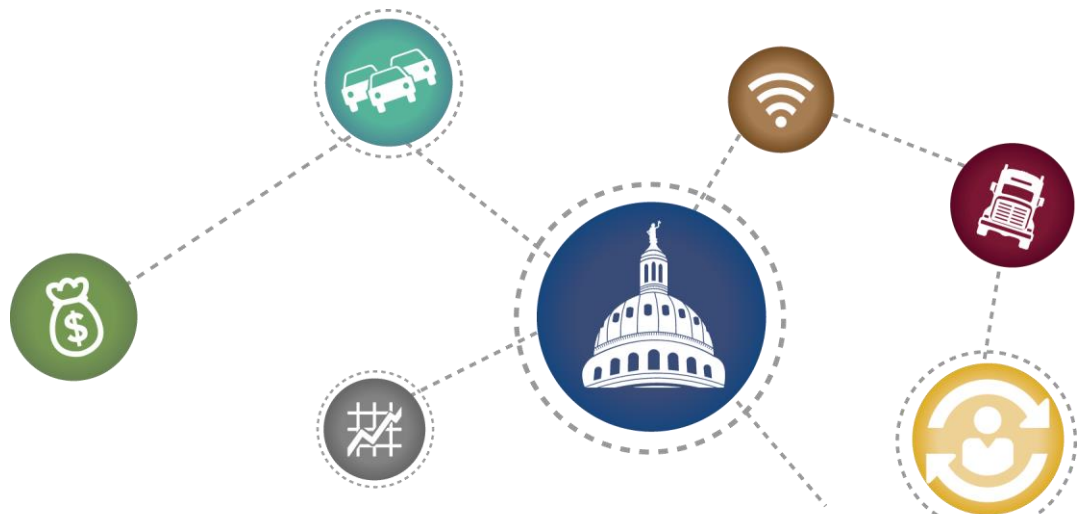


VMT Fee Assessment

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List of Acronyms

CNG	Compressed natural gas
Comptroller	Texas Comptroller of Public Accounts
CSP	Certified service provider
DOT	Department of Transportation
DPS	Department of Public Safety
EDI	Electronic data interchange
EFT	Electronic fund transfer
GPS	Global positioning system
IFTA	International Fuel Tax Agreement
IT	Information technology
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas
MnDOT	Minnesota Department of Transportation
mpg	Miles per gallon
MRFT	Minnesota Road Fee Test
OBD	On-board diagnostic
ODOT	Oregon Department of Transportation
RTS	Registration and Titling System
RUC	Road user charge
RUCPP	Road Usage Charge Pilot Program
TAVIS	Texas Automated Vehicle Inspection System
TEXNET	Texas Network for Electronic Transfers
TxDMV	Texas Department of Motor Vehicles
TxDOT	Texas Department of Transportation
VIC	Vehicle Inspection Connection
VMT	Vehicle miles traveled
WRUCC	Western Road User Charge Consortium
WSTC	Washington State Transportation Commission

Executive Summary

Road user charges (RUCs) would address one of the primary long-term shortcomings of the fuel tax by generating revenue from drivers in proportion to road usage, not fuel consumption. This would entail assessing a fee based on distance driven, among other potential charging components. Assessment could occur through any number of mechanisms: flat fees based on an assumed mileage, odometer readings, or high-tech assessment using location data and in-vehicle devices. The concept has been pilot tested in multiple states, and Oregon will be implementing an RUC as a replacement to the fuel tax in 2015. That implementation will be limited to 5,000 drivers who will choose from numerous road user charging options, most of which will be operated and maintained by private certified service providers (CSPs).

Oregon's implementation is indicative of the advancement in the area of road user charging since the concept was first pilot tested over 10 years ago, and there is a strong indication that future road user charging systems will incorporate many of the elements found in the Oregon deployment. First, it is likely that numerous metering options will need to be accommodated. This is necessary in order to provide drivers choice, which in turn can help mitigate many of the major public acceptance concerns voiced by the public in opposition to these fee systems. The most prevalent of these concerns is privacy, and allowing drivers to choose from any number of privately administered assessment and charging systems is seen as one of the most effective ways of addressing privacy issues. The accommodation of numerous methods for road usage assessment, particularly those that are high tech in nature and likely to evolve over time, will likely necessitate a reliance on open platforms based on certain basic standards. These standards will not favor any particular technology and will require that only basic data be transmitted to the implementing entity. Furthermore, a reliance on multiple technologies implies a much more significant role for the private sector, including provision of devices, metering and assessment of road usage, collection and remittance of fees to the state, and maintenance of user accounts. It is believed that partnerships with the private sector will reduce administrative costs to the state, which is another significant public concern with regard to road user charging systems.

Texas is fairly well positioned from an institutional standpoint to take advantage of these developments and potentially explore the road user charging concept. The Texas Department of Motor Vehicles (TxDMV) interacts with Texas drivers on a routine basis (annually or bi-annually) as part of the vehicle registration process. It thus has the most comprehensive data on vehicles registered with the State of Texas and their owners. The State of Texas also collects odometer readings as part of the vehicle inspection process, and legislative mandates on the consolidation of the inspection and registration processes mean that TxDMV will soon have access to inspection data, including odometer readings. Furthermore, there are already numerous methods by which private vendors access and provide data to TxDMV's systems on behalf of Texas drivers and residents.

In spite of Texas' ability to leverage existing institutional capabilities to accommodate a road user charger system, there would still need to be significant effort exerted to develop those

capabilities. For example, while odometer readings are collected as part of the vehicle inspection process and can be accessed, the data are unreliable. Odometer readings are not checked or audited, and in some cases, vehicular systems preclude the ability of the inspection operator to even take a reading. Furthermore, Texas has over 23 million registered vehicles, and a fee system linked to odometer readings of those vehicles, even if it required only minimal data as in Oregon, would still require a significant investment in expanding and developing data resources. Even though vehicle registration and inspection processes are being integrated to an extent, data on odometer readings collected at inspection are not currently available to TxDMV. Accessing those data, assuming they are reliable, would result in an additional 23 million queries by the agency. This is significant because odometer readings are housed on a cloud server by a private vendor, not the Texas Department of Public Safety (DPS) or TxDMV. Thus, there is a cost associated with each query. It is anticipated that queries submitted during the registration process to the inspection database as part of the state's one-sticker program will be minimal in terms of the amount of data transmitted for each transaction. Registration outlets will only confirm that a vehicle has been inspected, which will allow the registration to proceed. This keeps the costs of querying the cloud server relatively low. However, a fee system that required regular transmission of more data, such as actual odometer readings, could significantly increase this cost to TxDMV. Finally, state agencies have expressed concern about using data they do not collect or are otherwise not responsible for in the assessment of a fee they levy. For example, TxDMV would have concerns about using odometer readings to assess an RUC, as it does not collect the odometer data and is not responsible for its maintenance.

Introduction—Road User Charging

State and federal fuel taxes (both gasoline and diesel) are the largest source of transportation funding for Texas. The Texas Comptroller of Public Accounts (Comptroller) estimates that state and federal fuel tax revenues will account for just under 64 percent of the \$10,899,676 available in the State Highway Fund in 2015 (1). Texas first levied gasoline taxes in 1923 at a rate of \$0.01 per gallon, and since then it has been a fairly reliable and stable source of revenue for the state. However, because the tax is levied on a per-gallon basis and not on the sales price, it can quickly lose purchasing power. Furthermore, the more fuel efficient a vehicle is, the less it pays in taxes per mile driven. This is problematic because the passenger and commercial vehicles that consume fuel and generate fuel tax revenues are continually getting more fuel efficient.

This shortcoming of the fuel tax has led to the exploration of potential funding alternatives. One such option that has been examined extensively in recent years is the RUC. These types of fees have gone by numerous names: mileage fees, mileage-based user fees, and vehicle miles traveled (VMT) fees. Regardless of their name, each of these fees is ultimately based on the same principle: charging for usage of the roadway based on distance traveled. Charges could potentially incorporate any number of aspects of usage, such as varying charges by weight of the vehicle or the time of day. Regardless of whatever charging components might be introduced, the basic premise of charging for road usage based on distance alleviates one of the largest drawbacks of the fuel tax, namely that it generates revenue in proportion to travel, not fuel consumption.

Summary of Recent Road User Charging Efforts

Most research on the implementation of RUCs, including pilots of the concept, has occurred at the state level, although there has been interest in the concept at the federal level. This section summarizes the most recent and pertinent state-level pilots of the RUC concept, as they provide valuable insight into potential implementation challenges and opportunities and provide context for examining those issues within the state of Texas. There have been several efforts conducted in states that will not be summarized in the section, including:

- Nevada Department of Transportation (DOT; various efforts through 2010)—Undertook several federally funded policy, economic, and technology studies aimed at identifying potential issues associated with implementing RUCs and similar funding mechanisms in the state of Nevada. The Nevada DOT also undertook public outreach efforts, including town hall meetings, in order to explore the public acceptance issues associated with implementation. A pilot has yet to be conducted.
- Oregon Mileage Fee Concept and Road User Fee Pilot Program (2005)—Tested a mileage-based fee system that relied on a global positioning system (GPS)-enabled in-vehicle device that connected to vehicular diagnostic ports for the determination of miles

traveled. Wireless equipment allowed participants to pay the assessed mileage fee in conjunction with fuel purchases.

- Puget Sound Regional Council, Traffic Choices Study (2002)—Evaluated driver response to network tolling in the Seattle metropolitan area. The system used a GPS-enabled in-vehicle device to apply a mileage-based fee that varied based on the type of facility and time of day.
- University of Iowa, National Evaluation of a Mileage-based Road User Fee (2005)—Evaluated a multistate mileage-based user fee as a potential replacement system for the fuel tax. The pilot was carried out in 12 U.S. cities with devices that connected to vehicular on-board diagnostic (OBD) ports and used GPS to determine location.

Most of the pilots discussed in this section began with some form of directive from that state's legislature. In some cases, the legislature established a task force or some other type of appointed body in order to answer certain policy questions prior to testing. Legislative support is particularly important for RUC pilot success. Legislative support and associated enabling legislation can ensure that the pursuit of road charging concepts meets public policy goals, while a lack of legislative support can stymie such efforts. It is often the desire of transportation agencies and non-elected transportation officials to not get ahead of the legislature and be seen as driving policy. A lack of supporting legislation or public support from elected officials has resulted in the failure of many state-level research efforts to move toward implementation.

Task force/commission-level efforts to identify policy issues prior to RUC pilot implementation have thus far followed a generally consistent pattern, starting with:

1. Determining the acceptability of the concept—One of the first steps to be undertaken in this process is to decide if pursuing the road user charging concept is advisable and desirable. This process generally occurs at the legislative level with the appointment of committees, task forces, or steering committees comprised of elected officials, experts in the transportation field, and transportation policy stakeholders. Assessments of future needs and anticipated future revenues from traditional funding sources may be undertaken by this entity. It is also likely that various funding sources outside of road user charging will be evaluated in terms of their ability to generate the revenue necessary to meet future needs.
2. Developing policy—If it is determined that road user charging systems are indeed worthy of pursuit, then it becomes necessary to identify major policy goals for the system to fulfill. This is critical because system design will ultimately be determined by policy, as policy will dictate the type of information that is ultimately collected and utilized by the system.
3. Assessing feasibility—Once broad road user charging policies have been developed, it may be desirable to develop a variety of road user charging concepts and associated technology configurations to meet those policy goals. An assessment of each concept's

feasibility and ability to attain desired policy goals can then occur. The most feasible options are likely to then be recommended for future pilot tests.

