



February 17, 2010

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| Technical Advisory Committee | Agenda Item 3 |
| Consider recommendation of the CAMPO travel demand model sharing protocol | |

Uses of the CAMPO travel demand model (TDM) and associated data for many planning and project implementation activities in the Central Texas region have grown significantly in the past several years. CAMPO staff in 2009 requested the Texas Transportation Institute (TTI) undertake a research project to

1. protect the integrity of the official TDM developed and implemented by CAMPO staff in support of the regional transportation planning activities and
2. allow for modified TDMs developed by other able users for other purposes based on acceptable modeling practice and in consultation with CAMPO staff.

Once approved by the Transportation Policy Board, this protocol will replace the current license agreement, after adoption of the CAMPO 2035 Transportation Plan.

The CAMPO Adopted Plan TDM is defined as the latest version of the CAMPO travel demand model developed for the purpose of supporting the CAMPO 2035 Transportation Plan. The attached protocol will provide flexibility to users to apply the results of CAMPO TDM or test various alternatives and still refer to the output as the result of applying the CAMPO Adopted Plan TDM.

Allowed Uses of CAMPO TDM

1. Direct Use of the Adopted Plan TDM: The Adopted Plan TDM includes base year calibration and forecast year plan analysis model runs and analyses of output directly from these runs. Potential uses include: background traffic for site-specific analysis as well as noise and air quality conformity analysis in support of plan.
2. Project-Specific TDM Applications: Users may test various alternatives and refer to the output as the result of applying the CAMPO Adopted Plan TDM for specific projects or open-end applications. These applications are called CAMPO derivative TDM or CAMPO Alternative Analysis TDM. Three types of derivative TDM are allowed: A) Minor Highway and/or Transit Edits with Static Plan Trip Tables, B) Localized Demographics Edits, and C) Other Alternatives Scenarios.

Non-Conforming Uses of CAMPO TDM

Any modifications other than the allowed uses of CAMPO Adopted Plan TDM stated above are deemed to revise the model and results such that CAMPO staff deems it as a Non-Conforming Use. Examples of Non-Conforming Uses include but are not limited to:

- Alteration or adjustment of TDM input settings or component algorithms, including

- the application model stream;
- Alteration of TDM output or mid-stream input/output data;
 - Using CAMPO TDM output as input to other models/software platforms; and
 - Extraction and use of model components as a basis for a new TDM, including local-area sub-models or future CAMPO TDMs.

CAMPO denies the model users the right to refer to, characterize, or label their model application as a CAMPO Adopted Plan TDM, CAMPO Derivative TDM, or any other reference using the CAMPO name. Users intentionally claiming a Non-Conforming Use of CAMPO TDM as an allowed use may be denied a new CAMPO Adopted Plan TDM license agreement for three years.

RECOMMENDATION

The TAC recommends to the Transportation Policy Board approval of the CAMPO Travel Demand Model Sharing Protocol.

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DRAFT

CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION (CAMPO)

CAMPO Travel Demand Model License Agreement

Introduction

This License Agreement is entered into this _____ day of _____, yyyy, by and between the Capital Area Metropolitan Planning Organization (hereinafter referred to as "CAMPO"), a Texas government entity located at 505 Barton Springs Road, Suite 700, Austin, TX, and _____, hereinafter referred to as the "MODEL USER", located at) _____. This License Agreement is intended to cover the MODEL USER's use of the CAMPO Travel Demand Model (TDM) as specified below under the General and User-Specific Conditions.

General Terms and Definitions

CAMPO is the agency responsible for the development of the CAMPO TDM and as such is the owner of the model and has the authority regarding model application. CAMPO is the only entity that has the authority to distribute copies of the CAMPO TDM.

MODEL PLATFORM is the proprietary software used to develop and apply the CAMPO TDM; this includes TransCAD 5.0, TRIPCAL5, and ATOM2. CAMPO does not have the authority to release or distribute these platforms and this License Agreement should not be understood to cover these platforms.

