



---

June 22, 2021

Mr. Thomas Irwin  
D.R. Horton  
2280 Wardlow Circle, Suite 100  
Corona, CA 92880

**SUBJECT: KELLER CROSSING SPECIFIC PLAN NO. 380 AMENDMENT NO. 1 VEHICLE MILES TRAVELLED (VMT) ANALYSIS**

Dear Mr. Thomas Irwin:

The following Vehicle Miles Travelled (VMT) Analysis has been prepared for the proposed Keller Crossing Specific Plan No. 380 Amendment No. 1 (**Project**), which is generally located north of Keller Road and west of Winchester Road (SR-79) in the County of Riverside.

## **PROJECT OVERVIEW**

The Project proposes a total of 356 single family detached residential dwelling units, 80 attached senior housing units, a 6.5-acre sports park/active park, and 176,000 square feet of commercial retail uses.

## **BACKGROUND**

Changes to California Environmental Quality Act (CEQA) Guidelines were adopted in December 2018, which requires all lead agencies to adopt VMT as a replacement for automobile delay-based level of service (LOS) as the new measure for identifying transportation impacts for land use projects. This statewide mandate went into effect July 1, 2020. To aid in this transition, the Governor's Office of Planning and Research (OPR) released a Technical Advisory on Evaluating Transportation Impacts in CEQA (December of 2018) (**Technical Advisory**). (1) Based on OPR's Technical Advisory, the County of Riverside in December of 2020 adopted an update to their own transportation analysis guidelines titled Transportation Analysis Guidelines for Level of Service and Vehicle Miles Traveled (County Guidelines). (2) The following analysis has been prepared based on the current County Guidelines.

## **VMT THRESHOLDS**

As outlined in the County Guidelines, mixed-use projects should evaluate each land use component of the project separately and apply the relevant significance threshold for each land use type (i.e., residential, office, retail, etc.). Thresholds of significance based on the adopted County Guidelines are

provided below in Table 1.

**TABLE 1: VMT THRESHOLDS OF SIGNIFICANCE**

Land Use	VMT Threshold <sup>1</sup>	Basis
Residential	15.19 VMT/capita	Existing county-wide average VMT per capita
Retail	Net Regional Change	Using the County as the basis

## ANALYSIS SCENARIOS

RIVTAM is a useful tool to estimate VMT as it considers interaction between different land uses based on socio-economic data such as population, households, and employment. RIVTAM is a travel forecasting model that represents a sub-area (Riverside County) of the Southern California Association of Governments (SCAG) regional traffic model. RIVTAM was designed to provide a greater level of detail and sensitivity in the Riverside County area as compared to the regional SCAG model. County Guidelines identifies RIVTAM/RIVCOM (a future model release) as the appropriate tool for conducting VMT modeling for land use projects within the County of Riverside.

Project VMT has been calculated using the most current version of RIVTAM. Adjustments in socio-economic data (SED) (i.e., population, households, and employment) have been made to separate traffic analysis zones (TAZs) within the RIVTAM model to reflect the Project's proposed land uses (i.e., residential, age restricted (60+) housing, and retail). Consistent with County Guidelines the VMT analysis was conducted for the following existing and cumulative scenarios:

- **Existing Conditions** – RIVTAM base year (2012) traffic model conditions.
- **Existing Plus Project Conditions** – RIVTAM base year (2012) traffic model plus the proposed Project land uses.
- **Cumulative No Project Conditions** – RIVTAM cumulative model (2040) without the proposed Project land use changes (i.e., adopted land use assumptions).
- **Cumulative Plus Project Conditions** - RIVTAM cumulative model (2040) plus the proposed Project land use changes.