4. Implementing the pilot implementation—At this point, the state may choose to take the most feasible charging configurations and initiate a pilot or field test of the technologies and administrative systems that would compose the overall charging system. Successive pilots might be required in order to refine the concept.
5. Assessing the results and issuing recommendations on implementation—The success of the pilot(s) will be crucial in determining whether the road usage charging system should be implemented as a permanent fee system. Should the state decide to implement, it will have to establish new legislation enabling the fee and assigning operational and administrative functions to public and/or private entities.

The States of Oregon and Washington have both followed this general model. Furthermore, the State of California recently passed legislation (Senate Bill No. 1077) that will move the state toward a potential future pilot by first establishing an RUC Technical Advisory Committee. The Technical Advisory Committee will be tasked with studying RUC alternatives to the gas tax, making recommendations to the Secretary of the Transportation Agency on a design for a pilot program, and making recommendations on evaluation criteria for the pilot program.

Oregon Road User Fee

In 2013, Oregon became the first state in the United States to pass legislation establishing a road user fee on passenger vehicles as a replacement for the fuel tax. The passage of this legislation came many years after the state initially began looking at usage-based revenue mechanisms for meeting long-term transportation infrastructure needs and completed two subsequent pilots (one of which will be discussed in the next section). The bill authorizing the new charge passed with bipartisan support in both the Oregon State Senate and House of Representatives.

The system will be implemented in summer 2015 with an initial participant pool of 5,000 vehicle owners. Participation in the system is voluntary. Participants will pay a \$0.015/mile road use charge in lieu of state fuel taxes. Participants in the program will receive a credit against the assessed fee for fuel taxes paid over the reporting period. Initial participation is limited in terms of the types of vehicles that can participate based on weight (vehicles must weigh less than 10,000 lb) and fuel efficiency (no more than 1,500 participating vehicles can have a fuel efficiency rating of less than 17 miles per gallon [mpg], and no more than 1,500 participating vehicles can have a fuel efficiency rating of between 17 mpg and less than 22 mpg).

The fee system will be based on an “open” platform, which is defined in the authorizing legislation as “an integrated system based on common standards and an operating system that has been made public so that components performing the same function can be readily substituted or provided by multiple providers.” Several alternative methods of assessment and payment will be provided, and at least one of those will not rely on location data from GPS. Specific methods for reporting and recording distance traveled are still being developed by the Oregon Department of Transportation (ODOT) and its private-sector partners.

The Oregon road user fee system will make extensive use of private entities, termed in the enabling legislation as certified service providers, for fee administration. CSPs will enter into agreements with ODOT for the reporting of road usage by participating vehicles or for administrative services related to the collection of road charges. These CSPs will be responsible for the majority of data collection and fee administration for the system. CSPs will be required to destroy any records related to the location and use of vehicles no later than 30 days following the completion of a payment processing, dispute resolution, or noncompliance investigation.

CSPs will be the primary entities responsible for collecting travel data, assessing fees, collecting fees, and remitting them to ODOT. It is anticipated by ODOT that this process will occur in conjunction with the provision of other services provided by the CSPs, such as navigation or routing assistance. Oregon has developed a relatively basic back office that will receive a “mileage message” on each participant from each CSP. The content and format of these mileage messages are standard and contain the minimal amount of information necessary for enforcement and the calculation of fuel tax credits. Location data will not be shared with ODOT.

The State of Oregon is interested in leveraging this system once it is up and running so that other states may utilize it if they wish to develop their own road user fee systems. To accomplish this, ODOT, along with its counterparts in Washington and Nevada, formed the Western Road User Charge Consortium (WRUCC) in 2013. WRUCC was formed for the purposes of developing road user charging expertise within departments of transportation and facilitating resource sharing on the road user charging concept among member states, which includes Texas. This includes the leveraging of Oregon’s existing capabilities for pilots in other states. The organization hopes to expand its membership significantly in the coming years and could be a facilitator of multistate road user fee charging pilots. A steering committee composed of representatives from each member entity will be developing a 24-month work plan for the consortium that will be reviewed and adopted by the board. Depending on the success of the upcoming Oregon deployment and the efforts of WRUCC, the Oregon system could eventually serve as the de facto multistate RUC administrative system.

ODOT Road Usage Charge Pilot Program

Prior to its current RUC implementation, ODOT completed two pilot studies of the RUC concept. The first, conducted in 2006, was discussed briefly in the introduction to this section. The second was initiated in 2011 and was known as the Road Usage Charge Pilot Program (RUCPP). The RUCPP was structured such that participants would have several options in how their fees were assessed, assessment methods would be based on open-market principles, and a significant level of private-sector participation in pilot administration would be present.

There were 88 participants in the RUCPP, which included eight state legislators and representatives from various transportation stakeholder groups. A total of 48 participants came from the states of Nevada and Washington, allowing ODOT to assess issues related to multistate interoperability. Participants paid the RUC at a rate of \$0.0156 per mile over a three-month

period of the pilot. RUCPP participants had four road usage metering options to choose from, including:

- A **basic plan**, under which participants used an in-vehicle device to record distance traveled but without location data. Participants thus paid for every mile they drove in their vehicles.
- An **advanced plan**, where participants used an in-vehicle device that recorded miles and basic location data. Mileage was allocated to the appropriate state, and participants only paid only for mileage accrued in their state.
- A **switchable/smartphone plan**, under which participants used a GPS-enabled smartphone application that allowed them to choose whether they reported miles on a zone basis (as in the advanced plan) or simply reported all miles traveled (as in the basic plan). Participants could switch the app between advanced and basic mode and therefore could choose whether to report location on a particular trip and only pay in-state mileage.
- A **simplified flat fee**, under which participants (of which only one chose this option) could simply pay a flat fee based on an assumed 35,000 miles traveled per year at \$0.0156 per mile.

Participants who chose a plan that used an in-vehicle device, which was almost all of them, had a choice of three different mileage reporting devices. All of the electronic plans used a “dongle,” an example of which can be seen in Figure 1. Each dongle connected to the vehicular OBD port. Users of the basic plan received a simplified dongle that, unlike the dongles used for the advanced plan, did not have an internal GPS component. The information received through the vehicular connection was used to determine miles driven. Devices were mailed to participants, who self-installed them. Users of the switchable plan received a dongle and also had to download the specialized smartphone application that allowed the phone to communicate with the dongle and receive data.



Figure 1. Oregon RUCPP Basic Plan Dongle.

Regardless of the plan and reporting device selected, all RUCPP participants had an RUC account to manage miles driven and charges owed. Under the advanced and smartphone-based plans, participants had their accounts managed by a private certified service provider. For the

RUCPP, the primary CSP was the technology vendor Sanef. Under the basic mileage reporting plan, users could choose to have their account managed by Sanef or ODOT. Users of the advanced and smartphone plan were required to have their accounts managed by Sanef. Mileage information was reported by the in-vehicle devices to the CSP, with excerpts of transmitted data also being sent to ODOT's mileage tax accounting division for use in auditing and reconciliation activities.

Participants paid invoices as generated by the RUCPP and received a credit against their assessed RUC for fuel taxes paid over the course of the pilot. Fuel tax credits were calculated by multiplying the ratio of chargeable miles (chargeable miles divided by total miles) by the estimated amount of fuel consumed and the fuel tax. Participants were given options with regard to how fees were paid, which varied based on the plan and account manager selected. Payment options for the RUCPP were as follows:

- **Basic plan**—Participants had the option of selecting ODOT or Sanef as their account manager. ODOT administration required the mailing of an invoice and payment by mail with a check. Participants with Sanef as their account manager could either receive an invoice through the mail or e-mail and paid fees online with a credit card or debit card.
- **Advanced and switchable/smartphone plans**—Participants under this plan received invoices electronically via e-mail and paid fees online with a debit or credit card.

The RUCPP was considered a success. ODOT found that participants generated roughly the same amount of revenue as they would have in fuel taxes. Most participants rated the system as either “fair” or “very fair,” and their positive perceptions of the system increased over the period of the pilot. Participants generally had positive views of the choices offered to them in terms of assessment and administration. The technology components of the system worked very well. Devices were easy to install and provided very accurate information. There were no reported safety issues with the devices and system performance metrics indicated that there were no notable errors in billing.

Washington State Road Usage Charging Task Force

Washington is the most recent state to follow Oregon's lead in the exploration of the RUC concept. In 2012, the Regular Session of the 62nd Legislature in Washington passed a supplemental transportation budget that directed the Washington State Transportation Commission (WSTC) to determine the feasibility of transitioning from the gas tax to a road user assessment system for funding the state's transportation programs. The bill (ESHB 2190) included funding for the Washington State DOT to conduct the work, and a steering committee was established to provide guidance. The Washington State Steering Committee was composed of 20 members drawn from various elected posts, transportation stakeholder groups, commerce and trade organizations, the legal community, public service providers, and academia.

The steering committee was required to report to the legislature by January 2013 on whether road user charging was feasible and, if so, to propose a research and development plan for the

2013–2015 fiscal biennium for examining key issues in a more in-depth manner and proposing technology demonstrations or pilots. After concluding that road user charging was feasible and making its research and development recommendations, the steering committee was further instructed to develop preliminary road usage charge policies, develop a business case for RUC transition, develop a preferred operational concept, assess likely financial outcomes, and identify and document important policy issues. In the course of its meetings, the steering committee determined that the primary overarching goal for any system developed should be generating sustainable revenue “for Washington State’s transportation system to transition from the current motor fuel tax system” (2).

At the December 9, 2014, meeting of WSTC, members heard from representatives of the steering committee, who presented a proposed concept of operations for a Washington State RUC. The proposed system would allow participants to choose from one of four road charging options:

- **Time permit**—Principals would purchase a time permit that would allow for unlimited road usage for the specified period purchased. The charge for the permit would likely be set relatively high, most likely based on roughly 35,000 miles per year of travel.
- **Odometer reading**—Principals would pay based on self-reported travel but would be subject to random checks.
- **Automated distance charge**—Principals would only pay for miles traveled within the state of Washington, which would be determined by the use of any number of location-based technologies.
- **Smartphone application road user charge measurement**—Principals would use a smartphone-based app for the collection of travel data and assessment of the fee.

A decision on whether to move forward with a pilot test of the concept proposed by the steering committee is expected from WSTC in the near future. Even if approval is granted, there is significant development work yet to be done on the concept, and it is not expected that a pilot would be initiated before 2017.

