



# Building a Better Gas Tax:

## How to Fix One of State Government's Least Sustainable Revenue Sources

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### **About ITEP**

Founded in 1980, the Institute on Taxation and Economic Policy (ITEP) is a non-profit, non-partisan research organization, based in Washington, DC, that focuses on federal and state tax policy. ITEP's mission is to inform policymakers and the public of the effects of current and proposed tax policies on tax fairness, government budgets, and sound economic policy. Among its many publications on state and local tax policy are *Who Pays? A Distributional Analysis of the Tax Systems in All 50 States* and *The ITEP Guide to Fair State and Local Taxes*. ITEP's full body of research is available at [www.itepnet.org](http://www.itepnet.org).

## Executive Summary

- State gasoline and diesel taxes (often just called “gas taxes”) are **the most important source of transportation funding under the control of state lawmakers**. Every state levies both of these taxes.
- Unfortunately, **most state gas taxes are built to fail**. Thirty six states levy only a fixed-rate tax that collects the same number of cents in tax, year after year, on every gallon of fuel purchased. But as this report shows, inflation has been eating away at these fixed-rate taxes as the price of asphalt, concrete, and other transportation construction inputs continues to grow almost every year.
- After adjusting to account for growth in construction costs, **the average state’s gas tax rate has effectively fallen by 20 percent, or 6.8 cents per gallon, since the last time it was increased**. Among the 36 states levying only a fixed-rate tax, effective gas tax rates have plummeted by 29 percent, or 9.5 cents per gallon since they were last increased. New Mexico (20.1 cents), Montana (18.5 cents), and Maryland (15.8 cents) have seen larger absolute declines in their gas taxes than any state other than Alaska. **A 50-state analysis of these trends is available in Appendix A**.
- This decline is part of an even longer-term trend. ITEP’s analysis of data from the U.S. Census Bureau shows that **state gas taxes are a less significant part of families’ household budgets than they have been in eighty years**.
- If every state updated its gas tax rate to match the level of purchasing power it had the last time it was raised, state gas tax revenues would be roughly \$10 billion higher per year. Put another way, **states have seen their gas taxes plummet by a combined \$10 billion** due to their failure to plan for inevitable increases in the cost of transportation construction. A number of states where transportation funding has been a hot-button issue in recent years are among those experiencing the largest losses. Iowa and Oklahoma are each losing over \$300 million per year, for example, while annual losses in Maryland and New Jersey are over \$500 million per state.
- State gas tax erosion has had disastrous effects on the nation’s transportation infrastructure. The \$10 billion annual gas tax revenue loss described above has played a big role in what the American Society of Civil Engineers (ASCE) estimates is a **\$130 billion drain on the economy** in the form of higher vehicle repair costs and travel time delays. These costs could be greatly reduced if lawmakers had the foresight and courage to raise sufficient revenues for state roadways and transit systems. As things currently stand, however, these costs are actually expected to increase dramatically in the years ahead.
- Lawmakers’ shortsightedness when it comes to the gas tax has also resulted in an increasing amount of pressure on other areas of state budgets. In 2011 alone, **Nebraska, Utah, and Wisconsin all passed new legislation authorizing long-term raids on their general funds in order to finance transportation**. Oklahoma and Virginia’s governors are pushing for lawmakers to enact similar legislation in 2012.
- The chronic under-funding of state transportation networks should be addressed in the short-term with **gas tax increases, and** in the longer-term **by reforming state gas taxes so their revenues can keep pace with the rising cost of building and maintaining a transportation network**. Fourteen states, including those with such varied geographies and politics as Georgia, Nebraska, and New York, already levy taxes that tend to grow over time. The best structural reform possible is to link, or “index,” the gas tax rate to some official measure of transportation construction cost growth. (See Recommendations #1 and #2, pages 7 and 8).
- While gas taxes are important revenue sources, they’re also regressive — meaning that they require low-income families to pay more of their income in tax than wealthy drivers. **But state gas tax reform does not have to negatively impact low-income families. New or expanded low-income tax credits can shield these vulnerable families** from much of the disproportionate impact of the gas tax, thereby allowing states to improve their transportation networks without paying for those improvements on the backs of those who can least afford it. (See Recommendation #3, page 9).

## Introduction

State gas taxes are currently levied in every state, and are the most important source of transportation revenue under the control of state lawmakers. In recent years, however, state gas taxes have fallen dramatically relative to the rising cost of asphalt, concrete, labor, and everything else that goes into maintaining a transportation network. The results of this decline have been both predictable and disastrous. Each year, states' crumbling infrastructure, inadequate transit systems, and congested roadways cost residents billions of dollars in vehicle repairs and lost productivity. These costs will likely grow dramatically in the years ahead.

This report provides new 50-state data showing exactly how much state gasoline and diesel taxes — adjusted to account for growth in transportation construction costs — have declined in recent years. The tax rate changes needed to offset those declines, and the revenue implications of those changes, are also provided for every state. Overall, this report shows that the states are losing over \$10 billion in revenue each year as a result of failing to plan for transportation cost growth since the last time they raised their gas taxes.

In addition to describing how states' transportation infrastructure has fared in light of this decline, the report also makes the case for why gas taxes should remain an important component of state transportation finance, and concludes with three specific recommendations. Taken together, those recommendations would allow states to generate a more adequate and sustainable stream of transportation revenue over the long-term, without unduly impacting low-income families that have fallen on hard times.

## Gas Taxes in Free-Fall

Imagine trying to fund a transportation network today with the revenue generated by a meager 1 cent per gallon gasoline tax, similar to what many states levied in the 1920's. At today's prices, even

maintaining dirt roads would be a challenge. A penny just doesn't go as far as it used to. Thankfully, no state faces a situation quite this dire, but this scenario does hint at the main challenge facing state gas taxes.

Most state gas taxes, as currently designed, are incapable of generating a sustainable stream of revenue over the long-term due to their fixed-rate structure. Unlike other major taxes that are collected on a percentage basis (e.g., Wisconsin's sales tax of 5 percent of an item's price), the gasoline tax is usually collected as a fixed number of cents on each gallon of gasoline sold (e.g., Massachusetts' gasoline tax of 21 cents per gallon). But while gas tax rates remain fixed over time, the cost of constructing and maintaining a transportation network inevitably becomes more expensive.

Take South Carolina, for example. The gas tax in the Palmetto State has been levied at a fixed rate of 16 cents per gallon since 1989. But after factoring in the rising cost of infrastructure construction, a 16 cent gas tax in 1989 actually had a "real" value to the state's road builders of over 28 cents, measured in today's dollars. In other words, what the state's Department of Transportation could have accomplished in 1989 with just 16 cents would cost a full 28 cents today. The difference between these two figures (12 cents per gallon) is equivalent to an unintended cut in the state's gas tax rate. In economist-speak, the state's "real" gas tax rate has dropped by 12 cents, despite the fact that the "nominal" rate (16 cents per gallon) remains unchanged.

The data presented in Appendix A analyze the gas taxes in all 50 states, plus the District of Columbia, relative to the rate of inflation in transportation construction costs. Figure 1, and the bulleted points below, summarize those findings on a national basis.

- The average state has not raised its gasoline or diesel tax rate in about a decade. Among the 36 states (plus DC) that do not automatically adjust their gas tax rates based on gas prices or

**Figure 1: National Trends in State Gas Tax Rate Decline, Relative to Transportation Construction Costs**

	Since Last Increase			Since 1990			Since 2000		
	Average % Decline in Tax Rate	Average Increase Needed to Return to Previous Rate	Total Annual Revenue Yield of Rate Increases	Average % Decline in Tax Rate	Average Increase Needed to Return to Previous Rate	Total Annual Revenue Yield of Rate Increases	Average % Decline in Tax Rate	Average Increase Needed to Return to Previous Rate	Total Annual Revenue Yield of Rate Increases
<b>Gasoline</b>	20%	6.8 cents	\$7.9 billion	17%	5.0 cents	\$4.4 billion	14%	3.9 cents	\$3.5 billion
<b>Diesel</b>	18%	6.0 cents	\$2.1 billion	16%	5.1 cents	\$1.3 billion	13%	3.7 cents	\$1.0 billion

See Appendix A for more detail, including state-specific data.

inflation, that figure is actually closer to 15 years (or 13 years in the case of diesel fuel). These states are said to have a “fixed-rate” tax.

- After adjusting to account for the rising price of asphalt, concrete, labor, and other transportation inputs, the average state gas tax rate has declined by 20 percent since the last time it was increased. Gas and diesel tax rates would have to rise by over 6 cents per gallon, on average, to return them to the level of purchasing power they had last time they were raised. Among states with only a fixed-rate gas tax, rates would have to rise by roughly 9 cents per gallon. In the aggregate, this would generate over \$10 billion in additional revenue per year — revenue that states have essentially been failing to collect due to their decision not to plan for the rising cost of transportation construction. While the impact on drivers would vary by state, a 9 cent per gallon tax increase would cost the average driver less than \$4 per month (see Figure 4 on page 7).
- State gas tax rates are also lower than they were either ten or twenty years ago. After adjusting for transportation cost growth, gas tax rates are about 17 percent lower than they were in 1990, and about 14 percent lower than they were in 2000. Returning state gas tax rates to their 1990 levels would require immediate gas and diesel tax rate increases averaging about 5 cents per gallon, and would generate approximately \$5.8 billion in new revenue each year. Returning rates to their 2000 levels would require an almost 4 cent per gallon increase, on average, generating \$4.5 billion in revenue. All told, forty-one states levy their gas taxes at a lower rate than they did at the turn of the century, and thirty-nine states levy their diesel fuel taxes at a lower rate.
- Gas tax decline has not been uniform among the states. The fourteen “variable-rate” states (each of which ties its gas tax rate to either inflation or gasoline prices) have seen their real gas tax rates hold fairly steady. Most of the other thirty-six states, by contrast, have experienced significant declines in recent years. In particular, nineteen of those states have watched their gas tax rates plummet by 40 percent or more since the last time their gas tax rates were raised, and sixteen states have seen that level of decline in their diesel taxes.

Appendix C provides a discussion of the various gas tax structures used by each state.

## Playing Catch-Up

One of the major findings of this report is that states are collectively losing about \$10 billion per year due to construction cost increases that have occurred since the last time their gas tax rates were raised. In other words, altogether the states need to raise their gas taxes by a total of \$10 billion just to get those taxes back up to previous levels.

To be clear, this is not the same thing as saying a \$10 billion gas tax increase is all that is needed to meet current transportation funding needs in the states.

