

Analysis of Gas tax increase for Ohio Transportation Funding

David Pritchard, P. E.

February 21, 2019

This analysis was prepared for and submitted to the 2016 Joint Legislative Task Force on Transportation Issues of the Ohio legislature. It is intended to add to the discussion of ways to improve the funding stream for Ohio roadways and infrastructure.

The Ohio Motor Fuel Tax is a major source of funding for highways in the State at 28 cents per gallon for gasoline. This was last increased by 6 cents to account for inflation in construction costs in the period 2003 - 2006. Since this time inflation and increased engine efficiencies have cut the effective yield of the tax by about 1/3 . It has been possible to continue a significant roadwork program by means of debt, using Ohio Turnpike revenues and private partnership financing, but these sources have limitations, with the turnpike bonds largely spent. To pay off these debts and commitments will also become a draw on future tax incomes. And at the level of funding achieved even with these approaches that involve borrowing, Ohio does not significantly catch up to deferred maintenance. Evaluations of the infrastructure systems conducted Nationally and in Ohio have indicated a major shortfall in the funding of infrastructure and a corresponding deterioration in the quality, efficiency and safety of our roadways. With Ohio's gas tax providing far less than it did when the last increase was instituted, further deterioration can be expected unless funding is increased.

While efficiency and economic benefits are important reasons to maintain and improve transportation infrastructure, safety is a consideration that should be an important factor as well. Many Bridges in Ohio are ranked structurally deficient or functionally obsolete, the latter term being seriously misleading. What it typically means is "dangerously narrow", as for example the Brent Spence bridge over the Ohio River in Cincinnati. Locals joke that the safest thing to do if your car stalls on the bridge is to get out and jump into the river.

And major projects yield big safety improvements. The US rt. 33 bypass at Nelsonville is reported by ODOT to have reduced accidents on that stretch of highway by 80%. As a frequent user of that particular roadway, I consider the bypass to be a real benefit to me and the thousands of folks that drive there. Other roads in Southeast Ohio need upgrades as well. While extensive freeway-type roads may not be warranted in lower traffic areas with rough terrain, there are many 2-lane highways that carry significant semi-truck freight traffic that have no berm, other than the width of the white line.

The current level of gas tax collection and method of its distribution fall short in another area - roadways inside municipalities. In my community about 3/4 of the cost of street maintenance comes from city general funds that are not generated from user charges like the gas tax. Gas tax funds distributed by the State, license fee shares, and other grant funds only cover about 25% of the total expended in recent years, which does not appear to be keeping up with the rate of wear and tear. While there might be a justification for some local street funding to be property based, it seems that the share paid by gas tax as a user fee should be much more than 25% as the total. While a municipality might prefer to rely on its own vehicle user fees, it is impractical, and largely prohibited by State law, to enact its own tax on gas or license fees. The legislation for a gas tax increase should also include financial incentives to cities to use a substantial part of the funding needs displaced by added State funding to improve local transit.

This would benefit the very low income citizens of Ohio that cannot afford the \$7,000 annual cost of car ownership and so must rely on mass transit for commuting to work, family health care access, and in some cases, even access to grocery supermarkets.

Future methods of transportation funding may make use of updated technology such as a vehicle mile tax, but that is likely 15 to 25 years in the future (given the number of 15 year - old vehicles on the road nowadays). In the interim, the gas tax, combined with limited reliance on license fees, is the best source. This approach requires realistic adjustments for inflation and vehicle efficiency, and separate charges for electric vehicles. Adjusting for inflation in construction cost since 2005 justifies an additional 10 cents gas tax, and adjusting for improved gas mileage 6 cents. To increase the State's contribution to local community roadway expenditures from the current 25% State funding to 50% State funding may involve an additional 10 cents. While this is a significant increase, it results in gas taxes a fraction of those in most developed nations, nations in which have strong and competitive economies and an additional benefit; highway fatality rates a fraction of the fatality rates in the US.

Highway safety is important, and it is personal. As an engineer and a "seasoned" user of our transportation system, I have experienced the death of half a dozen acquaintances over my life, a number that most Americans are statistically likely to see in their lifetime as well. While better funding, and resulting better infrastructure, will not eliminate all traffic fatalities, it might result in one or two or three of your friends surviving to enjoy a deserved retirement rather than dying at the age of forty, or 30, or twenty, as some of my friends have. An adequate gas tax means fewer highway fatalities.

