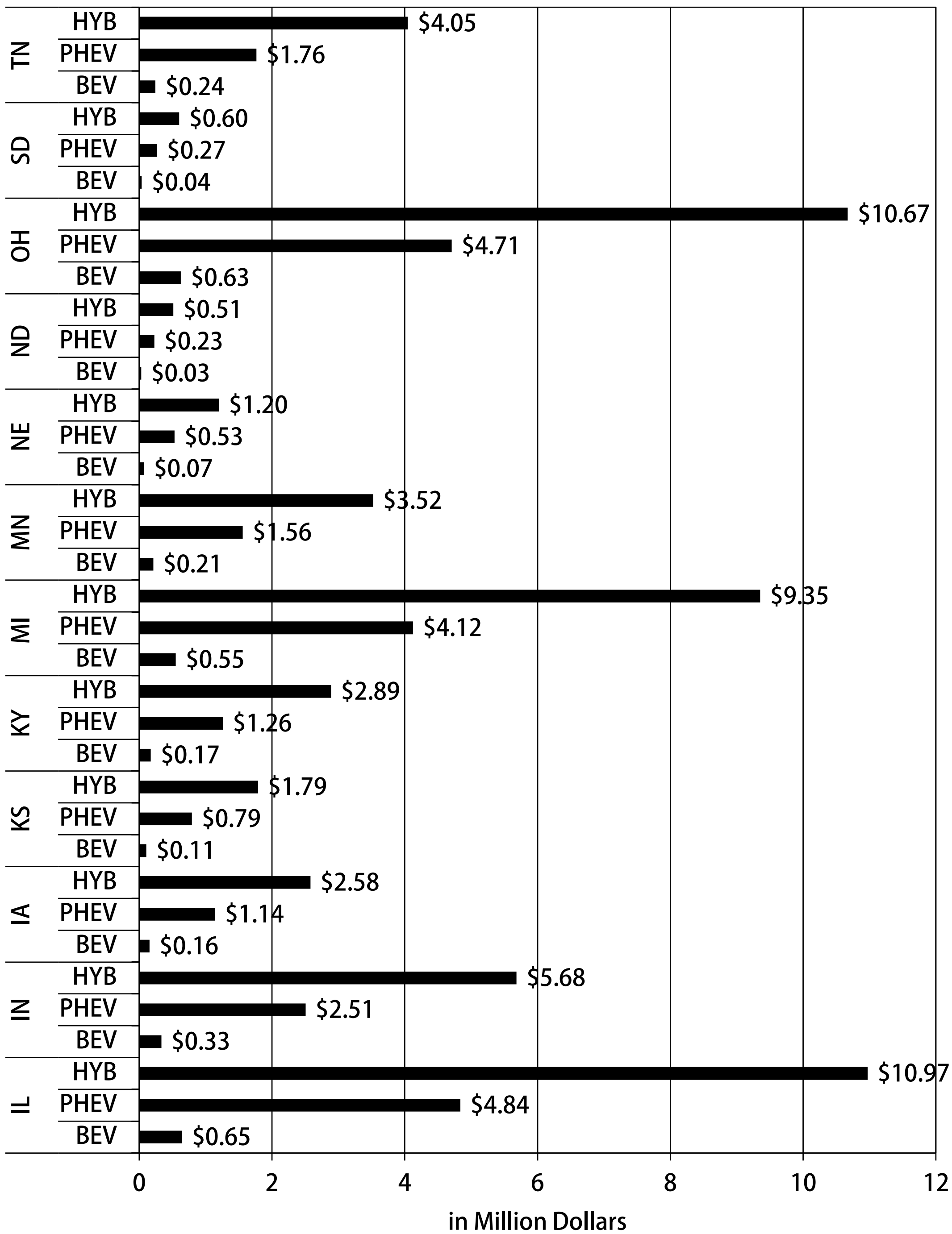


**Table 2: Highway Trust Fund (HTF) Funding Gap: Comparison between the projected gap of the HTF under the baseline and the scenario in billion 2013 dollars.**

| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Baseline* | | | | | | | | | | | | | |
| Start Balance | 10.0 | 5.8 | 4.1 | -6.5 | -16.3 | -25.4 | -33.5 | -41.8 | -49.3 | -56.8 | -63.5 | -70.2 | -76.2 |
| Revenue | 33.8 | 34.4 | 33.9 | 33.9 | 34.0 | 34.0 | 34.1 | 34.1 | 34.1 | 34.1 | 34.1 | 34.1 | 34.1 |
| Transfers | 6.0 | 10.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Outlays | 44.0 | 46.0 | 44.6 | 43.7 | 43.0 | 42.2 | 42.4 | 41.6 | 41.6 | 40.8 | 40.9 | 40.1 | 40.1 |
| End Balance | 5.8 | 4.1 | -6.5 | -16.3 | -25.4 | -33.5 | -41.8 | -49.3 | -56.8 | -63.5 | -70.2 | -76.2 | -82.2 |
| *Scenario* | | | | | | | | | | | | | |
| Start Balance | 10.0 | 4.0 | 0.6 | -10.7 | -20.6 | -29.0 | -36.1 | -42.6 | -47.5 | -51.9 | -54.7 | -56.8 | -57.3 |
| Revenues | 32.0 | 32.6 | 33.2 | 33.9 | 34.5 | 35.2 | 35.9 | 36.6 | 37.3 | 38.0 | 38.8 | 39.5 | 40.3 |
| Transfers | 6.0 | 10.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Outlays | 44.0 | 46.0 | 44.6 | 43.7 | 43.0 | 42.2 | 42.4 | 41.6 | 41.6 | 40.8 | 40.9 | 40.1 | 40.1 |
| End Balance | 4.0 | 0.6 | -10.7 | -20.6 | -29.0 | -36.1 | -42.6 | -47.5 | -51.9 | -54.7 | -56.8 | -57.3 | -57.1 |

*Notes: The outlays are taken from the 2014 projections of the Congressional Budget Office (CBO). Source: Projections of Highway Trust Fund Accounts Under CBO's February 2014 Baseline.*

sales for those units. Next, we assume an annual fee on new vehicles sold after 2014 imposed on the aforementioned vehicles of $50, $75, and $100 on conventional hybrids, plug-in electric, and battery electric vehicles, respectively[8]. Figure 6 summarizes the income that would be generated in 2025. The results indicate that the revenue generated from such a fee would be negligible as a source of revenue compared to the overall fuel tax revenue.

### 4.2 Federal Funding Gap

The Congressional Budget Office projects the Highway Trust Fund (HTF) to have a zero balance in late 2014. Table 2 summarizes the funding gap under the proposed fuel tax policy of reducing the federal fuel taxes by one cent and linking them to inflation in 2014. The outlays are taken from the 2014 CBO projections. Although the cumulative funding gap in 2025 is reduced from $82.2 billion to $57.1 billion, the HTF still remains significantly underfunded. However, our analysis reveals that under the proposed policy, the revenues will increase faster than the outlays. Thus, the annual shortfall becomes smaller over time and reaches almost zero at the end of the projection period.

## 5 Discussion and Conclusion

The Institute on Taxation and Economic Policy (2011) report outlined the challenges related to the inadequacy and lack of sustainability of most states' current fuel tax regimes. Our analysis suggests that indexing fuel taxes to inflation would addresses the challenge of sustainability by providing a revenue source that increases at or exceeds the rate of inflation between now and 2025. If states were to enact policies that link fuel taxes to a measure of inflation, state governments would arrest

[8]The values of $50, $75, and $100 were chosen based on proposed fees for alternative fuel vehicles in North Carolina: http://abcnews.go.com/Business/nc-lawmakers-propose-50-100-fees-green-car/story?id=19291271.

the decreasing purchasing power of their current revenue streams. While the fuel tax would remain constant in real terms, increases in population, real income, and vehicle miles traveled will drive increased revenue for these 12 states between now and 2025.

Our analysis does not examine whether linking fuel taxes to inflation would sufficiently address the inadequacy of fuel taxes. Such an analysis would require an in depth examination of each state's infrastructure needs and its associated costs to determine an optimal fuel tax rate; this effort falls outside of our analysis. Given the estimates of the American Society of Civil Engineers [2], suggesting the US transportation system will need $1.72 trillion in additional investment to bring it to functional sufficiency by 2020, it is unlikely that indexing fuel taxes to inflation alone will address the entirety of this gap; nevertheless, indexing to inflation in 2014 will certainly leave states better positioned to address the funding gap than continuing the status quo.

Concerns around the adequacy of the current fuel tax structure could be exacerbated by an immediate reduction in fuel taxes to make the tax structure more politically palatable; the amount of revenue foregone through a one-cent reduction is not insubstantial. Policymakers across the 12 states will need to consider whether the foregone revenue from a one-cent reduction in fuel taxes is a price that they are willing to pay in the short term to ensure a sustainable source of revenue for the transportation system over the long term. If a one cent reduction is pursued, policymakers will also have to assess whether they will access general funds to cover the short-term loss in revenue-thereby reducing resources available for other state responsibilities—or if they will delay transportation—related projects to reduce costs. Nevertheless, our analysis suggests states will realize a long-term benefit from linking fuel taxes to inflation, even if it requires them to adopt measures that result in foregone revenue in the short term.

## 6 Illinois: Fuel Tax Changes and Impact on State Revenue

In most U.S. states, fuel taxes are the primary source of transportation funding not subject to federal control; however, due to inflation, increased fuel efficiency in vehicles, and changing driving behavior, these taxes are proving increasingly inadequate to meet the costs of maintaining the transportation system. The costs of maintaining current transportation systems and investing in new capital projects rises with the cost of living and the cost of materials; however, the effective rate of most states' fuel taxes decrease because they are fixed rather than indexed to the rate of inflation. Given that, the financing gap between tax revenue and transportation costs will continue to widen if the status quo is maintained.

Concerns regarding the sustainability of the current reliance on fuel taxes to finance the transportation infrastructure has triggered interest in alternative approaches to calculating transportation user fees, one of which includes linking current fuel taxes to inflation. Such an approach seeks to keep the effective tax rate for fuel taxes constant over time relative to the cost of living and materials. This analysis focuses on three questions regarding the implications of changes to the state's fuel tax policy:

1. What would be the effect of a one-cent reduction in gasoline and diesel taxes?
2. What would be the effect on fuel tax revenue through 2025 of reducing gasoline and diesel taxes by one cent in 2014 and indexing both rates immediately to inflation?
3. How much additional revenue could have been generated from linking the gasoline and diesel tax to inflation the last time the state adjusted fuel taxes?

To evaluate these scenarios, we generated a baseline that evaluates state revenue assuming the status quo (no increase in fuel taxes, not linked to inflation) through 2025, using fuel prices as forecasted by the U.S. Energy Information Administration (EIA). Our model projects gasoline and diesel consumption as a trend based on historic information and assumes that 10 percent of the diesel consumption is not taxed (based on historic averages). Inflation is based on the U.S. Bureau of Labor Statistics' Consumer Price Index and projected into the future based on data from the U.S. Department of Agriculture.

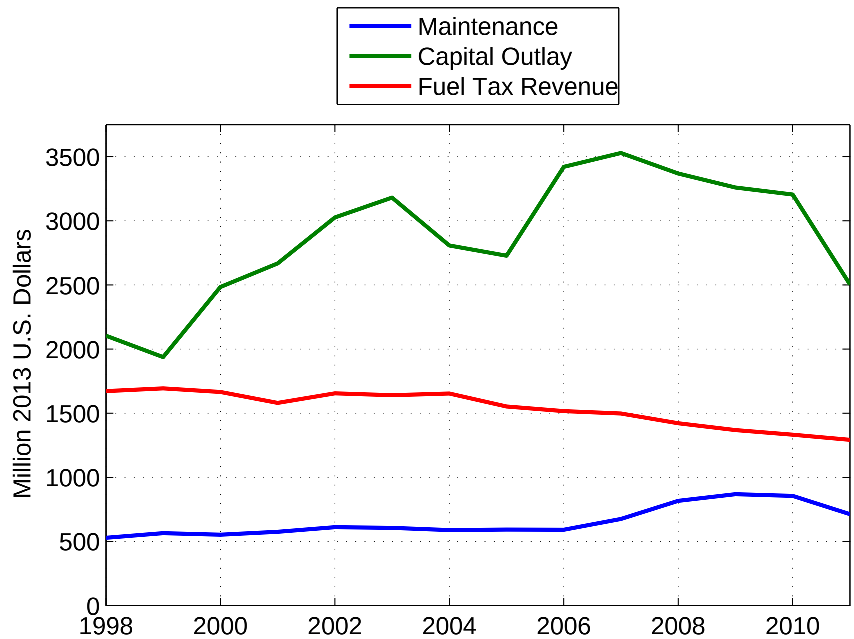
**Finding 1: A reduction in gasoline and diesel taxes by one-cent per gallon would reduce state revenue by a total of $58.2 million in 2014.**

To assess the outcomes of alternative policies, we used our model to generate two scenarios: (1) indexing fuel taxes to inflation in 2014 and (2) indexing the gasoline and diesel tax to inflation in 1990, which corresponds to the last adjustment of the gasoline and diesel tax in Illinois. Figure 8 summarizes the effects on state revenue for the two scenarios where gasoline and diesel taxes are indexed to inflation in 2014 (*Scenario* in the figure) and 1990 (*Forgone* in the figure).

**Finding 2: Indexing the tax rate to inflation in 2014 would result in an additional $70.6 million in average annual tax revenue between 2014 and 2025.**

If fuel tax rates were reduced by one-cent and indexed to inflation in 2014, additional real state revenue of $195.1 million per year would be generated in 2025 (Table 3).

**Figure 7: Illinois: State expenditure on highways and fuel tax revenue**




*Note: Capital outlay includes the cost of materials, supplies, construction machinery, equipment, and administrative costs.*

**Finding 3: Indexing the fuel taxes rates to inflation the last time those taxes were adjusted, a cumulated additional revenue of $12.343 billion would have been generated through 2013 if Illinois had linked the fuel taxes to inflation the last time they were adjusted.**

Our model projects that linking Illinois's fuel taxes to the rate of inflation could have a substantial impact on the state's ability to maintain its transportation system into the future. Had the state indexed fuel taxes to inflation in 1990, it would have secured an additional $12.343 billion to support transportation maintenance and new investments. If Illinois maintains its current fuel tax regime and does not link its fuel taxes to inflation, it will be forgoing $125.9 million in additional annual fuel tax revenue by 2025. In order to ease the immediate burden of indexing fuel taxes to inflation, some policymakers have suggested an immediate reduction in the fuel tax by one-cent. Such a reduction would represent $58.2 million in forgone tax revenue; however, the short term loss of revenue would be quickly recovered through linking fuel taxes to inflation.

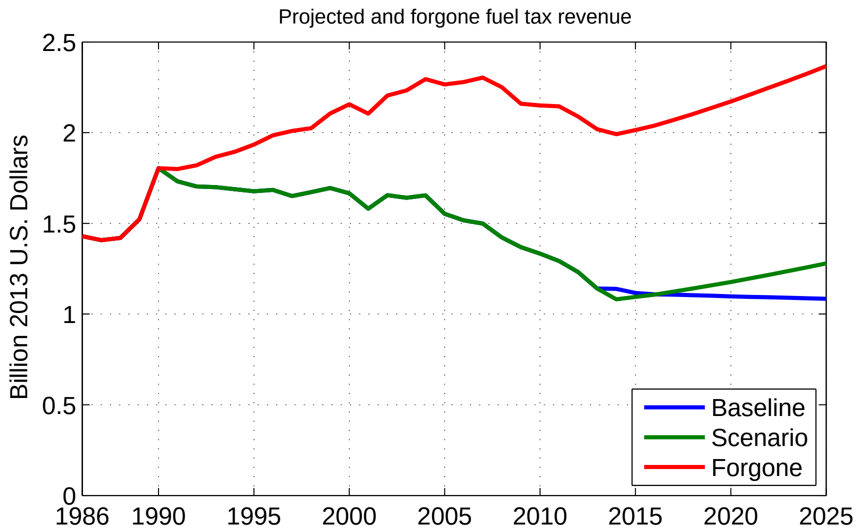
**Table 3: Tax revenue in million 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

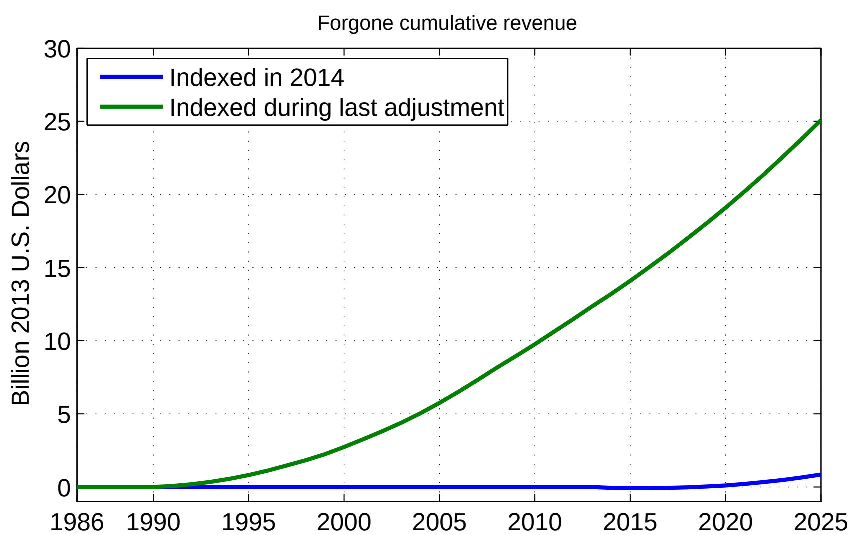
| | State Fuel Tax Revenue (in Million 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 1,139 | 1,081 | -58 | -58 |
| 2015 | 1,116 | 1,094 | -22 | -80 |
| 2016 | 1,109 | 1,107 | -2 | -82 |
| 2017 | 1,106 | 1,124 | 17 | -65 |
| 2018 | 1,104 | 1,140 | 37 | -28 |
| 2019 | 1,101 | 1,159 | 57 | 29 |
| 2020 | 1,098 | 1,177 | 79 | 108 |
| 2021 | 1,095 | 1,196 | 102 | 210 |
| 2022 | 1,092 | 1,216 | 124 | 334 |
| 2023 | 1,090 | 1,237 | 147 | 481 |
| 2024 | 1,087 | 1,258 | 171 | 652 |
| 2025 | 1,084 | 1,279 | 195 | 847 |

**Table 4: State fuel tax expenditure for the average driver in 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | Cost to Average Driver (in 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 135 | 128 | -7 | -7 |
| 2015 | 131 | 128 | -3 | -9 |
| 2016 | 129 | 129 | 0 | -10 |
| 2017 | 127 | 129 | 2 | -8 |
| 2018 | 126 | 130 | 4 | -4 |
| 2019 | 124 | 131 | 6 | 3 |
| 2020 | 123 | 132 | 9 | 12 |
| 2021 | 121 | 133 | 11 | 23 |
| 2022 | 120 | 133 | 14 | 37 |
| 2023 | 118 | 134 | 16 | 53 |
| 2024 | 117 | 135 | 18 | 71 |
| 2025 | 116 | 136 | 21 | 92 |

**Figure 8: Illinois Tax Revenue (2011-2025) and Cumulative Difference**



# 7 Indiana: Fuel Tax Changes and Impact on State Revenue

In most U.S. states, fuel taxes are the primary source of transportation funding not subject to federal control; however, due to inflation, increased fuel efficiency in vehicles, and changing driving behavior, these taxes are proving increasingly inadequate to meet the costs of maintaining the transportation system. The costs of maintaining current transportation systems and investing in new capital projects rises with the cost of living and the cost of materials; however, the effective rate of most states' fuel taxes decrease because they are fixed rather than indexed to the rate of inflation. Given that, the financing gap between tax revenue and transportation costs will continue to widen if the status quo is maintained.