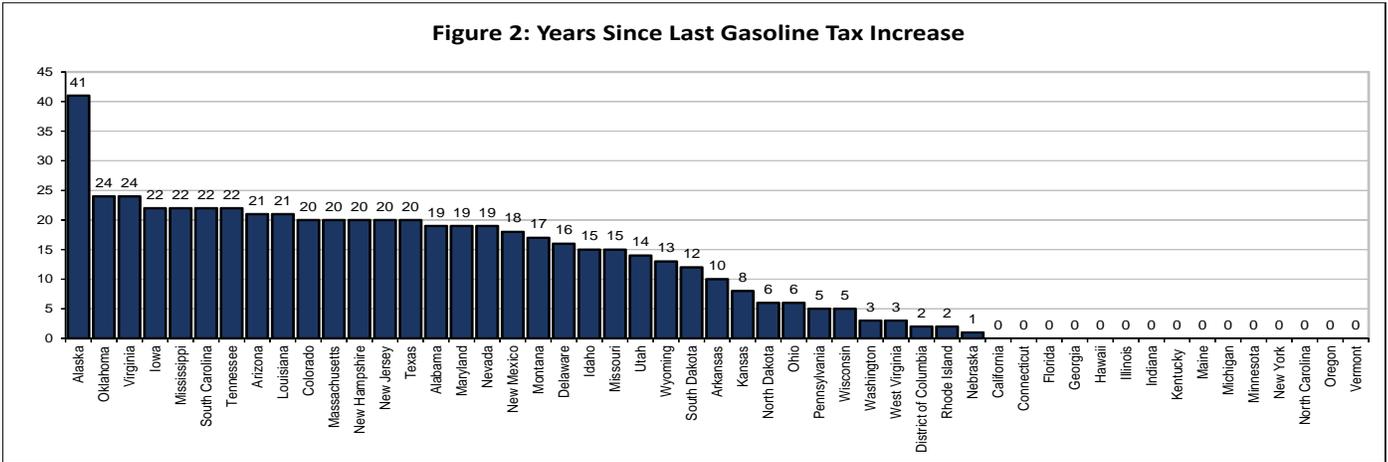
Take Nebraska, for example, where the state recently raised its gas tax rate due to an automatic provision in law linking the rate to gas price growth. As a result of this recent increase, Nebraska does not add to the \$10 billion national figure.

But while the price-based structure of Nebraska’s gas tax has made it more sustainable, the transportation revenues available to the state are still simply inadequate. A recent study by Transportation for America, for example, identifies 18.2 percent of the state’s bridges as deficient. And lawmakers’ recent decision to sign into law a long-term, yearly raid of the general sales tax for transportation funding purposes makes clear that they are keenly aware of this inadequacy.

## Transportation Infrastructure in Crisis

The ongoing decline of the gas tax is troubling in large part because of the tax’s enormous importance to the efficient and safe operation of state transportation systems. As indicated in Figure 3, state gas taxes are the most significant source of highway funding under the control of state lawmakers. In light of the gas tax’s enormous importance, and ongoing decline, it should come as little surprise that America’s transportation infrastructure is widely regarded as being in poor (and worsening) condition.

**Figure 2: Years Since Last Gasoline Tax Increase**



According to the American Society of Civil Engineers (ASCE), a quarter of America’s bridges are structurally deficient or obsolete, one-third of the nation’s major roads are in poor or mediocre condition, almost half of all major urban highways are congested, and nearly half of all Americans lack access to bus or rail transit.<sup>1</sup> As a result of these deficiencies, the ASCE estimates that Americans waste the monetary equivalent of \$32 billion in travel time delays each year, and another \$97 billion on vehicle operating costs. That \$130 billion drain on the American economy can be at least partially attributed to the \$10 billion decline in state gas taxes revealed in the previous section.

As with the gas tax itself, these outcomes are part of a long-running, and ongoing downward trend. The ASCE’s grade for the nation’s roadways fell from a C+ in 1988 to a D- in 2009, the most recent year for which data are available. Similarly, the group’s rating of America’s mass transit systems — which if adequately funded could take considerable pressure off of the nation’s roads — fell from a C- to a D over that same period.

The ASCE’s analysis makes it painfully obvious that America’s crumbling infrastructure will not wait for politicians to gain the foresight and courage needed to adequately fund its repair. Asphalt and concrete can only last so long under the continuous wear-and-tear exacted by three trillion vehicle miles traveled each year. Absent significant funding increases, the ASCE expects that the costs imposed on the economy by the nation’s deteriorating infrastructure will rise by 82 percent over the next decade, and the number of vehicle hours lost due to traffic congestion will triple.

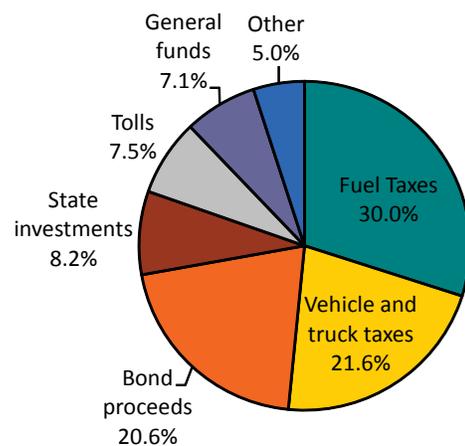
<sup>1</sup> American Society of Civil Engineers, *Failure to Act: The Economic Impact of Current Investment Trends in Surface Transportation Infrastructure* (2011). See also ASCE, *2009 Report Card for America’s Infrastructure* (2009)

## Why the Gas Tax?

The need for additional transportation funding is clear, but some lawmakers may question whether the gas tax is the appropriate means of securing that funding. As it turns out, there are good reasons for continuing to rely on the gas tax as a source of state transportation revenue. One of the main rationales in support of the gas tax is the “benefits principle” of transportation finance, which states that those using the transportation network the most should pay the most for its continued operation. Doing so has the potential to curb its overuse, and therefore reduce unnecessary wear-and-tear, traffic congestion, and even societal ills like air pollution and excessive suburban sprawl.

In practical terms, the benefits principle suggests that an individual driving 40 miles each way to work should pay more for the maintenance of the highway system than someone who works from home. Similarly, a person driving a heavy truck should pay more than somebody in a compact car, given the difference in roadway wear-and-tear created by

**Figure 3: State Own-Source Revenues for Highways**



Source: Federal Highway Administration

those two vehicles. The gas tax accomplishes these outcomes better than any other currently implementable alternative, because it generally demands more of those driving the furthest distances, and of those driving the heaviest (and therefore least fuel-efficient) vehicles.<sup>2</sup>

But the benefits principle has limits, including most notably its frequent tension with other measures of tax fairness. Low-income workers may have to drive long distances to work, for example, and while the benefits principle suggests these workers should pay for their use of the road, the gas tax can be simply unaffordable for workers living near or below the poverty line. Because low- and middle-income families spend much more of their income on gasoline than do upper-income taxpayers, the gas tax is undeniably regressive. Put another way, the benefits principle is sometimes directly at odds with the “ability-to-pay” principle. Fortunately, the regressivity of the gas tax can be lessened if states mitigate the impact of gas taxes on low-income families through the use of targeted low-income credits. Recommendation #3 in the next section outlines options for achieving this outcome.

In addition to concerns over tax regressivity, some lawmakers point to the unsustainable nature of the gas tax as evidence that it has become obsolete. According to this line of reasoning, if the tax isn’t yielding an adequate stream of revenue over time, then maybe it’s time for the state to try something else. But most of the gas tax’s unsustainability comes from its short-sighted, fixed-rate structure. Recommendation #2 in the next section explains how to overcome this problem: link the tax rate to some measure of transportation construction cost growth.

While the gas tax is certainly broken, it can be fixed. Many of the proposed alternatives to this “obsolete” tax, by contrast, are flawed in even more fundamental ways. Lawmakers in states like Georgia, Idaho, Nebraska, Oklahoma, Utah, Virginia, and Wisconsin have proposed or enacted measures raising sales taxes, or simply raiding existing general revenues to fund transportation. Raiding other revenue streams is extremely poor policy in states that, for the most part, are already struggling to adequately fund education, public safety, and other public priorities. And the sales tax is a bad choice as well, since it is both regressive and totally divorced from the “benefits principle” discussed above.

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<sup>2</sup> While the gas tax is the best option currently available from a “benefits principle” perspective, it is hardly perfect in this regard. See, e.g., Tony Dutzik, Benjamin Davis, and Phineas Baxandall, *Do Roads Pay for Themselves? Setting the Record Straight on Transportation Funding*, U.S. PIRG Education Fund (2011).

## Federal Gas Tax Faring No Better

The federal gas tax, like most state gas taxes, is a fixed-rate tax. And as with most fixed-rate state gas taxes, the federal tax has shrunk considerably in recent years when compared with the rising cost of transportation construction. While federal data have been omitted from the appendices for simplicity’s sake, ITEP analyzed that decline and found that:

- The federal gasoline and diesel tax rates have not been raised in 18 years. After adjusting to account for the rising cost of transportation construction, both taxes have seen the real value of their rates fall by 41 percent.
- Returning the federal gas and diesel taxes to their purchasing power as of 18 years ago (when they were last increased) would require rate increases of 12.6 and 16.7 cents per gallon, respectively.
- Updating the federal tax rates in this way would generate about \$23 billion in additional revenue each year.

The decline of the federal gas tax should be of major concern to the states because a large share of state transportation spending is financed by the federal government, and in particular by the federal gas tax. In order to compensate for this decline, the federal government has repeatedly dipped into its general fund for additional transportation dollars. This practice may become much more difficult in the months and years ahead, however, as concern over the federal budget deficit has created enormous pressure to cut back on spending across all areas of government.

States may find themselves receiving significantly less federal support in the future unless the President and Congress decide that the federal gas tax rate is finally in need of updating.

## Raiding the General Fund When Gas Taxes Fall Short

It's not just transportation spending that gets cut when gas taxes fail to provide a sustainable stream of revenue. Rather than boosting their gas taxes, at least three states enacted long-term diversions of general fund revenues this year to supplement their transportation trust funds, and two more states are run by Governors looking to follow suit. These diversions will result in fewer resources for education and other public priorities than would have otherwise been the case.

**Nebraska:** Starting in 2013, 0.25 percentage points of the state's 5.5 percent sales tax will be dedicated to highways for a period of twenty years.

**Utah:** For fiscal year 2013 and beyond, 30 percent of all sales tax revenue growth will be dedicated to transportation. This comes on top of multiple sales tax diversions for transportation that are already required by law in Utah.

**Wisconsin:** Starting in 2013, 0.25 percent of all general fund tax revenue (e.g., sales and income taxes) will be dedicated to transportation.

**Oklahoma:** Governor Fallin has proposed repairing Oklahoma's many deficient bridges using state income tax revenue. That proposal will be debated during the 2012 legislative session.

**Virginia:** Governor McDonnell has proposed increasing the share of the sales tax going to transportation from 0.5 to 0.75 percentage points, and siphoning off even more general fund revenue during better economic times. His proposal will be debated during the upcoming legislative session.

