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**Travel Demand Modeling
Interim
MEMORANDUM OF AGREEMENT**

Between

**The Michigan Department of Transportation
Statewide and Urban Travel Analysis Section
and
The Kalamazoo Area Transportation Study**

Approved: March 27, 2013

Please note: The differences between the current TMA Memorandum of Agreement and the Interim Memorandum of Agreement are *initialized* and will be deleted upon the final approval of the Kalamazoo Area Transportation Study 2040 Long Range Plan. A new Memorandum of Agreement will be drafted at that time. The Kalamazoo Area Transportation Study 2040 Long Range Plan is expected to be approved through their Executive Committee on approximately February 2016.

Memorandum of Agreement of Roles and Responsibilities

Section 1 - INTRODUCTION AND PURPOSE

The principal parties to this *Interim* Memorandum of Agreement (MOA) are the Kalamazoo Area Transportation Study (KATS) and the Statewide & Urban Travel Analysis Section, Statewide Transportation Planning Division, Michigan Department of Transportation (SUTA). KATS is recognized as the Metropolitan Planning Organization (MPO) responsible for coordinating area-wide transportation planning in the Kalamazoo County metropolitan area, and a small portion of eastern Van Buren County, and will be referred to as the Kalamazoo travel demand model.

The purpose of this *Interim* Memorandum of Agreement is to identify and define the areas of responsibility for the development, maintenance, operation and application of the Kalamazoo travel demand model. The model will be used in the development of future KATS long range transportation plans, air quality conformity analysis (for the LRTP, TIP and amendments), alternative testing, congestion management process, project identification and prioritization, sub-area, corridor and site impact studies and various other transportation planning studies as deemed appropriate by SUTA and KATS. The urban area model covers all of Kalamazoo County and a small portion of eastern Van Buren County. This *Interim* Memorandum of Agreement covers the current long range planning cycle, and is in effect until a new MOA is signed by both parties.

This document is incorporated by reference (paragraph h) in the 2010 Memorandum of Understanding Metropolitan Transportation Planning Responsibilities for the Kalamazoo Area Transportation Study.

Section 2 – MODEL DEVELOPMENT COMMITTEE

A Model Development Committee (MDC) shall be maintained for the purpose of coordinating modeling efforts in the KATS area which relate to model development, update/validation, model calibration, LRTPs, and, when appropriate, travel impact analysis applications. KATS will chair and provide staff support for the MDC. The membership of the MDC shall include representatives from KATS, SUTA, the Statewide Planning Section of MDOT, Kalamazoo Metro Transit, the Kalamazoo County Transportation Authority, and any other persons or agencies agreed upon by these core members of the team.

When appropriate, the MDC or its individual members will work with MDOT project staff and/or local project staffs to determine the scope and type of travel demand modeling work appropriate for each individual travel impact analysis application.

The MDC shall provide input and recommendations on a work plan and schedule for the model calibration/LRTP as described in Section 4 below, and will conform to the overall schedule for developing long range transportation plans. The model calibration/LRTP Work Plan will detail the tasks, roles and responsibilities for Phase I and Phase II of the model update process as described in Section 4 below.

The MDC shall meet monthly, or as needed, but not less than 2 times a year to accomplish the model calibration/LRTP tasks and/or to coordinate modeling applications. They shall review data and inputs into the model and provide feedback on the process and procedures of model development and subsequent use of the model.

Section 3 - AGENCY RESPONSIBILITIES

The primary goal of this Interim Memorandum of Agreement is to focus on transferring the primary responsibility of the KATS travel demand model from SUTA to KATS staff. This will be accomplished through side-by-side guidance from SUTA staff to KATS staff, through each phase of model preparation and development. This is precipitated due to KATS reclassification to TMA status. To ensure that KATS staff can assume full responsibility for all travel forecasting responsibilities, they will develop technical staff with sufficient expertise and experience in travel demand modeling. This includes the development,

maintenance, and operation of the KATS travel demand model used in metropolitan planning applications within the model area boundary. SUTA staff will work closely with KATS staff to transfer knowledge and provide training and technical support during this transition.

The Interim Agreement will be executed on this date and will remain in force until the Policy Committee approval of the KATS 2040 Long Range Plan, which is expected in February 2016. At that time a new MOA will be initiated and approved by both parties.

Role and responsibilities for both KATS and SUTA staff are broken out into three timeframes for the purpose of developing and transferring the travel demand model to KATS in support of the KATS 2040 model development/long range plan cycle. The expected overall length for these three time frames will begin upon execution of this document and will end at the Executive Committee approval of the 2040 Long Range Plan in February 2016.

The data development phase, in support of the four step modeling process, would be undertaken by a joint effort of KATS and SUTA Staff prior to employing the services of a modeling consultant. The traditional, trip-end, four step modeling process and subsequent LRTP development phases would be undertaken by KATS, with the assistance of a modeling consultant and technical support by SUTA Staff.

Phase I – Data Development will begin upon execution of the MOA and end approximately in October 2013. It is expected that at that time a consultant will be brought on board. This phase focuses on the model set up and preparation to transfer this information to the Consultant. KATS and SUTA will work closely together to ensure KATS staff is proficient with all steps within Phase I.

