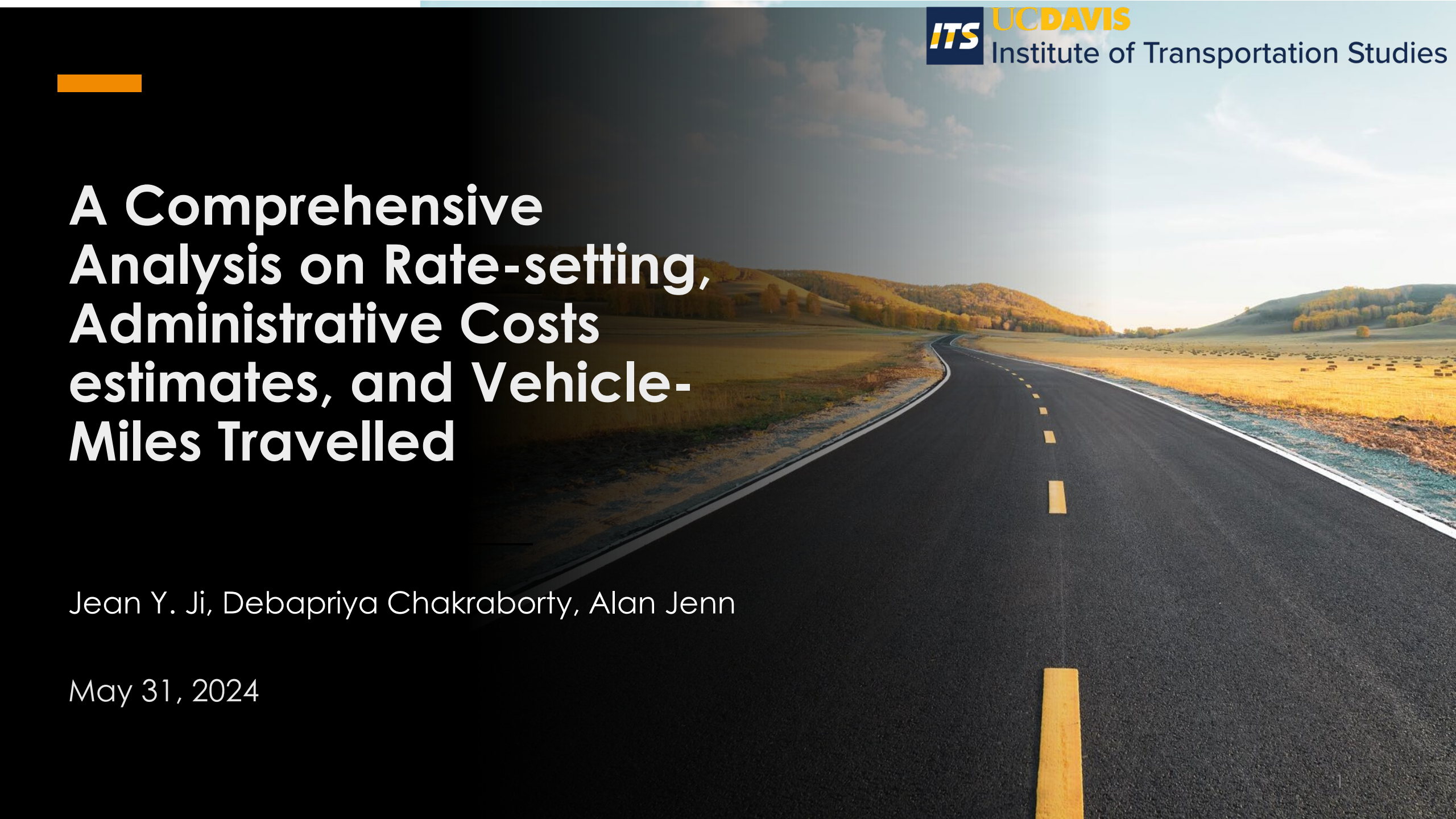

ITS UCDAVIS Institute of Transportation Studies

# A Comprehensive Analysis on Rate-setting, Administrative Costs estimates, and Vehicle-Miles Travelled

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# 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

