California Rural Counties Task Force

ruralcountiestaskforce.org

Rural Induced Demand Study

CTC Measuring Transportation Impacts Webinar#2

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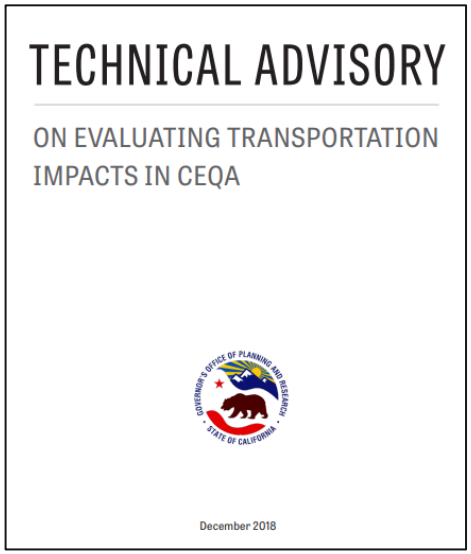
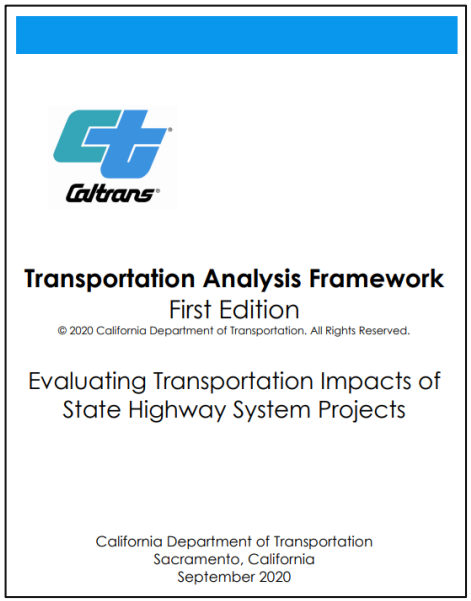
Background

SB 743 Implementation RCTF Participation

- **Governor's Office of Land Use and Climate Innovation: *Technical Advisory on Evaluating Transportation Impacts in CEQA* (SB 743 Guidelines) – December 2018**
  - In relation to the recommended elasticity analysis methodology, the guidance acknowledged: "This method would not be suitable for rural (non-MPO) locations in the state which are neither congested nor projected to become congested."

- **Caltrans: *Traffic Analysis Framework First Edition – Evaluating Transportation Impacts of State Highway System Projects* – 2020**
  - "Of the 58 counties in California, the Calculator can be applied directly in 37 counties that belong to a Metropolitan Statistical Area (MSA) but not in the remaining 21 non-MSA rural counties."

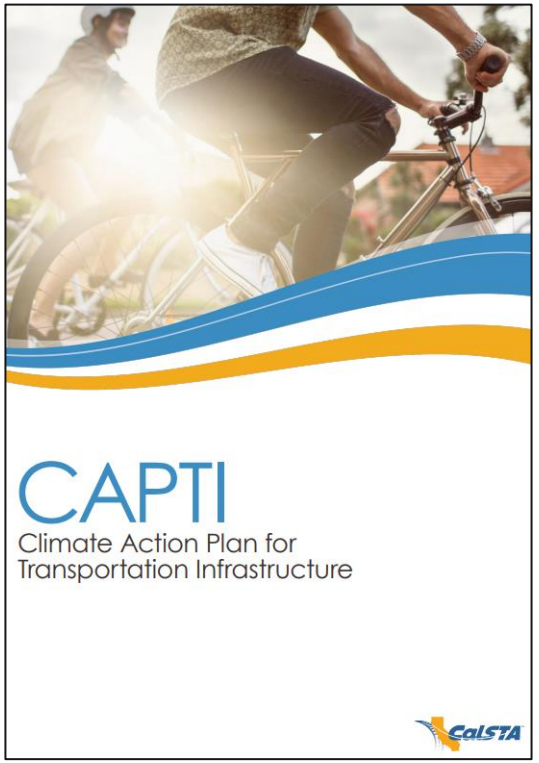




Background

SB 743 Implementation RCTF Participation

- **Climate Action Plan for Transportation Infrastructure (CAPTI) - July 2021 & CAPTI 2.0 January 2025**
  - CAPTI noted “It is important to acknowledge that not all highway expansion projects serve the same purpose or have the same results…Context, and specific project analysis and attributes, are key to determining a project’s impacts.”
  - CAPTI 2.0 Action S2.2 - “Improve VMT analysis and mitigation guidance for rural projects to better account for the low VMT impact of many rural projects in consultation with rural stakeholders.”



