UCDAVIS
Institute of Transportation Studies

Road Pricing Project- California Transportation Commission

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Tab 8

Scope of Work

Task 1

1. Compile written documentation of the methodologies for developing road charge rates in other states

2. Summarize what factors the rates were based on – for example, was VMT used? Were total registered vehicles used?

3. Identify any strategies designed to alleviate burdens on low-income drivers or any other special sub-group of drivers

Task 2

1. Develop a list of commercial vehicle companies, types, weights, ranges of MPGs, and amounts

2. Research on fuel taxes and fees the commercial vehicles pay annually

3. Estimate commercial fuel taxes and fees in the future

Task 3

1. Collect average annual VMT based on: vehicle class types, regions, and income

2. Estimate potential VMT changes in the next 10 years

Task 4

1. Assist the Commission in completing the estimates of administrative costs of RUC

Task 1: OREGON & The Eastern Transportation Coalition

Lessons learned from an operational RUC program & a multi-state pilot

Oregon:
The RUC was designed as a revenue-neutral replacement of the gasoline tax

Current rate is 1.8 cents/mile

The State-level fuel taxes generate the most revenue at around $520 million in 2015

Exempting vehicles with ratings of at least 40 MPG from paying enhanced registration surcharge fees

Eastern coalition:

For the passenger vehicle pilot, the revenue-neutral rate was computed by dividing the state fuel tax by the national fuel economy average: 23 MPG

The current RUC rate-setting methodology is based on the recovery of the State-level motor fuel revenues for the participating states

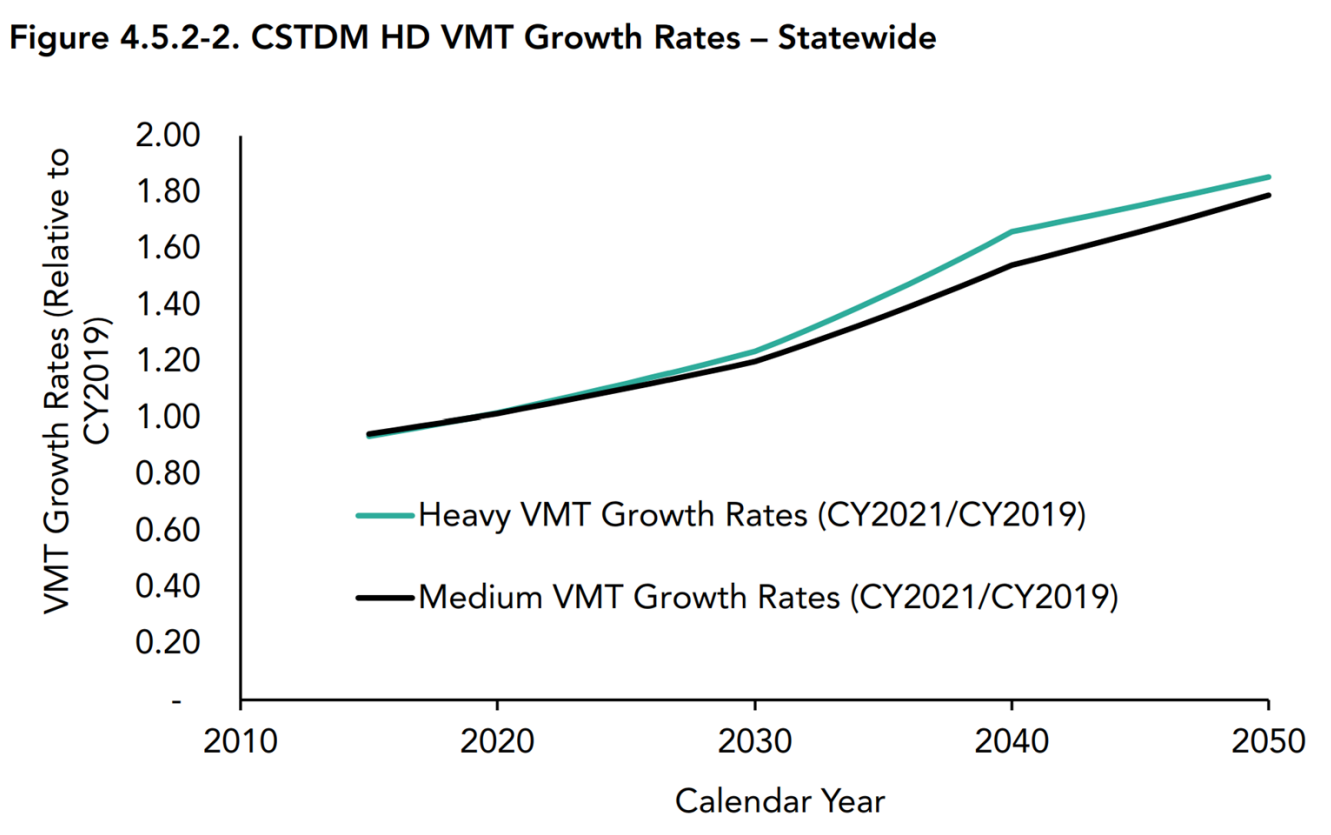
Rural and mixed geographic drivers may pay less with RUC than gasoline tax, while most drivers would be minimally impacted, amounting to about an annual increase or decrease of $18

