



Consolidated Task Memorandum #1

Multi-State VMT-Based Fee Institutional and Legal Analysis

FINAL

April, 2010

I. INTRODUCTION

Project Background

In December 2009, the I-95 Corridor Coalition initiated a project entitled Multi-State VMT-Based Fee Institutional and Legal Analysis. This was in response to direction received from its Executive Board in the spring of 2009 to embark upon a program to help address the current surface transportation program funding crisis by exploring alternatives to the gas tax as the primary funding mechanism. In May 2009, the Coalition convened a workshop involving a group of experts to discuss how the Coalition could best contribute to the national effort on the topic. Based upon the results of this workshop, and the considerable research already undertaken on other aspects of this issue, at the Coalition's June 2 combined Steering Committee/Executive Board meeting, a decision was made to launch a project focused on the institutional and administrative requirements of a multi-state VMT-based fee system, and to explore legal and regulatory issues that may hinder the adoption of such a system.

Project Objectives

The objectives of the project are to:

- Build consensus on a comprehensive set of functions to be included in a multi-state VMT-based fee system
- Identify the institutional and administrative requirements of a multi-state VMT-based fee system
- Identify alternative mechanisms for governing and administering multi-state VMT-based fee collection
- Explore existing multi-state revenue collection systems for lessons that can be applied to the VMT-fee situation
- Prepare preliminary estimates of the costs of administration and enforcement under different options
- Identify legal issues that may constitute barriers or opportunities with regard to state and multi-state implementation of VMT programs
- Identify legal and administrative issues associated with fee structures that include variable charges and pricing for externalities such as congestion, environmental and vehicle type/class differences

- Explore the State and Federal legal/regulatory environment and assess the significance of legal/regulatory barriers
- Develop an approach to address the significant barriers identified, including structure
- Prepare an integrated final report containing a set of recommendations regarding next steps to take to address institutional/administrative and legal/regulatory issues and findings.

There are a great number of very useful current and recent studies that are addressing other aspects of VMT-based fees, especially the technologies that might be used to identify vehicles and the miles driven since the last communication. Many of these studies are cited below and can be accessed on the Coalition's website. The Coalition is making every effort to utilize and benefit from these other studies while not duplicating them. This project, with its focus on institutional and administrative requirements and legal and regulatory issues, is intended to make a unique contribution that will be supportive of these other studies.

Contents of This Consolidated Task Memorandum

This is the first task memorandum produced under the project. It specifically addresses the first three objectives listed above, and provides a summary discussion of the legal and regulatory issues that will be explored. It consolidates several of the individual deliverables that were defined in the project scope of work as follows:

- A task memorandum assessing the consequences of whether certain functionalities are to be considered within the scope of a multi-state VMT-based fee system.
- A task memorandum identifying the institutional and administrative requirements of a multi-state VMT-based fee system and their relationships to each other and to other aspects such as technology
- A task memorandum identifying alternative institutional and administrative approaches to a multi-state VMT-based fee system

In addition, this memorandum provides a comprehensive list of potential legal or regulatory issues that will be explored later in the project.

Scope

A number of decisions about underlying assumptions have been made in regard to issues that will be addressed under the scope of the project:

- The project will assess VMT-based fees applied to all roads (state and local jurisdictions) and to vehicles of all types on a multi-state basis.
- The project will consider issues associated with the collection of VMT-based fees at both the State and Federal levels of government.
- Mechanisms for the equitable sharing of revenues among multiple States and local jurisdictions will be explored.

- Both mandatory and optional system functions will be considered in the analysis. Optional functions are those that the system will have the capability to perform, but implementation by any jurisdiction is optional. Congestion pricing is an example of an optional function.
- The institutional, administrative and legal aspects of an array of implementation options representing increasingly enhanced functionality will be assessed. These implementation options will cover a full range of functionality, including optional functions such as charges that vary by time of day and by facility, and applications of other fees such as potential greenhouse gas emission based charges.
- No assumption is made regarding the level of revenue that a multi-state application of VMT-based fees would produce relative to the current level of revenues being collected by a state DOT or a toll agency. Revenues produced by a VMT-based fee may be considered as a replacement for gas tax revenues or as a supplement to them. Toll agencies are assumed to continue to collect current fees.
- No assumption is made regarding the technology that would be used to implement a VMT-based fee system, although it is understood that certain technologies cannot be used to achieve some desired functions (i.e., some technologies may be insensitive to varying of VMT charges by time of day or facility).

In addition, a number of clarifying decisions have been made regarding issues that will **not** be addressed under the scope of the project. As listed in the section below, a number of organizations have embarked on studies related to VMT-based fees and these other efforts will be addressing the following issues that are **not** within the scope of this project.

- The public acceptability of imposition of a VMT-based fee;
- Privacy issues associated with use of certain of the enabling technologies (although privacy considerations will be accounted for in assessing administrative and institutional options);
- The desirability of varying fees to help meet social objectives related to, for example, income level or age;
- The performance of different implementation technologies relative to issues such as accuracy and reliability; and
- The transition path from the current gas tax based revenue collection system to a system that includes collection of VMT-based fees.

The Coalition may pursue additional analyses of certain issues at the conclusion of this project, or explore the possibility of a multi-state trial. Such analyses or trial may explore issues such as the transition path or the potential for an opt-in approach in order to take

advantage of financial incentives. Issues associated with the politics of funds distribution could also be explored.

Efforts of Other Organizations That Are Addressing VMT Fees

Other organizations have addressed and are continuing to address the VMT-based fee efforts. A brief summary list of some of these efforts follows. Links to the reports referenced below can be found on the I-95 Corridor Coalition's website at:

<http://www.i95coalition.org>

- For a 12-month period starting in April of 2006, the Oregon Department of Transportation conducted a pilot demonstration of a mileage-based road user fee system as part of FHWA's Value Pricing Pilot Program.
- The University of Iowa is conducting a 4-year study to assess the appropriateness of the technology and to evaluate user acceptance of a VMT charging system. Six sites are included in the project: Austin, TX; Baltimore, MD; Boise, ID; Eastern Iowa; Research Triangle, NC; and San Diego, CA.
- As part of Special Report 299, the Executive Committee of the Transportation Research Board commissioned a paper entitled *Discerning the Pathway to Implementation of a National Mileage-Based Charging System* (dated October 2009). The paper presents concepts for research and development programs to test the technical and political feasibility of road use metering and mileage charging. It also deals with issues related to the conduct of trials or pilot projects.
- As part of Project 20-24(69), the National Cooperative Highway Research Program (NCHRP) produced a report entitled *Implementable Strategies for Shifting to Direct Usage-Based Charges for Transportation Funding*. The goal of the project was to identify a range of options that might support the near-term implementation of a national system of VMT fees and evaluate their relative strengths and weaknesses. A second phase of this project is starting.
- The NCHRP is currently conducting Project 19-08 entitled *Costs of Alternative Revenue-Generation Systems*. The objective of the project is to develop a methodology that can be used to analyze and compare the administrative, collection and compliance costs of alternative revenue systems including VMT fees.
- The Intelligent Transportation Institute at the University of Minnesota prepared a report entitled *Technology Enabling Near-Term Nationwide Implementation of Distance Based Road User Fees*. The report describes a technology solution that could be implemented in the near term.
- The Research and Innovative Technology Administration (RITA) in the US Department of Transportation produced a paper entitled *Mileage-Based User Fee Technology Study*. The paper identifies the major functions and available technology options and a framework for categorizing them, and presents a high-level qualitative assessment.

- The Texas Transportation Institute (TTI) is conducting an exploratory study on the viability of pursuing vehicle mileage fees as a statewide source of transportation revenue. The study includes formation of focus groups to assess perceptions and attitudes and stakeholder interviews.

A number of international efforts were reviewed as part of an international scanning trip sponsored by the USDOT, the NCHRP and AASHTO that fostered information sharing about variable road pricing activities outside the US. Exchanges were held with those involved in activities in Stockholm, London, Singapore, Germany, the Netherlands and the Czech Republic. A presentation summarizing the initial report of the participants can be found on the Coalition's website referenced above.

VMT Trends in the I-95 Corridor Coalition Region

The information on vehicle miles of travel presented below is based upon analysis of data compiled by the FHWA from data reported by the states. In 2008, Coalition member states reported over 1,050 billion vehicle miles traveled (VMT), accounting for over one-third of the nation's total VMT. Figure 1 shows the relationship between Coalition member states VMT and national VMT. It indicates that the Coalition region's share of VMT has remained relatively consistent over the last decade. In terms of growth, however, VMT in some Coalition member states has been growing at a faster rate than VMT at the national level (see Figure 2). VMT has been growing at a faster rate in Florida when compared to other Coalition member states. Figure 3 shows VMT by state.

At the national level, about two-thirds of the VMT is in urban areas. This share is higher for the Coalition member states, at over 72 percent in 2008. Figure 4 shows the share of urban and rural VMT for 2008 in Coalition member states. In two states (Vermont and Maine), urban VMT is under 50 percent of the total VMT (26 and 28 percent respectively). Urban VMT in six Coalition member states is over 80 percent of total VMT (District of Columbia, Rhode Island, Connecticut, Massachusetts, New Jersey, and Florida). The urban versus rural breakout of VMT is a product of U.S. Bureau of the Census definitions and classifications of those types of areas, with the VMT within those areas estimated by the states.