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

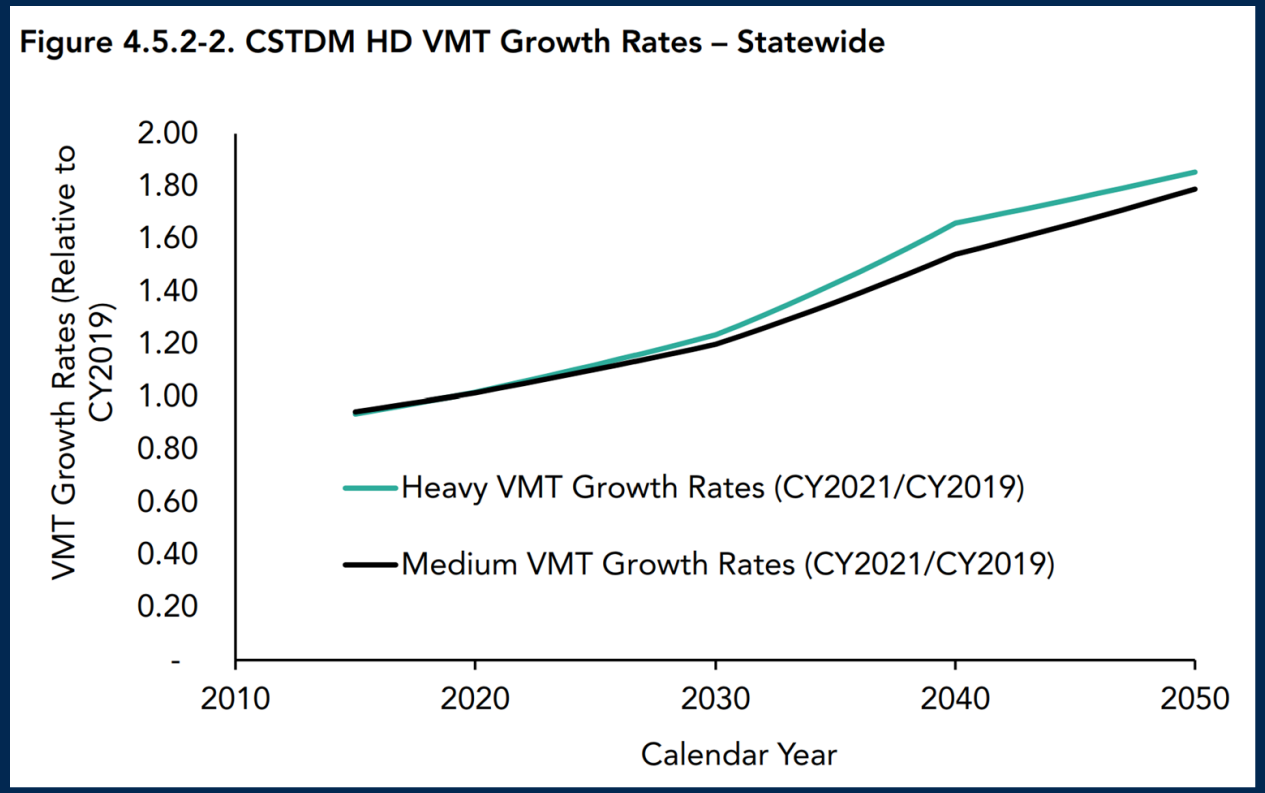
1. Collect average annual VMT based on: vehicle class types, regions, and income

**2. Estimate potential VMT changes in the next 10 years**

## Task 4

**1. Complete the estimates of administrative costs of RUC**

# Task 2: Estimate future fuel taxes revenues




- CSTDM VMT forecast (1.1% annual growth rate)
- To provide more granular and quantitative understandings on the breakdown of VMT by vehicle class
- Leveraged EMFAC outputs to compute VMT driven on diesel by vehicle class

# Task 2: Estimate future fuel taxes revenues

- Equation 1 and 2 demonstrated the details of the computations of diesel excise and sale taxes revenues, respectively.

$$Diesel\ excise\ taxes\ revenue = \frac{VMT\ by\ diesel\ by\ vehicle\ class}{fuel\ efficiency\ by\ vehicle\ class} \cdot diesel\ excise\ tax\ rate \quad (1)$$

$$Diesel\ sales\ taxes\ revenue = \frac{VMT\ by\ diesel\ by\ vehicle\ class}{fuel\ efficiency\ by\ vehicle\ class} \cdot average\ diesel\ price \cdot sales\ tax\ rate \quad (2)$$