Concerns regarding the sustainability of the current reliance on fuel taxes to finance the transportation infrastructure has triggered interest in alternative approaches to calculating transportation user fees, one of which includes linking current fuel taxes to inflation. Such an approach seeks to keep the effective tax rate for fuel taxes constant over time relative to the cost of living and materials. This analysis focuses on three questions regarding the implications of changes to the state's fuel tax policy:

1. What would be the effect of a one-cent reduction in gasoline and diesel taxes?
2. What would be the effect on fuel tax revenue through 2025 of reducing gasoline and diesel taxes by one cent in 2014 and indexing both rates immediately to inflation?
3. How much additional revenue could have been generated from linking the gasoline and diesel tax to inflation the last time the state adjusted fuel taxes?

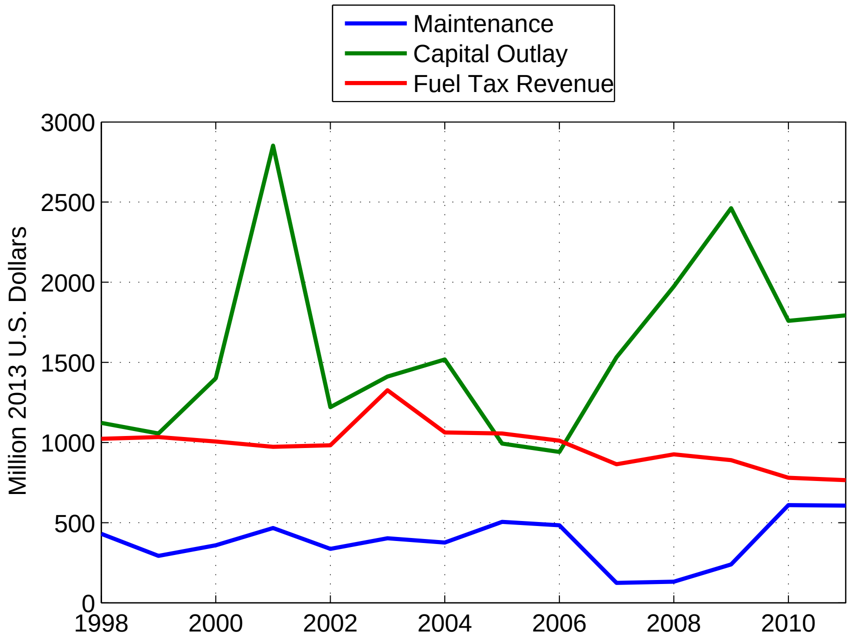
To evaluate these scenarios, we generated a baseline that evaluates state revenue assuming the status quo (no increase in fuel taxes, not linked to inflation) through 2025, using fuel prices as forecasted by the U.S. Energy Information Administration (EIA). Our model projects gasoline and diesel consumption as a trend based on historic information and assumes that 10 percent of the diesel consumption is not taxed (based on historic averages). Inflation is based on the U.S. Bureau of Labor Statistics' Consumer Price Index and projected into the future based on data from the U.S. Department of Agriculture.

**Finding 1: A reduction in gasoline and diesel taxes by one-cent per gallon would reduce state revenue by a total of $41.7 million in 2014.**

To assess the outcomes of alternative policies, we used our model to generate two scenarios: (1) indexing fuel taxes to inflation in 2014 and (2) indexing the gasoline and diesel tax to inflation in 2003 and 1997, which corresponds to the last adjustment of the gasoline and diesel tax in Indiana, respectively. Figure 10 summarizes the effects on state revenue for the two scenarios where gasoline and diesel taxes are indexed to inflation in 2014 (*Scenario* in the figure) and 1997/2003 (*Forgone* in the figure).

**Finding 2: Indexing the tax rate to inflation in 2014 would result in an additional $42.1 million in average annual tax revenue between 2014 and 2025.**

**Figure 9: Indiana: State expenditure on highways and fuel tax revenue**




*Note: Capital outlay includes the cost of materials, supplies, construction machinery, equipment, and administrative costs.*

If fuel tax rates were reduced by one-cent and indexed to inflation in 2014, additional real state revenue of $125.9 million per year would be generated in 2025 (Table 5).

**Finding 3: Indexing the fuel taxes rates to inflation the last time those taxes were adjusted, a cumulated additional revenue of $1.679 billion would have been generated through 2013 if Indiana had linked the fuel taxes to inflation the last time they were adjusted.**

Our model projects that linking Indiana's fuel taxes to the rate of inflation could have a substantial impact on the state's ability to maintain its transportation system into the future. Had the state indexed the diesel tax to inflation in 1997 and the gasoline tax to inflation in 2003 — the years in which they were most recently increased — it would have secured an additional $1.679 billion to support transportation maintenance and new investments. If Indiana maintains its current fuel tax regime and does not link its fuel taxes to inflation, it will be forgoing $125.9 million in additional annual fuel tax revenue by 2025. In order to ease the immediate burden of indexing fuel taxes to inflation, some policymakers have suggested an immediate reduction in the fuel tax by one-cent. Such a reduction would represent $41.7 million in forgone tax revenue; however, the short term loss of revenue would be quickly recovered through linking fuel taxes to inflation.

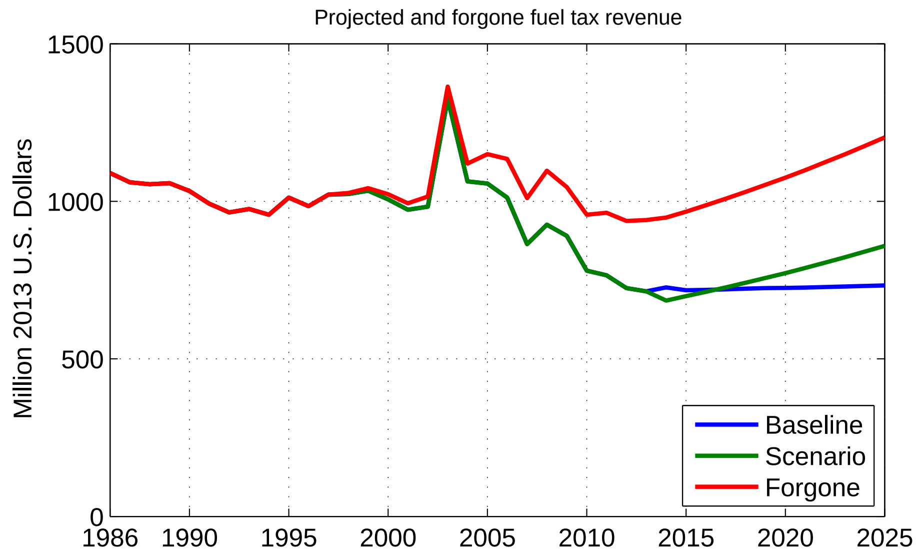
**Table 5: Tax revenue in million 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

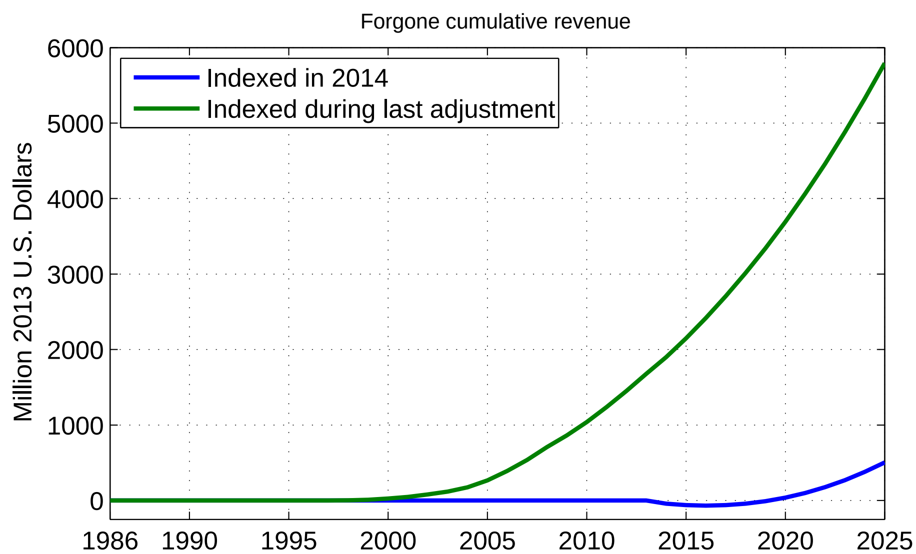
| | State Fuel Tax Revenue (in Million 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 727 | 685 | -42 | -42 |
| 2015 | 718 | 699 | -19 | -61 |
| 2016 | 719 | 713 | -6 | -67 |
| 2017 | 721 | 727 | 6 | -60 |
| 2018 | 723 | 742 | 19 | -41 |
| 2019 | 724 | 757 | 32 | -9 |
| 2020 | 725 | 772 | 47 | 38 |
| 2021 | 726 | 788 | 62 | 100 |
| 2022 | 728 | 805 | 77 | 177 |
| 2023 | 730 | 823 | 93 | 270 |
| 2024 | 731 | 840 | 109 | 379 |
| 2025 | 733 | 859 | 126 | 505 |

**Table 6: State fuel tax expenditure for the average driver in 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | Cost to Average Driver (in 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 126 | 119 | -7 | -7 |
| 2015 | 123 | 120 | -3 | -10 |
| 2016 | 122 | 121 | -1 | -12 |
| 2017 | 122 | 123 | 1 | -10 |
| 2018 | 121 | 124 | 3 | -7 |
| 2019 | 120 | 125 | 5 | -2 |
| 2020 | 119 | 127 | 8 | 6 |
| 2021 | 118 | 128 | 10 | 16 |
| 2022 | 117 | 129 | 12 | 28 |
| 2023 | 116 | 131 | 15 | 43 |
| 2024 | 115 | 133 | 17 | 60 |
| 2025 | 114 | 134 | 20 | 80 |

**Figure 10: Indiana Tax Revenue (2011-2025) and Cumulative Difference**



# 8 Iowa: Fuel Tax Changes and Impact on State Revenue

In most U.S. states, fuel taxes are the primary source of transportation funding not subject to federal control; however, due to inflation, increased fuel efficiency in vehicles, and changing driving behavior, these taxes are proving increasingly inadequate to meet the costs of maintaining the transportation system. The costs of maintaining current transportation systems and investing in new capital projects rises with the cost of living and the cost of materials; however, the effective rate of most states' fuel taxes decrease because they are fixed rather than indexed to the rate of inflation. Given that, the financing gap between tax revenue and transportation costs will continue to widen if the status quo is maintained.

Concerns regarding the sustainability of the current reliance on fuel taxes to finance the transportation infrastructure has triggered interest in alternative approaches to calculating transportation user fees, one of which includes linking current fuel taxes to inflation. Such an approach seeks to keep the effective tax rate for fuel taxes constant over time relative to the cost of living and materials. This analysis focuses on three questions regarding the implications of changes to the state's fuel tax policy:

1. What would be the effect of a one-cent reduction in gasoline and diesel taxes?
2. What would be the effect on fuel tax revenue through 2025 of reducing gasoline and diesel taxes by one cent in 2014 and indexing both rates immediately to inflation?
3. How much additional revenue could have been generated from linking the gasoline and diesel tax to inflation the last time the state adjusted fuel taxes?

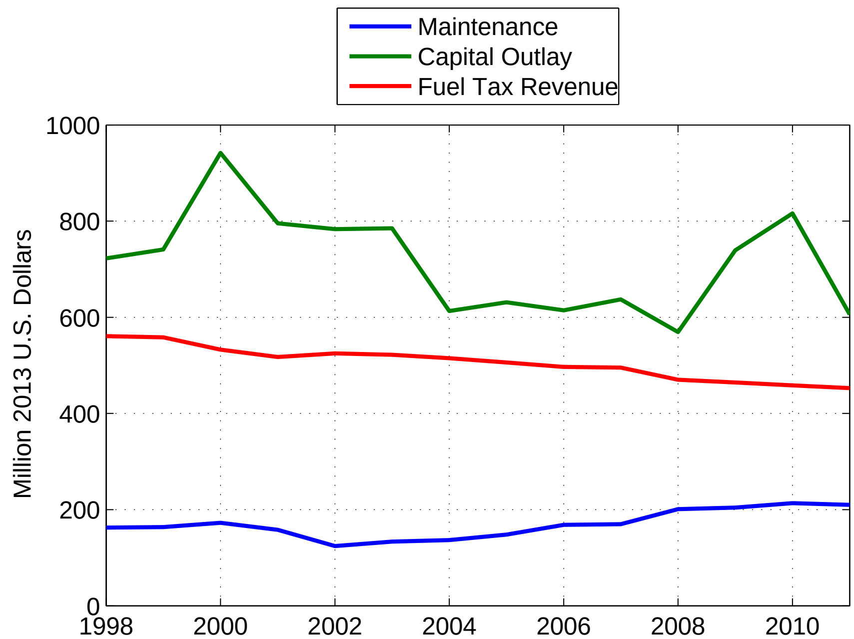
To evaluate these scenarios, we generated a baseline that evaluates state revenue assuming the status quo (no increase in fuel taxes, not linked to inflation) through 2025, using fuel prices as forecasted by the U.S. Energy Information Administration (EIA). Our model projects gasoline and diesel consumption as a trend based on historic information and assumes that 10 percent of the diesel consumption is not taxed (based on historic averages). Inflation is based on the U.S. Bureau of Labor Statistics' Consumer Price Index and projected into the future based on data from the U.S. Department of Agriculture.

**Finding 1: A reduction in gasoline and diesel taxes by one-cent per gallon would reduce state revenue by a total of $21.9 million in 2014.**

To assess the outcomes of alternative policies, we used our model to generate two scenarios: (1) indexing fuel taxes to inflation in 2014 and (2) indexing the gasoline and diesel tax to inflation in 2008 and 1989, which corresponds to the last adjustment of the gasoline and diesel tax in Iowa, respectively. Figure 12 summarizes the effects on state revenue for the two scenarios where gasoline and diesel taxes are indexed to inflation in 2014 (*Scenario* in the figure) and 1989/2008 (*Forgone* in the figure).

**Finding 2: Indexing the tax rate to inflation in 2014 would result in an additional $33.8 million in average annual tax revenue between 2014 and 2025.**

**Figure 11: Iowa: State Expenditure on Highways and Fuel Tax Revenue**




*Note: Capital outlay includes the cost of materials, supplies, construction machinery, equipment, and administrative costs.*

If fuel tax rates were reduced by one-cent and indexed to inflation in 2014, additional real state revenue of $90.9 million per year would be generated in 2025 (Table 7).

**Finding 3: Indexing the fuel taxes rates to inflation the last time those taxes were adjusted, a cumulated additional revenue of $145 million would have been generated through 2013 if Iowa had linked the fuel taxes to inflation the last time they were adjusted.**

Our model projects that linking Iowa's fuel taxes to the rate of inflation could have a substantial impact on the state's ability to maintain its transportation system into the future. Had the state indexed the diesel tax to inflation in 1989 and the gasoline tax to inflation in 2008 — the years in which they were most recently increased — it would have secured an additional $145 million to support transportation maintenance and new investments. If Iowa maintains its current fuel tax regime and does not link its fuel taxes to inflation, it will be forgoing $90.9 million in additional annual fuel tax revenue by 2025. In order to ease the immediate burden of indexing fuel taxes to inflation, some policymakers have suggested an immediate reduction in the fuel tax by one-cent. Such a reduction would represent $21.9 million in forgone tax revenue; however, the short term loss of revenue would be quickly recovered through linking fuel taxes to inflation.

