VMT FEE BASICS AND THE OREGON PILOT PROGRAM

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Road User Fee Task Force

**Legislative Mandate**

“To develop a design for revenue collection for Oregon’s roads and highways that will replace the current system for revenue collection.”
Task Force Selection

A Vehicle Miles Traveled Fee
Fundamentals of Mileage Charging

Six Things A Mileage Charging System Must Do

1. Calculate miles driven
2. Access mileage data
3. Apply mileage charging rates
4. Provide a billing
5. Collect payment
6. Enforce payment

[300 miles x 1.2 cents = $3.60]
Essential Precept

“Technology should *not* drive system design. *Public policy* should determine the nature of any mileage charging system.”
Structuring VMT Fees To Address Policy Goals

• Sustainable funding for roads
• Congestion management
• Greenhouse gas reduction
• Energy independence
• Responsible cost allocation
Policy Issues for Mileage Based Fees

- Purpose of the system
- Nature of payer and charge
- Cover all motorists
- Cover all roads
- Cover all mileage
- Protect motorist privacy
- Local option & geographic zones
- Congestion pricing
- Rate structure
- Public vs. private operations
Structural Issues for Mileage Based Fees

- Ease of motorist use
- Extent of private sector burden
- Administration
- Integration with other systems
- Crediting gas tax
- Reliability and back up system
- Managing nonpayment and fraud
- Operating cost/revenue ratio
- Capital costs
- Transition management
- Overall system risk
Technology Issues for Mileage Based Fees

• Specificity of travel: Identification of geographic zones or specific travel routes via GIS map?

• Central server/computer connected with databases

• Implement a closed system or an open system
  - Technology platform: Proprietary vs. available standards
  - Operating system: Proprietary or available?
  - Data transfer: Single manner vs. options
  - Invoicing and payment: One way or multiple ways?
  - On-vehicle device: One pre-market device or post market options?

• Enforcement
  - At fuel pump vs. electronic surveillance, or combination

• Separate systems for light and heavy vehicles
Public Concerns

- Confidence in system
  - Efficiency
  - Fairness
  - Perceptions of large and costly bureaucracy
- Privacy & fear of technology
- Imposition of a government mandated on-vehicle device
- Motorist class wars
  - Rate structure
  - Rate equity
- Flexibility of road pricing
Central Billing Model

- GPS Satellite
- Satellite signals
- VMT data
- OVD
- Residence or Account of Vehicle Owner
- Payment
- VMT Charge
- Central Computer (Customer Service Center)
- Central Database

Steps:
1. GPS Satellite transmits signals to the vehicle.
2. VMT data is collected by the OVD.
3. Data is transmitted to the residence or account of the vehicle owner.
4. Payment is processed through the central computer.
5. VMT charge is recorded in the database.
Central Billing Model

**Pluses**
- Covers all vehicles
- Covers all roads
- Charges only in-state travel
- Easy for some motorists
- Protects motorist privacy
- Potentially low capital costs
- Minimal private sector burden
- Allows congestion pricing

**Minuses**
- Enforcing payment
- High operational costs
- Inconvenient for cash payers
- Imprecise gas tax credit
- No back up system
- Non-seamless transition
- Public concerns about privacy and how system would work
- High overall system risk
The Receipt

Fuel tax deducted from fuel purchase

Mileage fee imposed as part of fuel purchase

Leathers Fuels
11421 SE Powell Blvd
Portland, OR 97266

Pump# 1 Unleaded
19.50 @ 2.549 49.71
ST Fuel Tax @ .24 (4.68)
VMT Fee : 0
Rush Hour : 40
In-Oregon : 364.6
Non-Oregon: 0
No Signal : 0
Subtotal 50.08
Total 50.08
Cash 50.08

Thank You!
Final Results: Proof of Concept

Successes

• Zone differentiation
• Mileage counting
• Vehicle identification with fuel pump
• Transmission accuracy
• Transaction administration
• Reduced peak driving 22%
• Acceptance by participants

Challenge

• Short timeline required cutting quality assurance
Pay-at-the-Pump Model

**Pluses**

- Meets most policy objectives
  - Provides gas tax credit
  - Covers all roads
  - Charges only in-state travel
  - Easy for all motorists to use
  - Protects motorist privacy
  - Cost effective operations
  - Reliable
  - Enforceable
  - Seamless transition
  - Minimal private sector burden
  - Allows congestion pricing
  - Reduces overall system risk

**Minuses**

- Long period for development and implementation
- Slow technological evolution
- Does *not* cover vehicles not visiting commercial fueling stations
- Public concerns about privacy and how system would work
Mileage Charging Under an Open Interoperable System

