Define Level of Peer Review

It is the responsibility of the project manager to ensure that the traffic model is peer reviewed, while it is up to region traffic operations to define the peer review requirements. To assist with defining the peer review requirements, this policy defines four levels of peer review for traffic models:

1. Project team level review – The project team leads the peer review process, providing a high-level review (e.g., spot-check) of the traffic model. The region traffic modeler (if available) and/or region traffic operations will provide an in-depth review of the traffic model as needed. If the region does not have the available knowledge and/or resources, they *may* contact BTO-TESS for assistance with the in-depth review.
2. Region level review – The region traffic modeler and/or region traffic operations lead the peer review process. The project team will provide oversight of the peer review process and BTO-TESS, BSHP –PDAS, BPED –TFS, the Southeast (SE) region – TFS, and other statewide bureaus (SWBs) will assist in the peer review as needed. The region will provide an in-depth review of the traffic model. If the region does not have the available knowledge and/or resources, they *may* contract with an independent consultant (one that is not a member of the consultant team developing the traffic model) to assist as necessary.
3. Independent consultant level review – An independent consultant typically leads the peer review process, but works closely with the region traffic modeler and/or region traffic operations on all aspects of the review. The project team will provide oversight of the consultant's peer review and BTO-TESS, BSHP-PDAS, BPED-TFS, SE-TFS and other SWBs will assist in the peer review as needed. The independent consultant will provide an in-depth review of the traffic model while the region traffic modeler and/or region traffic operations will typically provide a high-level review. In cases where the region has the knowledge and resources available, they *may* choose to forego the use of an independent consultant.
4. SWB level review with Federal Highway Administration (FHWA) oversight - An independent consultant leads the peer review process, but works closely with the region traffic modeler, region traffic operations, BTO-TESS, BSHP-PDAS, BPED-TFS, SE-TFS, and other SWBs on all aspects of the review. The independent

consultant will provide an in-depth review of the traffic model while the region traffic modeler and/or region traffic operations and SWBs will typically provide a high-level review. In cases where the region has the knowledge and resources available, they *may* choose to forego the use of an independent consultant.

For projects constructed with federal funds, FHWA oversight of the peer review process will be required to ensure that the traffic model adheres to federal guidelines. The extent of FHWA involvement will vary depending on the specifics of the proposed project.

Note: BPED-TFS and/or SE-TFS should be involved in all levels of peer review, especially if the traffic model does not utilize the traffic volume and/or demand data directly from an official/approved traffic forecast provided by the department.

The level of peer review will vary depending on the complexity of the traffic model, which is dependent on the project type (mega/major project, high profile project, routine improvement project, etc.), project scope, corridor type, traffic control, roadway congestion level, and traffic analysis tool(s) utilized. However, a project team or region level review is typically sufficient for most HCM-based traffic models. The SWBs will be involved on high-profile projects, mega/major projects, and those projects that have potential for becoming a mega/major project.

The level of peer review *may* significantly impact the overall schedule and budget for a project, and *should* be determined early on during project scoping. However, the project team often has to wait for the initiation of the traffic analysis in order to define the level of peer review required. Therefore, the project team *should* assume the highest potential peer review level will be required when defining the schedule and budget for a project.

In order to quantify the level of complexity associated with building and reviewing a traffic model (specifically a microsimulation traffic model), the department worked with a consultant to establish a scoring system. The scoring system defines the level of complexity and the level of peer review required by assigning points within the following categories:

1. Project type
2. Geometric conditions
    a. Arterial corridor
    b. Freeway corridor
3. Traffic pattern/conditions
    a. Routing options
    b. Origin-destination (O-D) matrix development
    c. Level of congestion (existing and future)

Within the geometric conditions category there are two subcategories to define the type of corridor included in the analysis: arterial corridor (includes individual intersections, streets or corridor segments) and freeway corridor. The traffic pattern/conditions category contains three subcategories: routing options, O-D matrix development and existing/anticipated level of congestion. Figure 2.1 provides an illustration of the traffic model level of complexity scoring system.

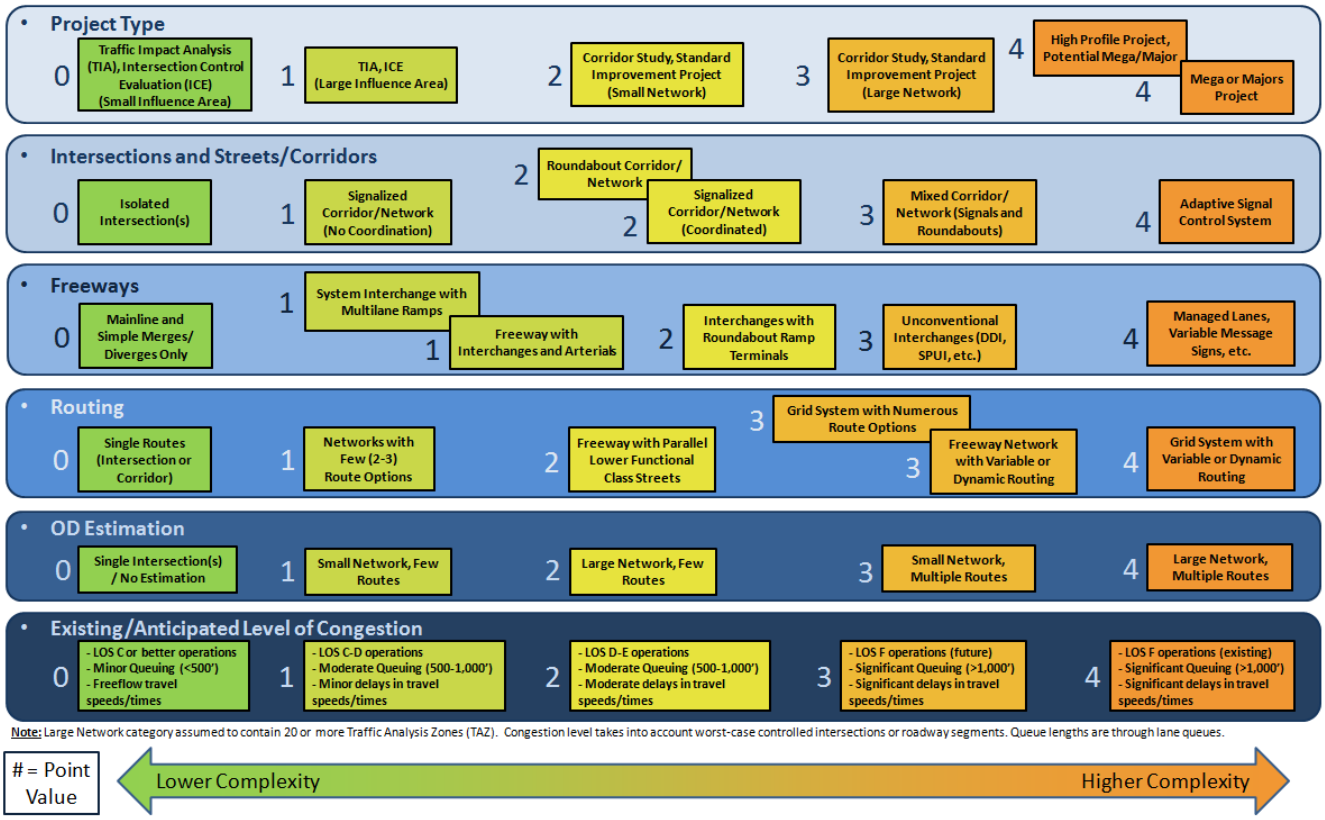

Figure 2.1 Traffic Model Complexity Scoring Diagram

As illustrated in Figure 2.1, there are several factors within each category and subcategory that define the complexity of a traffic model. For example, the complexity of a traffic model for an arterial corridor is dependent on whether the traffic model is an isolated intersection, an uncoordinated signalized corridor, a coordinated signalized corridor, a roundabout corridor, a mixed traffic control corridor (e.g., a corridor with signals and roundabouts), or an adaptive signal control system. Every factor has an associated level of complexity based on a scale of 0 to 4 (an isolated intersection has a complexity score of 0 while an adaptive signal control system has a complexity score of 4). If multiple factors are applicable, the score associated with the highest level of complexity dictates the overall score for that category or subcategory. For example, a Traffic Impact Analysis (TIA) project with a small influence area by itself has a complexity score of 0; however, if the TIA is a high profile project the score used in the "project type" category would be 4. The highest score within each category/subcategory is then summed to determine an overall complexity score for the traffic model (maximum score of 24). The higher the overall complexity score, the more likely it is that microsimulation traffic models will be necessary. Please refer to Attachment 2.1, a Microsoft Office Excel based template, for assistance with developing the overall complexity score for the traffic model. In coordination with region traffic operations, the project team's traffic lead or project manager *should* complete the traffic model complexity-scoring template.

The overall traffic model-complexity-score defines the minimum peer review requirements for the project. It is possible for a higher (more intense) level of peer review to be completed. Ultimately, it is up to region traffic operations to define the final peer review

requirements. Refer to Table 2.1 for the complexity score associated with each peer review level.

Due to modified roadway geometry, increased traffic volumes, reduced levels of congestion, etc., it is possible for the traffic model-complexity-score to be different under future alternative scenarios than it is under existing conditions. Therefore, it is critical to consider both existing conditions and potential future alternatives (including levels of service) when defining the traffic model complexity score and the associated level of peer review required. The highest traffic model-complexity-score across all of the scenarios (existing and future alternatives) dictates the minimum peer review requirements.

