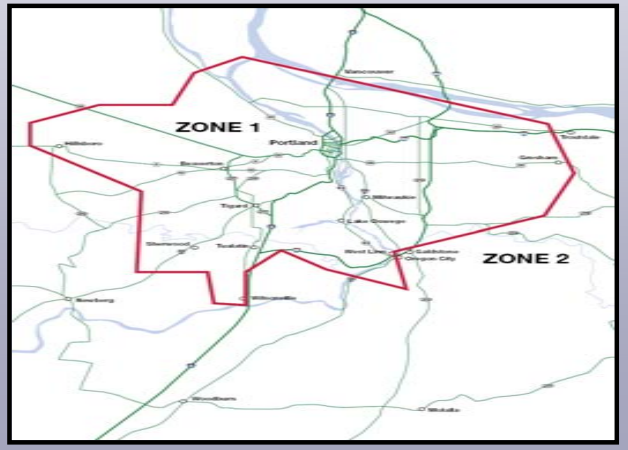
Changing the Climate of Transportation



Western Association of State Highway
& Transportation Officials

Seattle, Washington
July 15, 2009

James Whitty, Manager
Office of Innovative Partnerships
and Alternative Funding

Changing the Climate of Transportation in Oregon

- **The Present:** *The Oregon Solar Highway*
- **The Near Future:** *Electric Vehicle Charging Network*
- **Longer Term:** *Charging for Vehicle Miles Traveled*

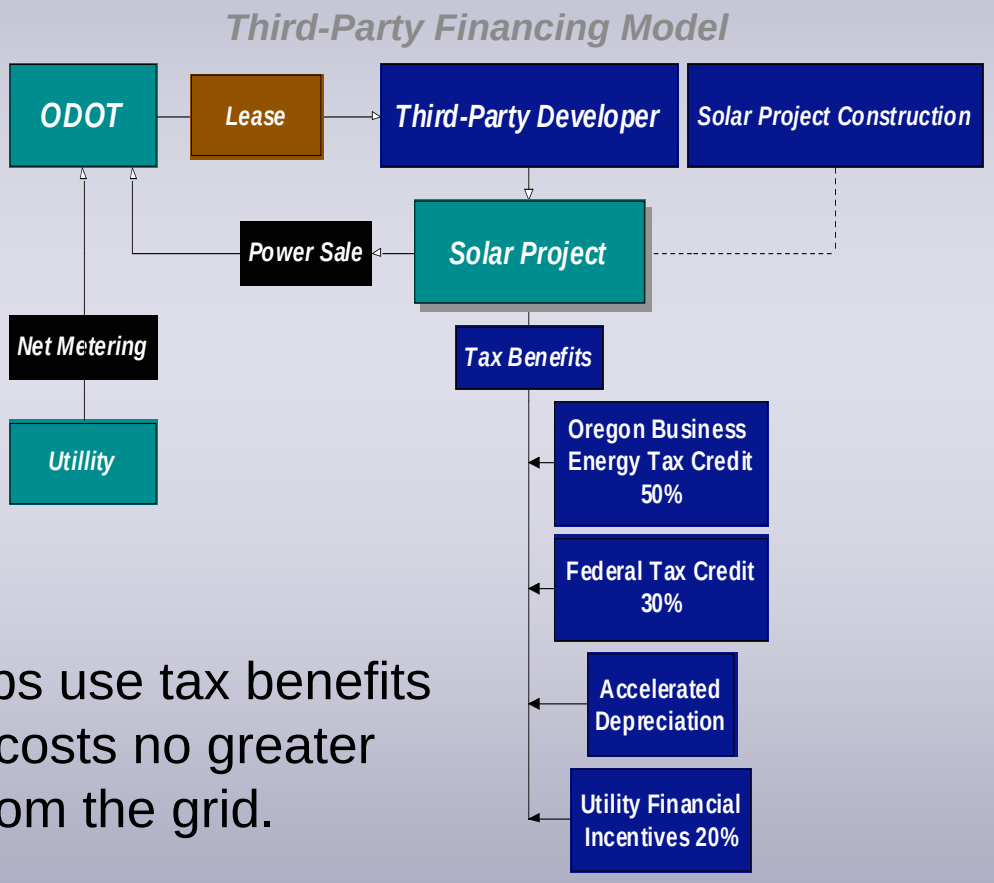
The Oregon Solar Highway

In late 2007, the Oregon Department of Transportation embarked on an historic initiative... *...to build the first Solar Highway in Oregon and the nation.*