Minnesota Department of Transportation Mileage-Based User Fee Pilot

In 2007, the Minnesota Legislature set aside \$5 million for the Minnesota Department of Transportation (MnDOT) to conduct a pilot test of technologies that would allow for the replacement of the state’s fuel tax as part of the 2007 MnDOT appropriations bill. Prior to the implementation of the pilot, a policy study was facilitated in order to identify and evaluate implementation issues, and a 25-member task force was appointed by the commissioners for MnDOT to make recommendations on the pilot concept. In its final report, the task force noted that the primary objectives of a state mileage-based user fee system should be to promote an equitable fee system such that all motorists pay for their use of the roadway system, and to generate funding for transportation programs by either supplementing or replacing the motor fuel tax.

MnDOT initiated the Minnesota Road Fee Test (MRFT) pilot project in the Minneapolis/St. Paul region with 500 participants in September 2011, with the pilot concluding in October 2012. Participants submitted to an initial odometer reading and were provided specialized Android smartphones with a custom mileage fee app installed. (A follow-up odometer reading was taken after a two-month baseline assessment period, and a third odometer reading was taken at the conclusion of the pilot in order to confirm distance data and to identify evaders.) The smartphones were GPS enabled and collected and transmitted the data needed for the pilot. All other functionality on the phones utilized in the test was disabled. The MRFT system also used a dongle that was attached to the vehicular OBD-II port, which communicated vehicular identification information to the smartphone app, allowing the app to verify that the phone was in the correct vehicle.

Data collected by the MRFT app were transmitted through a 3G mobile data channel to the pilot project's back-office data infrastructure. Rates for travel varied based on the time of day, location, and usage of the device. Travel outside of Minnesota was free. Travel within the Twin Cities was assessed at a rate of \$0.01 per mile, and travel within the Twin Cities during the hours of 7 a.m. to 9 a.m. and 4 p.m. to 6 p.m. was assessed at a rate of \$0.03 per mile. Mileage accrued without the device being turned on, as identified with odometer readings and diagnostic data, was assessed at \$0.03 per mile.

The smartphone also tested an in-vehicle signing application that was offered to 247 participants and provided visual and auditory warnings to drivers regarding sharp turns, construction zones, speed reduction zones, and school zones.

Participants were given an initial stipend and expected to pay for their assessed mileage fee from that initial amount. Invoices were issued by the operations team on a monthly basis. Participants were provided several options for paying invoices including:

- Via check through the mail.
- Online via PayPal.
- Through an online participant portal.
- In person at the MRFT office where odometer readings were conducted.

At the conclusion of the pilot, MnDOT concluded that smartphones are viable as an assessment and communication device but have issues with reliability. Getting a reliable GPS signal can also be a challenge in many cases. Participants found the fee rates and fee categories to be sensible and appropriate and understood the need to replace the fuel tax. However, many found the system tested to be too complicated relative to the fuel tax. MnDOT also concluded that a statewide deployment of the MRFT system would require significant administrative support. The system collected a total of \$32,000 in fees, which averaged to about \$12 per month per participant. MnDOT experienced a 98 percent collection rate on invoices sent to participants.

Implication of Research and Current Trends

While only one state (Oregon) is moving forward with implementation of an RUC, its experience and the experiences of other states that have explored the concept are informative for Texas.

Thus far, research efforts have yielded the following conclusions:

- **The generation of sustainable funding in proportion to road use is the central policy objective**—Road user charging systems have the potential to accomplish a number of transportation policy goals, but the central policy focus in efforts undertaken by the states thus far is the generation of sustainable revenue in proportion to road use. It is the primary policy objective for the two recently conducted mileage fee pilots in Oregon and Minnesota and is the primary policy consideration for the State of Washington as it moves toward potential fee development. The policy goal itself implies the central failure of the fuel tax: that funding is not generated in proportion to road use and associated costs but rather fuel consumption. Other transportation revenue sources, such as vehicle registration fees and vehicle sales taxes, have a similar weakness in that they are assessed at an amount that is independent of the amount of travel.
- **Privacy concerns will persist, and “choice” is key to addressing them**—All of the pilots discussed in this section illustrate the fact that privacy concerns are likely to be among the largest barriers in terms of gaining public acceptance. Oregon has continually worked to develop systems that provide choice in terms of metering options and to provide protection for those selecting technology-based applications. Minnesota tested location-based applications as a discounting tool for state-mandated odometer readings, essentially offering the technology solution as an alternative in order to alleviate potential privacy concerns. The Washington Transportation Commission is currently considering moving forward with a pilot test that would, like Oregon’s last pilot and subsequent implementation, provide numerous options for drivers to report travel and pay fees. Public opinion research has shown that one of the most significant barriers to acceptance of road user charging is perceptions of privacy violation. No one system will be able to address all privacy concerns, but by providing technology options as a choice (versus high-cost, low-tech options), states implementing these systems can enable drivers to select the level of privacy protection they are most comfortable with.
- **Flexible and scalable systems require an open architecture that allows for technology evolution**—Recent state-level pilots of the road usage charging concept feature a greater degree of flexibility in the technology systems that support them than pilot efforts conducted before 2010. Early pilot projects tended to feature devices that were custom built for the pilot and required some degree of assistance from the research team to install in participating vehicles. However, recent pilots have relied on off-the-shelf technologies such as smartphones or have featured several private vendors to develop flexible and innovative solutions for participants to choose from. This allows the

road pricing system to evolve along with the technologies that may support it. To better enable the road user charging systems to evolve, it is also necessary to establish them on open architectures and open systems based on publicly available common standards and a common operating system. Under an open system, components performing the same function can be readily substituted and services can be provided by multiple providers. A closed, proprietary system locks the charging system into that particular technology for the foreseeable future, meaning that its technology components are likely to become obsolete in a relatively short time frame. Closed, proprietary systems are also difficult to expand in order to accommodate new jurisdictions or geographical areas, or to accommodate additional services.

- **The auto industry will likely oppose fees targeted to specific vehicle types**—Any state looking to develop and implement road user charging applications should expect opposition from several different stakeholder groups, but the automotive industry is likely to oppose levying charges on specific types of vehicles. Automakers opposed initial versions of the bill authorizing implementation of Oregon’s upcoming RUC by successfully making the case that it amounted to an increase in taxes and that it unfairly targeted high-fuel-efficiency vehicles such as electric vehicles. Original versions of the legislation would have levied the charge on high-fuel-efficiency vehicles only, and automotive manufacturers successfully argued that the new charge would make it harder for them to sell these types of vehicles, which manufacturers are already being mandated to develop through various federal laws and regulations.
- **There will be a significantly enhanced role for the private sector relative to existing fee systems**—RUCs levied on a per-vehicle basis represent a significant shift in terms of the number of collection points for transportation funding. The current fuel tax system relies on relatively few collection points, as fuel taxes are collected from fuel distributors and suppliers as opposed to individual drivers. RUCs, on the other hand, would have to be collected directly from drivers or, more likely, the registered owners of vehicles. This represents a significant administrative burden for state entities, particularly in the state of Texas, which processes an average of 23 million vehicle registrations per year. Oregon’s 2015 deployment will rely almost exclusively on the private sector for various aspects of system operations and administration. There are several potential roles for the private sector to fulfill in road user charging systems, including provision of devices, metering and assessment of road usage, collection and remittance of fees to the state, and maintenance of user accounts.

Texas Institutional Assessment

The implementation of an RUC, if it were to occur in Texas, would likely require the development of significant new capability as well as the mobilization and utilization of existing state institutions. The extent to which the state would be able to leverage existing capabilities, relative to developing new capabilities, could lower potential system and administrative costs. If the state were to implement an RUC with existing resources, there are likely three (if not more) state entities that would be significantly involved from an operational and/or administrative standpoint:

- **The Texas Comptroller of Public Accounts**—Acts as the state’s primary tax collector, accountant, revenue estimator and treasurer.
- **The Texas Department of Public Safety**—Enforces state transportation laws and regulations as well as administers the state’s vehicle safety and emissions inspection programs.
- **The Texas Department of Motor Vehicles**—Maintains the state’s vehicle registration database and administers the state’s vehicle registration program.

These agencies all have activities that require them to either interact with or maintain records on Texas drivers or collect/administer/manage transportation-related fees and taxes. While the Texas Department of Transportation (TxDOT) is directly tasked with developing, operating, and maintaining the state’s various transportation modes, and while it would be a significant stakeholder in any future funding system, it does not participate in any passenger vehicle transportation fee processes outside of toll roads and does not interact with almost all Texas drivers on a *periodic* basis. *Periodic* is a critical word in this context since TxDOT does, in fact, constantly interact with drivers, but these interactions are generally not on a regular, routine basis. For example, the registered owners of vehicles directly interact with TxDMV at least every two years, if not once every year, through the vehicle registration process. As such, TxDOT would likely not play a major role in the *administration* of a Texas RUC. The Texas Department of Insurance is in a similar situation due to its oversight of driver insurance.

The next three sections present an overview of the three state agencies identified above in terms of:

- The institutional framework governing each agency.
- State statutes, ordinances, executive orders, or administrative regulation pertinent to each agency.
- Relevant transportation-related taxes and fees collected by that state agency.
- Current processes for collecting any transportation-related taxes and fees by the agency.
- Payment and filing processes and methods used by that state agency.

Texas Comptroller of Public Accounts

The Comptroller's Office was originally created in 1835 by the provisional government of Texas and is considered part of the Executive Department, as defined in Article 4 (Executive Department) of the Texas Constitution (3). In 1995, an amendment was passed that abolished the Texas State Treasurer and reassigned its duties to the Comptroller. The operations of the Comptroller are regulated by provisions of the Texas Constitution, Title 34 of the Texas Administration Code, and the Texas Tax Code. The Comptroller is the State of Texas' primary financial steward.

Institutional Structure

The Comptroller serves as "the chief steward of the state's finances, acting as tax collector, chief accountant, chief revenue estimator and chief treasurer for all of state government" (3). His primary responsibility is the collection and administration of tax revenue, but the agency has numerous programs dedicated to managing the state's fiscal activity and providing services to state agencies, taxpayers, public officials, and the general public. The Comptroller collects more than 60 different taxes, fees, and assessments, which generated an estimated \$80 billion in the state's 2012–2013 budget period.

Responsibility for the administration of motor fuel taxes, as well as other taxes, is shared among various functional areas within the Comptroller organization, including the Tax Administration, Revenue Estimating, and Revenue Administration areas. The Tax Administration area monitors new tax policies, audits the activities of individuals and companies submitting tax payments, and enforces the collection of taxes on behalf of Texas cities, counties and other local government (4). The Revenue Estimating area produces the Tax Exemption and Tax Incidence Report, which provides estimates of the value of exemptions, special rates, deductions, and discounts for large taxes including the gasoline tax. The Revenue Administration area includes revenue processing, account maintenance, and revenue accounting and is responsible for the following duties (4):

- Collection and processing of state revenue.
- Distribution of local sales taxes to cities and counties.
- Maintenance of taxpayer accounts.
- Processing of tax payment exceptions and adjustments.

