905.3 Transportation Impact Analysis, Accompaniment to Volume Development

In **EPG 905.3.4.8 Forecast for a TIA**, two exhibit example diagrams (**Figure 905.3.4.8.7 and Figure 905.3.4.8.8**) were provided when summarizing how to develop estimated / forecasted traffic volumes for a new development in a TIA. Below is an accompaniment to this section that includes a full example problem, which encompasses all TIA new development trip types through illustrations.

The assignment of each of the components of site trips (new (primary), pass-by, and diverted link) is recommended to be calculated and displayed on separate flow diagrams. Calculations are typically performed in a spreadsheet. Below is a step-by-step example of TIA trip assignment calculations. In this example, a new site is built with a new site driveway joining the intersection of Road X and Road Y as the 4th leg on the east.

1. a. **New (Primary) Trips:** The assignment of new (primary) trips for each turning movement is calculated by multiplying the previously determined number of directional new (primary) trips (trip generation) by the new (primary) distribution percentage applicable to that movement.

**Exhibit B1 – New (Primary) Site Trip Percentages**

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Sample calculation for westbound to northbound right turn movement at the nearby intersection:

This movement is outbound from the site.

Trip generation of outbound new (primary) trips = 50

Trip distribution of outbound new (primary) trips = 40 percent

Trip assignment = 50 x 0.40 = 20 new (primary) site trips

**Exhibit B2 – Assignment of New (Primary) Site Trips**

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1. b. **Pass-by Trips:** The assignment of pass-by trips for each turning movement is calculated by multiplying the previously determined number of directional pass-by trips (trip generation) by the pass-by distribution percentage applicable to that movement. Typically, pass-by trips should not exceed 5 to 10 percent of the traffic volumes on the adjacent roadways. Also, the egress and ingress pass-by volumes usually are equal.

Note that the intersection with the site driveway will have northbound and southbound through movement pass-by trips with negative values, since they are now traveling into the site instead of traveling by. However, the overall “Road Y” segment trips north and south of the intersection will contain a net gain of 0 pass-by trips.

**Exhibit B3 – Assignment of Site Pass-By Trip Percentages**

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**Exhibit B4 – Assignment of Site Pass-By Trips**

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1. c. **Diverted Link Trips:** The assignment of diverted link trips for each turning movement is calculated by multiplying the previously determined number of directional diverted link trips (trip generation) by the diverted link distribution percentage applicable to that movement. Typically, the egress and ingress diverted link volumes should be equal.

Note that the intersection with the site driveway will have northbound and southbound through movement diverted link trips with negative values, since they are now traveling into the site instead of traveling by. However, the overall “Road Y” segment trips north and south of the intersection will contain a net gain of 0 diverted link trips.

**Exhibit B5 – Assignment of Diverted Link Trip Percentages**

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**Exhibit B6 – Assignment of Diverted Link Trips**

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1. d. **Site Trip Summation:** Each of the components of site trips are then summed for each vehicle movement and displayed in a flow diagram of total site trips as shown below.

**Exhibit B7 – Total Site Trip Assignment**

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1. e. **Site Trips with Background Traffic:** The total site trips are then combined with Background Traffic to create Background plus Site trips as shown below.

**Exhibit B8 – Site Trips with Total Traffic**



In **Exhibit B8**, above, Road Y would have a total of 140 southbound through trips after subtracting 10 trips lost from what was originally 150 background trips.