Solar Highway Demonstration Project

- 104 kW ground mounted solar array
- 594 175-watt DC solar panels
- Will produce 112,000 kWhs annually
- About 1/3 of interchange lighting needs

ODOT has a Business Model…

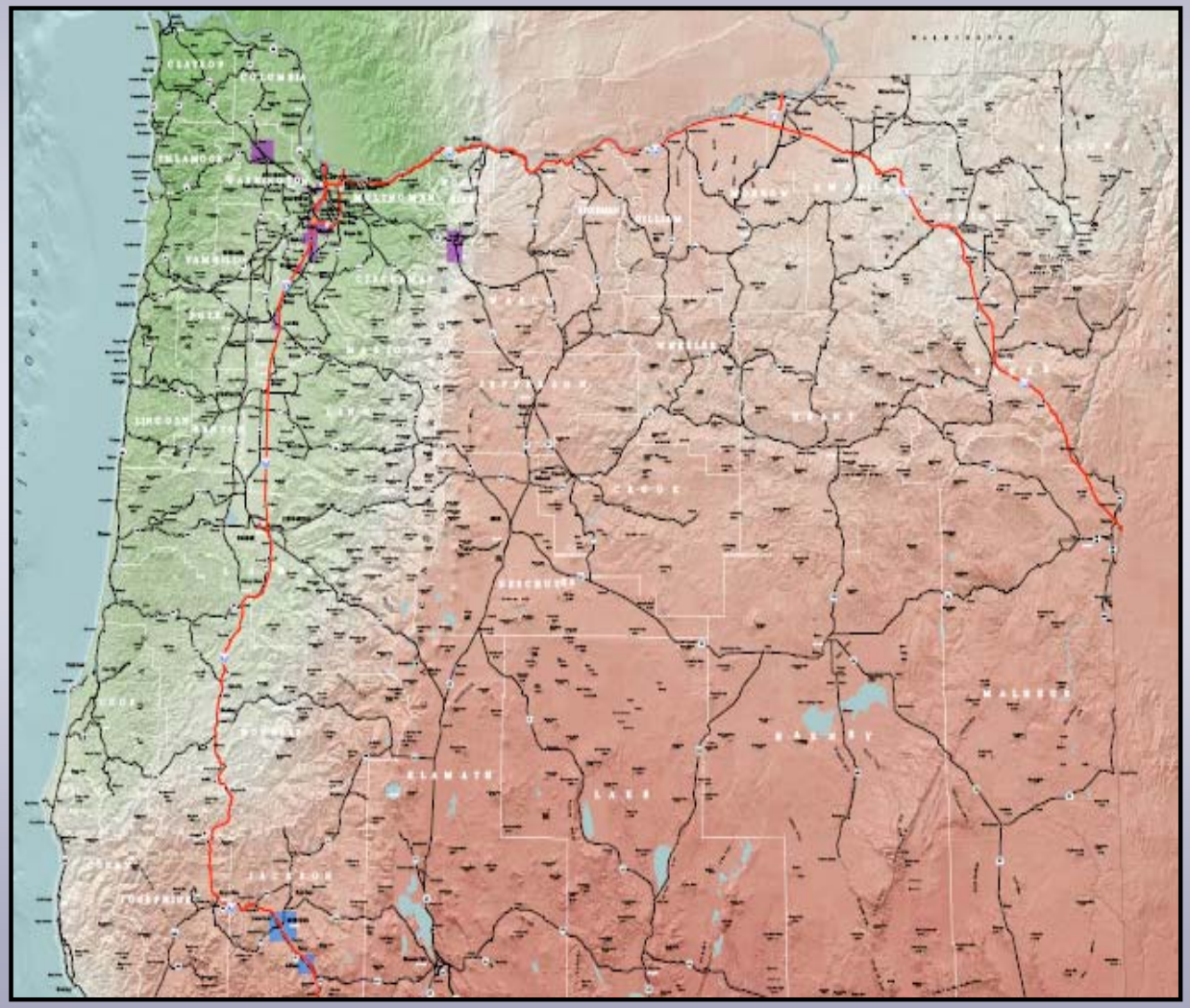


Public-private partnerships use tax benefits to deliver solar power at costs no greater than paid for electricity from the grid.