As part of its strategic plan, the agency developed automated and computerized tools to facilitate the yearly processing of approximately 4.8 million tax return documents (e.g., sales tax, property tax, motor fuel tax) and 5 million payments worth \$54 billion. Although traditional paper filing methods continue to be made available, the Comptroller's Office states in its strategic plan "a desire to conduct all taxpayer filing and paying transactions using automated means (Internet or telephone)" (4, p. 16). This move toward developing a seamless electronic payment platform

matches the potential demands of a fee based on road user mileage data that requires the ability to track and monitor road use.

The Comptroller investigates and maintains records on tax-related fraud, with some of the most common criminal cases handled by the Comptroller’s Criminal Investigations area, including evasion of motor vehicle taxes by falsification of motor vehicle title applications and/or failure to transfer titles on motor vehicle sales and motor fuel tax violations. Examples include “criminal elements that circumvent the laws associated with dyed diesel and other motor fuels statutes” (4). The Criminal Investigations area has five regional offices that are considered important for enforcement of tax regulations: Northeast (Fort Worth, Dallas, Wichita Falls, and Tyler); West (Odessa, Abilene, Lubbock, and El Paso); Central (Austin HQ); South (San Antonio and Corpus Christi); and Southeast (Houston).

Transportation-Related Taxes and Fees

The Comptroller is responsible for collecting the majority of transportation-related fees and taxes in Texas. However, none of these is collected directly from drivers by the Comptroller.

Motor Fuel Taxes

Motor fuel taxes are levied on the majority of fuels used for motor vehicle transportation, which include gasoline, diesel, liquefied gas, compressed or liquefied natural gas, and biodiesel. Motor fuel taxes are excise taxes, not sales taxes, and are regulated in the Tax Code Chapter 162 and the Texas Administrative Code Title 34, Part 1, Chapter 3, and Subchapter S Motor Fuel Tax (5). The Texas Administrative Code also outlines details on the collection and distribution of the motor fuel taxes. Table 1 shows state motor fuel tax revenues for Fiscal Year (FY) 2013.

Table 1. Motor Fuel Tax Revenues (FY 2015).

Fuel Taxed	Revenue (\$ Millions)
Gasoline	\$1,471
Diesel Fuel	\$511
Liquefied Gas	\$2
Total Motor Fuel Revenue	\$1,985

Source: (6)

Motor fuel taxes are paid to the Comptroller by various entities in the motor fuel supply chain, not drivers themselves. Entities within the motor fuel supply chain are required to have a license from the Comptroller that in turn requires them to remit fuel taxes on the commodities they deal with. Some of these entities are known as “motor fuel transporters” and include “a sole owner, partnership, corporation, or other organization transporting gasoline or diesel fuel in this state as a motor fuel transporter by means of truck, railroad tank car or marine vessel outside the bulk transfer/terminal system” (7). There are over 6,300 licensed motor fuel transporters, also called common carrier taxpayers, in Texas, as shown in Table 2 (8). Appendix 1 provides detailed definitions for each license holder class that is required to pay motor fuel taxes.

Table 2. Number of Active Fuel Tax Licenses by the Comptroller.

Fuel License Description	Number of Licenses	% of Total
Aviation Fuel Dealer	2,171	34.1
Diesel Fuel Bonded User	2,149	33.8
Diesel Fuel Distributor	880	13.8
Gasoline Distributor	640	10.1
Gasoline Supplier	151	2.4
Gasoline Permissive Supplier	40	0.6
Diesel Fuel Permissive Supplier	38	0.6
Gasoline Exporter	30	0.5
Diesel Fuel Exporter	29	0.5
Diesel Fuel Distributor/Aviation Dealer	19	0.3
Gasoline Distributor/Aviation Dealer	13	0.2
Gasoline Importer	5	0.1
Diesel Fuel Importer	4	0.1
Diesel Fuel Blender	1	0.0
Total	6,366	100

Note: Fuel tax licenses issued as of June 10, 2014.

Source: (8)

The following subsections describe taxing and reporting details for each type of fuel used in motor vehicles.

Gasoline Motor Fuel Tax

Taxes collected on gasoline and diesel account for the largest portion of the revenue generated by motor fuel taxes. The current state tax on gasoline and diesel is \$0.20 per gallon sold or used in the state; this rate has been in effect since being set in 1991 (9).

The tax is levied on the first sale, distribution, or use of gasoline within the state. An importer, distributor, or supplier that makes the first taxable sale or use of gasoline is responsible for payment of tax due to the state. Gasoline taxes are paid to the state by the first seller, but the tax amount is carried over, documented, and paid on all subsequent sales of that gasoline: from suppliers or terminal operators to distributors and importers, to distributors and consumers at the final point of sale. Gasoline deliveries can follow various supply chain paths from their first taxable sale to their final sale at the pump. Gasoline extracted in another state will first pass through an importer, while a supplier will make the first sale of gasoline extracted in Texas (10).

In FY 2012, the gasoline tax contributed \$2.3 billion in tax dollars collected for the state according to the *Tax Exemptions and Tax Incidence* report in 2013 (11). The report also detailed the results of three statutes that reduce the gasoline tax liability and require administration by the Comptroller: exemptions, refunds, and discounts. Exemptions apply to gasoline sold for a use other than to propel a vehicle on Texas public roads and to certain exempt purchasers (such as

the federal government and Texas public school districts). Refunds may be given to licensed suppliers, distributors, and non-highway users, among others (12). Finally, discounts (collection allowances or deductions) are offered to license holders who collect and remit the gasoline tax in a timely fashion, like a handling fee. Table 3 illustrates the value of statutory reductions to state gasoline taxes.

Table 3. Value of Statutory Reductions to State Gasoline Tax (FY 2012).

Type of Reduction	Value in 2013 (\$ Millions)
Exemptions and Refunds*	\$74.2
Discounts	\$49.2
Total**	\$124.2

*Comptroller totals exemptions and refunds together.

**This total does not match because some refunds and exemptions fall under a different tax code.

Source: (12)

Diesel Motor Fuel Tax

The tax on diesel fuel parallels the guidelines for gasoline. A \$0.20 tax is levied on the first distribution, sale, or use of diesel fuel within the state, payable by the first importer, supplier, or distributor and passed along with each purchase to the final user. The filing and reporting procedures also mirror the steps for gasoline and are discussed in more detail in a subsequent section. As of August 2011, 917 diesel fuel distributors, 168 suppliers, 51 permissive suppliers, four importers, and two blenders were licensed in Texas (9). Eligible transit companies are also given a discount, paying \$0.195 on diesel fuel. Assuming the timely payment of taxes due, permitted suppliers and importers are allowed a deduction for filing expenses of 2 percent on taxable gallons, distributors and importers receive a deduction of 1.75 percent, and interstate truckers receive a 0.5 percent deduction (13).

There are several exceptions to the \$0.20 per gallon tax rate on diesel fuel. Commercial motor vehicles used to transport passengers on fixed or scheduled routes are eligible for a refund on diesel fuel used for commercial purposes in Texas. A claim for a refund must be submitted to the Comptroller in the month following the expense, and records of routes, miles traveled, and gallons of fuel purchased and on hand must be kept. Monthly reports are required regardless of whether a refund is being requested. A School Fund Benefit Fee of \$0.04875 per gallon is imposed on diesel fuel that is exempt from the standard tax (14).

Another exception is for diesel fuel destined for non-highway purposes, which is not subject to the \$0.20 per gallon tax. Dyed diesel fuel is allocated for agricultural and other non-highway purposes and is dyed a color (red) to distinguish it from colorless diesel fuel used for motor vehicles. The value of dyed diesel that is exempt from taxation is approximately \$260 million each year (15). Dyed diesel users must acquire a license from the Comptroller, and licensed users of dyed diesel must maintain detailed records of purchases and uses using invoices or distribution logs (16). Violations of dyed diesel use restrictions are widespread and require legal

and criminal action by the Comptroller to enforce. Dyed diesel crimes can range from misdemeanors to second-degree felonies that can result in prison sentences (15).

Liquefied Petroleum Gas

Liquefied petroleum gas (LPG), or propane, is the term for a group of hydrocarbon-based gases derived from natural gas or crude oil. Unlike the other fuels discussed above, LPG is taxed through a prepaid decal system paid for directly by the user. Taxes for LPG used in vehicles are collected through an annual sticker permit fee based on the vehicles' registered gross vehicle weight rating and the number of miles driven the previous year.

The taxpayer is expected to record his or her odometer reading on the payment form. A taxpayer can deduct the number of miles driven outside of Texas by submitting a form that enumerates all mileage incurred outside of the state. Electronic-based reporting is not available for this fuel. The Comptroller also has a division responsible for investigating and auditing these submitted odometer reports. This audit function would need to be a component of the paper-based odometer report submitted by users of the RUC system.

Exceptions to the decal system exist for out-of-state vehicles, International Fuel Tax Agreement (IFTA; discussed in the next section) licensed vehicles, and vehicles operated under licensed dealers of LPG motor vehicles. In the last case, LPG motor vehicle dealers pre-purchase special decals for each LPG vehicle owned, and instead of an annual tax, drivers must pay a \$0.15 per gallon tax to a licensed LPG dealer each time a vehicle is refueled. Interstate truckers operating under the IFTA agreement pay for all motor fuels under a separate reporting system (addressed below) (17).

Compressed Natural Gas and Liquefied Natural Gas

On September 1, 2013, the Texas Legislature updated the system for taxing compressed natural gas (CNG) and liquefied natural gas (LNG) with House Bill 2148 by requiring CNG/LNG dealers to collect a \$0.15 per gallon tax when the fuel is sold or delivered into the fuel supply tank of a motor vehicle. Dealers must be licensed by the Texas Railroad Commission's Alternative Energy Division, and licenses must be renewed annually (18). Individuals who maintain their own storage of CNG/LNG for use in their vehicles are required to obtain a CNG/LNG dealer license as well. CNG licenses generated \$28,110 in revenue in FY 2012 (19).

Licensed dealers submit a report every quarter and pay the tax due to the Comptroller for the previous calendar quarter. This report is required even if there is no tax due. Furthermore, every licensed interstate trucker has to file a report every month and remit payment of tax due. If filing and payment are remitted on time, licensed dealers are eligible to deduct 1 percent of the total taxes paid and interstate truckers are eligible to deduct 0.5 percent to cover administrative expenses. This deduction is calculated by each taxpayer as a part of the reporting (20). Like with gasoline, CNG and LNG taxpayers are eligible to apply for refunds for non-highway uses (12). Electronic reporting is not available for this fuel.