Figure 1: VMT – National and I-95 Corridor Coalition States (in millions)

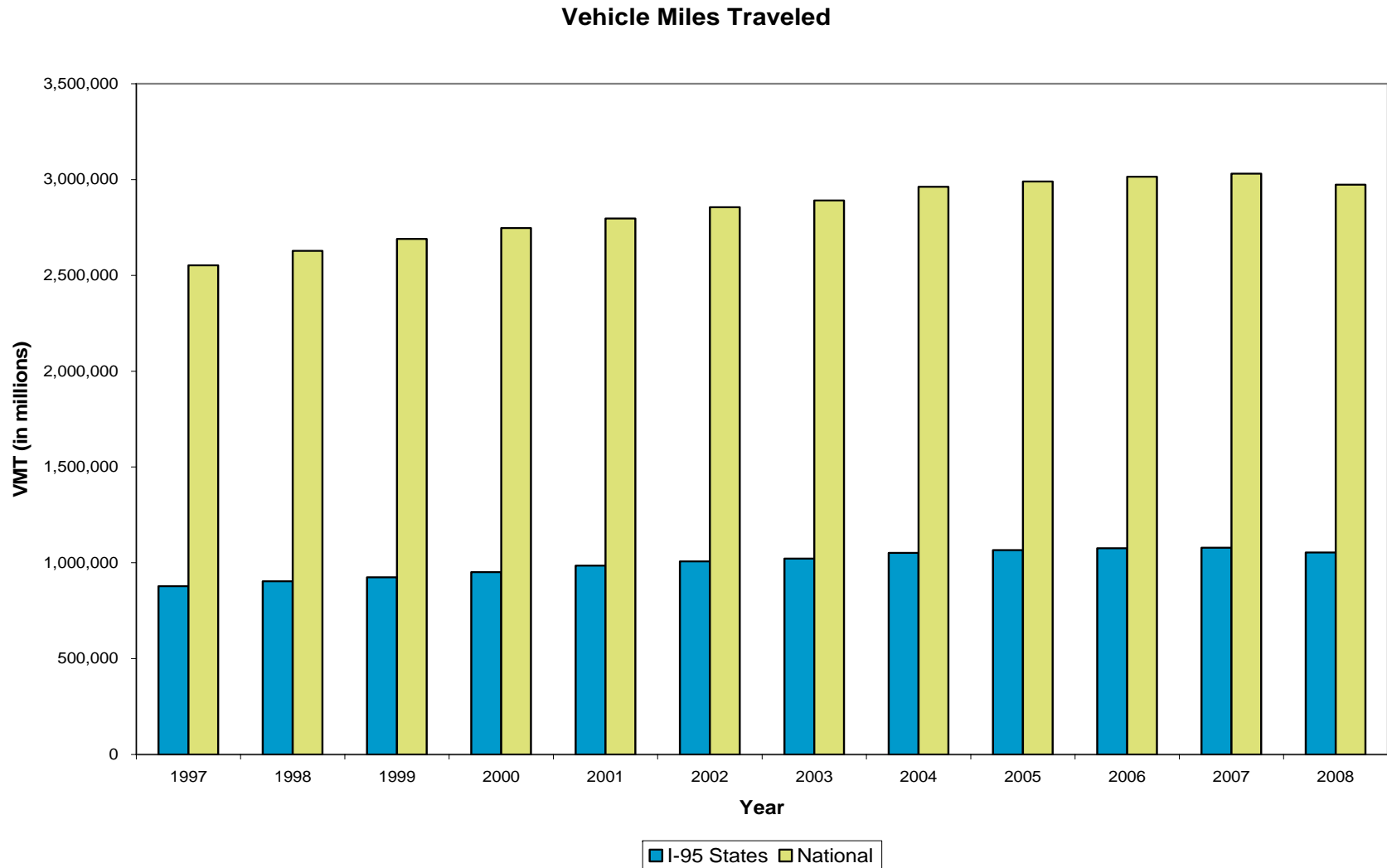


Figure 2: VMT Growth Over the Last Decade

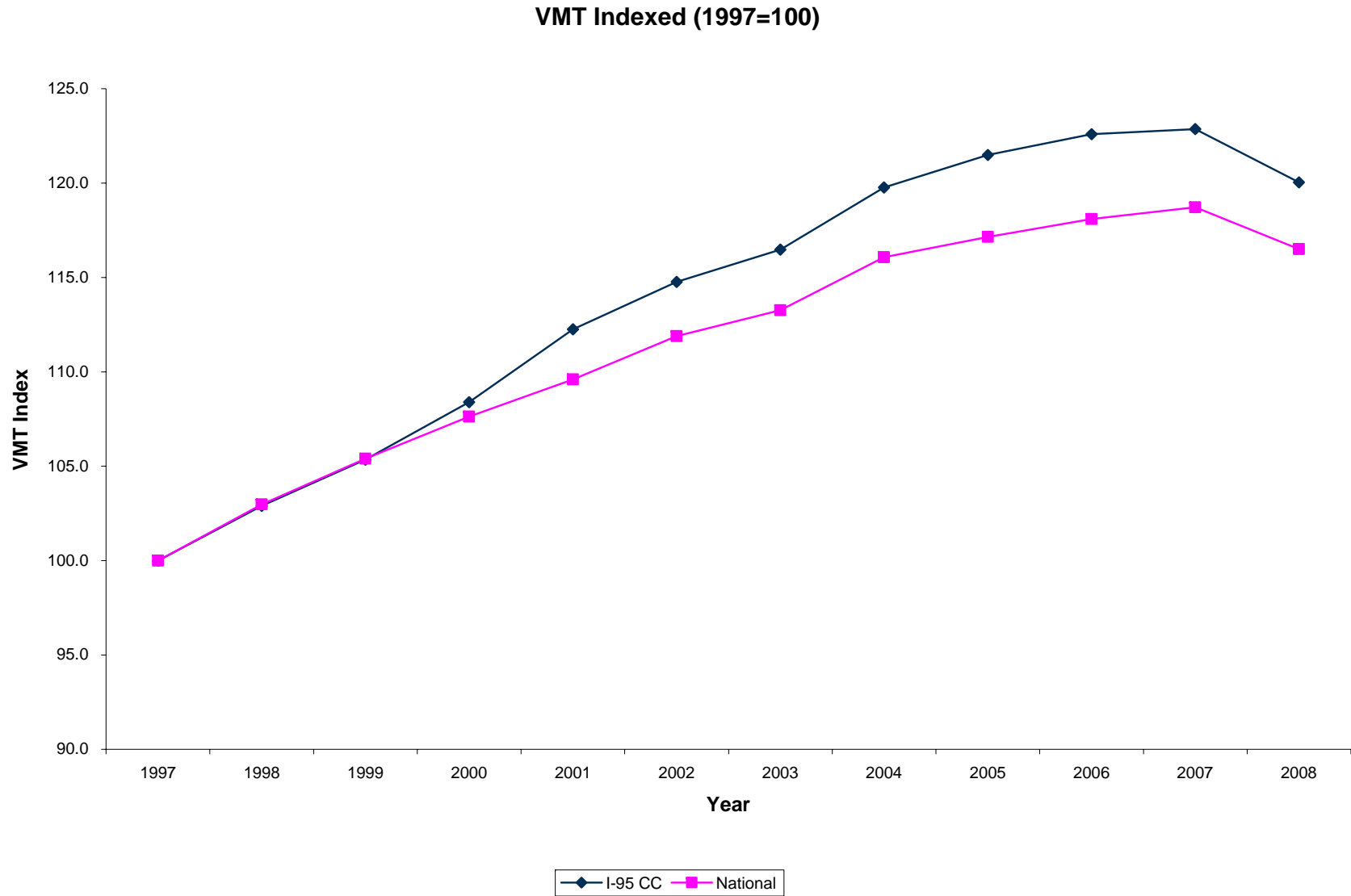


Figure 3: VMT by State within the I-95 Corridor Coalition (in millions)

