

# **The Oregon Road User Fee Concept and Pilot Program**

A Primer

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## I. Background

The 2001 Oregon Legislature established the Road User Fee Task Force “to develop a design for revenue collection for Oregon’s roads and highways that will replace the current system for revenue collection.” After considering 28 different funding ideas, the Task Force recommended that the Oregon Department of Transportation (ODOT) conduct a pilot program to study two strategies: (1) the feasibility of replacing the gas tax with a mileage based fee collected at fueling stations and (2) the feasibility of using this mileage fee collection platform for collecting congestion charges.

### *The Concept*

The Oregon Mileage Fee Concept developed by the Task Force includes (see Appendix A):

- A GPS-based receiver, without a transmitter, that counts miles driven by zone. Zones can be defined by geographic area or geographic area and time of day.
- Mileage data is transmitted wirelessly via short-range radio frequency and instantly while fueling at service stations.
- Fuel stations automatically add the mileage fee, deduct the gas tax, and apply congestion charges.
- The mileage fee system and gas tax system operate simultaneously.
- On-vehicle equipment would only be required in new vehicles.
- New vehicles that include the required equipment would pay the mileage fee, while existing vehicles would pay the gas tax. No retrofitting of vehicles would be required.
- Privacy is protected by only counting the number of miles traveled and not capturing any trip data.

The mileage fee would only apply to passenger vehicles, as Oregon’s weight-distance tax would be retained for heavy trucks.

### *The Pilot Program*

ODOT launched a 12-month study in March of 2006 and concluded in March of this year. The program included 260 volunteer vehicles and two service stations in Portland. The pilot program was designed to test the technology and the administrative feasibility of the Oregon Mileage Fee Concept.

- *Control Phase.* For the first half of the study, all participants purchased fuel at one of the two services stations equipped with mileage readers no less than twice a month. Miles driven by zone were recorded, but participants continued to pay the standard Oregon gasoline tax. With all participants following this same protocol for this initial period, ODOT established a baseline of driving behavior for each vehicle. Participants developed routines that involved the requisite fuel stops, and familiarized themselves with the on-board technology during this phase. Prior to the initialization of the test phase of the pilot, drivers and ODOT also had the opportunity to work through any difficulties with the technology and operations.
- *Test Phase.* During the second half of the study, the drivers were separated into three groups: a Vehicle Miles Tax (VMT) group, a Rush Hour group, and a small Control group. Drivers in the VMT group ceased paying the gasoline tax, and instead paid 1.2 cents per mile for miles driven in Oregon. Drivers in the Rush Hour group also discontinued paying the gasoline tax, but they were charged a higher rate per mile for

driving during AM and PM “rush hours” (7-9 AM and 4-6 PM Monday through Friday, excluding holidays) within the Portland metropolitan area.

No drivers actually “paid” mileage fees during the study, regardless of group. Instead, ODOT debited against an endowment fund established for each vehicle. ODOT notified participants of their endowment balances every two weeks, giving them information that could help them modify their driving habits in order to reduce charges to their account balance and maximize their reward at the completion of the study. Any endowment balance remaining at the study’s end was granted to the participant; this provided an economic incentive that was intended to mimic real-life incentives to save money by driving more thoughtfully.

The administrative and technology systems established for the mileage fee pilot were intended to test as closely as possible the systems envisioned for a full implementation of an actual mileage fee. This was not always possible, particularly with regard to on-vehicle technology, back-end systems and data flows. However, the key elements were incorporated into the pilot design.

Those elements were:

- On-board and service station technology
- Motorist fee payment at the pump
- Monthly fee vs. gas tax “true-up” from distributors and retailers
- Summary data rather than detailed data to protect privacy
- Secure central data collection and storage

### *Funding*

The Federal Highway Administration (FHWA) funded the bulk of the project with three targeted grants through its Value Pricing Pilot Program, totaling \$2.1 million over six years; the State of Oregon contributed \$771,000 in matching funds.