Table 2.1 Peer Review Level Requirements

Total Complexity Score [a]	Minimum Required Peer Review	Notes
0-3	Project Team Level Review [b]	• Project team leads peer review • Region provides in-depth review as needed
4-7	Region Level Review [b]	• Region provides in-depth review, • SWBs provide assistance as needed • Independent consultant review as needed
8-10	Independent Consultant Level Review	• Independent consultant leads review [c] • Region provides high-level review • SWBs provide assistance as needed
11+	SWB Level Review With FHWA Oversight [d]	• Independent consultant leads review [c] • Region and SWBs provide high-level review • FHWA oversight *may* be needed

(a) The scoring system identified within this table **shall** act as a guide and not as a rigid requirement. Ultimately, professional judgment will be required to determine the level of peer review needed.
(b) A project team or region level review is sufficient for most HCM-based traffic models.
(c) If the region has the required knowledge and resources, they *may* choose to forego the use of an independent consultant.
(d) This indicates when there is a high probability that FHWA oversight will be required. Prior to developing the traffic models, the project team *should* coordinate with FHWA to determine their level of involvement (if any).

Establish Peer Review Team

Upon defining the peer review requirements, the project team *should* meet with region traffic operations to identify the peer review participants and establish all internal and external stakeholders. This meeting *should* occur as early as possible, but **shall** occur prior to the initiation of the traffic analysis.

Table 2.2 provides a summary of the stakeholders to consider for inclusion on the peer review team. The peer review process will vary slightly from one project to another, thus Table 2.2 *should* serve as a guide (not a rigid requirement) when establishing the peer review team.

Table 2.2 - Potential Peer Review Participants

Stakeholder [(a)]	Level of Involvement	Notes
Region		
• Region Traffic Operations • Region Traffic Modeler (if available)	• All levels of peer review	Roles/responsibilities will vary based on level of review required
Statewide Bureaus		
• BTO-TESS and BSHP – PDAS	• SWB with FHWA oversight level review	Provides assistance as needed on all levels of peer review Provides high-level review of all mega/major project traffic models
• BPED-TFS and/or SE-TFS	• All levels of peer review	Provides high-level review of traffic volume/demand data (including O-D matrices) included in microsimulation traffic models
External Stakeholders		
• Independent Consultant	• Independent consultant level review • SWB with FHWA oversight level review	*May* get involved on lower level reviews if region staff do not have the necessary resources [(b)]
• FHWA	• FHWA oversight review	Typically involved on mega/major projects and Interstate Access Justification Reports (IAJRs) being federally funded
• Local Municipalities, Regional Planning Commissions (RPCs), Metropolitan Planning Organizations (MPOs)	Typically will not review the traffic model, but *may* participate in peer review discussions to ensure that local concerns are addressed [(c)]	

(a) The peer review team established for a specific project *may* include more or fewer members than those listed above.
(b) Region traffic operations *should* assess whether they have the knowledge and resources to complete the peer review; if not an independent consultant **shall** be selected/procured to complete the peer review regardless of the traffic model complexity.
(c) Early coordination with the Southeastern Wisconsin Regional Planning Commission (SEWRPC) for mega/major projects located in the SE region is highly recommended.

Although Table 2.2 provides insight into when the SWBs and/or FHWA *should* be involved with the peer review, unique situations not covered in the table *may* also trigger the need to involve a SWB or FHWA. Thus, the project team *should* coordinate with the SWBs and FHWA during project scoping to verify their level of involvement (if any) in the peer review process. In general, the SWBs (specifically BTO-TESS) will be involved on all mega/major projects and projects where FHWA participation in the peer review process is desired or required.

If the region does not have the knowledge and/or resources available to conduct the peer review of the traffic model, the project manager will most likely need to select and procure an independent consultant to complete the peer review, regardless of the traffic model complexity. If desired, the region *may* contact BTO-TESS for support or possibly, to conduct the peer review of the simpler traffic models (traffic model-complexity-score of 0-7).

If there is a need for an independent consultant, the project team *should* follow the process outlined in the department's Facilities Development Manual Chapter 8, Section 5 (FDM 8-5) to select and procure a consultant team to perform the necessary peer review. The Statewide Master Contract for Traffic Analysis and Modeling (BTO 03) and the Statewide Master Contract for Traffic Engineering Services (BTO 01) identifies the consultants that have been previously selected and authorized to conduct traffic engineering services (including traffic model peer reviews). The list of consultants on the master contracts are updated every two-years and are available through the Contract Administration Reporting System (CARS) application or through BTO-TESS. If desired, BTO-TESS can provide assistance with the selection of the independent peer review consultant.

In order to ensure a truly independent peer review, it is critical that the consultant chosen to conduct the peer review does not have any affiliation or conflict of interest with the consultant team selected to perform the traffic analysis.

Layout/Schedule Peer Review Process

Once the peer review team has been established, the project manager **shall** coordinate with the peer review team (typically via a coordination meeting) to identify the following components of the peer review process:

1. Project milestones which will trigger the need for a peer review
2. Roles of the individual peer review members
3. Data requirements
4. Schedule for conducting the peer review(s)
5. Transfer process for traffic model(s) and peer review comments

The following provides additional discussion on each of these components.

Identify Project Milestones

There are typically three major project milestones for a peer review: (1) completion of the existing year traffic model, (2) completion of the design year no-build traffic

model and (3) completion of each design year build/project alternative traffic model. Complex traffic models *may* warrant the need for peer reviews at additional project milestones, such as after the initial coding of the traffic model but prior to the full calibration of the traffic model. At the completion of the coordination meeting, both the project team and peer review team *should* have a clear understanding of where the peer review(s) *should* fall within the overall project timeline.

With HCM-based traffic models, the review of the existing year, design year no-build, and design year build/project alternative traffic models can occur simultaneously. However, due to the complexity of microsimulation traffic models, a peer review will typically be required at each of the three milestones described above. Consecutive review of the existing year, the design year no-build and the design year build/project alternative traffic models is required. In other words, the existing year traffic model **shall** be peer reviewed before the analyst can develop the design year no-build traffic model; and the design year no-build traffic model **shall** be peer reviewed before the analyst can develop the design year build traffic model.

The subsequent text provides a description of the three major milestones.

Milestone 1: Completion of Existing Year Traffic Model

The existing year traffic model replicates existing field conditions. Existing year traffic conditions *should* reflect the year that is as close to the original start of the traffic analysis as possible. A peer review is required at this project milestone to ensure that the traffic model provides an accurate representation of field conditions based on data collected by the project team and/or peer review team. At this milestone, BPED-TFS or SE-TFS *should* verify that the traffic model and traffic forecasts utilize a consistent existing volume data set.

Milestone 2: Completion of Design Year No-Build Traffic Model

The design year no-build traffic model reflects design year conditions absent of the proposed project. It will reflect design year traffic volumes and existing geometry or existing geometry with other planned and enumerated improvement projects. To be included in the design year no-build traffic model, the planned improvement projects need to occur after the existing year but prior to the proposed project's design year. The design year no-build conditions for a specific project *may not* match the no-build conditions reflected in the travel demand model (TDM). Thus BPED-TFS or SE-TFS *should* verify that the same assumptions (e.g., number of travel lanes) is reflected in both the traffic model and traffic forecasts.

Minor improvements (such as signal timing improvements) *may* need to be included in the design year no-build scenario in order for the traffic model to function with the design year traffic volumes. In these cases, the traffic model actually represents a design year do-minimum condition (e.g., minor improvements to the existing condition). The project team *should* clearly document these do-minimum improvements prior to the no-build traffic model peer review.

A peer review is required at this project milestone to confirm that the traffic model accurately depicts design year traffic volumes and to verify that the basic structure of the model is consistent with the existing year traffic model. If the analyst properly addresses and carries forward comments from the existing year model, the peer review process at the design year no-build project milestone *should* be less intensive than the initial peer review.

Milestone 3: Completion of Each Design Year Build/Project Alternative Traffic Model

The design year build traffic models capture design year conditions with the proposed project improvements. A peer review is required for each project alternative. Peer reviews are necessary at this project milestone to ensure that the traffic model is consistent with the previous traffic models and to verify that it accurately captures the proposed improvements. Checking for geometric improvements, changes in travel demand/traffic patterns, and consistency against the existing and no-build traffic models *should* be the focus of the design year alternative model reviews. BPED-TFS or SE-TFS *should* verify that the same assumptions (e.g., number of travel lanes) is reflected in the design year build traffic models and traffic forecasts.

Outline Roles/Responsibilities

Table 2.1 and Table 2.2 (shown previously) *may* be able to assist in the assessment of the general roles (e.g., high-level review, assistance as needed, etc.) for each peer review team member. The specific team member responsibilities (e.g., responsible for reviewing model network, responsible for reviewing traffic volume data, etc.), however, *should* be clarified during the coordination meeting.

Define Data Requirements

In an ideal world, all of the traffic data needed to validate that the traffic model is properly calibrated (i.e., provides an accurate representation of real-world conditions) will be collected during the development of the traffic model. In some instances, however, it *may* be necessary for the peer review team to gather additional data as part of the peer review process. If additional data is required, during the initial coordination meeting, the project team *should* define the data collection plan (e.g., how to obtain the data, when to collect the data, and who will collect the data).

Additionally, the peer review team *should* discuss whether there are any previously developed traffic models (specifically microsimulation traffic models) that could serve as a resource for the development, calibration, validation and peer review of the proposed traffic model.

Define Preliminary Schedule

The schedule for the peer review is highly dependent on the complexity of the traffic model and level of peer review required. The peer review of a highly complex traffic model that requires FHWA oversight will take longer to complete than the peer review of a relatively simple traffic model that only requires a project team level review. Since the peer review schedule impacts the overall schedule of the project, it is critical for the project team to define the peer review timeline as early in the project as possible, preferably during project scoping. The project team can utilize Table 2.3 to approximate the amount of time within the overall project schedule to allow for the peer review process. The timelines provided in Table 2.3 assume that BPED-TFS or SE-TFS have already generated and/or reviewed and approved the traffic forecasts utilized within the traffic model.