- A) 1: Data Collection (KATS and SUTA Staff, in support of the Four Step Modeling Process)
 - a) Socio-Economic Data Development
 - i) Develop the Base Year (2010) Demographic Dataset
 - ii) Develop the Base Year (2010) Employment Dataset
 - iii) Develop the Forecast Year(s) Demographic Dataset (possibly to 2040 or beyond, and intermittent years for Air Quality)
 - iv) Develop the Forecast Year(s) Employment Dataset (possibly to 2040 or beyond, and intermittent years for Air Quality)
 - b) Develop the Base Year Model Roadway Network
 - c) Develop the Traffic Analysis Zone (TAZ) Structure

Phase II – Model development will begin with the consultant coming on board and end at the completion of the contract. This time frame is expected to run from approximately October 2013 to approximately October 2014. This phase focuses on the development of a traditional four step model for use in the long range plan process. KATS and SUTA will work closely with the Consultant to ensure KATS staff is proficient with all steps within Phase II.

Model Development of Traditional Four Step Modeling Process;

- B) Develop RFP for Modeling Assistance, and contract with a modeling consultant
- C) 2: Trip Generation (KATS Staff and Modeling Consultant)
- D) 3: External Travel Estimation (KATS Staff and Modeling Consultant)
- E) 4: Trip Distribution (KATS Staff and Modeling Consultant)
- F) 5: Mode Choice (KATS Staff and Modeling Consultant)
- B) 6: Time of Day / Auto Occupancy (KATS Staff and Modeling Consultant)
- G) 7: Traffic Assignment (KATS Staff and Modeling Consultant)
- H) 8: Model Calibration and Validation (KATS Staff and Modeling Consultant)
- I) 9: Model Application / System Analysis (KATS Staff and Modeling Consultant)
- J) 10: Air Quality Analysis (KATS Staff and Modeling Consultant) - if required
- K) 11: Document the model development (KATS Staff and Modeling Consultant)
- L) 12: Training in the development and use of the TDFM (KATS Staff and Modeling Consultant)

Phase III – Drafting the 2040 Long Range Plan will begin at the completion of the consultant contract and end with the approval of the KATS 2040 Long Range Plan. It is expected that this time frame will run from approximately October 2014 until approximately February 2016. The primary focus of this phase will deal with the drafting and completion of the Long Range Plan and how the model supports the selection of the projects included in that Plan. KATS and SUTA will work closely together to ensure KATS staff is proficient with using the travel demand model to address model related aspects of the Long Range Plan.

M) 13: Long Range Transportation Plan Development (KATS Staff and SUTA Staff)

SUTA and KATS staff will work closely together from execution of this document until February 2016 on all corridor studies, work zone analysis, alternative testing, and air quality testing. KATS modeling staff will work closely with SUTA staff to ensure that the entire project inputs, development, and outputs are understood by KATS staff.

It is recommended that KATS staff coordinate with SUTA's Congestion Management Systems Specialist to develop a CMP document that will be in accordance with Federal guidelines, and be approved through FHWA within the due dates as required by MAP-21.

KATS, in cooperation with SUTA, has primary responsibility for the overall development, maintenance and operation of the Kalamazoo travel demand model. KATS agrees to dedicate adequate staff to accomplish these tasks. SUTA agrees to assist as requested, and as staffing allows. KATS and SUTA will cooperatively collaborate in the overall development, maintenance and operation of the Kalamazoo travel demand model. KATS and MDOT will collectively collaborate and agree to the tasks, timeline/schedules, and deliverables required for the development and calibration of the model. At agreed upon milestones, SUTA and KATS will review any modeling work progress/status to date, as part of the MDC. The Kalamazoo travel demand model is currently supported on a PC platform using TransCAD and TransCAD software packages. KATS agrees to maintain the software licensing agreements that will provide continuing support for the operation of the Kalamazoo travel demand model.

KATS shall also provide SUTA with a copy of the most recent travel demand model. This includes: all associated files, supporting programs and/or interfaces, and all interim and final documentation reports related to the inventory of current conditions, planning assumptions being made, and the forecasting methodology used in the model, upon request. This will include all necessary files to operate and run the travel demand model. Technical support for both TransCAD and the travel demand model will be provided to KATS by SUTA, as staff resources allow.

Part of KATS's model maintenance responsibilities will be to serve as the liaison for the collection and monitoring of local transportation network attributes. This includes annually updating/ identifying TIP roadway project locations and providing changes to network attributes for non-trunkline components of the network, as specified in the UWP. SUTA shall provide network attributes for the trunkline components of the network to KATS for model updating. KATS shall maintain a TransCAD database containing current network and zone attributes. Procedures for sharing and updating zone and network attributes shall be negotiated through the MDC.

KATS is responsible for keeping the base and future socio-economic data current. This will be accomplished through annual review and monitoring of socio-economic changes (TAZ Characteristics Inventory). This update will allow for the identification of significant changes or growth "hot spots." This information will be provided to the MDC to determine how the model should be maintained and updated. Technical and Policy Committee approval of base and future socio-economic data is required before proceeding with modeling for LRTPs.