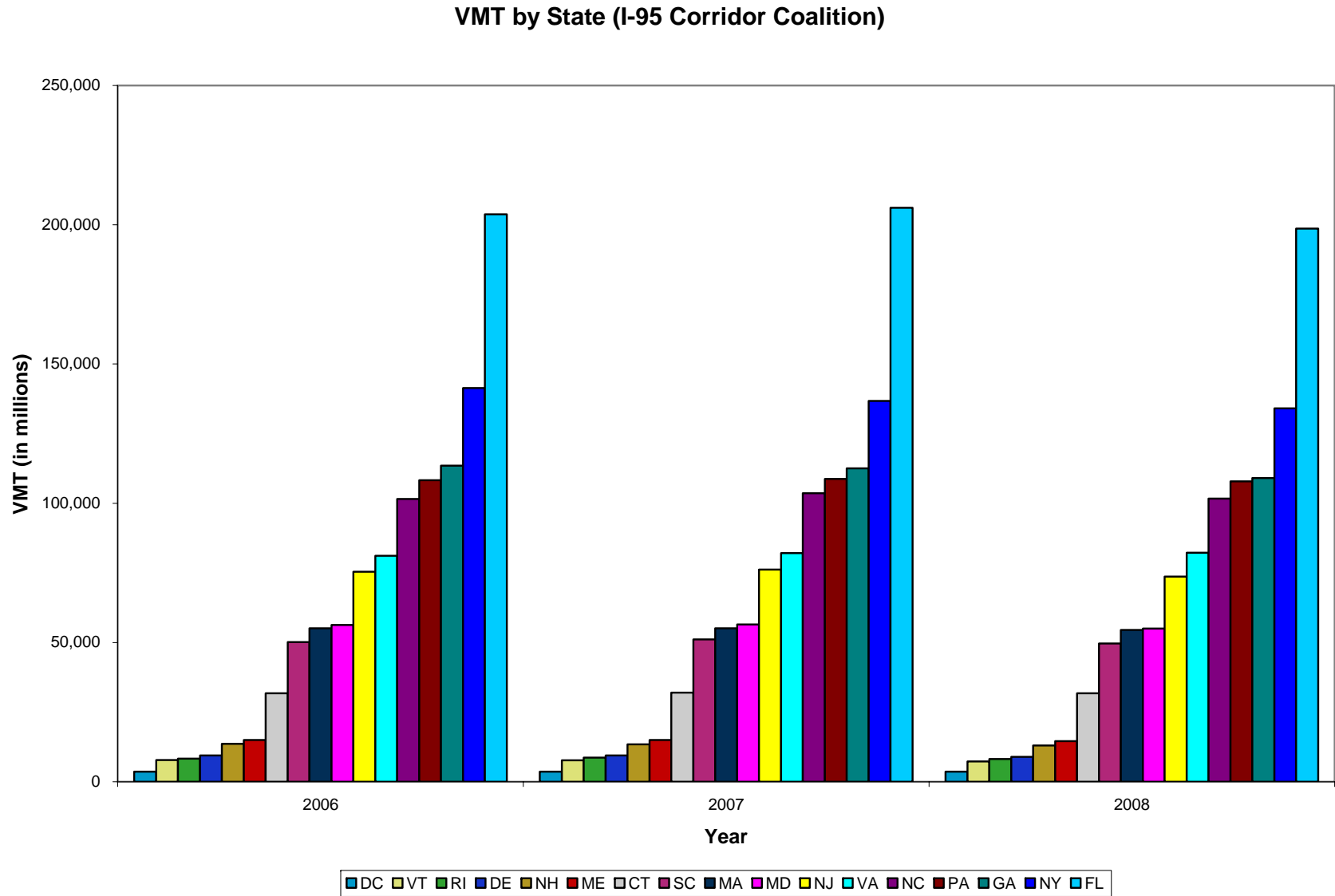
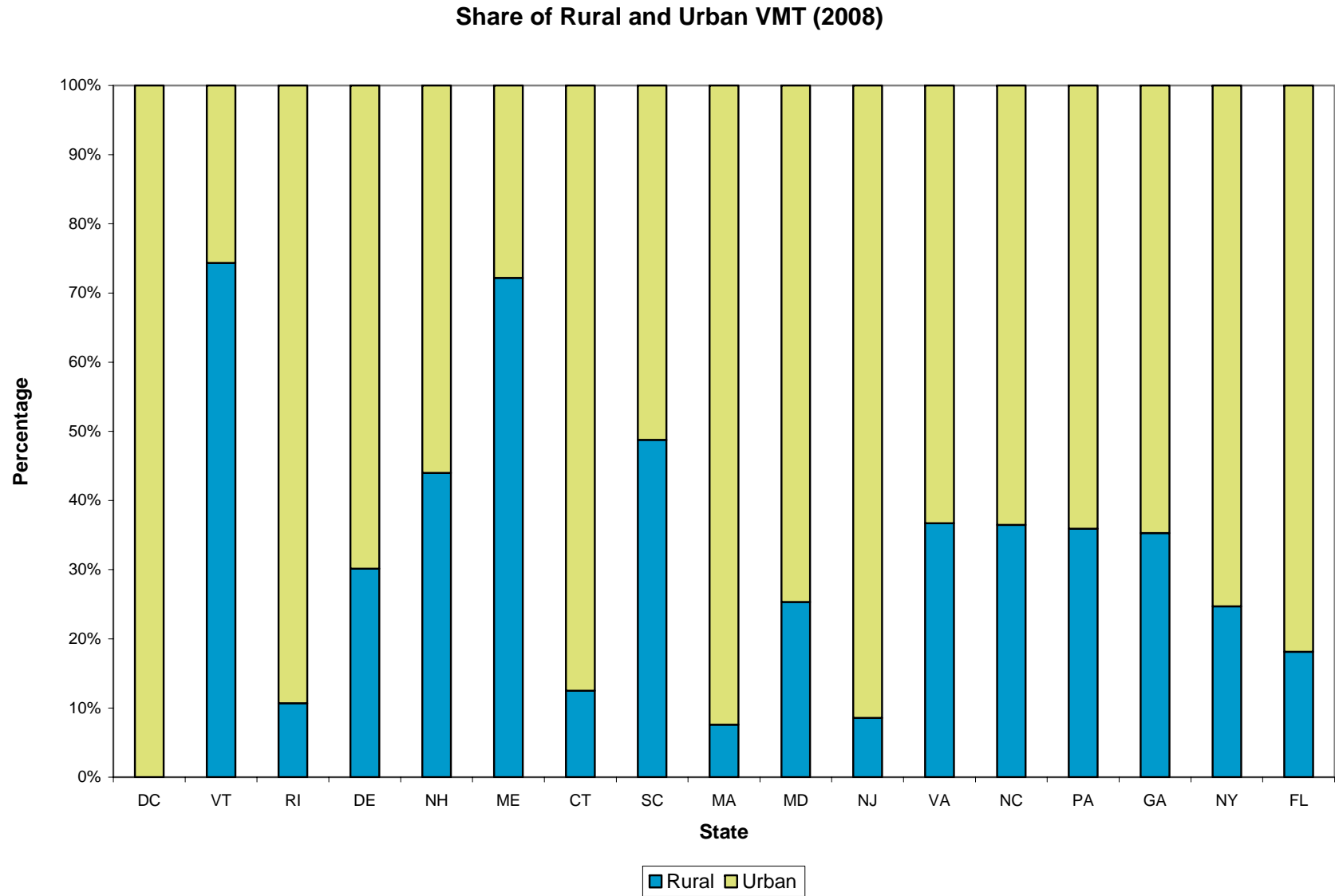


Figure 4: Share of Rural and Urban VMT in 2008 for I-95 Corridor Coalition Member States



II. SYSTEM FUNCTIONALITY

This section provides background information on the potential functionalities of a VMT-based fee system and the technologies that could be used to implement them. It first summarizes the policy motivations for VMT-based fees, the functionalities required to achieve them, and identifies a technological options for implementing them. The institutional, administrative, and legal aspects of which will then be explored.

Policy Motivations

The NCHRP 20-24(69) report referenced above identified two policy motivations for implementing VMT-based fee concepts:

- To develop an eventual replacement for motor vehicle fuel taxes that would provide more stable and sustainable revenue over time; and
- To create a set of financial incentives to support a broad range of policy goals such as reducing congestion, road wear, and harmful emissions by varying the per-mile charge according to certain vehicle or travel or system performance characteristics.

The former can be accomplished in a variety of ways, but accomplishment of the latter requires use of additional functionalities and more sophisticated technologies that track, for example, time, general location or specific location (i.e., facility identification).

This project is designed to inform (but not to make) a key decision: whether a multi-state VMT-based system should deal only with the former motivation, thus easing the path towards multi-state adoption; or whether a multi-state VMT-based system should be designed from the outset to achieve a variety of policy goals related to the latter motivation. However, the project will explore the administrative and legal complexities that would be added by the functionalities and technologies needed to achieve the goals associated with the latter motivation.

This is not to say that more aggressive policy goals could not be achieved if the design of the system is limited to only those features necessary to achieve the former motivation. Rather, these goals could be achieved, as they are now, through systems independent of a multi-state VMT-based fee system. In theory, establishing the back office and communications infrastructure of an integrated multi-state fee collection system would reduce individual organization implementation and operations and maintenance costs.

Mandatory System Functions

Mandatory system functions are those associated with the augmentation or replacement of motor vehicle fuel taxes in order to provide more stable and sustainable revenue over time. In order to achieve only this policy motivation, the following system functions are required:

- Calculate vehicle miles driven;
- Communicate the mileage information to a processing point;
- Apply a per mile rate for the vehicle type;
- Invoice and collect payment and provide for related communications with users;

- Retain auditable records; and
- Provide security and enforcement.

Some variability could easily be accommodated within such a system. For example, individual states could charge different rates (analogous to different motor vehicle fuel tax rates in different states), or different rates could be applied on the basis of vehicle size and weight or vehicle MPG rating. However, a system designed to achieve only this policy motivation would not be able to achieve policy goals associated with time of day charges or location-specific charges.

Optional System Functions

Optional system functions are those associated with creating a set of financial incentives to support a broader range of policy goals such as reducing congestion, road wear, and harmful emissions by varying the per-mile charge according to certain vehicle or travel or system performance characteristics or combination of these characteristics. In order to achieve this policy motivation, the following additional system functions may be required:

- Calculate the miles driven by time-of-day and/or by general location (e.g., by jurisdiction or by cordon area) or by specific location (i.e., on a specific facility); and
- Apply a per mile rate that may vary according to time-of-day and/or location parameters or other factors (e.g., current congestion level at the time and place of travel).

Accommodation of these system functions will require more sophisticated technologies inside vehicles (and possibly on the roadside) and more complex back office processing software.

Plausible System Implementation Options

The NCHRP 20-24(69) report referenced above examined a wide range of implementation options. A complete list and analysis of these options is provided in Chapters 6, 7 and 8 of that report. It also identified a smaller set of the most promising options judged to have the greatest potential for near-term implementation. Criteria used in making this judgment included road network coverage, the implementation cost/system functionality tradeoff, enforceability, the level of governmental support required and the compliance burden on users.

For purposes of this project, three of the options analyzed have been chosen to form a framework for the analysis of the administrative, institutional and legal requirements, issues, options and potential solutions associated with increasing levels of system functionality. These three options closely correspond to options developed in other studies and cover the full range of system functionality, from deployment of a system designed to accommodate only the mandatory system functions associated with the augmentation or replacement of motor vehicle fuel taxes, to deployment of a system designed to also accommodate the full range of optional system functions associated with creating a set of financial incentives by varying the per-mile charge by time-of-day, by facility, and by other factors.

The three system implementation options are described throughout the report as:

- **Simple** – This option is labeled in the NCHRP 20-24(69) report as “mileage metering based on fuel consumption.” It is the lowest implementation cost option, and offers the ability to achieve mandatory functionality of charging per mile traveled with some limited fee variability capability (e.g., to reflect vehicle size, weight, number of axles or MPG rating). The essence of this system is to use fuel consumption as a basis for estimating travel distance. Vehicles must be equipped with Automatic Vehicle Identification (AVI) devices. Electronic readers and communications systems installed at service stations would read the vehicle IDs and transmit the ID data to a processing point. Processing software would estimate miles driven based on the amount of fuel purchased and the vehicle’s fuel economy rating, and would apply a per mile charge. From the point of view of the user, there will be additional technology required on the vehicle but payment transactions at the motor fueling station would be similar to transactions today. A different payment system will be required for those vehicles that do not utilize motor fueling stations or are only partially powered by gasoline (e.g., hybrids, electric or hydrogen vehicles, etc.). For example, it may be that such vehicles will be required to be equipped with an on-board unit that produces travel distance information (see below) and to periodically stop at a fueling station or other location to report their accumulated mileage.
- **Moderate** – This option is labeled in the NCHRP 20-24(69) report as “OBD II/cellular-based metering.” It is described in great detail in the University of Minnesota report referenced above. This implementation option achieves some of the optional functionality associated with general location variability. For example, this option would make it possible to estimate the costs of travel by time, by jurisdiction or other smaller geographic area (e.g., cordon-based congestion charges). This system requires equipping vehicles with an on-board unit (OBU) connected to the second generation on-board diagnostics port (OBD II) available on vehicles manufactured since 1996. Vehicle speed and time data collected by the OBD II is processed by the OBU to produce travel distance information. The integration of cellular communications technology with the OBU enables the estimation of travel location. The cellular communications technology (or some other technology) could also be used to track time and to transmit the OBU processed data to the processing point. From the point of view of the user, there will be additional technology required on the vehicle and payment transactions could either be similar to today’s at motor fueling stations or payments could be made through another system. Vehicles that do not utilize motor fueling stations or are only partially powered by gasoline (e.g., hybrids, electric or hydrogen vehicles, etc.) will be required to periodically stop at a fueling station or other location to report their accumulated mileage or make payments through an alternative payment system.
- **Complex** – This option is labeled in the NCHRP 20-24(69) report as “high-resolution GPS-based mileage metering.” This implementation option achieves all of the optional functionality associated with time and with general or specific location variability. This option makes it possible to estimate the cost of travel by jurisdiction or other smaller geographic area, by specific route or facility, or by time-of-day. This system relies on use of differential GPS technology for accurate time and location data (within one to

two meters). Wireless communications would be used to transmit data to the processing point. From the point of view of the user, there will be additional technology required and payment transactions could either be similar to today's at motor fueling stations or payments could be made through another system. A different payment system will be required for those vehicles that do not utilize motor fueling stations.