International Fuel Tax Agreement

Texas domiciled commercial motor vehicles that operate in multiple states, provinces, or countries are required to participate in a unique reporting system that was designed to simplify fuel tax payments to multiple tax jurisdictions. IFTA is an international agreement that allows for unified reporting of motor fuel taxes (including gasoline, diesel, liquefied gas, compressed natural gas, and liquefied natural gas) by qualified commercial motor vehicles. This agreement is intended for commercial vehicles that operate in multiple states or provinces, allowing them to report travel in multiple jurisdictions on a single form. Texas IFTA licensees submit payment to the Texas Comptroller. An IFTA clearinghouse, used by all IFTA participating entities, uses the data submitted by trucking operations in order to determine where trucks are traveling and allocate diesel and gasoline revenues among participating states based on the usage. Licensed IFTA vehicle operators must report the mileage, gallons, and tax paid for each fuel in each state in which they have traveled (21). The online Electronic Data Interchange (EDI) payment and reporting system can be used by IFTA filers as well (22). Currently, most IFTA filers submit paper reports, and some use EDI. The Revenue Administration Division of the Comptroller's Office reported that it is considering an electronic filing system for IFTA members (M. Moran and T. Baker, personal communication, Oct. 22, 2014).

Trip Permits

Qualified commercial motor vehicles have the option to purchase a trip permit for a one-time entry into the state of Texas, in lieu of an interstate trucker's license, for up to five trips per year. Trip permits can be purchased by check or money order (\$50) payable to the Texas CPA. License plate number or vehicle identification number and date of entry must be submitted with payment, and a receipt with the same information will be provided in return as the "trip permit." These permits allow commercial trucks to travel on Texas roadways without purchase of an annual license or decal, which would require them to undertake the monthly or quarterly reporting required of Texas interstate truckers or IFTA licensees (23).

Collection, Payment, and Filing Methods

Regardless of the specific entity or entities tasked with the administration of a future RUC, it is likely that the Comptroller would be responsible for the remittance of funds by those entities. As such, an examination of the current methods for filing and reporting of taxes utilized by the office is informative for identifying the institutional structure an RUC would be required to operate within. Taxes can be paid to the Comptroller via the Internet, telephone, or mail. Field offices located in 25 cities across the state accept tax returns and payments, assist with tax permit applications and returns, and conduct field investigations for compliance. Approximately 96.8 percent of all tax dollars are submitted electronically (4). The Comptroller reports that an increase in the number of electronic filers and payers has significantly reduced the handling and processing of paper reports and payments. Electronic submission also allows for faster allocation of funds to local authorities, makes data available within 24 hours, and can minimize human error (4).

As such, the Comptroller encourages the use of electronic filing and payment methods whenever possible. There are over 142,000 taxpayers enrolled in an electronic funds transfer (EFT) system, which includes the following:

- **Texas Network for Electronic Transfers (TEXNET; Payment Method Only):** TEXNET operates as a deposit system for taxpayers making large payments and streamlines the money transfer process so that the Comptroller receives payments on the due date (24). Use of TEXNET is required for most tax payments in excess of \$100,000 and for certain types of tax payments above \$10,000 as explained in specific tax regulations. As of January 2003, fuel tax filers who are required to use TEXNET for tax payments are also required to file using an electronic form (such as EDI). Tax payments between \$10,000 and \$100,000 per fiscal year can optionally be paid through an EFT system.
- **Electronic Data Interchange (Reporting Method Only):** The Comptroller also offers software called the Electronic Data Interchange, which is an e-file system designed for businesses reporting a large number of outlets on a monthly or quarterly basis and can be used by tax professionals on behalf of clients who receive approval from the Comptroller (25). EDI is recommended for large operations involving multiple sales outlets and is available to gasoline, diesel, natural gas, and IFTA tax filers. In fact, EDI is only available for sales and use, direct pay, motor fuel, IFTA, crude oil, and natural gas taxes. Texas is one of 24 states to offer the EDI system, which is modeled on a standard system developed under American National Standards Institute and Accredited Standards Committee guidelines, for motor fuel tax reporting (26). EDI transfers reports and filing data almost instantaneously to the taxing agency (27). According to the Comptroller, EDI saves money for the taxpayer and the state by reducing the cost to prepare, send, and process the reports (28). EDI filers who exceed the \$100,000 payment must comply with the TEXNET payment method, while other EDI filers may authorize an electronic payment with their EDI report. A filer who is not required to pay electronically can also pay by check.
- **Webfile:** Webfile is an online system for filing, and paying, taxes to the State of Texas. Administered by the Comptroller, Webfile enables taxpayers to file 31 taxes and fees online. The program offers three payment options—directly through Webfile via electronic check (which requires a bank account), with a major credit card, or through TEXNET (4). Webfile is not used for motor fuel taxes.

While all taxpaying entities are eligible to submit tax *payments* electronically, not all fuel taxes are eligible for electronic *reporting*. For example, LPG (or propane), CNG, and LNG tax systems currently do not have an electronic reporting option with the Comptroller.

Representatives from the Comptroller reported that these three systems are flexible enough to be able to incorporate a new tax since they operate as an integrated system that responds to regulatory changes and the implementation of new taxes.

The payment and filing method required varies based on the type of tax and the amount of tax paid by the tax filer in the previous fiscal year. In Texas, a taxpayer who paid more than \$10,000 in the previous year is generally required to submit payment electronically to the Comptroller. If the previous year’s payment exceeded \$100,000, the taxpayer is required to submit payment through TEXNET specifically (29). This system and others maintained by the Comptroller’s Office will be discussed in more detail later in this section.

Some taxpayers are required to file tax reports electronically as well. This requirement applies to sales, direct pay, crude oil, natural gas, mixed beverage, hotel, motor vehicle rental, insurance premium, and fuel tax filers who paid \$50,000 or more in the previous fiscal year and IFTA (discussed later) taxpayers who paid more than \$100,000. Most taxpayers paying less than \$50,000 may voluntarily file returns electronically, although there are still some taxpayers who only have the option of paper forms (29).

Several methods can be used alone or in combination to file and remit fuel taxes in the state of Texas. While taxes may be initially paid by different parties, such as fuel suppliers in the case of gasoline taxes or vehicle operators in the case of CNG taxes, all of the collected funds are remitted to the state by some sort of entity licensed by the state. This differs from federal income taxes, where payers are generally responsible for remitting payments directly to the collecting authority, in this case the Internal Revenue Service. Table 4 presents the filing requirements for diesel fuel as an example of the various reporting and payment methods applicable based on fuel type and taxes paid. An overview of the various electronic tools and methods is presented in the following subsections (30).

Table 4. Example of Comptroller Filing Requirements (Diesel Fuel Requirements).

Amount Reported and Paid in Preceding Fiscal Year	\$10,000–\$49,000	\$50,000–\$99,999	\$100,000+
Reporting Method(s)	<ul style="list-style-type: none"> • EDI • Paper report 	<ul style="list-style-type: none"> • EDI 	<ul style="list-style-type: none"> • EDI
Payment Method(s)	<ul style="list-style-type: none"> • EDI • TEXNET 	<ul style="list-style-type: none"> • EDI • TEXNET 	<ul style="list-style-type: none"> • EDI • TEXNET

Source: (30)

Texas Department of Motor Vehicles

Since 1907, TxDMV and its predecessors have been legally responsible for performing all passenger and commercial vehicle registrations in the state, with revenue collected from state vehicle registration fees long serving to fund the state's highway network. Because of the consolidation of vehicle registration, safety and emissions inspection, and fee-based information, TxDMV has the potential to play an important function in the development of a VMT-based framework. Recent efforts to consider combining some of the duties of DPS and TxDMV, such as those considered by a recent report published in 2012 (31), further suggest that a VMT framework could be integrated into this new single-sticker system. The subsections that follow review important institutional, legislative, and registration fee structure considerations regarding TxDMV.

Institutional Structure

TxDMV is responsible for:

- Performing all passenger and commercial vehicle registrations.
- Developing motor vehicle theft prevention measures.
- Regulating car dealerships and vehicle weight limits.

The agency has a nine-member, governor-appointed board. This board must include one county tax assessor, two franchise auto dealers, one independent auto dealer, one representative from the vehicle manufacturing industry, one representative from the motor carrier industry, one county or city law enforcement officer, and two members of the general public.

TxDMV in its current organizational arrangement was made a free-standing state agency in 2009 by Texas House Bill 3097 with the express purpose of improving the administration of title and registration-based transactions, and enforcing rules governing motor vehicle dealers, salvage vehicle dealers, and household goods carriers. The reason for this organizational change was to place the agency's focus on streamlining its processes, reviewing its fee structures, and reducing wait times while allowing TxDOT to focus on infrastructure (32). Based on the findings of the 2008 Sunset Advisory Commission on TxDOT, it was also established that various processes were falling short of model standards developed by the Sunset Advisory Commission staff, including various administrative licensing and enforcement processes in the statutes and rules governing motor vehicle dealers, salvage dealers, and household goods carriers (33).

Based on Article VIII, Section 7-A of the Texas Constitution, and Chapter 152 of the Tax Code, motor vehicle registration and titling fees are collected by county tax assessor offices as agents of the state, where a portion is retained for their use at the local county level, and then the rest is provided to TxDMV, which remits to the State Comptroller's Office for deposit into the State Highway Fund and General Revenue Fund (34). County tax assessor offices are mostly allowing their registration and titling fee collection to take place through an online system supported by Texas.Gov, but a few have remained on a paper form and office-based payment within their local

jurisdiction. County offices often, for reasons of convenience, partner with deputized substations such as grocery stores to allow form submission and payments to take place there (35). In 2011, Section 501 of the Transportation Code allowed for the creation of an electronic titling system with title information to be collected by TxDMV. On March 1, 2015, DPS and TxDMV will move to a single-sticker inspection and registration renewal system that requires a timely exchange of inspection data from DPS to TxDMV to support the single-sticker system (36).

Necessary information technology (IT) infrastructure and legislative precedents are in place or are being put into place to facilitate the rapid exchange of data between TxDMV, DPS, and the State Comptroller's Office. For example, the State Comptroller's Office uses data on fee remittance from TxDMV to establish the overhead costs and organizational charges that TxDMV may charge to users for registering and titling motor vehicles (37).

Transportation-Related Taxes and Fees

TxDMV collects titling fees and registration fees. The size of the registration fee is entirely dependent on the type of vehicle in question. As shown in Table 5, the standard fee for motorcycles and mopeds is \$30, the fee for trailers under 6,000 lb is \$45, and both light trucks and passenger vehicles are charged \$50.75. There are considerably more weight classifications and corresponding fees for heavy trucks and trailers. On the low end, the registration of a trailer between 6,000 and 10,000 lb involves a fee of \$54, while the owner of a trailer between 70,000 and 80,000 lb is required to pay a fee of \$840. The registration fees currently in place became effective in the 81st Legislature (2011) with the passage of House Bill 2553, which simplified the standard fee system by reducing state registration fees to three fees from more than 75 fees. Prior to this, registration fees had not been changed since 1985. Table 5 compares registration fees prior to September 1, 2011, to fees enacted after House Bill 2553 was enacted into law.

TxDMV also collects titling fees whenever an automobile is sold. For an individual in Texas to take ownership of an automobile, the vehicle must be titled in that individual's name. A title cannot be granted to an individual until the automobile sales tax (6.25 percent of the vehicle sale price) has been paid. Any time the ownership of a car changes, the state automobile tax must be paid to finalize the title transfer. Even in cases of the vehicle being given as a gift, the individual presenting the gift must pay a fee of \$10 before the ownership change can be made official.