KATS, in cooperation with SUTA, is responsible for area-wide model calibration; all phases of model updating and analysis in support of the LRTP; non-trunkline travel impact analyses; and non-trunkline sub-area, corridor and site analyses. SUTA is responsible for trunkline travel impact analyses; and trunkline sub-area, corridor and site analyses. Furthermore, if SUTA has a trunkline modeling application, as specified above, but is unable to perform the work for any reason, KATS will be given an opportunity to perform the work. The reverse will also be true; KATS will offer SUTA the opportunity to perform the work for non-trunkline jobs, as well.

Both SUTA and KATS may distribute copies of the Kalamazoo travel demand model to other agencies, (which include consultants, contractors, academic institutions, or other entities) that may be performing work for them. The model and any enhancements to it made by these other agencies, remain the property of MDOT and KATS. Prior to distributing the Kalamazoo travel demand model, MDOT will coordinate with KATS to ensure they are in agreement, and visa-versa. Contracts between other agencies and either SUTA or KATS shall specify that the model and all modifications made to it shall revert back to SUTA and/or KATS at the completion of the contract.

To ensure consistency in the model results, whether used by SUTA or KATS, each agency agrees to consult the other, prior to conducting any modeling analysis (other than providing simple traffic forecasts). This means that for non-trunkline applications, KATS will consult with MDOT prior to beginning work, and visa-versa. Consultation will be accomplished in a timely manner, sensitive to the customer's deadlines. All parties involved with model applications shall jointly discuss and agree to the following elements:

- A. Purpose of the study
- B. Any potential zone or network changes or data base updates.
- C. Proposed traffic assignment techniques.
- D. Proposed products or documentation and any required review and/or approval process.
- E. Distribution of study results.
- F. Agency responsibilities.
- G. Schedule, including feedback and review cycles.

For any modeling applications, KATS and SUTA shall use the same model; that is, the most current network, trip tables, and approved socio-economic data on file, will be the starting point for any modeling applications, unless agreed to otherwise by both agencies. Throughout the model application, KATS and SUTA will be provided the opportunity to review the progress/status of the application at agreed upon intervals in the process. Both agencies to this agreement retain the right to independently interpret the results of any model applications.

KATS and SUTA shall document any network or traffic analysis zone modifications, or SE Data growth rate assumptions used for model applications and shall document the results for review. Upon review and agreement by both agencies, these modifications can be incorporated as the most current network, trip tables, and (when approved by the Technical and Policy Committees) socio-economic data, growth rates, and can be the new starting point for any modeling applications.

KATS shall run the model for air quality conformity analysis requirements, alternative analysis, corridor analysis and other special studies. In addition, the model shall be used as an input for the KATS's congestion management process.

Section 4 - MODEL CALIBRATION/LRTP

Model calibration/LRTP efforts will be completed in two phases--(1) model development, update/validation and model calibration, and; (2) application of the model for the LRTP planning process, air quality conformity analysis and congestion management process. Sufficient staff resources from KATS and SUTA will be dedicated to completion of both phases in accordance with the overall LRTP development schedule. A work plan and schedule for accomplishing the two phases outlined below will be developed and agreed upon by the MDC.

Phase I - Model Development, Update/Validation and Model Calibration

The first phase of the model calibration/LRTP effort will include the work necessary to sufficiently develop, update/validate and calibrate the Kalamazoo travel demand model so that it meets MDOT calibration targets and contains all data elements that are required to support the Transportation Management System (TMS) performance measures. When MDOT calibration targets are met to the satisfaction of the MDC, the model will be considered calibrated and will then be used to identify LRTP current and future congestion deficiencies and to evaluate solutions to resolve those deficiencies.

Phase II - Long Range Transportation Plans

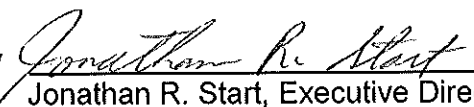
Phase II includes the modeling work necessary to complete an LRTP, including current and future deficiency analysis, alternatives analysis, air quality conformity analysis, and

the congestion management process. KATS, in cooperation with SUTA, will be responsible for performing the technical modeling work for Phase II. SUTA will provide technical assistance to KATS during this period, as requested. At a minimum, SUTA will provide a review function throughout the model calibration/LRTP process.

Section 5 - AGREEMENT

This memorandum outlines the roles and responsibilities between the Statewide & Urban Travel Analysis Section, Statewide Transportation Planning Division, Michigan Department of Transportation (SUTA) and the Kalamazoo Area Transportation Study (KATS) for model development, update/validation, calibration, maintenance, operation and analysis of the Kalamazoo travel demand model. The parties hereto have caused this Memorandum of Agreement (MOA) to be executed on this date and to remain in force until a new MOA is initiated and approved by both parties.

Kalamazoo Area Transportation Study

By 
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Date 3-27-2013

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Date 4-1-2013