

## West Alton PM Peak Hour Trip Generation Sensitivity Analysis

The PM peak hour trip generation sensitivity analysis consisted of a two stage analysis process. The first stage consisted of screening the nearby intersections to determine which could be impacted due to the change in the PM peak hour trip generation. The second stage consisted of conducting a sensitivity analysis of the additional trips at the selected intersections to determine if the intersection would be impacted.

### Trip Generation Change

To reflect the actual characteristics of the Project, the Draft EIR utilized a blended trip generation rate from two land use descriptions in *Trip Generation, 9<sup>th</sup> Edition* (Institute of Transportation Engineers [ITE], 2012). The two land use descriptions selected for the development of the blended rate consisted of:

- Apartment (ITE Code 220<sup>1</sup>) land use for the 230 units (3 stories).
  - 0.51 trips per dwelling unit during the AM peak hour
  - 0.62 trips per dwelling unit during the PM peak hour
- Mid-Rise Apartment (ITE Code 223<sup>2</sup>) land use for the 573 units (3 to 5 stories).
  - 0.30 trips per dwelling unit during the AM peak hour
  - 0.39 trips per dwelling unit during the PM peak hour

The resulting blended rate for the 803 proposed dwelling units was determined to be 0.36 trips per dwelling unit during the AM peak hour and 0.46 trips per dwelling unit during the PM peak hour. An iterative process was used to adjust the model to generate the values as close to the above “blended” rate as possible. However, it is not a deterministic process, and therefore the closest result yielded a net trip generation rate of 0.45 trips per dwelling unit during the AM peak hour (instead of 0.36), and 0.45 trips per dwelling unit during the PM peak hour. The trip generation rates utilized in the Draft EIR were 25 percent higher for the AM peak hour and within 2 percent for PM peak hour when compared to the blended rate. As identified in Table 1 below, the 2 percent difference in the PM peak hour results in a difference of 8 total, -10 inbound, and 18 outbound PM peak hour trips.

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<sup>1</sup> Apartments are rental dwelling units located within the same building with at least three other dwelling units, for example, quadraplexes and all types of apartment buildings.

<sup>2</sup> Mid-rise apartments are apartments (rental dwelling units) in rental buildings that have between three and 10 levels (floors).

Table 1 – Trip Generation Comparison

| Land Use                 | Size      | PM Peak Hour Rate |      |       | Trip Rate<br>Unit | PM Peak Hour Trips |     |       |
|--------------------------|-----------|-------------------|------|-------|-------------------|--------------------|-----|-------|
|                          |           | Rate              | % In | % Out |                   | In                 | Out | Total |
| Apartment (TIA)          | 803 units | 0.45              | 65%  | 35%   | per unit          | 235                | 126 | 361   |
| Apartment (Blended Rate) | 803 units | 0.46              | 61%  | 39%   | per unit          | 225                | 144 | 369   |
| Difference               |           |                   |      |       |                   | (10)               | 18  | 8     |

**First Stage Screening**

To represent a conservative assumption in the screening process, all 18 outbound trips were assigned to one lane at one intersection. This assumption is conservative as it assumes that all 18 trips are assigned to one intersection (which would not account for the distribution of traffic in other directions to different intersections) and it assumes that none of the -10 inbound trips are assigned. The 18 trips were divided by the standard TIA lane capacity of 1,700 vehicles per hour per lane to determine the volume-to-capacity (v/c) ratio. These assumptions would result in the greatest possible increase in the v/c ratio at any intersection. Using the conservative assumptions, the greatest change in v/c that an intersection could expect would be 0.01 ( $18 \div 1,700 = 0.01$ ).

A screening threshold was established to screen out intersections that would not be impacted with the change in the PM peak hour trip generation. It was determined that intersections operating at LOS D with a v/c ratio of 0.89 or less under the “plus project” condition should be screened out of the sensitivity analysis. Combining the 0.01 v/c change identified above and the threshold would result in intersections not meeting the v/c ratio requirement of the TIA impact criteria.

The screening threshold was applied to intersections along Irvine Boulevard between Sand Canyon Avenue and Alton Parkway as project traffic would be distributed in multiple directions after reaching either of these roadways. The distribution of project traffic on other roadways would result in a v/c change that would be less than the 0.01 identified and thus have no change on the intersection v/c ratio.

The nearby intersections identified for the screening analysis included:

- 301 – Sand Canyon Ave and Irvine Blvd
- 317 – SR-133 NB Ramps and Irvine Blvd
- 561 – LY Street and Irvine Blvd
- 577 – Pusan Wy/Z St and Irvine Blvd
- 579 – A/02 St and Irvine Blvd
- 316 – SR-133 SB Ramps and Irvine Blvd
- 558 – Ridge Valley/O St and Irvine Blvd
- 572 – Modjeska/A St and Irvine Blvd
- 563 – B St and Irvine Blvd
- 338 – Alton Pkwy and Irvine Blvd

The screening analysis for these intersections can be found in Table 2 below.