Table 5. Current Texas State Registration Fees (Effective January 2015).

Fee Description	Fees before 09/01/2011	Fees after 09/01/2011
Registration Fees (previously more than 75 fees simplified to 3)		
Motorcycles and Mopeds	\$30.00	\$30.00
0–6,000 lb trailers	\$26.00–\$45.00	\$45.00
Passenger Vehicles	\$40.80, \$50.80, \$58.80	\$50.75
Light Trucks	Avg. \$54.54	\$50.75
Weight Classification Registration Fees (previously more than 1,600 different fees simplified to 7)		
6,001–9,999 lb	\$45.00–86.00	\$54.00
10,000–17,999 lb	\$86.00–\$164.00	\$110.00
18,000–25,999 lb	\$134.00–\$254.00	\$205.00
26,000–39,999 lb	\$182.00–\$421.00	\$340.00
40,000–54,999 lb	\$266.00–\$566.00	\$535.00
55,000–69,999 lb	\$354.00–\$740.00	\$740.00
70,000–80,000 lb	\$446.00–\$840.00	\$840.00
Miscellaneous Fees (standardized automated fee across all counties and eliminated separate reflectorization fee)		
Automated System Fee	\$1.00 certain counties	\$1.00 all counties
Reflectorization Fee	\$0.30	\$0

Source: (38)

Collection, Payment, and Filing Methods

All Texas residents who own vehicles domiciled in the state are required to register and annually renew their registration for a fee according to type and weight of that vehicle. State law allows Texas residents to register a vehicle in person with the county tax assessor-collector, by mail, or online if that county participates in the state’s online registration program. TxDMV receives funds from vehicle titling fees and vehicle registration fees and then remits those funds to the Comptroller to be deposited in either the State Highway Fund or the General Revenue Fund (depending on the fee type that was collected). Counties also retain a portion of these fees. Texas Transportation Code Section 502.102 stipulates specifically how much of the state registration fee is retained by counties and how much is remitted to the state. For vehicles that weigh 6,000 lb or less, counties are allowed to retain \$350 for each mile of county road but not to exceed 500 miles. From that point, 50 percent of net collections is remitted to the County Road and Bridge Fund, and the other 50 percent is deposited in the State Highway Fund.

TxDmv uses the Registration and Titling System (RTS) to process new titles, registrations, and fee collection and has four primary access portals for this purpose (39). County tax collectors access RTS by a **point of sale** system installed in county tax collector offices across the state.

This point of sale system serves as an approval point by the county for all other remote portals prior to funds and information being forwarded on to TxDMV. Third-party vendors such as grocery stores who act as deputized county collectors access the RTS system through a simple **web portal**. **Web Dealer** is an online system that provides access to the RTS system for auto dealers and others making inquiries on titles. A **java server portal** on the TxDMV site allows online renewals and access to the RTS system accordingly. All four of these entry points to the RTS system have payment and refund mechanisms.

According to TxDMV, there are many entities, such as DPS, tow truck companies, repossession services, and insurance providers that also access the RTS portal in order to perform queries for vehicle information (39). The RTS system gets accessed nonstop, with about 1 million queries being submitted on a monthly basis. Toll road operators also provide a monthly update of vehicle records to and from the RTS. In many cases, these RTS interfaces are as simple as uploading to a file transfer protocol server.

Texas Department of Public Safety

Created in 1935 by the 44th Legislature, DPS is responsible for “enforcing the laws protecting the public safety and provide for the prevention and detection of crime” (40). However, authority to enforce state vehicle inspection laws did not come until 1951, after the passage of the Safety Responsibility Act, which required all operators and owners of motor vehicles to be able to pay for damages their vehicles caused to others. Since that time, DPS gained authority to oversee vehicle safety inspections and collect fees through subsequent legislative acts. Today, DPS is responsible for licensing and overseeing more than 38,000 vehicle safety inspectors and for ensuring that all those inspectors are acting in accordance with the law. The subsections that follow review the institutional structure, applicable laws and regulations, collection process, payment and filing methods, and transportation-related taxes and fees.

Institutional Structure

Several applicable state laws and regulations govern how passenger and commercial vehicle inspections are conducted. In 1951, House Bill 223 established a compulsory vehicle inspection program. Chapter 23 of the Texas Administrative Code and provisions in Chapter 547 and 548 of the Texas Transportation Code specify requirements for how vehicle inspections must be conducted. DPS is authorized by law to license stations, certify inspectors, conduct overt audits on inspection stations, investigate complaints against stations and inspectors, and provide training and inspector certification.

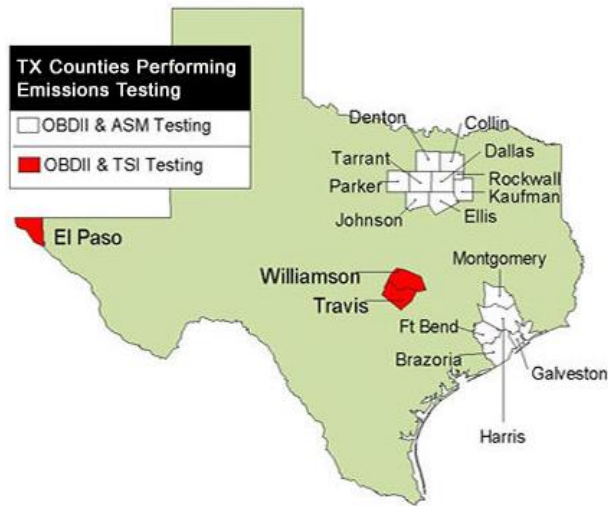
According to Texas Transportation Code Chapter 548, Subchapter H, fees are assessed on a per-inspection basis. In 2010, there were 18.3 million inspections performed, generating gross revenue of \$288.4 million (or an average of \$15.76 collected per inspection) (31). The inspection of commercial vehicles is governed entirely by the state, and per Transportation Code 502.0023, commercial vehicles may be registered for up to eight years. The federal government certified Texas’ commercial motor vehicle inspection program in 1994.

House Bill 2305 was enacted into law in 2013 and amends the Texas Transportation Code to require TxDMV and DPS to enter into an agreement on the submission by DPS of inspection compliance information to TxDMV. It requires DPS to maintain an electronic database to which inspection stations are required to electronically submit the vehicle identification number of a vehicle, an indication of whether the vehicle passed inspections, and any additional information for the type of vehicle inspected. Furthermore, this bill requires the tax assessor-collector to collect, at the time of registration, the portion of the inspection fee required to be remitted to the state and to remit the fee to the Comptroller. The changes in this bill will alter the structure by which registration and inspection fees are collected and processed (41). The system will ultimately result in the elimination of the current vehicle safety inspection sticker, leaving the state with a one-sticker vehicle registration and inspection system.

The general system used by TxDMV is specific to vehicle class with multiple inspection types (safety, emissions) and different fees for those emissions tests in different counties. There are eight types of inspections varying by county, weight classification, and vehicle usage. Matching this variety to a single-sticker system impacted many business processes and required their adjustment. For county tax assessor offices where the annual registration fee is paid, the process is a simple pass-fail review by querying the cloud-based Vehicle Inspection Connection (VIC) server, which is discussed in the next section (39). For county assessors, the system essentially tells them that a vehicle has been inspected or has not been inspected, which allows the county office to proceed with or deny the registration.

Transportation-Related Taxes and Fees

Two types of transportation-related taxes and fees are administered principally by DPS programs: passenger vehicle inspection fees and commercial vehicle inspection fees. In addition to an annual safety inspection, gasoline-powered vehicles registered in counties with an emissions program must also be emissions tested. For emissions testing, DPS and the Texas Commission on Environmental Quality partner to administer the Vehicle Emissions Testing Program, otherwise known as AirCheck Texas. Figure 2 illustrates the Texas counties required to perform emissions testing.



Source: (42)

Figure 2. Texas Counties Performing Emissions Testing.

State law requires all Texas registered vehicles (with the exception of new vehicles) to receive an annual inspection. All inspections include a comprehensive safety inspection; however, some vehicles are required to have an emissions test performed in addition to a safety inspection. Inspection fees vary depending on where in the state the vehicle is registered and the type of inspection that is performed. Table 6 shows the maximum fee that can be charged for each inspection type in various regions.

Table 6. Current State Inspection Fee Rates.

Inspection Type	Safety Only	Dallas/Fort Worth Area	Houston/Galveston Area	Travis/Williamson County	El Paso County
One Year Safety	\$14.50	\$14.50	\$14.50	\$14.50	\$14.50
Two Year Safety (New Vehicles Only)	\$23.75	\$23.75	\$23.75	\$23.75	\$23.75
Commercial/Windshield	\$62.00	\$62.00	\$62.00	\$62.00	\$62.00
Commercial/Decal	\$62.00	\$62.00	\$62.00	\$62.00	\$62.00
Trailer/Motorcycle	\$14.50	\$14.50	\$14.50	\$14.50	\$14.50
OBD-II Inspection	n/a	\$39.75	\$39.75	\$28.75	\$26.75
Acceleration Simulation Mode Inspection	n/a	\$39.75	\$39.75	n/a	n/a
Two Speed Idle Inspection	n/a	\$39.75	\$39.75	\$28.75	\$26.75
Emission Test Only	n/a	\$27.25	\$27.25	\$16.25	\$14.25

Note: Inspection fees current as of June 2014.

Source: (43)

Vehicles registered in counties with an emissions program must be emissions tested. Table 7 shows the total number of safety-only, trailer/motorcycle, commercial vehicle, and emissions inspections that were performed from FY 2006 to FY 2011.

Table 7. State Vehicle Inspections Performed by Category (FY 2006–FY 2011).

Fiscal Year	Inspection Category				Total Annual Inspections Performed
	Safety Inspections	Trailer/Motorcycle Inspections	Commercial Vehicle	Emissions	
2006	8,208,657	247,345	489,775	7,527,613	16,473,390
2007	8,346,906	253,784	499,697	7,759,095	16,859,482
2008	8,542,981	333,607	532,364	7,893,267	17,392,219
2009	8,352,375	318,927	527,518	8,285,576	17,484,396
2010	8,787,331	309,795	528,681	8,764,498	18,390,305
2011	8,768,716	325,176	550,428	8,836,935	18,481,255

Source: (31)

Vehicle safety and emissions inspections are carried out by third-party providers such as service stations and automotive dealerships. The specific process by which this occurs will be discussed later in this section. The Regulatory Services Division of DPS is responsible for administering the vehicle inspection system. This department certifies vehicle inspectors and inspection stations, monitors and ensures compliance with inspection stations, and supervises vehicle emissions programs designed to meet federal clean air requirements (43). In 2009, DPS oversaw more than 10,000 inspection stations in Texas, employing about 38,000 licensed inspectors that performed approximately 16 million inspections annually (44).