## **II. Key Findings**

### *1. The mileage fee system is viable and the pilot test proves concept.*

The study showed that, using existing technology, a mileage fee could be implemented to replace the gas tax as the principal revenue source for highway funding. Ninety-one percent of pilot participants said that they would like to continue on the mileage fee program.

### *2. Paying at the pump works.*

The study showed that the mileage fee could be paid at the pump, with minimal difference in process or administration for the motorist. Like the gas tax, collection of the mileage fee can be embedded within routine commercial transactions: paid mostly by the distributor, reimbursed by the retailer and consumer (see Appendix B). By including the mileage fee in the fuel bill, it allows cash or credit payment, just like the gas tax. Although many of the components used in the pilot program were not at the standards of commercial products, examples of existing commercial products that perform the various required functions exist.

### *3. The mileage fee can be phased in.*

The study showed that the mileage fee could be phased in gradually alongside the gas tax, allowing non-equipped vehicles to continue paying the gas tax, while equipped vehicles could pay the mileage fee. Retrofitting vehicles at this point appears expensive and difficult.

*4. Integration with current systems can be achieved.*

The study demonstrated the ability to integrate with two main existing systems: the service station point-of-sale (POS) system, and the current system of gas tax collection by the state.

*5. Congestion and other pricing options are viable.*

The study showed that different pricing zones could be established and the assigned fees could be charged for driving in those zones, even at particular times of day, proving that the mileage fee concept could support congestion pricing, assessment and collection of local revenues, differentiation among in-state vs. out-of-state miles, and other “zone-oriented” features.

*6. Privacy is protected.*

Many levels of privacy can be implemented in a system similar to that used in the pilot program. There is a trade-off between privacy and information stored for enforcement, and dispute resolution (see Appendix C). All levels are technologically feasible, but greater information storage will require more costly devices and computing infrastructure. The system was developed and implemented with specific engineering requirements related to privacy. Key privacy related requirements were:

- No point location data could be stored or transmitted;
- All on-vehicle device communication must be short range;
- The only centrally stored data needed to assess mileage fees was prior zone mileage totals for each vehicle.

*7. Minimal burden on business.*

While distributors and gas stations bear some new accounting burdens, administration is largely automated and can be integrated easily into existing transaction processes. Capital costs required for implementation would mostly be for the outfitting of service stations with mileage reading equipment. The service stations are not willing to accept these costs from their own pocket.

*8. Minimal evasion potential.*

Evasion is not likely to be a major issue. Tampering with the mileage fee collection device results in payment of the gas tax. The difference between gas taxes and mileage fees is likely to be very small, providing very little incentive to try to evade the mileage fee. The eventual fee level, on-board engineering, fee structure, fuel tax rates, and penalties for tampering will determine if there is enough incentive for this type of equipment tampering.

*9. Low cost of administration.*

Costs are associated in three areas: service stations, on-vehicle and DOT administration. Service station capital costs include the equipment while operating costs include communications with a central database and modifications to point-of-sale systems. On-vehicle capital costs will be determined by auto manufacturers and included in the price of new vehicles. Additional costs include replacement or repair of malfunctioning equipment. ODOT will incur operating costs for auditing and providing technical assistance to service stations and motorists. Auditing should cost \$1.0 million annually, a fraction (less than 2%) of expected annual mileage fee revenue.

### **III. Next Steps**

Now that the Oregon Mileage Fee Concept has been tested and proven successful in the Road User Fee Pilot Program, additional development and testing need to take place in order to prepare for full implementation including: resolving technical issues, expanding the concept to

include home fueling, tolling and multi-state integration, and developing cost estimates for full implementation. This will include an operational test, simulating a multi-state mileage fee and congestion pricing system. Oregon has applied for a federal grant to continue this work.