Work Scope:

- RCTF *Rural Induced Demand Study* – February 2025

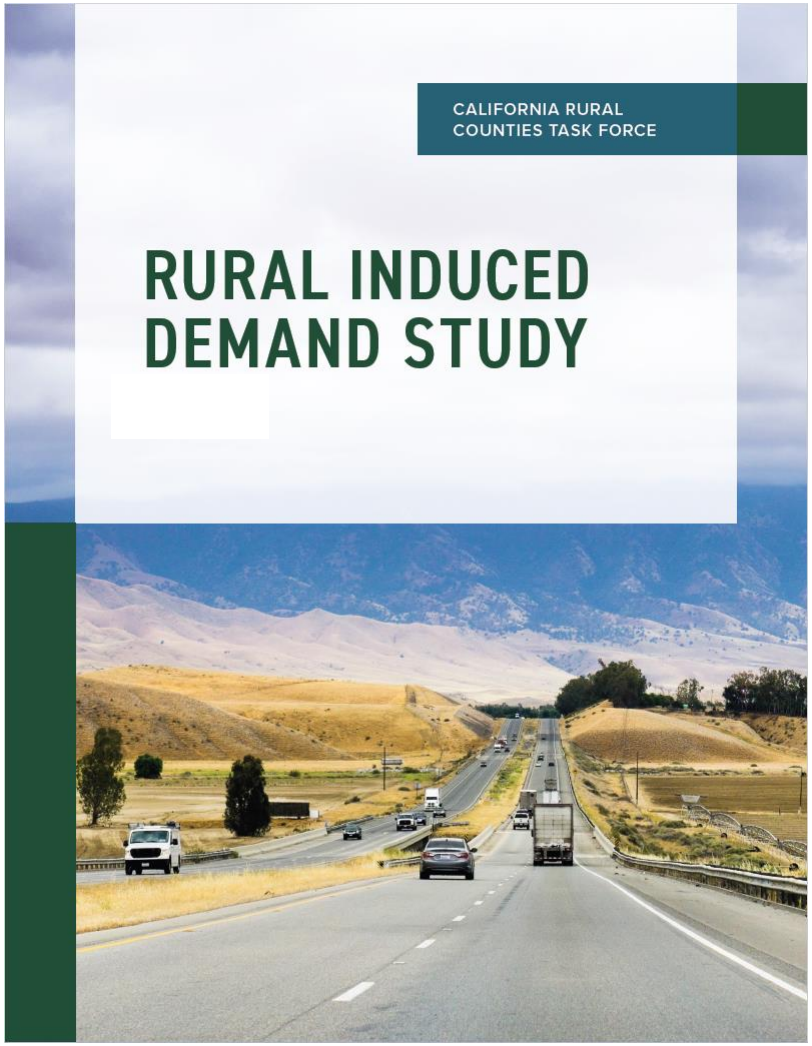
Literature Review: Applicability of Research to Rural Projects