Appendix to Analysis of Gas tax increase for Ohio Transportation Funding

David Pritchard, P. E. February 21, 2019

This Appendix was prepared for and submitted to the 2016 Joint Legislative Task Force on Transportation Issues of the Ohio Legislature as additional information in response to questions posed at the November 15 Hearing of the Transportation Task Force.

In my testimony I recommended a gas tax increase of 26 cents per gallon, a tax which is essentially a user fee, where the user pays for the needed transportation infrastructure. This increase would consist of 10 cents for inflation since 2005, 6 cents for improved gas mileage, and 10 cents for funding an increased share of city roadways. The latter increment for cities would increase the percentage of my town's transportation funding via user fees from 1/4 now to 1/2 with the increase.

For non-gasoline-powered vehicles I had noted that the annual fee needed for equivalence to a gas-powered vehicle would be several hundred dollars, but less than \$1,000. Based on the assumptions listed below, a typical charge would be \$168 per year at present gas tax, and \$156 more with the added tax I proposed, for a total of \$324 per year. This amount is equivalent to less than 5% of the cost of operating a typical vehicle.

Please note that my figures are based on very general assumptions and do not account the vehicle numbers and tax income from commercial vehicles, which is significant. However I believe that the values I have developed are a reasonable point for beginning a discussion.

I did not mention in my testimony that a significant benefit of designating a larger portion of the gas tax to city roadways is that the city funds offset by the gas tax would be available for other forms of transportation such as community transit systems. It is well understood in transportation planning that efficient improvements to transit systems and programs to attract riders from single occupancy vehicles can reduce the need to add vehicle lanes and so save on highway expenditures. An additional benefit is safety: not only are you safer on a bus by a factor of 100, having a good transit system allows judges to prohibit dangerous drivers from ever getting behind the wheel - they can always take the bus.

It is unfortunate that the State constitution prohibits the use of the gas tax for other modes of transportation. While on its face this seems a good idea, it may well result in very inefficient use of funds, both in terms of economic benefits and traveler safety. The decision on how to balance gas tax and transit ticket prices against roadway and mass transit investments should be an administrative and engineering decision based on the most efficient economic, safety and engineering model for a particular locale, not an overarching state law. Freeing up a part of the cities' budgets for more information-based transportation system decisions would be a good thing by giving cities, small and large, the ability to use their funds better.

I hope that this information is helpful. I can provide more details on these concepts and the sources of information used if you wish, and graphical representations if appropriate (sample attached).

David F. Pritchard, PE
1351 W. First Ave.
Columbus, OH 43212
614-519-4819 email davepritchard@sbcglobal.net

Calculations providing the basis of recommended gas tax increases

D.

Pritchard, PE, 11-25-16

The values that I suggested for gas tax increase are based on the following assumptions and calculations, with the values for a city being for my local city with a population of 7,000 people, estimating about 5,500 registered vehicles:

Basic Data

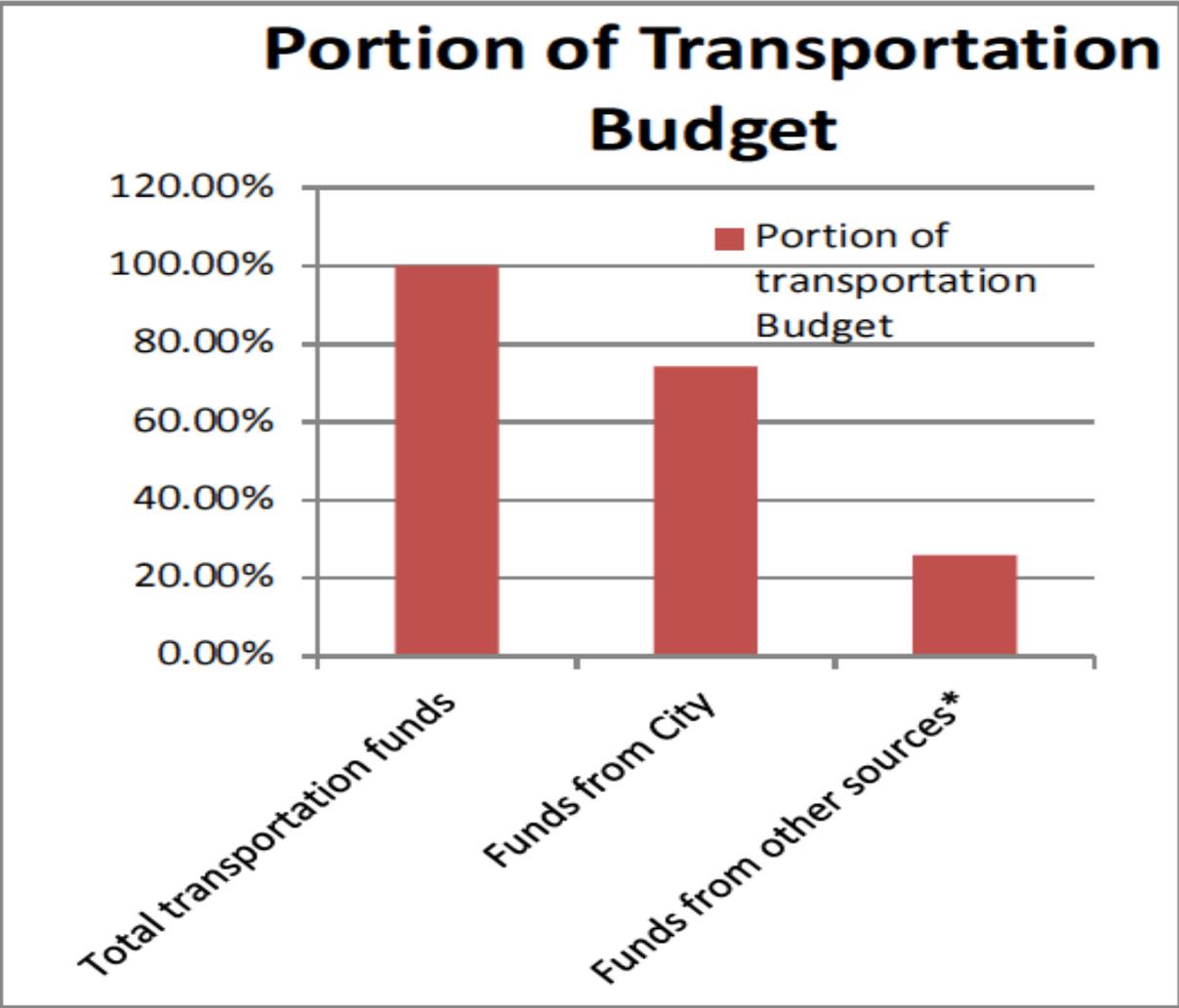
- Ohio population	11.6 million
- Registered vehicles	9 million
- Average miles per vehicle	12,000/year
- Average fleet miles per gal.	20 miles/gallon
- Local city's road budget	\$1.210,000 per year
- Local city's user fee income	\$310,000 per year

Existing Gas Tax and Yield

- Existing gas tax	\$0.28 per gallon
- Cost of exist tax per mile	\$0.014 per mile (0.28/20)
- Cost of exist tax per vehicle	\$168 per vehicle (12,000 mi/year x \$0.014/mile)
- Cost of exist tax per family	\$336 per family (assuming 2 vehicles per family)
- Cost of exist tax as % of total	2.6% (0.014/.54 based on IRS total allowed \$0.54/mile)
- Share of city's exist spending	26% (310,000/1,210,000 for a city road budget of \$1.21 mil)
- State yield of exist tax	\$1.5billion (\$0.014/gal x 12,000 mi/year x 9,000,000 vehicles)

Proposed Gas Tax

- Proposed gas tax increase	\$0.26 per gallon (to State \$0.16/gal = \$0.008/mile; to cities \$0.10/gal = \$0.005/mile)
- Cost of proposed tax per mile	\$0.013 per mile (\$0.26 per gal / 20 miles per gallon)
- City yield of added \$0.10/gal	\$330,000 per year (0.005x12,000x5,500 for a town population of 7,000)
- Share of city's road budget	27% (\$330,000 per year / \$1,210,000 per year)
- Total yield of \$0.10 to all cities	\$540 million (\$0.005/mi x 12,000mi/yr x 9,000,000 vehicles)
- State yield of added \$0.16/gal	\$864 million (0.008x12,000x9,000,000 for 9 million vehicles in Ohio)
- Added cost of tax per vehicle	\$156/year (\$0.013/mi x 12,000 mi/year = \$156/year)
- Cost of total tax per vehicle	\$324/year (168+156 after increase)
- Cost of increased tax as a %	5% (\$0.027 per mile compared to IRS allowed amount of \$0.54 per mile or \$324 out of an annual cost to operate a vehicle of about \$7,000.



Note: The chart represents the total budget of a suburban city that is used for streets and roads, showing the division between funds from city sources and funds from other sources. City funding is primarily from property and income tax, and the "other sources" comes primarily from the city's share of gas taxes, license fees and from grants.