Throughout the development of the pilot program a number of comparatively minor, but still important, issues were identified. Before the Oregon Concept can be implemented on a statewide or national basis, the following issues need to be addressed. If received, ODOT will use grant funds for these objectives:

*Improving the experience at the pump:*

- Improve the short range communication between the vehicle and the pump for greater accuracy.
- Work with an auto manufacturer or the Society of Automotive Engineers to develop functional specifications for integrated on-board equipment and test vehicles.
- Reduce point-of-sale transaction time at the pump.
- Identify additional possible customer service benefits for consumers at the fueling stations using planned technology.

*Resolving issues associated with nationwide implementation:*

- Conduct a multi-state simulation operational test including drivers, equipped vehicles and service stations.
- Integrate with existing national standards bodies and Vehicle Infrastructure Integration (VII) efforts.
- Develop a method to define and load dynamic multiple taxing districts into vehicle computers for concurrent taxing at the Federal, State, County and municipal levels.
- Develop new standards for communication between fueling stations and taxing authorities.
- Develop a national or regional tax collection clearinghouse(s) and revenue distribution system concept.
- Develop a concept for collecting mileage fees from vehicles that fuel/recharge at home.

*Developing firm cost estimates for full mileage fee implementation:*

- Define costs associated with meeting national technology standards.
- Estimate development and production costs to auto manufacturers and consumers to implement on-vehicle devices as original equipment.
- Refine cost estimates for retrofitting existing vehicles.
- Refine administrative cost estimates for fee collection and system maintenance.
- Refine cost estimates for service station equipment and operations.

*Congestion pricing integration:*

- Explore possibilities for using the Oregon Concept to collect tolls and additional congestion pricing strategy alternatives.
- Develop a concept for congestion pricing implementation in conjunction with technology phase in.

To implement this plan, ODOT is requesting a total of \$14.8 million in grant funds from the ITS Operational Testing for the Mitigation of Congestion (ITS-OTMC) program, and ODOT would provide \$3.7 million in state matching funds, for a total program budget of \$18.5 million. The project timeline is three years.

#### **IV. Key Transition Issues for National Implementation**

The critical pathway to national implementation passes through the automobile manufacturers, the fuel distribution industry and the motoring public. Automakers must accept new vehicle technology. Fuel retailers must accept new electronic transactions. The motoring public must accept a new paradigm for generating revenue for our nation's road system.

The mileage fee is not yet ready for implementation on either a local, state or national basis. Technology refinements for the vehicles and fuel pump collections may take up to five years to develop. Public acceptance, industry acceptance and installation may take 10 years or longer. Implementation could therefore begin about 10 years from now, on a phased basis, with revenue benefits occurring immediately. Since retrofitting is not yet viable, a phased implementation is necessary as only new vehicles would contain the required technology. Complete implementation, meaning application to every vehicle, would occur over a 25 to 30 year period.

Extensive communications must occur with the motoring public. They must understand and accept resolution of the problem addressed before they will accept this solution. They must also understand how privacy is protected and how fairness is built into the rate structure.

***It is critical to note that while the mileage fee may not be ready for national implementation in the short term, the work necessary to prepare for implementation in the long term must begin immediately. The later preparation begins, the later national implementation can occur.***

This implementation plan could be phased in over the next several decades, with specific milestones in each of the following three time periods.

##### *2008-2015 – Development*

The near-term phase would focus on further development of the system. This would include technical refinement of technology, including improving the on-vehicle equipment, refining short-range communication between the vehicle and the pump, wireless updates, and developing anti-hacking and privacy protections. In addition, specifications for equipment—on-board technologies, service stations, point of sale, and short range communication—would be developed. Once specifications are developed, federal mandates might be required to ensure the required equipment is included in all new vehicles in order to ease implementation when the system is ready. A regional revenue collection centers system would be developed for allocation of federal, state and municipal mileage fee revenues and municipal congestion fee revenues. This period could include a large-scale pilot and may also involve several states implementing the concept on a statewide level.

During this period it will also be necessary to build public acceptance of the concept. This will include establishing the need for this change, educating the public on the issues of equity in paying for the transportation system, and ensuring privacy protection.