Case studies Rural Projects

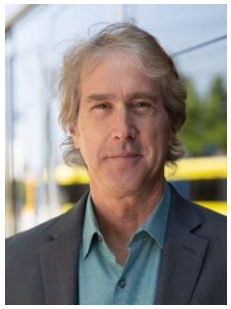
Recommendations to Address CEQA

Recommendations for State Planning and Programming Guidance

Recommendations for Future Technical Studies and Data Improvements



Rural Induced Demand Study



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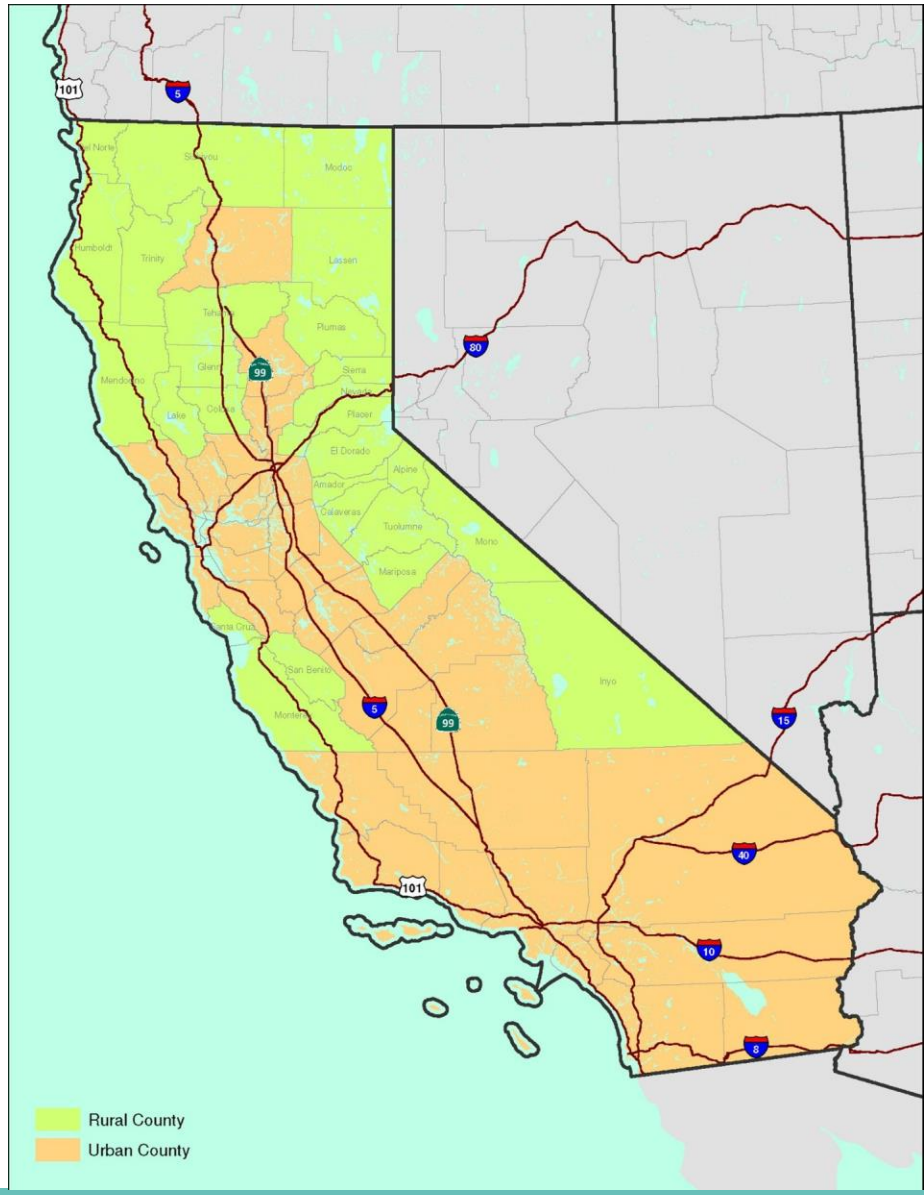