Table 2.3 - Peer Review Time Requirements

Level of Peer Review	Approximate Time Required to Complete Initial Peer Review (Including data collection, coordination, etc.)
Project Team Level Review	• 1-2 weeks for existing conditions • 6 weeks for existing/future volumes review by BPED-TFS or SE-TFS • 1-2 weeks for each additional project milestone/alternative
Region Level Review	• 3-4 weeks for existing conditions • 6 weeks for existing/future volumes review by BPED-TFS or SE-TFS • 3-4 weeks for each additional project milestone/alternative
Independent Consultant Level Review	• 4-8 weeks for existing conditions • 6 weeks for existing/future volumes review by BPED-TFS or SE-TFS • 4-8 weeks for each additional project milestone/alternative
SWB Level Review *Without FHWA Oversight*	• 4-8 weeks for existing conditions • 6 weeks for existing/future volumes review by BPED-TFS or SE-TFS • 4-8 weeks for each additional project milestone/alternative
With FHWA Oversight	• 12-16 weeks for existing conditions • 6 weeks for existing/future volumes review by BPED-TFS or SE-TFS • 12-16 weeks for each additional project milestone/alternative

Notes:

- The time ranges shown here are approximate, thus the project team *should* only utilize these timelines to approximate the amount of time within the overall project schedule to allow for the peer review process. Actual timelines are dependent on individual project details such as the amount of data collection and the complexity of the future models.
- All timelines shown here are associated with the review of a microsimulation traffic model. The review time required for HCM-based traffic models is dependent on the region resources.
- The peer review schedule *may* assume concurrent review by all internal WisDOT peer review team members (project team, region, independent consultant, SWB). However, the schedule *should* assume that FHWA peer reviews will only occur after the completion of WisDOT's review.
- If an independent consultant is required, add extra time to the schedule to account for scoping/contracting the independent consultant's work.

With the exception of FHWA, all members of the peer review team can conduct their review of the traffic model(s) simultaneously. WisDOT, however, *should* complete all internal department peer reviews (project team, region, independent consultant, statewide bureau reviews) prior to FHWA reviewing the traffic model(s). FHWA, however, *may* be available to answer questions and to provide suggestions for items to consider during internal department reviews.

Detail Traffic Model/Peer Review Comment Transfer Process

During the initial coordination meeting, the peer review team *should* layout the process for handing off the data (traffic model, peer review comments, etc.) between the analyst and the peer review team. It *may* be helpful for the project manager to set up a schedule for check-in-meetings or conference calls over the course of the peer review to help facilitate the exchange of data. The number and timing of these meetings will vary depending on the complexity of the traffic model, but could include the following:

- A hand-off meeting when the traffic model is ready to go to the reviewer(s),
- A preliminary findings meeting when the reviewer(s) has completed the initial review and developed their first thoughts and questions on the model,
- An ultimate findings meeting when the reviewer(s) has completed the peer review and
- A response meeting when the analyst has addressed the comments raised by the review team.

Conduct Peer Review

A key concept of the peer review process is to assess whether the traffic model has been implemented in a way that is suitable for meeting the goals and objectives of the study for which it is being built without violating current WisDOT policies (i.e., is the traffic model fit-for-purpose?). To assist the reviewer with making this decision, the project manager *should* provide the peer review team with a summary of the project scope, project goals, and intended purpose of the traffic model prior to initiating the peer review. It is important to affirm that the project scope is stable and unambiguous, as it will be difficult for the reviewer to assess the traffic model's fitness-for-purpose if the purpose itself is subject to change over the duration of the project. The project manager *should* also emphasize that the role of the reviewer is to identify problems and/or make suggestions to improve the quality of the traffic model, but not fix problems associated with the traffic model.

The following provides specific details on how to conduct a peer review for both HCM-based and microsimulation traffic models.

HCM Traffic Model Peer Review

A project team or region-level review will be sufficient for most HCM traffic models, although SWB involvement will be required for mega/major projects. The region traffic modeler and/or region traffic operations **shall** conduct, at a minimum, a high-level review of the HCM traffic model(s) to verify that the analyst has followed

standard protocols. To ensure consistency with the review of the traffic models, the reviewer (typically region traffic operations) *should* complete DT1887 – HCM Analysis Review Checklist while conducting their review. The reviewer, as appropriate, *should* insert "not reviewed" on DT1887 to denote which components of the traffic model were not addressed during their review. Attachment 2.2 provides a copy of DT1887.

The primary purpose of DT1887 is to provide a coversheet that summarizes the major concerns/issues the reviewer has on the traffic model. The reviewer *should* document the specific/detailed comments on the traffic model in a separate memorandum and attach it to DT1887.

DT1887 provides a mechanism for the reviewer to easily identify whether the specific parameters within the traffic model (e.g., lane geometry, signal timings, etc.) and overall traffic model is acceptable, conditionally acceptable or unacceptable. These terms are defined as follows:

- Acceptable - The traffic model is acceptable as is without any revisions,
- Conditionally acceptable - The traffic model is acceptable based on the condition that the traffic analyst addresses a few (no more than 5) specific issues or concerns either by revising the traffic model or providing additional justification as to why no additional revisions are necessary,
- Unacceptable – The traffic model needs major revisions.

As illustrated in DT1887, the typical components of the HCM traffic model that *should* be reviewed include:

- Traffic Analysis Tool/Version – Prior to developing the traffic model, region traffic operations and the analyst *should* have agreed upon the appropriate analysis tool to utilize. The reviewer *should* confirm that the traffic model was developed using the agreed upon analysis tool, specifically that the correct software, software version and software build (e.g., Synchro 8 Build 806, Sidra 6.1, etc.) have been utilized. The traffic models *should* only utilize the department-supported software packages. FDM 11-5-3.7 identifies the explicit software packages that the department supports.

  The reviewer *should* note any differences in the version and/or build of the software package utilized during the development and review of the traffic model.

- Lane Geometry – The reviewer *should* confirm that the traffic model depicts the proper lane geometry, including lane configurations, turn bay lengths, lane widths, right-turn channelization, and distance between intersections. In some situations, the HCM methodology *may not* allow the coding of the actual lane geometrics (e.g., the HCM methodology limits the number of approaches/lanes). In these cases, it *may* be necessary to utilize an alternative tool for the analysis. The analyst **shall** obtain prior approval from region traffic operations prior to utilizing modified lane geometry within the HCM traffic model. The agreed upon modifications to actual lane

geometries should be noted on DT1887 or in the accompanying comment memorandum.

- Traffic Volumes/Percent Trucks/Peak Hour Factor (PHF) – The reviewer should verify that the appropriate traffic volumes for the defined analysis year and time period have been accurately coded into the traffic model. Design year traffic volumes should reflect official WisDOT traffic forecasts (i.e., forecasts prepared or reviewed and approved by BPED-TFS or SE-TFS).

  If applicable, the analyst should provide documentation on the process completed to develop design hour volumes (K30, K100, K250, weekday AM/PM peak, etc.), to produce O-D matrices, and/or balance the traffic volumes along the corridor. The reviewer should look at the documentation and check the volume adjustments for reasonableness.

  The reviewer should verify that the appropriate percentage of trucks or heavy vehicles have been included in the analysis. Unless there is one movement that is predominately trucks (e.g., the movement goes into a truck parking facility), as prescribed in the HCM, the traffic model should include the percent of trucks/heavy vehicles based on intersection approach and not by the individual turning movement.

  Per FDM 11-5-3, the analysis of existing conditions should utilize a PHF based on data collected in the field, and is typically calculated for the intersection as a whole rather than approach or turning movement. FDM 11-5-3 also indicates that design year traffic analysis for the mainline roadway segment *may* utilize a PHF of 1.0.

- Signal Timing Parameters – At a minimum, the reviewer should verify that all traffic models that involve traffic signals utilize appropriate signal timing and phasing plans, saturation flow rates and right-turn-on red (RTOR) volumes. The reviewer should refer to the Traffic Signal Design Manual – Chapter 3, Subject 2, Section 2 (TSDM 3-2-2) for guidance on the recommended traffic signal timing parameters, including saturation flow rates. Region traffic operations *may* have additional guidance on the signal timing parameters.

  As noted in TSDM 3-2-2, RTOR usage is only applicable for signalized intersections with an exclusive right-turn lane. TSDM 3-2-2 indicates that the RTOR volume **shall** be the lesser of the following:

  - (3600/cycle length) * 2 or
  - 50% of the hourly right-turn volume.

  For the SE region the RTOR guidance summarized below should be utilized:

  - For single right-turn lanes – RTOR Volume = 50% of the hourly right-turn volume

- For dual right-turn lanes – RTOR Volume = 30% of the hourly right-turn volume
- For triple right-turn lanes – RTOR Volume = 20% of the hourly right-turn volume.

Regardless of the methodology utilized to calculate it, the RTOR volume should still be included as part of the total intersection volume.

- Stop-Control/Roundabout Parameters – The reviewer should verify that all traffic models that involve stop-controlled intersections utilize appropriate and reasonable critical gap, follow-up times, saturation flow rates, vehicle storage in the median and the presence of an upstream traffic signal. Unless justified otherwise by a field study, default values should be utilized for most parameters.

  WisDOT has established Wisconsin specific critical and follow-up headway values for the analysis of roundabouts (see FDM 11-26-20.4, Table 20.3). The reviewer should check for proper usage of these headway values for traffic models that include roundabouts.