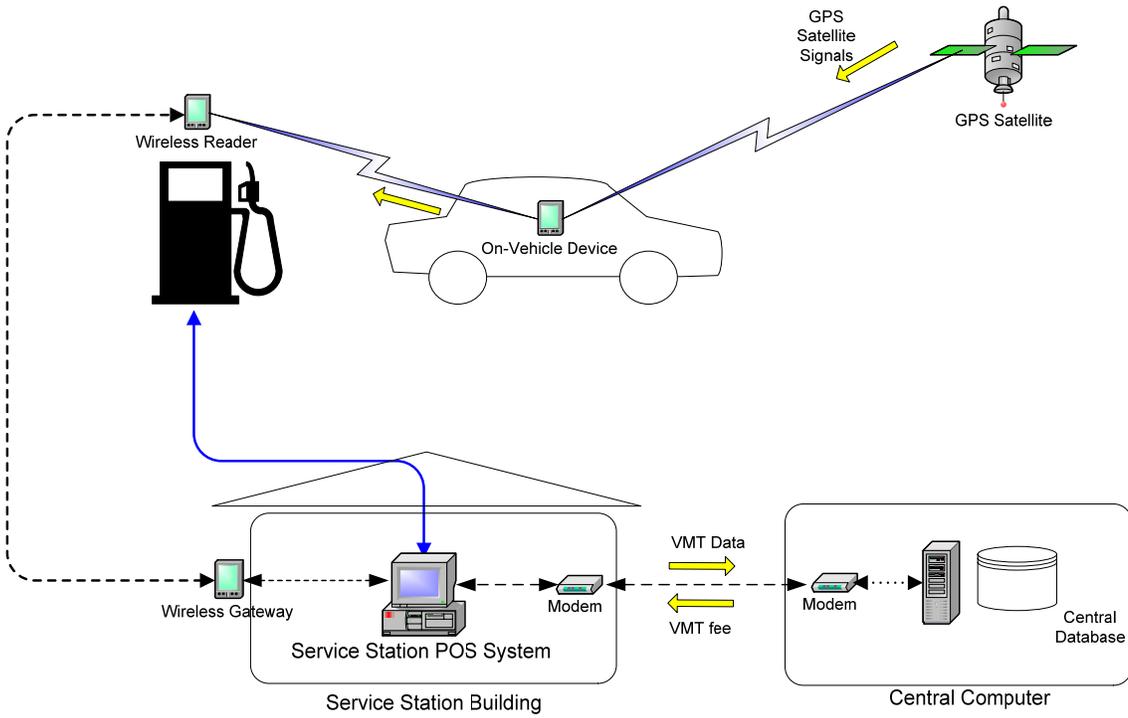
##### *2016-2030 – Implementation Phase- In*

Implementation of the concept at the national level would likely begin in the mid-term, with new vehicles paying a road user fee and existing vehicles paying the gas tax. By 2030 about 80% of the vehicles would be on the new system.