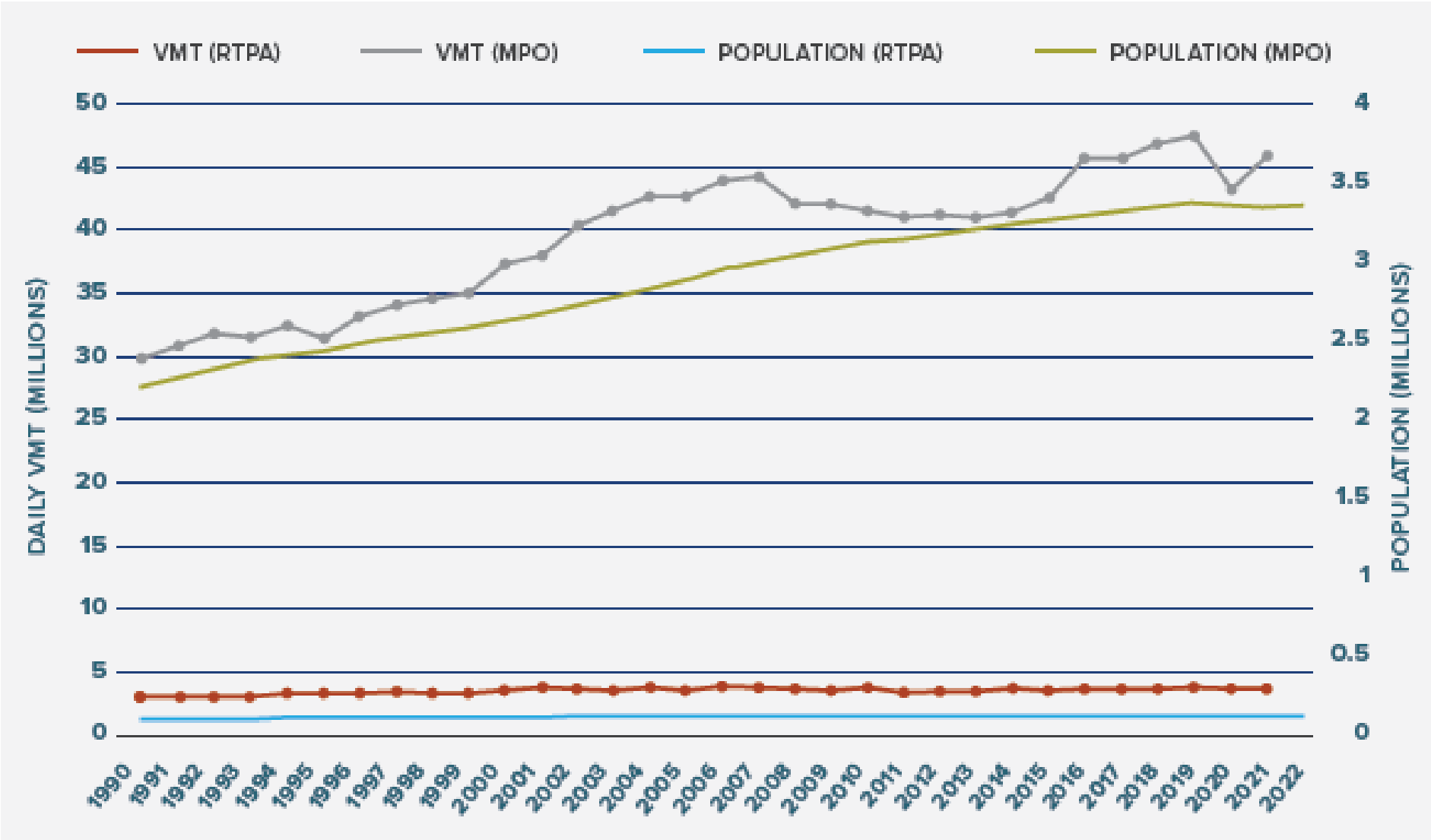
Induced Demand: Rural Areas Characteristics

- Many rural corridors lack significant congestion
- The focus of rural transportation improvements (purpose and need) is often on safety, reliability, goods movement, access and evacuation.
- Congestion in rural areas is often related to seasonal or holiday traffic
- Improvements usually do not significantly reduce travel times
- Rural motorists have more limited choices in destinations and routes
- Demand for land development is typically lower in rural areas than urbanized areas
- Rural areas are typically not well served by transit (low potential for mode shifts)

ALPINE	INYO	NEVADA
AMADOR	LAKE	PLUMAS
CALAVERAS	LASSEN	SIERRA
COLUSA	MARIPOSA	SISKYOU
DEL NORTE	MENDOCINO	TEHAMA
GLENN	MODOC	TRINITY
HUMBOLDTH	MONO	TUOLUMNE