- Freeway/Highway Parameters – For freeway weaving analysis, the reviewer should look at the source of the weaving volumes and verify that the assumptions made to determine the volumes are in accordance with the previously agreed upon methodology. Additionally, the reviewer should check the weaving segment length, number of maneuver lanes and the minimum number of lane changes utilized in the analysis.

  For freeway merge or diverge analysis, the reviewer should inspect the basic number of lanes, acceleration or deceleration lengths and volume inputs for accuracy.

  For basic highway segments, the reviewer should examine the road classification, access density, no-passing zone inputs and free-flow speed for accuracy.

- Measures of Effectiveness (MOEs) – The reviewer should look at the key MOEs that are applicable to the proposed project to verify their acceptability in terms of operation. Some of the key MOEs include level of service (LOS), 95th percentile back-of-queue length, delay and density. Additional MOEs *may* include volume-to-capacity ratio (v/c), travel time, and travel time reliability.

- Other – The reviewer should note any other aspects of the traffic model (e.g., growth rates, gap acceptance, lane utilization, link speeds, etc.) that they checked during their evaluation. Additionally, the reviewer should provide any general comments they have regarding the overall performance of the traffic model.

Upon completion of their evaluation, the reviewer should provide a copy of the completed DT1887 to the project team and/or analyst for their response. The reviewer only needs to complete one DT1887 for an entire corridor; there is no need to complete DT1887 for every intersection along the corridor.

The analyst should note on the DT1887 form how they propose to respond to any comments on the traffic model (e.g., revise the traffic model or provide justification for their original assumptions). The Document Results Section provides additional detail on how to document this correspondence.

Microsimulation Traffic Model Peer Review Overview

Due to their complexity, microsimulation traffic models typically require an independent consultant and/or SWB level of review. Each member of the peer review team should complete DT2291 – Microsimulation Peer Review Report to document their findings, comments, and concerns related to the traffic model. The reviewer, as appropriate, should insert "not reviewed" on DT2291 to denote which components of the traffic model were not addressed during their review. The reviewer **shall** complete a peer review after each project milestone; however, they *may* combine their comments from each milestone onto one form. Attachment 2.3 provides a copy of DT2291.

The first page of DT2291 is where information regarding the peer review and traffic model is denoted (e.g., review date, reviewer and analyst contact information, model completion/revision date, etc.).

The heart of the DT2291 form (pages 2 through 8) is where the reviewer documents their observations regarding the traffic model features and characteristics. This section of the form uses a three-column format. The left side of the form is where the reviewer identifies the overall acceptably of the traffic model component (acceptable, conditionally acceptable or unacceptable) and notes the extent of the revisions required (no revisions, minor revisions, moderate revisions, or major revisions).

The center of the form provides space for detailed technical comments including reviewer-to-analyst communications. The reviewer should attach or insert additional sketches, screen shots, calculations, or other information that will assist the analyst in understanding the problems identified in the traffic model. Where relevant, DT2291 *may* include suggested techniques for improving the traffic model.

The right side of the form provides an area for the analyst to address the reviewer's comments. This is where the analyst should identify if and how they will revise the traffic model. If the analyst feels that no revisions to the traffic model are necessary, they should provide justification for their original assumptions.

The final section of DT2291 is the reviewer's sign-off. In this section the reviewer should unequivocally inform the analyst and project team whether the model is (or is not) suitable for the intended purpose. If the traffic model is deemed

unacceptable, the reviewer summarizes the number and severity of the revisions required (e.g., 2 minor and 1 major revision to the traffic model are required).

While DT2291 provides documentation of the overall peer review process, it should not serve as the sole means of communication between the reviewer and the analyst. The reviewer should document all communications with the analyst and attach them to DT2291 for future reference. Ultimately, it is the responsibility of the project manager to monitor the peer review process to ensure efficient communication between the peer review team and the analyst.

Conducting the Peer Review

Regardless of the software program utilized to develop the traffic model, a good first step is to open up the traffic model and observe the simulation. This allows for a visual inspection of the traffic model to identify if there is anything that just does not look right (e.g., vehicles make dramatic movements, vehicles suddenly drop off the network, vehicles are turning left from an exclusive right-turn lane, etc.). The visual inspection can help the reviewer identify which portions of the traffic model they should concentrate their review efforts.

As illustrated in DT2291, the typical features and characteristics of a microsimulation traffic model that should be reviewed include:

- Network Coding
- Intersection Traffic Control and Ramp Metering
- Closures, Restrictions, and Incidents
- Entrance Ramps
- Lane Use Parameters
- Zone Structure/Vehicle Inputs
- O-D Matrices, Demand Profiles, and Time Periods
- Core Simulation Parameters
- Routing Parameters/Vehicle Routes
- Vehicle Types and Proportions
- Stuck/Stalled Vehicles
- Special Features
- Consistency with Related Traffic Models
- Calibration/Validation
- Documentation

This list is not all-inclusive and should only serve as a starting point for the peer review. It is possible for a traffic model to be deemed acceptable based on all features listed above and yet still not be fit-for-purpose. The reviewer should keep a clear understanding of the project scope, goals, and intended purpose of the traffic model in mind while conducting the peer review. Additionally, the peer review process should always take into consideration the current capabilities and limitations of the software package and version utilized in development of the traffic model as new software features are seldom foolproof. The following text provides details on the key parameters of the traffic model that the reviewer should assess during their evaluation. Currently the department supports the use of SimTraffic and Paramics for microsimulation but realizes that limitations of these software

packages *may* justify the utilization of Vissim. BTO-TESS must pre-approve the utilization of Vissim. The guidance below is specific for SimTraffic, Paramics and Vissim; however, the general principles are applicable for all microsimulation software packages.

Refer to Exhibit 2.1 for additional information about how to evaluate each key feature of the traffic model.

Network Coding

Network coding establishes the horizontal and vertical geometry of the roadway network, including intersection spacing and roadway curvature. Network coding also includes appropriate use of settings such as link free-flow speed and turning speeds.

Intersection Traffic Control and Ramp Metering

Intersection controls are devices that regulate traffic flow at intersections (e.g., signals, roundabouts, stop control and ramp meters). Elements of the signals/ramp meters *may* include the controller type, detector placement, signal heads, signal groups, coordination between signals, signal phasing and/or signal/ramp meter-timing plans.

Closures, Restrictions and Incidents

Closures represent temporary or permanent roadway segment, link, or lane closures (i.e., traffic is restricted from using that particular roadway segment, link, or lane). Restrictions represent links or lanes where travel is restricted, either temporarily or permanently, to specific vehicle types (e.g., lanes designated for high-occupancy-vehicles (HOV) or lanes restricting truck use). Incidents include simulated vehicle breakdowns, crashes, etc.

Entrance Ramps

Entrance ramps or freeway merge areas typically require careful coding in microsimulation. This section generally refers to parallel freeway entrance ramps, although there are instances where this feature is appropriate for arterials as well. The reviewer should review the lane utilization upstream of the entrance ramp, the aggressiveness of the merging vehicles (e.g., minimum time on entrance ramp, driver headway factors), and the length of the acceleration lane and/or taper parallel to the entrance ramp.

Lane Use Parameters

Lane use parameters control the amount and/or destination of the traffic using each lane. A typical application of these parameters is to pre-position vehicles in advance of a fork in the road.

Zone Structure/Vehicle Inputs

Zone structure and vehicle inputs define where and how traffic is loaded into the network.

O-D Matrices, Demand Profiles & Time Periods

O-D matrices contain the network demand patterns (number of trips traveling between each pair of zones). Time periods and demand profiles control the timing for the release of vehicles into the network (e.g., are the vehicles released at a steady rate or at a gradually increasing/decreasing rate). In some cases, it is necessary to use multiple O-D matrices and/or demand profiles (e.g., there *may* be one matrix for cars and a second matrix for trucks). The reviewer should evaluate the source of the demand profile and time period selection. BSHP-PDAS, BPED-TFS and/or SE-TFS should weigh in on the appropriate use of these features within the traffic model and *may* provide suggestions for source data (e.g., annual traffic recorders [ATR] data).

Core Simulation Parameters

Core simulation parameters affect fundamental aspects of vehicle behavior in the network, such as driver aggressiveness and the willingness to merge into small gaps. Default values are acceptable for some parameters, but other parameters require project-or-area-specific values. Thus, the reviewer should check all core simulation values for reasonableness.

Routing Parameters/Vehicle Routes

Routing parameters influence the way vehicles travel through the network. If coded improperly, these controls can cause unrealistic or erratic routing.

Vehicle Types and Proportions

The proportion and types of vehicles (such as trucks, buses and high-occupancy-vehicles) influences the overall performance of each part of the network. The reviewer should verify that the traffic model utilizes actual field data to the best extent possible.

Stuck/Stalled Vehicles

Stuck or stalled vehicles are vehicles that unexpectedly slow or stop partway through their route. They can cause backups that do not exist in the field. The reviewer should note any problems with stuck or stalled vehicles, including intermittent problems.

Special Features

Special features include site or study-specific items such as the use of detectors, car parks, variable message signs, special purpose lanes, speed harmonization, public transit routes, toll lanes, toll plazas, pedestrian modeling, special graphics, Application Programming Interfaces (APIs), among others.

Consistency with Related Traffic Models

Complex projects often involve a series of related traffic models (existing, future no-build, future build alternatives, different times of day, etc.). To assure the integrity of the study as a whole, these traffic models must be consistent. Additionally, adjacent and overlapping model areas should utilize consistent analysis methodologies. The results of the traffic model should not contradict the results of the TDM.