Task 1: Key Takeaways

- RUC rate-setting methodologies have been a revenue-neutral rate with the gasoline tax
- Some states have taken VMT into account when setting RUC rates, such as Minnesota and Washington
- Future RUC rate-setting should address equity by varying rates among income groups, geography (rural-urban), and vehicle weights

Task 2: Commercial Vehicles

Estimate fuel taxes in the future

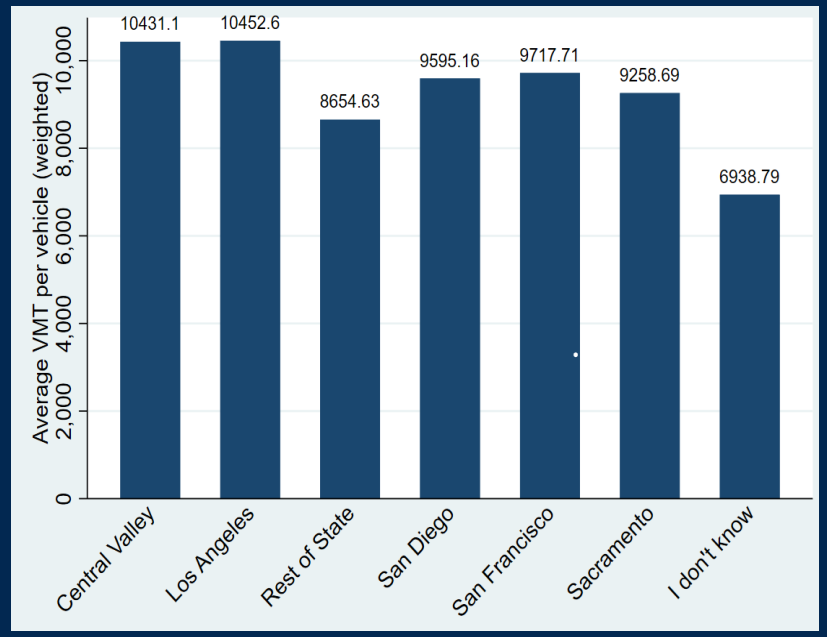


- EMFAC VMT forecast (1.1% annual growth rate)
- CSTDM estimated commercial VMT in 2010 was 97.6 billion miles
- Assuming growth rate of 1.1% from 2010 to 2025, and 1.2% from 2025 to 2030
- The estimated commercial VMT in 2030 is 122 billion miles
- Estimated diesel tax revenues are $7.1 and $2.2 billion for State and federal, respectively