Induced Demand: Rural Areas Characteristics

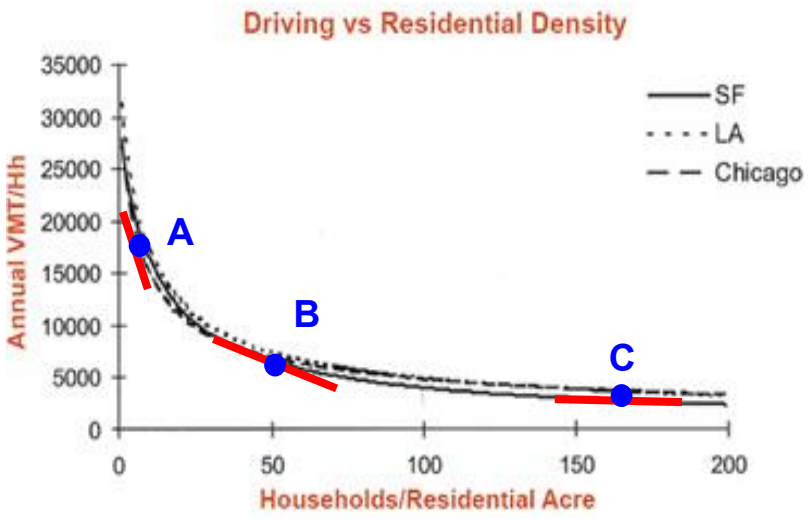
FIGURE 5. DAILY VMT AND POPULATION GROWTH TRENDS (RTPA AND MPO)



(Summary)
Findings from the Literature Review

Elasticities

- Most of the current State guidance focus on induced demand elasticities
- An elasticity is the percentage change in one variable in response to a percentage change in a different variable
- Current state guidance support the premise that increasing road capacity will increase car use by an equal measure (an elasticity of 1)



SOURCE: HOLTZCLAW, GOLDSTEIN, CLEAR, HAAS & DITTMAR, 2010

- Elasticities are context-sensitive. An elasticity measured in one place, even if done correctly, may not be valid in a different sort of place or areas.

Literature Review

- **Lane-miles are an imperfect proxy for travel time savings** – The thing that drives induced travel is a reduction in travel times, not additional capacity per se. In the absence of congestion and other external factors, additional capacity does not by itself induce demand.

- " **IT IS NOT THE LANE MILES OF ROADS THAT PROMPT PEOPLE TO TRAVEL MORE, HOWEVER**. RATHER IT IS THE BENEFITS THAT THE LANE MILES CONFER. ONLY IF TRAVEL SPEEDS INCREASE AND TRAVEL TIMES FALL WILL MOTORISTS GRAVITATE TO AN IMPROVED CORRIDOR." (Robert Cervero 2001)

- **Only *significant* reductions in travel times change travel behavior** – Traveler interview surveys found that travel times would have to be reduced by at least 15 minutes to have any appreciable effect on origin-destination choice.

- **Nearly all of the Induced demand research and data is based on data from metropolitan areas**.

Literature Review

Caution Use of Simplified Aggregate Elasticity Tools – Project Level Analysis

Several studies warned against using simplified tools based on aggregate elasticities. Some examples:

- "*Simple models of the kind presented here cannot supplant the detailed analyses needed to evaluate specific projects.* ***It should not be assumed that the aggregate elasticities obtained in our analysis apply equally to every urban region, let alone to any particular project***." (Hansen and Huang, 1997)

- "*The analysis presented here uses aggregate state level time-series data to determine relationships to VMT. The analysis in this paper does not imply that any specific project will generate additional traffic.* ***Obviously specific project level analysis is needed to assess impacts of specific transportation plans***." (Noland 1998)

(Summary) Recommendations

Key Findings

- The literature review highlights challenges in the current approaches to assessing induced demand, particularly in rural contexts located within the MSA, and emphasizes the importance of incorporating relevant findings into policymaking and state guidance.

- Project location and context are a key consideration for CEQA project level analysis and must be taken into consideration.