Calibration/Validation

Calibration refers to the process where the analyst adjusts selected parameters within the traffic model (e.g., global and local headway and reaction times, driver aggressiveness, etc.) in order to get the traffic model to reproduce conditions observed in the field.

Validation refers to the process where the analyst checks the traffic model outputs against field measured data including traffic volumes, travel speeds, travel times, intersection queuing and trip-making patterns (e.g., weaving volumes). Validation is performed utilizing field data that is different from the data utilized during calibration of the traffic model.

A properly calibrated and validated traffic model should accurately reflect real-world traffic conditions. The analyst should document the methodology and assumptions utilized to calibrate and validate the traffic model and submit the calibration/validation report along with the traffic model for review by the peer review team.

The reviewer should spot-check the traffic model outputs and compare them to the results documented in the calibration/validation report. If the reviewer cannot produce similar outputs, it *may* indicate an issue with the traffic model's calibration.

Documentation

Proper documentation of modeling methods and assumptions establishes accountability and facilitates efficient revision, updating, and follow-up. The review team should verify proper documentation of the modeling methods.

Document Results

It is critical to document any correspondence between the peer review team and traffic analyst regarding the peer review process. The correspondence should be documented within or attached to the appropriate review form (DT1887 and/or DT2291), and **shall** include how the traffic analyst revised the traffic model to address the peer review comments or provide justification as to why no revisions to the traffic model were made. On projects where the peer review team and traffic analyst interact frequently, it *may* be necessary to provide a separate document to detail all of the correspondences. Attachment 2.4 provides examples of ways to document the communication between the project team and traffic analyst. The project manager **shall** include the additional

documentation along with all completed DT1887 and/or DT2291 forms within the project's records file.

The region **shall** provide a summary of the peer review process for all microsimulation traffic models (including all SimTraffic models used for design related decisions) to BTO-TESS for information and tracking purposes. The summary **shall** identify the following aspects associated with the peer review process:

1. Project information (project identification number, project name, study area, study limits)
2. Name of analyst who constructed the traffic model
3. Name of lead peer reviewer
4. Summary of peer review results (DT1887, DT2291, correspondence documentation)
5. Copy of all FHWA comments on the traffic model

Even if BTO-TESS is not involved with the peer review process, it is generally advantageous for the project team to inform BTO-TESS of any pending peer reviews, specifically those for a microsimulation traffic model. This allows BTO-TESS to assess whether there are any potential overlapping peer reviews that *may* impact the project's schedule.

The project manager or region traffic operations **shall** email a copy of all interim and final DT2291 forms, including FHWA comments, to DOTTrafficModelPeerReview@dot.wi.gov. Region traffic operations **shall** also include a copy of the relevant DT1887 and/or DT2291 forms with the submittal of all Phase II – Alternative Selection Intersection Capacity Evaluation (ICE) reports.

Traffic Model Complexity - Peer Review Scoring Template

FINAL 2015-07-31

WisDOT CO Microsimulation Peer Review Pilot Project

Instructions: Fill in gray boxes to determine level of traffic model peer review effort required. Choose appropriate project category in **Table 1: Project type**. Choose primary network type in **Table 2: Geometrics Scoring** and mark applicable categories. Mark all applicable categories in **Table 3: Traffic Pattern and Congestion Scoring**. Final scoring reflects the highest point value in each table (maximum of 24 points). **Table 4** shows the recommended procedure for selecting and scoping the traffic model peer review. Consider existing conditions and potential future alternatives that the project/study is anticipated to cover.

WisDOT Region:		Ex: SE, SW, NE
Project:		Ex: STH __ Corridor Study
Project ID:		Ex: 1234-56-7890
Project Description:		Ex: City - City
Highway:		Ex: STH __
County:		Ex: Dane County
Traffic Conditions:		Ex: Base (Existing), Base and Future
Modeling Software:		Ex: Paramics, Vissim, SimTraffic

General Project Description:
Ex: Limits of project (Size of Network, # of TAZs), other software used for analysis, anticipated O-D data source, assumptions on Future scenarios, etc.

Table 1: Project Type

Complete (1):	Check all that apply:						
(1) Project Type	Category	Traffic Impact Analysis (TIA), Intersection Control Evaluation (ICE), or similar (Small Influence Area)	Traffic Impact Analysis (TIA), Intersection Control Evaluation (ICE), or similar (Large Influence Area)	Corridor Study/Operational Needs Study or Standard Improvement Project (Small Network)	Corridor Study/Operational Needs Study or Standard Improvement Project (Large Network)	High Profile Project, Potential Mega/Major Project (EA, PEL, EIS)	Mega or Majors Project
	Point Total	0	1	2	3	4	4
	Applicable?	0	0	0	0	0	0

Note: Large Network category assumed to contain 20 or more Traffic Analysis Zones (TAZs).

Table 2: Geometrics Scoring

Choose (1) or (2):	Check all that apply:						
(1) Intersections and Streets/Corridors	Category	Isolated Intersection(s)	Signalized Corridor / Network (No Coordination)	Roundabout Corridor / Network	Signalized Corridor / Network (Coordinated)	Mixed Corridor / Network (Signals and Roundabouts)	Adaptive Signal Control System
	Point Total	0	1	2	2	3	4
	Applicable?	0	0	0	0	0	0
Or							
(2) Freeways	Category	Mainline and Simple Merges/Diverges Only	System Interchange with Multilane Ramps	Freeway with Interchanges and Arterials	Interchanges with Roundabout Ramp Terminals	Unconventional Interchanges (DDI, Echelon, SPUI, etc.)	Managed Lanes, Variable Message Signs, etc.
	Point Total	0	1	1	2	3	4
	Applicable?	0	0	0	0	0	0

Table 3: Traffic Pattern and Congestion Scoring

Complete (1), (2), and (3):	Check all that apply:						
(1) Routing	Category	All-or-Nothing Routing Assignment				Dynamic/Variable Routing	
		Single Routes (Intersection or Corridor)	Networks with Few (2-3) Route Options	Freeway with Parallel Lower Functional Class Streets	Grid System with Numerous Route Options	Freeway Network with Parallel Route Options	Grid System with Numerous Route Options
	Point Total	0	1	2	3	3	4
	Applicable?	0	0	0	0	0	0
(2) OD Estimation	Category	Single Intersection(s) / No Estimation	Small Network, Few Routes	Large Network, Few Routes	Small Network, Multiple Routes	Large Network, Multiple Routes	
	Point Total	0	1	2	3	4	
	Applicable?	0	0	0	0	0	
(3) Existing/Anticipated Level of Congestion	Category	- LOS C or better operations - Minor queuing (<500') - Freeflow travel speeds/times	- LOS C-D operations - Moderate queuing (500-1,000') - Minor delays in travel speeds/times	- LOS D-E operations - Moderate queuing (500-1,000') - Moderate delays in travel speeds/times	- LOS F operations (future) - Significant queuing (>1,000') - Significant delays in travel speeds/times	- LOS F operations (existing) - Significant queuing (>1,000') - Significant delays in travel speeds/times	
	Point Total	0	1	2	3	4	
	Applicable?	0	0	0	0	0	

Note: Large Network category assumed to contain 20 or more TAZs. Congestion level takes into account worst-case controlled intersections or roadway segments. Queue lengths are through lane queues.

Table 4: Scoring Results and Recommendations

Project Type		
	Total	0
Geometrics Subtotal	Intersections and Corridors	0
	Freeways	0
	Total	0
Traffic Pattern and Congestion Subtotal	Routing	0
	OD Estimation	0
	Level of Congestion	0
	Total	0
Total Points		0

Point Scale	Review Recommendation Type	Estimated Schedule for Initial Review (including data collection, coordination, etc.)
0 - 3	High-level WisDOT Region review.	1-2 weeks existing conditions 1-2 weeks per alternative
4 - 7	WisDOT Region conducts peer review with assistance from independent consultant or BTO as necessary.	3-4 weeks existing conditions 2-3 weeks per alternative
8 - 10	Independent consultant conducts peer review with WisDOT Region input and BTO assistance as necessary.	4-8 weeks existing conditions 2-3 weeks per alternative
11+	Independent consultant conducts peer review with WisDOT Region, BTO, other WisDOT Bureau involvement and FHWA oversight.	2-4 months existing conditions (no FHWA) 1 month per alternative (no FHWA) 3-4 months existing conditions (with FHWA) 1-2 months per alternative (with FHWA)

Access the Excel File via the following link: \\MADFDCVFILPI13\n4public\BHO\Traffic Analysis and Modeling\Peer Review\Scoring Template\07-31-15\2015-07-31 Traffic Model Peer Review Scoring Template - Final.xlsx

HCM ANALYSIS REVIEW CHECKLIST

Wisconsin Department of Transportation (WisDOT)

DT1887 8/2015

Attachment 2.2 DT1887 HCM Analysis Review Checklist

		Date Reviewed (m/d/yyyy)		
Project ID(s)	Region:	1st Review	2nd Review	3rd Review
Project Name/Description	Highway(s)	Reviewed By:		

Lead Reviewer	Lead Analyst	Region Contact
Name (First, MI, Last)	Name (First, MI, Last)	Name (First, MI, Last)
Organization/Firm	Organization/Firm	Region/Bureau
(Area Code) Telephone Number	(Area Code) Telephone Number	(Area Code) Telephone Number
Email Address	Email Address	Email Address

TRAFFIC MODEL DESCRIPTION

Model Completion/Revision Date (m/d/yyyy)	Analysis Year(s)	Analysis Scenario/Alternative

Scope of Model (intersections, ramps, corridors, etc. being reviewed)

Analysis Time Period (s)