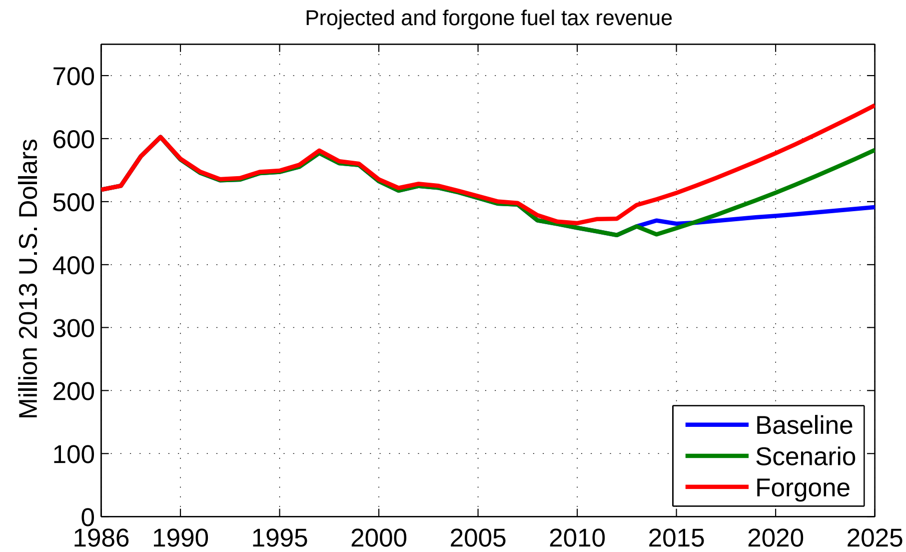
**Table 7: Tax revenue in million 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

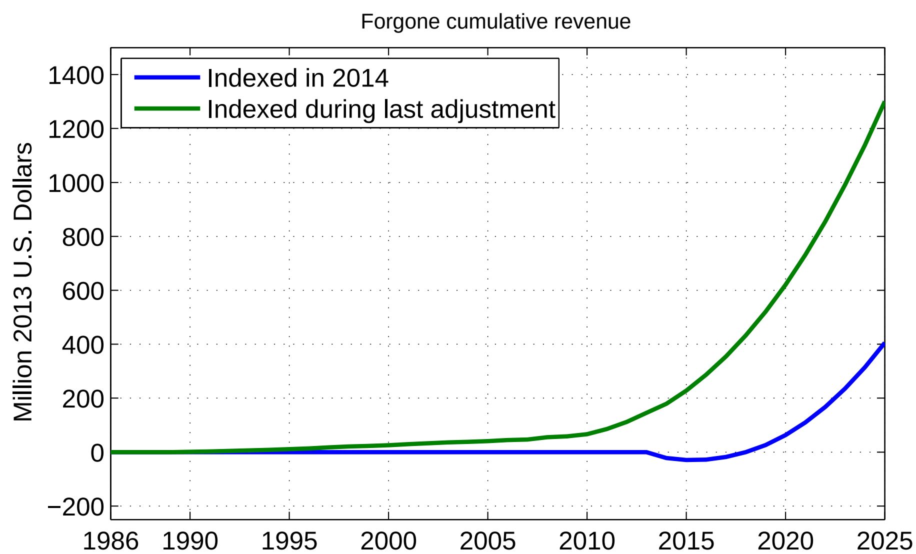
| | State Fuel Tax Revenue (in Million 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 470 | 448 | -22 | -22 |
| 2015 | 465 | 458 | -7 | -29 |
| 2016 | 467 | 468 | 1 | -28 |
| 2017 | 469 | 479 | 9 | -18 |
| 2018 | 472 | 490 | 18 | -1 |
| 2019 | 475 | 502 | 27 | 26 |
| 2020 | 477 | 514 | 37 | 63 |
| 2021 | 480 | 527 | 47 | 110 |
| 2022 | 483 | 540 | 57 | 167 |
| 2023 | 486 | 554 | 68 | 235 |
| 2024 | 488 | 568 | 79 | 314 |
| 2025 | 491 | 582 | 91 | 405 |

**Table 8: State fuel tax expenditure for the average driver in 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | Cost to Average Driver (in 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 210 | 200 | -10 | -10 |
| 2015 | 206 | 203 | -3 | -13 |
| 2016 | 205 | 205 | 1 | -12 |
| 2017 | 204 | 208 | 4 | -8 |
| 2018 | 203 | 211 | 8 | -1 |
| 2019 | 203 | 214 | 11 | 11 |
| 2020 | 202 | 217 | 15 | 26 |
| 2021 | 201 | 220 | 20 | 46 |
| 2022 | 200 | 224 | 24 | 70 |
| 2023 | 199 | 227 | 28 | 97 |
| 2024 | 198 | 231 | 32 | 130 |
| 2025 | 198 | 234 | 37 | 166 |

**Figure 12: Iowa Tax Revenue (2011-2025) and Cumulative Difference**



## 9 Kansas: Fuel Tax Changes and Impact on State Revenue

In most U.S. states, fuel taxes are the primary source of transportation funding not subject to federal control; however, due to inflation, increased fuel efficiency in vehicles, and changing driving behavior, these taxes are proving increasingly inadequate to meet the costs of maintaining the transportation system. The costs of maintaining current transportation systems and investing in new capital projects rises with the cost of living and the cost of materials; however, the effective rate of most states' fuel taxes decrease because they are fixed rather than indexed to the rate of inflation. Given that, the financing gap between tax revenue and transportation costs will continue to widen if the status quo is maintained.

Concerns regarding the sustainability of the current reliance on fuel taxes to finance the transportation infrastructure has triggered interest in alternative approaches to calculating transportation user fees, one of which includes linking current fuel taxes to inflation. Such an approach seeks to keep the effective tax rate for fuel taxes constant over time relative to the cost of living and materials. This analysis focuses on three questions regarding the implications of changes to the state's fuel tax policy:

1. What would be the effect of a one-cent reduction in gasoline and diesel taxes?
2. What would be the effect on fuel tax revenue through 2025 of reducing gasoline and diesel taxes by one cent in 2014 and indexing both rates immediately to inflation?
3. How much additional revenue could have been generated from linking the gasoline and diesel tax to inflation the last time the state adjusted fuel taxes?

To evaluate these scenarios, we generated a baseline that evaluates state revenue assuming the status quo (no increase in fuel taxes, not linked to inflation) through 2025, using fuel prices as forecasted by the U.S. Energy Information Administration (EIA). Our model projects gasoline and diesel consumption as a trend based on historic information and assumes that 10 percent of the diesel consumption is not taxed (based on historic averages). Inflation is based on the U.S. Bureau of Labor Statistics' Consumer Price Index and projected into the future based on data from the U.S. Department of Agriculture.

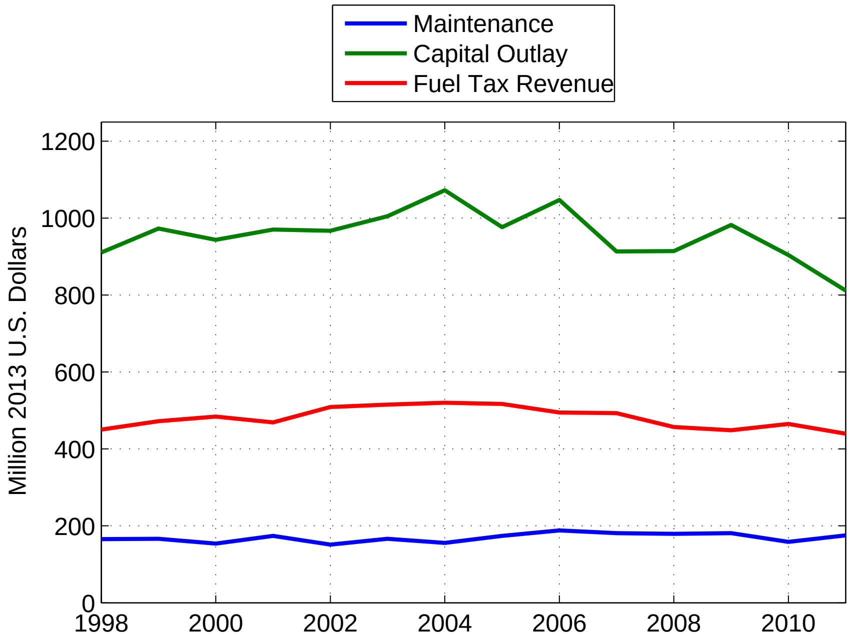
**Finding 1: A reduction in gasoline and diesel taxes by one-cent per gallon would reduce state revenue by a total of $17.0 million in 2014.**

To assess the outcomes of alternative policies, we used our model to generate two scenarios: (1) indexing fuel taxes to inflation in 2014 and (2) indexing the gasoline and diesel tax to inflation in 2003, which corresponds to the last adjustment of the gasoline and diesel tax in Kansas. Figure 14 summarizes the effects on state revenue for the two scenarios where gasoline and diesel taxes are indexed to inflation in 2014 (*Scenario* in the figure) and 2003 (*Forgone* in the figure).

**Finding 2: Indexing the tax rate to inflation in 2014 would result in an additional $30.1 million in average annual tax revenue between 2014 and 2025.**

If fuel tax rates were reduced by one-cent and indexed to inflation in 2014, additional real state revenue of $75.3 million per year would be generated in 2025 (Table 9).

**Figure 13: Kansas: State Expenditure on Highways and Fuel Tax Revenue**




*Note: Capital outlay includes the cost of materials, supplies, construction machinery, equipment, and administrative costs.*

**Finding 3: Indexing the fuel taxes rates to inflation the last time those taxes were adjusted, a cumulated additional revenue of $621 million would have been generated through 2013 if Kansas had linked the fuel taxes to inflation the last time they were adjusted.**

Our model projects that linking Kansas's fuel taxes to the rate of inflation could have a substantial impact on the state's ability to maintain its transportation system into the future. Had the state indexed fuel taxes to inflation in 2003, it would have secured an additional $621 million to support transportation maintenance and new investments. If Kansas maintains its current fuel tax regime and does not link its fuel taxes to inflation, it will be forgoing $75.3 million in additional annual fuel tax revenue by 2025. In order to ease the immediate burden of indexing fuel taxes to inflation, some policymakers have suggested an immediate reduction in the fuel tax by one-cent. Such a reduction would represent $17.0 million in forgone tax revenue; however, the short term loss of revenue would be quickly recovered through linking fuel taxes to inflation.

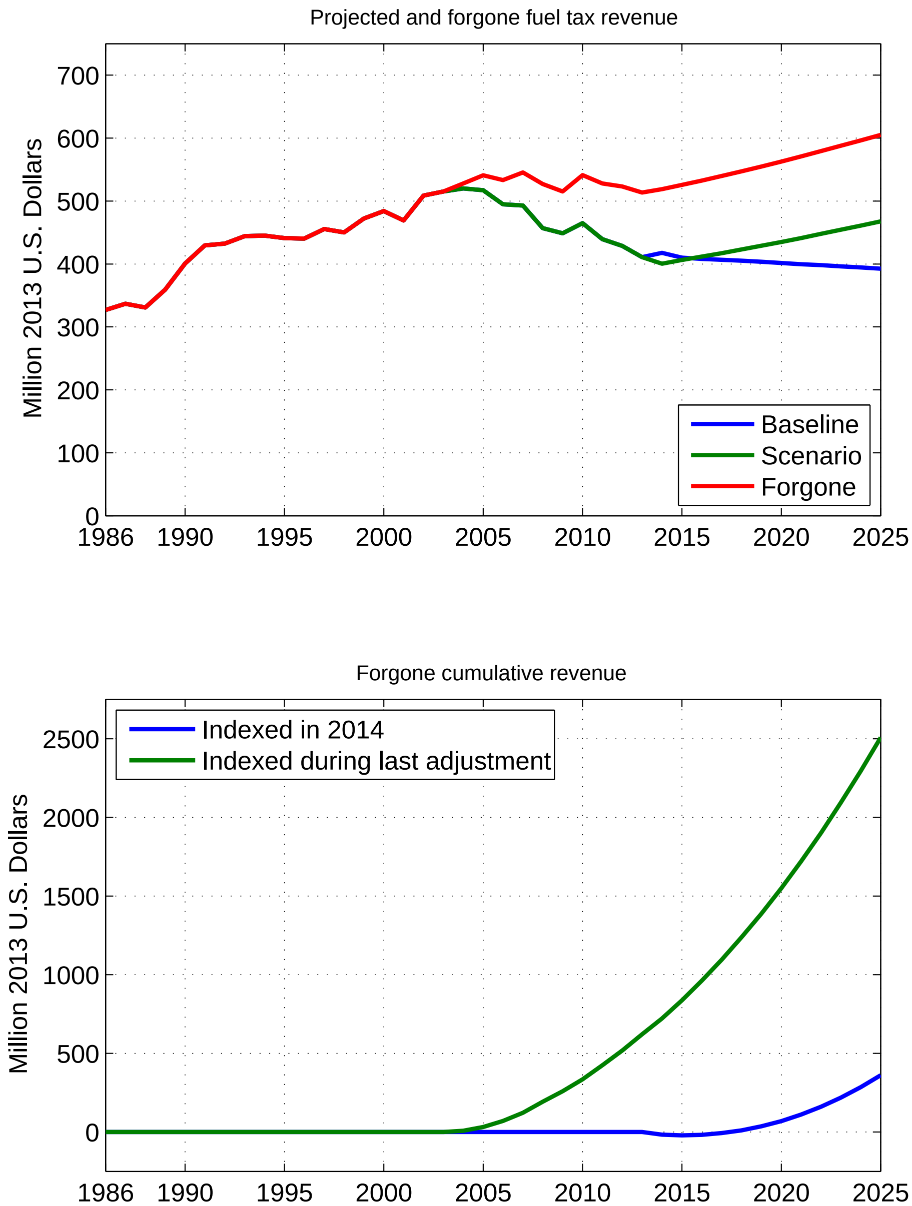
**Table 9: Tax revenue in million 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | State Fuel Tax Revenue (in Million 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 418 | 401 | -17 | -17 |
| 2015 | 410 | 406 | -4 | -21 |
| 2016 | 408 | 412 | 4 | -17 |
| 2017 | 407 | 417 | 11 | -7 |
| 2018 | 405 | 423 | 18 | 11 |
| 2019 | 404 | 429 | 25 | 37 |
| 2020 | 402 | 435 | 33 | 70 |
| 2021 | 400 | 441 | 42 | 111 |
| 2022 | 398 | 448 | 50 | 161 |
| 2023 | 396 | 454 | 58 | 219 |
| 2024 | 394 | 461 | 67 | 286 |
| 2025 | 393 | 468 | 75 | 361 |

**Table 10: State fuel tax expenditure for the average driver in 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | Cost to Average Driver (in 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 195 | 188 | -8 | -8 |
| 2015 | 190 | 188 | -2 | -10 |
| 2016 | 187 | 189 | 2 | -8 |
| 2017 | 185 | 190 | 5 | -3 |
| 2018 | 182 | 191 | 8 | 5 |
| 2019 | 180 | 191 | 11 | 16 |
| 2020 | 177 | 192 | 15 | 31 |
| 2021 | 175 | 193 | 18 | 49 |
| 2022 | 173 | 194 | 22 | 71 |
| 2023 | 170 | 195 | 25 | 95 |
| 2024 | 168 | 196 | 28 | 124 |
| 2025 | 165 | 197 | 32 | 155 |

**Figure 14: Kansas Tax Revenue (2011-2025) and Cumulative Difference**



## 10 Kentucky: Fuel Tax Changes and Impact on State Revenue

In most U.S. states, fuel taxes are the primary source of transportation funding not subject to federal control; however, due to inflation, increased fuel efficiency in vehicles, and changing driving behavior, these taxes are proving increasingly inadequate to meet the costs of maintaining the transportation system. The costs of maintaining current transportation systems and investing in new capital projects rises with the cost of living and the cost of materials; however, the effective rate of most states' fuel taxes decrease because they are fixed rather than indexed to the rate of inflation. Given that, the financing gap between tax revenue and transportation costs will continue to widen if the status quo is maintained.

Concerns regarding the sustainability of the current reliance on fuel taxes to finance the transportation infrastructure has triggered interest in alternative approaches to calculating transportation user fees, one of which includes linking current fuel taxes to inflation. Such an approach seeks to keep the effective tax rate for fuel taxes constant over time relative to the cost of living and materials. This analysis focuses on two questions regarding the implications of changes to the state's fuel tax policy:

1. What would be the effect of a one-cent reduction in gasoline and diesel taxes?
2. What would be the effect on fuel tax revenue through 2025 of reducing gasoline and diesel taxes by one cent in 2014 and indexing both rates immediately to inflation?

To evaluate these scenarios, we generated a baseline that evaluates state revenue assuming the status quo (no increase in fuel taxes, not linked to inflation) through 2025, using fuel prices as forecasted by the U.S. Energy Information Administration (EIA). Our model projects gasoline and diesel consumption as a trend based on historic information and assumes that 10 percent of the diesel consumption is not taxed (based on historic averages). Inflation is based on the U.S. Bureau of Labor Statistics' Consumer Price Index and projected into the future based on data from the U.S. Department of Agriculture.

