

State of Good Repair Research Methods Support an MPO's Quest to Improve Travel Demand Forecasting

The Challenge

THE METROPOLITAN Transportation Commission and Association of Bay Area Governments (ABAG) are the metropolitan planning organization (MPO) and council of governments (COG), respectively, for the San Francisco Bay Area, a region with nearly eight million residents. The Bay Area has over two dozen multimodal transit operators serving a diverse geographical area.

One of the roles MTC/ABAG plays is providing technical assistance for transit asset management to transit operators. This entails creating a consistent asset inventory across all the transit operators and developing systems-wide performance management requirements.

For its Plan Bay Area 2040 planning effort, MTC/ABAG developed an approach to measure and assess the performance of state-of-good-repair (SGR) investments and determine the cost-benefit ratios for improving SGR for rail, bus, and roadways.



Importantly, the analysis needed to allow for consistent comparison across modes and between state of good repair, modernization, and expansion investments. Collecting and analyzing the necessary data in a way that would contribute to making informed projections of financial need associated with SGR—and doing that on a regional level—posed significant methodological challenges.

“Without the research in TCRP Report 157, it would have been very difficult for us to do the analysis that we needed for our long-range planning.”

**– Dave Vautin,
Principal Planner &
Analyst, MTC/ABAG**

Asset Rating Leads to Deeper Analysis

MTC/ABAG TURNED to the research and methodological guidance contained in **TCRP Report 157: State of Good Repair: Prioritizing the Rehabilitation and Replacement of Existing Capital Assets and Evaluating the Implications for Transit.** The report reviews literature related to evaluation of transit capital asset rehabilitation and replacement. It also provides a summary of sample transit asset management practices drawn from a set of agency interviews. In addition, the research describes the impacts of investments in asset rehabilitation and presents a framework for evaluating and prioritizing these investments.

Dave Vautin, a principal planner with MTC/ABAG, used **TCRP Report 157** as a starting point that is enabling the organization to break new ground by integrating asset management requirements with longer range travel demand forecasting.

For example, the report reviews various applications of the Federal Transit Administration's Transit Economics Requirements Model (TERM), which rates asset conditions on a scale from poor to excellent. The MPO has implemented a form of TERM Lite, which, as the report notes, allows

for "an existing asset clarification system [to] be used as a guide for establishing or enhancing a capital asset inventory."

Using TERM Lite as a starting point across the multimodal systems under review, the MPO developed methodologies on its own. Taken together, "We were able to determine not just the age of an asset but the potential impact to service to transit customers," Vautin says.

To reach this point, Vautin and his team spent months developing formulas and methodologies. He says that **TCRP Report 157** is valuable because, using TERM Lite, "it allowed us to forecast the future failure rates of transit assets." Without the research and case study materials in this report, "it would have been very difficult for us to do this type of analysis."

TCRP Report 157 states that "The determination of exactly what costs are included in an analysis depends in large part upon what options the decision maker is weighing." This is precisely the reason that MTC/ABAG pursued innovative methodologies that allowed them to score investments programmatically, so that it's clear how asset condition affects actual operations. For instance, does the model show that certain rail cars or buses are going to break down occasionally, or all the time? Will a

system-wide shutdown be likely, or a five-minute delay?

The upshot of this work is that the MPO will have methodologies that allow them to do a better job of funding long-range planning, and to make the case for additional SGR investments. An ability to show the cost-effectiveness of maintaining and upgrading existing systems is baked into the analysis.

Vautin says the MPO is one of the first in the country to integrate SGR data into a travel demand model. **TCRP Report 157** has served as a foundation for this ongoing work, and new versions of the methodology are being tested on several systems. ●



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