# Task 2: Estimate future fuel taxes revenues

Annual revenue from diesel excise taxes ($billion)

| Vehicle class | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Light-duty | 0.15 | 0.15 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.13 |
| Medium-duty | 0.24 | 0.24 | 0.24 | 0.25 | 0.25 | 0.24 | 0.24 | 0.24 |
| Heavy-duty | 1.20 | 1.22 | 1.24 | 1.26 | 1.28 | 1.29 | 1.31 | 1.32 |
| Total | 1.59 | 1.61 | 1.62 | 1.65 | 1.67 | 1.67 | 1.69 | 1.69 |

Annual revenue from diesel sales taxes ($billion)

| Vehicle class | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Light-duty | 0.25 | 0.24 | 0.23 | 0.23 | 0.23 | 0.22 | 0.22 | 0.21 |
| Medium-duty | 0.41 | 0.42 | 0.42 | 0.43 | 0.43 | 0.42 | 0.42 | 0.41 |
| Heavy-duty | 2.04 | 1.95 | 1.98 | 2.01 | 2.03 | 2.06 | 2.08 | 2.10 |
| Total | 2.70 | 2.61 | 2.63 | 2.67 | 2.69 | 2.70 | 2.72 | 2.72 |

# Task 2: Estimate future fuel taxes revenues

Table 1. Revenue-neutral RUC rates by vehicle class and fuel type in 2023

| Vehicle class | Diesel rate ($/mile) | Gasoline rate ($/mile) |
|---|---|---|
| Light-duty | 0.06 | 0.03 |
| Medium-duty | 0.13 | 0.04 |
| Heavy-duty | 0.19 | N/A |

# Task 3: VMT Projection | Light-duty vehicle

- Leveraged the regression equation from EMFAC 2017 for estimating VMT driven on gasoline
- Explanatory variables: gasoline price, national housing starts, unemployment rate, and population

$$VMT_{gasoline} = -12.52 - 10.24 \cdot gasoline\ price\ \left(\frac{\$}{gallon}\ in\ 2015\ \$\right)$$
$$+0.0176 \cdot national\ housing\ starts\ (thousands)$$
$$-1.079 \cdot unemployment\ rate\ (\%) + 8.638 \cdot population$$