Please see Table 1 for a more comprehensive illustration of the functionality that each of the above implementation options enables and some of the positives and negatives associated with each function.

Table 1: Functionality Enabled by Implementation Options

Parameter	Explanation	Benefits	Consequences	Simple -Fuel-Consumption Based	Moderate -OBD II / Cellular	Complex -High Res GPS
Distance						
Travel Distance	Proportional to distance traveled.	Basic requirement for VMT based fees. Easily measurable.	Alone does not enable charges to vary by time or location and does not permit revenue to be apportioned accurately among jurisdictions.	√	√	√
Time						
Time of Day/Day of Week	Vary fee by time of day and/or day of week.	Allows charges to be based on time of day and/or day of week (e.g., peak periods).	Requires technology that can receive accurate local times throughout the year. Alone does not enable charges to vary by use of specific facilities during specific times.		√	√
Location						
Jurisdiction or Cordon-based	Vary fee by if travel occurs in a defined area.	Allows charges to vary by jurisdiction or in congestion zones.	Requires location based system in vehicles.		√	√
Roadway or Facility	Vary fee if travel occurs on a specific facility.	Enables charges to vary by specific facility (e.g., toll facility).	Requires more expensive technology to deploy that can determine specific roadway of travel.			√
Lane-based	Vary fee by lane of travel (e.g., HOT lane).	Enables charges to vary for those using express facilities or special purpose lanes.	May require overhead or in-lane sensors to communicate with vehicle to achieve needed accuracy.			???

Table 1: Functionality Enabled by Implementation Options (Continued)

Parameter	Explanation	Benefits	Consequences	Simple -Fuel-Consumption Based	Moderate -OBD II / Cellular	Complex -High Res GPS
External						
Traffic Congestion	Vary fee by current LOS on a facility or along a corridor.	Can assist in dissuading travel in order to reduce congestion delays.	Requires knowledge of traffic congestion periods at a given time and accurate location of the vehicle.			√
Environmental Regional	Vary fee by level of regional air quality index (code red days).	Can assist in dissuading travel when environmental impacts reach defined negative levels.	Requires knowledge of regional air quality status and location to ensure vehicle is within area covered.		√	√
Vehicle Characteristics - Fixed						
Type	Vary fee by type of vehicle (passenger car, commercial vehicle, transit vehicle, etc.)	Allows charges to vary by type of vehicle.		√	√	√
Weight Class	Vary fee by vehicle weight class or GVWR.	Allows charges to vary by weight of vehicle.	Assumption that a high GVWR vehicle is carrying a heavy load may not be true.	√	√	√
Axles	Vary fee by number of axles.	Allows charges to vary by approximation for weight of vehicle.	Assumption that more axles means that a vehicle is actually carrying a heavy load may not be true. May not accurately reflect weight.	√	√	√
Emissions Estimated	Vary fee by EPA emission estimates for vehicle.	Allows charges to vary according to EPA emissions estimates.	Emissions ratings for all vehicles required/	√	√	√
Energy Efficiency Est.	Vary fee by estimated fuel economy rating.	Allows charges to vary according to fuel economy rating.	Fuel economy ratings for all vehicles required.	√	√	√

Table 1: Functionality Enabled by Implementation Options (Continued)

Parameter	Explanation	Benefits	Consequences	Simple -Fuel-Consumption Based	Moderate -OBD II / Cellular	Complex -High Res GPS
Vehicle Characteristics - Dynamic						
Weight Actual	Vary fee by actual weight.	Allows charges to vary by estimated actual weight of vehicle.	Method for estimating actual weight required (e.g., WIM).		√	√
Emissions Actual	Vary fee by actual emissions.	Allows charges to vary according to actual emissions estimates.	Requires greater in-car sophistication to provide actual emissions estimates.		√	√
Energy Efficiency Actual	Vary fee by actual energy efficiency.	Allows charges to vary according to actual fuel economy estimates.	Requires greater in-car sophistication to provide actual fuel economy estimates.		√	√
Occupancy	Vary fee by actual vehicle occupancy.	Allows vehicle occupancy to factor into charging scheme.	Requires greater in-car sophistication to provide actual occupancy estimates (and distinguish people from other heavy objects).		√	√

III. INSTITUTIONAL AND ADMINISTRATIVE REQUIREMENTS

This section identifies the institutional and administrative requirements that need to be addressed in order to implement multistate VMT-based fees. It relates those administrative and institutional requirements to the three system implementation options.

There are specific administrative functions and institutional arrangements that will be required in order to collect VMT-based fees under each of the three generic implementation options described above. In addition, there are options for what type of institution will administer VMT-based fees. The administrative functions will be similar under each institutional arrangement. These administrative functions described below include both “specific administrative requirements” and “governance administrative requirements.”

Current Administrative Costs for Motor Fuel Taxes

The administration of motor fuel taxes is relatively low cost in comparison to the revenues that states accrue. At the national level, an average of 0.82 percent of motor fuel tax receipts have been used for collection expenses over the past decade. The figure is comparable for Coalition states, at an estimated level of 0.86 percent. In looking at the data for the individual states, however, this percentage fluctuates between 0.36 percent (Rhode Island) and 1.40 percent (North Carolina), although the median is estimated at 0.93 percent (see Table 2). Variations are not meaningful due to the different ways in which states may accumulate and report administrative costs.

Current Administrative Costs for Vehicle Registration Fees

The percentage of motor vehicle receipts that are used for collection expenses and the average cost per vehicle of collection expenses for registration fees are presented in Table 2 below using data from FHWA Highway Statistics tables. The data is for the period 1997 to 2007.

At the aggregate national level (for all states combined) and in Coalition member states, 11.0 percent and 12.8 percent of the motor vehicle receipts are used for collection expenses, respectively, at a cost of almost \$13 per vehicle at the national level, and almost \$12 per vehicle for Coalition member states. Again, the share of revenues used for collection expenses and the cost per vehicle fluctuates across Coalition member states. For instance, in Delaware, less than 4 percent of the motor vehicle receipts pay for collection expenses, compared to over 27 percent in South Carolina. These fluctuations are again due to both differing requirements, such as for vehicle inspections, and the differing protocols used in reporting the administrative costs.

Table 2: Collection Costs as a Percentage of Total Receipts for Motor Fuel Taxes and Motor Vehicle Fees, and Cost of Motor Vehicle Fee Collection per Registered Vehicle (1997-2007)

States	Admin -		
	Admin - MFT	Veh Reg	\$/Veh Reg
Connecticut	0.95%	16.35%	\$ 16.30
Delaware	1.10%	3.96%	\$ 5.79
Dist Col		12.01%	\$ 40.99
Florida	1.13%	7.34%	\$ 5.72
Georgia	1.07%	20.89%	\$ 8.85
Maine	0.38%	26.81%	\$ 22.49
Maryland	0.89%	13.76%	\$ 34.55
Massachusetts	0.90%	14.84%	\$ 9.12
New Hampshire	0.49%	17.52%	\$ 16.63
New Jersey	1.00%	15.70%	\$ 16.64
New York	1.00%	17.97%	\$ 14.45
North Carolina	1.40%	14.41%	\$ 9.39
Pennsylvania	0.86%	8.97%	\$ 8.12
Rhode Island	0.36%	21.62%	\$ 18.76
South Carolina	1.39%	27.11%	\$ 13.95
Vermont	0.92%	10.09%	\$ 21.55
Virginia	0.84%	14.79%	\$ 19.84
I-95 Corridor	0.86%	12.79%	\$ 11.88
National	0.82%	11.04%	\$ 12.89

Specific Administrative Requirements

Administrative requirements include but are not limited to the procedures required for:

- Enrolling user participants (either volunteer or mandatory)
- Accumulating mileages and charges due, by state and by agency
- Calculating and reconciling state and agency mileages
- Distributing revenues among the states and other agencies
- Calculating and billing the fees to users (with consideration that there may be multiple methods of billing) and utilizing credit and debit card-based payment procedures
- Maintaining user interface and communication
- Auditing, security, and enforcement to assure collection of fees from users and to assure the equitable distribution of the fees among agencies
- Identifying specific state and multi-state administrative units and their respective responsibilities
- Governance procedures for resolving issues between states and for defining multi-state agreements versus state responsibilities, and
- State and other agency membership rules and requirements.

Each of these is discussed below with a description of the nature and scope of the requirement and, where possible, how the administration might differ among the three major technology approaches.

Many of these administrative requirements are already in place for state administration of motor vehicle registrations, motor fuel taxes, and toll authorities. Estimates are cited here

of the administrative costs that are now being incurred for the existing fees, including motor fuel taxes and registration fees.

Enrolling User Participants (Volunteer or Mandatory)

For motor fuel taxes, there is no administrative requirement related to user enrollment, but there must be such an administrative function for VMT-based fees under each of the technology options. Enrolling user participants is closely linked to all further interactions with the participants, including fee calculations, fee collections, and maintaining user interfaces and communications.