Unfortunately, these developments appear to be part of a long-term trend. An analysis done by Pew's Subsidyscope project found that taxes and fees paid by drivers (the most significant of which is the gas tax) make up a smaller share of total highway funding than at any point since the creation of the Interstate Highway System in 1957. While Pew finds

various reasons for this decline, they highlight the fact that "states have had trouble increasing fuel taxes to keep up with inflation."<sup>3</sup>

Other lawmakers have proposed additional toll roads or vehicle and license fees in order to fund transportation, often because such approaches are deemed more politically palatable than anything labeled a "tax." But while both of these approaches do target drivers, they fall short of the ideal in that neither is designed to accurately account for how much one actually drives. Toll roads result in drivers paying vastly different amounts depending on where they drive, while vehicle and license fees charge occasional drivers the same amount as long distance commuters.

One increasingly popular alternative to the gas tax, especially among academics, is known as the "Vehicle Miles Traveled" (VMT) tax. No state uses a VMT tax today, though Oregon recently conducted a VMT tax pilot project involving roughly 250 volunteer drivers. The idea is that the government would install a device in every car that counts the number of miles driven in-state, and then send those drivers tax bills based on that number.

## A New Low

While this report mostly focuses on trends from the last two decades, one measure from the U.S. Census Bureau shows that state gas taxes are actually at an all-time low. In 2010, total state gas tax revenues nationwide (not including sales taxes on gas) were lower as a share of personal income than at any point since the widespread adoption of state gas taxes at the end of the 1920's. In layman's terms, this means that state gas taxes are a less significant component of families' household budgets than they have been in roughly eighty years.

The main appeal of this approach is that unlike the gas tax, the revenue generated by a VMT tax will not be eroded by improving fuel-efficiency. Fuel-efficiency has undoubtedly become a growing challenge to the gas tax as of late, as new cars and trucks today are about 16 percent more

<sup>3</sup> The Pew Charitable Trusts, *Analysis Finds Shifting Trends in Highway Funding: User Fees Make Up Decreasing Share* (2009).

efficient than in 2004.<sup>4</sup> This trend is expected to continue in the years ahead, and it's an issue that cannot be ignored. Advocates of VMT taxes also point out that their solution could arguably improve the fairness of the highway finance system by preventing those driving hybrid and electric vehicles from paying significantly less in tax for their enjoyment of the roads.

But while fuel-efficiency and alternative fuel advancements will almost certainly require a substitute for the gas tax in the long-run, VMT tax advocates still have a ways to go in convincing lawmakers and the public that privacy issues, device installation costs, and issues surrounding the taxation of out-of-state drivers can all be resolved. Until that conversation happens, gas taxes will remain the best and most practical source of transportation revenue available to state governments

## Recommendations for Reform

State gas taxes have three major shortcomings, each of which can be largely remedied by the recommendations contained in this section.

First, state gas taxes are **inadequate**, meaning that they don't raise enough revenue to pay for the public services demanded by state residents. Widespread discontent with traffic congestion and the exceedingly poor condition of the nation's roads, bridges, and transit systems are evidence of the inadequacy of state gas taxes.

Second, most state gas taxes are **unsustainable**. Unsustainable taxes generate an increasingly inadequate amount of revenue over time. Fixed-rate state gas taxes are simply incapable of dealing with rising transportation infrastructure costs. The detailed 50-state data contained in Appendix A provide ample evidence of this unsustainability.

Third, gas taxes are **regressive**, meaning that they impact low-income families more heavily, as a share of their income, than the wealthy (see Figure 6 on page 10). Regressive taxes are of concern because they can negatively impact the standard of living of families struggling to make ends meet, and because most state tax systems are already sharply regressive overall.<sup>5</sup>

<sup>4</sup> Environmental Protection Agency, *Light-Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 Through 2010*, EPA-420-R-10-023 (2010), at 8.

<sup>5</sup> Institute on Taxation and Economic Policy, *Who Pays? A Distributional Analysis of the Tax Systems in All 50 States* (2009)

Recommendations to address each of these shortcomings — and help states design better gas taxes — are provided below.

## Recommendation #1: Enhance Adequacy Through Gas Tax Rate Increases

The condition of America's transportation system is clearly unacceptable, and cannot be improved absent funding increases. Rather than steering government funds away from other priorities, states should increase their gasoline and diesel tax rates in order to generate that funding. Many state-based analysts have already estimated the magnitude of gas tax increases that would be needed to accomplish key transportation goals in specific states. Lawmakers can find additional guidance in Appendix A, which details the gas tax rate changes, and their revenue impact, that would be needed to return each state's gas tax to its previous purchasing power.

In states where high gas prices are a concern, lawmakers could write legislation raising the gas tax so that it only goes into effect once gas prices have fallen to some pre-determined level. A permanent five cent per gallon increase, for example, could be scheduled to take effect only after gas prices have fallen by twenty cents from current levels. Such an approach could lessen the apparent impact on drivers, though in truth, concern over that impact is often overblown. As Figure 4 indicates, even a twenty cent per gallon tax increase would cost the average driver under \$9.00 per month, and at least some of that cost would undoubtedly be offset through lower vehicle repair costs and less wasted gasoline burnt while stuck in traffic.

**Figure 4: Monthly Impact of Various State Gas Tax Increases on the Average Driver**

Cent Per Gallon Increase	Additional Gas Taxes Paid Per Month
1	\$0.43
2	\$0.86
3	\$1.29
4	\$1.72
5	\$2.15
6	\$2.59
7	\$3.02
8	\$3.45
9	\$3.88
10	\$4.31
11	\$4.74
12	\$5.17
13	\$5.60
14	\$6.03
15	\$6.46
16	\$6.89
17	\$7.32
18	\$7.76
19	\$8.19
20	\$8.62

## Gas Tax Politics

While some politicians view a gas tax increase as a political non-starter, lawmakers in every state have successfully mustered the courage to raise their gas tax rates on numerous occasions. Had those increases not been enacted, most state gas taxes today would remain at 1 or 2 cents per gallon, and funding a 21st century infrastructure through the gas tax would be impossible.

In just the last four years, Minnesota, Oregon, Rhode Island, Vermont, Washington State, and the District of Columbia have all raised their gas tax rates through legislative action. Over that same period, another fourteen states saw their gas taxes rise due to provisions in law that automatically adjust the tax rate based on increases in the price of gas, or in the inflation rate.

To be sure, many motorists have a knee-jerk reaction against anything that raises the price at the pump. At the same time, however, many of those same drivers adamantly support additional road maintenance and measures to reduce traffic congestion. Clearly explaining the linkage between gas taxes and those services is essential to gaining popular support for gas tax reform.

It's also worth noting that potential gas tax reformers are likely to draw some surprising allies to their side. In addition to unions and public service advocates, businesses that have recognized the impact that a poorly-functioning transportation system can have on their bottom-lines are also frequent gas tax supporters. Major business groups have recently backed proposals to raise the gas tax in Iowa, Maryland, Michigan, and other states, as well as at the federal level.

## Recommendation #2: Enhance Sustainability Through Gas Tax Reform

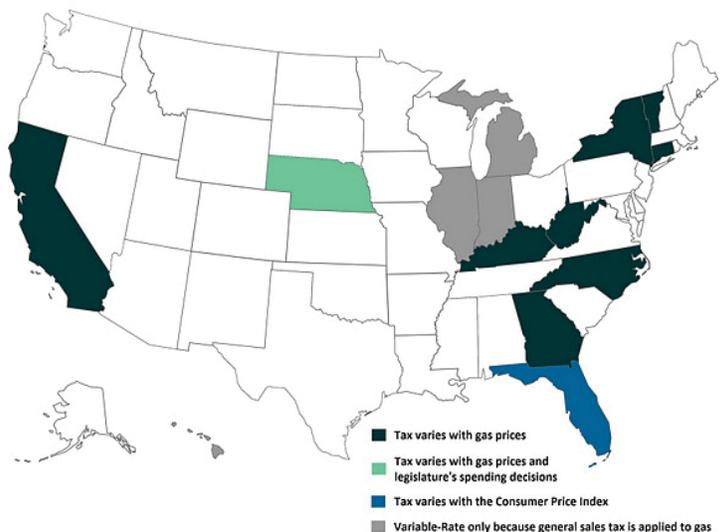
While an increase in the per-gallon tax rate will bolster state transportation revenues in the short-term, reforms to the basic design of state gas taxes are needed to ensure that revenue growth does not once again fall behind transportation needs. There are three main ways to go about reforming the gas tax: link its rate to transportation cost growth, link its rate to a

more familiar consumer-based inflation rate, or link its rate to the price of gas.

The best option for reforming state gas taxes is to tie (or “index”) them to the rate of growth in transportation infrastructure costs.<sup>6</sup> This is the most direct route for ensuring that increases in the price of asphalt, machinery, and other transportation inputs do not prevent states from adequately maintaining their transportation networks. Unfortunately, this option is not currently used in any state, though Michigan and Ohio previously levied their gas taxes in this manner, and the Arkansas’ Blue Ribbon Committee on Highway Finance recently recommended that Arkansas adopt this reform.<sup>7</sup>

While linking state gas tax rates to transportation infrastructure costs is the most sensible option, some lawmakers may feel more comfortable linking the tax rate to the more familiar inflation rate measured by the Consumer Price Index (CPI)— that is, the rate of growth in prices for items purchased by a typical consumer. Many state and federal income

Figure 5: States Levying a Variable-Rate Gas Tax



<sup>6</sup> The construction cost index used in this report is a combination of the national Composite Bid Price Index (which has been discontinued) and the National Highway Construction Cost Index (NHCCI). See Appendix D for more detail. Other options include the Construction Cost Index published by the Engineering News-Record, the Bureau of Labor Statistics’ index for “other nonresidential construction” (BONS), and state-specific cost indexes in the states that produce them.

<sup>7</sup> John H. Bowman and John L. Mikesell “Recent Changes in State Gasoline Taxation: An Analysis of Structure and Rates,” 36 National Tax Journal 163-182 (1983). See also Blue Ribbon Committee on Highway Finance, Final Report (2010), available at: [http://www.blueribbonhighways.com/public/userfiles/BlueRibbon\\_FinalReport12-1-2010.pdf](http://www.blueribbonhighways.com/public/userfiles/BlueRibbon_FinalReport12-1-2010.pdf).

tax provisions are already indexed to the CPI, and Florida currently indexes a portion of its gas tax rate to CPI. CPI-indexing represents a significant improvement over a fixed-rate gas tax, and results in very modest and predictable increases in nominal gas tax rates in most years. But when the cost of asphalt and other transportation inputs grows more quickly than the CPI — as it did throughout much of the 2000’s — this approach is likely to prove inadequate.