- Many rural corridors lack the prerequisite factors to result in induced demand (i.e. lack of significant congestion, no latent demand, do not significantly reduce travel times, low growth, lack of developable/marketable land, etc.).

- “Lane miles” is an imperfect proxy or measure of travel time savings, as induced travel primarily results from reduced travel times and greater access to developable land rather than increased capacity.

Key Findings (continued)

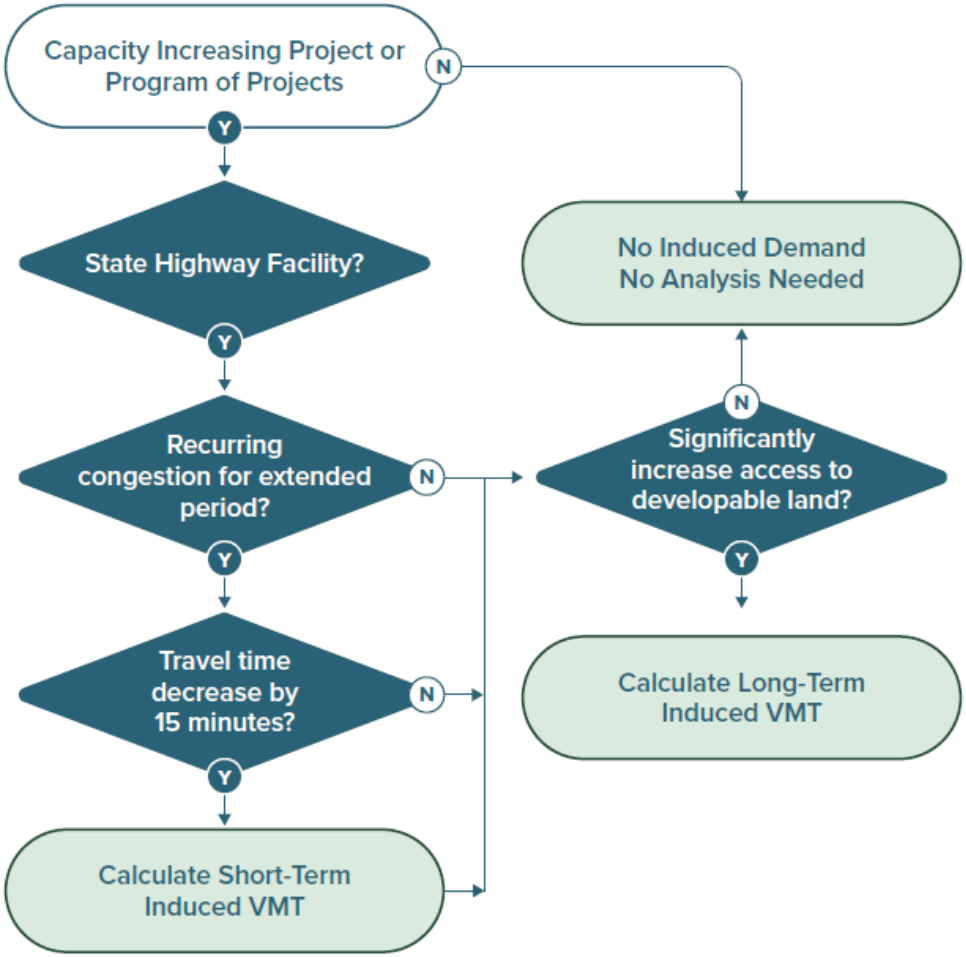
- Significant travel time reductions of 15 minutes, or more are required for individuals to modify or increase their travel behaviors.

- Aggregate based elasticity methods lack the context and specificity desired for CEQA analysis and should be utilized with caution for project level analysis.

- Recommend a combinations of analysis tools (Hybrid Methodology) such as travel demand models (short-term induced demand effect) and elasticity-based approaches (long-term induced demand effect) to address context and potential impacts more accurately.

- Induced Demand “Screening Criteria” can be implemented to provide guidance on transportation projects where induced demand is unlikely to result.

