

# Rethinking How We Build So Californians Can Drive Less



California Environmental Assembly | Feb. 10, 2022



# Topics

- Background on VMT reduction at Caltrans
- Status of affected highway projects
- Key implementation issues

# Background: Policy framework

- Caltrans guidance adopted in 2020
  - Follows OPR Technical Advisory of 2018 and SB 743 of 2013
  - Makes induced travel (measured in vehicle-miles traveled, or VMT) an environmental concern under CEQA



Climate



Equity



Health



Land Conservation



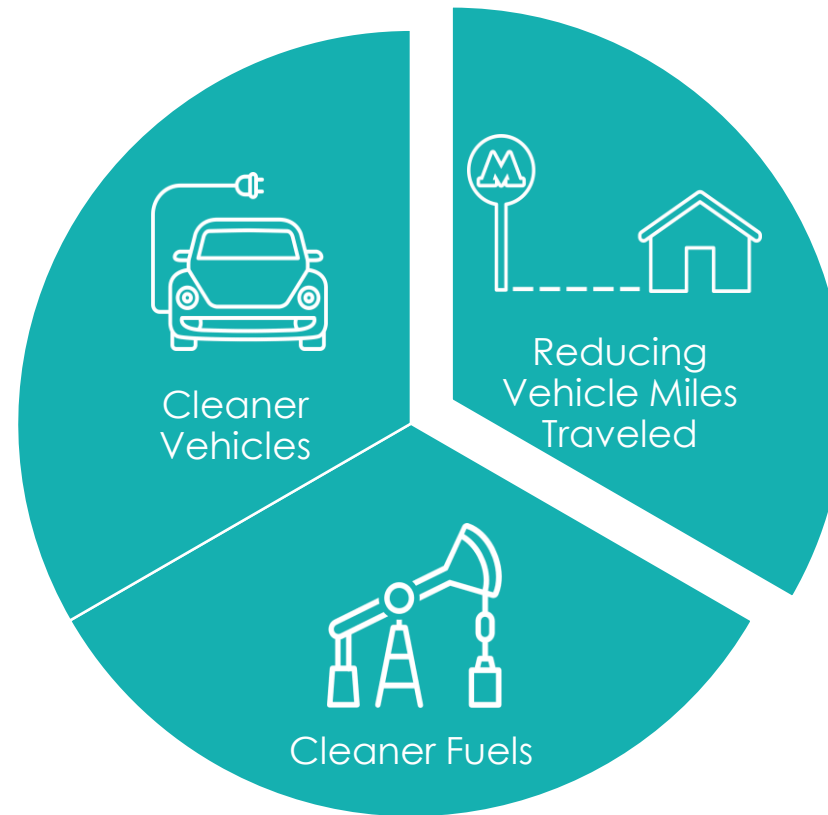
Safety



Infill Housing