☐ Weekday AM Peak Hours: _____ ☐ Weekday Midday Peak Hours: _____ ☐ Weekday PM Peak Hours: _____ ☐ Fri Peak Hours: _____ ☐ Sat Peak Hours: _____ ☐ Sun Peak Hours: _____ ☐ Other: _____ Hours: _____

Analysis Tool(s) Utilized

☐ HCS - Version: _____ ☐ Synchro – Version/Build: _____ ☐ Sidra - Version: _____ ☐ Other: _____ - Version: _____

SUMMARY OF REVIEW

Item Reviewed	Overall Model Acceptability	Revision Required	Reviewer Comment(s)	Analyst Response(s)
Traffic Analysis Tool/Version	☐☐☐ Acceptable ☐☐☐ Unacceptable ☐☐☐ Conditionally Acceptable	☐☐☐ No ☐☐☐ Yes		
Lane Geometry	☐☐☐ Acceptable ☐☐☐ Unacceptable ☐☐☐ Conditionally Acceptable	☐☐☐ No ☐☐☐ Yes		
Traffic Volumes, % Trucks, Peak Hour Factor (PHF)	☐☐☐ Acceptable ☐☐☐ Unacceptable ☐☐☐ Conditionally Acceptable	☐☐☐ No ☐☐☐ Yes		

(continued on reverse side)

SUMMARY OF REVIEW *(continued)*

Item Reviewed	Overall Model Acceptability	Revision Required	Reviewer Comment(s)	Analyst Response(s)
Signal Parameters (including RTOR)	☐ Acceptable ☐ Unacceptable ☐ Conditionally Acceptable ☐ N/A	☐ No ☐ Yes		
Stop-Control/Roundabout Parameters	☐ Acceptable ☐ Unacceptable ☐ Conditionally Acceptable ☐ N/A	☐ No ☐ Yes		
Freeway/Highway Parameters	☐ Acceptable ☐ Unacceptable ☐ Conditionally Acceptable ☐ N/A	☐ No ☐ Yes		
Measures of Effectiveness (MOEs)	☐ Acceptable ☐ Unacceptable ☐ Conditionally Acceptable ☐ N/A	☐ No ☐ Yes		
Other:	☐ Acceptable ☐ Unacceptable ☐ Conditionally Acceptable	☐ No ☐ Yes		
Overall Model	☐ Acceptable ☐ Unacceptable ☐ Conditionally Acceptable	☐ No ☐ Yes		

MICROSIMULATION PEER REVIEW REPORT

Wisconsin Department of Transportation (WisDOT)

DT2291 9/2015

Reviewer, please email completed form to:

To: Project Manager & Region Contact

CC: DOT Traffic Model Peer Review

Subject: DT2291 for Project ID; Traffic Model Name

	1st Review	2nd Review	3rd Review
Date Reviewed (m/d/yyyy):			
Reviewed By:			
Model Completion/Revision Date(m/d/yyyy):			

CONTACT INFORMATION

Lead Reviewer	Lead Analyst	Region Contact
Name (First, MI, Last)	Name (First, MI, Last)	Name (First, MI, Last)
Organization/Firm	Organization/Firm	Region/Bureau
(Area Code) Telephone Number	(Area Code) Telephone Number	(Area Code) Telephone Number
Email Address	Email Address	Email Address

TRAFFIC MODEL DESCRIPTION

Project ID(s)	Project Name/Description	Region:	Highway(s)
Traffic Model Name/Description	Analysis Scenario/Alternative	Analysis Year(s)	

Analysis Time Period (s)

☐ Weekday AM Peak Hours: ☐ Weekday Midday Peak Hours: ☐ Weekday PM Peak Hours: ☐ Fri Peak Hours: ☐ Sat Peak Hours: ☐ Sun Peak Hours: ☐ Other: Hours:

Analysis Tool(s) Utilized

☐ SimTraffic- Version: ☐ Paramics - Version: ☐ Vissim - Version: ☐ Other: - Version:

SCOPE AND EXTENT OF PEER REVIEW

Purpose & Scope of Review

Description/Limit of Model

Configuration Settings

Number of Zones:	Number of Time Steps:	Speed Memory:	Assignment Type:
Mean Target Headway:	Mean Reaction Time	Matrix Structure	Vehicle Classifications/Splits

Seed Values Used for Calibration:	
Seed Values Used for Review:	
Other:	

Were any changes to the model made by the review team? If yes, please describe.

DIRECTIONS

This form is applicable for the review of all microsimulation traffic models, regardless of the traffic software program utilized to develop the traffic model. However, this form focuses on the SimTraffic, Paramics and Vissim microsimulation software packages.
When noting problems or concerns, identify the severity of the issue and the revisions recommended using the following scale: Minor, Moderate, or Major. Check the appropriate box associated with each review (the blue box for the 1st review, the green box for the 2nd review and the purple box for the 3rd review).
If more than one review of the traffic model is required, use different color text to distinguish the comments associated with each review (e.g., comments from the 1st review should be in blue text, comments from the 2nd review should be in green text, and comments from the 3rd review should be in purple text). Provide any supporting tables, screenshots, or additional images in a separate attachment to this form.

OBSERVATIONS, MODEL FEATURES AND CHARACTERISTICS

Geometrics /Traffic Control

Network Coding	*Network Coding establishes the horizontal and vertical geometry of the network. It also includes the appropriate use of settings such as link free-flow speed.* • *For SimTraffic, this is coded within the Synchro module and includes placement and interconnection of nodes and links, number of lanes, lane widths, lane configurations, roadway curvature, storage lengths, and other intersection and network geometry.* • *For Paramics this includes placement and interconnection of nodes, links and link categories, curb points, curves, turn lanes, merge points, stop bars, signposts, and other network infrastructure.* • *For VISSIM this includes the placement and interconnection of links, connectors, desired speed decisions, reduced speed areas, conflict areas, and priority rules.*	
As a whole, network coding is:	**Observations/Comments:**	**Analyst Response**
☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review
Intersection Traffic Control & Ramp Metering	*Intersection Controls are devices that regulate traffic flow at intersections, such as signals, roundabouts, and stop-controlled intersections. Elements of the signals may include the controller type, detector placement, signal heads, signal groups, and/or coordination between signals. Ramp meters control the rate of entry to a freeway. Comments on signal and ramp meter timing plans may be included in this section.*	
As a whole, intersection controls are:	**Observations/Comments:**	**Analyst Response**
☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review

Geometrics /Traffic Control

Closures, Restrictions, & Incidents	*Closures represent links or lanes that are temporarily or permanently closed to traffic. Restrictions represent links or lanes that are temporarily or permanently closed to specific types of vehicles (such as lanes designated for High Occupancy Vehicles or lanes restricting truck use). Incidents include simulated vehicle break-downs, etc.* • *This feature is **not** applicable for SimTraffic*	
As a whole closures, restrictions & incidents are:	**Observations/Comments:**	**Analyst Response**
☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review
Entrance Ramps	*Driver behavior and lane utilization approaching entrance ramps should be reviewed in this section.* • *For SimTraffic, modifications to the default mandatory distance and positioning distance settings should be reviewed.* • *For Paramics, modifications to default ramp headway, minimum ramp time, and ramp aware distance should be reviewed. The minimum ramp time setting specifies how long a driver will stay on the parallel entrance ramp before beginning to look for a gap to merge onto the freeway.* • *For VISSIM, the effective merging area defined by the positions of the links and connectors should be reviewed.*	
As a whole, the vehicle behavior approaching entrance ramps is:	**Observations/Comments:**	**Analyst Response**
☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review
Lane Use Parameters	*Lane use parameters control the amount and/or destination of the traffic using each lane. A typical application of these parameters is to pre-position vehicles in advance of a fork in the road*	
As a whole, lane use parameters are:	**Observations/Comments:**	**Analyst Response**
☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review

Traffic/Global	***Zone Structure/Vehicle Inputs***	*Zone structure and vehicle inputs define where and how traffic is loaded into the network.* • *For SimTraffic, the intersection turning movement volumes from the Synchro module determine how the traffic is loaded into the network. If volumes are imbalanced in the Synchro network, SimTraffic will assume a traffic source or sink between nodes (such as driveways). Reviewer should note imbalances that may not be realistic or representative of the network.* • *For Paramics, zone structure relates to the placement of the zones representing the locations where traffic enters or leaves the network. Observations related to sectors and zone connectors should be included in this section. If the microsimulation model zones are derived from a travel demand model, reviewers should use this section to note any issues related to the consistency of the Paramics input data with respect to the travel demand model data.* • *For VISSIM, vehicle inputs control where traffic is loaded into the network and how much is loaded. Reviewer should use this section to note any issues related to the consistency of input data related to the sources.*	
	As a whole, zone structure and vehicle inputs are:	**Observations/Comments:**	**Analyst Response**
	☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review
	O-D Matrices, Demand Profiles, & Time Periods	*Origin-Destination (O-D) matrices contain the network demand patterns (number of trips between each pair of zones). Time Periods and Demand Profiles control the timing of the release of the trips into the network. In some cases multiple matrices are used (for example separate matrices for cars and heavy trucks). The reviewer should evaluate the source of the demand profile and time period selection.* • *For SimTraffic, network-wide O-D Matrices and demand profiles are not applicable. The intersection turning movement volumes, rather than network-wide O-D matrices, determines the origin and destination of the traffic. The Link O-D volumes setting can be modified within Synchro to model the weaving interaction between 2 adjacent intersections (such as zeroing out an off-ramp left-turn to on-ramp left-turn movement at a diamond interchange). Volume adjustment factors, rather than demand profiles, dictate the percentage of peak hour traffic to load into the network for each analysis period. Thus the intersection turning movement volumes, Link O-D volumes, volume adjustment factors (such as growth factor and PHF adjust settings), and the time and duration of the seeding (i.e., warm-up period) and recording (i.e., analysis period) periods should be reviewed.*	
	As a whole, O-D matrices, demand profiles, & time periods are:	**Observations/Comments:**	**Analyst Response**
	☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review

