



MEMORANDUM

Date: March 27, 2019

To: Terri Manuel, City of Corona
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From: Jason D. Pack, P.E.
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Subject: Corona General Plan VMT Assessment

OC17-0508

This memorandum was developed to document the potential transportation impacts associated with the buildout of the proposed Corona General Plan. The assessment develops vehicle miles traveled (VMT) estimates in accordance with the requirements of Senate Bill 743 (SB 743) which dictates that VMT shall be used for transportation impact assessment in California Environmental Quality Act (CEQA) studies. This assessment has been developed based on Fehr & Peers' recommendations for the City of Corona's proposed traffic impact study guidelines and VMT thresholds of significance. The remainder of this memorandum is divided into VMT Background, VMT Analysis and Conclusions.

VMT Background

As a result of SB 743, the new recommended metric in the CEQA guidelines for transportation impacts is VMT per capita. The legislative intent of SB 743 is to balance the needs of congestion management with statewide goals for infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.

The VMT presented in this assessment is the average VMT per person per day in the City of Corona. VMT can be simplified as the product of the number of trips and the trip distance. For example, a project may generate 100 trips per day with a round trip distance of ten miles; the project generates 1,000 VMT. Corona residents on average travel 30 miles per weekday, or 30 VMT. The VMT estimate



accounts for the full length of their trips per day, including home to work, work to shopping, and other trips back to home.

VMT for a project or City can be estimated through the use of travel demand models that forecast traffic patterns for specific driver purposes on typical weekdays. These models contain traffic analysis zones (TAZs) that represent neighborhoods and employment centers with land use data coded that reflects the socioeconomic conditions of that area, such as number of households, population, average income, and type of employment. The trips that are produced and attracted to each of these zones can be recorded with the trip lengths, and thus VMT can be calculated.

Under the City's proposed guidelines, the Corona General Plan Model (CPGM) should be used to forecast daily VMT. To compare scenarios, VMT is normalized by dividing by the total service population. The service population is the sum of the population and employment in the City. A significant impact would occur if the listed conditions below are met:

- Project Level Impact: The buildout of the project increases the total daily VMT per service population (VMT/SP) above the baseline level for the City
- Cumulative Effect on VMT: The buildout of the project causes total daily VMT/SP within the City to be higher than the no project alternative under cumulative conditions (year 2040)

VMT Analysis

Fehr & Peers utilized the CPGM travel demand forecasting model to estimate VMT for the Project and surrounding communities. The VMT estimates incorporate the "full accounting" methodology, in that it accounts for the complete length of the trip from the origin to the destination and assigns 100% of that trip distance to the City of Corona. To estimate the potential VMT impacts, Fehr & Peers had to estimate VMT from the Base Year (2017), Future Year (2040) No Project and Future Year (2040) With Project horizons in the CPGM. The Future Year (2040) No Project scenario assumes the existing general plan is built out in horizon year 2040.

Project VMT

The Base Year (2017) and Future Year (2040) VMT estimates are summarized in **Table 1**. As shown in **Table 1**, the Future Year (2040) VMT/SP in the General Plan area is anticipated to have a VMT/SP of 32.6. This is 2.4 VMT/SP higher than that of the Base Year (2017) VMT/SP, which has a VMT/SP of 30.2.



TABLE 1 PROJECT VMT ANALYSIS SUMMARY

Scenario	2017 Base Year				
	Population	Employment	Service Population	Total Daily VMT	VMT/SP
2017 Base Year					
City of Corona (Citywide) VMT	165,366	70,972	236,338	7,093,655	30.0
Sphere of Influence (SOI) Only VMT	37,264	4,346	41,610	1,295,079	31.1
Total Corona General Plan Area (Citywide plus SOI)	202,630	75,318	277,948	8,385,277	30.2
2040 Future Year					
City of Corona (Citywide) VMT	184,055	84,395	268,450	8,674,797	32.3
Sphere of Influence (SOI) Only VMT	57,842	22,079	79,921	2,702,890	33.8
Total Corona General Plan Area (Citywide plus SOI)	241,897	106,474	348,371	11,366,074	32.6

Source: Fehr & Peers, 2019

Cumulative VMT

The Future Year (2040) No Project and Future Year (2040) With Project VMT estimates are summarized in **Table 2**. Since the No Project and With Project scenarios have the same land use assumptions, the only differences in the scenarios are the road diet on Sixth Street, which reduces the number of lanes on Sixth Street from four to two in the With Project scenario.