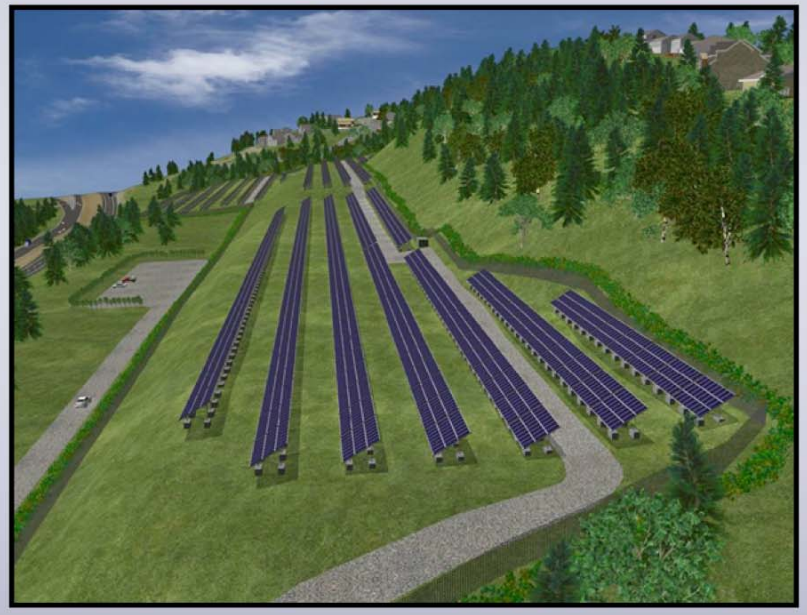
Placed in Service December 19, 2008

Statewide Opportunities for Solar Highways

- ODOT Uses 47 MW of Electricity
- 19,000 Lane Miles of ROW
- Less than 1% of ROW offsets all ODOT electrical use



Next Project Opportunities



- Expand Initial Project ~ 200 kW
- Baldock Safety Rest Area ~ 1.5 MW
- World's Largest Solar Highway Project ~ 3 MW
- Southern Oregon Project ~ 2 MW

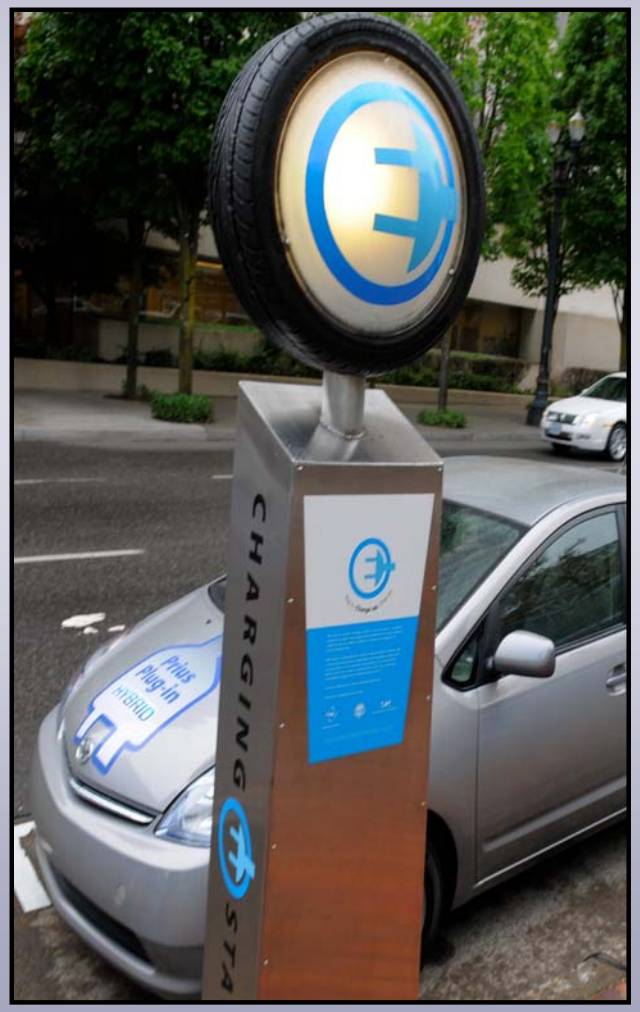
Electric Vehicle Charging Network

EV Charging Network Project Goals

- Bring together local partners and private industry
- Allow access to centralized purchase agreements for EV charging equipment
- Establish Oregon standards for EV charging stations including appearance, performance and safety
- Encourage development of renewable energy and “smart metering”