Traffic/Global	***Core Simulation Parameters***	*Core simulation parameters affect fundamental aspects of vehicle behavior in the network, such as driver aggressiveness and the willingness to merge into small gaps. Modifications to default software values should be reviewed.* • *For SimTraffic, examples of core simulation parameters to review include driver and vehicle characteristics and behaviors.* • *For Paramics, examples of core simulation parameters to review include mean target headway, mean target reaction time, perturbation, global routing cost coefficients, driver familiarity, time steps, speed memory, allowing heavy vehicles to use all lanes, and matrix tuning.* • *For VISSIM, examples of core simulation parameters to review include Driving Behaviors, Simulation Resolution, and Speed Distributions.*	
	As a whole, core simulation parameters are:	**Observations/Comments:**	**Analyst Response**
	☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review
	Routing Parameters/ Vehicle Routes	*Routing parameters or vehicle routes influence the way vehicles travel through the network. If coded improperly, these controls can cause unrealistic or erratic routing.* • *This feature is **not** applicable for SimTraffic. However, interaction between intersections can be checked as noted with the Link O-D feature in the O-D Matrices, Demand Profiles, & Time Periods section.* • *For Paramics, routing parameters (such as cost factors, turn penalties, modification of the link type hierarchy, and waypoints) override the default routing behavior and profoundly influence the route choice in the network. They are occasionally used to increase or decrease the traffic volume on specific links.* • *For VISSIM, vehicle routes and vehicle routing decisions control the flow of traffic from the entrance points through the network. They can be coded using either actual vehicle flows or percentages.*	
	As a whole, traffic routing parameters are:	**Observations/Comments:**	**Analyst Response**
	☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review

Traffic/Global

Vehicle Types & Proportions	*The proportion of vehicles (such as trucks, buses, and High Occupancy Vehicles) influences the overall performance of each part of the network. Vehicle lengths (such as heavy truck lengths) should be reviewed.*	
As a whole, vehicle types & proportions are:	**Observations/Comments:**	**Analyst Response**
☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review
Stuck/Stalled Vehicles	*This section should be used to note any problems with stuck or stalled vehicles (including intermittent problems). These are vehicles that unexpectedly slow or stop partway through their route (which can cause backups that do not exist in the field).* • *For Paramics, this section should also be used for comments on the use of blockage removal tools, if used.* • *For SimTraffic, this section should be used to comment on if short links may be resulting in stuck or stalled vehicles within the network.*	
As a whole, stuck/stalled vehicle occurrence is :	**Observations/Comments:**	**Analyst Response**
☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review
Special Features	*Special features include site- or study-specific items such as the use of detectors, car parks, variable message signs, special purpose lanes, speed harmonization, public transit routes, toll lanes, toll plazas, pedestrian modeling, special graphics, Application Programming Interfaces (APIs), etc* • *At present, SimTraffic will not model bus stops, bus routes, bus and carpool lanes, light rail, on-street parking, or short term event; thus, the use of special features is typically not applicable in SimTraffic.*	
As a whole, use of special features is :	**Observations/Comments:**	**Analyst Response**
☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review

Traffic/Global	***Consistency with Related Traffic Models***	*Modeling studies often involve a series of related models (base model, future no-build, and build alternatives, different times of day, etc.). To assure the integrity of the study as a whole, these models must be consistent.*	
	As a whole, model consistency is :	**Observations/Comments:**	**Analyst Response**
	☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review
Calibration/Validation/Documentation	***Calibration/Validation***	*Calibration refers to the process where the analyst adjusts selected parameters within the traffic model (e.g., global and local headway and reaction times, driver aggressiveness, etc.) in order to get the traffic model to reproduce conditions observed in the field. Validation refers to the process where the analyst checks the traffic model outputs against field measured data including traffic volumes, travel speeds, travel times, intersection queuing and trip-making patterns (e.g., weaving volumes). The reviewer should spot-check the traffic model outputs and compare them to the results documented in the calibration/validation report. If the reviewer cannot produce similar outputs, it may indicate an issue with the traffic model's calibration.*	
	As a whole, model calibration is :	**Observations/Comments:**	**Analyst Response**
	☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review
	Documentation	*Proper documentation of modeling methods and assumptions establishes accountability and facilitates efficient revision, updating, and follow-up. Review team should verify that proper documentation has been provided.*	
	As a whole, model documentation is :	**Observations/Comments:**	**Analyst Response**
	☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable Extent of Revisions Required: ☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	1st Review 2nd Review 3rd Review	1st Review 2nd Review 3rd Review

MICROSIMULATION PEER REVIEW REPORT *(continued)*

Wisconsin Department of Transportation (WisDOT) **DT2291**

SUMMARY OF REVIEW		
Overall Traffic Model	As a whole, the traffic model is :	**Summary of the review team's findings and recommendations**
	☐ ☐ ☐ Acceptable ☐ ☐ ☐ Conditionally Acceptable ☐ ☐ ☐ Unacceptable	1st Review
	Extent of Revisions Required:	2nd Review
	☐ ☐ ☐ No Revisions Required ☐ ☐ ☐ Minor Revisions Required ☐ ☐ ☐ Moderate Revisions Required ☐ ☐ ☐ Major Revisions Required	3rd Review

REVIEWER'S CONCULSION (Check One)

☐ ☐ ☐ *It is the opinion of the review team that the model as reviewed and tested is an accurate and reasonable representation of the traffic conditions in the study area for the analysis year, time period, and scenario/alternative indicated in the title block of this document.*

☐ ☐ ☐ *It is the opinion of the review team that the model as reviewed and tested requires correction of _____ errors before it can be regarded as a reasonable representation of the traffic conditions in the study area for the analysis year, time period, and scenario/alternative indicated in the title block of this document. (Indicate number and severity of errors: Minor, Moderate, or Major).*

Prepared By (Signature)	**Date** *Click here to enter a date.*	**Contact Information** Phone: Email:
Prepared By (Signature)	**Date** *Click here to enter a date.*	**Contact Information (Phone, Email)** Phone: Email:
Prepared By (Signature)	**Date** *Click here to enter a date.*	**Contact Information (Phone, Email)** Phone: Email:

Attachment 2.4 Sample Correspondence

HCM ANALYSIS REVIEW CHECKLIST
Wisconsin Department of Transportation (WisDOT)
DT1887 8/2015

Project ID(s)	Region:	Date Reviewed (m/d/yyyy) 1st Review	2nd Review	3rd Review
86-75-309	NE	2/29/2016	3/17/2016	

TRAFFIC MODEL DESCRIPTION

Model Completion/Revision Date (m/d/yyyy)	Analysis Year(s)	Analysis Scenario/Alternative
9/12/2015	2040	Future AM and PM peaks, Enhanced Signal (Alternative #2)

Scope of Model (intersections, ramps, corridors, etc. being reviewed)
Intersection of USH 888 (N/S) and STH 747 (E/W), Blue Moose, WI

Analysis Time Period (s)

☒ Weekday AM Peak	☐ Weekday Midday Peak	☒ Weekday PM Peak	☐ Fri Peak	☐ Sat Peak	☐ Sun Peak	☐ Other: _____
Hours: 7:00-9:00	Hours: _____	Hours: 3:30-5:30	Hours: _____	Hours: _____	Hours: _____	Hours: _____

Analysis Tool(s) Utilized
☐ HCS - Version: _____ ☒ Synchro – Version/Build: 8.0.806.61 ☐ Sidra - Version: _____ ☐ Other: _____ - Version: _____

SUMMARY OF REVIEW

Item Reviewed	Overall Model Acceptability	Revision Required	Reviewer Comment(s)	Analyst Response(s)
Traffic Analysis Tool/Version	☒ Acceptable ☐ Unacceptable ☐ Conditionally Acceptable	☒ No ☐ Yes	The most recent build of Synchro is used. This is acceptable.	
Lane Geometry	☐ Acceptable ☐ Unacceptable ☒ Conditionally Acceptable	☐ No ☒ Yes	WB right turn lane is channelized in the plans but not the model. Please correct. WBR is now shown as channelized in the model	WBR should be channelized. This has been corrected.
Traffic Volumes, % Trucks, Peak Hour Factor (PHF)	☐ Acceptable ☐ Unacceptable ☒ Conditionally Acceptable	☐ No ☒ Yes	Heavy vehicle (HV) percentage set to 2% for all approaches. From the 2012 turning movement count, the NB AM has 8% HV and NB PM has 13% HV. Other approaches should also be examined in both peak periods Truck percentages are now acceptable	Saturated Flow Rate (RTOR) has been set to 60 vph. All other RTOR volumes were checked and are in compliance with TSDM 3-2-2-2.