Screening Recommendations



Hybrid Analysis Recommendations

Induced Demand Hybrid Approach –Travel Demand Model (Short-Term Induced Effect) plus Elasticity (Long-Term Induced Effect)

a) Areas with validated 4-Step or Activity-Based Travel Demand Models
   a) If short-term induced effect is applicable, **use travel demand model**
   b) If the long-term induced effect is applicable, a maximum induced elasticity is **0.21**
   c) If no long-term induced effect is anticipated, **no adjustment is needed**

b) Areas with validated 3-step Travel Demand Models
   a) If short-term induced effect is applicable, **use travel demand model**
   b) If the long-term induced effect is applicable, a maximum induced elasticity is **0.30** (urban area)
   c) If the long-term induced effect is applicable, a maximum induced elasticity is **0.21** (rural area)
   d) If no long-term induced effect is anticipated, **no adjustment is needed.**

c) Areas with Land Use Allocation model with validated feedback mechanics.
   a) **No adjustments needed for short- or long-term induced effect, use modeling process**

d) Areas with an unvalidated or no travel demand model (statistical trends, statewide model, big data)
   a) **NCST Calculator (unless identified in TAF as being not required) or Qualitative Analysis**

Hybrid Analysis Recommendations

NCST Induced Travel Calculator, components of 1.0 elasticity for induced VMT are:

- **Changes in commercial driving** **= 19 to 29%**
  - **Exempt under CEQA and SB 375**
- **Changes in individual or household driving** **= 9 to 39%**
  - **Short-Term Effect – Travel Demand Model Superior**
- **Diversion of traffic** **= 0 to 10%**
  - **Short-Term Effect – Travel Demand Model Superior**
- **Changes in Land Use Patterns (including migration)** **= 5 to 21%**
  - **Long-Term Effect – Travel Demand Models (in of themselves) do not explicitly address**
- **Elasticity Range:** **= .33 to 1.00**

Duranton, G., & M. A. Turner (2011). The Fundamental Law of Road Congestion: Evidence from US Cities. American Economic Review, 101(6), 2616-2652. Retrieved from https://www.aeaweb.org/articles?id=10.1257/aer.101.6.2616.

NCST Calculator Recommendations

The following steps are recommended for improving the applicability of the NCST tool:

- **Flexible Interface:** Develop a more interactive user interface that allows the analyst to input which induced demand effects and elasticity values are appropriate for a given analysis context.
- **Context-Specific Elasticities:** Develop a more nuanced approach that incorporates context-specific elasticity values. To improve accuracy, recognize regional variations and project-specific conditions.
- **Incorporate Travel Time Changes:** Enhance the tool to factor in changes in travel time/cost more explicitly. Consider using analytical tools (demand or simulation models) that can capture the impact of travel time reductions or increases due to the project.
- **Account for Latent Demand:** Improve the estimation of latent demand by including more detailed data on potential users who are not currently traveling due to existing congestion (Origin-Destination analysis—big data or demand models).
- **Validation and Calibration:** Regularly validate and calibrate the tool against real-world data and outcomes from completed projects. This will help ensure that the tool remains accurate and reliable over time.

By implementing these recommendations, the NCST Calculator can provide more contextually relevant estimates of induced VMT, although the use of an elasticity-based approach should be limited to a program-level evaluation whenever possible.

Byett, A., Laird, J., Falconer, J., Roberts, P. (2024). Research Report 717 Assessing Induced Road Traffic Demand in New Zealand. https://www.nzta.govt.nz/resources/research/reports/717/

Next Steps

- Coordination with Caltrans, RCTF, & CALCOG to determine how to best implement study findings into state guidance per CAPTI
- Coordinate with University research partners on ways to improve and validate methodologies, tools, & data
- Further Analyze Newer Research and Support Data Collection Efforts:
- *Investigating Ability to Assess VMT Impacts of Rural Capacity-Enhancing Projects* – UC Berkley (Study is Underway)
- *Consistent VMT Mapping and Modeling in California: How Can We Better Assess the VMT Impacts of State and Local Transportation Projects?* Mineta Transportation Institute – December 2025

Questions