

I-105 ExpressLanes Project

Use of modified Auto Operating Cost and Transportation Demand Management assumptions

The 2016 SCAG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Regional Travel Demand Model (RTDM) was used to forecast traffic to the opening year (2027), RTP/SCS horizon year (2040) and design year (2047). Within the draft RTP/SCS, SCAG outlined four scenarios representing differing visions for land use and transportation in 2040. The four policy scenarios are 1) Trend; 2) 2012 RTP/SCS updated with local inputs; 3) Policy A; and 4) Policy B. The SCAG Regional Council adopted Scenario 3 (Policy A) in the RTP/SCS and is described as follows:

Scenario 3 (also known as Policy A) built upon Scenario 2 and incorporated additional best practices to increase transportation mode choice and reduce personal automobile dependency¹. This scenario included expanded regional investment in Transit Integration strategies to increase transit ridership. This scenario assumed that first/last mile improvements will be made at all major fixed-guideway transit stations (i.e. commuter rail, subway, light rail and bus rapid transit (BRT) stations) across the region. Scenario 3 tested a new concept called Livable Corridors, comprised of arterial roadways where jurisdictions are planning for some combination of high-quality bus service, increased opportunities for active transportation, and higher density residential and employment at key intersections. Scenario 3 also tested the concept of “Neighborhood Mobility Areas.” This concept is built on a set of policies and complete street investments to encourage replacing automobile trips less than three miles in length with walking, bicycling and slow-speed electric vehicles. Scenario 3 incorporated new technology and innovations such as bike share and car sharing, and assumed growth of these shared mobility services in urban areas predominantly through private sector actions. This scenario built upon SCAG policies from the 2012 Plan, and allowed for more future growth in walkable, mixed-use communities and in High Quality Transit Areas (HQTAs).

The auto operating costs (AOC) and Transportation Demand Management (TDM) assumptions in the SCAG RTDM Policy A scenario are listed in Table 1. Using these assumptions, WSP performed initial modeling of the 2047 scenarios and the resulting traffic volumes were projected to be 9-11% lower in the HOV lane and 5% to 6% lower overall than 2017 volumes as shown in Table 2. In response to the negative growth in traffic volumes, WSP also conducted sensitivity tests using lower AOC and TDM assumptions resulting in minimal reductions.

**Table 1: SCAG
RTDM assumptions**

Modeling Year	2017	2027	2040-2047
Auto operating cost (\$2012, cents per mile)	25.31	28.21	33
TDM work trip reductions	2.42%	3.94%	17.20%
Source ²	2016 RTP/SCS 2017 “S3”	2026 “S1” and “S3” hybrid	2016 RTP/SCS 2040 “S3”

¹ 2016 RTP/SCS Sustainable Communities Strategy (SCS) Background Documentation

http://scagrtpscsc.net/Documents/2016/final/f2016RTPSCS_SCSBackgroundDocumentation.pdf

² 2016 RTP/SCS Transportation Conformity Analysis Appendix

http://scagrtpscsc.net/Documents/2016/final/f2016RTPSCS_TransportationConformityAnalysis.pdf

Table 2: Travel Demand Forecast with RTP Policy A Assumptions

Freeway Segment		2017 No Build			2047 No Build (low AOC/TDM) % Change w.r.t. 2017			2047 No Build (high AOC/TDM) % Change w.r.t. 2017		
Segment	Dir	GP	HOV	TOTAL	GP	HOV	TOTAL	GP	HOV	TOTAL
I-405 to I-110	EB	111,000	29,000	140,000	0%	-4%	-1%	-4%	-11%	-6%
I-110 to I-710	EB	117,000	30,000	147,000	0%	-1%	0%	-4%	-11%	-5%
I-710 to I-605	EB	116,000	31,000	147,000	-1%	0%	-1%	-5%	-10%	-6%
I-605 to I-710	WB	104,000	31,000	135,000	-1%	-1%	-1%	-6%	-9%	-6%
I-710 to I-110	WB	103,000	32,000	135,000	0%	0%	0%	-4%	-10%	-5%
I-110 to I-405	WB	109,000	28,000	137,000	0%	-2%	0%	-4%	-10%	-5%

When these results were presented to the 105 PAED Project Development Team (PDT), the PDT agreed that this was not a realistic forecast. The PDT consists primarily of Caltrans, Metro, and FHWA staff. As a result, the PDT recommended that AOC and TDM assumptions should be held constant from 2027 to 2047 and directed WSP to incorporate this into the traffic forecast as shown in Table 3. In doing so, the PDT adopted a worse case scenario for traffic volumes and planning purposes in that lower AOC and TDM assumptions would translate into higher vehicle volumes on the I-105 general purpose lanes and ExpressLanes.

**Table 3: I-105 PAED
AOC and TDM
assumptions**

Modeling Year	2017	2027	2040-2047
Auto operating cost (\$2012, cents per mile)	25.31	28.21	28.21
TDM work trip reductions	2.42%	3.94%	3.94%

It is still early to draw conclusions about the success of the policies proposed in the 2016 RTP/SCS to achieve trip reductions, particularly as these policies would have to reverse the historical trend of increasing vehicular demand with increasing population and employment. The 2016 RTP/SCS, for example, did not anticipate much of any growth in Transportation Network Companies (TNC) traffic, nor the decrease in transit boardings observed between 2012 and 2016. Auto operating costs also tend to be volatile. The 2016 RTP/SCS model had a 2012 base year, which coincided with a period of high gas prices. The 2020 RTP/SCS model has a 2016 base year, which coincides with a period of lower gas prices. The 2020 RTP/SCS model then has an AOC of only ~17 cents/mile for 2016, compared to the previous AOC projection for 2016 which was more than 20 cents/mile. While the 2020 RTP/SCS AOC projections have not been published, it will likely be lower than what was assumed in the 2016 Plan. Furthermore, all cost inputs to the model (AOC, transit fare, parking costs, and household incomes) should be expressed in constant dollars, that is, net of inflation.

In sum, while we understand the need and desire to be consistent with regional policies, we are also required to use all the information available to us at the time that the study is performed. It is based on this information that we recommended the as adopted TDM and AOC assumptions for the PAED. As indicated above, these assumptions were discussed in depth with the PDT throughout Summer/Fall 2018, and we proceeded based on the PDT's approval. SCAG was also consulted to provide guidance in addition to validating the current 2016 RTP/SCS modeling assumptions.