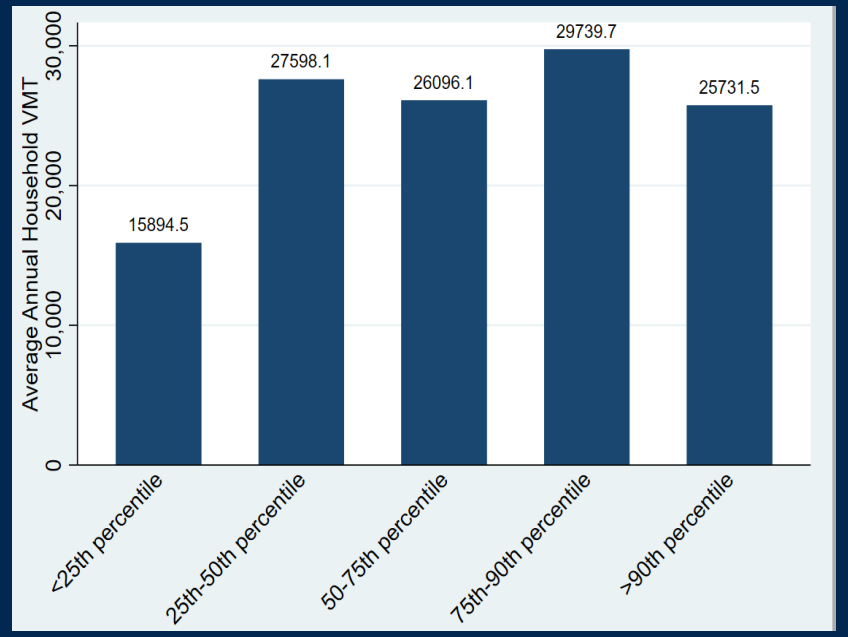
Task 3: VMT by vehicle type, regions & Income group

Leveraging CSTDM (2010) & the 2019 California Vehicle Survey

Vehicle class	Short-distance VMT (billions)	Long-distance VMT (billions)	External VMT (billions)	Total VMT (billions)	Vehicles (millions)	total VMT/vehicle
Private	410	0.03	49	459	29	1.58E+04
Commercial	10.6	37	50	97.6	1	9.76E+04



By Region



By Income Group

Task 3: VMT Projection | Light-duty vehicle

- VMT forecast model in EMFAC: light-duty VMT forecast model includes variables like gasoline price, population and number of households

- Adopt FHWA's methodology to build a regression model to project VMT at the State level from 2020 to 2030

- FHWA VMT forecast model leverages a wider suite of explanatory variables to forecast VMT (e.g., GDP per household, employment, road supply)

Task 4: RUC-Tolling integration

A potential way to reduce administrative costs

- Investigated 9 road-tolling programs in the U.S. to identify opportunities within these programs to reduce administrative costs
- Leveraged a two-pronged analysis approach: conducted semi-structured interviews to identify common themes
- Applied thematic findings to inform the evaluation criteria for the multi-criteria decision-making analysis (MCDA)

	Evaluation Rubric					
Criteria	n/a	1	2	3	4	5
Administrative costs	No mentioning of administrative costs	Vague mentions of administrative costs, no examples or estimates provided	Some mentions of administrative costs but no quantitative estimates or indication of future research	Indicated an increase in administrative costs and future investigation is needed	Provided specific actions to take for reducing administrative costs	Provided estimates for administrative costs

Task 4: RUC-Tolling integration

A potential way to reduce administrative costs

	Revenue Generation			Equity		Technology Feasibility		Public Acceptance			Autonomy	
	Collection Cost	Admin Costs	Enforcement Costs	Affordability	Accessibility /Inclusiveness	On-road Tech	Back-office integration	Data Privacy	Usability/ Awareness	Payment Flexibility	Interoper-ability	Data management/ Ownership
California	3	5	4	3	3	5	4	5	5	3	4	4
Colorado	3	3	4	3	4	4	5	4	5	3	3	3
Eastern Transportation Coalition	4	4	4	5	4	4	5	4	5	2	5	5
Hawaii	4	4	3	4	4	5	4	5	5	3	2	2
Minnesota	3	3	3	3	2	3	5	4	4	2	4	3
Oregon	3	4	4	4	4	3	5	4	4	3	4	4
Utah	4	4	4	4	3	4	4	5	5	4	3	4
Washington	4	5	4	3	4	5	5	4	4	3	4	5

To evaluate the revenue generation capacity of each State's RUC pilot or program, the following criteria are evaluated: collection costs, administrative costs, and enforcement costs.

