

The future is bright! But how do we pay for it?

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Technology's influence on the world of transportation cannot be denied. It is most visible in the automotive industry. The fast-paced progression in driverless, highly-efficient and alternative-fuel vehicles holds great promise for improving highway safety, reducing environmental impact, and bringing great efficiencies to our mobility. However, this same progress also threatens to undermine our hallmark-funding source for roads and bridges: the gas tax. How we bring harmony between our tax structure and our vehicles is the focus of policymakers across the country. The good news is that it can be achieved.

Driverless cars are no longer the vision of futurists or crystal ball gazers. Today, we see many autonomous features in new cars like self-parking, lane departure warning, and adaptive cruise control that serve as early signals of the paradigm shift occurring before our eyes. And advancements in vehicles are not just about the driving experience, they are also about increased fuel economy and advancing viable alternatives to fossil fuels.

The United States has a long history of pushing for advancements. In 1975 in the wake of the Arab oil embargo, Congress enacted CAFE (Corporate Average Fuel Economy) standards aimed at improving the average fuel economy of cars and light trucks. CAFE standards have recently been increased with the current requirement for all new cars set to achieve an average of

54.5 miles per gallon (MPG) by 2025. In 2015, new vehicles sold in the United States averaged 25.3 MPG—so we are talking about more than doubling vehicle fuel economy in less than ten years, and the automobile manufacturers are up to the challenge.

What does this mean in revenue terms? Using Washington State as an example, conservative forecasts suggest the state will see its current average fleet MPG increase from 19.8 to 35 MPG by 2035—equating to a nearly 50% reduction in state gas tax revenues. Like many states, maintaining and improving roads in Washington is a challenge under current revenue levels. Imagine the impact when the state has 50% less revenue to spend in an environment of increasing costs for services and materials.

As automakers and technology companies work feverishly to advance autonomous vehicle technology, while also advancing improvements in vehicle fuel economy, a road reality check is needed: much of our current transportation infrastructure is in a state of disrepair, making a trip in a driverless car akin to riding a bike in the mud.

In order for those critical on-board vehicle sensors and cameras to work in a driverless car, our roads and bridges must be in tip-top condition with smooth surfaces and clear striping, embedded pavement sensors, interactive signage, and real-time communication systems with near-

perfect connectivity. When one adds the cost of all these needed enhancements to the current massive backlog of deferred construction and maintenance, it becomes clear that a perfect storm may be brewing and at the center of it is our unsustainable funding structure for transportation.

The problem we face going forward is simple: as vehicle fuel economy increases each year, gas consumption decreases, and consequently, so do gas tax revenues. While increases in the gas tax can help infuse much-needed dollars into the transportation system in the near term, over time we face a cycle of diminishing returns.

Some advocates argue for raising the gas tax more often to keep ahead of diminishing fuel consumption, or index it to inflation. But political realities make that challenging at best, and simple economics make it a non-starter. In Washington State, where the gas tax will be 49.4 cents this July, it would take annual increases of about 1.5 cents per gallon every year starting in 2019 just to keep transportation funding at the levels produced today. If this were to happen, Washington State's per gallon gas tax would be 64.4 cents per gallon by 2029. Sadly, raising the gas tax that high still doesn't generate enough funding to cover transportation needs.

And gas is no longer the only game in town. Plug-in hybrids and electric cars sales are growing. Tesla has a backorder program where nearly 400,000 people

have placed a \$1,000 deposit to own a Tesla 3 in late 2017. Several automakers have announced they are investing heavily to transition their vehicle line-up to hydrogen fuel cell, starting this year with the Toyota Mirai.

Fortunately, there is at least one solution that will address this tale of woe. That solution is a Road Usage Charge (RUC)—also referred to as a “mileage based user fee” (MBUF) or a “vehicle miles traveled” (VMT) tax. RUC is a per-mile charge drivers would pay for the use of roads, rather than paying per gallon of gas consumed. It will take leadership and foresight to begin the evolution of moving away from the gas tax, but it seems the time to start is now.

Several states have begun exploring the possibility of RUC, with the biggest body of work found in the West Coast states. Washington, Oregon and California have been working on

assessing and testing RUC systems for years. Oregon has led the country with its work on this topic since 2001, and is now the first state in the nation with a permanent RUC program in which up to 5,000 Oregonians can voluntarily sign up to pay the RUC instead of the gas tax.

California began assessing RUC in 2013 and will launch a statewide RUC pilot project this summer. Washington State has been conducting a detailed assessment of RUC since 2012 and is preparing to launch a statewide RUC pilot project where up to 2,000 volunteers from five different regions in the state will test four mileage reporting options as follows:

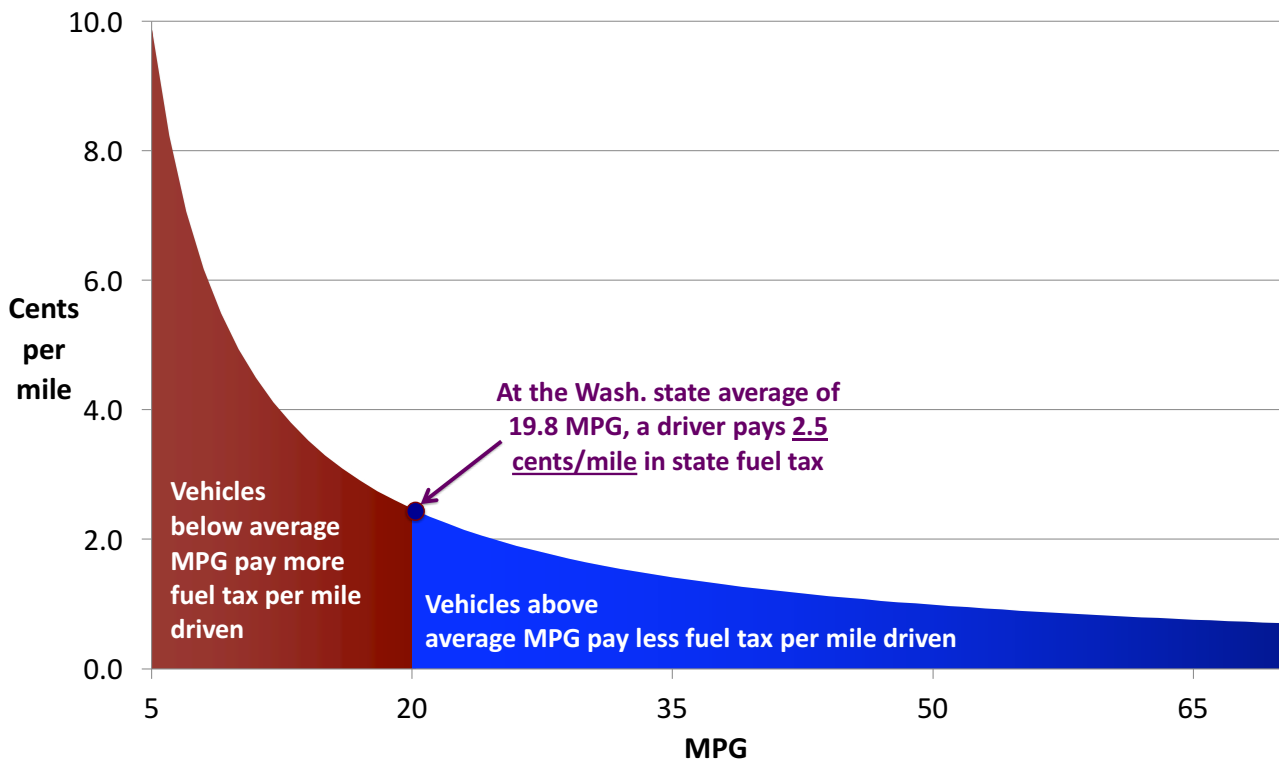
- **Time Permit:** a flat fee to drive an unlimited number of miles for a given period of time.
- **Odometer Charge:** a per-mile charge measured by odometer readings.

- **Automated Distance Charge:** a per-mile charge measured by in-vehicle technology that can distinguish between in-state and out-of-state travel with periodic billing.
- **Smart Phone Application:** a smartphone application would be used for total mileage collection.

While RUC will serve as a solution, it is certainly not an easy one to advance given its controversy. Common myths surrounding RUC are:

- It must utilize GPS technology to work and thus will track individuals’ driving habits and location.
- It will unfairly impact rural drivers who have to drive farther to get to essential services.
- It will cost drivers more money and generally be unfair compared to the gas tax.

Per-mile revenue from 49.4 cents/gallon fuel tax, by vehicle MPG



But facts quickly debunk the myths.

FACT 1: We are already paying by the mile today—we just don't think of it that way. Because the gas tax is consumption based, the more you drive, the more you pay. Your vehicle's MPG determines your per-mile tax costs.

As indicated in the chart on page 79, at 19.8 MPG the average Washington driver is currently paying the equivalent of 2.5 cents per mile in gas taxes. Vehicles that get less than 19.8 MPG, shown in the red area of the chart, are paying more in gas tax compared to the cars in the blue section that get above 19.8 MPG. Essentially, older, less fuel-efficient cars are subsidizing the roads for more fuel-efficient and electric cars that pay little to nothing in gas taxes.

FACT 2: RUC can be collected without the use of any technology. One approach both California and Washington State will test in their

pilots is an odometer-read approach where drivers would simply report their total annual miles driven to their state licensing agency as part of the vehicle registration renewal process. RUC would be calculated by multiplying the per-mile rate by total miles traveled. This is a simple, no-tech solution that serves the purpose of paying for road usage.

FACT 3: The real cost impact of RUC will be determined by what you drive. RUC ensures that everyone pays their fair share for the use of the roads, regardless of their MPG or fuel type. Thus, under an RUC system, 15 MPG pickup trucks will pay the same per-mile driven as a 45 MPG Toyota Prius. The chart below compares the cost impact between the gas tax and an RUC by car model.

When considering the fast-paced advancements in vehicle technology and fuel economy, coupled with our nation's growing backlog of

critical infrastructure investment, all indicators point to the need for significant changes in how we fund our transportation system. While the gas tax has been an efficient and reliable workhorse for decades, technology and environmental policies have created a new reality in which we must operate. An RUC is a logical next step to achieving a financially sustainable future that will increase equity and provide a reliable funding mechanism to support our infrastructure. RUC enables us to pave a smooth path to the future of driverless cars that will honk as they pass the deserted gas stations.

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Cost of fuel tax or RUC at 1,000 miles/month