As shown in **Table 2**, the With Project and No Project scenarios are forecast to produce generally the same VMT, though the With Project scenario is forecast to generate higher VMT than the No Project scenario by a margin of 0.03% in the General Plan Area and by a margin of 0.02% within the City of Corona.

The results of the modeling estimates indicate that vehicles are selecting a slightly longer path of travel given the lane reduction in capacity on Sixth Street. The relatively small increase in VMT is consistent with the relatively small decrease in lane miles (the 1.75 lane mile reduction on Sixth Street is 0.3% of the total lane miles within the model in the City of Corona and 0.002% of the total lane miles in the SCAG region).



These results are contrary to the theory of induced travel which has found a significant relationship with increasing highway capacity corresponding to increases in VMT. It follows that a reduction in capacity should yield a reduction in VMT for the region. Given the geographic scale of the SCAG region in the CGPM, it is unlikely that the model is sensitive enough to account for effects of induced travel to be accurately reflected in these VMT estimates. The increase in VMT forecast is within the model standard error and is likely negligible.

TABLE 2 CUMULATIVE VMT ANALYSIS SUMMARY

Scenario	2017 Base Year				
	Population	Employment	Service Population	Total Daily VMT	VMT/SP
2040 Future Year No Project					
City of Corona (Citywide) VMT	184,055	84,395	268,450	8,672,884	32.3
Sphere of Influence (SOI) Only VMT	57,842	22,079	79,921	2,701,420	33.8
Total Corona General Plan Area (Citywide plus SOI)	241,897	106,474	348,371	11,362,777	32.6
2040 Future Year With Project					
City of Corona (Citywide) VMT	184,055	84,395	268,450	8,674,797	32.3
Sphere of Influence (SOI) Only VMT	57,842	22,079	79,921	2,702,890	33.8
Total Corona General Plan Area (Citywide plus SOI)	241,897	106,474	348,371	11,366,074	32.6

Source: Fehr & Peers, 2019



Conclusions

This section documents the impacts associated with the buildout of the proposed General Plan and proposes mitigation measures to reduce the impacts to less-than-significant.

VMT Impacts

Since the buildout of the General Plan area is anticipated to have a higher VMT/SP when compared to both the Base Year and Future No Project Conditions, it can be concluded that developing the General Plan to buildout conditions causes a significant impact on VMT.

The City of Corona can consider Transportation Demand Management (TDM) measures which are an effective way to reduce VMT and are not captured in the models, such as CPGM utilized in this analysis. For example, if a plus project scenario VMT surpasses the VMT per service population of the Base Year (2017), the inclusion of TDM measures have the ability to reduce VMT and VMT/SP. As such, the General Plan proposed buildout should result in additional VMT reductions than those summarized above. Therefore, the City should strive to develop and implement TDM measures.

Mitigation Measures

As previously noted, the City Policy Plan will affect VMT in the area. It should be noted that the VMT information presented is produced from the model and only accounts for the built environment variables that the regional model is sensitive to. Additional policies in the City Policy Plan supporting variables the model is not sensitive to (such as connectivity in neighborhoods, presence of bicycle and pedestrian facilities, and transportation demand management (TDM) measures) are not reflected in these estimates. As such, the following provides a summary of built environment variables that the model is either accounting for or not accounting for, and the appropriate approach for the City to consider additional VMT reductions moving forward.