---

<sup>1</sup> County Guidelines; Page 22

## PROJECT LAND USE CONVERSION

For non-residential land uses such as the commercial retail, land use information in terms of building square footage is converted into employees, which is the non-residential input for the travel demand model. The conversion factors used by County of Riverside’s most recent General Plan Update, which are contained in *Appendix E-2: Socioeconomic Build-Out Assumptions and Methodology of the County’s General Plan* were used to convert building square footage to employees.<sup>2</sup>

For residential land uses including single family residential and age-restricted residential, a conversion from dwelling units to population was used for each residential land use type. For the market rate single family residential land use, the County’s General Plan Update data was used consistent with the source used for residential development. However, as the County’s General Plan land use conversion data did not contain a relevant conversion factor for age-restricted housing, the age restricted housing component was modeled based on an average persons per household figure obtained from the National Association of Home Builders (NAHB) *Approving 55+ Housing: Facts That Matter*. Table 2 summarizes the resulting conversion of land use information to SED used to adjust RIVTAM to reflect the Project. As shown, the Project is estimated to generate a population of 1,298 and an employment of 352.

**TABLE 2: LAND USE TO SED CONVERSION FACTORS AND RESULTING SED**

	Residential	Age-Restricted Residential	Retail
Units	356 dwelling units	80 dwelling units	176,000 SF
Conversion Factor	3.17 persons per household <sup>3</sup>	2.11 persons per household <sup>4</sup>	1 employee/500 SF <sup>5</sup>
SED Model Input	1,129 population	169 population	352 employees

## VMT ANALYSIS

As described in the County Guidelines, VMT significance thresholds are based on land use type, which for purposes of the analysis are separated into efficiency or net change metrics. Efficiency metrics include either VMT per capita (residential based VMT) and VMT per employee (employee based VMT). “Net Change” refers to the net change in regional VMT. Net change is used for elements that include a significant customer base such as retail uses.

The calculation of VMT efficiency metrics such as VMT per capita has two components – the total number of trips generated and the average trip length of each vehicle. As the proposed Project has both

<sup>2</sup> Source: County of Riverside General Plan Appendix E-2: Socioeconomic Build-Out Assumptions and Methodology.

<sup>3</sup> Population Density Factor was obtained from the County of Riverside General Plan Appendix E-2: Socioeconomic Build-Out Assumptions and Methodology (see Table E-2, Average Household Size by Area Plan, Page 2).

<sup>4</sup> Population Density Factor was obtained from the National Association of Home Builders (NAHB) *Approving 55+ Housing: Facts That Matter* (see Figure I-2, Age of Household Head 55 to 64, Page 8).

<sup>5</sup> Employee Density Factor was obtained from the County of Riverside General Plan Appendix E-2: Socioeconomic Build-Out Assumptions and Methodology (see Table E-5, Commercial Employment Factors, Page 3).

residential and non-residential trips, vehicle trip productions and attractions were used from the all home-based trip purposes and home-based-work trip purpose matrices. Using the peak and off-peak person trip matrices, skim (distances) matrices and appropriate occupancy rates, VMT was calculated for the Project TAZs. Table 3 presents the Existing plus Project VMT per capita calculation for the Project’s residential component as compared to the County’s adopted impact threshold for residential land use. The Project is calculated to exceed the County’s impact threshold for residential land use by 53.9%, which results in a potentially significant impact.

**TABLE 3: EXISTING PLUS PROJECT VMT PER CAPITA COMPARISON**

Analysis Scenario	Residential VMT per Capita	Threshold Comparison
Riverside County Threshold	15.19	0.0%
Existing Plus Project	23.38	+53.9%

As the Project also includes a retail land use component, it is important to also consider this element’s potential impact on VMT. Local-serving retail under 50,000 square feet per store, per County Guidelines, is presumed to have a less than significant impact. Regional-serving retail (i.e., retail with stores larger than 50,000 square feet) or other unique land uses will need to be evaluated on their own merits as detailed project descriptions become available in the future. If a future retail project includes stores larger than 50,000 square feet exceeding the County’s screening threshold, there is potential for a significant impact. As the Project does not contain a specific retail development proposal, an assessment of potential impacts to VMT related to the Project’s retail component has been provided for **informational purposes only**.