The most common but least preferable gas tax reform is to link the gas tax rate to the price of gasoline. Many lawmakers may be tempted by this route because it closely resembles the traditional sales taxes with which they’re familiar, and because thirteen states already make use of this method (see Appendix C). But transportation costs tend to rise much more steadily over time than the price of gasoline. It’s not at all unusual, for example, for the price of gasoline to increase or decrease by 20 percent or more from one year to the next. Linking gas tax rates (and therefore, transportation budgets) to such a volatile base can pose serious challenges for transportation officials and lawmakers alike. A handful of states have already abandoned percentage-based gas taxes because of their volatility, and a number of others have repeatedly intervened — usually at the last possible moment — to prevent their gas tax rates from rising or falling more dramatically than they would like.<sup>8</sup> But even with all its problems, a gas tax linked to gas prices will produce a more sustainable revenue stream over the long-term than a fixed-rate state gas tax, especially if it’s paired with one or more of the volatility-reducing techniques discussed in the text box on this page.

### **Recommendation #3: Reduce Regressivity through Low-Income Relief**

Gas taxes are inherently regressive — that is, low- and middle-income families pay a much larger share of their income in gasoline taxes than do the wealthy. A November 2009 ITEP report titled *Who Pays?* found that low-income families pay about 0.4 percent of their income in state and local gas taxes nationwide, while the best-off taxpayers pay just 0.03 percent of their income in these taxes.<sup>9</sup> That same study found that

<sup>8</sup> Indiana, Maryland, New Mexico, and Washington all repealed their price-based gas taxes in the 1980’s when gas price declines threatened a sharp decrease in tax rates and revenues. See Jeffrey Ang-Olson, Martin Wachs, and Brian D. Taylor, “Variable-Rate State Gasoline Taxes,” 54 *Transportation Quarterly* 55-68 (2000). More recent volatility in gas prices has resulted in lawmakers in Georgia and North Carolina intervening to prevent automatic increases or decreases in their gas tax rates.

<sup>9</sup> Institute on Taxation and Economic Policy, *Who Pays? A Distributional Analy-*

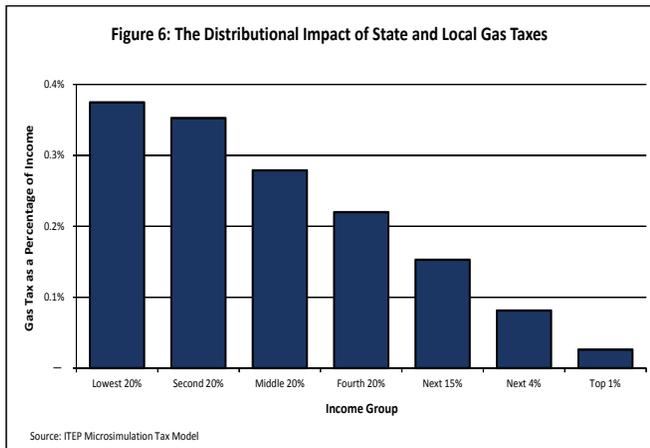
## **Managing Volatility Under a Reformed Gas Tax**

Gas tax reform can greatly improve the sustainability of state gas taxes, but lawmakers should be careful not to introduce unwelcome volatility into their transportation revenue streams. Managing gas tax volatility is both good policy and good politics. A gas tax rate that varies considerably from one year to the next is of concern not only to state transportation departments that require a predictable level of funding, but also to voters – and their representatives – who would prefer not to see such ups and downs. The following approaches have all been used to manage gas tax volatility, with varying degrees of success.

**1. Base the tax on a more stable average measure.** Rather than linking state gas tax rates to the actual change in the cost of infrastructure in any given year, states should rely on a “moving average” of infrastructure costs from the previous three years. Such an approach reduces the impact that unusually high or low prices in any one year can have on the tax rate. Similarly, for states linking their gas tax rates to the price of gasoline, linking the rate to the average gas price from the last twelve months can result in slightly more stability than linking to the actual price paid at the pump, which can vary on a minute-by-minute basis.

**2. Limit maximum rate changes.** When reforming state gas taxes, lawmakers can set up rules ahead of time dictating what size rate change is considered to be too large. West Virginia, for example, now effectively limits changes in the variable portion of its gas tax rate to no more than ten percent per year. Similarly, Arkansas’ Blue Ribbon Committee on Highway Finance recommended that tax rate increases be restricted to no more than two cents at any given time, and that no rate decreases should be allowed absent legislative approval. These approaches are far preferable to having lawmakers scramble to prevent any rate change they deem to be too large, as has recently occurred in Georgia, North Carolina, and even West Virginia prior to the enactment of their new limit on rate changes.

**3. Impose floors and/or ceilings.** The least preferable means of managing gas tax volatility is to artificially restrict the minimum/maximum tax rate through so-called “floors” and “ceilings.” Floors and ceilings can be placed either on the tax rate itself (e.g., the tax cannot fall below 20 cents or rise above 30 cents), or on the underlying measure to which the tax rate is tied (e.g., gas prices for the sake of calculating the tax rate can be no lower than \$2.00, and no higher than \$4.00). But floors and ceilings risk becoming outdated very quickly. Kentucky, for example, states that the average wholesale gas price used in calculating its tax rate cannot fall below \$1.34. Given current trends in wholesale gas prices, this limitation is unlikely to have any practical impact for the foreseeable future. More significantly, Pennsylvania has placed a ceiling of \$1.25 on the wholesale price used to calculate its tax rate. Since wholesale prices are not expected to fall below \$1.25 any time soon, the variable portion of Pennsylvania’s gas tax has essentially become “stuck” at 19.2 cents per gallon, and now functions like a fixed-rate tax.



overall, the poorest 20 percent of state residents pay about 10.9 percent of their income in state and local taxes, while the richest 1 percent pay about 5.2 percent. In this light, state gas taxes should be seen as a small but important contributor to the overall regressivity of state tax systems, and it should be clear that any effort to raise state gas taxes will pose some challenges from a tax fairness perspective.

Fortunately, states can reduce the regressive effects of gas tax reform by enacting a refundable tax credit, or by bolstering one of their existing refundable credits. These credits provide a dollar-for-dollar reduction in tax liability for families with income below a certain threshold. States usually use their existing income tax systems to administer these credits, though Washington State, which lacks an income tax, is in the process of implementing a stand-alone credit.

Seven states currently offer low-income credits specifically designed to offset the effect of regressive consumption taxes (usually the sales tax), and most states offer similar credits that accomplish broadly the same goal.<sup>10</sup> Minnesota temporarily allowed a “Low Income Motor Fuel Credit” to offset the impact of a 2008 gas tax increase, though that credit was unfortunately eliminated during the rush to close a budget gap created by the Great Recession.<sup>11</sup>

Since every dollar of revenue a state foregoes through a refundable tax credit goes to the people who need it most, a credit is the most efficient method for ensuring that gas tax reform does not harm those least able to afford its impact. In deciding how best to provide gas tax relief via a tax credit, lawmakers should consider the following four criteria:

<sup>10</sup> For a comprehensive overview of low-income credits at the state-level, see Institute on Taxation and Economic Policy, *State Tax Codes as Poverty Fighting Tools* (2011).

<sup>11</sup> The credit was created by H.F. 2800 of the 2007-2008 legislative session. It was available to taxpayers during tax year 2009.

- **Refundability:** Any credit intended to help a state’s most vulnerable families must be “refundable,” so that families with little or no income tax liability can receive the credit’s benefits. Since non-refundable credits cannot exceed the size of the recipient’s income tax bill, such credits are of no help to low-income families that pay little in income tax, but much in gas taxes. Of course, in states without an income tax, any low-income credit will be refundable by default.
- **Simplicity:** In states that already offer a refundable tax credit, bolstering that credit may be preferable to creating an entirely new credit specifically for the purpose of offsetting state gas taxes. This approach keeps the task of filing tax returns somewhat simpler for low-income families, and increases the likelihood that these families will know about and claim all of the relief for which they are eligible. State Earned Income Tax Credits (EITCs) are among the simplest of all credits, since they are usually calculated as a flat percentage of the taxpayer’s federal EITC amount.
- **Inflation-protected:** Like the gas tax itself, a refundable tax credit not designed to account for the rising prices of goods and services will inevitably lose its effectiveness as time passes. Linking both the credit amount and its eligibility criteria to inflation is the best way to avoid this outcome. States opting to couple gas tax reform with an EITC based on the federal credit will not face this problem, since the federal EITC parameters are already indexed to inflation.
- **Outreach:** Eligible families obviously need to know that a tax credit exists in order to claim it. Effective implementation of any low-income tax credit requires an outreach campaign designed to get the word out. State EITCs have an edge over other forms of tax credits in terms of ease of outreach, since state EITC outreach campaigns can be designed to piggyback on existing federal EITC outreach efforts. It’s worth noting that outreach campaigns are generally more successful with larger tax credits, since claiming smaller “token” credits can be perceived as more hassle than it’s worth.

By pairing gas tax reform with a well-designed low-income credit, states can fund a much-needed investment in their transportation networks without having to pay for it on the backs of low-income families.

## Conclusion

Most state gas taxes are built to fail, and cannot generate sufficient transportation revenue today or in the long-term. Overall, this report estimates that the states are losing \$10 billion in annual gas tax revenue that could have been collected if they had planned for inevitable increases in the price of construction materials the last time they raised their gas taxes. This \$10 billion shortfall is a major contributor to the \$130 billion that the American Society of Civil Engineers (ASCE) estimates is lost each year due to vehicle repairs and travel time delays caused by deficiencies in America's transportation systems.