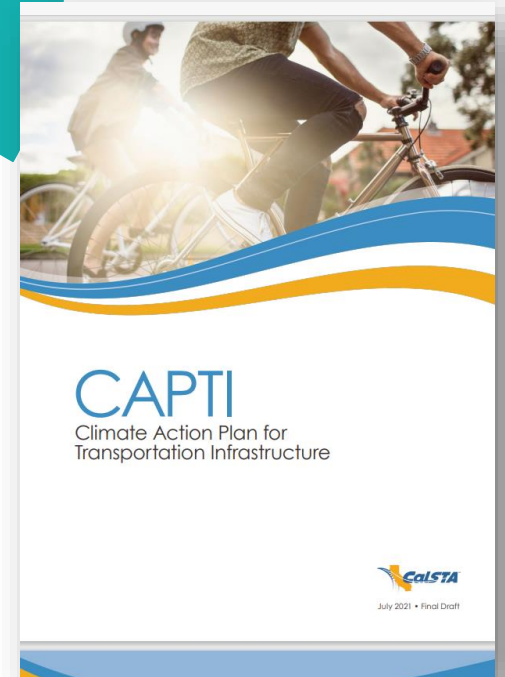
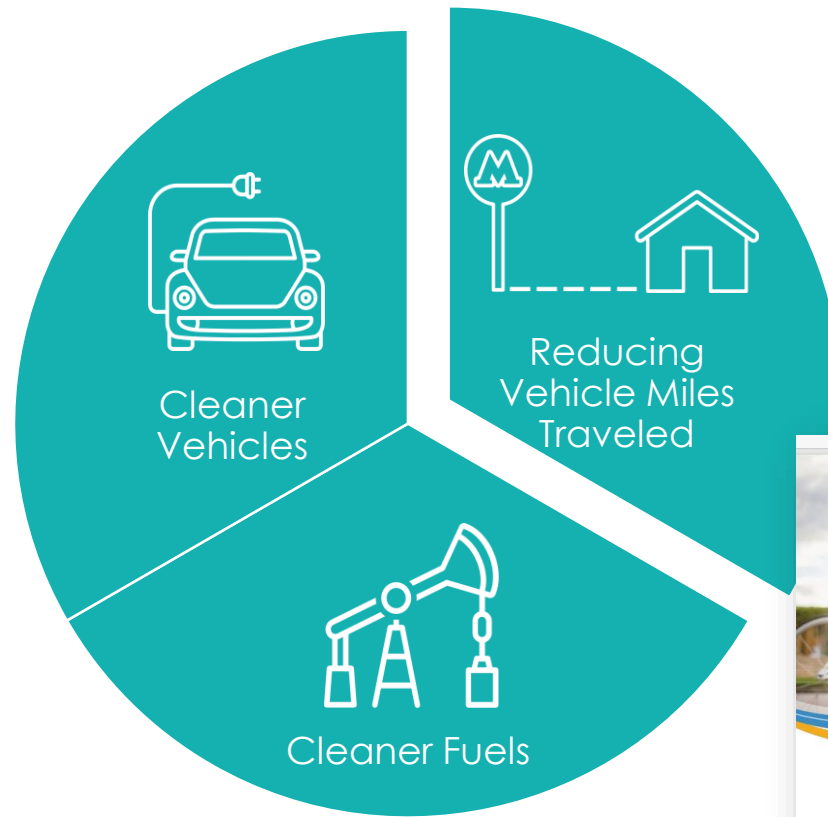
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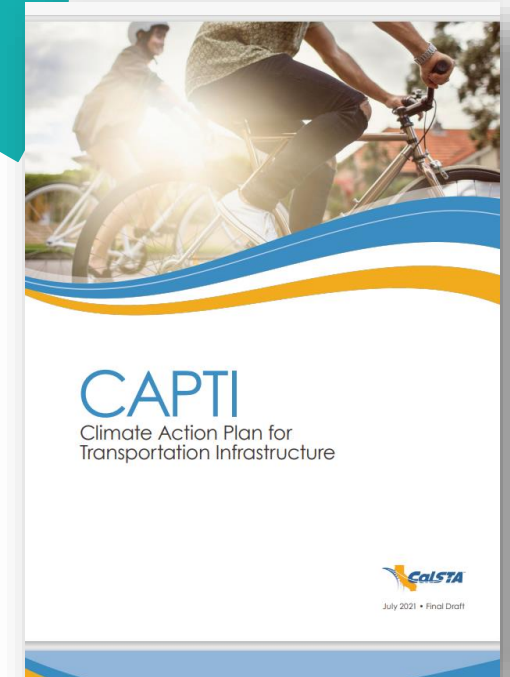
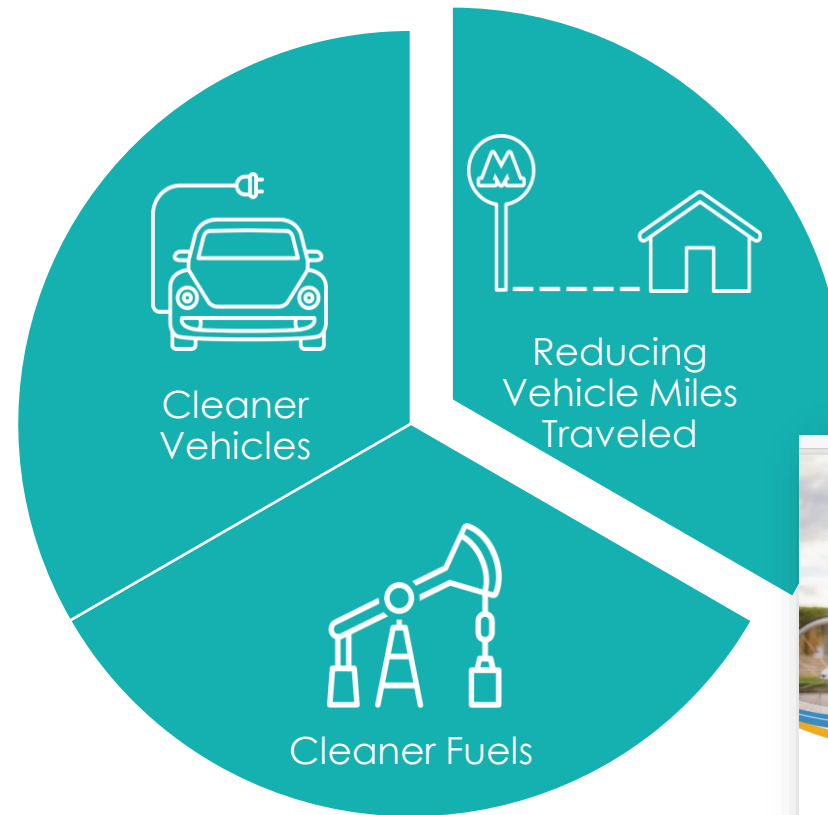
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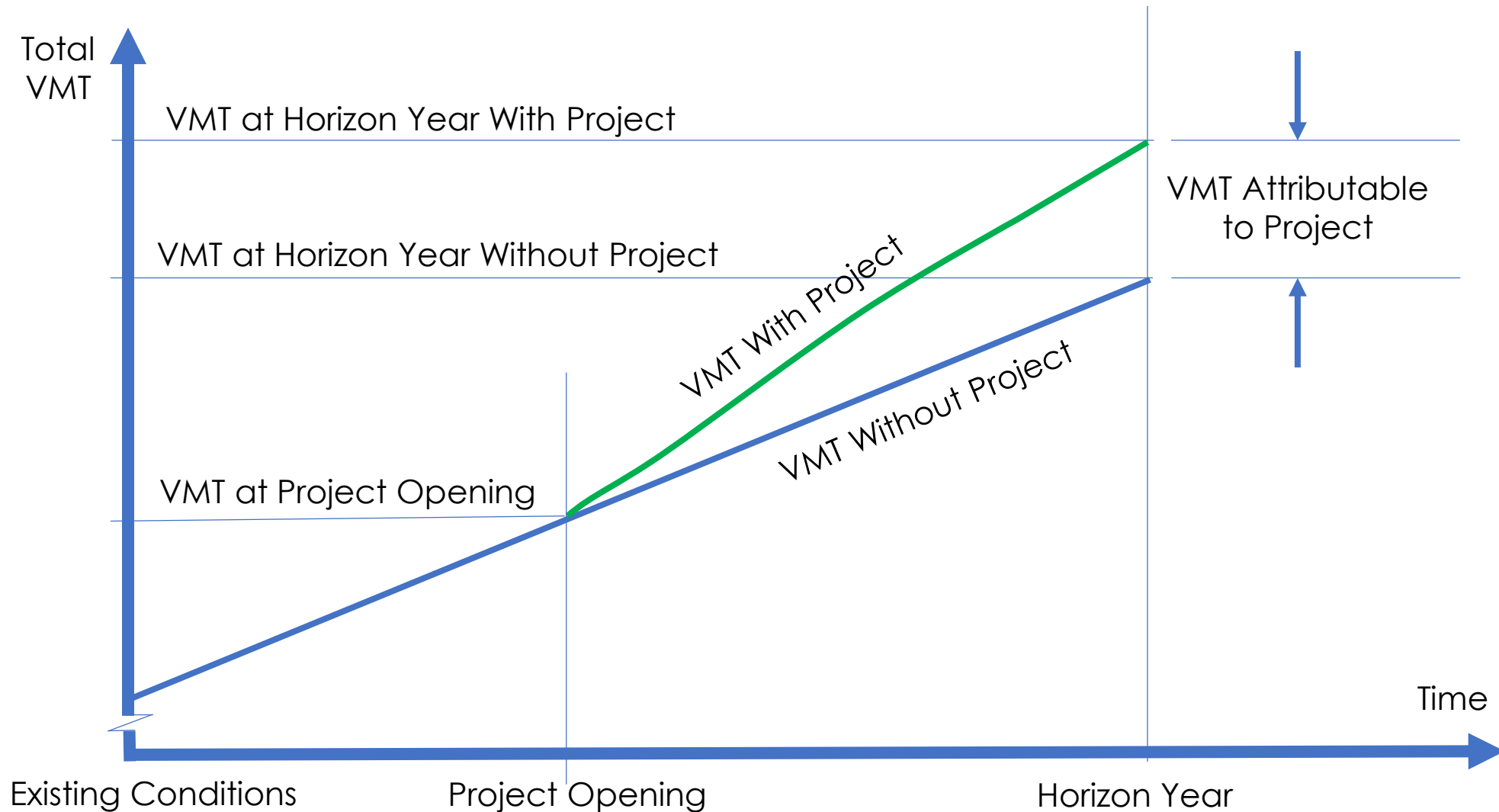