All of the implementation options – simple, moderate, and complex -- require enrolling user participants. Even in the simple system involving VMT fee collection based on estimated fuel consumption, the user's ID must be known in order to maintain payment records. However, under the simple system, payment would likely occur at the fueling station itself each time fuel is purchased ("pay at the pump"). No further user transactions would be necessary except if the user contests the payment calculations. The moderate and complex systems both involve additional transactions with users after enrollment.

Enrollment of users could be either mandatory or voluntary. Volunteer VMT-based fee systems will have more straightforward enrollment rules, but of course will only cover those vehicles whose owners choose a VMT-based fee system rather than a still continuing alternative fee system (i.e., fuel taxes and registration fees). Voluntary systems may not make much of an impact unless strong incentives are established for enrollment, such as the opportunity to save on fees. For example, a high annual fee per vehicle might be set, with the alternative of reporting vehicle miles of travel utilizing a reliable reporting mechanism (which could be through a pay at the pump system or through a private state-licensed GPS-based or OBD-II/cellular-based VMT miles of travel compiler). Voluntary enrollment is not considered to be viable except for during a transition period when users could, for example, opt out of motor fuel taxes while opting to pay VMT-based fees.

Enrolling user participants is a major administrative challenge for mandatory VMT-based fee systems. Basing enrollments on the current files for state vehicle registrations is the only straightforward method of enrolling all of the users that must be enrolled. There are currently vehicles being operated that are unregistered, that have lapsed registrations or that use bogus license plates. Enforcement to minimize evasion and ensure valid collections will be equally as important for VMT fees as it is today for registration fees and fuel taxes. States have an interest in collecting VMT based fees which vary among vehicle types, including at least the consideration of vehicle weights and axles and perhaps vary based on other characteristics.

The costs and efforts needed for setting up a separate entity to enroll and bill customers should not be minimized. Billing itself is a significant cost and that the enrollment and maintenance of a separate database could be substantial. States could use the DMV process as the mandatory enrollment mechanism and for billing. DMVs maintain a name and address of every registered vehicle (mandatory enrollment) for every state. While the addresses may not be up to date, they should be able to bill the customers and if not paid, then the vehicles could be not allowed to be registered. While this is significant work for

DMVs and they would need additional authority provided to it by the states, it seems to be a cheaper option than duplicative efforts would entail.

The registration or re-registration of all motor vehicles within a state is a periodic function, generally for two years and sometimes for one year. A fee is paid for registration based on vehicle characteristics, with modifications for owner characteristics. States are moving more and more to registration renewals on the Internet to save time and money and to reduce the need for users to travel to motor vehicle offices. However, it is recognized that incorporating VMT fees into Internet registrations will complicate that process.

The administrative functions required for enrollment will also depend on the periodicity of the payment for VMT-based fees. This aspect is discussed further below under the requirement for "collections". If an agency determines that payments will be collected every year or every two years in association with registration or re-registration activities, then the administration of the enrollment function might be performed in parallel to the administration of registration fees.

The toll agencies within the Coalition region have also established a broad market based administrative structure for enrollments, but it will require massive expansion and decisions about whether it changes from voluntary to mandatory in order to expand to broader VMT-based fees. In addition, the toll collection enrollment is highly concentrated within those states and corridors where the current major toll facilities are located. E-ZPass is offered by all toll agency members of the IAG, and an account holder must enroll and establish a prepaid account and obtain one or more transponders assigned to that account from one of the member agencies. Then, when the account holder travels on any E-ZPass tolled facility, the home agency deducts the appropriate toll from the user's E-ZPass account.

There are already nearly 12 million E-ZPass accounts and 19 million transponders in use, so the experience under E-ZPass can provide lessons on how to enroll participants and organize and administer a program for a mass market that is comprised of both individual and commercial/business users. While this is a voluntary program, its expansion to all users for multi-state VMT-based fees could be accomplished by building upon lessons from the established administrative functions that are already being performed for the toll agencies.

The federal government would experience major challenges in enrolling users for VMT-based fees since it has no vehicle registration files or experience with toll accounts. The federal government would have to base its own enrollments on the states' vehicle registration files or would have to create an entirely new enrollment and administrative structure. Since the federal government has no current specific relationship with owners of automobiles and other light duty vehicles, it would either have to emulate or rely on state efforts or duplicate the state efforts.

The federal government's currently most widespread set of interactions with individuals is through the federal income tax system. However, not everyone is required to file income tax forms, and there is no federal reporting or record keeping with regard to vehicle miles of travel, whereas employers, banks, and others are required to report on personal income.

Accessing and Accumulating Mileages and Charges by State and Agency

Alternative technologies are available, as described in the previous section, through which mileages and charges can be calculated, but the administration of processing of the information is an important additional function. Accurate mileage information may be needed for each vehicle or at least for each vehicle owner by jurisdiction or by agency. Data collection and assurance of data quality will be a challenging aspect of administering VMT-based fees.

The incredible problems and complications of self reporting of mileage for light duty and household vehicles lead to the need for an electronic system that will automate most aspects of record keeping and reporting of vehicle miles of travel. The important aspects of optional approaches to electronic record keeping and reporting have been described in many recent research reports, and are documented usefully in the TRB Special Report 299 referenced above and available on the Coalition's website

For the simple system, an approximate estimate of miles accrued since the last refueling will be made at the motor fuel station. Since the miles are not recorded in terms of the state or jurisdiction in which the travel occurred, the revenue will simply accrue to the state (and, if applicable, local jurisdiction) in which refueling takes place. This is what occurs now with the purchase of motor fuel by light duty vehicles. An implicit assumption will continue to be made that fuel purchases reasonably reflect where travel occurs. Of course, for areas near state borders, this is problematic, but the situation with VMT-based fees will not be more problematic than the current situation.

The simple option does not provide for collection of fees from pure electric vehicles or pure natural gas vehicles which can be refueled elsewhere. Such vehicles will have to be assessed fees in some other manner. At its foundation, this approach really remains a tax per gallon of fuel, so it is uncertain what the benefit of a switch to this system really offers in terms of distance-based charging. At a minimum, the next logical step is to determine how alternative fueled vehicles would be handled in a multi-state environment, and what the added costs of administration and collection would be required to handle those vehicles. Those vehicles would likely require some aspects of the more complex options in order to be charged on the basis of VMT.

For the moderate or complex options, administrative functions will include periodic or even continuous recording of miles of travel by jurisdiction, and also by time of day and facility if congestion pricing charges are to be applied. For the moderate and complex systems, this information can either be stored in the vehicle itself, allowing for less frequent data transfers, or could be calculated centrally with data transfers at more frequent intervals. The moderate system will presumably accumulate VMT by state and perhaps by major jurisdiction, and can also identify the time of day when the travel occurred. The complex system will perform all of these functions and will also have the capability to compile and store information on the facility utilized. Both cellular systems and GPS systems can have sufficient communications capacities to upload VMT data frequently. A back office administrative function will monitor and check on all user accounts.

The functions of accessing and accumulating mileages by state are already performed for the owners and operators of heavy vehicles operating in multiple states under the procedures for the International Registration Plan (IRP) and the International Fuel Tax agreement (IFTA). Vehicles of this type already keep records of their travel and of their fuel purchases for business purposes. While the required IRP and IFTA reporting adds administrative burden to the carriers, it is a reasonable byproduct of sound business record keeping. IRP and IFTA rely on self reporting, with the possibility of audits or other checks of the information that is provided. For both IRP and IFTA, registration fees and fuel taxes are apportioned by the percentage of miles of travel by the owner's fleet in each state. Thus, there is no incentive to underreport on total miles of travel.

The IRP and the IFTA use a "base state" protocol in which each carrier reports only to a base state of registration for its fleet. Thus, there is no need for duplicative reporting. The states each have audit procedures to assure accuracy. A primary concern among the states has been that other states are sufficiently competent in auditing and enforcement so that carriers do not have an incentive to shop around for a lax base state. Lack of proficiency in auditing and enforcement by a state would serve to reduce the fee distributions due to other states.

Accumulating mileages and charges by state and by agency for other vehicles under the moderate or the complex option will require performance of new and similar administrative functions for a very large number of additional vehicles. The additional reporting units will include all owners of small and other vehicles which do not now come under IRP and IFTA. Self reporting of mileage is very problematic for these non-IRP vehicle owners due to the current lack of record keeping of any sort. An excellent and more thorough discussion of the total folly of a self reporting system is available in the aforementioned TRB Special Report 299. Households and perhaps some businesses do not keep records to track their VMT, either in total or by state or by facility. When queried about their annual miles traveled, their reported responses are approximations. Another overwhelming problem with the self reporting of mileage for VMT-based fees without auditing or checking is the incentive to underreport and thus pay less than what is due.

For federal revenue collection, only total annual mileage is relevant. A federal VMT-based fee does not require jurisdictional breakouts, unless federal law determines that such information must be compiled. The Federal government may have interest in the more detailed data available from the moderate and complex implementation options.

Calculating the Fees Due to Each Agency

The data and administrative requirements will differ substantially based on whether the requirement for estimating fees is geographically coarse, such as estimating fees due to each state, or geographically very fine, such as estimating fees due to the owners of particular roads (e.g. toll facilities). Both the simple fuel based and OBD-II/cellular data systems will give an approximation of the jurisdiction in which travel occurs. Under a fuel-based system, states might agree to utilize their current procedures, which basically are an agreement to equate the fuel purchased in a state as a proxy for fees due in the state. Not changing the fee distributions among states with a fuel-based VMT system is an option. The moderate system of cellular-based information could give a good approximation of

miles of travel within each state (or major jurisdiction, if applicable) and could include automated procedures for estimating fees due to each state or jurisdiction.

The situation becomes much more complex and data intensive for administration of fees that would be collected by facility and by time of day. Only fine GPS-based information may suffice for assuring the accuracy of usage estimates by facility rather than by broader geographic area. Even finer data is needed if lanes are to be differentiated by a VMT-based system, such as for distinguishing the usage of HOT lanes versus parallel lanes.

