



Deployment of Mileage Charging Systems in the United States

Presented to

The 2nd Mileage Based User Fee Symposium

Minneapolis, Minnesota
April 20, 2010

James Whitty, Manager
Office of Innovative Partnerships
and Alternative Funding





Today's Presentation

1. Recommendations for a National Mileage Based Charging System
2. What We Still Need to Learn Prior to Adoption and Implementation
3. Results of Oregon's Recent Pilot Test of an Automated Weight-Distance Tax for Heavy Trucks



Policy Issues for Mileage Based Fees

- Purpose of the system
- Nature of payer and charge
- Cover all motorists
- Cover all roads
- Cover all mileage
- Protecting motorist privacy
- Local option
- Congestion pricing
- Rate structure
- Public vs. private operations

Revenue source, management of congestion, encouraging operation of fuel efficient vehicles

All motorists pay based on distance, time and place of travel and vehicle characteristics

YES, all public roads

YES, except on private land

YES, according to motorist choice

YES, states, counties, cities

YES, decided locally

*Multiplier applied against flat rate;
Lower rate for highly rural zones*

Public private partnership with government agency as default



Public Concerns for Mileage Based Fees

- 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

Create an efficient, fair, cost-efficient operation run via public private partnership

Offer motorists various options for protecting privacy to levels they choose, including choice of on-vehicle device

Default should not be manual reporting

Simply endure the struggle

Impose sideboards that define limits



Structural Issues for Mileage Based Fees

- Easy motorist use
- Crediting gas tax
- Administration
- Integration with other systems
- Reliability and back up system
- Managing nonpayment and fraud
- Transition management
- Overall system risk
- Operating costs
- Capital costs

Under interoperable technology platform, motorists chooses on-vehicle technology and invoicing and payment method

Motorist chooses between precise credit or estimated credit

Operated as public private partnership with payment at the pump for cash option and default payment

Operating cost target should be low

Capital costs yet to be tallied



Technology for an Interoperable Mileage Charging System

- Specificity of travel: Identification of geographic zones or specific travel routes via GIS map?
- Central server/computer connected with databases

Motorist chooses but bears burden of choice

YES

- An *interoperable technology platform*

• Technology platform:

Establishment of available standards

• Operating system:

Establishment of available standards

• Data transfer:

Options allowed that meet standards

• Invoicing and payment:

Multiple options for invoicing and payment

• On-vehicle device:

Pre-market default device with motorist choice from post market options

- Enforcement:

At fueling/charging station during transition

- Separate systems for light and heavy vehicles

YES



On-Vehicle Devices Under Interoperable Platform

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
- Certification of on-vehicle devices and installation