(continued on reverse side)

SUMMARY OF REVIEW (continued)

Item Reviewed	Overall Model Acceptability	Revision Required	Reviewer Comment(s)	Analyst Response(s)
Signal Parameters (including RTOR)	☐ Acceptable ☐ Unacceptable ☒ Conditionally Acceptable ☐ N/A	☐ No ☒ Yes	While the EBR Saturated Flow Rate (RTOR) is set to 90 vph, or half of the 180 vph AM demand, it should be set to 60 vph per TSDM 3-2-2-2 since the cycle length is 120 seconds. EBR Saturated Flow Rate (RTOR) was corrected to 60 vph	Saturated Flow Rate (RTOR) has been set to 60 vph. All other RTOR volumes were checked and are in compliance with TSDM 3-2-2-2.
Measures of Effectiveness (MOEs)	☐ Acceptable ☐ Unacceptable ☒ Conditionally Acceptable ☐ N/A	☐ No ☒ Yes	EBL movement has LOS E in the PM while the NBT/SBT have LOS B. Can signal timing be adjusted to make green time more equitable? The adjusted signal timing results in acceptable LOS for all approaches.	Signal timing has been adjusted to allocate more green time to the EBL movement. Now EBL is LOS C, NBT is LOS B, and SBT is LOS C; all of which are acceptable.
Other: Pedestrian movements	☐ Acceptable ☐ Unacceptable ☒ Conditionally Acceptable	☐ No ☒ Yes	NB pedestrian traffic was included in the base year analysis – why is this not included here? Given the construction of the path, it is acceptable to not consider pedestrian impacts here.	Though not documented here, an off-road paved path will be constructed to the west as part of this alternative. This will serve NB pedestrian traffic destinations and remove almost all NB pedestrian traffic. Please confirm that it is acceptable to not include any NB pedestrian traffic in analysis.
Overall Model	☐ Acceptable ☐ Unacceptable ☒ Conditionally Acceptable	☐ No ☒ Yes	See comments from above Overall model is now acceptable	

MICROSIMULATION PEER REVIEW REPORT

Wisconsin Department of Transportation (WisDOT)

DT2291--8/2015

Reviewer, please email completed form to:

			1st Review	2nd Review	3rd Review
To:	Project Manager & Region Contact	Date Reviewed (m/d/yyyy):	2/29/2016	3/17/2016	4/20/2016
CC:	DOT Traffic Model Peer Review	Reviewed By:	RIAWD	RIAWD	RIAWD
Subject:	DT2291 for Project ID; Traffic Model Name	Model Completion/Revision Date (m/d/yyyy):	2/15/2016	3/14/2016	4/18/2016

TRAFFIC MODEL DESCRIPTION

Project ID(s)	Project Name/Description	Region:	Highway(s)
0-11-23-68	Cold Corridor--STH 999 & IH-O, Red Bayou, WI	NW	STH 999 & IH-O

Traffic Model Name/Description	Analysis Scenario/Alternative	Analysis Year(s)
Paramics Base Condition Model	AM, PM, FRI, SUN	2013

Analysis Time Period (s)

- ☒ Weekday AM Peak → Hours: 6:30-8:30
- ☐ Weekday Midday Peak Hours: *****
- ☒ Weekday PM Peak → Hours: 3:15-5:15
- ☒ Fri Peak → Hours: 4:30-6:30
- ☐ Sat Peak → Hours: *****
- ☒ Sun Peak → Hours: 3:00-5:00
- ☐ Other: ***** → Hours: *****

Analysis Tool(s) Utilized

- ☐ SimTraffic - Version: *****
- ☒ Paramics - Version: 7.01
- ☐ Vissim - Version: *****
- ☐ Other: ***** - Version: *****

SCOPE AND EXTENT OF PEER REVIEW

Purpose & Scope of Review

Provide a detailed review of the base condition model coding and calibration

Description/Limit of Model

STH 999 & IH-O, 0.5 miles south of Random Road north to the West River Bridge

Configuration Settings

# Zones:	# Time Steps:	Speed Memory:	Assignment Type:
25	5	8	All-or-nothing
Mean Target Headway:	**Mean Reaction Time**	**Matrix Structure**	**Vehicle Classifications/Splits**
0.87	0.93	2 O-D matrices, 1 for passenger vehicles & 1 for heavy vehicles	Separate matrices

Seed Values Used for Calibration:	113, 683, 23, 149, 593, 1039, 28567
Seed Values Used for Review:	23, 28567
Other: Variable Speed Limit	Variable speed limit (VSL) applied on IH-O

Were any changes to the model made by the review team? If yes, please describe.

No

OBSERVATIONS, MODEL FEATURES AND CHARACTERISTICS

metrics / Traffic Control

Network Coding

Network Coding establishes the horizontal and vertical geometry of the network. It also includes the appropriate use of settings such as link free-flow speed.

- *For SimTraffic, this is coded within the Synchro module and includes placement and interconnection of nodes and links, number of lanes, lane widths, lane configurations, roadway curvature, storage lengths, and other intersection and network geometry.*
- *For Paramics this includes placement and interconnection of nodes, links and link categories, curb points, curves, turn lanes, merge points, stop bars, signposts, and other network infrastructure.*
- *For VISSIM this includes the placement and interconnection of links, connectors, desired speed decisions, reduced speed areas, conflict areas, and priority rules.*

As a whole, network coding is:

- ☐ ☒ ☐ Acceptable
- ☒ ☐ ☐ Conditionally Acceptable
- ☐ ☐ ☐ Unacceptable

Extent of Revisions Required:

- ☐ ☒ ☐ No Revisions Required
- ☒ ☐ ☐ Minor Revisions Required
- ☐ ☐ ☐ Moderate Revisions Required
- ☐ ☐ ☐ Major Revisions Required

Observations/Comments:

1st Review

Intersection of This Rd and That Dr - the EB approach currently has an exclusive right turn lane, which is not coded in the model (Link 523:524). It is possible that this exclusive right turn lane was added after the model base year

2nd Review

An EB exclusive right turn lane was added on link 523:524. This is used only by buses and right turns, since bicycles are not included in this model.

3rd Review

*****

Analyst Response

1st Review

Lane appears to have been in place prior to 2012 and is marked for buses, bicycles, and right turns only. An exclusive EB right turn lane has been added that extends back to the WB ramp terminal intersection. This change is not expected to affect the results

2nd Review

*****

3rd Review

*****

Routing Parameters/Vehicle Routes

Routing parameters or vehicle routes influence the way vehicles travel through the network. If coded improperly, these controls can cause unrealistic or erratic routing.

- *This feature is **not** applicable for SimTraffic. However, interaction between intersections can be checked as noted with the Link O-D feature in the O-D Matrices, Demand Profiles, & Time Periods section.*
- *For Paramics, routing parameters (such as cost factors, turn penalties, modification of the link type hierarchy, and waypoints) overide the default routing behavior and profoundly influence the route choice in the network. They are occasionally used to increase or decrease the traffic volume on specific links.*
- *For VISSIM, vehicle routes and vehicle routing decisions control the flow of traffic from the entrance points through the network. They can be coded using either actual vehicle flows or percentages.*

As a whole, traffic routing parameters are:

- ☐ ☐ ☐ ☒ Acceptable
- ☒ ☒ ☒ ☐ Conditionally Acceptable
- ☐ ☐ ☐ ☐ Unacceptable

Extent of Revisions Required:

- ☐ ☐ ☐ ☒ No Revisions Required
- ☒ ☒ ☒ ☐ Minor Revisions Required
- ☐ ☐ ☐ ☐ Moderate Revisions Required
- ☐ ☐ ☐ ☐ Major Revisions Required

Observations/Comments:

1st Review

Link cost factors are applied in 13 locations. It was noted that link 709:708 has an exceptionally high cost factor of 1000. Why is this so high? This link is located on STH 999 between the Random Rd ramp terminal intersections.

2nd Review

This is an acceptable approach.

3rd Review

The cost factor for link 709:708 was changed to 1 which is acceptable.

Analyst Response

1st Review

Link 709:708 cost factor will be adjusted. Other cost factors were generally used for routing purposes at interchanges to prevent vehicles from exiting then re-entering the freeway. No additional changes are proposed - please confirm.

2nd Review

Update completed.

3rd Review

*****

Microsimulation Peer Review Form Responses

Date of Last Response: February 29, 2016

Project: 0-11-23-58
Cold Corridor – STH 999 & IH-O
Up North

Analyst: Traffic Models 'R Us (TMRU)

Traffic Model Name/Description: Future Year (2040) AM Model

Analyst's Response Code

A = Agree completely; will revise (no written response required)

RFS = Requires further study in next phase (no written response required)

P = Agree partially; will revise to some degree (see written response)

D = Disagree; will not revise (see written response)

	1st Review:	2nd Review:	3rd Review:
Model Completion/Revision Date(m/d/yyyy):	01/07/16		
Reviewer 1: **An Employee of the State (EOS)**	02/04/16		
Reviewer 2: **Review is All We Do (RIAWD)**	02/11/16		
Reviewer 3: **FHWA**	02/14/16		

Category	Reviewer		Analyst		
	Initials	Review Comments	Response Code	Response	Markup Complete
Network Coding	EOS	#1(Link 422:413) # 2 (Link 1109:209 kerb points) #3 (Link 344:229 stopline rotation)	A A A	#1 Link adjusted to provide two lanes	TMRU – 3/02/15
	RIAWD	#1 (Model weave lengths) #2 (Ramp at node 447)	P A	#1 The study team has modified the upstream lane choice rules associated with the mainline weaves between Fake Rd. and False Dr. While there is always a degree of early or late lane changing within the model due to randomly assigned degrees of aggressiveness, awareness, etc., this issue has been mitigated to the greatest extent possible. #2 Ramp parameters modified to mitigate this issue as much as possible. The future AM model should now match the draft PM model, as this issue was more prominent during the future PM peak period.	TMRU – 03/02/15
	FHWA	#1 (Link 29:30 and 29:31) #2 (81st St./St. Peter Ave geometry)	D RFS	#1 The left turn lane here (Link 29:31) has been modeled as separate to prevent vehicles from attempting to move over, therefore blocking the lane and causing a queue. No change is proposed. #2 The design team has indicated that while the DXF does not indicate an allowable movement from SB 81st St to the IH-0 EB entrance ramp, this access could be provided as the team continues to work on design refinements. Movement from SB 81st to IH-0 EB will be modeled, and results of this will help inform the final design decision.	TMRU – 03/02/15