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- Consistent with CAPTI
- **Caltrans goal: No induced VMT**



# Background: Induced travel



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- Driver Behavior Change
  - Route changes (increase or decrease VMT)
  - Mode shift (increases VMT)
  - Longer trips (increases VMT)
  - More trips (increases VMT)
- Land use change
  - More dispersed development (increases VMT)



# Status of affected projects

- Relevance
  - Concurrence projects – no
  - Legacy projects – yes and messy
  - New projects – yes and cleaner
- VMT analysis
  - Several projects have calculated their VMT impact or are in the process of doing so
- Mitigation
  - Fewer projects have addressed mitigation
- Examples
  - SR 37 – Draft EIR suggests tolling can mitigate VMT
  - SR 59 – Discussions focus on offsetting road diets

# Implementation: VMT assessment

- Tools available for new lane-miles, with complications:
  - Some rural areas
  - Interchanges
  - Priced/managed lanes
  - Minor arterials

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## **Does tolling reduce VMT?**

- Adds travel cost, so yes.
- Reduces travel time and uncertainty, so no.
- Reduces carpool incentives (in HOV-to-HOT conversion), so no.

# Implementation: Mitigation

- Active transportation
- Land use
  - Residential
  - Commercial/employment
- TDM
- Transit
- Micromobility
- Telecommuting
- Schedule-shifting
- Road diets
- Pricing
- Lane management
- Parking
- Park and rides
- Land preservation

# Implementation: Mitigation

California Air Pollution Control Officers Association

Handbook for Analyzing Greenhouse Gas Emission  
Reductions, Assessing Climate Vulnerabilities, and  
Advancing Health and Equity

*Designed for Local Governments, Communities, and Project Developers*



# Implementation: Mitigation



## GHG Reduction Formula

$$A = \frac{B - C}{C} \times D$$

## GHG Calculation Variables

ID	Variable	Value	Unit	Source
Output				
A	Percent reduction in GHG emissions from project VMT in study area	0-30.0	%	calculated
User Inputs				
B	Residential density of project development	[ ]	du/acre	user input
Constants, Assumptions, and Available Defaults				
C	Residential density of typical development	9.1	du/acre	Ewing et al. 2007
D	Elasticity of VMT with respect to residential density	-0.22	unitless	Stevens 2016

### Further explanation of key variables:

- (C) – The residential density of typical development is based on the blended average density of residential development in the U.S. forecasted for 2025. This estimate includes apartments, condominiums, and townhouses, as well as detached single-family housing on both small and large lots. An acre in this context is defined as an acre of developed land, not including streets, school sites, parks, and other undevelopable land. If reductions are being calculated from a specific baseline derived from a travel demand forecasting model, the residential density of the relevant transportation analysis zone should be used instead of the value for a typical development.
- (D) – A meta-regression analysis of five studies that controlled for self-selection found that a 0.22 percent decrease in VMT occurs for every 1 percent increase in residential density (Stevens 2016).

# Implementation: Mitigation

Elasticity	Typical density	Typical HH VMT
-0.22	9.1	17816



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# Implementation: Mitigation

Elasticity	Typical density	Typical HH VMT
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Density	Delta VMT
9.1	0
9.2	-42
9.3	-83
9.4	-125
9.5	-166
9.6	-208
9.7	-249
9.8	-291
9.9	-332
10	-374
10.1	-415
10.2	-457
10.3	-499
10.4	-540
10.5	-582
10.6	-623
10.7	-665
10.8	-706
10.9	-748
11	-789

T-1. Increase Residential Density



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# Implementation: Mitigation

- Additionality
- Bundling/tiering
- Equity impacts
- Unmitigated VMT



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