Table 2 – Screening Analysis

| ID  | Intersection                      | Scenario                  | PM peak hour v/c | v/c exceed 0.89 threshold? |
|-----|-----------------------------------|---------------------------|------------------|----------------------------|
| 301 | Sand Canyon Ave and Irvine Blvd   | Existing Plus Project     | 0.48             | No                         |
|     |                                   | 2017 Plus Project         | 0.66             | No                         |
|     |                                   | 2035 Plus Project         | 0.75             | No                         |
|     |                                   | Post-2035 Plus Project    | 0.79             | No                         |
|     |                                   | Pending 2017 Plus Project | 0.64             | No                         |
|     |                                   | Pending 2035 Plus Project | 0.75             | No                         |
| 316 | SR-133 SB Ramps and Irvine Blvd   | Existing Plus Project     | 0.56             | No                         |
|     |                                   | 2017 Plus Project         | 0.53             | No                         |
|     |                                   | 2035 Plus Project         | 0.68             | No                         |
|     |                                   | Post-2035 Plus Project    | 0.65             | No                         |
|     |                                   | Pending 2017 Plus Project | 0.53             | No                         |
|     |                                   | Pending 2035 Plus Project | 0.69             | No                         |
| 317 | SR-133 NB Ramps and Irvine Blvd   | Existing Plus Project     | 0.65             | No                         |
|     |                                   | 2017 Plus Project         | 0.75             | No                         |
|     |                                   | 2035 Plus Project         | 0.71             | No                         |
|     |                                   | Post-2035 Plus Project    | 0.73             | No                         |
|     |                                   | Pending 2017 Plus Project | 0.78             | No                         |
|     |                                   | Pending 2035 Plus Project | 0.73             | No                         |
| 558 | Ridge Valley/O St and Irvine Blvd | Existing Plus Project     | 0.55             | No                         |
|     |                                   | 2017 Plus Project         | 0.77             | No                         |
|     |                                   | 2035 Plus Project         | 0.68             | No                         |
|     |                                   | Post-2035 Plus Project    | 0.7              | No                         |
|     |                                   | Pending 2017 Plus Project | 0.79             | No                         |
|     |                                   | Pending 2035 Plus Project | 0.69             | No                         |
| 561 | LY Street and Irvine Blvd         | Existing Plus Project     | [a]              | -                          |
|     |                                   | 2017 Plus Project         | 0.58             | No                         |
|     |                                   | 2035 Plus Project         | 0.52             | No                         |
|     |                                   | Post-2035 Plus Project    | 0.52             | No                         |
|     |                                   | Pending 2017 Plus Project | 0.58             | No                         |
|     |                                   | Pending 2035 Plus Project | 0.53             | No                         |

Note

[a]: Intersection does not exist in scenario

| ID  | Intersection                  | Scenario                  | PM peak hour v/c | v/c exceed 0.89 threshold? |
|-----|-------------------------------|---------------------------|------------------|----------------------------|
| 572 | Modjeska/A St and Irvine Blvd | Existing Plus Project     | 0.42             | No                         |
|     |                               | 2017 Plus Project         | 0.57             | No                         |
|     |                               | 2035 Plus Project         | 0.72             | No                         |
|     |                               | Post-2035 Plus Project    | 0.73             | No                         |
|     |                               | Pending 2017 Plus Project | 0.57             | No                         |
|     |                               | Pending 2035 Plus Project | 0.73             | No                         |
| 577 | Pusan Wy/Z St and Irvine Blvd | Existing Plus Project     | 0.47             | No                         |
|     |                               | 2017 Plus Project         | 0.51             | No                         |
|     |                               | 2035 Plus Project         | 0.62             | No                         |
|     |                               | Post-2035 Plus Project    | 0.59             | No                         |
|     |                               | Pending 2017 Plus Project | 0.53             | No                         |
|     |                               | Pending 2035 Plus Project | 0.63             | No                         |
| 563 | B St and Irvine Blvd          | Existing Plus Project     | [a]              | -                          |
|     |                               | 2017 Plus Project         | [a]              | -                          |
|     |                               | 2035 Plus Project         | 0.61             | No                         |
|     |                               | Post-2035 Plus Project    | 0.6              | No                         |
|     |                               | Pending 2017 Plus Project | [a]              | -                          |
|     |                               | Pending 2035 Plus Project | 0.63             | No                         |
| 579 | A/02 St and Irvine Blvd       | Existing Plus Project     | [a]              | -                          |
|     |                               | 2017 Plus Project         | 0.83             | No                         |
|     |                               | 2035 Plus Project         | 0.64             | No                         |
|     |                               | Post-2035 Plus Project    | 0.63             | No                         |
|     |                               | Pending 2017 Plus Project | 0.84             | No                         |
|     |                               | Pending 2035 Plus Project | 0.66             | No                         |
| 338 | Alton Pkwy and Irvine Blvd    | Existing Plus Project     | 0.43             | No                         |
|     |                               | 2017 Plus Project         | 0.62             | No                         |
|     |                               | 2035 Plus Project         | 0.82             | No                         |
|     |                               | Post-2035 Plus Project    | 0.7              | No                         |
|     |                               | Pending 2017 Plus Project | 0.63             | No                         |
|     |                               | Pending 2035 Plus Project | 0.84             | No                         |

Note

[a]: Intersection does not exist in scenario

According to the screening analysis in Table 2 above, no intersection had a v/c ratio equal to or greater than 0.89 in any analysis scenario. Therefore, no intersection met the screening threshold identified.

### Second Stage Sensitivity Analysis

No intersection was determined to meet the screening threshold identified in the first stage. Therefore no intersection was studied in the second stage.

### Conclusion

No intersection met the screening threshold for the sensitivity analysis. Therefore, no intersection would be impacted if the project trip generation were calculated as 2 percent higher in the PM peak hour.