The erosion of state gas taxes documented in this report should be offset in the short-term with gas tax increases, and prevented from recurring in the longer term by linking state gas tax rates to some official measure of the growth in transportation construction costs. If these two changes are paired with low-income tax relief, states will be well positioned to stop the dramatic and ongoing decline of the nation's roads and transit systems, without having to negatively impact the families least able to afford a higher gas tax. 📌

# Appendix A: Gas Tax Decline Relative to Transportation Costs

**Table A-1: Changes in the Tax Rate on Gasoline Since Last Gas Tax Increase, Adjusted to Consider Transportation Construction Cost Growth**

	Years Since Last Increase	Percent Change in Cost-Adjusted Tax Rate Since Last Increase	Tax Rate Change Needed to Return Rate to Previous Level (cents per gallon)	Annual Revenue Yield of Rate Change (\$million)
Alabama	19	-40%	10.7	280.8
Alaska	41	No data	No data	No data
Arizona	21	-42%	13.0	336.7
Arkansas	10	-24%	6.9	90.8
California(1)	0	0%	0.0	0.0
Colorado	20	-40%	14.9	305.8
Connecticut(1)	0	0%	0.0	0.0
Delaware	16	-39%	14.9	65.3
District of Columbia	2	14%	-2.9	-2.8
Florida(1)(2)	0	0%	0.0	0.0
Georgia(1)(2)	0	0%	0.0	0.0
Hawaii(1)(3)	0	0%	0.0	0.0
Idaho	15	-36%	14.2	95.6
Illinois(1)(3)	0	0%	0.0	0.0
Indiana(1)(3)	0	0%	0.0	0.0
Iowa(4)	22	-43%	14.4	227.7
Kansas	8	-19%	5.6	66.8
Kentucky(1)(2)	0	0%	0.0	0.0
Louisiana	21	-42%	14.4	327.1
Maine	0	0%	0.0	0.0
Maryland	19	-40%	15.8	421.2
Massachusetts	20	-40%	14.2	395.7
Michigan(1)(3)	0	0%	0.0	0.0
Minnesota	0	0%	0.0	0.0
Mississippi	22	-43%	13.7	221.9
Missouri	15	-36%	9.6	304.6
Montana	17	-41%	18.5	91.1
Nebraska(1)(2)	1	3%	-0.9	-7.4
Nevada	19	-40%	15.4	168.7
New Hampshire	20	-40%	12.2	86.2
New Jersey	20	-40%	9.8	410.7
New Mexico	18	-54%	20.1	170.8
New York(1)(2)	0	0%	0.0	0.0
North Carolina(1)(2)	0	0%	0.0	0.0
North Dakota	6	-16%	4.4	16.7
Ohio	6	-16%	5.3	265.4
Oklahoma	24	-45%	13.3	254.1
Oregon	0	0%	0.0	0.0
Pennsylvania	5	-10%	3.5	175.9
Rhode Island	2	14%	-3.9	-15.2
South Carolina	22	-43%	12.1	320.2
South Dakota	12	-30%	9.5	40.8
Tennessee	22	-43%	15.2	470.9
Texas	20	-40%	13.5	1657.6
Utah	14	-34%	12.6	128.4
Vermont(1)(2)	0	0%	0.0	0.0
Virginia	24	-45%	14.5	580.3
Washington	3	10%	-3.3	-86.0
West Virginia(1)(2)	3	10%	-2.8	-24.2
Wisconsin	5	-10%	3.5	87.2
Wyoming	13	-31%	5.9	19.2
<b>AVERAGE</b>	<b>10.7</b>	<b>-20%</b>	<b>6.8</b>	<b>159.0</b>
AVERAGE (fixed-rate states)	14.7	-29%	9.5	221.7
AVERAGE (variable-rate states)	0.3	1%	-0.3	-2.3
<b>TOTAL</b>	--	--	--	<b>7,948</b>
TOTAL (fixed-rate states)	--	--	--	7,980
TOTAL (variable-rate states)	--	--	--	-32

(1) These states levy a variable-rate gasoline tax. For a description of variable-rate vs. fixed-rate taxes, see Appendix C.

(2) All rates used are as of December 31st of the relevant year. These states have gasoline tax rate increases scheduled for January 1, 2012 that are not factored into these calculations. See Appendix D for more detail.

(3) These states technically levy a variable-rate gas tax, but only because they apply their general sales tax rate to gasoline. For a discussion of this issue and an analysis of these states' fixed-rate gasoline excise taxes, see Appendix B.

(4) These figures analyze the E10 ethanol tax in Iowa (as opposed to the ordinary gasoline tax), because over 70% of taxable gas/gasohol sold in Iowa is E10 ethanol. Revenue estimates assume the ordinary gas tax would rise by the same amount as the E10 ethanol tax.

**Table A-2: Changes in the Tax Rate on Gasoline Since 1990, Adjusted to Consider Transportation Construction Cost Growth**

	Percent Change in Cost- Adjusted Tax Rate Since 1990	Tax Rate Change Needed to Return Rate to 1990 Level (cents per gallon)	Annual Revenue Yield of Rate Change (\$million)
Alabama	-16%	2.9	76.8
Alaska	-42%	5.8	16.5
Arizona	-42%	13.0	336.7
Arkansas	-7%	1.7	22.8
California(1)	16%	-6.1	-912.5
Colorado	-36%	12.4	255.5
Connecticut(1)	4%	-1.7	-25.3
Delaware	-17%	4.5	20.0
District of Columbia	-24%	7.5	7.2
Florida(1)(2)	23%	-4.2	-336.9
Georgia(1)(2)	-1%	0.1	5.6
Hawaii(1)(3)	9%	-2.5	-10.2
Idaho	-19%	6.0	40.4
Illinois(1)(3)	-15%	6.5	316.1
Indiana(1)(3)	12%	-3.9	-119.2
Iowa(4)	-42%	13.7	216.6
Kansas	-13%	3.5	42.1
Kentucky(1)(2)	2%	-0.6	-12.7
Louisiana	-42%	14.4	327.1
Maine	2%	-0.7	-4.9
Maryland	-26%	8.4	222.9
Massachusetts	-28%	8.3	230.3
Michigan(1)(3)	11%	-3.6	-160.2
Minnesota	-19%	6.4	158.6
Mississippi	-42%	13.0	211.1
Missouri	-10%	1.9	61.2
Montana	-22%	7.4	36.5
Nebraska(1)(2)	-29%	10.5	89.1
Nevada	-26%	8.0	87.2
New Hampshire	-35%	9.5	67.6
New Jersey	-20%	3.6	149.8
New Mexico	-38%	10.5	89.7
New York(1)(2)	-2%	0.7	37.5
North Carolina(1)(2)	-5%	2.0	87.0
North Dakota	-21%	6.3	23.8
Ohio	-19%	6.4	320.1
Oklahoma	-42%	11.5	220.9
Oregon	-3%	1.0	15.1
Pennsylvania	6%	-1.7	-83.8
Rhode Island	-7%	2.4	9.5
South Carolina	-42%	11.5	304.6
South Dakota	-29%	9.0	38.6
Tennessee	-42%	14.4	448.0
Texas	-23%	5.8	713.8
Utah	-25%	8.2	83.6
Vermont(1)(2)	-1%	0.3	0.9
Virginia	-42%	12.6	504.6
Washington	-1%	0.4	9.8
West Virginia(1)(2)	-8%	2.8	24.1
Wisconsin	-17%	6.1	154.0
Wyoming	-6%	0.8	2.5
<b>AVERAGE</b>	<b>-17%</b>	<b>5.0</b>	<b>86.7</b>
AVERAGE (fixed-rate states)	-24%	6.9	146.9
AVERAGE (variable-rate states)	1%	0.0	-72.6
<b>TOTAL</b>	<b>--</b>	<b>--</b>	<b>4,420</b>
TOTAL (fixed-rate states)	--	--	5,420
TOTAL (variable-rate states)	--	--	-1,017

(1) These states levy a variable-rate gasoline tax. For a description of variable-rate vs. fixed-rate taxes, see Appendix C.

(2) All rates used are as of December 31st of the relevant year. These states have gasoline tax rate increases scheduled for January 1, 2012 that are not factored into these calculations. See Appendix D for more detail.

(3) These states technically levy a variable-rate gas tax, but only because they apply their general sales tax rate to gasoline. For a discussion of this issue and an analysis of these states' fixed-rate gasoline excise taxes, see Appendix B.

(4) These figures analyze the E10 ethanol tax in Iowa (as opposed to the ordinary gasoline tax), because over 70% of taxable gas/gasohol sold in Iowa is E10 ethanol. Revenue estimates assume the ordinary gas tax would rise by the same amount as the E10 ethanol tax.

**Table A-3: Changes in the Tax Rate on Gasoline Since 2000, Adjusted to Consider Transportation Construction Cost Growth**

	Percent Change in Cost- Adjusted Tax Rate Since 2000	Tax Rate Change Needed to Return Rate to 2000 Level (cents per gallon)	Annual Revenue Yield of Rate Change (\$million)
Alabama	-27%	6.0	156.1
Alaska	-27%	3.0	8.5
Arizona	-27%	6.7	174.2
Arkansas	-24%	6.7	87.0
California(1)	9%	-3.7	-549.2
Colorado	-27%	8.2	168.8
Connecticut(1)	8%	-3.2	-47.6
Delaware	-27%	8.6	37.7
District of Columbia	-14%	4.0	3.8
Florida(1)(2)	-9%	2.3	180.7
Georgia(1)(2)	23%	-3.8	-187.0
Hawaii(1)(3)	-2%	0.4	1.8
Idaho	-27%	9.3	63.0
Illinois(1)(3)	3%	-0.9	-45.2
Indiana(1)(3)	35%	-9.7	-296.6
Iowa(4)	-27%	7.1	112.1
Kansas	-13%	3.5	41.1
Kentucky(1)(2)	28%	-5.8	-128.5
Louisiana	-27%	7.5	169.2
Maine	-1%	0.2	1.4
Maryland	-27%	8.8	234.2
Massachusetts	-27%	7.8	218.4
Michigan(1)(3)	2%	-0.8	-35.9
Minnesota	2%	-0.5	-13.1
Mississippi	-27%	6.7	109.2
Missouri	-27%	6.3	200.6
Montana	-27%	10.1	49.5
Nebraska(1)(2)	-20%	6.5	55.2
Nevada	-27%	8.6	93.8
New Hampshire	-27%	6.7	47.6
New Jersey	-27%	5.4	226.7
New Mexico	-27%	6.3	54.0
New York(1)(2)	-10%	3.8	218.5
North Carolina(1)(2)	10%	-3.3	-141.2
North Dakota	-20%	5.8	22.2
Ohio	-7%	2.2	110.2
Oklahoma	-27%	6.0	114.3
Oregon	-9%	3.0	45.2
Pennsylvania	-12%	4.4	219.8
Rhode Island	-17%	6.5	25.2
South Carolina	-27%	6.0	157.6
South Dakota	-27%	8.2	35.2
Tennessee	-27%	7.5	231.8
Texas	-27%	7.5	915.1
Utah	-27%	9.1	93.1
Vermont(1)(2)	-2%	0.5	1.8
Virginia	-27%	6.5	261.1
Washington	19%	-5.9	-153.8
West Virginia(1)(2)	-8%	2.6	22.3
Wisconsin	-15%	5.4	134.9
Wyoming	-27%	4.9	15.9
<b>AVERAGE</b>	<b>-14%</b>	<b>3.9</b>	<b>69.0</b>
AVERAGE (fixed-rate states)	-21%	5.8	120.9
AVERAGE (variable-rate states)	5%	-1.1	-67.9
<b>TOTAL</b>	<b>--</b>	<b>--</b>	<b>3,521</b>
TOTAL (fixed-rate states)	--	--	4,463
TOTAL (variable-rate states)	--	--	-951

(1) These states levy a variable-rate gasoline tax. For a description of variable-rate vs. fixed-rate taxes, see Appendix C.  
(2) All rates used are as of December 31st of the relevant year. These states have gasoline tax rate increases scheduled for January 1, 2012 that are not factored into these calculations. See Appendix D for more detail.  
(3) These states technically levy a variable-rate gas tax, but only because they apply their general sales tax rate to gasoline. For a discussion of this issue and an analysis of these states' fixed-rate gasoline excise taxes, see Appendix B.  
(4) These figures analyze the E10 ethanol tax in Iowa (as opposed to the ordinary gasoline tax), because over 70% of taxable gas/gasohol sold in Iowa is E10 ethanol. Revenue estimates assume the ordinary gas tax would rise by the same amount as the E10 ethanol tax.