**Finding 1: A reduction in gasoline and diesel taxes by one-cent per gallon would reduce state revenue by a total of $29.4 million in 2014.**

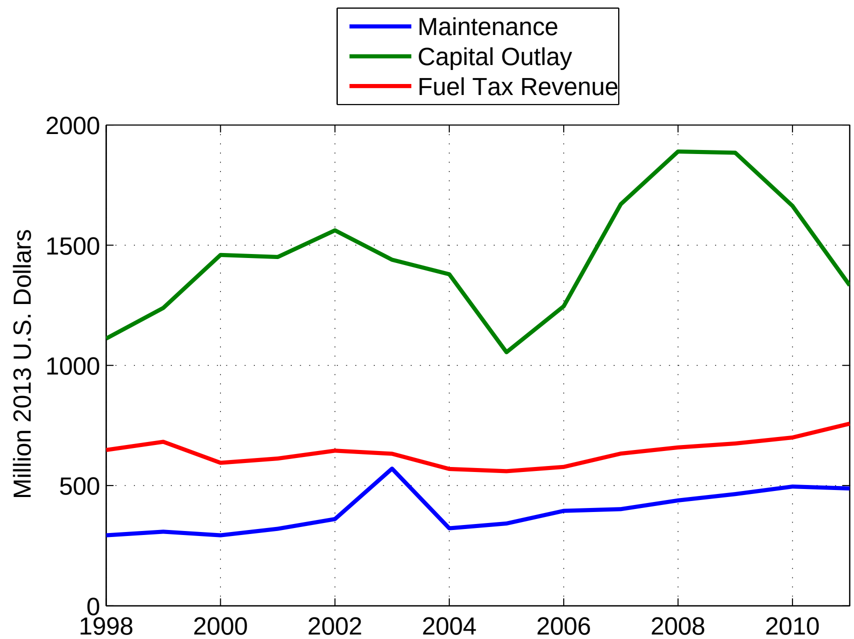
To assess the outcomes of alternative policies, we used our model to generate one scenario: indexing fuel taxes to inflation in 2014. Figure 16 summarizes the effects on state revenue for the scenario where gasoline and diesel taxes are indexed to inflation in 2014 (*Scenario* in the figure).

**Finding 2: Indexing the tax rate to inflation in 2014 would result in an additional $29.7 million in average annual tax revenue between 2014 and 2025.**

If fuel tax rates were reduced by one-cent and indexed to inflation in 2014, additional real state revenue of $95.1 million per year would be generated in 2025 (Table 11).

**Finding 3: Kentucky adjusts the tax rate on an annual basis and thus, there is no forgone revenue.**

**Figure 15: Kentucky: State Expenditure on Highways and Fuel Tax Revenue**




*Note: Capital outlay includes the cost of materials, supplies, construction machinery, equipment, and administrative costs.*

Our model projects that linking Kentucky's fuel taxes to the rate of inflation could have a substantial impact on the state's ability to maintain its transportation system into the future. If Kentucky maintains its current fuel tax regime and does not link its fuel taxes to inflation, it will be forgoing \$95.1 million in additional annual fuel tax revenue by 2025. In order to ease the immediate burden of indexing fuel taxes to inflation, some policymakers have suggested an immediate reduction in the fuel tax by one-cent. Such a reduction would represent \$29.4 million in forgone tax revenue; however, the short term loss of revenue would be quickly recovered through linking fuel taxes to inflation.

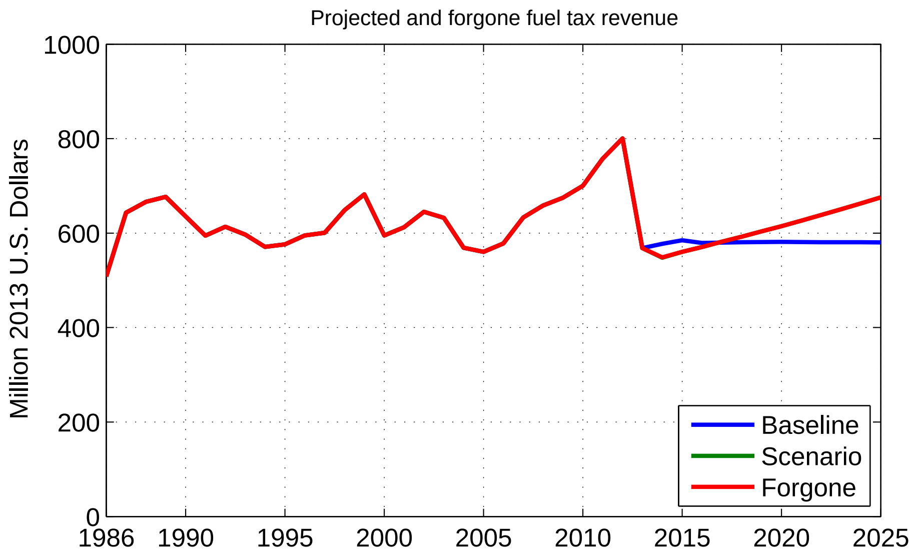
**Table 11: Tax revenue in million 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

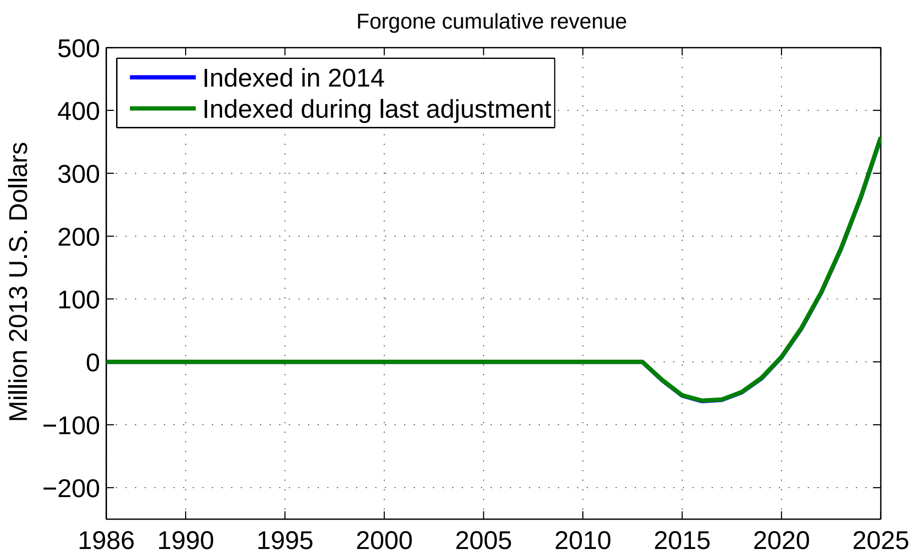
| | State Fuel Tax Revenue (in Million 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 577 | 548 | -29 | -29 |
| 2015 | 585 | 560 | -24 | -54 |
| 2016 | 579 | 571 | -9 | -62 |
| 2017 | 580 | 582 | 2 | -61 |
| 2018 | 581 | 593 | 12 | -49 |
| 2019 | 581 | 604 | 22 | -26 |
| 2020 | 581 | 615 | 34 | 7 |
| 2021 | 581 | 626 | 45 | 53 |
| 2022 | 581 | 638 | 57 | 110 |
| 2023 | 581 | 650 | 70 | 180 |
| 2024 | 581 | 663 | 82 | 262 |
| 2025 | 580 | 676 | 95 | 357 |

**Table 12: State fuel tax expenditure for the average driver in 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | Cost to Average Driver (in 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 190 | 180 | -10 | -10 |
| 2015 | 190 | 183 | -8 | -18 |
| 2016 | 187 | 184 | -3 | -20 |
| 2017 | 185 | 186 | 1 | -20 |
| 2018 | 184 | 187 | 4 | -16 |
| 2019 | 182 | 189 | 7 | -9 |
| 2020 | 180 | 191 | 10 | 1 |
| 2021 | 179 | 193 | 14 | 15 |
| 2022 | 177 | 194 | 17 | 33 |
| 2023 | 175 | 196 | 21 | 54 |
| 2024 | 173 | 198 | 25 | 78 |
| 2025 | 172 | 200 | 28 | 106 |

**Figure 16: Kentucky Tax Revenue (2011-2025) and Cumulative Difference**



## 11 Michigan: Fuel Tax Changes and Impact on State Revenue

In most U.S. states, fuel taxes are the primary source of transportation funding not subject to federal control; however, due to inflation, increased fuel efficiency in vehicles, and changing driving behavior, these taxes are proving increasingly inadequate to meet the costs of maintaining the transportation system. The costs of maintaining current transportation systems and investing in new capital projects rises with the cost of living and the cost of materials; however, the effective rate of most states' fuel taxes decrease because they are fixed rather than indexed to the rate of inflation. Given that, the financing gap between tax revenue and transportation costs will continue to widen if the status quo is maintained.

Concerns regarding the sustainability of the current reliance on fuel taxes to finance the transportation infrastructure has triggered interest in alternative approaches to calculating transportation user fees, one of which includes linking current fuel taxes to inflation. Such an approach seeks to keep the effective tax rate for fuel taxes constant over time relative to the cost of living and materials. This analysis focuses on three questions regarding the implications of changes to the state's fuel tax policy:

1. What would be the effect of a one-cent reduction in gasoline and diesel taxes?
2. What would be the effect on fuel tax revenue through 2025 of reducing gasoline and diesel taxes by one cent in 2014 and indexing both rates immediately to inflation?
3. How much additional revenue could have been generated from linking the gasoline and diesel tax to inflation the last time the state adjusted fuel taxes?

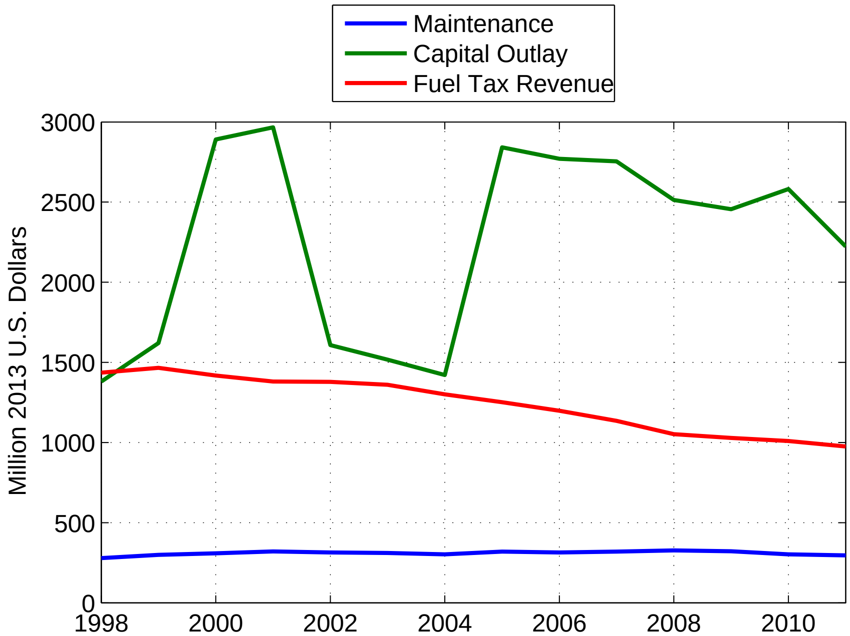
To evaluate these scenarios, we generated a baseline that evaluates state revenue assuming the status quo (no increase in fuel taxes, not linked to inflation) through 2025, using fuel prices as forecasted by the U.S. Energy Information Administration (EIA). Our model projects gasoline and diesel consumption as a trend based on historic information and assumes that 10 percent of the diesel consumption is not taxed (based on historic averages). Inflation is based on the U.S. Bureau of Labor Statistics' Consumer Price Index and projected into the future based on data from the U.S. Department of Agriculture.

**Finding 1: A reduction in gasoline and diesel taxes by one-cent per gallon would reduce state revenue by a total of $53.1 million in 2014.**

To assess the outcomes of alternative policies, we used our model to generate two scenarios: (1) indexing fuel taxes to inflation in 2014 and (2) indexing the gasoline and diesel tax to inflation in 1997 and 2003, which corresponds to the last adjustment of the gasoline and diesel tax in Michigan, respectively. Figure 18 summarizes the effects on state revenue for the two scenarios where gasoline and diesel taxes are indexed to inflation in 2014 (*Scenario* in the figure) and 1997/2003 (*Forgone* in the figure).

**Finding 2: Indexing the tax rate to inflation in 2014 would result in an additional $57.2 million in average annual tax revenue between 2014 and 2025.**

**Figure 17: Michigan: State Expenditure on Highways and Fuel Tax Revenue**




*Note: Capital outlay includes the cost of materials, supplies, construction machinery, equipment, and administrative costs.*

If fuel tax rates were reduced by one-cent and indexed to inflation in 2014, additional real state revenue of $164.0 million per year would be generated in 2025 (Table 13).

**Finding 3: Indexing the fuel taxes rates to inflation the last time those taxes were adjusted, a cumulated additional revenue of $3.665 billion would have been generated through 2013 if Michigan had linked the fuel taxes to inflation the last time they were adjusted.**

Our model projects that linking Michigan's fuel taxes to the rate of inflation could have a substantial impact on the state's ability to maintain its transportation system into the future. Had the state indexed the diesel tax to inflation in 2003 and the gasoline tax to inflation in 1997 — the years in which they were most recently increased — it would have secured an additional $3.665 billion to support transportation maintenance and new investments. If Michigan maintains its current fuel tax regime and does not link its fuel taxes to inflation, it will be forgoing $164.0 million in additional annual fuel tax revenue by 2025. In order to ease the immediate burden of indexing fuel taxes to inflation, some policymakers have suggested an immediate reduction in the fuel tax by one-cent. Such a reduction would represent $53.1 million in forgone tax revenue; however, the short term loss of revenue would be quickly recovered through linking fuel taxes to inflation.

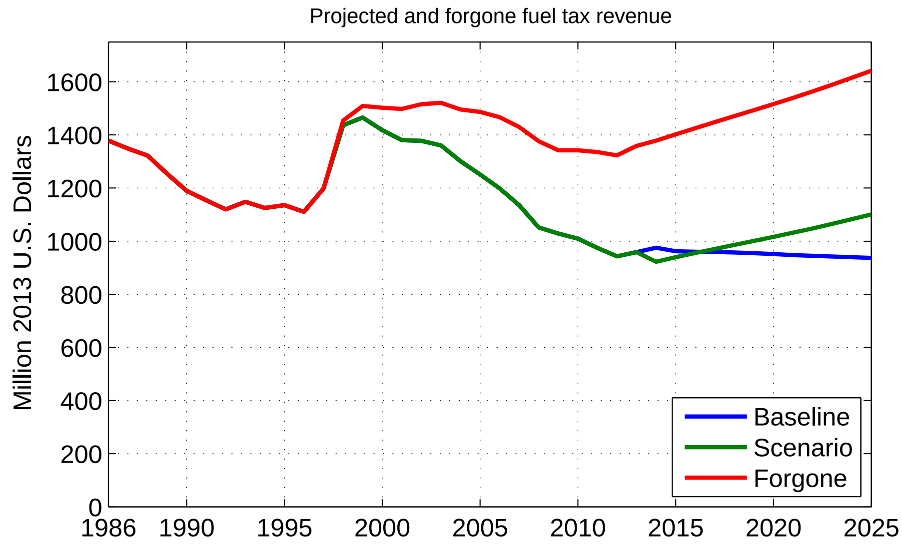
**Table 13: Tax revenue in million 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

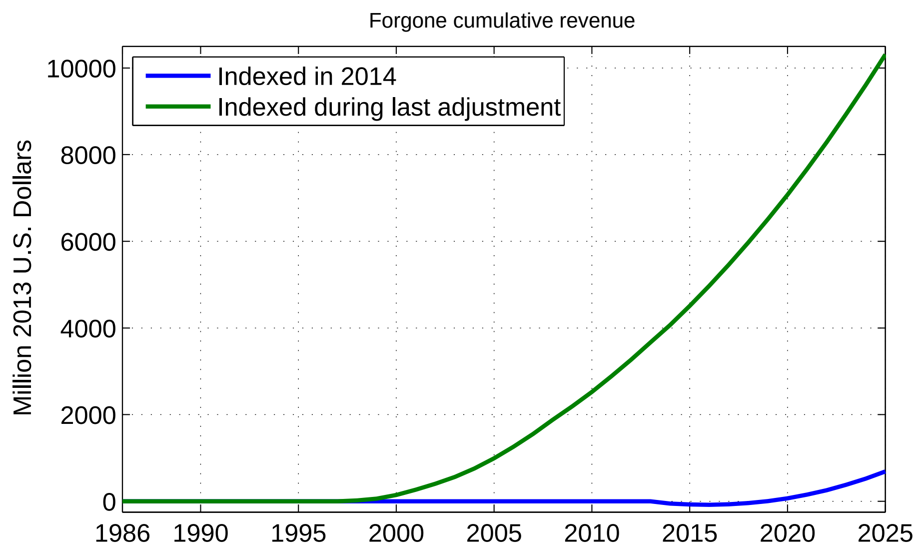
| | State Fuel Tax Revenue (in Million 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 975 | 922 | -53 | -53 |
| 2015 | 962 | 940 | -22 | -76 |
| 2016 | 960 | 955 | -5 | -81 |
| 2017 | 959 | 971 | 11 | -69 |
| 2018 | 958 | 986 | 28 | -41 |
| 2019 | 955 | 1,001 | 46 | 5 |
| 2020 | 951 | 1,016 | 65 | 69 |
| 2021 | 948 | 1,032 | 84 | 153 |
| 2022 | 945 | 1,048 | 103 | 256 |
| 2023 | 942 | 1,065 | 123 | 379 |
| 2024 | 939 | 1,083 | 143 | 523 |
| 2025 | 937 | 1,101 | 164 | 687 |

**Table 14: State fuel tax expenditure for the average driver in 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | Cost to Average Driver (in 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 136 | 129 | -7 | -7 |
| 2015 | 133 | 130 | -3 | -11 |
| 2016 | 132 | 131 | -1 | -11 |
| 2017 | 130 | 132 | 2 | -10 |
| 2018 | 129 | 133 | 4 | -6 |
| 2019 | 127 | 133 | 6 | 0 |
| 2020 | 126 | 134 | 9 | 9 |
| 2021 | 124 | 135 | 11 | 20 |
| 2022 | 122 | 136 | 13 | 33 |
| 2023 | 121 | 137 | 16 | 49 |
| 2024 | 119 | 137 | 18 | 67 |
| 2025 | 118 | 138 | 21 | 88 |

**Figure 18: Michigan Tax Revenue (2011-2025) and Cumulative Difference**



## 12 Minnesota: Fuel Tax Changes and Impact on State Revenue

In most U.S. states, fuel taxes are the primary source of transportation funding not subject to federal control; however, due to inflation, increased fuel efficiency in vehicles, and changing driving behavior, these taxes are proving increasingly inadequate to meet the costs of maintaining the transportation system. The costs of maintaining current transportation systems and investing in new capital projects rises with the cost of living and the cost of materials; however, the effective rate of most states' fuel taxes decrease because they are fixed rather than indexed to the rate of inflation. Given that, the financing gap between tax revenue and transportation costs will continue to widen if the status quo is maintained.