Data transmission frequency will be linked to privacy concerns, since the manner of data accumulation and the frequency of transmissions may bear on privacy concerns. DSRC could play a role in communications, especially if 5.9 GHz becomes relevant at some time in the future for other transportation applications. The DSRC communications option may present a less expensive communications option that is not tied to private service providers.

For federal VMT-based fees, only total annual mileage is relevant, unless the federal government determines through statute that it wishes to have such information, perhaps in order to participate in pricing travel based on time of day and facility. Because data on motor fuel tax sales now enters into federal formula allocations to states, any change that impacts on the data collected will potentially impact on federal allocation methods and formulas.

Billing and Collecting Payments from Users and Utilizing Credit and Debit Card-Based Payment Procedures

Billing and collection of payments must be accomplished for all users. If the state registration files are used for enrollments, all users will be enrolled and have accounts. Because current state motor fuel taxes for light duty vehicles approximate, on average, about \$8 per month, monthly or more frequent collection or reconciliation may not be desired either by the states or by the users. Current Federal motor fuel taxes on light duty vehicles are of a comparable average magnitude of around \$100 per vehicle per year.

The motor fuel tax is paid by the person driving the vehicle at the time of refueling, whereas the registration fee and presumably any VMT-based fee is paid by the vehicle owner. This would imply a shift in incidence if VMT based fees are a replacement for motor fuel taxes.

If the collection of VMT fees only in association with the registration or the re-registration of a vehicle is acceptable, then state collections every one or two years would focus on assessing the vehicle miles of travel of the vehicle being registered or re-registered. Prepayment of the next period's likely VMT fees could be done at the same time as any rebate or additional fee is paid for the most recent period. This could be a function performed either by a public entity such as a Department of Motor Vehicles, by some other state entity or by a private entity operating under a license. Such a license could be given by a Department of Motor Vehicles, some other state or multistate agency or a Federal entity.

More complex fee structures such as those that might be implemented for proposed congestion pricing approaches or for purposes of controlling greenhouse gas emissions

would possibly involve substantially higher fee levels than are collected today, and thus a single payment for a full year's time could involve very substantial sums. Either the payer or the payee might then prefer more frequent billing and more frequent collections, depending on whether or not the fees were to be prepaid or billed after the fact.

More frequent collection or reconciliation of VMT-based fees may be desired by agencies depending on the procedures for either prepayment or payment after the fact. However, more frequent payments will entail more challenging administrative efforts and more time by users to make payments. Remittance schedules for registration are staggered, of course, so that most of the work evens out over months of the year. It will be necessary to establish similar staggering of remittance schedules for VMT-based fees.

Consideration also needs to be given to the fact that about 17 million U.S. households do not have bank accounts and so are basically reliant on cash-based transactions. Cash payments can, of course, be made at fuel stations. The simple option could function much as it does today for such users (who would still need to be enrolled). A yearly or biannual payment of fees in cash at a motor vehicle agency or other agency is most likely how cash households pay their existing registration fees.

There is likely to be some overlap between those households that do not own autos and those households that do not have bank accounts. More frequent than annual payments at a payment site would be an added administrative burden both for the agencies and for the cash paying users. However, annual payments might be an acceptable option for agencies, if, as with registration fees, this is in effect a prepayment of the users' likely VMT-based fees for the next year.

Toll agencies which rely on "open road tolling" employ vehicle roadside identification sensors. Those who have EZPass accounts have the transactions recorded electronically and their accounts are billed for the passage through the gantry. Those without accounts have their license plates photographed, and then an automated system (with human checking) identifies the license plate and generates a bill which is sent to the user. This mail-based system for collections could also be applied to VMT-based fees as well as tolls. However, this is administratively very cumbersome, particularly when considering the prevalence of very small payments.

Billing and collecting with a pay at the pump system will still involve the establishment and maintenance of user accounts and the accumulation of mileages, but from the point of view of the user, the billing and payment will be similar to what is experienced today purchasing fuel at the pump. The system must bill automatically for VMT fees that are due. A communications link between the pump itself and the processing point where estimated fees are being calculated will be required. This complicates the transaction from the point of view of the fueling station since the VMT charges are computed by an external entity for each transaction (user) rather than current fuel taxes which are simply proportional to the volume of fuel sold.

The federal government would experience major challenges in billing users. Since the federal government has no current relationship with the owners of light duty vehicles, it would either have to emulate or rely on state efforts or duplicate state efforts. More

frequent than annual billings for the federal government would seem to be unreasonable given that the average payment would be around \$100 per vehicle (based on existing levels of motor fuel tax collections.)

Maintaining User Interface and Communication

User interface and communications are needed to resolve all changes in status of enrollments and to resolve collections and enforcement issues. Thus, there must be procedures established and functioning for periodic or regular communications between the collection agency and the user. For state registrations under current procedures, the interactions occur only when the status of a registration changes or when a registration is renewed. This is done now in various ways, over the Internet or via mail or by a visit to a registration office.

Toll agencies have broad experience with user interface and communications. The Interagency Group or IAG is an agreement through which agencies coordinate the procurement of the technologies to be used in E-ZPass and cooperate to share E-ZPass fees equitably. However, the individual agencies specify their own back office user interface and communication procedures and the performance standards for their back office procedures. Agencies make their own arrangements (in house or contracted out) for back office operations which are typically referred to as customer service centers. The customer service centers are responsible for tag distribution, answering queries, administering the accounts of the users, and conducting violation enforcement. Currently, there are 18 separate operating customer service centers within the IAG.

There also needs to be consideration, in the more complex scenarios, of the communication of fees to users. If fees vary by route, by time of day, by level of congestion, etc, then consideration should be given to creating tools that allow a user to determine reasonably the expected cost of their trip. The more complex the set-up, the more information will be required. This also gets in to how frequently to bill the user. The less frequently a user is billed, the less likely they are to change their behavior based on the cost of the trip(s). More frequent feedback - maybe even built into the more advanced technology - should consider providing this feedback in real time to the user. Commercial drivers apparently have access to this information through various information services, and these could perhaps be expanded for passenger vehicles.

Another issue to consider is that equity issues will surface when people feel that time of day fees unfairly impact them because they have no alternative route or less costly mode available to them. This could be especially vexing for persons traveling through a metro area as the shortest path to some other, final destination.

The administrative procedures must also address potential service outages in the communications links between base and on-board systems. As the systems will be expected to have 100% geographic coverage of the participating states or the US, and to operate 24/7, problems are likely to occur with at least localized temporary outages. For extended outages or otherwise "dark" areas, alternative, "manual" procedures will be needed. (NY comment)

Enforcement, Auditing, and Security, to Assure Collection of Fees from Users and to Assure the Equitable Distribution of the Fees among Agencies

Enforcing payment, auditing, and security of data will be an important and potentially costly administrative function. For the moderate and complex implementation options, a component to monitor whether the in-vehicle systems are functional while the vehicle is in use will be required. This might be done through a satellite or cellular communications system that can check on a vehicle's status in real time. Administrative procedures will be necessary for enforcing the collection of fees that are due on vehicles with non-functioning systems.

Auditing will be another important function to assure that reporting and payment of VMT-based fees are legitimate. The heavy vehicle registrants under IRP are required to maintain records that can be audited. The commonality of records and the standards for audits are keys to the ability of both IRP and IFTA to function as "base state" systems. Under the base state concept, the audit procedures have to be sufficient to convince other states that they do not need to audit registrants based in other states. The alternative would be that some carriers could face audits from multiple states, with consequent duplications of burdens for both the states and the motor carriers.

The IRP and IFTA come close to enabling the administration of even more detailed types of fees, such as fees that would be applied to local jurisdictions or to specific routes. However, this level of detail is a record keeping requirement to enable audits rather than a regular reporting requirement.

For light vehicle owners, such records are not currently kept, and automated procedures are considered to be the only option for record keeping that would not add an unreasonable burden which would not be acceptable to the general public.

Another model that could be built upon for light vehicle users is E-ZPass. The E-ZPass users have transponders that are readable by each toll agency, and the agency to whom the transponder is registered is identified on the transponder. Through reciprocity, the agencies then transfer gross payments for the tolls that are due to each of them from the accounts of each user. Credit card and transaction fees are also calculated based upon IAG agreements and settled separately from the toll transfers. In addition, there are daily exchanges of data files indicating what transponders are valid and guaranteed by the issuing agency.

User appeals and grievances with billing will need to be addressed and will require considerable back office administrative support in order to resolve such issues fairly and quickly. The experiences with the procedures currently in place under IRP and under E-ZPass may offer some guidance on the implications for the administrative efforts and costs of appeals and grievance resolutions for multi-state vmt-based fees. States with a lot of through traffic would want to ensure that vehicles wouldn't be "paying" their user fee outside of the state and then driving through with no "benefit" to the state under a simpler system (i.e., avoiding higher gas pumps especially if the state is smaller.) (MDOT comment)

In terms of enforcement, toll agencies employing electronic toll collection have been facing the challenge of toll violators for years. With the move toward more open-road tolling configurations, the challenge of toll violations has been compounded with inadvertent toll violators adding to the problem of those deliberately attempting to evade the toll. Toll operators have used an array of increasingly sophisticated violations enforcement systems (VES) to protect revenue streams with digital imaging and automated license plate recognition (ALPR) technologies to accurately capture license plate images in order to identify vehicle owners without transponders.

Violations processing in electronic tolling represents a sizeable administrative cost at the back office, and often other related costs for collection agencies and legal services firms to pursue egregious toll violators. The sophistication of the new VES technologies have spurred many toll operators to begin to consider cashless toll operations, by which travelers are encouraged to have a toll tag, such as E-ZPass, but those drivers without a tag have a bill sent to the vehicle owner. Both the traditional VES applications and newer cashless tolling operations depend upon firm relationships with numerous motor vehicle agencies to ensure a trusted method to identify vehicle owners.

New concepts of operations for many new cashless toll operations are increasingly dependent on a supportive state legislative foundation to ensure adequate penalties for non-payment of a post-paid video toll transaction. For these systems to work well on many toll facilities within the Coalition region, multi-state agreements for violation collections and penalties are fundamental. This will certainly be an area in which enforcement and collections VMT-based fees can be considered collaboratively with toll authority needs that are being established.