Collection, Payment, and Filing Methods

According to the Texas Comptroller Manual of Accounts, fees are collected by appointed inspection stations and portions of those fees collected are retained by that station, remitted to DPS, or deposited into the General Revenue Account administered by the Comptroller as follows (45):

- A \$12.50 fee for each annual certificate of inspection required of any motor vehicle, motorcycle, trailer, semi-trailer, pole trailer, or mobile home; \$7 is retained by the inspection station and \$5.50 is remitted to the state.
- A \$5.75 fee for each annual certificate of inspection required for all mopeds; \$5.50 is remitted to the state and \$0.25 is retained by the inspection station.
- A \$50 fee for inspection of commercial motor vehicles, of which \$10 is remitted to the Department of Public Safety.
- An inspection fee of not less than \$21.75 for new cars sold in Texas; \$7 is retained by the inspection station and \$14.75 is remitted to the state. Of the \$14.75 amount, \$4 is deposited to the General Revenue Account—Clean Air. Inspections expire in two years.

- A \$10 commercial motor vehicle fee for the Texas emissions reduction plan.
- An emissions-related inspection fee, set by DPS, to recover costs for the vehicle emission inspection and maintenance program.

Furthermore, a few fees are required to be paid by the vehicle inspector according to the following conditions (45):

- A fee of \$100 for a two-year certificate of appointment to act as an official inspection station, renewable on August 31 of odd-numbered years. If applicant has been convicted of a violation related to emissions inspection, the fee is \$500 with subsequent renewals of \$100.
- A \$25 fee for each appointment as inspector, with the first appointment effective until August 31 of even-numbered years and valid for two-year periods thereafter.

Certified DPS inspection stations must first purchase inspection certificates in advance of an inspection from DPS. These certified vehicle inspection stations then perform inspections and assess the fee outlined in state law and provide a sticker and certificate. For reference, in FY 2011, a total of 18.5 million inspections were performed, generating a total of \$288 million in gross revenue (31). Under the new one-sticker program, a sticker will no longer be issued to the vehicle owner upon inspection.

With respect to performing and enforcing vehicle inspections, DPS's primary responsibility is providing the requisite reporting equipment to certified vehicle inspectors, who then perform the inspection. In the past, DPS used a system known as the Texas Automated Vehicle Inspection System (TAVIS). TAVIS allowed certified inspectors to enter inspection information directly into a specialized computer system. Participation in the TAVIS program was mandatory for all inspection stations, with the state providing the TAVIS inspection unit (which included a small specialized processor, bar code scanner, metal cart, monitor, keyboard, and related cables and cords) (46).

In 2013, DPS moved away from the TAVIS system and toward a web-based information portal called the Vehicle Inspection Connection system for safety inspection stations (i.e., stations in counties that are not required by law to perform vehicle emissions testing). VIC is a web-based system that allows motor vehicle inspection officials the ability to login and input vehicle inspection information. This application can be used to perform several tasks, including (a) purchase certificates and view order history, (b) pay for inspector application and renewal fees, and (c) view inspection reports. According to DPS officials, future changes in this program will allow data collected by the VIC system to be accessed by the Department of Motor Vehicles as part of implementation of the House Bill 2305 single-sticker program (47).

Conclusions: The Texas Context for Road User Fees

The previous section of this report summarizes the institutional structure of administrative systems for the three state entities that would likely play a significant role in a potential road user charging effort if pursued in Texas. The Comptroller, TxDMV, and DPS all use complex reporting systems that work to certify vehicle safety and emissions, register and title vehicles, and distribute associated fees for use within the state government, and within the county and city governments. It is likely that these systems would be leveraged extensively if the state were to explore the road user charging concept as an option for transportation funding in Texas.

Furthermore, the introduction of this report highlighted several conclusions that might be informative for Texas based on previous and ongoing assessments/implementations of the road user charging concept. Recall that these conclusions are as follows:

- **Policy Objectives:** The generation of sustainable funding in proportion to road use is generally the central policy objective for states looking at RUCs.
- **Private-Sector Role:** There will be a significantly enhanced role for the private sector relative to existing fee systems.
- **Consumer Choice Provisions:** Privacy concerns will persist, and choice is key to addressing them.
- **Flexible and Adaptable Open Systems:** Flexible and scalable systems require an open architecture that allows for technology evolution.
- **Targeted Vehicle Charging:** The auto industry will likely oppose fees targeted to specific vehicle types.

In this final section of the report, the conclusions drawn from other research will be evaluated relative to the previous section's institutional assessment. This allows for the identification of opportunities for and barriers to implementation within Texas.

Policy Objectives

The setting of policy for the overall system, in terms of the primary objective of the charge, is ultimately a legislative decision and outside of any existing institutional capabilities within the State of Texas. If an RUC system is to be developed and implemented in Texas, elected officials or a body appointed by elected officials will likely have to decide what the system is ultimately designed to do. Policy objectives can include:

- **Revenue generation**—Is the system designed to generate supplemental revenue, or is it designed to fully replace fuel taxes?
- **System management**—Is the system designed to change driver behavior? Will it charge different weight classes a different rate in order to fully account for potential user costs?

Will the system have differential pricing based on time of day in order to encourage more people to not travel during rush hour?

- **Environmental mitigation**—Is the system designed to help mitigate the air quality impacts of transportation, such as by providing discounted rates to cleaner, newer vehicles?

All of these policy objectives have been considered by other states that have evaluated the road user charging concept, but revenue generation, specifically the generation of sustainable revenue to replace the fuel tax based on usage, has been adopted by all.

Private-Sector Participation

RUCs levied on a per-vehicle basis represent a significant shift in terms of the number of collection points for transportation funding. The current fuel tax system relies on relatively few collection points, as fuel taxes are collected from fuel distributors and suppliers as opposed to individual drivers. RUCs, on the other hand, would have to be collected directly from drivers or, more likely, the registered owners of vehicles. This would represent an additional administrative burden for state entities, particularly for the State of Texas, which processes an average of 23 million vehicle registrations per year. Furthermore, it is likely that future road user charging systems will need to accommodate several different road usage assessment methods and associated technologies, potentially complicating system administration and escalating costs.

One method for addressing these increased administrative costs is a greater reliance on the private sector for things such as technology provision and account maintenance. Oregon's 2015 deployment will rely almost exclusively on the private sector for various aspects of system operations and administration. The State of Texas already allows third-party vendors to submit payments and associated information on behalf of taxpayers through the vehicle inspection process, offers various access points to TxDMV's registration and titling system, and offers numerous Comptroller-administered systems. Thus, there is precedent in Texas for the state to rely in large part on the private sector to function within an operational and administrative capacity for the collection of data and levying of a state transportation fee.

There are several potential roles for the private sector to fulfill in road user charging systems, including:

- Provision of devices.
- Metering and assessment of road usage.
- Collection and remittance of fees to the state and maintenance of user accounts.

Provision of Devices

It is unlikely that the State of Texas, if it chose to pursue a road user charging system, would benefit from being responsible for providing road usage assessment devices to drivers. As noted

elsewhere in this document, it is likely that road usage systems will have to adapt to accommodate continual changes in technology applications. It is unlikely that the state will be able to keep up with these developments and provide users with the most current technologies available. Furthermore, there is likely to be a wide range of options that utilize drivers' existing telecommunications devices, such as smartphone apps, and in-vehicle systems such as telematics-based applications.

Additionally, state provision of road usage devices implies a certain level of ownership and responsibility of those devices by the state. In the event that there is a malfunction or the device reports erroneous information, it will be up to the state to rectify the problem.

Metering and Assessment of Road Usage

Most states exploring the road user charging concept are looking at providing numerous options for the assessment of road usage. Providing options allows consumers to adopt the assessment strategy they are most comfortable with. In general, there are three tiers of road usage assessment:

- **Flat Fee (No Tech)**—An assumed mileage is used to generate a flat fee that is paid by the driver. This tier could most likely be incorporated into existing vehicle registration/inspection processes or some other state-maintained fee system. This new fee would not be without cost, but it would be among the lowest cost options to the state for administering an RUC. This assessment option could therefore be administered by the state.
- **Odometer Reading (Low Tech)**—This assessment tier relies on periodic readings of the odometer to determine travel without the need for location data. The State of Texas does collect odometer readings as part of the vehicle inspection process, but these readings are not verified and audited. Furthermore, in many cases, odometer readings are simply not taken due to the complexity of the vehicular system involved. If the state were to utilize private-sector entities for odometer readings, it would still need to audit these readings. As such, the administration of an odometer-reading-based assessment option would be a reasonable responsibility for the state, and significant changes to how those readings occur as part of the inspection process would need to occur in order to ensure compliance.
- **Location-Based Assessment (High Tech)**—The collection of location data and assessment of road usage data through various technologies is the most logical option for private sector participation in this area of fee administration. As noted before, the private sector is well positioned to anticipate and provide technology solutions that meet customer demand. However, the state would still require information from these providers in order to conduct enforcement activities. The State of Oregon has addressed this issue by developing a back-office system that requires vendors to upload basic, standardized data files that are technology agnostic. Oregon intends to leverage this

system once it is mature, and it could serve as a resource for Texas efforts, which could lower costs to the state.

Collection and Remittance of Fees to the State, and Maintenance of User Accounts

TxDMV, through county tax assessors, is the only state entity that has routine interaction with Texas drivers in terms of collecting fees and taxes through its vehicle registration and titling system. The Comptroller does not collect any transportation-usage-related fees directly from drivers and does not administer data systems on Texas drivers. DPS administers the state's safety inspection program but does not interact with drivers as part of that program, and its role is mostly related to regulation of inspection outlet operators. Thus, in terms of implementing a system that levies a new fee for road usage, TxDMV is the most logical option in terms of being able to leverage existing institutional capability.

This observation should not be taken to mean that administration of a new fee system by TxDMV would be low cost. Rather, it would likely be low cost relative to other fee administration options that would require significant capacity development in terms of customer service functions. TxDMV has indicated that placing a new fee on the 23 million vehicles currently registered in Texas would require significant work for TxDMV to accommodate, even within its existing RTS applications. New data fields would have to be entered and updated for all registered vehicles, and new data exchange protocols would have to be developed. The cost of this effort cannot be estimated at this time, but the costs associated with developing new capabilities for the state's one-sticker program could be illustrative.

If the state were to follow Oregon's lead and rely on private sector entities for a significant portion of administrative effort, including collecting and remitting fees and maintaining driver accounts, significant effort would still be needed to develop the necessary systems for enforcement. Oregon's back office is touted as minimal and low cost, but it is currently set up to handle data from only 5,000 participants. The minimal amount of data used by Oregon's back office would still amount to a significant IT investment if applied to all registered vehicles in Texas. Furthermore, even if the state were to leverage Oregon's back-office capabilities, the state entities interviewed for this effort indicated that they would still prefer to have their own data for enforcement and auditing.

However, as noted throughout this paper, the State of Texas is capable of interacting with private sector vendors for the collection of data and payment of fees and taxes. This is particularly true given the Comptroller and TxDMV's efforts to provide and encourage the use of more electronic reporting and filing options to Texas residents, almost all of which can be accessed by private vendors in some way.