Concerns regarding the sustainability of the current reliance on fuel taxes to finance the transportation infrastructure has triggered interest in alternative approaches to calculating transportation user fees, one of which includes linking current fuel taxes to inflation. Such an approach seeks to keep the effective tax rate for fuel taxes constant over time relative to the cost of living and materials. This analysis focuses on two questions regarding the implications of changes to the state's fuel tax policy:

1. What would be the effect of a one-cent reduction in gasoline and diesel taxes?
2. What would be the effect on fuel tax revenue through 2025 of reducing gasoline and diesel taxes by one cent in 2014 and indexing both rates immediately to inflation?

To evaluate these scenarios, we generated a baseline that evaluates state revenue assuming the status quo (no increase in fuel taxes, not linked to inflation) through 2025, using fuel prices as forecasted by the U.S. Energy Information Administration (EIA). Our model projects gasoline and diesel consumption as a trend based on historic information and assumes that 10 percent of the diesel consumption is not taxed (based on historic averages). Inflation is based on the U.S. Bureau of Labor Statistics' Consumer Price Index and projected into the future based on data from the U.S. Department of Agriculture.

**Finding 1: A reduction in gasoline and diesel taxes by one-cent per gallon would reduce state revenue by a total of $34.2 million in 2014.**

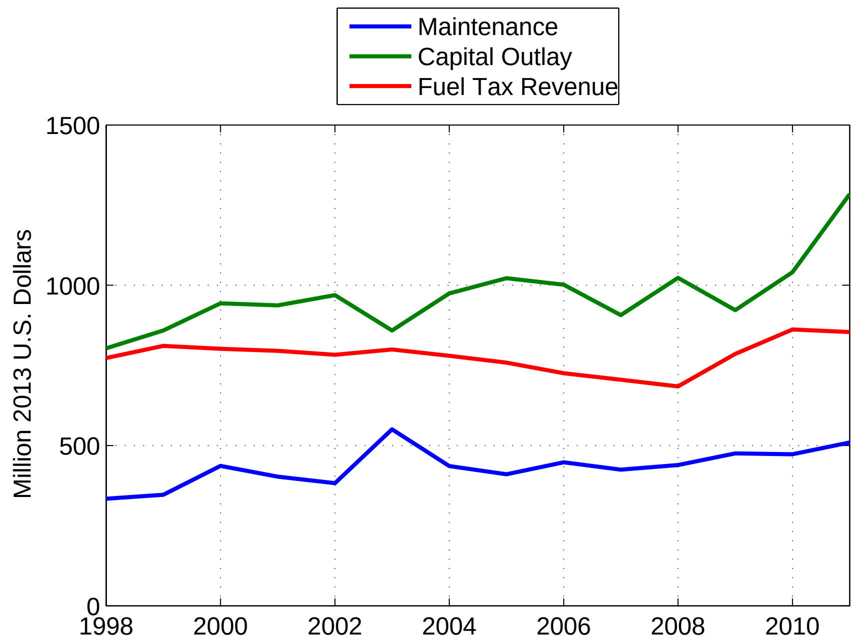
To assess the outcomes of alternative policies, we used our model to generate one scenario: indexing fuel taxes to inflation in 2014. Figure 20 summarizes the effects on state revenue for the two scenarios where gasoline and diesel taxes are indexed to inflation in 2014 (*Scenario* in the figure).

**Finding 2: Indexing the tax rate to inflation in 2014 would result in an additional $48.1 million in average annual tax revenue between 2014 and 2025.**

If fuel tax rates were reduced by one-cent and indexed to inflation in 2014, additional real state revenue of $116.2 million per year would be generated in 2025 (Table 15).

**Finding 3: Minnesota adjusts the tax rate on an annual basis and thus, there is no forgone revenue.**

**Figure 19: Minnesota: State Expenditure on Highways and Fuel Tax Revenue**




*Note: Capital outlay includes the cost of materials, supplies, construction machinery, equipment, and administrative costs.*

Our model projects that linking Minnesota's fuel taxes to the rate of inflation could have a substantial impact on the state's ability to maintain its transportation system into the future. If Minnesota maintains its current fuel tax regime and does not link its fuel taxes to inflation, it will be forgoing $116.2 million in additional annual fuel tax revenue by 2025. In order to ease the immediate burden of indexing fuel taxes to inflation, some policymakers have suggested an immediate reduction in the fuel tax by one-cent. Such a reduction would represent $34.2 million in forgone tax revenue; however, the short term loss of revenue would be quickly recovered through linking fuel taxes to inflation.

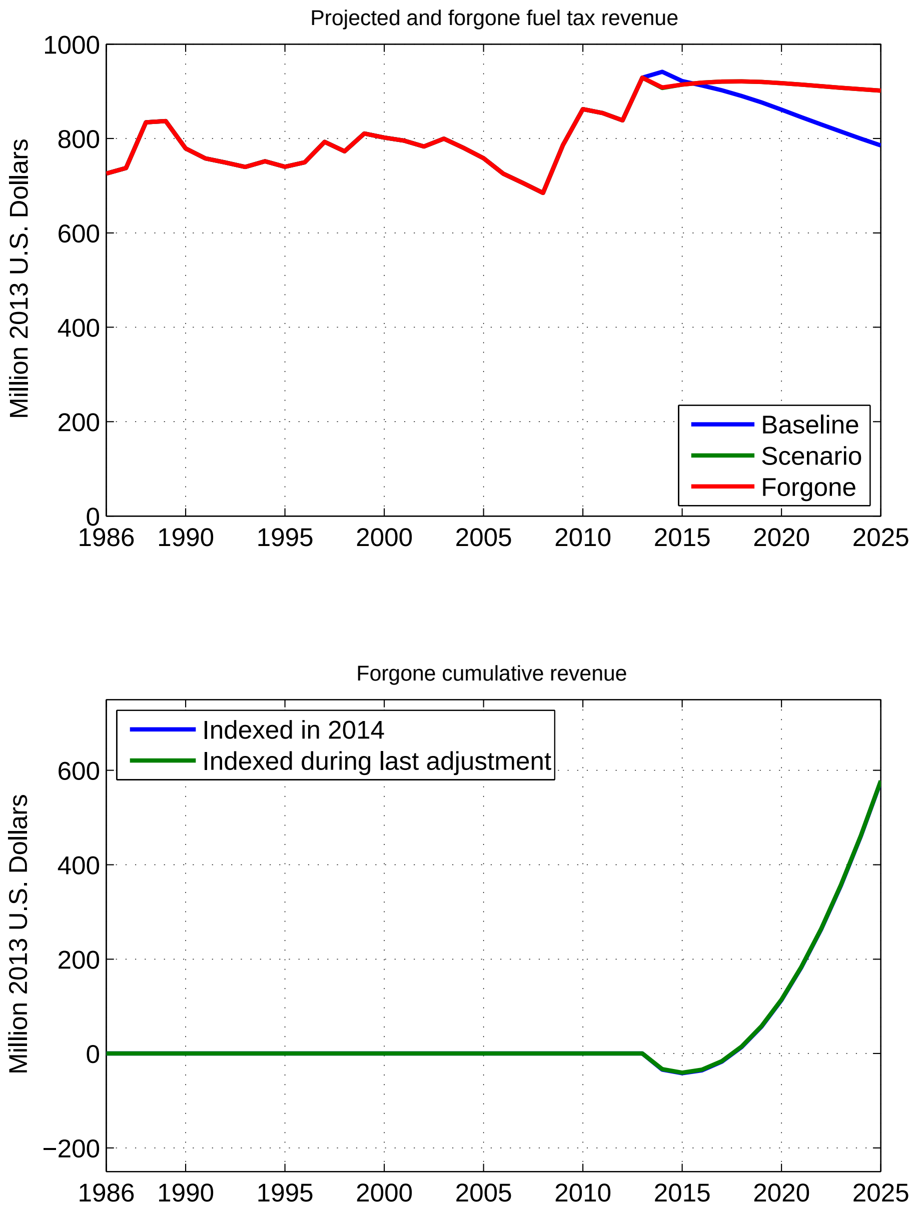
**Table 15: Tax revenue in million 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | State Fuel Tax Revenue (in Million 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 941 | 907 | -34 | -34 |
| 2015 | 922 | 914 | -7 | -42 |
| 2016 | 912 | 918 | 6 | -36 |
| 2017 | 902 | 921 | 18 | -17 |
| 2018 | 890 | 921 | 31 | 14 |
| 2019 | 877 | 920 | 43 | 57 |
| 2020 | 861 | 917 | 56 | 113 |
| 2021 | 845 | 914 | 69 | 182 |
| 2022 | 830 | 911 | 81 | 263 |
| 2023 | 815 | 908 | 93 | 356 |
| 2024 | 800 | 904 | 105 | 461 |
| 2025 | 785 | 902 | 116 | 577 |

**Table 16: State fuel tax expenditure for the average driver in 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | Cost to Average Driver (in 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 236 | 228 | -9 | -9 |
| 2015 | 229 | 227 | -2 | -10 |
| 2016 | 225 | 226 | 2 | -9 |
| 2017 | 220 | 225 | 4 | -4 |
| 2018 | 215 | 223 | 7 | 3 |
| 2019 | 210 | 220 | 10 | 13 |
| 2020 | 204 | 217 | 13 | 27 |
| 2021 | 198 | 215 | 16 | 43 |
| 2022 | 193 | 212 | 19 | 62 |
| 2023 | 188 | 209 | 21 | 83 |
| 2024 | 182 | 206 | 24 | 107 |
| 2025 | 177 | 204 | 26 | 133 |

**Figure 20: Minnesota Tax Revenue (2011-2025) and Cumulative Difference**



## 13 Nebraska: Fuel Tax Changes and Impact on State Revenue

In most U.S. states, fuel taxes are the primary source of transportation funding not subject to federal control; however, due to inflation, increased fuel efficiency in vehicles, and changing driving behavior, these taxes are proving increasingly inadequate to meet the costs of maintaining the transportation system. The costs of maintaining current transportation systems and investing in new capital projects rises with the cost of living and the cost of materials; however, the effective rate of most states' fuel taxes decrease because they are fixed rather than indexed to the rate of inflation. Given that, the financing gap between tax revenue and transportation costs will continue to widen if the status quo is maintained.

Concerns regarding the sustainability of the current reliance on fuel taxes to finance the transportation infrastructure has triggered interest in alternative approaches to calculating transportation user fees, one of which includes linking current fuel taxes to inflation. Such an approach seeks to keep the effective tax rate for fuel taxes constant over time relative to the cost of living and materials. This analysis focuses on two questions regarding the implications of changes to the state's fuel tax policy:

1. What would be the effect of a one-cent reduction in gasoline and diesel taxes?
2. What would be the effect on fuel tax revenue through 2025 of reducing gasoline and diesel taxes by one cent in 2014 and indexing both rates immediately to inflation?

To evaluate these scenarios, we generated a baseline that evaluates state revenue assuming the status quo (no increase in fuel taxes, not linked to inflation) through 2025, using fuel prices as forecasted by the U.S. Energy Information Administration (EIA). Our model projects gasoline and diesel consumption as a trend based on historic information and assumes that 10 percent of the diesel consumption is not taxed (based on historic averages). Inflation is based on the U.S. Bureau of Labor Statistics' Consumer Price Index and projected into the future based on data from the U.S. Department of Agriculture.

**Finding 1: A reduction in gasoline and diesel taxes by one-cent per gallon would reduce state revenue by a total of $15.6 million in 2014.**

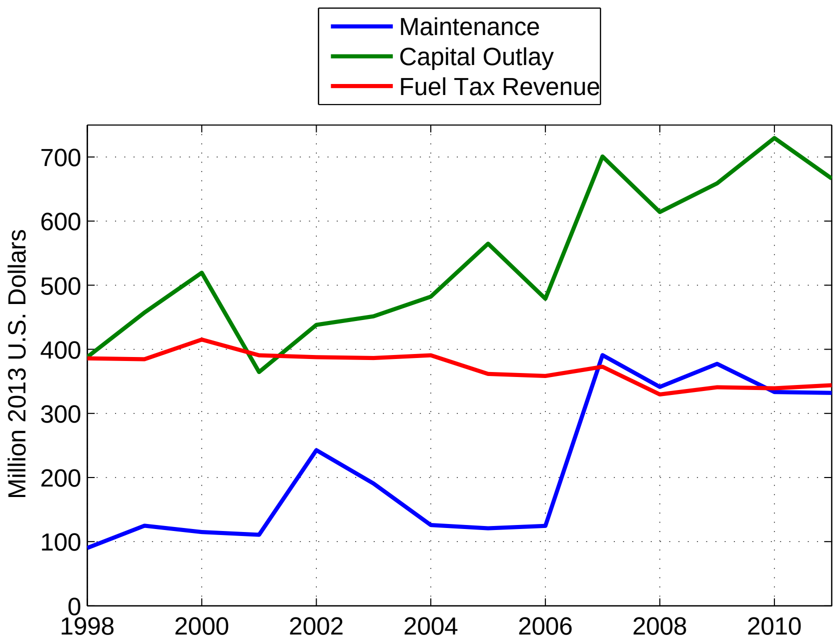
To assess the outcomes of alternative policies, we used our model to generate one scenario: indexing fuel taxes to inflation in 2014. Figure 22 summarizes the effects on state revenue for the scenario where gasoline and diesel taxes are indexed to inflation in 2014 (*Scenario* in the figure).

**Finding 2: Indexing the tax rate to inflation in 2014 would result in an additional $6.3 million in average annual tax revenue between 2014 and 2025.**

If fuel tax rates were reduced by one-cent and indexed to inflation in 2014, additional real state revenue of $28.0 million per year would be generated in 2025 (Table 17).

**Finding 3: Nebraska adjusts the tax rate on an annual basis and thus, there is no forgone revenue.**

**Figure 21: Nebraska: State Expenditure on Highways and Fuel Tax Revenue**




*Note: Capital outlay includes the cost of materials, supplies, construction machinery, equipment, and administrative costs.*

Our model projects that linking Nebraska's fuel taxes to the rate of inflation could have a substantial impact on the state's ability to maintain its transportation system into the future. If Nebraska maintains its current fuel tax regime and does not link its fuel taxes to inflation, it will be forgoing $28.0 million in additional annual fuel tax revenue by 2025. In order to ease the immediate burden of indexing fuel taxes to inflation, some policymakers have suggested an immediate reduction in the fuel tax by one-cent. Such a reduction would represent $15.6 million in forgone tax revenue; however, the short term loss of revenue would be quickly recovered through linking fuel taxes to inflation.