- **Defining Zones**
  - GPS
  - Cellular

- **Metering Distance**
  - Odometer
  - GPS

- **Transfer of Data**
  - DSRC
  - RFID
  - WiFi
  - Cellular
  - Mesh
  - Text

- **Invoicing**
  - Point of sale
  - Mail
  - E-mail
  - Automatic debit

- **Payment**
  - Point of sale
  - Mail
  - Electronic
  - Prepayment
  - Cell Phone
Market-Provided On-Vehicle Devices

Must comply with prescribed standards and certifications
- Data accuracy and form
- Data transmission frequency
- Vehicle identification
- Anti-tampering and enforcement protocols
- Certifications of device and installation

Motorist choice of on-vehicle device
- Various privacy protection capabilities
- Data generation and retention alternatives
- Precision
- Cost
- Selection of applications & value added services
Oregon Road User Fee Pilot Program 2.0: Implementing an Open System

- 5,000 motorists in Portland metropolitan area
- Mileage fee rates set by administrative rule
- Motorist pays mileage fee in lieu of state gas tax
- Voluntary motorist participation by contract
- Motorist selects capability of on-vehicle device
- Private sector implements and operates
- Permanent?
Oregon’s Pilot Test of Truck Road Use Electronics

- A staged developmental effort for an automated weight-distance tax
- **Stage One**: Five trucks from one motor carrier for 75 days commencing January 14, 2010
- Pilot test drivers will operate automated reporting system and manual reporting system concurrently
- Evaluation to compare accuracy, cost and compliance effort of manual and automated systems
- Results may lead to system refinements and further tests
An Automated Axle Weight Distance Tax System

1. At start of trip, truck driver enters weight of the combination and number of axles into an electronic on-board unit equipped with GPS receiver.

2. Truck travels as the on-board unit records travel coordinates.

3. At end of month, the on-board unit wirelessly sends coordinate data through cellular transmission to a data repository.

4. DOT converts coordinate data to mileage and generates highway use tax statement for the motor carrier.

5. Motor carriers elect to receive their highway use tax statement by mail or via Internet payment.
Mileage Fee Rate Structure

Consequences of a Flat Rate

Charge Per 100 Miles

Charge Per 100 Miles

losers

winners

$7.00

$6.00

$5.00

$4.00

$3.00

$2.00

$1.00

$0.00

MPG

4  6  8  10  12  14  16  18  20  22  24  26  28  30  32  34  36  38  40  42  44  46  48  50  52  54  56  58  60  62  64  66  68  70

Flat VMT Charge
Gas Tax
Rate Structuring Options for VMT Charge

Public Policy Options
• Revenue
• Traffic management
• Environmental
• Energy independence
• Responsible Cost Allocation

Rate Structure Options
• A flat basic rate
• A stacked rate
• Externality multiplier
• Gas tax/mileage fee mix
Rural Driving

- Subsidizing rural motorists for driving longer distances
- Rural motorists already pay distance-based charge – the gas tax
- Rural subsidization premature until affect of rate structure known
- Can charge different rate for driving in rural zones
A National Investigation

State Versus National Implementation
- Vital federal role in state implementations
- Technology standardization
- Cooperation of national industries
- Charging out-of-state vehicles

Approach for National Implementation
- Timeline for completing development
- Policy oversight body
- National-level project teams
- Reports to Congress
- Concurrent investigations
- Funding directed pilot programs
Work Yet To Do

Assessing various VMT charging systems
• Collection costs
• *Open vs. closed* system

Technology and systems
• Business rules will determine technology applications
• Integration with other systems
• Anti-tampering for on-vehicle devices
• Institutional and legal issues
• Compliance enforcement

Public Acceptance: three steps
1. Determining public attitudes and expectations
2. Design mileage charging system for public needs
3. Implement education and communications program
Work Yet To Do

Governance
• Who should design the system?
• How should revenue be allocated?
• Who will operate the system: public or private sector?

Transition
• Retrofitting versus phase in
• Retention of fuel tax during phase-in
• Pre-market vs. after-market devices
• Setting standards for technologies
• Determining certification processes

Voluntary Adoption
• Motorist choice of after-market device
• Additional services and applications
• Mobile peer-to-peer exchange of vehicle data
• *Option Out* as an alternative but not default option
An Interim System: VMT Estimate Model
Pay-at-the-Pump Model

- Wireless Reader
- GPS Satellite Signals
- On-Vehicle Device (OVD)
- VIN, VMT data, Fuel purchase amount
- Wireless Gateway
- Service Station POS System
- VMT Data
- VMT Charge
- Modem
- Central Computer
- Central Database
- Service Station Building
- GPS Satellite

Wireless Reader connects to GPS Satellite, which sends signals to the On-Vehicle Device (OVD). The OVD collects VIN, VMT data, and fuel purchase amount, which are then transmitted to the Wireless Gateway. The Gateway sends the data to the Service Station POS System. The VMT Data and VMT Charge are then sent to the Modem, which connects to the Central Computer and the Central Database.