Motorist choice of on-vehicle device

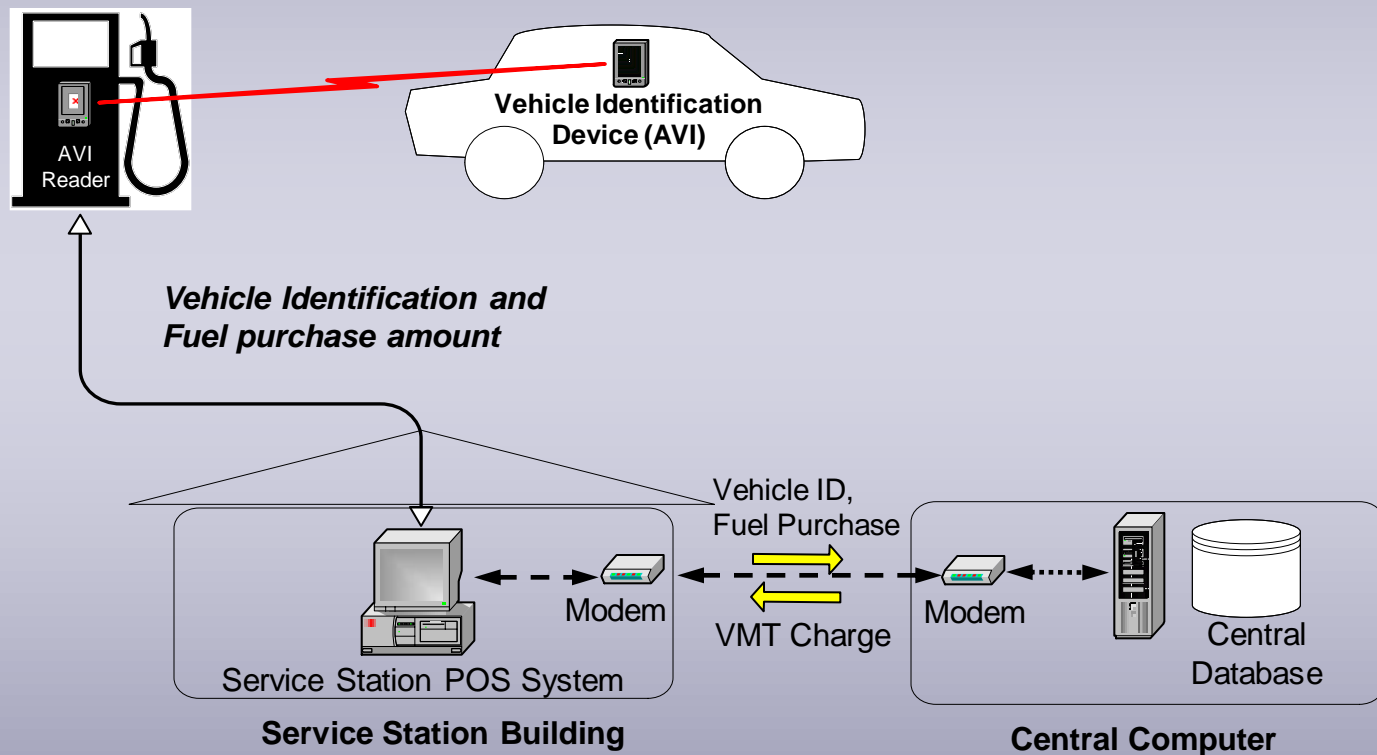
- Spectrum of privacy protection capabilities
 - GPS versus cellular
 - GIS map versus odometer
 - Thick versus thin client
 - Data encryption
 - Trusted third party
- Data generation and retention alternatives
- Functionality: Additional applications & services
- Precision and Cost



OVD



An Interim System: VMT Estimate Model





Things we need to learn about implementing a mileage charging system in the US

1. **GPS and Cellular.** Would it be wise to allow GPS and cellular on-vehicle devices in the same system?
2. **Effective enforcement.** What is an effective enforcement mechanism during a partial application?
3. **Interoperability standards.** What should the standards be for a system built upon an interoperable technology platform?
4. **Choice of on-vehicle device.** Will choice placate motorists' fears?
5. **Private sector role.** What should the private sector role be in a US deployment?
6. **Cost.** Can we build an affordable system and what will it cost?
7. **Early Deployments.** Voluntary adoption, electric vehicle mandate or interim system?



Automating Current Oregon Weight-Distance Tax



- Under current manual entry process, truck drivers or company office staff keep paper record of each trip, truck combination, number of axles, and beginning and ending odometer readings

- Monthly or quarterly, trucking companies complete mileage report, calculate the weight-distance tax, and send payment with 1/4 using Oregon Trucking Online

OREGON DEPARTMENT OF TRANSPORTATION
 MOTOR CARRIER TRANSPORTATION DIVISION
 800 CAPITOL ST NE
 SALEM OR 97331-3029

QUARTERLY MILEAGE TAX REPORT

OPERATIONS DURING THE QUARTER OF: _____

REPORT DUE: _____

SEE INSTRUCTIONS ON BACK

CARRIER NAME AND ADDRESS: _____

A	B	C	D	E	F
LICENSE PLATE OR PASS NUMBER	STATE	UNIT NUMBER	MAKE OF VEHICLE	DECLARED WEIGHT	

OREGON DEPARTMENT OF TRANSPORTATION
 MOTOR CARRIER TRANSPORTATION DIVISION
 800 CAPITOL ST NE
 SALEM OR 97331-3029

MONTHLY MILEAGE TAX REPORT

OPERATIONS DURING THE MONTH OF: _____ MONTH _____ YEAR _____

REPORT DUE: _____

SEE INSTRUCTIONS ON BACK

CARRIER NAME AND ADDRESS: _____

SECTION 1

A	B	C	D	E	F		G
					BEGINNING	ENDING	
LICENSE PLATE OR PASS NUMBER	STATE	UNIT NUMBER	MAKE OF VEHICLE	DECLARED WEIGHT	ODOMETER READINGS	TO	NO. OF