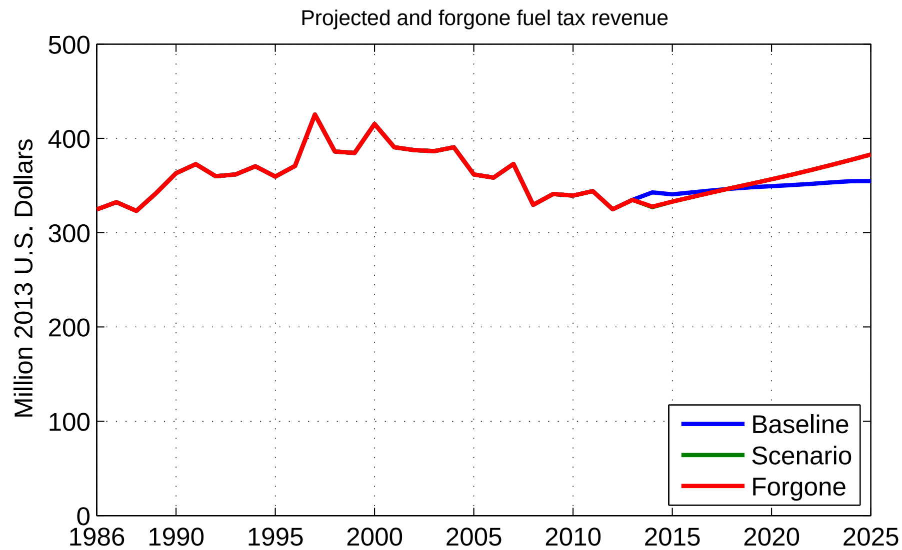
**Table 17: Tax revenue in million 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

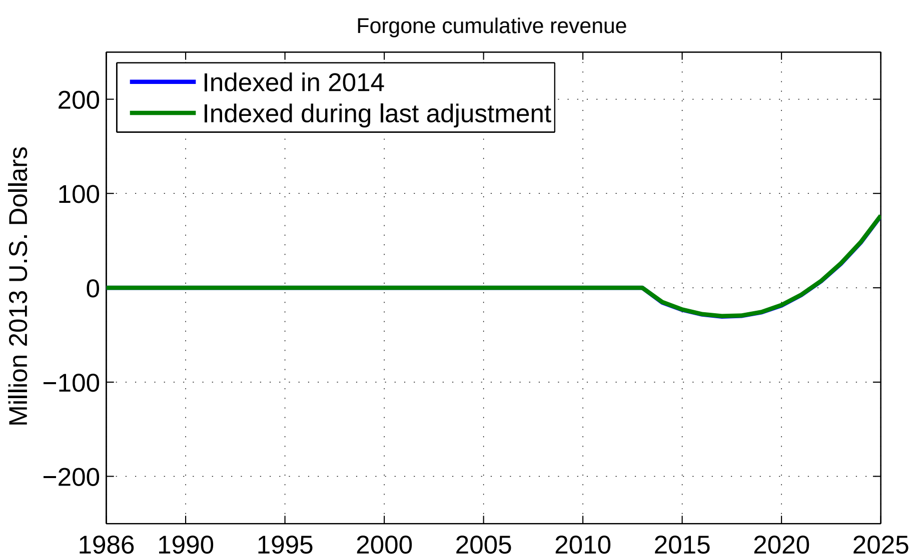
| | State Fuel Tax Revenue (in Million 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 343 | 327 | -16 | -16 |
| 2015 | 341 | 333 | -8 | -23 |
| 2016 | 343 | 338 | -5 | -28 |
| 2017 | 345 | 343 | -2 | -31 |
| 2018 | 347 | 347 | 1 | -30 |
| 2019 | 348 | 352 | 4 | -26 |
| 2020 | 349 | 357 | 7 | -19 |
| 2021 | 350 | 361 | 11 | -8 |
| 2022 | 352 | 367 | 15 | 7 |
| 2023 | 353 | 372 | 19 | 25 |
| 2024 | 355 | 377 | 23 | 48 |
| 2025 | 355 | 383 | 28 | 76 |

**Table 18: State fuel tax expenditure for the average driver in 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | Cost to Average Driver (in 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 241 | 230 | -11 | -11 |
| 2015 | 238 | 232 | -5 | -16 |
| 2016 | 237 | 233 | -3 | -20 |
| 2017 | 236 | 234 | -2 | -21 |
| 2018 | 235 | 235 | 0 | -21 |
| 2019 | 234 | 236 | 3 | -18 |
| 2020 | 232 | 237 | 5 | -13 |
| 2021 | 231 | 238 | 7 | -6 |
| 2022 | 229 | 239 | 10 | 3 |
| 2023 | 228 | 240 | 12 | 15 |
| 2024 | 227 | 241 | 14 | 30 |
| 2025 | 225 | 242 | 18 | 47 |

**Figure 22: Nebraska Tax Revenue (2011-2025) and Cumulative Difference**



# 14 North Dakota: Fuel Tax Changes and Impact on State Revenue

In most U.S. states, fuel taxes are the primary source of transportation funding not subject to federal control; however, due to inflation, increased fuel efficiency in vehicles, and changing driving behavior, these taxes are proving increasingly inadequate to meet the costs of maintaining the transportation system. The costs of maintaining current transportation systems and investing in new capital projects rises with the cost of living and the cost of materials; however, the effective rate of most states' fuel taxes decrease because they are fixed rather than indexed to the rate of inflation. Given that, the financing gap between tax revenue and transportation costs will continue to widen if the status quo is maintained.

Concerns regarding the sustainability of the current reliance on fuel taxes to finance the transportation infrastructure has triggered interest in alternative approaches to calculating transportation user fees, one of which includes linking current fuel taxes to inflation. Such an approach seeks to keep the effective tax rate for fuel taxes constant over time relative to the cost of living and materials. This analysis focuses on three questions regarding the implications of changes to the state's fuel tax policy:

1. What would be the effect of a one-cent reduction in gasoline and diesel taxes?
2. What would be the effect on fuel tax revenue through 2025 of reducing gasoline and diesel taxes by one cent in 2014 and indexing both rates immediately to inflation?
3. How much additional revenue could have been generated from linking the gasoline and diesel tax to inflation the last time the state adjusted fuel taxes?

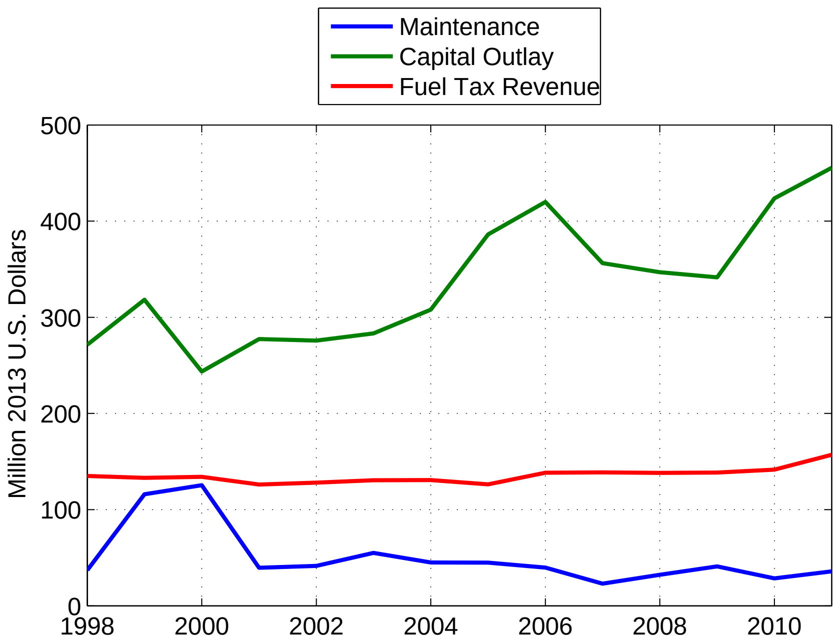
To evaluate these scenarios, we generated a baseline that evaluates state revenue assuming the status quo (no increase in fuel taxes, not linked to inflation) through 2025, using fuel prices as forecasted by the U.S. Energy Information Administration (EIA). Our model projects gasoline and diesel consumption as a trend based on historic information and assumes that 10 percent of the diesel consumption is not taxed (based on historic averages). Inflation is based on the U.S. Bureau of Labor Statistics' Consumer Price Index and projected into the future based on data from the U.S. Department of Agriculture.

**Finding 1: A reduction in gasoline and diesel taxes by one-cent per gallon would reduce state revenue by a total of $7.8 million in 2014.**

To assess the outcomes of alternative policies, we used our model to generate two scenarios: (1) indexing fuel taxes to inflation in 2014 and (2) indexing the gasoline and diesel tax to inflation in 2005, which corresponds to the last adjustment of the gasoline tax in North Dakota. Figure 24 summarizes the effects on state revenue for the two scenarios where gasoline and diesel taxes are indexed to inflation in 2014 (*Scenario* in the figure) and 2005 (*Forgone* in the figure).

**Finding 2: Indexing the tax rate to inflation in 2014 would result in an additional $12.3 million in average annual tax revenue between 2014 and 2025.**

**Figure 23: North Dakota: State Expenditure on Highways and Fuel Tax Revenue**




*Note: Capital outlay includes the cost of materials, supplies, construction machinery, equipment, and administrative costs.*

If fuel tax rates were reduced by one-cent and indexed to inflation in 2014, additional real state revenue of $31.2 million per year would be generated in 2025 (Table 19).

**Finding 3: Indexing the fuel taxes rates to inflation the last time those taxes were adjusted, a cumulated additional revenue of $146 million would have been generated through 2013 if North Dakota had linked the fuel taxes to inflation the last time they were adjusted.**

Our model projects that linking North Dakota's fuel taxes to the rate of inflation could have a substantial impact on the state's ability to maintain its transportation system into the future. Had the state indexed fuel taxes to inflation in 2005, it would have secured an additional $146 million to support transportation maintenance and new investments. If North Dakota maintains its current fuel tax regime and does not link its fuel taxes to inflation, it will be forgoing $31.2 million in additional annual fuel tax revenue by 2025. In order to ease the immediate burden of indexing fuel taxes to inflation, some policymakers have suggested an immediate reduction in the fuel tax by one-cent. Such a reduction would represent $7.8 million in forgone tax revenue; however, the short term loss of revenue would be quickly recovered through linking fuel taxes to inflation.

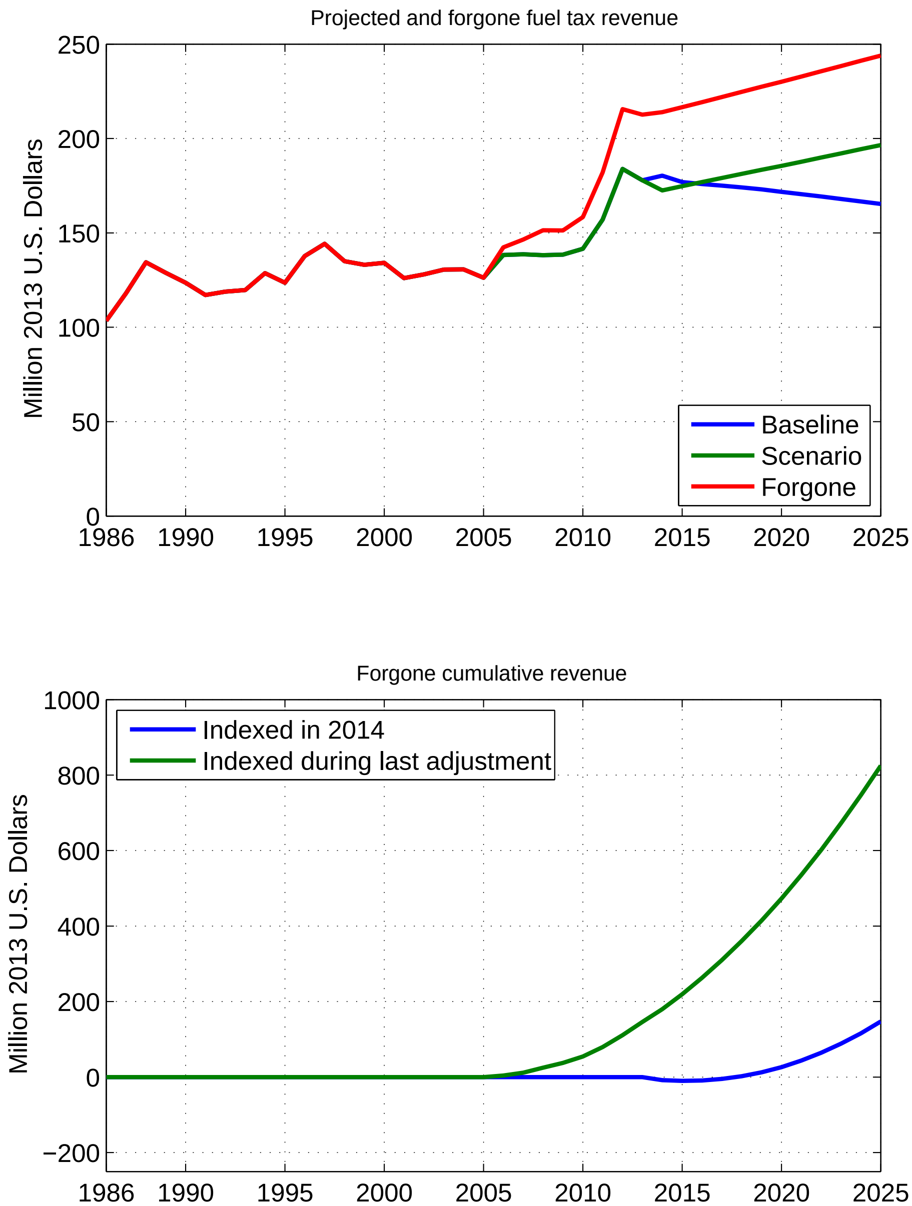
**Table 19: Tax revenue in million 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | State Fuel Tax Revenue (in Million 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 180 | 172 | -8 | -8 |
| 2015 | 177 | 175 | -2 | -10 |
| 2016 | 176 | 177 | 1 | -9 |
| 2017 | 175 | 179 | 4 | -5 |
| 2018 | 174 | 181 | 7 | 2 |
| 2019 | 173 | 183 | 10 | 13 |
| 2020 | 172 | 186 | 14 | 26 |
| 2021 | 170 | 188 | 17 | 44 |
| 2022 | 169 | 190 | 21 | 64 |
| 2023 | 168 | 192 | 24 | 88 |
| 2024 | 167 | 194 | 28 | 116 |
| 2025 | 165 | 197 | 31 | 147 |

**Table 20: State fuel tax expenditure for the average driver in 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | Cost to Average Driver (in 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 343 | 328 | -15 | -15 |
| 2015 | 333 | 329 | -4 | -19 |
| 2016 | 328 | 330 | 2 | -17 |
| 2017 | 323 | 331 | 8 | -9 |
| 2018 | 319 | 332 | 13 | 4 |
| 2019 | 314 | 332 | 19 | 22 |
| 2020 | 308 | 333 | 25 | 47 |
| 2021 | 303 | 334 | 31 | 78 |
| 2022 | 298 | 334 | 36 | 114 |
| 2023 | 293 | 335 | 42 | 156 |
| 2024 | 288 | 336 | 48 | 204 |
| 2025 | 283 | 336 | 53 | 257 |

**Figure 24: North Dakota Tax Revenue (2011-2025) and Cumulative Difference**



## 15 Ohio: Fuel Tax Changes and Impact on State Revenue

In most U.S. states, fuel taxes are the primary source of transportation funding not subject to federal control; however, due to inflation, increased fuel efficiency in vehicles, and changing driving behavior, these taxes are proving increasingly inadequate to meet the costs of maintaining the transportation system. The costs of maintaining current transportation systems and investing in new capital projects rises with the cost of living and the cost of materials; however, the effective rate of most states' fuel taxes decrease because they are fixed rather than indexed to the rate of inflation. Given that, the financing gap between tax revenue and transportation costs will continue to widen if the status quo is maintained.

Concerns regarding the sustainability of the current reliance on fuel taxes to finance the transportation infrastructure has triggered interest in alternative approaches to calculating transportation user fees, one of which includes linking current fuel taxes to inflation. Such an approach seeks to keep the effective tax rate for fuel taxes constant over time relative to the cost of living and materials. This analysis focuses on three questions regarding the implications of changes to the state's fuel tax policy:

1. What would be the effect of a one-cent reduction in gasoline and diesel taxes?
2. What would be the effect on fuel tax revenue through 2025 of reducing gasoline and diesel taxes by one cent in 2014 and indexing both rates immediately to inflation?
3. How much additional revenue could have been generated from linking the gasoline and diesel tax to inflation the last time the state adjusted fuel taxes?

To evaluate these scenarios, we generated a baseline that evaluates state revenue assuming the status quo (no increase in fuel taxes, not linked to inflation) through 2025, using fuel prices as forecasted by the U.S. Energy Information Administration (EIA). Our model projects gasoline and diesel consumption as a trend based on historic information and assumes that 10 percent of the diesel consumption is not taxed (based on historic averages). Inflation is based on the U.S. Bureau of Labor Statistics' Consumer Price Index and projected into the future based on data from the U.S. Department of Agriculture.

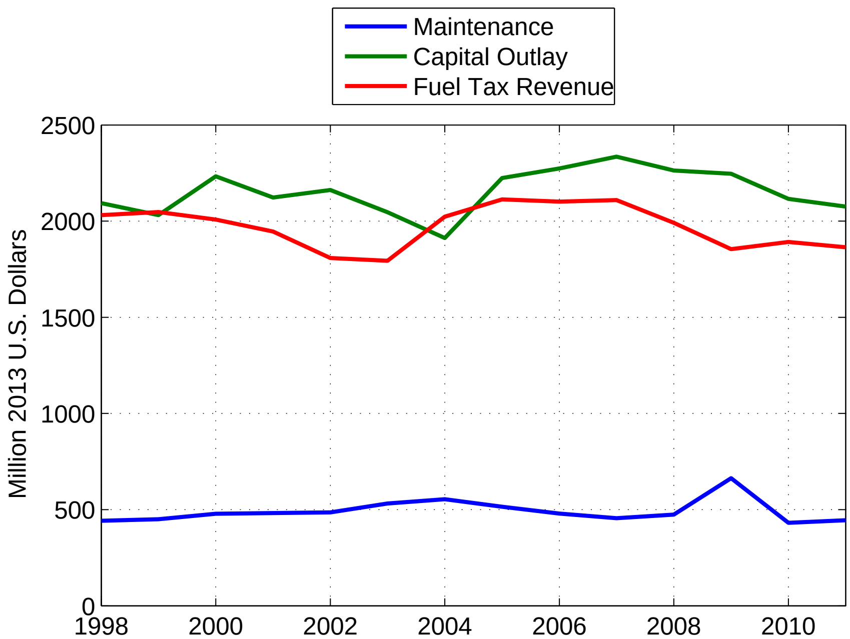
**Finding 1: A reduction in gasoline and diesel taxes by one-cent per gallon would reduce state revenue by a total of $63.6 million in 2014.**

To assess the outcomes of alternative policies, we used our model to generate two scenarios: (1) indexing fuel taxes to inflation in 2014 and (2) indexing the gasoline and diesel tax to inflation in 2005, which corresponds to the last adjustment of the gasoline tax in Ohio. Figure 26 summarizes the effects on state revenue for the two scenarios where gasoline and diesel taxes are indexed to inflation in 2014 (*Scenario* in the figure) and 2005 (*Forgone* in the figure).

