



RURAL AND URBAN EQUITY CONSIDERATIONS

One concern surrounding distance-based fees as a future source of transportation system funding is whether drivers in rural areas would be disadvantaged relative to their urban counterparts. Given the greater travel distances to work and other destinations in rural areas compared to the shorter travel distances in more densely-populated urban areas, it stands to reason that, all things being equal, rural drivers would be paying more for the miles they traveled with a fixed fee based on vehicle miles traveled (VMT). The question is are all things equal between urban and rural drivers. Recent studies on how rural and urban drivers would be affected by distance-based fees (DBF) show that rural drivers may in fact be better off financially with distance-based fees than under the current gas tax. This could be true under a scenario where miles per gallon (MPG) for all vehicles is averaged and converted to a flat per-mile fee. That assumption has not been tested for long-term sustainability, meaning adequacy of revenue collected to maintain the system.

The Minnesota Distance-Based Fee Demonstration

The current Minnesota Distance-Based Fee demonstration does not directly address the rural/urban equity issue, but future policies will certainly need to address the issue. While there is still debate over how and when a distance-based fee might replace the current motor fuel tax as vehicles become more fuel-efficient and move away from petroleum-based fuels, MnDOT planners are assuming that we will have a motor fuel tax for a long time into the future. In addition, they assume that a distance-based fee will be introduced in stages alongside the motor fuel tax, with policies established to assure that vehicles are not double-taxed for their use of the transportation system.

The long-term vision for the continuation of the motor fuel tax and the introduction of distance-based fees is important in understanding how the two would work together and the implications for rural/urban equity. In the past, the motor fuel tax was a good way of charging drivers for the use of roads in proportion to their use of those roads. The motor fuel tax was and still is a relatively inexpensive way for state and federal governments to collect taxes to pay for road construction, maintenance and operations. However, as vehicles have become more fuel-efficient and electric vehicles begin to replace vehicles that require motor fuel, the motor fuel tax does not reflect the use of roads as equally as it did in the past - some drivers bear a disproportionate share of the cost for funding the transportation system. Research shows that residents of rural areas rely more heavily on light trucks and older, less fuel-efficient vehicles than residents of urban areas, and thus pay a higher share of the motor fuel tax on a per-mile basis than drivers in urban areas (Western Road User Charge Consortium, 2017). Many states attempt to address this inequity by charging a fixed annual fee on electric vehicles, but this does not account for the amount of road usage by these vehicles.

Minnesota's DBF demonstration will pilot a transferable and scalable model that is sustainable and fair. This model represents a migration to DBFs on some vehicles and not a total transformation of the system away from the motor fuel tax in the foreseeable future. The model is designed to have low implementation, operations and enforcement costs, and assumes retention of the motor fuel tax for

most fossil-fueled vehicles and that all vehicles should be charged an appropriate and proportionate share for their use of the roads.

Rural/Urban Equity Studies

A 2010 study conducted a quantitative analysis on the impact of switching from 24 cents per mile fuel tax to a flat 1.2 cents per mile VMT tax using the state of Oregon as an example. Contrary to expectations, the study found that households in rural areas would actually benefit from a change in tax regimes from a fuel tax to a VMT tax. This is due to the fact that on average, rural households own vehicles with lower fuel efficiency even though they drive more miles than urban households (McMullen, Zhang, & Nakahar, 2010). What is often missing from this discussion is the fact that this type of policy would create its own set of equity issues..., now urban drivers are subsidizing rural drivers..., and most importantly, it is an unsustainable model.

In 2017 EDR Group completed a study for the Western Road Usage Charge Consortium (RUC West) to assess the financial impacts of moving from a fuel tax to a mileage-based fee system (Western Road User Charge Consortium, 2017). The initial study covered seven states including Arizona, California, Idaho, Montana, Oregon, Utah and Washington. The analysis was later extended to include Colorado, Hawaii, and Texas for a total of ten states.

The project included identifying fuel consumption and vehicle types in use by urban and rural households and determining the mileage driven for all households in each setting. Using estimates of vehicle miles driven by geographic area, vehicle type information from motor vehicle registrations, and gas tax revenue information for each of the participating states, EDR Group determined the “revenue-neutral” equivalent mileage-based road usage fee rates that would be required to replace current gas tax revenues in each state.