The Need for a Common "Brand"

Oregon Innovative Partnerships Program (OIPP) can help increase public awareness and acceptance through uniformity

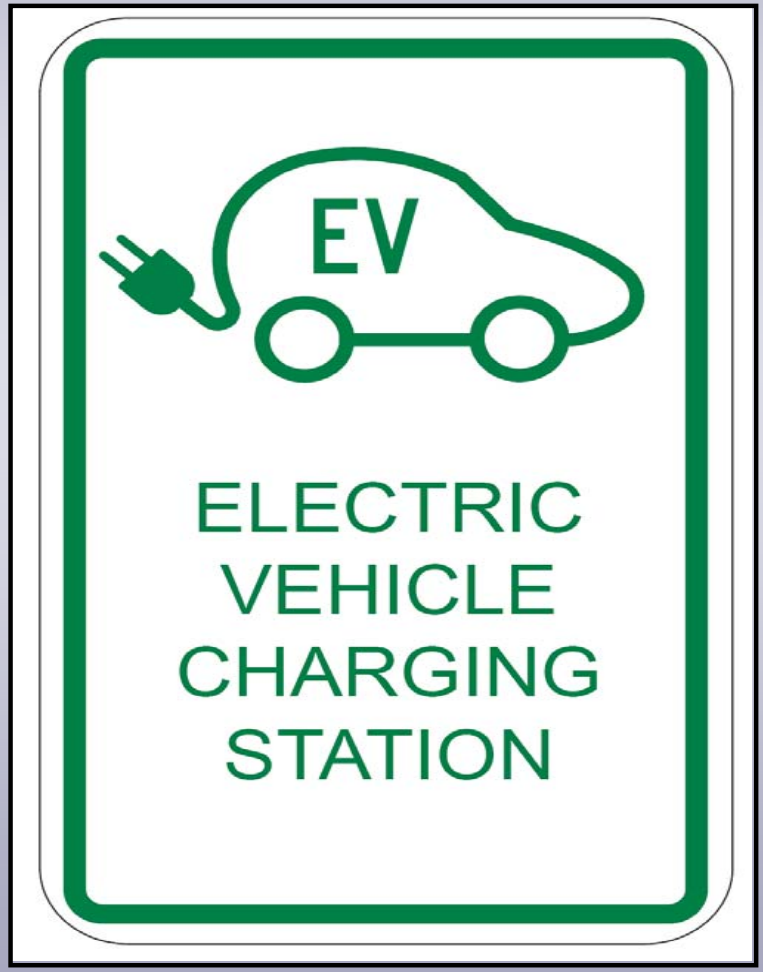


Need for Consistent EV Signage

Here is a sample of EV Charging Signage used in other places

New ODOT Adopted Sign

- ODOT adopted a standard sign which has been deployed in several communities
- Another way to get the public to recognize and accept the new technology