**Finding 2: Indexing the tax rate to inflation in 2014 would result in an additional $140.7 million in average annual tax revenue between 2014 and 2025.**

If fuel tax rates were reduced by one-cent and indexed to inflation in 2014, additional real state revenue of $340.5 million per year would be generated in 2025 (Table 21).

**Figure 25: Ohio: State Expenditure on Highways and Fuel Tax Revenue**




*Note: Capital outlay includes the cost of materials, supplies, construction machinery, equipment, and administrative costs.*

**Finding 3: Indexing the fuel taxes rates to inflation the last time those taxes were adjusted, a cumulated additional revenue of $1.668 billion would have been generated through 2013 if Ohio had linked the fuel taxes to inflation the last time they were adjusted.**

Our model projects that linking Ohio's fuel taxes to the rate of inflation could have a substantial impact on the state's ability to maintain its transportation system into the future. Had the state indexed fuel taxes to inflation in 2005, it would have secured an additional $1.668 billion to support transportation maintenance and new investments. If Ohio maintains its current fuel tax regime and does not link its fuel taxes to inflation, it will be forgoing $340.5 million in additional annual fuel tax revenue by 2025. In order to ease the immediate burden of indexing fuel taxes to inflation, some policymakers have suggested an immediate reduction in the fuel tax by one-cent. Such a reduction would represent $63.6 million in forgone tax revenue; however, the short term loss of revenue would be quickly recovered through linking fuel taxes to inflation.

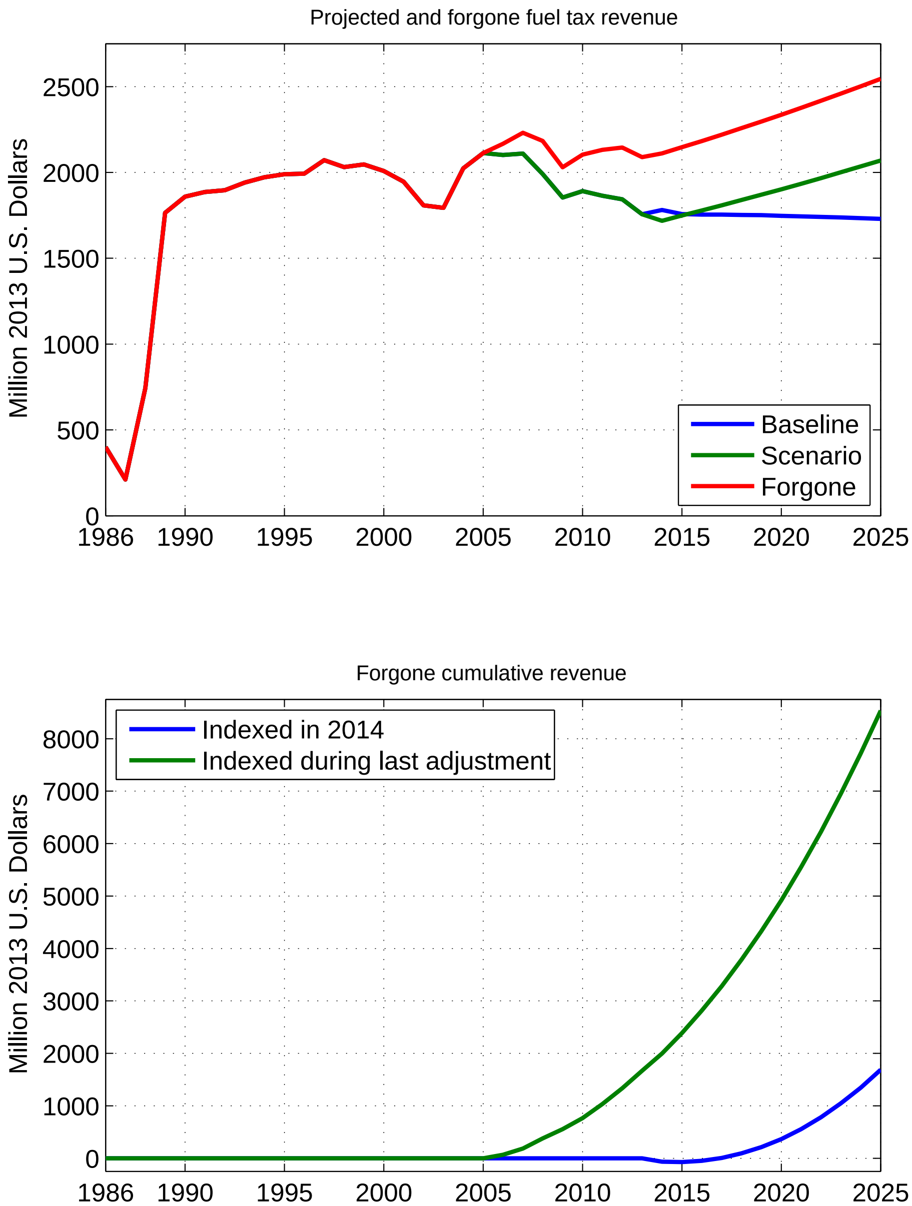
**Table 21: Tax revenue in million 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | State Fuel Tax Revenue (in Million 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 1,781 | 1,718 | -64 | -64 |
| 2015 | 1,757 | 1,750 | -8 | -71 |
| 2016 | 1,754 | 1,778 | 24 | -47 |
| 2017 | 1,754 | 1,809 | 55 | 8 |
| 2018 | 1,753 | 1,839 | 86 | 94 |
| 2019 | 1,751 | 1,870 | 119 | 212 |
| 2020 | 1,748 | 1,901 | 154 | 366 |
| 2021 | 1,744 | 1,934 | 190 | 556 |
| 2022 | 1,741 | 1,967 | 226 | 783 |
| 2023 | 1,737 | 2,001 | 263 | 1,046 |
| 2024 | 1,733 | 2,035 | 301 | 1,348 |
| 2025 | 1,729 | 2,070 | 340 | 1,688 |

**Table 22: State fuel tax expenditure for the average driver in 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | Cost to Average Driver (in 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 220 | 212 | -8 | -8 |
| 2015 | 215 | 214 | -1 | -9 |
| 2016 | 212 | 215 | 3 | -6 |
| 2017 | 210 | 217 | 7 | 1 |
| 2018 | 208 | 219 | 10 | 11 |
| 2019 | 206 | 220 | 14 | 25 |
| 2020 | 204 | 222 | 18 | 43 |
| 2021 | 201 | 223 | 22 | 65 |
| 2022 | 199 | 225 | 26 | 91 |
| 2023 | 197 | 227 | 30 | 120 |
| 2024 | 194 | 228 | 34 | 154 |
| 2025 | 192 | 230 | 38 | 192 |

**Figure 26: Ohio Tax Revenue (2011-2025) and Cumulative Difference**



## 16 South Dakota: Fuel Tax Changes and Impact on State Revenue

In most U.S. states, fuel taxes are the primary source of transportation funding not subject to federal control; however, due to inflation, increased fuel efficiency in vehicles, and changing driving behavior, these taxes are proving increasingly inadequate to meet the costs of maintaining the transportation system. The costs of maintaining current transportation systems and investing in new capital projects rises with the cost of living and the cost of materials; however, the effective rate of most states' fuel taxes decrease because they are fixed rather than indexed to the rate of inflation. Given that, the financing gap between tax revenue and transportation costs will continue to widen if the status quo is maintained.

Concerns regarding the sustainability of the current reliance on fuel taxes to finance the transportation infrastructure has triggered interest in alternative approaches to calculating transportation user fees, one of which includes linking current fuel taxes to inflation. Such an approach seeks to keep the effective tax rate for fuel taxes constant over time relative to the cost of living and materials. This analysis focuses on three questions regarding the implications of changes to the state's fuel tax policy:

1. What would be the effect of a one-cent reduction in gasoline and diesel taxes?
2. What would be the effect on fuel tax revenue through 2025 of reducing gasoline and diesel taxes by one cent in 2014 and indexing both rates immediately to inflation?
3. How much additional revenue could have been generated from linking the gasoline and diesel tax to inflation the last time the state adjusted fuel taxes?

To evaluate these scenarios, we generated a baseline that evaluates state revenue assuming the status quo (no increase in fuel taxes, not linked to inflation) through 2025, using fuel prices as forecasted by the U.S. Energy Information Administration (EIA). Our model projects gasoline and diesel consumption as a trend based on historic information and assumes that 10 percent of the diesel consumption is not taxed (based on historic averages). Inflation is based on the U.S. Bureau of Labor Statistics' Consumer Price Index and projected into the future based on data from the U.S. Department of Agriculture.

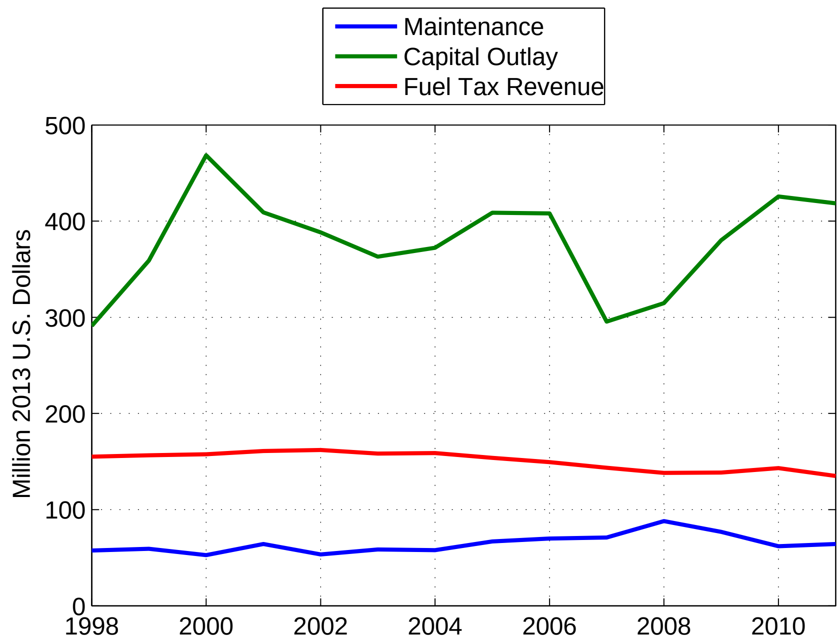
**Finding 1: A reduction in gasoline and diesel taxes by one-cent per gallon would reduce state revenue by a total of $6.7 million in 2014.**

To assess the outcomes of alternative policies, we used our model to generate two scenarios: (1) indexing fuel taxes to inflation in 2014 and (2) indexing the gasoline and diesel tax to inflation in 1999, which corresponds to the last adjustment of the gasoline tax in South Dakota. Figure 28 summarizes the effects on state revenue for the two scenarios where gasoline and diesel taxes are indexed to inflation in 2014 (*Scenario* in the figure) and 1999 (*Forgone* in the figure).

**Finding 2: Indexing the tax rate to inflation in 2014 would result in an additional $9.9 million in average annual tax revenue between 2014 and 2025.**

If fuel tax rates were reduced by one-cent and indexed to inflation in 2014, additional real state revenue of $25.9 million per year would be generated in 2025 (Table 23).

**Figure 27: South Dakota: State Expenditure on Highways and Fuel Tax Revenue**




*Note: Capital outlay includes the cost of materials, supplies, construction machinery, equipment, and administrative costs.*

**Finding 3: Indexing the fuel taxes rates to inflation the last time those taxes were adjusted, a cumulated additional revenue of $436 million would have been generated through 2013 if South Dakota had linked the fuel taxes to inflation the last time they were adjusted.**

Our model projects that linking South Dakota's fuel taxes to the rate of inflation could have a substantial impact on the state's ability to maintain its transportation system into the future. Had the state indexed fuel taxes to inflation in 1999, it would have secured an additional $436 million to support transportation maintenance and new investments. If South Dakota maintains its current fuel tax regime and does not link its fuel taxes to inflation, it will be forgoing $25.9 million in additional annual fuel tax revenue by 2025. In order to ease the immediate burden of indexing fuel taxes to inflation, some policymakers have suggested an immediate reduction in the fuel tax by one-cent. Such a reduction would represent $6.7 million in forgone tax revenue; however, the short term loss of revenue would be quickly recovered through linking fuel taxes to inflation.

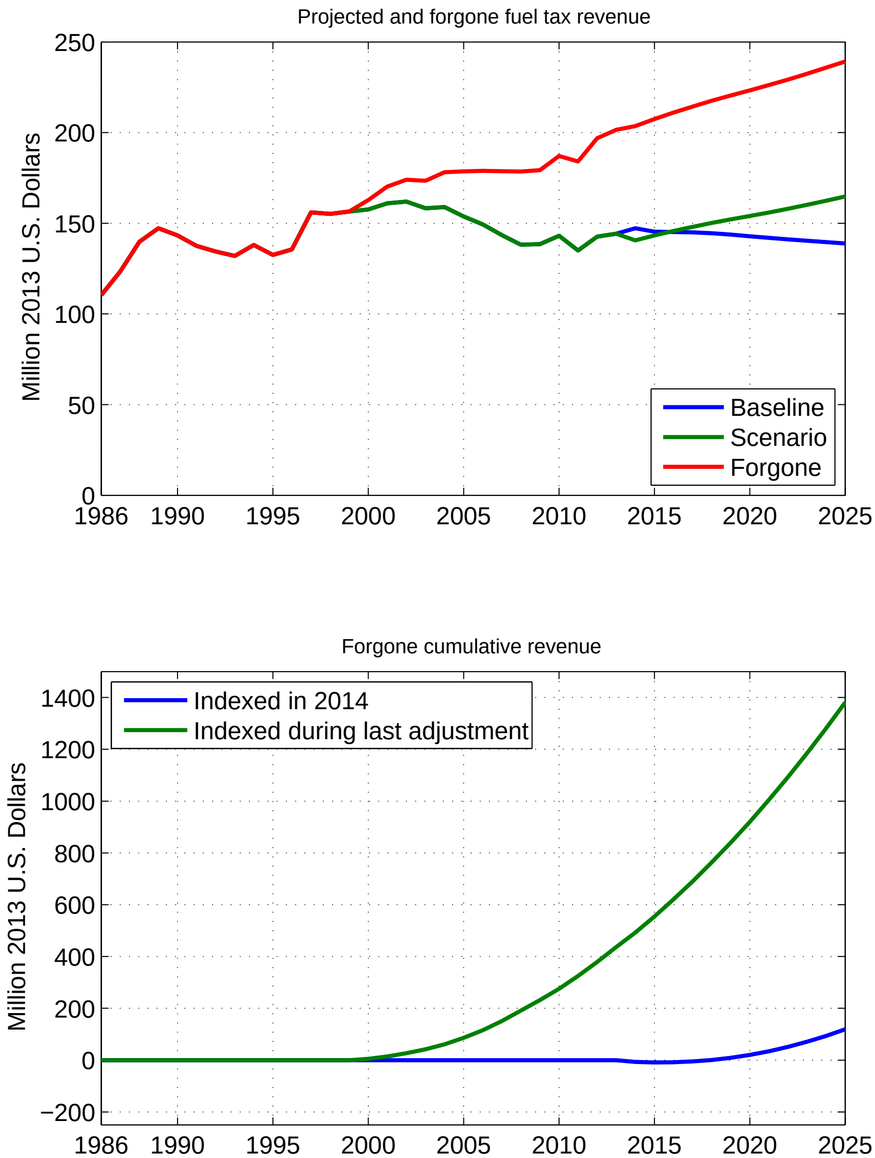
**Table 23: Tax revenue in million 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | State Fuel Tax Revenue (in Million 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 147 | 141 | -7 | -7 |
| 2015 | 145 | 143 | -2 | -9 |
| 2016 | 145 | 146 | 1 | -8 |
| 2017 | 145 | 148 | 3 | -5 |
| 2018 | 144 | 150 | 6 | 1 |
| 2019 | 144 | 152 | 8 | 9 |
| 2020 | 143 | 154 | 11 | 20 |
| 2021 | 142 | 156 | 14 | 34 |
| 2022 | 141 | 158 | 17 | 51 |
| 2023 | 140 | 160 | 20 | 71 |
| 2024 | 140 | 162 | 23 | 94 |
| 2025 | 139 | 165 | 26 | 119 |

**Table 24: State fuel tax expenditure for the average driver in 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | Cost to Average Driver (in 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 234 | 223 | -11 | -11 |
| 2015 | 229 | 225 | -3 | -14 |
| 2016 | 226 | 227 | 1 | -13 |
| 2017 | 224 | 228 | 5 | -8 |
| 2018 | 221 | 229 | 9 | 0 |
| 2019 | 218 | 230 | 13 | 13 |
| 2020 | 214 | 231 | 17 | 30 |
| 2021 | 211 | 232 | 21 | 50 |
| 2022 | 207 | 232 | 25 | 75 |
| 2023 | 204 | 233 | 29 | 104 |
| 2024 | 201 | 234 | 33 | 137 |
| 2025 | 198 | 235 | 37 | 174 |

**Figure 28: South Dakota Tax Revenue (2011-2025) and Cumulative Difference**



## 17 Tennessee: Fuel Tax Changes and Impact on State Revenue

In most U.S. states, fuel taxes are the primary source of transportation funding not subject to federal control; however, due to inflation, increased fuel efficiency in vehicles, and changing driving behavior, these taxes are proving increasingly inadequate to meet the costs of maintaining the transportation system. The costs of maintaining current transportation systems and investing in new capital projects rises with the cost of living and the cost of materials; however, the effective rate of most states' fuel taxes decrease because they are fixed rather than indexed to the rate of inflation. Given that, the financing gap between tax revenue and transportation costs will continue to widen if the status quo is maintained.