Pilot test of Truck Road Use Electronics – TRUE

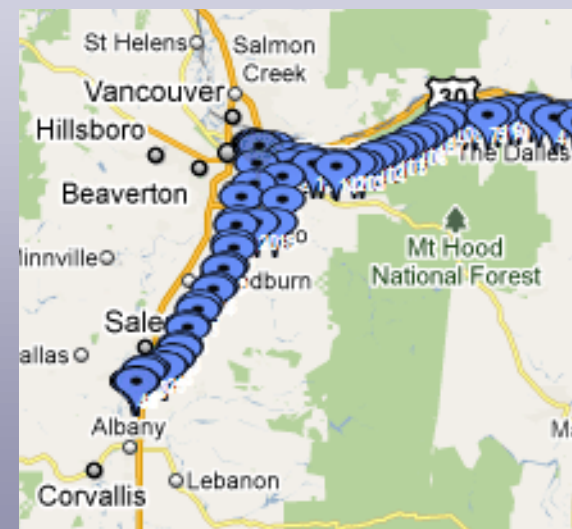
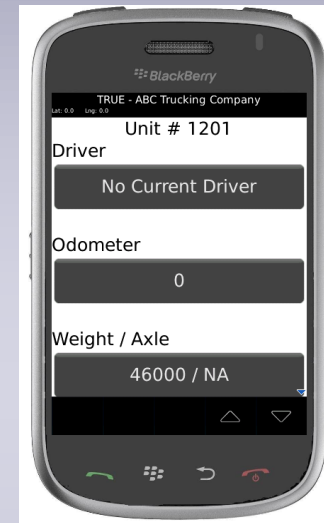
- Upon request of Oregon Congressman Peter DeFazio, ODOT developed TRUE, a modified BlackBerry and a custom-built computer application.
- In January 2010, ODOT partnered with a Portland company to put TRUE devices in five of its trucks and conducted pilot test in February and March.





TRUE: An Automated Weight-distance Tax Process

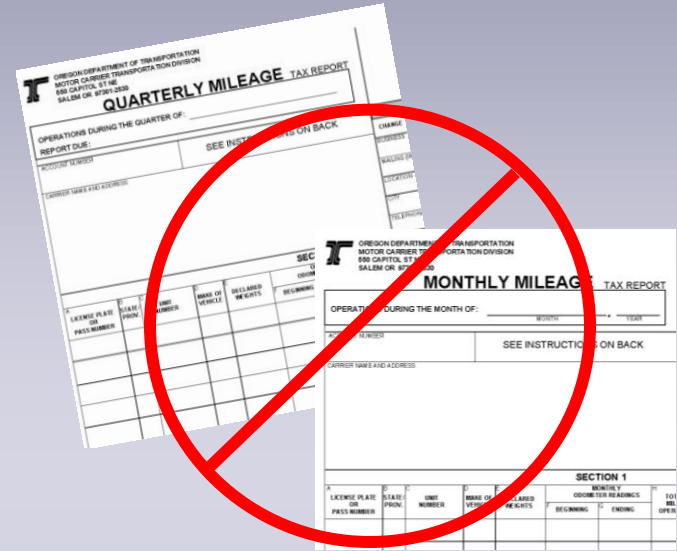
- A wireless smartphone in the truck cab sends GPS signals to a computer application that converts the coordinates to mileage, combines with electronic reporting of truck combinations and number of axles, calculates the tax for travel on Oregon roads and sends a bill for payment





TRUE reports and billing

- No paper reporting
- Automated reports included a list of dates and times a TRUE-equipped truck transited a weigh station, comparing weight and axle information entered by drivers with recordings at the station
- Online reports gave the company access to details about truck trips and tax, with ability to pay online