Consistent with County Guidelines, it is appropriate to measure the net regional change in VMT related to the implementation of a retail land use project using the entire Riverside County area as the regional boundary. A net increase in regional total VMT is identified as the County’s adopted impact threshold for retail land uses (see Figure 6 – VMT Threshold of Significance of the County Guidelines).

To make this assessment, total link-level VMT was extracted from the “with Project” model runs for the base year (2012) model. This calculation is commonly referred to as the “boundary method” and includes the total VMT for all vehicle trips with one or both trip ends within a specific geographic area.

As shown in Table 4, there is a de minimis increase in total regional VMT for base year (2012) with the addition of the Project’s retail component. This finding would seem intuitive as the RIVTAM base year (2012) model includes sparse levels of development in the Project’s vicinity, which results in slightly longer trips for customers of the shopping center to travel to the proposed retail shopping component. As identified previously, the retail component of the Project has the potential to have a significant impact if a single retail building is larger than 50,000 square feet. Additional analysis would need to be completed prior to the development of the retail components to determine potential impacts to VMT.

**TABLE 4: NET CHANGE IN TOTAL REGIONAL VMT**

	Riverside County
Base Year (2012) No Project	53,661,883
Base Year (2012) With Project	53,692,655
Change in VMT	+30,772
Percent Change	+0.06%

**CUMULATIVE ANALYSIS**

Appendix E of the County Guidelines states the following, “for Specific Plans and Community Plans, Riverside County requires that Cumulative analysis be completed irrespective of the findings of Baseline Plus Project conditions. Additionally, No Project and Plus Project conditions under both the Baseline and Cumulative must provide total Regional VMT values. Note that the Regional VMT values are for informational purposes and are not used as the basis for the determination of a significant impact.” Table 5 provides a comparison of VMT per capita for cumulative no project and plus project scenarios. As indicated previously, the Project results in an increase in VMT per capita as compared to the Riverside County regional average. However, the proposed changes to the Project results in a decrease in VMT per capita as compared to the previously adopted Keller Crossing Specific Plan.

**TABLE 5: CUMULATIVE PROJECT VMT PER CAPITA COMPARISON**

	Cumulative Year (2040) No Project	Cumulative Year (2040) Plus Project
Project Area	25.58	21.95
Riverside County	16.37	16.37

Total link-level VMT was also extracted from the “No Project” and “Plus Project” cumulative year (2040) models. As shown in Table 6, there is a de minimis net decrease in regional total VMT for cumulative year (2040).

**TABLE 6: RIVERSIDE COUNTY TOTAL VMT**

	Riverside County
Cumulative Year (2040) No Project	92,554,131
Cumulative Year (2040) With Project	92,545,829
Change	- 8,302
Percent Change	-0.01%

## POTENTIAL VMT REDUCTION STRATEGIES

Projects that exceed VMT threshold(s) are required to mitigate to the extent feasible its transportation impact. VMT reduction strategies for large projects and specific plans may include altering a project's density, land use mix, site design, and availability of transit, bicycle, and pedestrian facilities. For smaller individual development projects, VMT may be reduced through the use of transportation demand management (TDM) strategies.<sup>6</sup>

The Project's VMT reduction strategies at the specific plan level should include the following:

- Provide more options for shorter trips by locating residential uses in walking distance to retail uses.
- Provide pedestrian and bicycle network improvements within the development connecting complementary uses (i.e., residential and retail) internally and to existing off-site facilities.
- Where applicable ensure design of key intersections and roadways encourage the use of walking, biking and transit.
- Collaborate with the Riverside Transit Authority (RTA) to determine the feasibility of providing new or re-route existing transit services to the Project.

In addition, the following TDM strategies may be applicable at the implementing project level:

- Reduce Parking Supply for Retail Uses (parking policy range of effectiveness: 5.0 - 12.5%)
- Transit Rerouting and Transit Stops (transit system improvements range of effectiveness: 0.02 - 10.7%)
- Implementation of Local Shuttle Service (grouped strategy with transit system improvements)

Additional TDM measures and their potential effectiveness within the suburban context of Riverside County are further defined in Appendix F of the County Guidelines.