Concerns regarding the sustainability of the current reliance on fuel taxes to finance the transportation infrastructure has triggered interest in alternative approaches to calculating transportation user fees, one of which includes linking current fuel taxes to inflation. Such an approach seeks to keep the effective tax rate for fuel taxes constant over time relative to the cost of living and materials. This analysis focuses on three questions regarding the implications of changes to the state's fuel tax policy:

1. What would be the effect of a one-cent reduction in gasoline and diesel taxes?

2. What would be the effect on fuel tax revenue through 2025 of reducing gasoline and diesel taxes by one cent in 2014 and indexing both rates immediately to inflation?

3. How much additional revenue could have been generated from linking the gasoline and diesel tax to inflation the last time the state adjusted fuel taxes?

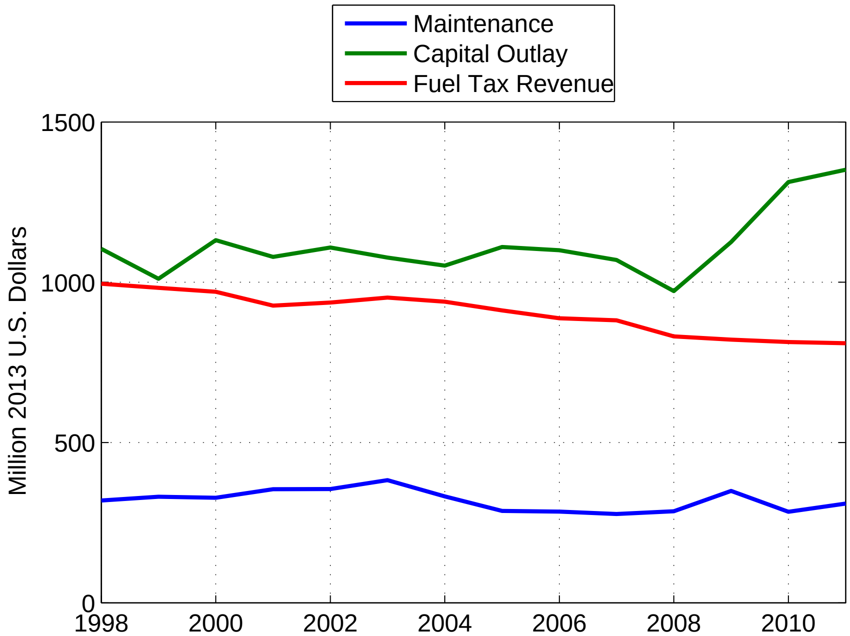
To evaluate these scenarios, we generated a baseline that evaluates state revenue assuming the status quo (no increase in fuel taxes, not linked to inflation) through 2025, using fuel prices as forecasted by the U.S. Energy Information Administration (EIA). Our model projects gasoline and diesel consumption as a trend based on historic information and assumes that 10 percent of the diesel consumption is not taxed (based on historic averages). Inflation is based on the U.S. Bureau of Labor Statistics' Consumer Price Index and projected into the future based on data from the U.S. Department of Agriculture.

**Finding 1: A reduction in gasoline and diesel taxes by one-cent per gallon would reduce state revenue by a total of $40.3 million in 2014.**

To assess the outcomes of alternative policies, we used our model to generate two scenarios: (1) indexing fuel taxes to inflation in 2014 and (2) indexing the gasoline and diesel tax to inflation in 1989 and 1990, which corresponds to the last adjustment of the gasoline tax in Tennessee, respectively. Figure 30 summarizes the effects on state revenue for the two scenarios where gasoline and diesel taxes are indexed to inflation in 2014 (*Scenario* in the figure) and 1989/1990 (*Forgone* in the figure).

**Finding 2: Indexing the tax rate to inflation in 2014 would result in an additional $48.2 million in average annual tax revenue between 2014 and 2025.**

**Figure 29: Tennessee: State Expenditure on Highways and Fuel Tax Revenue**




*Note: Capital outlay includes the cost of materials, supplies, construction machinery, equipment, and administrative costs.*

If fuel tax rates were reduced by one-cent and indexed to inflation in 2014, additional real state revenue of $133.6 million per year would be generated in 2025 (Table 25).

**Finding 3: Indexing the fuel taxes rates to inflation the last time those taxes were adjusted, a cumulated additional revenue of $8.827 billion would have been generated through 2013 if Tennessee had linked the fuel taxes to inflation the last time they were adjusted.**

Our model projects that linking Tennessee's fuel taxes to the rate of inflation could have a substantial impact on the state's ability to maintain its transportation system into the future. Had the state indexed the diesel tax to inflation in 1990 and the gasoline tax to inflation in 1989 — the years in which they were most recently increased — it would have secured an additional $8.827 billion to support transportation maintenance and new investments. If Tennessee maintains its current fuel tax regime and does not link its fuel taxes to inflation, it will be forgoing $133.6 million in additional annual fuel tax revenue by 2025. In order to ease the immediate burden of indexing fuel taxes to inflation, some policymakers have suggested an immediate reduction in the fuel tax by one-cent. Such a reduction would represent $40.3 million in forgone tax revenue; however, the short term loss of revenue would be quickly recovered through linking fuel taxes to inflation.

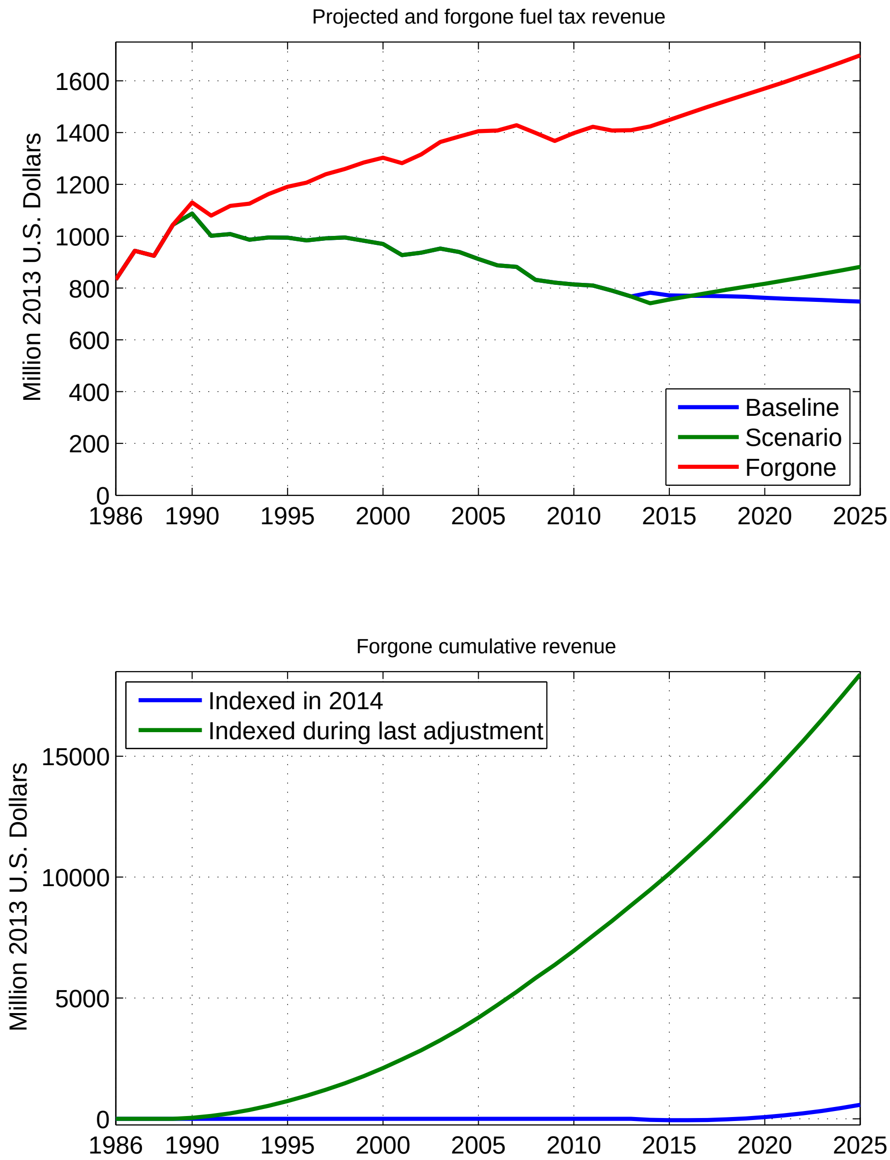
**Table 25: Tax revenue in million 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | State Fuel Tax Revenue (in Million 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 782 | 741 | -40 | -40 |
| 2015 | 771 | 755 | -16 | -56 |
| 2016 | 770 | 768 | -2 | -58 |
| 2017 | 770 | 781 | 11 | -47 |
| 2018 | 768 | 793 | 25 | -22 |
| 2019 | 766 | 805 | 39 | 17 |
| 2020 | 762 | 817 | 54 | 72 |
| 2021 | 759 | 829 | 70 | 141 |
| 2022 | 756 | 841 | 85 | 226 |
| 2023 | 753 | 854 | 101 | 327 |
| 2024 | 751 | 868 | 117 | 444 |
| 2025 | 748 | 881 | 134 | 578 |

**Table 26: State fuel tax expenditure for the average driver in 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | Cost to Average Driver (in 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 167 | 158 | -9 | -9 |
| 2015 | 163 | 160 | -3 | -12 |
| 2016 | 161 | 161 | 0 | -12 |
| 2017 | 160 | 162 | 2 | -10 |
| 2018 | 158 | 163 | 5 | -5 |
| 2019 | 156 | 164 | 8 | 3 |
| 2020 | 154 | 165 | 11 | 14 |
| 2021 | 152 | 166 | 14 | 28 |
| 2022 | 150 | 166 | 17 | 45 |
| 2023 | 148 | 167 | 20 | 65 |
| 2024 | 146 | 168 | 23 | 87 |
| 2025 | 144 | 169 | 26 | 113 |

**Figure 30: Tennessee Tax Revenue (2011-2025) and Cumulative Difference**



## 18 Fuel Tax Changes and the Impact on Federal Revenue

**Finding 1: A reduction in gasoline and diesel taxes by one-cent per gallon would reduce federal revenue by a total of $1.737 billion in 2014.**

To assess the outcomes of alternative policies, we used our model to generate two scenarios: (1) indexing fuel taxes to inflation in 2014 and (2) indexing the gasoline and diesel tax to inflation in 1997, which corresponds to the last adjustment of the gasoline and diesel tax at the federal level. Figures 31 summarizes the effects on the federal revenue for the two scenarios where gasoline and diesel taxes are indexed to inflation in 2014 (*Scenario* in the figure) and 1997 (*Forgone* in the figure).

**Finding 2: Indexing the tax rate to inflation in 2014 would result in an additional $1.143 billion in average annual tax revenue between 2014 and 2025.**

If fuel tax rates were reduced by one-cent and indexed to inflation in 2014, additional real federal revenue of $6.177 billion per year would be generated in 2025 (Table 27).

**Finding 3: Indexing the fuel taxes rates to inflation the last time those taxes were adjusted, a cumulated additional revenue of $133.305 billion would have been generated through 2013 if the federal government had linked the fuel taxes to inflation the last time they were adjusted.**

Our model projects that linking the federal fuel taxes to the rate of inflation could have a substantial impact on the ability to maintain its transportation system into the future. Had the federal government indexed fuel taxes to inflation in 1997, it would have secured an additional $133.305 billion to support transportation maintenance and new investments. If the federal government maintains its current fuel tax regime and does not link its fuel taxes to inflation, it will be forgoing $6.177 billion in additional annual fuel tax revenue by 2025. In order to ease the immediate burden of indexing fuel taxes to inflation, some policymakers have suggested an immediate reduction in the fuel tax by one-cent. Such a reduction would represent $1.737 billion in forgone tax revenue; however, the short term loss of revenue would be quickly recovered through linking fuel taxes to inflation.

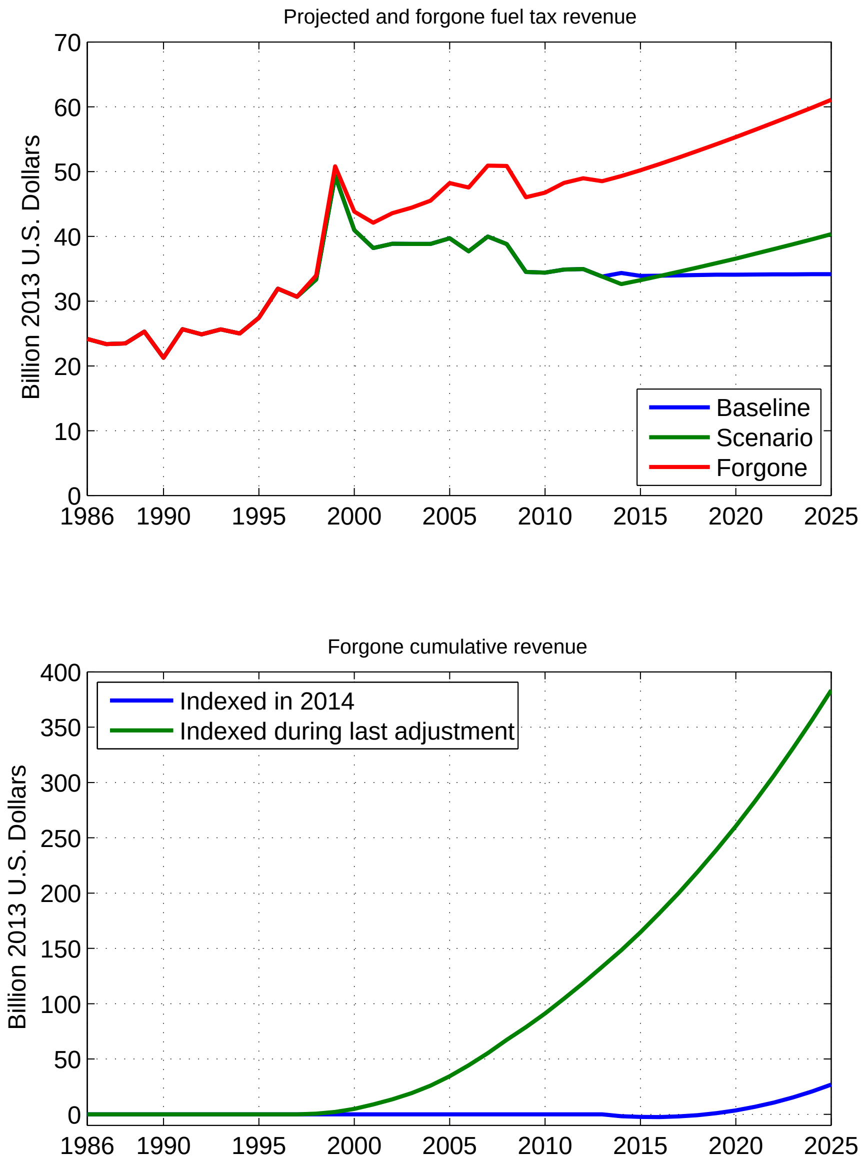
**Table 27: Tax revenue in million 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | State Fuel Tax Revenue (in Million 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 34,352 | 32,615 | -1,737 | -1,737 |
| 2015 | 33,894 | 33,239 | -655 | -2,392 |
| 2016 | 33,905 | 33,864 | -41 | -2,433 |
| 2017 | 33,970 | 34,514 | 544 | -1,888 |
| 2018 | 34,026 | 35,182 | 1,156 | -733 |
| 2019 | 34,078 | 35,871 | 1,793 | 1,060 |
| 2020 | 34,089 | 36,569 | 2,481 | 3,541 |
| 2021 | 34,104 | 37,294 | 3,190 | 6,731 |
| 2022 | 34,133 | 38,037 | 3,904 | 10,635 |
| 2023 | 34,141 | 38,780 | 4,638 | 15,273 |
| 2024 | 34,143 | 39,541 | 5,398 | 20,671 |
| 2025 | 34,143 | 40,320 | 6,177 | 26,848 |

**Table 28: Federal fuel tax expenditure for the average driver in 2013 dollars under the baseline (no adjustment) and the scenario (2014 CPI indexed and one-cent reduction)**

| | Cost to Average Driver (in 2013 Dollars) | | | |
|---|---|---|---|---|
| Year | Baseline | Scenario | Additional | Cumulative |
| 2014 | 157 | 149 | -8 | -8 |
| 2015 | 153 | 150 | -3 | -11 |
| 2016 | 152 | 152 | 0 | -11 |
| 2017 | 151 | 153 | 2 | -9 |
| 2018 | 150 | 155 | 5 | -4 |
| 2019 | 148 | 156 | 8 | 4 |
| 2020 | 147 | 158 | 11 | 15 |
| 2021 | 146 | 159 | 14 | 29 |
| 2022 | 144 | 161 | 17 | 45 |
| 2023 | 143 | 162 | 19 | 64 |
| 2024 | 142 | 164 | 22 | 87 |
| 2025 | 140 | 166 | 25 | 112 |

**Figure 31: Federal Tax Revenue (2011-2025) and Cumulative Difference**



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