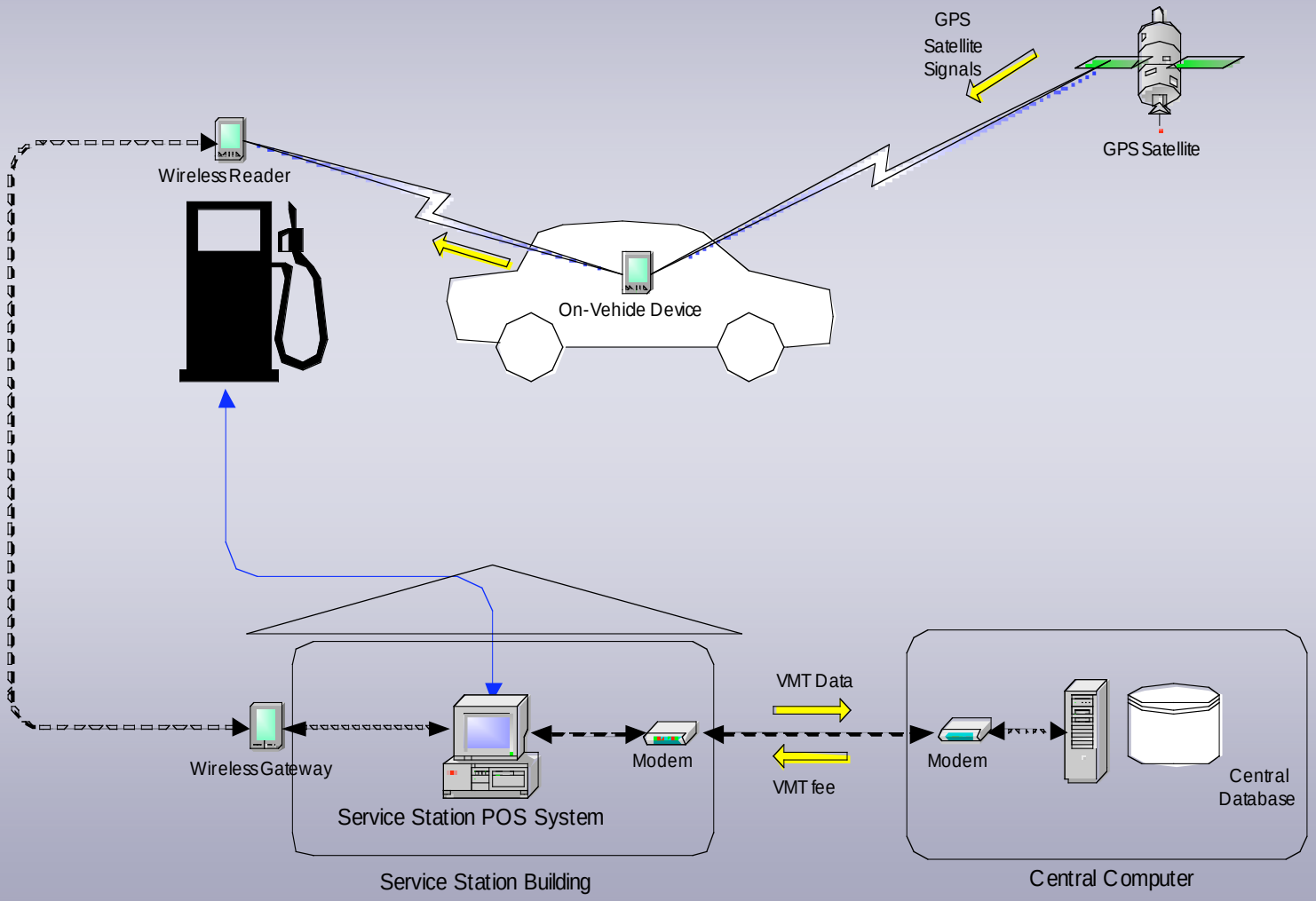


Other Features of the Project

- EV Charging systems will accommodate vehicles from *all manufacturers*
- They must comply with all applicable safety regulations and industry standards
- There is a strong need for public educational to gain familiarity and confidence in EVs