**Table A-4: Changes in the Tax Rate on Diesel Fuel Since Last Increase, Adjusted to Consider Transportation Construction Cost Growth**

	Years Since Last Increase	Percent Change in Cost-Adjusted Tax Rate Since Last Increase	Tax Rate Change Needed	
			to Return Rate to Previous Level (cents per gallon)	Annual Revenue Yield of Rate Change (\$million)
Alabama	7	-18%	4.2	30.2
Alaska	41	No data	No data	No data
Arizona	21	-42%	13.0	98.5
Arkansas	11	-27%	8.4	52.0
California(1)	0	0%	0.0	0.0
Colorado	19	-40%	13.8	72.6
Connecticut(1)	0	0%	0.0	0.0
Delaware	16	-39%	14.2	8.0
District of Columbia	2	14%	-2.9	-0.3
Florida(1)(2)	0	0%	0.0	0.0
Georgia(1)(2)	0	0%	0.0	0.0
Hawaii(1)(3)	0	0%	0.0	0.0
Idaho	15	-36%	14.2	36.4
Illinois(1)(3)	0	0%	0.0	0.0
Indiana(1)(3)	0	0%	0.0	0.0
Iowa	22	-43%	17.1	108.9
Kansas	8	-19%	6.1	29.1
Kentucky(1)(2)	0	0%	0.0	0.0
Louisiana	21	-42%	14.4	106.4
Maine	0	0%	0.0	0.0
Maryland	18	-41%	16.6	87.9
Massachusetts	20	-40%	14.2	54.9
Michigan(1)(3)	0	0%	0.0	0.0
Minnesota	0	0%	0.0	0.0
Mississippi	22	-43%	13.7	76.9
Missouri	15	-36%	9.6	95.0
Montana	17	-41%	19.0	46.8
Nebraska(1)(2)	1	3%	-0.9	-3.7
Nevada	19	-40%	18.1	54.6
New Hampshire	20	-40%	12.2	11.5
New Jersey	20	-40%	11.8	94.0
New Mexico	7	-18%	4.7	22.2
New York(1)(2)	0	0%	0.0	0.0
North Carolina(1)(2)	0	0%	0.0	0.0
North Dakota	6	-16%	4.4	10.4
Ohio	6	-16%	5.3	76.5
Oklahoma	24	-45%	10.8	83.8
Oregon(4)	0	0%	0.0	0.0
Pennsylvania	5	-10%	4.3	56.4
Rhode Island	2	14%	-3.9	-2.2
South Carolina	22	-43%	12.1	86.8
South Dakota	12	-30%	9.5	20.4
Tennessee	21	-42%	12.3	109.5
Texas	20	-40%	13.5	517.4
Utah	14	-34%	12.6	51.1
Vermont(5)	2	14%	-3.4	-2.0
Virginia	4	1%	-0.2	-2.1
Washington	3	10%	-3.3	-20.8
West Virginia(1)(2)	3	10%	-2.8	-8.3
Wisconsin	5	-10%	3.5	24.7
Wyoming	13	-31%	5.9	20.4
<b>AVERAGE</b>	<b>9.9</b>	<b>-18%</b>	<b>6.0</b>	<b>42.1</b>
AVERAGE (fixed-rate states)	13.2	-25%	8.3	57.2
AVERAGE (variable-rate states)	0.3	1%	-0.3	-0.9
<b>TOTAL</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>2,104</b>
TOTAL (fixed-rate states)	--	--	--	2,116
TOTAL (variable-rate states)	--	--	--	-12

(1) These states levy a variable-rate diesel tax. For a description of variable-rate vs. fixed-rate taxes, see Appendix C.

(2) All rates used are as of December 31st of the relevant year. These states have diesel tax rate increases scheduled for January 1, 2012 that are not factored into these calculations. See Appendix D for more detail.

(3) These states technically levy a variable-rate diesel tax, but only because they apply their general sales tax rate to diesel. For a discussion of this issue and an analysis of these states' fixed-rate diesel excise taxes, see Appendix B.

(4) Roughly 68% of diesel fuel sold in Oregon is subject to the weight-mile tax instead of the diesel tax. Diesel tax increases are always accompanied by upward adjustments in the weight-mile tax done according to a formula that considers the wear-and-tear produced by different vehicle classes. For simplicity, the revenue calculations above include the impact of increasing the weight-mile tax, and assume that the revenue generated by that tax would mirror the revenue that would have been generated if those gallons had simply been subject to the ordinary diesel tax.

(5) Unlike the state gasoline tax, Vermont's diesel tax is a fixed-rate tax. Because over 80% of Vermont's motor fuel sales come from gasoline, Vermont is generally classified as a variable-rate state in this report. For the purpose of calculating averages and totals in this chart, however, Vermont has been classified as a fixed-rate state.

**Table A-5: Changes in the Tax Rate on Diesel Fuel Since 1990, Adjusted to Consider Transportation Construction Cost Growth**

	Percent Change in Cost-Adjusted Tax Rate Since 1990	Tax Rate Change Needed to Return Rate to 1990 Level (cents per gallon)	Annual Revenue Yield of Rate Change (\$million)
Alabama	-8%	1.7	11.8
Alaska	-42%	5.8	9.7
Arizona	-42%	13.0	98.5
Arkansas	5%	-1.0	(6.1)
California(1)	17%	-6.5	(168.4)
Colorado	-34%	10.5	55.3
Connecticut(1)	5%	-2.2	(6.0)
Delaware	-20%	5.5	3.1
District of Columbia	-24%	7.5	0.9
Florida(1)(2)	23%	-4.2	(57.3)
Georgia(1)(2)	8%	-1.7	(20.9)
Hawaii(1)(3)	13%	-3.5	(1.8)
Idaho	-19%	6.0	15.4
Illinois(1)(3)	-13%	6.2	83.1
Indiana(1)(3)	10%	-3.3	(40.4)
Iowa	-42%	16.2	103.6
Kansas	-16%	5.0	23.8
Kentucky(1)(2)	13%	-2.7	(21.5)
Louisiana	-42%	14.4	106.4
Maine	-9%	3.2	5.8
Maryland	-24%	7.6	40.2
Massachusetts	-28%	8.3	32.0
Michigan(1)(3)	4%	-1.4	(11.8)
Minnesota	-19%	6.4	40.3
Mississippi	-42%	13.0	73.1
Missouri	-10%	1.9	19.1
Montana	-19%	6.7	16.4
Nebraska(1)(2)	-29%	10.5	44.7
Nevada	-29%	10.9	32.7
New Hampshire	-35%	9.5	9.0
New Jersey	-25%	5.7	45.6
New Mexico	-24%	6.5	31.0
New York(1)(2)	-14%	5.3	55.3
North Carolina(1)(2)	-5%	2.0	19.0
North Dakota	-21%	6.3	14.9
Ohio	-19%	6.4	92.2
Oklahoma	-42%	9.4	72.9
Oregon(4)	-3%	1.0	5.1
Pennsylvania	30%	-8.9	(117.3)
Rhode Island	-7%	2.4	1.4
South Carolina	-42%	11.5	82.5
South Dakota	-29%	9.0	19.2
Tennessee	-42%	12.3	109.5
Texas	-23%	5.8	222.8
Utah	-25%	8.2	33.3
Vermont(5)	-35%	15.0	8.9
Virginia	-36%	10.0	94.3
Washington	-1%	0.4	2.4
West Virginia(1)(2)	-8%	2.8	8.2
Wisconsin	-17%	6.1	43.6
Wyoming	-6%	0.8	2.7
<b>AVERAGE</b>	<b>-16%</b>	<b>5.1</b>	<b>26.2</b>
AVERAGE (fixed-rate states)	-23%	6.8	38.3
AVERAGE (variable-rate states)	2%	0.1	-9.1
<b>TOTAL</b>	<b>--</b>	<b>--</b>	<b>1,338</b>
TOTAL (fixed-rate states)	--	--	1,456
TOTAL (variable-rate states)	--	--	-118

(1) These states levy a variable-rate diesel tax. For a description of variable-rate vs. fixed-rate taxes, see Appendix C.

(2) All rates used are as of December 31st of the relevant year. These states have diesel tax rate increases scheduled for January 1, 2012 that are not factored into these calculations. See Appendix D for more detail.

(3) These states technically levy a variable-rate diesel tax, but only because they apply their general sales tax rate to diesel. For a discussion of this issue and an analysis of these states' fixed-rate diesel excise taxes, see Appendix B.

(4) Roughly 68% of diesel fuel sold in Oregon is subject to the weight-mile tax instead of the diesel tax. Diesel tax increases are always accompanied by upward adjustments in the weight-mile tax done according to a formula that considers the wear-and-tear produced by different vehicle classes. For simplicity, the revenue calculations above include the impact of increasing the weight-mile tax, and assume that the revenue generated by that tax would mirror the revenue that would have been generated if those gallons had simply been subject to the ordinary diesel tax.

(5) Unlike the state gasoline tax, Vermont's diesel tax is a fixed-rate tax. Because over 80% of Vermont's motor fuel sales come from gasoline, Vermont is generally classified as a variable-rate state in this report. For the purpose of calculating averages and totals in this chart, however, Vermont has been classified as a fixed-rate state.