The results of the RUC West study show that rural drivers will likely save money under this mileage-based fee, revenue-neutral scenario (see Table 1). The study projects that, on average, rural households would pay 1.9-6.3 percent less and urban households would pay 0.3-1.4 percent more state tax in a RUC system than they currently pay in state motor fuel tax. The ranges reflect the differences from state to state. While this analysis does not take into account how future policymakers may decide to address the issue of rural-urban equity in the taxation and distribution of road user revenues, it does indicate that a simple shift from the gas tax to a mileage tax raising the same revenue on a single-fee basis would benefit rural drivers more than urban drivers.

Table 1: Percent Savings with RUC

	Urban	Mixed	Rural
Arizona	-0.7%	1.7%	6.1%
California	-0.3%	2.4%	6.3%
Idaho	-1.0%	0.9%	3.1%
Montana	-1.4%	-0.4%	1.9%
Oregon	-1.0%	2.9%	4.8%
Texas	-0.5%	1.6%	3.1%
Utah	-0.6%	3.4%	5.5%
Washington	-1.0%	3.6%	4.8%

Note: Positive numbers show a saving with RUC, in the Rural and Mixed columns. **Source:** RUC West: Rural Drivers and Communities

Atkinson (2019) points out that rural drivers are currently paying more in fuel taxes simply because they drive more – 34 percent more miles per year than people in urban areas—and the difference is even greater in rural western states. However, even with this reality, there should be no difference in how switching to road user charges impacts rural drivers.

“Consider a driver who commutes 50 miles a day from their small town to a big metropolitan area in a car that gets 20 miles per gallon, and assume they pay a combined state/federal gas tax of 45 cents per gallon for a total tax of \$1.12 per day. In comparison, a suburban driver who commutes downtown and drives 16 miles a day would pay 36 cents a day in fuel taxes. If the drivers each paid only a fee of 2.25 cents per mile (and paid no fuel taxes), the rural driver would still pay \$1.12 per day, with the suburban driver still paying 36 cents. In other words, on average, rural drivers today pay more in fuel taxes than urban drivers—and would continue to pay more under an RUC system.”

A 2017 study found that a VMT system that includes congestion pricing would impact urban and higher-income drivers more than rural and lower-income drivers (Langer, Maheshri, & Winston, 2017). Atkinson (2019) argues that this is another reason why a RUC system would be beneficial for rural drivers: It has the potential to enable congestion pricing—and the vast majority of recurring congestion occurs in metropolitan areas. Under a RUC system that uses congestion pricing, urban drivers will pay more than rural drivers, but also benefit from congestion pricing.

Scenarios

Ultimately the impact of future distance-based fees will depend on the decisions of future policymakers. However, we can make some preliminary assessments based on possible scenarios.

1. **Status quo.** Continue the reliance on the motor fuel tax with no new distance-based fees. This will mean that rural drivers will continue to pay more than urban drivers based on their greater annual mileage as well as their reliance on older, less fuel-efficient vehicles.
2. **Flat distance-based fee.** If the motor fuel tax were replaced by a flat distance-based fee in the future, rural drivers may pay less than their urban counterparts depending upon the rates assumed.
3. **Distance-based fee with congestion pricing.** If a distance-based fee was combined with congestion pricing in urban areas, rural drivers would pay less than urban drivers, though the urban drivers would enjoy the benefit of less congestion.
4. **Parallel systems.** Continue the motor fuel tax but initiate distance-based fees on some vehicles such as electric vehicles, autonomous vehicles, fleets, those who choose to pay distance-based fees in lieu of the fuel tax, or a separate distance-based fee for the Metro region or Metro counties only. This system would leave most rural drivers with the status quo of the motor fuel tax but could increase revenue in urban areas. Of course, rural drivers would also pay these distance-based fees to the extent they used roads in urban areas. This system would leave most rural drivers with the status quo of the motor fuel tax but could increase revenue in urban areas.
5. **Efficiency and weight equivalence.** Future policymakers may also decide to reward vehicle fuel efficiency. Pricing based on weight class of vehicles might be an alternative and a way to encourage the use of more fuel-efficient vehicles.

Given the challenges and costs of retrofitting a system for distance-based fees, it is most likely that this last scenario of parallel systems would be the way that distance-based fees might be introduced in Minnesota. The current Minnesota pilot offers an opportunity to test a system which could build upon in-vehicle technology and shared mobility platform technology. Under this scenario, distance-based fees would be introduced incrementally with policies designed to assure equitable treatment among various user groups. Shared mobility services such as car sharing as well as electric vehicles and autonomous vehicles are likely to be most common in urban areas, and thus would not have an impact on the tax burdens of rural drivers who would continue to pay the motor vehicle tax. However, as more and more vehicles are becoming electrified in both urban and rural settings, rural drivers of electric vehicles too could begin paying distance-based fees.

WORKS CITED

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