Consumer Choice, and a Reliance on Flexible and Adaptable Open Systems

Providing consumer choice is critical for addressing public concerns related to RUC implementation. Location-based road usage applications can allow drivers to discount mileage accrued out of state or on private roadways. However, these location-based technologies can raise privacy concerns for some travelers who perceive the applications as “tracking” them. These drivers may prefer to simply submit to an odometer reading. Thus, providing choice in how road usage is assessed allows drivers to adopt the metering method they are most comfortable with.

Furthermore, many of the vehicles currently on the roadway do not have the requisite in-vehicle technology to support electronic reporting of mileage by most of the systems currently under consideration. For example, OBD ports, based on the OBD-II standard, were not mandated for new vehicles until 1996. OBD-II-based road metering devices have been the most extensively tested technologies on the market for assessing road usage, and are even commonly used in distance-based insurance applications. However, because the OBD-II standard is not found in many pre-1996 models, many vehicles would not be able to utilize this technology for the assessment of road usage in the event of an RUC deployment. Thus, if a state were to implement an RUC program, it would need to allow for numerous reporting options, including low-tech mileage reporting methods such as flat fees based on an assumed mileage or certified odometer reading, in addition to more high-tech options.

The ever-evolving nature of in-vehicle technologies is a major reason for allowing reporting by multiple technologies under an open platform with basic standards. Any governmental mandate or preference for the use of one particular application or technology will limit the ability of the overall system to remain flexible in the face of these evolving technologies. Oregon’s approach to this issue has been to remain generally agnostic with regard to the types of technologies that are used to collect road usage information. Road usage assessment technologies will be subjected to a certification process, and as long as they and their service providers meet the requirements of that process, they can be used in the collection of road usage information. Information on road usage is reported to ODOT’s back office using a standardized mileage message that is technology agnostic and thus allows technologies to develop and evolve.

A strong reliance on technology for the collection of road usage data and the assessment of a charge is likely to require the development and maintenance of computerized systems for data management, even if the data maintained are minimal (as is the case with Oregon). Even if much of this capability is handled by the private sector, the state will still have to maintain records sufficient to conduct enforcement activities. Fortunately, the three agencies discussed in this report are all working to modernize their existing capabilities and are transitioning toward an even greater reliance on electronic reporting of fees and associated information. If these agencies were not undergoing these efforts, significant effort would be required in order to develop the required IT systems. This is not to say that developing a system to house road usage enforcement

data by the state would not be a significant undertaking. As noted throughout this report, the establishment of any new fee system will require the development of new IT capabilities. However, there is opportunity for efforts underway at these three agencies to be leveraged for a potential RUC system.

Targeted Vehicle Charging

Electric vehicles and some types of alternative fuel vehicles currently pay far less in fuel taxes (or none at all) relative to traditional internal combustion engine vehicles. Some states have therefore considered levying new RUCs on specific vehicles that are currently underpaying for usage of the road network. Texas currently has data available through vehicle registration and inspection processes, such as vehicle type and make/model, that could accommodate this type of vehicle-specific charging. However, the State of Oregon encountered significant opposition from automotive manufacturers when it attempted to target high-mileage vehicles in its upcoming RUC deployment. Manufacturers are already required to develop and sell more fuel-efficient vehicles as part of various state and federal programs, and they successfully made the case to the state legislature that targeting more fuel-efficient vehicles would make them less attractive to buyers. Participation in the upcoming deployment was therefore opened to all vehicle types with some restrictions.

Appendix 1: Fuel Tax Supplier Definitions

The following list provides descriptions of the fuel tax suppliers summarized in Table 2 of this report (48).

- **Terminal Operator:** “A terminal operator is a person who owns, operates or otherwise controls a terminal and has been issued a Terminal Control Number under the Internal Revenue Code. Types of terminals include barge, pipeline, and refinery.”
- **Supplier:** “A supplier is a person registered under Section 4101, Internal Revenue Code, (637 Certificate of Registration) for transactions of motor fuel in the bulk transfer/terminal system, and is a position holder of motor fuel in a terminal or refinery in this state or a person who receives motor fuel in this state under a two-party exchange. A position holder has a contract with a terminal operator for the use of storage facilities and terminaling services for motor fuel at a terminal. A supplier may act as a distributor, importer, exporter, blender, or aviation fuel dealer without obtaining a separate license. The minimum bond required is \$600,000.”
- **Permissive Supplier:** “A permissive supplier is a person registered under Section 4101, Internal Revenue Code (637 Certificate of Registration), and is a position holder in motor fuel located only in another state or receives motor fuel only in another state under a two-party exchange and elects, but is not required, to have a supplier’s license for the purpose of collecting tax on motor fuel removed from an out-of-state terminal destined for delivery into Texas. A permissive supplier may act as a distributor, importer, exporter, blender, or aviation fuel dealer without obtaining a separate license. The minimum bond required is \$600,000.”
- **Distributor:** “A distributor is a person who acquires motor fuel from a licensed supplier, permissive supplier or another licensed distributor and who makes sales at wholesale (deliveries for resale and/or sales in bulk deliveries by way of transport truck, railcar or barge to end-users). In addition to selling at wholesale, a distributor’s activities may include sales at retail. A licensed distributor may act as an importer, exporter or blender without obtaining a separate license. A separate license is required to operate as an aviation fuel dealer. The minimum bond required is \$30,000.”
- **Importer:** “An importer is a person who imports motor fuel into this state. An importer may act as an exporter or blender without obtaining a separate license. An importer must also complete the Texas Application for Petroleum Product Delivery Fee Permit (Form AP-154). The minimum bond required is \$30,000.”
- **Motor Fuel Transporter:** “A motor fuel transporter is a person who transports gasoline, diesel fuel or gasoline blended fuel outside the bulk transfer/terminal system by means of a transport vehicle, railroad tank car or a marine vessel. A motor fuel transporter license

is not required for a person transporting their own fuel in their own cargo tank for their own use and not for resale, or a licensed supplier, permissive supplier or distributor who retains ownership to the motor fuel while the fuel is being transported.”

- **Aviation Fuel Dealer:** “An aviation fuel dealer is a person who is the operator of an aircraft servicing facility that delivers gasoline or diesel fuel exclusively into the supply tanks of aircraft or into equipment used solely for servicing aircraft and used exclusively off-highway. An aviation fuel dealer cannot use, sell or distribute any gasoline or diesel fuel on which a fuel tax is required to be collected or paid.”
- **Liquefied Gas Dealer:** “A liquefied gas dealer is a person authorized to collect and pay taxes on liquefied gas delivered into the fuel supply tanks of motor vehicles displaying an out-of-state license plate or a current year IFTA decal and/or vehicles displaying motor vehicle dealer’s liquefied gas tax decal.”
- **Compressed Natural Gas/Liquefied Natural Gas Dealer:** “A compressed natural gas/liquefied natural gas dealer is a person who delivers CNG or LNG into the fuel supply tanks of motor vehicles. A dealer includes a fleet user who maintains a private CNG or LNG storage for delivery into their own motor vehicles and not for resale.”
- **Exporter:** “An exporter is a person who exports motor fuel from Texas. The minimum bond required is \$30,000.”
- **Blender:** “A blender is a person who produces blended motor fuel outside the bulk transfer/terminal system by mixing one or more petroleum products with another product, regardless of the original character of product blended, if the blended motor fuel is capable for use in the generation of power for the propulsion of a motor vehicle. The minimum bond required is \$30,000.”
- **Interstate Trucker:** “An interstate trucker is a person who operates a motor vehicle only in Mexico and in Texas for commercial purposes and the motor vehicle (1) has two axles with a registered gross weight in excess of 26,000 lb; (2) has three axles; or (3) is used in combination and the registered gross weight of the combination exceeds 26,000 lb.”

Appendix 2: IFTA Form and Related Administrative Code

IFTA Fuel Tax Report Supplement

a. T Code: 56100 Original

c. Texas taxpayer number: []

d. IFTA number: TX

e. Filing period: Indicate filing period

h. Due date: []

1. Indicate the appropriate fuel type for this supplement. CHECK ONLY ONE - Use a separate IFTA Report Supplement, Form 56-102, for each fuel type.

01 - Diesel 02 - Gasoline 03 - Ethanol 04 - Propane (LPG) 05 - Compressed Natural Gas (CNG) OTHER (See instructions)

A. Total IFTA miles (Whole miles): []

B. Total Non-IFTA miles (Whole miles): []

C. Total miles (Item A + Item B): []

D. Total gallons purchased (IFTA and non-IFTA): []

E. Average fleet MPG (Item C ÷ Item D): []

F. Juris. ID CODES	G. Total IFTA Miles (Whole miles)	H. Taxable Miles (Whole miles)	J. Taxable Gallons (Item I - E)	L. Purchased Gallons (Whole gallons)	M. Net Taxable Gallons (K - L)	N. Tax Rate	O. Tax/Credit Due (M x N) (Dollars & cents)	P. Interest Due (Dollars & cents)	Q. Total Due (O + P) (Dollars & cents)

Figure 3. Format of Form 56-102 for IFTA Fuel Tax Reporting.

The tax administration chapter of the Texas Administrative Code (Chapter 3, Subchapter S, Rule 3.430) requires that IFTA truckers record the beginning and ending odometer reading for all trips taken in Texas. The text of the code states:

“(11) An interstate trucker, as that term is defined in Tax Code, §162.001, shall keep a record on an individual-vehicle basis of: (A) the total miles traveled, evidenced by odometer or hubodometer readings, everywhere by all vehicles traveling to or from this state, and the total miles traveled, evidenced by odometer or hubodometer readings, in this state, including for each individual vehicle:

- (i) date of each trip (starting and ending);
 - (ii) trip origin and destination;
 - (iii) beginning and ending odometer or hubodometer reading of each trip;
 - (iv) odometer or hubodometer reading entering Texas, and odometer or hubodometer reading leaving Texas;
 - (v) power unit number or vehicle identification number or license plate number;
- (B) the total quantity purchased and delivered at retail of gasoline, diesel fuel or liquefied gas everywhere by all vehicles traveling to or from this state, and the total quantity of gasoline, diesel fuel or liquefied gas purchased and delivered into the fuel supply tanks of motor vehicles in this state, including for each individual vehicle:
- (i) date of purchase;
 - (ii) name and address of seller;
 - (iii) number of gallons or liters purchased;
 - (iv) type of fuel purchased;
 - (v) price per gallon or liter; and
 - (vi) unit number of the vehicle into which the fuel was placed.
- (C) An interstate trucker that uses a distribution log to record removals from the person's own bulk storage into a motor vehicle must include on each log the person's stamped or preprinted name and address, and for each individual delivery:
- (i) date of delivery;
 - (ii) number of gallons or liters of gasoline, diesel fuel or liquefied gas delivered;
 - (iii) license plate or vehicle identification number or power unit number;
 - (iv) odometer or hubodometer reading; and
 - (v) signature of the user.
- (D) An interstate trucker that maintains bulk fuel storage must keep a record of the number of gallons of gasoline, diesel fuel, or liquefied gas beginning and ending inventories, all invoices of bulk purchases and records to substantiate all fuel withdrawals from storage.”

The use of odometer and hubodometer readings in IFTA filings may have useful implications for a mileage-based fee system.

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