The California Air Pollution Control Officers Association (CAPCOA) documentation provides a variety of information related to potential VMT reduction strategies through implementation of TDM measures. Some of the referenced strategies are already accounted for through the modeling of the General Plan and some are supported through policy language of the General Plan document. Other strategies are project specific and/or would be implemented through the development code or conditioned on future development.



Measures Already Accounted for (In Some Degree) in the General Plan Transportation Modeling

The specific TDM strategies that are already accounted for in the forecasting efforts are noted below along with how well the model has accounted for the attribute:

- Density – The model accounted for adjustments to the trip generation rate for specific land uses like multifamily housing; however, the general plan model makes general assumptions related to density on this level and, for specific developments, may or may not be fully reflecting the effects of density on VMT
- Location Efficiency – The model accounts for the location efficiency of proposed general plan land uses
- Diversity – The model is sensitive to the diversity of land uses and it is reflected in the General Plan forecasts
- Destination Accessibility – The model is sensitive to the accessibility of destinations
- Transit Accessibility – The model accounts for transit access to/from land uses from both existing and planned transit systems

Measures Not Accounted for in the General Plan Transportation Modeling

The following TDM measures are not accounted for in the General Plan forecasts and VMT estimates but may be included in policy direction as part of the General Plan document, through specific development proposals, or through updates to the development code that would further reduce VMT:

- Design – This would likely occur through an update of the development code or design guidelines
- Below Market Rate Housing – This would occur on a project-by-project basis
- Orientation Toward Non-Auto Corridor – This would likely occur through an update of the development code or design guidelines
- Proximity to Bike Path – This would likely occur through an update of the development code or design guidelines
- Pedestrian Network – This would likely occur through an update of the development code, design guidelines or an active transportation plan (ATP)
- Traffic Calming – This would likely occur through an update of the development code, design guidelines or a neighborhood traffic calming program



- Neighborhood Electric Vehicle Network – This would likely apply only for master planned developments and would be project specific
- Bicycle Network – This would likely occur through an update of the development code, design guidelines or ATP
- Parking Supply Limits – This would likely occur through an update of the development code or design guidelines
- Unbundled Parking Costs – This would likely occur through an update of the development code or design guidelines
- On-Street Market Pricing – This would likely occur through an update of the development code or design guidelines
- Residential Area Parking Permits – This would likely occur through an update of the development code or design guidelines
- Transit System Network Expansion – This would likely occur through an update of the development code or design guidelines
- Transit System Frequency/Speed – This would likely occur through an update of the development code or design guidelines
- Bus Rapid Transit – This would likely occur through an update of the development code or design guidelines
- Access Improvements – This would likely occur through an update of the development code or design guidelines
- Station Bike Parking – This would likely occur through an update of the development code or design guidelines
- Local Shuttles – This can occur through expansion of the Corona Cruiser or would be dependent on the developer/owner of future land uses to implement
- Park and Ride Lots – The General Plan can provide policy guidance to promote this strategy
- Commute Trip Reduction Programs (including transit fare subsidies, parking cash-out, parking pricing, alternative work schedules and telecommuting, marketing, employer-sponsored van pools or shuttles, ride share programs, bike share, end of trip facilities, school pool, and school buses) – The General Plan can provide policy guidance to promote these strategies, but the effectiveness is largely dependent on the employer type and the participation rate of their employees



Effectiveness of TDM Measures

The CAPCOA documentation identifies that, in a suburban context, the maximum achievable VMT reduction is 10% unless the development includes a NEV program; in which case a 15% VMT reduction is achievable. Additionally, some of these reductions are accounted for through the transportation modeling completed for the General Plan effort.

As noted above, most of the other measures would be implemented on a project-by-project basis or would occur during the development code update or modifications to the design guidelines and, because those have not yet been completed, cannot be relied upon for this General Plan evaluation.

Given the noted information, the only measures that can be incorporated into the General Plan through policy language are associated with the transit expansion efforts. Given that the City does not own or operate the transit system (except for the Corona Cruiser), the City can only support those efforts and cannot guarantee implementation.