Home Oregon Department of Transportation Search

Truck Road Use Electronics
037497 - ABC TRUCK LINE LLC

Scale Weight Exception Report
February 2010 Unit 2745

Scale No.	Scale Name	Day/Time	Scale Wt/Axles	Declared Wt/Axles
1008	BOOTH RANCH	2/01/2010 07:25 AM	593 / 6	460 / 4
1404	CASCADE LOCKS POE	2/01/2010 03:35 PM	920 / 8	1030 / 8
2409	WOODBURN POE	2/02/2010 07:23 PM	927 / 8	1030 / 8
2408	WOODBURN NB	2/03/2010 12:51 PM	898 / 8	1030 / 8
1402	WYETH WB	2/04/2010 12:20 PM	900 / 8	1030 / 8
2409	WOODBURN POE	2/05/2010 09:03 AM	911 / 8	1030 / 8
3004	COLD SPRINGS EW	2/10/2010 07:56 AM	604 / 6	1030 / 8
1402	WYETH WB	2/10/2010 06:47 PM	949 / 8	1030 / 8



TRUE: GPS Data Comparison

- Comparison of the TRUE-reported GPS coordinates with data from Qualcomm wireless devices already in company's trucks showed TRUE readings matched Qualcomm to within 0.05%. TRUE was actually more accurate

ODOT	Qualcomm	Percentage
45.95716	45.9353	99.95243396
45.60564	45.6058	100.0003508
45.79833	45.8081	100.0213327
-119.608	-119.6058	99.99826934
-121.193	-121.1956	100.0020051
-109.844	-109.8603	100.0145205
Biggest Deviation		0.05%
Average Deviation		0.01%



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Weight-Mile Tax Reports



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037497

Wednesday, April
7, 2010

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Month / Year

Weight-Mile
Tax Due

[February 2010](#)

\$2,172.03

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Oregon Trucking Online



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Weight-Mile Tax Report

February 2010

Plate	State	Unit	OR Miles	Total
YAGF852	OR	2527	4642	\$616.66
YAGF853	OR	2626	3505	\$466.23
YAGF854	OR	2636	721	\$91.74
YAGF855	OR	2668	3243	\$431.37
YAGF856	OR	2745	4260	\$566.03



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Weight-Mile Tax Report

February 2010

Plate: YAGF854

Unit: 2636

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503-378-4923

Account #:
037497

Wednesday, April
7, 2010

Route	Weight	Axles	Tax Rate	OR Miles	Total
2/01/2010 03:51 PM	1030	8	0.1330	13	1.76
2/01/2010 06:11 PM	1030	8	0.1330	124	16.58
2/11/2010 03:00 PM	960	7	0.1301	52	6.81
2/11/2010 06:25 PM	460	4	0.0583	1	0.09
2/11/2010 08:30 PM	1030	8	0.1330	25	3.35
2/12/2010 07:23 PM	460	4	0.0583	10	0.59
2/12/2010 09:13 PM	1030	8	0.1330	38	5.08
2/13/2010 05:19 PM	460	4	0.0583	3	0.22
2/13/2010 06:34 PM	1030	8	0.1330	10	1.38
2/15/2010 05:54 PM	460	4	0.0583	4	0.25
2/15/2010 08:04 PM	1030	8	0.1330	172	22.94
2/18/2010 07:55 PM	1030	8	0.1330	6	0.86
2/18/2010 08:45 PM	460	4	0.0583	1	0.05
2/19/2010 02:06 PM	1030	8	0.1330	11	1.46
2/19/2010 04:06 PM	460	4	0.0583	3	0.22



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Scale Weight Exception Report

February 2010

Unit 2745

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Thursday, March
11, 2010

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1402	WYETH WB	2/10/2010 06:47 PM	949 / 8	1030 / 8
2409	WOODBURN POE	2/11/2010 02:16 PM	870 / 8	1030 / 8
2306	FAREWELL BEND POE	2/17/2010 07:26 AM	839 / 8	1030 / 8
2409	WOODBURN POE	2/19/2010 09:41 AM	900 / 8	1030 / 8
1008	BOOTH RANCH	2/22/2010 10:43 AM	935 / 8	1030 / 8
1404	CASCADE LOCKS POE	2/22/2010 07:04 PM	902 / 8	1030 / 8
1402	WYETH WB	2/23/2010 03:32 PM	553 / 6	1030 / 8
1404	CASCADE LOCKS POE	2/23/2010 06:25 PM	934 / 8	1030 / 8
2409	WOODBURN POE	2/25/2010 10:44 AM	379 / 6	1030 / 8
2409	WOODBURN POE	2/25/2010 07:38 PM	475 / 6	1030 / 8

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**Road User Fee Pilot Program
Road User Fee Task Force
Truck Road Use Electronics**

www.oregon.gov/ODOT/HWY/OIPP/index.shtml