**Table A-6: Changes in the Tax Rate on Diesel Fuel Since 2000, Adjusted to Consider Transportation Construction Cost Growth**

	Percent Change in Cost-Adjusted Tax Rate Since 2000	Tax Rate Change Needed to Return Rate to 2000 Level (cents per gallon)	Annual Revenue Yield of Rate Change (\$million)
Alabama	-19%	4.3	31.0
Alaska	-27%	3.0	5.0
Arizona	-27%	6.7	51.0
Arkansas	-27%	8.4	52.0
California(1)	9%	-3.8	-98.5
Colorado	-27%	7.7	40.3
Connecticut(1)	46%	-14.5	-39.3
Delaware	-27%	8.2	4.6
District of Columbia	-14%	4.0	0.5
Florida(1)(2)	-9%	2.3	30.7
Georgia(1)(2)	25%	-4.4	-55.4
Hawaii(1)(3)	0%	0.0	0.0
Idaho	-27%	9.3	24.0
Illinois(1)(3)	4%	-1.5	-19.6
Indiana(1)(3)	31%	-9.0	-109.3
Iowa	-27%	8.4	53.6
Kansas	-14%	4.2	20.1
Kentucky(1)(2)	42%	-6.9	-54.4
Louisiana	-27%	7.5	55.0
Maine	-1%	0.4	0.7
Maryland	-27%	9.1	47.9
Massachusetts	-27%	7.8	30.3
Michigan(1)(3)	9%	-3.0	-24.8
Minnesota	2%	-0.5	-3.3
Mississippi	-27%	6.7	37.8
Missouri	-27%	6.3	62.6
Montana	-27%	10.4	25.5
Nebraska(1)(2)	-20%	6.5	27.7
Nevada	-27%	10.1	30.3
New Hampshire	-27%	6.7	6.3
New Jersey	-27%	6.5	51.9
New Mexico	-15%	3.7	17.6
New York(1)(2)	-11%	3.8	39.6
North Carolina(1)(2)	10%	-3.3	-30.9
North Dakota	-20%	5.8	13.9
Ohio	-7%	2.2	31.8
Oklahoma	-27%	4.9	37.7
Oregon(4)	-9%	3.0	15.2
Pennsylvania	-10%	4.2	55.4
Rhode Island	-17%	6.5	3.7
South Carolina	-27%	6.0	42.7
South Dakota	-27%	8.2	17.6
Tennessee	-27%	6.3	56.6
Texas	-27%	7.5	285.6
Utah	-27%	9.1	37.1
Vermont(5)	-18%	6.3	3.7
Virginia	-20%	4.5	42.0
Washington	19%	-5.9	-37.1
West Virginia(1)(2)	-8%	2.6	7.6
Wisconsin	-15%	5.4	38.2
Wyoming	-27%	4.9	16.9
<b>AVERAGE</b>	<b>-13%</b>	<b>3.7</b>	<b>19.2</b>
AVERAGE (fixed-rate states)	-21%	5.7	34.4
AVERAGE (variable-rate states)	10%	-2.4	-25.1
<b>TOTAL</b>	<b>--</b>	<b>--</b>	<b>979</b>
TOTAL (fixed-rate states)	--	--	1,306
TOTAL (variable-rate states)	--	--	-327

(1) These states levy a variable-rate diesel tax. For a description of variable-rate vs. fixed-rate taxes, see Appendix C.

(2) All rates used are as of December 31st of the relevant year. These states have diesel tax rate increases scheduled for January 1, 2012 that are not factored into these calculations. See Appendix D for more detail.

(3) These states technically levy a variable-rate diesel tax, but only because they apply their general sales tax rate to diesel. For a discussion of this issue and an analysis of these states' fixed-rate diesel excise taxes, see Appendix B.

(4) Roughly 68% of diesel fuel sold in Oregon is subject to the weight-mile tax instead of the diesel tax. Diesel tax increases are always accompanied by upward adjustments in the weight-mile tax done according to a formula that considers the wear-and-tear produced by different vehicle classes. For simplicity, the revenue calculations above include the impact of increasing the weight-mile tax, and assume that the revenue generated by that tax would mirror the revenue that would have been generated if those gallons had simply been subject to the ordinary diesel tax.

(5) Unlike the state gasoline tax, Vermont's diesel tax is a fixed-rate tax. Because over 80% of Vermont's motor fuel sales come from gasoline, Vermont is generally classified as a variable-rate state in this report. For the purpose of calculating averages and totals in this chart, however, Vermont has been classified as a fixed-rate state.

**Table A-7: Estimated Revenue Yield of Gas and Diesel Tax Changes Tied to Construction Cost Growth (\$million)**

	Estimated Revenue Yield Per Additional Penny of Gasoline Tax	Estimated Revenue Yield Per Additional Penny of Diesel	Annual Revenue Yield of Returning Gas and Diesel Rates to Levels at Times of Last	Annual Revenue Yield of Returning Gas and Diesel Rates to 1990 Levels	Annual Revenue Yield of Returning Gas and Diesel Rates to 2000 Levels
	Rate	Tax Rate	Increase	Levels	Levels
Alabama	26.1	7.1	311	89	187
Alaska	2.9	1.7	No data	26	14
Arizona	25.9	7.6	435	435	225
Arkansas	13.1	6.2	143	17	139
California(1)	148.7	26.0	0	-1,081	-648
Colorado	20.5	5.3	378	311	209
Connecticut(1)	14.7	2.7	0	-31	-87
Delaware	4.4	0.6	73	23	42
District of Columbia	1.0	0.1	-3	8	4
Florida(1)	79.6	13.5	0	-394	211
Georgia(1)	48.8	12.7	0	-15	-242
Hawaii(1)(2)	4.2	0.5	0	-12	2
Idaho	6.7	2.6	132	56	87
Illinois(1)(2)	48.6	13.4	0	399	-65
Indiana(1)(2)	30.6	12.2	0	-160	-406
Iowa(3)	15.8	6.4	337	320	166
Kansas	11.9	4.8	96	66	61
Kentucky(1)	22.2	7.9	0	-34	-183
Louisiana	22.7	7.4	433	433	224
Maine	6.7	1.8	0	1	2
Maryland	26.7	5.3	509	263	282
Massachusetts	27.9	3.9	451	262	249
Michigan(1)(2)	44.9	8.2	0	-172	-61
Minnesota	24.7	6.3	0	199	-16
Mississippi	16.3	5.6	299	284	147
Missouri	31.6	9.9	400	80	263
Montana	4.9	2.5	138	53	75
Nebraska(1)	8.5	4.2	-11	134	83
Nevada	10.9	3.0	223	120	124
New Hampshire	7.1	0.9	98	77	54
New Jersey	41.9	7.9	505	195	279
New Mexico	8.5	4.7	193	121	72
New York(1)	56.9	10.5	0	93	258
North Carolina(1)	43.1	9.4	0	106	-172
North Dakota	3.8	2.4	27	39	36
Ohio	49.8	14.3	342	412	142
Oklahoma	19.1	7.8	338	294	152
Oregon(4)	15.3	5.1	0	20	60
Pennsylvania	50.3	13.2	232	-201	275
Rhode Island	3.9	0.6	-17	11	29
South Carolina	26.4	7.1	407	387	200
South Dakota	4.3	2.1	61	58	53
Tennessee	31.0	8.9	580	557	288
Texas	122.5	38.2	2,175	937	1,201
Utah	10.2	4.1	179	117	130
Vermont(1)(5)	3.3	0.6	-2	10	6
Virginia	40.0	9.4	578	599	303
Washington	26.0	6.3	-107	12	-191
West Virginia(1)	8.5	2.9	-32	32	30
Wisconsin	25.2	7.1	112	198	173
Wyoming	3.3	3.5	40	5	33
<b>AVERAGE</b>	--	--	<b>201</b>	<b>113</b>	<b>88</b>
AVERAGE (fixed-rate states)	--	--	280	186	156
AVERAGE (variable-rate states)	--	--	-3	-80	-91
<b>TOTAL</b>	<b>1,351</b>	<b>356</b>	<b>10,052</b>	<b>5,758</b>	<b>4,500</b>
TOTAL (fixed-rate states)	789	232	10,096	6,893	5,777
TOTAL (variable-rate states)	562	124	-44	-1,134	-1,278

(1) These states levy a variable-rate tax. For a description of variable-rate vs. fixed-rate taxes, see Appendix C.

(2) These states technically levy a variable-rate gas tax, but only because they apply their general sales tax rate to gasoline. For a discussion of this issue and an analysis of these states' fixed-rate gasoline excise taxes, see Appendix B.

(3) Iowa's E10 ethanol tax was analyzed in lieu of the ordinary gasoline tax. See footnote 4 on table A-1.

(4) Roughly 68% of diesel fuel sold in Oregon is subject to the weight-mile tax instead of the diesel tax. Diesel tax increases are always accompanied by upward adjustments in the weight-mile tax done according to a formula that considers the wear-and-tear produced by different vehicle classes. For simplicity, the revenue calculations above include the impact of increasing the weight-mile tax, and assume that the revenue generated by that tax would mirror the revenue that would have been generated if those gallons had simply been subject to the ordinary diesel tax.

(5) The totals in this chart properly classify Vermont's gasoline tax as a variable-rate tax, and Vermont's diesel tax as a fixed-rate tax. Because over 80% of Vermont's motor fuel sales come from gasoline, Vermont is classified as a variable-rate state for computing the averages above.

## Appendix B: States Levying General Sales Taxes on Gas

Four states — Hawaii, Illinois, Indiana, and Michigan — are classified as levying a variable-rate style of gas tax only because they apply their general sales tax rates to gasoline purchases, in addition to levying a fixed-rate tax.<sup>12</sup> Ideally, general sales taxes should be levied on a very broad base of final retail consumption, and the revenue generated by these taxes should be dedicated to paying for the “general” operations of government (rather than reserved for a specific purpose, such as transportation finance). Gasoline is a huge part of American consumption, but unfortunately most states have decided to exempt this product from their sales tax bases. This decision has significantly narrowed state tax bases and reduced state revenues.

In an effort to provide a comprehensive analysis of state-level taxes on gasoline, Appendix A includes the effect of these four states’ general sales taxes on gas and diesel, in addition to the fixed-rate excise taxes also levied by each of these states. But including general sales taxes in the calculations (which by definition are not dedicated to transportation) obscures a significant decline in the fixed-rate taxes these states rely on to fund roads and transit. Table B-1, below, quantifies that decline.

