DELAY BENEFITS: ROADWAY

Projects that increase capacity or divert traffic can possibly reduce delay on the existing or surrounding roadway network. The impact of a project on congestion can be measured through the Vehicle Hours Traveled (VHT) on the network.

The benefit from roadway projects is derived from modeling the increased capacity or new roadway project in a micro-simulation model (using SYNCHRO and/or SimTraffic) and subsequently monetizing the benefit from reduced congestion as measured by VHT.

MICROANALYSIS

When the H-GAC Travel Demand Model was not used to analyze a project, a traffic analysis was completed using SYNCHRO and/or SimTraffic software and analyzing delay reduction with a micro-level model. This method requires collecting traffic counts along the affected roadways and modeling traffic for both existing conditions and the future no-build and build scenarios. The SYNCHRO/SimTraffic analysis shows the operational impacts of the proposed project, which includes intersection delay.

For both the regional travel demand model (macro) and the SYNCHRO analysis (micro), the average Value of Travel Time (VoTT) is $17.73/hour (2018$) and vehicle occupancy as 1.39 persons per vehicle, which is from H-GAC's 2018 Call for Projects spreadsheets. Using the formula below, the user saving for each project is calculated.

Depending upon the type of counts collected and analysis done, the benefit is for peak hour or peak period. This is stated in the supporting Excel documentation. The daily reduction (whether it be for peak hour or period) is extrapolated to annual delay using 260 annual days of travel, consistent with other H-GAC assumptions.

Equation 1 Roadway Project – User Savings

User Savings = VHT * PPV * VoTT

- VHT for year n = VHT for the analysis year*$(1+x\%)^n$
  - x% is assumed to be the annual growth rate; this is derived from the difference between the interim and forecast year VHT reduction

- Persons Per Vehicle (PPV) = 1.39 (updated per H-GAC 2018 Call for Projects)

- VoTT = $17.73 (2018); inflated by 2.3% per year

The congestion benefit begins in the year improvements are open to traffic; the congestion benefit extends until 2050. Accumulated benefits for the planning horizon are summed up and discounted at a 7% rate.