

Maintenance

**MAY 2019**

**Project Title:**

BRT Performance Analysis Phase 2

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## BRT Performance Analysis Phase 2

Continuation of developing a tool for Caltrans to assist Transit Agencies in deploying BRT.

### WHAT IS THE NEED?

In September 2013, Senate Bill (SB 743) was signed by the Governor which affects the way transportation impacts are analyzed under the California Environmental Quality Act (CEQA). The Senate Bill requires transportation agencies (such as Caltrans) to no longer exclusively use Level of Service (LOS) when planning a transportation system. By July 1, 2014 the Governor's Office of Planning and Research (OPR) is required to develop an initial draft of the alternative metrics, which may include "vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated". In order to assist transit agencies deploying BRT throughout California, Caltrans needs to create additional BRT specific metrics than can be used during reviews.

The Division of Mass Transportation (DMT) had requested that an existing research contract, BRT Person Throughput-Vehicle Congestion Tradeoffs (which is currently being amended to focus less on LOS and more on Measure of Effectiveness [MOE] for transit project proposals), be continued on in a new task under the BRT Toolbox Project. This new task will focus on Caltrans new role under SB 743's new changes to CEQA. In preparation of OPR's report DMT wanted to be prepared with some MOEs of their own that focus more along the lines of Caltrans mission, goals and vision.

### WHAT WAS OUR GOAL?

A tool that will allow Caltrans to analyze a transit project being proposed on a Caltrans facility. This can be done by analyzing person throughput or total throughput differences between analyzing a normal Caltrans transportation proposal versus an



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oriented proposal (i.e. take-a-lane project, removal of parking/shoulders, etc.).

## WHAT DID WE DO?

The research team will synergize this study with the on-going phase one study (BRT Person Throughput-Vehicle Congestion Tradeoffs) and employ the following methodological approaches in this proposed project:

- Review the literature in the areas of methods of comparing transit and non-transit improvements and measures of effectiveness (MOE), with focus on methodologies to estimate new transportation metrics alternative to LOS, such as vehicle miles traveled, automobile trips generated, and multimodal person throughput.
- In investigating ways to estimate the people throughputs for both automobile and transit trips, the project team, under the advice of the project expert panel, will focus on how the BRT projects can be evaluated by replacing auto LOS with metrics that better reflect transportation concerns in an urban setting with multimodal considerations. The expert panel formed for this project represents the knowledge and expertise in transportation planning, transit and BRT planning and operations. Working with the expert panel will enable the project to evaluate candidate evaluation criteria and metric from all perspectives and consideration. We will consult with Caltrans to ensure that the new transportation significance thresholds developed by this project team are consistent with the new evaluation criteria in response to SB 743's requirements. Transit agencies and regional MTAs (LACMTA and San Francisco MTA) will also be consulted for their perspectives.

- With changes of the evaluation criteria and metric, the analytical methods will also be modified. We will work with the expert panel to improve the transportation analytical models, for example the transit ridership analysis model to reflect the new evaluation criteria and metrics. We will also improve the existing macroscopic traffic estimation models (from the Highway Capacity Manual) to estimate automobile trips generated, vehicle miles traveled, and the automobile person throughput along a corridor.

## WHAT WAS THE OUTCOME?

While no "one size fits all" regulatory approach can be deployed for every BRT project, the research conducted for this report informs five broad recommendations that Caltrans districts could integrate into their BRT approval processes. Adopting planning practices that support BRT could not only facilitate construction of an environmentally and economically progressive transportation mode, but also align with the past decade of Caltrans' own departmental policy.

- In keeping with SB 743, eliminate automobile delay as a metric for BRT projects. This report outlines why person throughput, rather than VMT, may be most appropriate for the corridor-level analysis necessary when considering BRT impacts on Caltrans rights-of-way. Interviews, particularly with the SFCTA, suggest that person capacity might even be preferable. In addition, since OPR has already provided a comprehensive list and evaluation of alternative metrics, Caltrans need not conduct its own research and can easily choose from a set of published options.
- Explore travel demand models during the project approval process. In addition to requesting traffic simulation (e.g. Synchro) files from transit agencies, obtain and analyze



existing and predicted mode share calculations based on tour-based (e.g. SF-CHAMP) or trip-based (e.g. Alameda) forecasts. In addition to introducing an avenue of transparency and partnership between Caltrans and transit agencies, collaboration in demand modeling could help inform Caltrans district leadership of a BRT project's viability.

## WHAT IS THE BENEFIT?

It is expected that Caltrans will adopt one or more new metrics that more holistically capture the potential positive impacts of BRT. In keeping with the tentative recommendation of the BRT Person Throughput-Vehicle Congestion Tradeoffs research report, this report also endorses person throughput as an impact metric for proposed BRT routes under Caltrans jurisdiction, given the agency's specific interest in preserving or improving the performance of particular state-owned corridors. This report also introduces a simple spreadsheet tool to estimate a BRT project's traffic impact and show how improved bus service can boost corridor performance. Representatives of Caltrans D4, D7, and D11 were interviewed after tentative development of the tool, expressed support of a transition towards person throughput, and offered feedback on how the tool might best suit most district employees' needs.