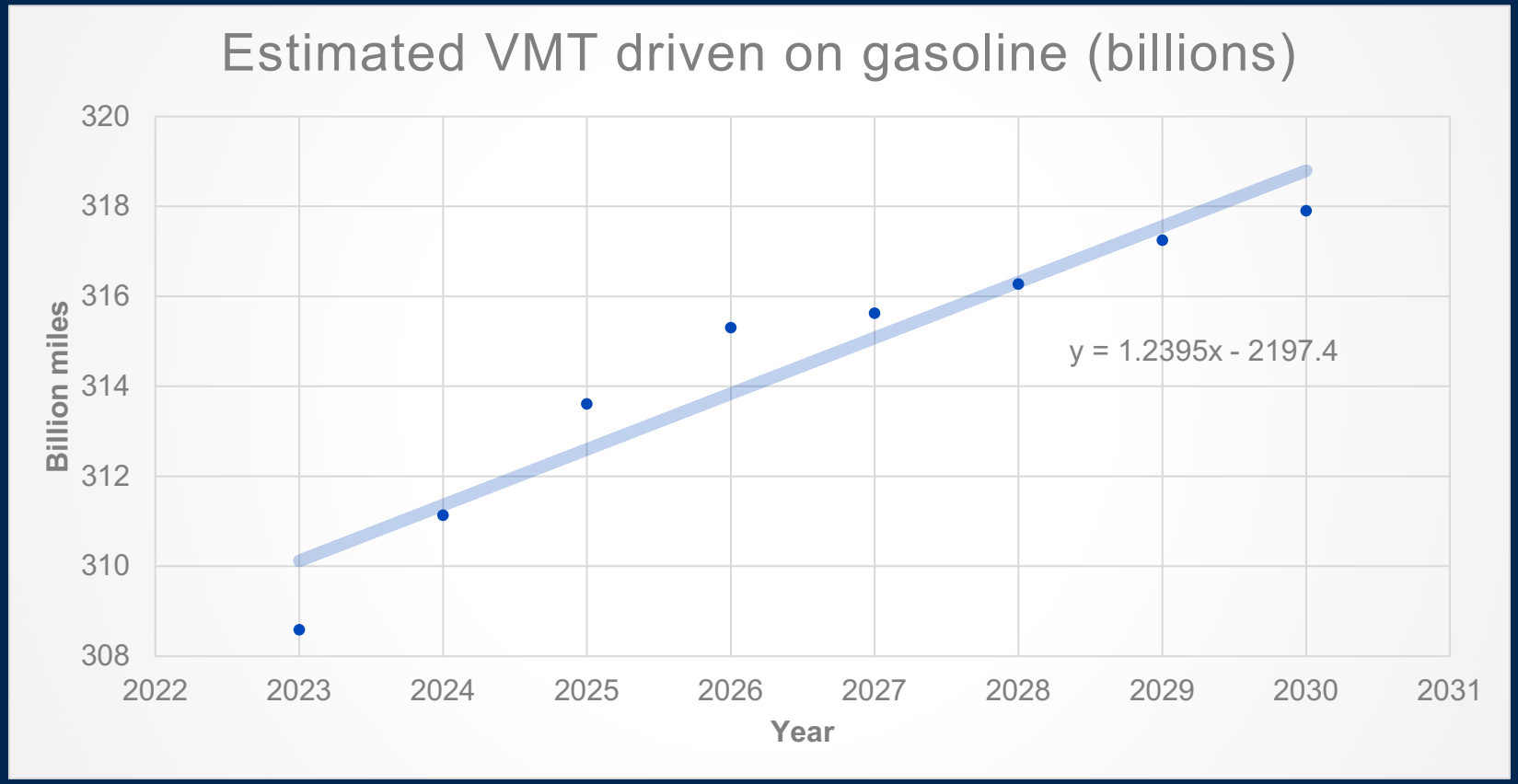
# Task 3: VMT Projection

Forecast of light-duty VMT in California

| Year | Estimated VMT gasoline (billions) | Gasoline price ($ 2015) | National Housing starts (thousands) | Unemployment rate (%) | Population (millions) |
|---|---|---|---|---|---|
| **2023** | 308.58 | 3.47 | 1400 | 4.6 | 39.0 |
| **2024** | 311.13 | 3.20 | 1400 | 4.8 | 39.0 |
| **2025** | 313.60 | 2.98 | 1400 | 4.6 | 39.0 |
| **2026** | 315.30 | 2.93 | 1400 | 4.3 | 39.1 |
| **2027** | 315.62 | 2.92 | 1400 | 4.1 | 39.1 |
| **2028** | 316.27 | 2.92 | 1400 | 4.3 | 39.2 |
| **2029** | 317.24 | 2.92 | 1400 | 4.2 | 39.3 |
| **2030** | 317.90 | 2.94 | 1400 | 4.2 | 39.4 |

# Task 3: VMT Projection

Forecast of light-duty VMT in California



# Task 4: Estimate back-office costs

- Two categories: staff agency costs and commercial account manager (CAM) costs
- To provides an estimate of potential state positions needed to administer a statewide RUC program

| Agency | Est. Annual Costs ($ million) |
|---|---|
| California Department of Motor Vehicles | 4.3 |
| Caltrans | 0.78 |
| State Controller's Office | 0.27 |
| California Department of Tax and Fee Administration | 0.20 |
| California Highway Patrol | 0.71 |
| **TOTAL** | 6.26 |

# Task 4: Estimate back-office costs

- CAM costs were estimated from tolling agencies' back-office operation costs
- Annual avg. operating costs is $5 per account
- Assuming 36 million vehicles in California, the estimated annual operating costs of the associated accounts is $180 million

Total est. annual operating costs = state agency costs + CAM costs
= $6.3 + $180 million = $186.3 million

# Conclusion

- Provided an additional layer of detail on revenue-neutral RUC rates by analyzing VMT driven on diesel vs. gasoline and across vehicle segments (light-, medium-, and heavy-duty)
- Linear increase of light-duty VMT in the next decade; estimated 318 billion miles by 2030.
- Estimated annual back-office costs of $186.3 million, approximately 3% of the motor fuel taxes revenue