

DIVISION OF RESEARCH, INNOVATION & SYSTEM INFORMATION

Research Initial Scope of Work SUBMITTAL FORM - FY 2022/23

- I. **Project Number:** 1759
Project Title: VMT Impact Modeling and Assessment

- II. **Task Number:** 4175
Task Title: Induced travel effects from various improvements to highways other than lane additions

- III. **Project Problem Statement:** More research is needed to provide Caltrans and its partners a better understanding of the induced-travel effects of a variety of project types. The department in 2020 adopted the National Center for Sustainable Transportation's (NCST) calculator for induced Vehicle Miles Traveled (VMT) (or NCST calculator) to assess projects that add lane-miles for freeways and major arterials. That leaves out important categories of additions or widenings to interchanges and to minor arterials, and for facilities that are built for non-general purposes, e.g. wildfire evacuations.

- IV. **Objective:** The objective of this project is to provide project a valid but simplified means of assessing induced travel impacts for projects now addressed by the department's lane-miles-based tool. Currently such assessments are burdensome and inconsistent from project to project.

- V. **Task Description of Work and Expected Deliverables:** This research will provide an authoritative review of peer-reviewed literature as well as best practices to understand how projects not covered by the current scope of the NCST calculator create induced travel (or do not). This study will attempt to develop rules of thumb, similar to the lane-miles elasticity in the current calculator, which avoid burdensome analyses using demand models and land-use scenario-building. If possible, researcher will recommend how such rules of thumb could be applied in project assessment in a simple toll like the NCST calculator. The expect product will be an updated and expanded NCTS calculator that will provide an understanding of induced VMT due to additions or widenings to interchanges and to minor arterials, and for facilities that are built for non-general purposes, e.g. wildfire evacuations, which currently are not covered under the existing NCST calculator.

- VI. **Background:** The National Center for Sustainable Transportation's (NCST) calculator for induced Vehicle Miles Traveled (VMT) (or NCST calculator) allows users to estimate the VMT induced annually as a result of adding general-purpose lane miles, high-occupancy vehicle (HOV) lane miles, or high-occupancy toll (HOT) lane miles to publicly owned roadways, like those managed by the California Department of Transportation (Caltrans), in one of California's urbanized counties (counties within a metropolitan statistical area (MSA)). The calculator applies only

to facilities with Federal Highway Administration (FHWA) functional classifications of 1, 2 or 3. That corresponds to interstate highways (class 1), other freeways and expressways (class 2), and other principal arterials (class 3). Calculator use is not appropriate in all circumstances or for all purposes, however. The following caveats apply:

- The calculator is limited to use for capacity expansions (lane additions, roadway lengthening, and new facility construction). It cannot be used to estimate VMT effects of capacity reductions or lane type conversions.
- The calculator is conservatively limited to use for additions of general-purpose, high-occupancy vehicle (HOV), and high-occupancy toll (HOT) lanes.
- The calculator is limited to use for capacity expansions on or construction of new publicly owned roadways with FHWA functional classifications of 1, 2, or 3.
- The calculator is limited to use in California's 37 urbanized counties.

VII. Estimate of Duration: One Year

VIII. Related Research: The Institute of Transportation Studies at the University of California, Davis (ITS-Davis) study, "The Induced Travel Calculator and Its Applications," initiated a technical assistance project to support Caltrans and others in applying the NCST Calculator. This report: (1) provides an overview of the Calculator and the induced vehicle travel effect, (2) summarizes the results from an earlier study comparing the Calculator's estimates with other induced travel analyses, (3) describes the technical assistance efforts and outcomes, and (4) discusses plans for future improvements to the Calculator.

Another potential resource for related research is UC Davis and the National Center for Sustainable Transportation's "Induced Travel Calculator Improvements." This project will explore possible improvements to the calculator and develop recommendations for any further improvements that would require additional resources. The research team will explore three types of improvements to the calculator: (1) Improvements to the explanation and documentation of the calculator on the website and in related resources; (2) Improvements to the calculator itself, such as refinements to the calculations and/or the data used by the calculator; and (3) Validation of the calculator in different contexts.

IX. Deployment Potential: This research will build upon the efficiency of the existing NCST calculator to assess induced VMT due to new projects that add lane-miles for freeways and major arterials. Caltrans currently has dozens of interchange, minor arterial, and evacuation route projects in the "pipeline," and more will follow. All of these need to be assessed for induced travel per CEQA. Project teams have expressed a need for a more consistent, less onerous way to make such assessments, so it is likely that the findings of this work would be put to immediate use.