##### *2031-2050 – Full Implementation*

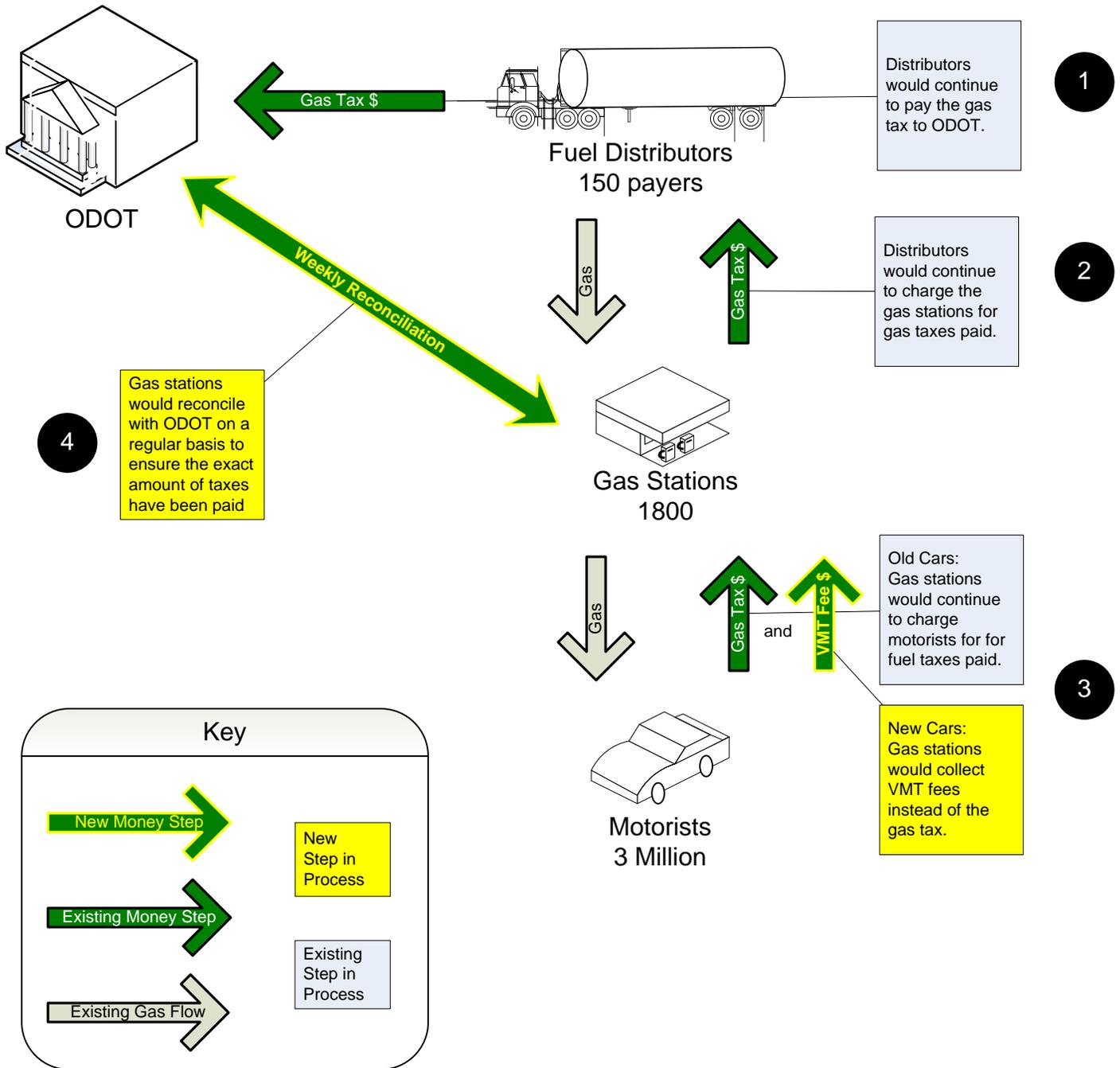
In the long-term, the concept would be fully implemented, with 99% of vehicles on the new system by 2040.

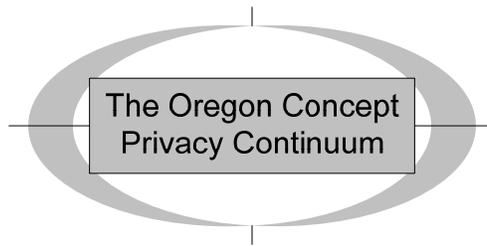
# The Oregon Concept VMT Data Collection Process



# The Oregon Concept State Gas Tax and VMT Fee Integrated Collection Process

## Appendix B





Privacy vs. Audit-ability



**Absolute Privacy**

- No records maintained
- No ability to audit
- No ability for customer validation

**No Privacy**

- Detailed trip data maintained
- Full ability to audit
- Full ability for customer validation