Task 4: Key Takeaways

- For pilots, there was a limited capacity in evaluating revenue generation from RUC. For voluntary RUC programs (UT and OR), there was no evaluation of enforcement costs

- The administrative costs of RUC would be much greater than that of the existing motor fuel taxes, largely due to the increase in the number of collection points. The estimated administrative costs of RUC ranges from 7% to 12% (WA and CA)

- Reduce administrative costs by integrating manual odometer reading into existing vehicle inspections in Hawaii or collaborating with the tolling industry to reduce collection costs

- Minnesota is interested in the integration between tolling and in-vehicle telematics

Appendix

Task 1: RUC Programs Evaluated

States/Region	Year of Operation	Pilot (Y/N)
Washington	2018 - 2019	Y
Oregon	Since 2015	N
California	2016 - 2017	Y
Utah	Since 2020	N
Colorado	2016 - 2017	Y
Minnesota	2020 - 2021	Y
The Eastern Transportation Coalition (Delaware, New Jersey, North Carolina, and Pennsylvania)	2020 - 2021	Y
Hawaii	2018 - 2022	Y

Here we discuss the highlighted RUC programs in detail

Task 2: Commercial Vehicles

Class, weights, MPG, Number of vehicles

Vehicle Class (FHWA)	Weights	MPG	Number of vehicles (in thousands)
Class 1	less than 6,000 lbs	17.5	62,617
Class 2	6,001 to 10,000 lbs	17.5	17,142
Class 3	10,001 to 14,000 lbs	6.5	1,142
Class 4	14,001 to 16,000 lbs	6.5	396
Class 5	16,001 to 19,500 lbs	6.5	376
Class 6	19,501 to 26,000 lbs	6.5	910
Class 7	26,001 to 33,000 lbs	6.5	437
Class 8	greater than 33,000 lbs	5.3	2,154

Sources: Alternative Fuels Data Center, Bureau of Transportation Statistics

Types of Fees	Vehicle classification	Who does it apply to?	Amount
Heavy Vehicle Use Tax (HVUT)	55,000 to 75,000 lbs	heavy vehicles operating on public highways	$100 plus $22/1000 lb over 55,000 lb annually
	Over 75,000 lbs		$550/year
California Motor Vehicle Fuel (Gasoline) Tax	Sales Tax	all vehicles that run on gasoline	2.25% plus applicable local sales tax rate
	Excise Tax		$0.54/gallon
Federal Motor Vehicle Fuel (Gasoline) Tax	Excise Tax	all vehicles that run on gasoline	$0.18/gallon
California Diesel Tax	Sales Tax	all vehicles that run on diesel	9.1% plus applicable local sales tax rate
	Excise Tax		$0.41/gallon
Federal Diesel Tax	Excise Tax	all vehicles that run on diesel	$0.24/gallon
Other taxes include California Weight fees for Commercial vehicles over 10,001 pounds, registered in California and Federal Tire tax			

Sources: Federal Highway Administration, California Department of Tax and Fee Administration, U.S. Energy Information Administration

Task 3: VMT Projection | Data and sources

Variables categories	Independent variables	Data sources
Demographics	Total population	ACS one-year estimates
	Population aged 20 - 65	ACS one-year estimates
	Number of households	ACS five-year estimates
	Avg. person per household	ACS five-year estimates
	Households with children younger than 18	US Census Demographics and Housing Characteristics
	Households in urban vs. rural area	US Census Demographics and Housing Characteristics
Economic activities	Total GDP per household	Bureau of Economic Analysis, annual data
	Personal consumption expenditures on gasoline	Bureau of Economic Analysis, annual data
	Median household income	ACS five-year estimates
	Consumer confidence index	CEIC Data
Cost of driving	Gasoline price	U.S. Energy Information Administration
	Average MPG	FHWA monthly VMT, EPA Alternative Fuels Data Center
Road Supply	Total road miles	Bureau of Transportation Statistics
	Road miles per vehicles	Bureau of Transportation Statistics, DMV vehicle count
Employment	Total employment	ACS one-year estimates
	Labor force participation rate	ACS five-year estimates
	Employed persons per household	ACS one-year estimates & five-year estimates