Charging for Vehicle Miles Traveled

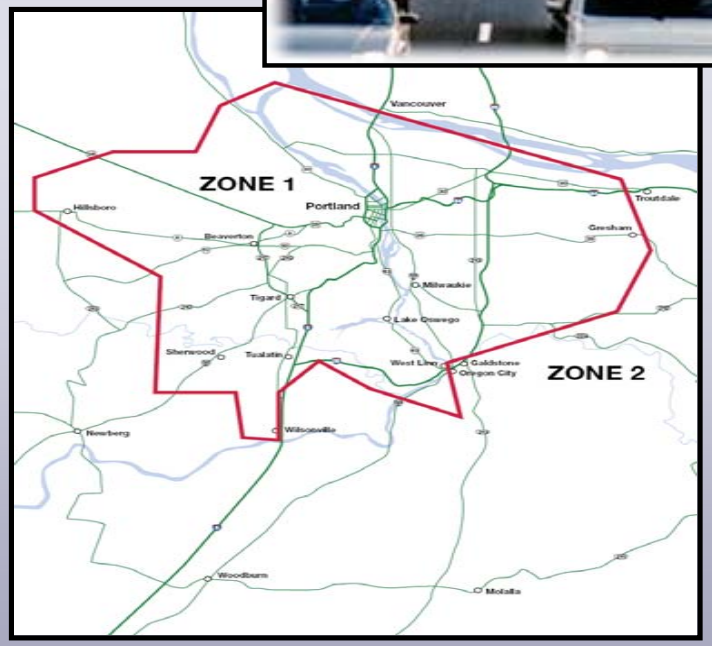
VMT Charging System Configuration



Adaptability for Congestion Pricing

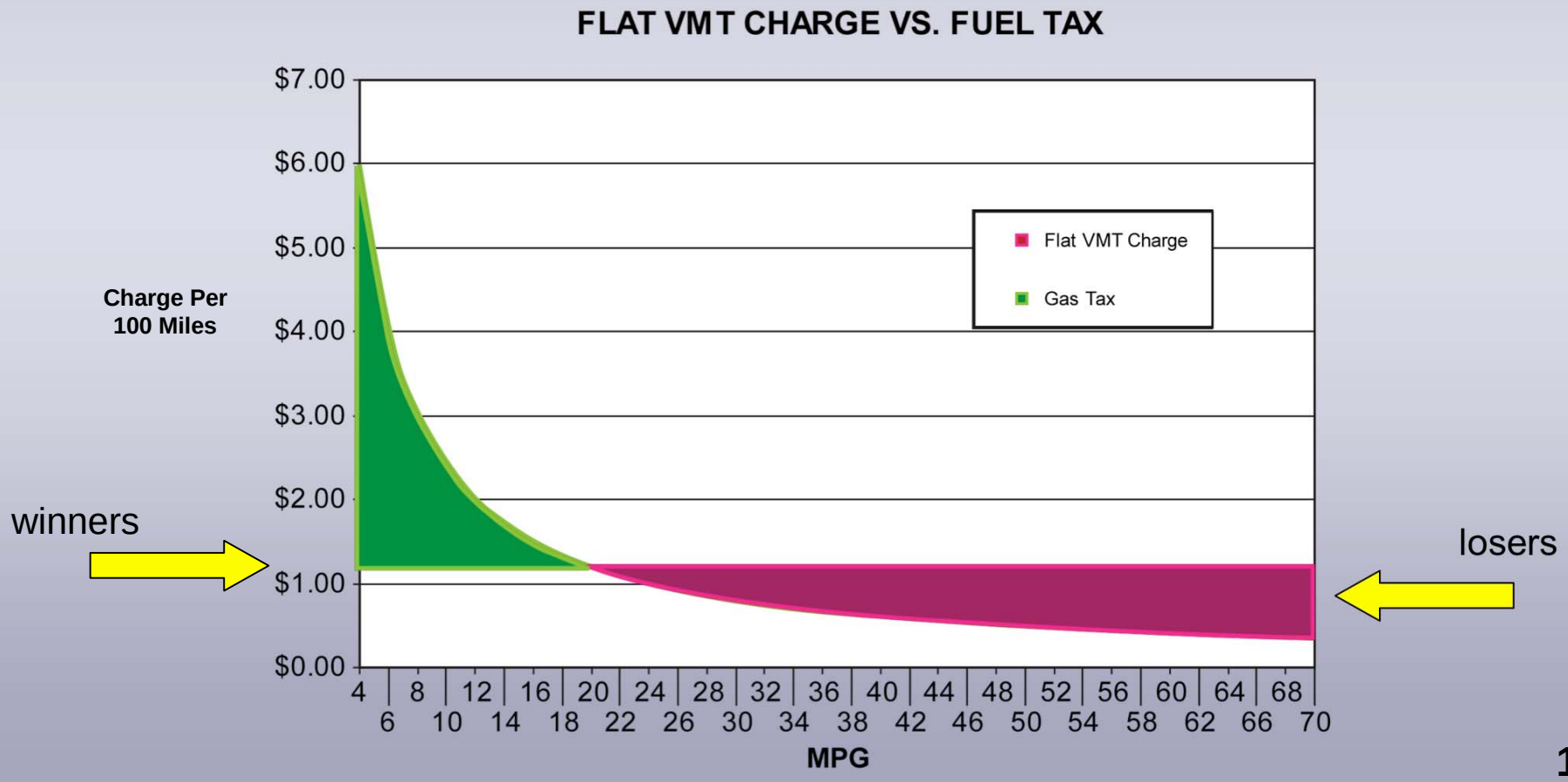
Area Pricing

- Identifies separate temporal “rush hour” zone
- Higher rates during peak periods



