TSM&O TIP Needs Analysis Tool

Metric Descriptions

AADT (Average Annual Daily Traffic)
Meta Manager Field: AADTYR_1
Units: Vehicles per day
Description: AADT is a measure of road usage collected using Automatic Traffic Recorders (ATRs) reflecting the last several years of ATR counts. Counts include both directions of traffic. Note that this value is the forecasted AADT for 1 year from the current year (includes both directions of traffic).*

AADT Future
Meta Manager Fields: AADTYR_5, AADTYR_10, AADTYR_15, AADTYR_20
Units: Vehicles per day
Description: Same as AADT except forecasts are for 5, 10, 15, or 20 years from the current year.

Growth
Meta Manager Fields: AADTYR_1 and AADTYR_5, AADTYR_10, AADTYR_15, AADTYR_20
Units: Percentage increase in AADT between selected year and current year
Description: Growth is a calculated value derived using the following equation:

$$GROWTH_X = \frac{AADTYR_X - AADTYR_1}{AADTYR_1},$$

$$where\ x\ is\ the\ projected\ year$$

Truck
Meta Manager Fields: TRKDYR_1, TRKDYR_20
Units: Percentage of trucks out of total vehicles
Description: Percentage of design hour^ AADT as trucks for 1 year from the current year. This value is an estimate. Note that this value is the forecasted AADT for 1 year from the current year (includes both directions of traffic).*

LOS (Level of Service)
Meta Manager Field: LOSYR_1
Units: Level of Service Value (1 = A, highest LOS to 6 = F, lowest LOS)
Description: Level of service is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. The LOS computations are based on the 2010 Highway Capacity Manual (HCM) methodologies for basic freeway segments, multilane highways, and two-lane highways.   The urban streets logic uses the HCM 2000 planning level analysis for urban street segments. The LOS computations use traffic forecasts projected for the 30th highest hour of the year for each traffic segment.   The computations use

existing site specific geometric and roadway data for each traffic segment. LOS is converted from the traditional "A" to "F" values to numeric values, in order to facilitate a more detailed comparison between segments and to determine the proximity of the segment LOS to the LOS threshold values. Note that this value is the forecasted Level of Service for 1 year from the current year (assuming unimproved conditions).* LOS values are determined using the design hour^.

LOS Future
Meta Manager Fields: LOSYR_5, LOSYR_10, LOSYR_15, LOSYR_20
Units: Level of Service Value (1 = A, highest LOS to 6 = F, lowest LOS)
Description: Same as LOS except forecasts are for 5, 10, 15, or 20 years from the current year.

Crash Rate
Meta Manager Field: rate
Units: Number of crashes per year per million Vehicle Miles Traveled
Description: 5 year average crashes per 100 million Vehicle Miles Traveled (by Meta-Manager segment). Includes all types of crashes.

Severity
Meta Manager Field: sevindx
Units: Severity Index Value (lowest value is 0, highest value is 606)
Description: Severity index (weighted average of crash severities). The severity index is a weighted crash value where each crash is given a greater weight if an injury or fatality is involved.

Weather
Meta Manager Field: N/A
Units: Inches of snow per year
Description: Derived from a continuous surface of average annual snowfall based on NOAA point data.

Event
Meta Manager Field: N/A
Units: Event Impact Factor (lowest factor is 1, highest factor is 30)
Description: Derived from a collection of point data representing individual events. The metric is based on attendance and a decay weight as a function of distance. The cumulative values are then ranked based on a natural breaks classification.

*Forecasts are produced by the Traffic Analysis Forecasting Information System (TAFIS) using a "Box-cox" regression analysis of historical traffic counts for every Traffic segment (TRADAS). Project level and MPO forecasts (reflecting new development and land use) are also incorporated as overrides in TAFIS.

^The design hour volume for all STN routes is based on the 30th highest volume of the year (K30). Traffic engineers have reached consensus on identify K30 as reaching a reasonable peak of activity before high outliers of traffic volume are used as determinative of overall patterns.

Preset Descriptions

Default TIP

Basic Definition: Standard values encompassing all metrics based on stakeholder input
Metric Weights: AADT – 10%, AADT Future 20 – 7%, Growth 20 – 7%, Truck 1 – 4%, LOS – 12%, LOS Future 20 – 12%, Crash Rate – 15%, Severity – 13%, Weather – 9%, Event – 11%
Description: These defaults are based on the previous WisDOT Corridor Management Process and stakeholder input.

Safety

Basic Definition: The level that road users are protected from danger, risk, or injury
Metric Weights: AADT – 20%, Crash Rate – 40%, Severity – 40%
Description: Safety is primarily based on number of crashes and crash severity. AADT is also included to account for the correlation between increased traffic and safety.

Mobility Present

Basic Definition: Ability of road users to travel with relative ease
Metric Weights: AADT – 25%, AADT Future 5 – 25%, Truck 1 – 25%, LOS – 25%
Description: Mobility accounts for the current level of service, but includes AADT and AADT projections in five years to account for the correlation between increased traffic and reduced mobility. Truck percentage is also included as the difference in speed and acceleration between trucks and passenger vehicles typically creates mobility issues.

Mobility Future

Basic Definition: Ability of road users to travel with relative ease
Metric Weights: AADT Future 20 – 25%, Growth 20 – 25%, Truck 20 – 25%, LOS Future 20 – 25%
Description: Similar to present mobility, AADT, LOS, and truck percentage are used, except with projections using the longest forecasting models of 20 years into the future. Current AADT is replaced with the growth percentage looking 20 years into the future.

Service

Basic Definition: Overall ability of road users to use the roadway within expectations
Metric Weights: AADT – 30%, Growth 20 – 10%, LOS – 30%, LOS Future 20 – 30%
Description: This preset is primarily weighted towards present and future level of service. AADT is also included as LOS impacts on more highly trafficked segments decreases service for more users. Growth is also included as a small percentage to project service into the future based on AADT.

Freight Performance

Basic Definition: Performance of freight traffic (trucks)
Metric Weights: AADT – 20%, Truck 1 – 60%, LOS – 20%
Description: The primary metric used in the freight performance preset is the percentage of trucks. AADT and LOS are included to weigh the impact of freight versus traffic volumes and overall service.