Calculating and Reconciling State and Agency Mileages

Calculating and reconciling mileages by state will be a key new function to assure that VMT-based fees are accurately collected and allocated based on the states in which the mileage accrues.

The IAG provides an arrangement that allows reconciliation of toll collections among participating agencies and integrated billing for the account-holding users of the participating facilities. The IAG is a consortium of 25 agencies that offers E-ZPass in 14 states (some inside and some outside the I-95 Corridor Coalition. The governance of the IAG operates through consensus, meaning that all agencies have to agree to all of its procedures.

IRP (and IFTA) procedures require registrants to be able to document and enable evaluation of the accuracy of their reports of vehicle movements and to substantiate the apportionment of their registration fees. Each registrant must maintain operational records that substantiate mileage in each jurisdiction and total mileage traveled everywhere. This is all the information that might be required under a VMT-based fee.

For the more complex fee structures under which payments would be due for travel by specific facility, either the drivers or the automated systems might be expected to substantiate travel on specific facilities or even on specific lanes. This level of complexity

requires additional burdens for both the agency responsible for reconciliation and the users of the system under the more complex charging arrangements.

For federal revenue collection, only total annual mileage is likely to be relevant. However, it is conceivable that federal fees could mirror more complex fee structures for congestion pricing or facility based pricing. In such a case, substantial coordination would be required.

Distributing Revenues Among the States and Other Agencies

An administrative mechanism will need to be established for the clearinghouse function of redistributing revenues among agencies so that each agency receives the net revenues that are due. If accurate mileage accounts are kept, reconciliation and transfers are not difficult.

For federal VMT-based fees, only total annual mileage is relevant and common federal revenues would be collected independent of where travel occurred.

Governance Administrative Functions

The functions in the governance administrative category include but are not limited to:

- Identifying specific state and multi-state administrative units and their respective responsibilities
- Governance procedures for resolving issues among states and for defining multi-state agreements versus state responsibilities
- State and other agency membership rules and requirements.

Identifying Specific State and Multi-State Administrative Units and Their Respective Responsibilities and Capabilities

Under each functional and institutional option, responsibilities need to be assigned to specific units of government or to private entities who will perform the functions on behalf of these government units. If the federal government administers VMT-based fees, these units also need to be described. The units will need to have the functionally required administrative capabilities and systems, including the data collection technologies and the information management systems. (NY comment)

Governance Procedures for Resolving Issues Among States and for Defining Multi-State Agreements Versus State Responsibilities

Overall procedures will be needed to resolve any issues that arise among cooperating states and toll agencies. Many of the current arrangements for multi-state and multi-toll agency cooperation are based on a consensus principle – i.e., those who are members must be in consensus about the rules and procedures for resolving issues. Procedures are likely to follow the precedents of the IRP, IFTA, and IAG.

State and Other Agency Membership Rules and Requirements

The membership rules establish minimum requirements for agency responsibilities under which all agencies will agree that each participating agency has the capability to perform its assigned functions adequately. Rules and requirements are likely to follow the precedents of the IRP, IFTA and IAG.

IV. INSTITUTIONAL ARRANGEMENT OPTIONS

Two alternative multi-state institutional options are identified and discussed below. Both of the options must satisfy the requirements described above, including those associated with the various implementation options (i.e., fuel based, OBD-II/Cellular, GPS). The options will be assessed regarding their ability to effectively and efficiently satisfy the above requirements through use of a set of evaluation criteria discussed below.

Also, under both of the options, it is assumed that congestion-based fees related to specific facilities or to specific regions of a state could be administered by separate regional agencies or by toll agencies or public-private partnerships in coordination with the agencies which have the responsibility for the overall VMT-based fees. While there would be savings in costs if regional or toll systems use the same technologies and administrative systems as the state systems, it is not required today that general user fees and specific tolls be collected together, nor would it be necessarily if VMT-based fees replace or augment state fuel taxes.

However, while it is possible to operate tolling systems and VMT-based systems separately, it is highly desirable to operate the systems with one set of technologies and business rules. The potential for economies of scale and operating efficiencies with a joint system, as well as the greater potential for public acceptance with one road charging system rather than multiple payment systems, should overcome any concerns that the toll authorities may have about independence of their systems and revenue streams. The issues that toll agencies will have with common technologies and systems can and should be addressed through the supporting financial, operating and reciprocity agreements.

STATE-CENTERED OPTION - Functions to be Performed By a State Agency to Administer VMT Based Fees for All Vehicles in the State

Under this option, a state agency or agencies would take over the administrative and legal functions to monitor and administer VMT-based fees, including reconciliation and coordination with other states. The administrative functions might either be performed in house or contracted out. Given the scale of the data handling and administrative functions, it is likely that contracting approaches would be used, and most certainly contracting approaches are implicit in procedures with "open systems" in which the users could select from among competing system technology contractors.

Procedures for coordination among the states could be modeled on the IRP and IFTA, with commonly accepted "base-state" responsibilities for the accounts of those vehicles registered in their jurisdictions. Other states would have to be assured that the base state was auditing and enforcing the collection of VMT-based fees which were due to all other states. Reconciliation among the various states' accounts would be similar to under the IRP and IFTA or would be modeled on the IAG model, with administration performed for each state and with a clearinghouse. The data collection and administrative techniques might include either or each of the other technologies such as fuel-system based, OBD-II/Cellular, or GPS systems.

In the case of toll facilities, VMT-based fees could be assessed independent of tolls. Although this may be considered double-charging, it is no different than today's operating environment where fuel taxes also apply to fuel consumed while driving on toll roads. It is assumed that fees for toll agencies will continue to be collected by those agencies except if the single state entity has the full capability to monitor travel on each facility, such as with a GPS system which can carefully track toll facility use versus use of other roads, and where the toll authority wishes to "opt-in".

This institutional option is consistent with any of the three functional alternatives for technologies.

SERVICE BUREAU CENTERED OPTION - Establish a New Multi-State Service Bureau (or Bureaus) to Administer Multi-State VMT Based Fees

Under this arrangement, an independent service bureau, which could include either or both non-profit and for-profit entities, would administer VMT-based fees on behalf of all the participating states. The intent of this option would be to reduce costs by consolidating some efforts, although many efforts could still be undertaken by a clearinghouse under a mostly state-centered option. The data collection and administrative techniques might include each of the implementation options (fuel-system based, OBD-II/Cellular, or GPS systems). It is assumed that fees for toll agencies will continue to be collected by those agencies except where the full capability to monitor travel on each facility, such as with sophisticated GPS, exits and the responsible state/toll agency authorities have established agreements with the service bureau. A service bureau will need to have access to and cooperation from state agencies which administer registrations and IRP procedures. The registration data needed is housed in these places, and it would not be reasonable to establish parallel duplicative arrangements..

A new service bureau would not necessarily be consistent with the first technology option, since the VMT-based fees would still be collected at motor fuel stations and only with the alteration of the basis for fees.

A new service bureau of some type would seemingly be required to administer the collection of federal VMT-based fees under the direction of the IRS, since it is not known whether the collection of federal taxes could be delegated to state agencies. Current IRS procedures do not necessarily include relationships with the owners and operators of all motor vehicles. If the states have established and contracted with a service bureau, the service bureau could also determine what federal VMT-based fees were due. However, it is a very important legal issue to determine if and to what extent any responsibilities for the collection of federal VMT-based fees could be delegated outside of the IRS, either to states or to a service bureau. While the willingness of the federal government to delegate collection of federal taxes to state agencies is not known, the evaluation should consider the advantages and disadvantages of such a delegation of authority.

V. EVALUATION CRITERIA FOR ALTERNATIVE VMT-BASED ADMINISTRATIVE AND INSTITUTIONAL OPTIONS

This section identifies the criteria that will be used to evaluate intuitional and administrative options.

It is difficult if not impossible to evaluate completely any of the institutional and administrative and legal options without consideration of all other aspects of the system, including the technologies. However, the institutional, administrative and legal issues can be evaluated using the normal criteria for considering revenue generation systems. The administrative and institutional options will be evaluated against specific criteria, including but not limited to the following:

Efficiency

- Could the institutional and administrative approach be comprehensive and multistate and potentially national in scope, while still accommodating the needs of individual States, local jurisdictions, and other institutions such as toll authorities?
- Would the approach encourage and contain a sufficient degree of uniformity across States and other jurisdictions/institutions to allow and encourage multistate coordination?
- Could the institutional and administrative and legal system accommodate a range of technologies or devices?
- Could the institutional and administrative systems accommodate additional capacity/functionality/value-added services beyond the core technical and administrative functions or services?
- Could the administrative and legal approaches be implemented incrementally (in stages)?

Effectiveness

- Would the system ensure adequate performance and reliability with regard to accuracy and fairness of application?
- Could the system be readily used as a platform for collecting all vehicle-related user fees, whether Federal, State, local, toll authority, or private?
- Could the administrative and legal approach maintain privacy/confidentiality/security? How would data be used and stored in order to ensure confidentiality?
- In maintaining privacy/confidentiality/security, would there also be sufficient opportunity for audits of records and rights for user appeal of discrepancies?

- In maintaining confidentiality/privacy/security, would the administrative and legal approach also provide adequate information for enforcement?

Equity

- Could the system achieve administrative cost and enforcement equity across individual users, user classes, and within geographic areas?
- Could the system potentially achieve Interstate equity (redistribution of funds) based on where travel occurs?
- Could the system be equitable among various users if implemented in some but not all States?

Administrative Mechanisms/Costs

- Would the implementation/operations/maintenance costs be fair and reasonable, and who would bear them? (This may require separate appraisal of in-vehicle technology costs, supporting infrastructure costs, and collection and enforcement costs.)
- Would the system place a significant new compliance burden on users in terms of the required efforts that they must make or time or monetary costs they will incur to comply with paying the VMT-based fees?

Evasion

- What features would the system entail that prevent evasion and ensure enforcement of system requirements and what costs would be incurred to curtail evasion opportunities?
- Could the system effectively and fairly accommodate users who are not "in the system" (foreign vehicles or out-of-State vehicles for functions that are not national)? Would compliance and enforcement costs be reasonable?