**Table B-1: Changes in Fixed-Rate Excise Tax Rates in States that Apply their General Sales Tax to Gas**

	Since Last Gas Tax Increase				Since 1990			Since 2000		
	Years Since Last Increase	Percent Change in Cost-Adjusted Tax Rate	Tax Rate Change Needed to Return Rate to Previous Level (cents per gallon)	Annual Revenue Yield of Rate Change (\$million)	Percent Change in Cost-Adjusted Tax Rate	Tax Rate Change Needed to Return Rate to 1990 Level (cents per gallon)	Annual Revenue Yield of Rate Change (\$million)	Percent Change in Cost-Adjusted Tax Rate	Tax Rate Change Needed to Return Rate to 2000 Level (cents per gallon)	Annual Revenue Yield of Rate Change (\$million)
<b>Gasoline Excise Tax: Adjusted to Consider Transportation Construction Cost Growth</b>										
Hawaii	4	1%	-0.2	-0.9	-10%	1.9	8.0	-23%	5.0	20.6
Illinois	21	-42%	13.7	665.8	-42%	13.7	665.8	-27%	7.1	344.5
Indiana	8	-19%	4.2	129.4	-30%	7.8	239.7	-13%	2.6	79.7
Michigan	14	-34%	9.8	439.1	-26%	6.8	306.3	-27%	7.1	318.4
<b>Diesel Excise Tax: Adjusted to Consider Transportation Construction Cost Growth</b>										
Hawaii	4	1%	-0.2	-0.1	-10%	1.9	1.0	-23%	5.0	2.6
Illinois	21	-42%	15.5	207.9	-42%	15.5	207.9	-27%	8.0	107.6
Indiana	23	-44%	12.6	153.1	-42%	11.5	140.7	-27%	6.0	72.8
Michigan	27	-50%	15.0	123.4	-42%	10.8	88.9	-27%	5.6	46.0

<sup>12</sup> California, Florida, Georgia, and New York are also sometimes identified as applying their general sales taxes to gasoline. California does apply its sales tax to gasoline and diesel, though these products are not taxed at the general sales tax rate, and the revenue generated from these taxes is dedicated to transportation rather than reserved for “general” purposes. California also levies a priced-based excise tax on gasoline. Florida’s so-called “fuel sales tax” is actually a 12 cent per gallon excise tax that varies with the Consumer Price Index, and is also dedicated to transportation. Georgia applies a separate “Prepaid State Tax” to gasoline and diesel that happens to be levied at the same rate as its general sales tax, but most of the revenue it generates is dedicated to transportation. And New York previously levied a true general sales tax on gas and diesel, but that tax has since been capped at a flat 8 cents per gallon. New York also levies a variable-rate Petroleum Business Tax.

## Appendix C: Current State Gas Tax Structures

Every state currently levies taxes specifically on the sale of gasoline and diesel fuel. These taxes can be grouped into four main categories, as seen below in Table C-1.

**Table C-1: Current State Gas Tax Structures**

	Variable-Rate Structures				Variable-Rate Structures			
	Fixed-Rate Excise Tax	Tax as % of Price	Indexed to CPI	Based on Spending	Fixed-Rate Excise Tax	Tax as % of Price	Indexed to CPI	Based on Spending
Alabama	x				Montana	x		
Alaska	x				Nebraska	x	x	x
Arizona	x				Nevada	x		
Arkansas	x				New Hampshire	x		
California	x	x			New Jersey	x		
Colorado	x				New Mexico	x		
Connecticut	x	x			New York	x	x	
Delaware	x				North Carolina	x	x	
District of Columbia	x				North Dakota	x		
Florida	x		x		Ohio	x		
Georgia	x	x			Oklahoma	x		
Hawaii(1)	x	x			Oregon	x		
Idaho	x				Pennsylvania(2)	x		
Illinois(1)	x	x			Rhode Island	x		
Indiana(1)	x	x			South Carolina	x		
Iowa	x				South Dakota	x		
Kansas	x				Tennessee	x		
Kentucky		x			Texas	x		
Louisiana	x				Utah	x		
Maine	x				Vermont(3)	x	x	
Maryland	x				Virginia	x		
Massachusetts	x				Washington	x		
Michigan(1)	x	x			West Virginia	x	x	
Minnesota	x				Wisconsin	x		
Mississippi	x				Wyoming	x		
Missouri	x							

(1) These states only qualify as levying a price-based tax because they apply their general sales taxes to gasoline and diesel fuel. See Appendix B.

(2) Pennsylvania's Oil Company Franchise Tax is technically based on the wholesale price of fuel, but the maximum price that can be used to calculate the cents-per-gallon tax rate is \$1.25. Since wholesale fuel prices are not expected to fall below \$1.25 in the foreseeable future, the franchise tax now effectively functions as a fixed-rate tax.

(3) Vermont's price-based tax (the "Motor Fuel Transportation Infrastructure Assessment") only applies to gasoline, not diesel fuel.

The first and most common type of gasoline tax is the fixed-rate tax, collected as a flat amount per gallon sold. In Texas, for example, drivers pay 20 cents in tax on every gallon of gasoline they purchase. This differs from general sales taxes which are calculated as a percentage of each item's purchase price. Every state except Kentucky levies a fixed-rate tax, while thirty-six states, plus D.C., rely exclusively on a fixed-rate tax on gasoline. The rates of fixed-rate gas taxes range from 8 to 37.5 cents per gallon, excluding special fees levied to pay for inspections, environmental clean-up, and other specific costs tied to the motor fuel industry.

Some states levy a variable-rate gas tax, usually in combination with a fixed-rate tax of the type described above. The most common type of variable-rate tax is based on the price of gas. Thirteen states levy a variable-rate tax based on gas prices, though four of these states — Hawaii, Illinois, Indiana, and Michigan — fall into this category only because they apply their general sales tax rate to gasoline purchases (see Appendix B for more detail). The remaining nine states levy a stand-alone price-based tax that is applied to some measure of average gas prices (either retail or wholesale) over the previous few months, rather than on the actual price paid by each driver at the pump. The price-based component of North Carolina's gas tax, for example, is recalculated twice per year based on 7 percent of the average wholesale price of gas over the relevant six month "base period." This method can be administratively simpler than basing the tax on the actual price paid for gas, and can also pave the way for limiting gas tax rate volatility (see page 9).

Florida levies a second type of variable-rate gas tax. Most of Florida's gas tax is tied to the Consumer Price Index — that is, the rate of inflation in a "basket" of goods purchased by the typical consumer.

There is a third type of variable-rate gas tax currently used in one state. In addition to levying a fixed-rate tax and a price-based tax, a portion of Nebraska's gas tax is automatically adjusted to raise just enough revenue to pay for the amount of transportation spending approved by the legislature. This structure has had little practical effect, however, because lawmakers have been hesitant to authorize spending levels that would trigger a rate increase.

## Appendix D: Methodology

Current and historical state gas tax rates were taken from official state-specific sources, primarily state departments of revenue, and were supplemented with information from the American Petroleum Institute (API), the Federal Highway Administration (FHWA), the U.S. Census Bureau, and various other sources.

Because the focus of this report is on state gas taxes, both federal and local taxes are excluded from the analysis. Excluding these taxes was usually a straightforward matter, though California and Florida represented unique cases. In California, both the state sales tax rate, and the statewide local sales tax rate were included. In Florida, the State Comprehensive Enhanced Transportation System (SCETS) tax was included because it is very nearly uniform across the state, and because the revenue it generates is under the control of the Florida Department of Transportation (FDOT), though it must be spent in the FDOT district in which it was collected. The SCETS was added to the basic excise tax and the so-called “fuel sales tax” to arrive at the state-level gas tax rate. The ninth-cent fuel tax, local option fuel tax, and additional local option fuel tax were all excluded as local taxes.

Various state fees, often levied for cleanup or inspection purposes, were also excluded. This was done both due to the lack of reliable historical data on such fees, and because these provisions are usually levied for very specific purposes other than transportation finance. Commercial carrier taxes and surcharges were also excluded for numerous reasons, including a lack of comprehensive historical data, difficulties associated with determining the amount of fuel subject to these surcharges, and the fact that these levies are essentially substitutes for non-fuel-based truck taxes levied in other states.

In states where gas taxes are levied as a percentage of actual fuel prices (rather than as a published cents-per-gallon equivalent based on average prices from some base period), state-specific gas price estimates for the relevant years were computed based on data from the U.S. Energy Information Administration (EIA). The state’s statutory percentage rate was then applied to that price (exclusive or inclusive of excise taxes, depending on the state) in order to yield an average cents-per-gallon estimate of the rate.

Where tax rates varied over the course of a year, the statutory rate as of December 31st was used, and gas prices as of December of the year in question were used for calculating percentage-based rates. To calculate current tax rates, official EIA forecasts were used to estimate December 2011 prices, so as to avoid discrepancies arising from seasonal variations in the price of gas.

It’s worth noting that eight states (Florida, Georgia, Kentucky, Nebraska, New York, North Carolina, Vermont, and West Virginia) have gas tax increases scheduled for January 1, 2012. These increases are not included in the calculations performed in this report because of a desire to remain consistent in examining year-end rates, and because the size of the rate increases in three of these states (Kentucky, Nebraska, and Vermont) were not available as of this writing. If these rate increases had been included, the result would have been both a slight reduction in the national average measures of gas tax decline, and a slight increase in the gap between variable-rate and fixed-rate state averages (since all eight of these states levy variable-rate taxes).

The calculations in Appendix A were performed by projecting what historical state gas tax rates would have been had they kept pace with a national construction cost index, and then comparing those rates to current tax rates. The index used in that appendix is the national Composite Bid Price Index (BPI), extrapolated to present day using the National Highway Construction Cost Index (NHCCI). A three-year trailing average was then taken to smooth volatility in the index, as recommended by the Arkansas Blue Ribbon Committee on Highway Finance.

In order to accurately reflect what current tax rates actually would have been if states indexed their gas tax rates to construction costs, the calculations in Appendix A assume that tax rates would be adjusted on July 1st of each year, based on the best data available that April (a 3 month lag time between data release and the implementation of the new rate appears to be typical among states indexing their gas taxes to inflation or average fuel prices). This

means that the cost-adjusted 2011 rate, for example, is based on the average of data covering the January 2008 – December 2010 period (because a 3 year trailing average was used).

Revenue calculations are based on the net volumes of gasoline and special fuels taxed at prevailing rates in each state in 2010, as reported by the FHWA. EIA projects that nationwide motor gasoline consumption will fall by just 1.5 percent in 2012, relative to 2010, so these estimates can be expected to provide a fairly accurate picture of the revenue that could be raised by increasing state gas tax rates in 2012. That said, because historical FHWA data indicate that changes in taxable fuel consumption are never uniform across states in any given year, no attempt was made to adjust the estimates to reflect the small change in consumption anticipated between 2010 and 2012. The revenue estimates contained in this report were checked against more recent official estimates as available, and were found to coincide with those figures very closely.

The impact of various sized gas tax increases on the average driver (Figure 4) was calculated based on FHWA data indicating that the average light-duty vehicle consumed 517 gallons of fuel in 2009. EIA data from a 2001 survey indicates that fuel consumption per vehicle does not vary significantly by region. Eight of the nine regions surveyed by EIA fell within roughly 5 percent of the national total that year. The only exception was the “West South Central” region (consisting of Arkansas, Louisiana, Oklahoma, and Texas), which consumed 7.4 percent more fuel per vehicle than the national average. Nonetheless, the figures contained in Figure 4 should still generally be thought of as upper-bound estimates, because they assume all 517 gallons consumed by the average vehicle will be purchased in-state and thus subject to the increased gas tax rate. In reality, some unknown fraction of the average driver’s gasoline purchases will be made out-of-state each year, and thus would be unaffected by any gas tax increase enacted by that driver’s elected officials.