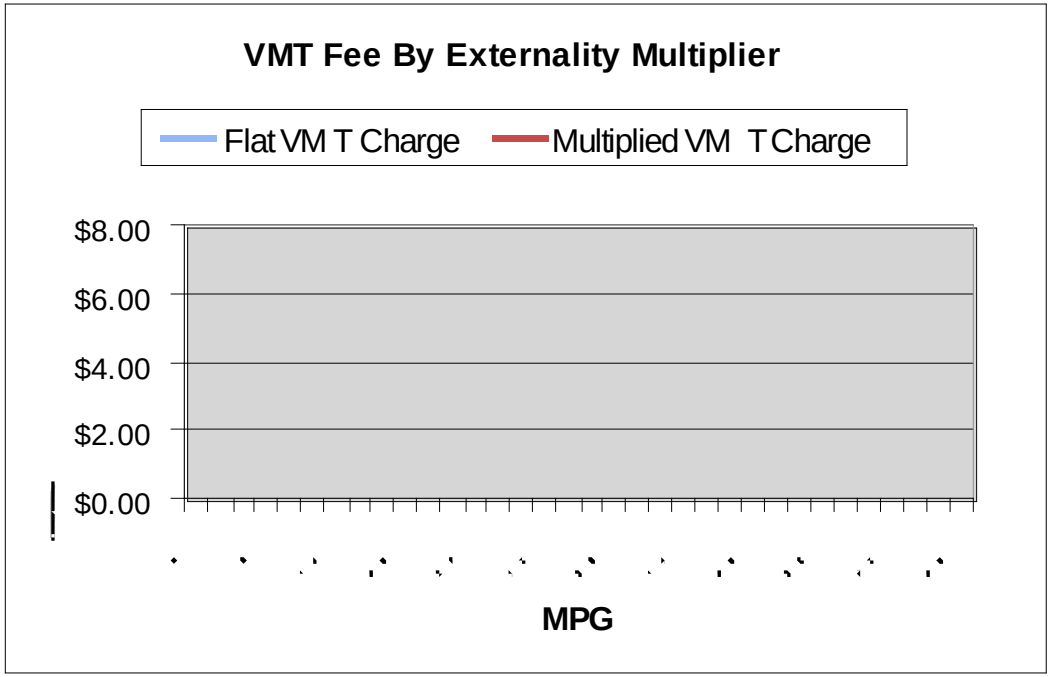
Mileage Charge Rate Structure

The Flat Rate Option



Externality Multiplier Option

MPG	Multiplier
42+	1.0
34	1.2
26	1.5
22	2.0
18	2.5
15	3.0
10	4.0
6	6.0



Assessing Oregon's Mileage Fee Concept

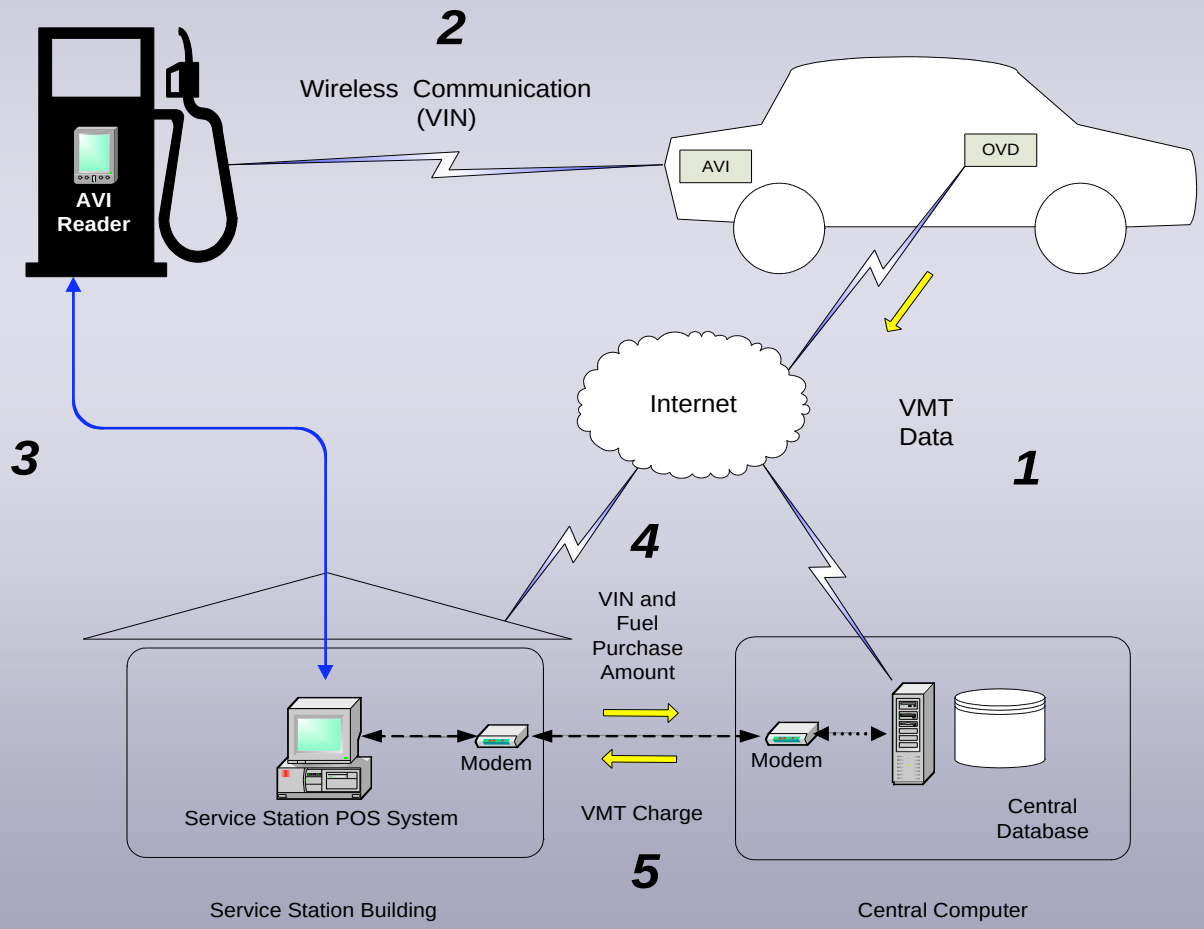
Pluses

- Meets Policy Directives
  - Charges only in-state travel
  - Provides gas tax credit
  - Cost effective
  - Protects motorist privacy
  - Enforceable
  - Reliable
  - Seamless transition
  - Burdens private sector minimally
  - Allows Congestion Pricing
- Successful One Year Pilot Demonstration

Minuses

- Long period for development and implementation
- Does not cover vehicles not visiting commercial fueling stations
- Does not have public acceptance - *Privacy concerns paramount*

Integrate Pay-at-the-Pump Model With Central Billing



An *Open System* for VMT Fee Collection

- Open technology platform
- Options for data transfer
- Options for payment
- Alternative privacy protection measures
- Market-provided on-vehicle devices

Market-Provided On-Vehicle Devices

- **Meets minimum government standards**
    1. Mileage metering
    2. Data transfer
    3. Vehicle identification
    4. Anti-tampering and secure cryptography

- **Self-selected by motorist**
    1. Various levels of privacy protection
    2. Various levels of data generation and retention
    3. Various payment options
    4. Various ways to obtain gas tax credit

Market-provided On-Vehicle Devices (cont'd)

- **Attractive Suite of Service and Product Applications**
  - Real time traffic incident reporting
  - Real time traffic speed data for specific facilities
  - Traffic speed predictions for specific facilities
  - Dynamic travel route time estimates
  - Congestion avoidance alternatives
  - Parking availability identification
  - Electronic parking payment
  - Pay-As-You-Drive Insurance
  - Electric charging station identification
  - Electric vehicle grid integration
  - Congestion pricing or tolling payment
  - Other applications provided by the marketplace

Future Open System Pilot Program

- 5,000 motorists
- Portland area
- Voluntary participation by contract
- Self-selection of devices and applications at no charge
- Only motorist obligation: Pay VMT fee in lieu of state gas tax
- Adoption of VMT fee rates by rule
- "*Opt in*" permanent
- Private sector develops, implements and operates system

Website for Oregon Innovative Partnerships Program

More information available at:

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