VI. POTENTIAL LEGAL ISSUES ASSOCIATED WITH ASSUMPTIONS IMPLIED BY VARIOUS SYSTEM FUNCTION POSSIBILITIES

This section provides a very preliminary list of the potential legal issues that might arise when implementing VMT-based fees. This is a preliminary “long” list of issues that *may* have legal implications. It is designed to establish a starting point for review and discussion. It is likely that many of the issues on the table below will be mooted – and can be readily addressed through careful drafting of enabling legislation. . In addition, it is possible that additional items may be added to the list as the project progresses. less,The purpose of this long list is to explicitly provide the complete range of legal issues that might be raised by the implementation of a VMT based fee program. Not all of these issues will be important in every state or for every type of VMT based fee program, and, indeed the resolution of the legal issues raise may vary from state to state.

For purposes of the legal analysis that is part of this study, only some of the items on this list will be explored in greater detail. For example, as noted at the outset of this paper, some of the issues associated a VMT based revenue system are beyond the scope of this study. This limitation will also apply to the legal issues we address. Other legal issues are not necessarily unique to the implementation of a VMT program. For example, the purchase of equipment necessary to operate a system will be conducted under state procurement laws. We do not intend to discuss standard procurement requirements. Thus, the list will be winnowed down so that the focus will be on the most critical issues and to reflect the issues and proposals addressed in the study as a whole.

Most (but not all) of the issues below are likely to require inclusion in state enabling legislation. A state may also wish to seek legislative support even when enabling legislation is not strictly necessary, e.g., where there may be litigable lack of clarity in authority. Some states -- in dealing with comparable issues --have found it prudent to pass explicit legislation to avoid litigation. Many issues can be avoided with appropriate legislative drafting.

Courts have generally upheld fees if they are clearly authorized in state law. State legislation may be subject to constitutional tests such as due process development and application, equal protection, takings and a rational nexus test (requiring that the fee must rationally relate to the purpose for which it imposed). However, it should be noted that state considerations are not necessarily parallel to federal legal principles when it relates to the authority of administrative agencies. Both federal and state courts have held that legislatures may not provide state agencies with overly broad discretion as this constitutes an “unconstitutional delegation of legislative authority.” But this rule is applied with varying degrees of rigor in federal and state courts, and from state to state. These restraints are not the same in every state, and will need to be addressed on a state by state basis.

The authority to levy taxes is different and broader than the authority to assess fees as part of a regulatory scheme. Motor fuel taxes are often characterized as user fees, but may not be considered fees as a matter of law. A key issue that will be addressed is to determine whether the legal authority to assess VMT-based fees should be based on the tax or user fee principles. Agencies authorized to collect tolls and user fees may need enabling

legislation to collect exactions which a court would characterize as taxes rather than fees. There may be significant differences in both the amount that can be assessed and the manner in which it is enforced.

In addition, states which have constitutional or other restrictions on the use of motor fuel taxes may face ambiguities with regard to whether VMT fees are or are not restricted, requiring clarification. (PennDOT comment)

There are certain specific federal legal issues relating to use of VMT fees on federal aid facilities. For example, under current federal highway law, Interstate commerce issues have been invoked with regard to weight distance taxes on trucks. That litigation has produced a body of law establishing principles which must be followed in taxing interstate commerce, including interstate transportation. Federal aid legislation requires an operator of a toll facility receiving federal aid to enter into an agreement with federal government imposing restrictions on the use of tolls funds. There may also be federal law implications associated with how the fee is characterized and on whom it is assessed. These kinds of issues may need to be addressed in this study.

The issue of using fueling stations and/or state entities to collect federal taxes, along with the potential for new IRS-to-individual vehicle relationships, raises a series of federal issues, (audit, evasion, enforcement) in addition to implying a potential significant change in the structure regarding transportation taxation.

The attached list represents a preliminary “long list” of issues. This list includes those that may easily be addressed by administrative act or in enabling legislation as well as some which greater potential legal significance – or of significance to particular states. This list will serve as the starting point for determining those deserving of more detailed consideration

Table 3: Possible Legal Issues Associated with Assumptions Implied by Proposed System Functions

Class	Issue	Legal Test			
		Requires Enabling Statute	Constitutionality <ul style="list-style-type: none"> • Due process • Equal Protection • Takings • State Constitutional Issues 	Subject to Rational Nexus Test	Federal Law <ul style="list-style-type: none"> • Interstate Commerce • DOT • IRS
Participation of Users	1. Participation will be mandatory	X		X	
	2. Compatible performance specifications t will be required --original equipment or aftermarket (phasing implications)	X			
Participation of Jurisdictions	3. Fee system will apply to all roads in states (regardless of jurisdiction)	X	X	X	X
	4. System will be applied on a multi-state basis	X	X	X	X
	5. Issues associated with operating with a multi-state agreement or compact	X			X
Scope/ incidence	6. Application will be to all vehicle types (with “public”/ emergency exceptions)	X		X	X
	7. Fees may differ by vehicle type (not just mileage)	X	X	X	
	8. States have power to impose fees for indirect user costs (congestion, emissions)	X	X	X	
	9. States have power to vary fees based on various social, environmental, and other public policy goals (e.g., vehicle type, equity, time of day usage, etc.)	X		X	
	10. Systems will be uniform across states (base line function, technology)	X	X		X
	11. Fees will apply to out of state vehicles	X	X	X	X

**Table 3: Possible Legal Issues Associated with Assumptions Implied by Proposed System Functions
(Continued)**

Class	Issue	Legal Test			
		Requires Enabling Statute	Constitutionality • Due process • Equal Protection • Takings • State Constitutional Issues	Subject to Rational Nexus Test	Federal Law • Interstate Commerce • DOT • IRS
Equity	12. Fees will have a clear rationale	X	X	X	X
	13. No special treatment to geographic groups ("local" vs. "thru" vs. cordon area)	X	X		X
	14. System will be accurate regarding incidence of cost-related charges on users	X	X	X	
	15. Collection of both tolls and other fees will continue, as with tolls and fuel taxes today	X	X	X	
State Authority	16. State agency will be empowered to set and collect fees	X			
	17. Collection agents (ex: fuel stations) will be immune to legal action re collection responsibilities	X			
	18. Primary enforcement will be available -- from state (on all facilities)	X			
	19. State powers of enforcement will include evasion, delinquency, tampering -- with reasonable penalties that will not immobilize users	X	X	X	X
	20. Multistate (interstate) entity can conduct financial-related functions	X	X	X	X
	21. Collection points will be required to collect	X			
	22. Functions can be outsourced to private entities with the exception of law enforcement	X			
	23. States can collect federal taxes as part of VMT system				X
	24. States can regulate wireless communications providers to force participation	X			X

Table 3: Possible Legal Issues Associated with Assumptions Implied by Proposed System Functions (Continued)

Class	Issue	Legal Test			
		Requires Enabling Statute	Constitutionality • Due process • Equal Protection • Takings • State Constitutional Issues	Subject to Rational Nexus Test	Federal Law • Interstate Commerce • DOT • IRS
Enforcement procedures	25. Payment evasion will be a civil (not criminal) offense	X			
	26. Enforcement will be through administrative procedures by system administration entity	X			
	27. Out of state violators will be pursued through other participating states: out of participating state violators will not be pursued	X	X		
Federal authority	28. There will be federal enforcement of collection of federal taxes from users	X			X
	29. Fees can be imposed on interstate facilities	X			X
Procurement issues	30. Collection systems/services may be jointly procured or procured separately in each state	X	X	X	
Implementation issues	31. System may be implemented on a pilot basis	X			
	32. Transition: replacement approach vs. simultaneous		X	X	
	33. Implementation will be on a multistate basis by agreement	X			
Privacy issues	34. Protection of information identifiable to a particular vehicle or individual	X			X
	35. Collecting or retaining data identifiable to a particular vehicle or individual	X			X

VII. SUMMARY OF MEMBER COMMENTS

1. The institutional, administrative and legal implications of a fully functioned multi-state VMT-based fee system (i.e., as represented by the "complex" implementation option) must be considered. The functionality represented by the "simple" implementation option is not necessarily sufficient to meet member agency needs or their ability to implement optional functions to address policy objectives (particularly toll agencies). A number of members echoed the themes of "scalable, expandable, flexible and interoperable, "doing it right the first time" and "keeping future options open."
2. Concern was expressed about the implications of imposing a VMT fee and new collection system on the operation of toll facilities, especially those with recent investments in video tolling.
3. Much skepticism was expressed about the ability to implement a system "quickly," thus not supporting a need for implementation of the "simple" implementation option for that purpose. However, a scan of international systems showed that although the systems could support multiple policy objectives, the most successful ones have kept things simple rather than complicated. Thus, members did not rule out implementation of the simple implementation option.
4. One member stated that the privacy issue would likely be raised in connection with even the "moderate" implementation option, thus privacy is likely not a reason to avoid the "complex" option which enables facility-based charges.
5. Several members stated that facility based charging was important to them, thus supporting focus on the issues raised by the "complex" implementation option. One member opined that the system should at least be able to do what is done today in terms of pricing related to HOT lanes, bridges and tunnels. Another pointed out the economies of scale and operating efficiencies of a joint system, as well as the greater potential for public acceptance of a single road charging system. Others pointed out that the "complex" option would provide a rich source of data that could be used for many other purposes.
6. One member mentioned that international systems have all involved a relationship with a national vehicle registry, while the US has only state registries. He also commented that in regard to the "simple" implementation option, the report needs to consider the issue of who is being charged -- i.e., vehicle owner vs. vehicle operator.
7. Several members commented that the distribution of funds collected on the basis of VMT needs to reflect where the miles travelled occurred (not just the location of where the funds were collected).

8. One person commented about the importance of ensuring payment transparency to the user in connection with the moderate and complex implementation options.
9. One person commented that a system that involved collection of Federal taxes could not be implemented on a piecemeal basis.
10. Several members expressed concern about the capability of state registration agencies (which are facing resource reductions and information system challenges) to take on the additional functions implied by a national VMT-based fee system.
11. A number of members expressed interest in the service bureau concept, but also pointed out the importance of maintaining an agency identity with their customers, implying need for a hybrid of the service bureau option presented in the report . EZ-Pass was cited as an example.
12. One member commented that potential relationships between the public sector and banking/financial and telecommunications organizations should be explored.