As individual development proposals are not currently available at the specific plan level, it is not possible to fully account for the effect of specific design elements, policies and improvements that will reduce VMT as part of this analysis. Although many of the aforementioned VMT reduction strategies may fully mitigate or reduce the VMT impacts identified in this analysis, necessary details to assure implementation and to accurately evaluate their effect are not available at the land planning stage.

---

<sup>6</sup> County Guidelines; page 25.

## CONCLUSION

Based on the results of this VMT analysis the following findings are made:

- The Project's residential land uses were found to exceed the existing county-wide average VMT per capita threshold by 53.9%. Future implementing Projects should provide feasible VMT reduction measures such as those described above. The Project is determined to have a significant transportation impact for residential development. Even with implementation of the feasible TDM measures discussed above, VMT reductions for projects located in a suburban context are limited to a maximum reduction of 15%, which would not be enough to reduce Project generated VMT per capita to a level of less than significant.
- Local-serving retail under 50,000 square feet per store, per adopted County traffic analysis guidelines is presumed to not have a significant impact.
- Regional-serving retail will need to be evaluated as detailed development proposals become available in the future. Retail buildings greater than 50,000 square feet may in a significant VMT impact.

If you have any questions, please contact me directly at [aevatt@urbanxroads.com](mailto:aevatt@urbanxroads.com).

Respectfully submitted,

URBAN CROSSROADS, INC.



Aric Evatt, PTP  
President



Robert Vu, PE  
Transportation Engineer

Mr. Thomas Irwin  
D.R. Horton  
June 22, 2021  
Page 8 of 8

## REFERENCES

1. **Office of Planning and Research.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* State of California : s.n., December 2018.
2. **County of Riverside.** *Transportation Analysis Guidelines for Level of Service Vehicle Miles Traveled.* County of Riverside : s.n., December 2020.

**ATTACHMENT A**  
**PROJECT TRIP GENERATION**

## PROJECT BUILDOUT TRIP GENERATION

Land Use	Quantity Units <sup>1</sup>	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Single Family Detached Residential	356 DU	66	198	264	222	130	352	3,362
Senior Housing - Attached	80 DU	6	10	16	11	9	20	296
Park	6.5 AC	7	7	14	13	13	26	326
Internal Capture:		-5	-44	-49	-137	-82	-219	-2,092
<b>Residential Subtotal:</b>		<b>74</b>	<b>171</b>	<b>245</b>	<b>109</b>	<b>70</b>	<b>179</b>	<b>1,892</b>
Commercial Retail	101.500 TSF	126	77	203	264	285	549	6,074
Internal Capture:		-9	-13	-22	-58	-84	-142	-1,572
Pass-by Reduction (34% PM/Daily):		0	0	0	-68	-68	-136	-1,532
Supermarket	50.000 TSF	115	76	191	236	226	462	5,340
Internal Capture:		-10	-10	-20	-51	-65	-116	-1,342
Pass-by Reduction (36% PM/Daily):		0	0	0	-58	-58	-116	-1,440
Pharmacy with Drive-Thru Window	14.000 TSF	28	25	53	72	72	144	1,528
Internal Capture:		-5	-1	-6	-16	-10	-26	-276
Pass-by Reduction (49% PM/Daily):		0	0	0	-27	-27	-54	-614
Fast-Food Restaurant with Drive-Thru	10.500 TSF	215	207	422	178	165	343	4,946
Internal Capture:		-65	-26	-91	-77	-98	-175	-2,524
Pass-by Reduction (49% AM; 50% PM/Daily):		-74	-74	-148	-34	-34	-68	-1,212
<b>Commercial Retail Subtotal</b>		<b>204</b>	<b>197</b>	<b>401</b>	<b>223</b>	<b>171</b>	<b>394</b>	<b>4,406</b>
<b>Project Buildout Total:</b>		<b>278</b>	<b>368</b>	<b>646</b>	<b>332</b>	<b>241</b>	<b>573</b>	<b>6,298</b>

<sup>1</sup> DU = dwelling units; TSF = thousand square feet; AC = acres