CAMPO TDM refers generally to either the CAMPO ADOPTED PLAN TDM or a CAMPO DERIVATIVE TDM, as defined below.

CAMPO ADOPTED PLAN TDM is the latest version of the CAMPO travel demand model developed for the purpose of supporting the CAMPO 2035 Transportation Plan. The CAMPO ADOPTED PLAN TDM was developed to analyze transportation system improvement strategies and system deficiencies in the regional five-county area (Bastrop, Caldwell, Hays, Travis, and Williamson Counties) and was validated to 2005 conditions. The CAMPO TDM is applied using TransCAD Version 5.0. The CAMPO ADOPTED PLAN TDM includes the model structure, supporting compiled interface and programs in TransCAD, supporting input files, and all socio-economic data and network data necessary to replicate the Adopted Plan model runs for the years 2005, 2010, 2015, 2025, and 2035. A summary of applicable scenarios for use of the CAMPO ADOPTED PLAN TDM is shown in Exhibit 1; a detailed checklist of required components is shown in Exhibit 2.

CAMPO DERIVATIVE TDM, or CAMPO ALTERNATIVES ANALYSIS MODEL, is a model based upon the CAMPO ADOPTED PLAN TDM, and modified under constraints appropriate to maintain the integrity of the CAMPO ADOPTED PLAN TDM. A summary of applicable scenarios for use of a CAMPO DERIVATIVE TDM is shown in Exhibit 1; a detailed checklist of required components for Derivative TDM Type A and Derivative TDM Type B is shown in Exhibit 2. Derivative Model Type C is provided to maintain flexibility for CAMPO staff to

provide advance approval for other variations of derivative type models outside the constraints of Type A and B, but which in CAMPO staff estimation could still be considered a derivative type model.

DIVERGENT MODEL VARIATION, or NON-CONFORMING MODEL, is a term used by CAMPO to refer to all other cases where the CAMPO ADOPTED PLAN TDM has been modified outside the constraints appropriate to maintain the integrity of the CAMPO ADOPTED PLAN TDM or the structure outlined below defining acceptable modifications to serve as a CAMPO DERIVATIVE TDM.

General Conditions for Model Release and Use

The MODEL USER agrees to the following conditions:

- *Other Model Platforms.* The MODEL USER is responsible for the purchase and maintenance of TransCAD from the Caliper Corporation. The MODEL USER is responsible for acquiring, from TxDOT Transportation Planning and Programming, software and documentation for TripCal5 and ATOM2, if necessary for the type of model run. While CAMPO staff does have familiarity with these separate MODEL PLATFORMS, some questions by users regarding these packages may be referred to their respective owners.
- *Latest Version.* The MODEL USER agrees to use the latest version of the CAMPO ADOPTED PLAN TDM provided by CAMPO as a basis for any work.
- *TDM Documentation.* The MODEL USER agrees to acquire and reference the CAMPO TDM Documentation, as well as seek out training on the CAMPO TDM as appropriate.
- *Distribution.* The MODEL USER will not share or distribute the CAMPO TDM to any other entity without written permission from CAMPO. Other interested parties will be referred directly to CAMPO.
- *Divergent Model Variation or Non-conforming Model.* Unless expressly specified as being acceptable under the structure summarized in Exhibit 1, with detailed checklist of required components in Exhibit 2, any modifications to the CAMPO ADOPTED PLAN TDM are deemed to revise the model and results such that CAMPO denies the MODEL USER the right to refer to, characterize, or label their model application as a CAMPO ADOPTED PLAN TDM, CAMPO DERIVATIVE TDM, CAMPO ALTERNATIVES ANALYSIS MODEL, or any other reference using the CAMPO name. CAMPO considers this type of model and results to be a DIVERGENT MODEL VARIATION or NON-CONFORMING MODEL.
- *Penalty of Non-conforming Model.* Users intentionally claiming a Non-Conforming use of CAMPO TDM as an allowed use and refuse to correct such claims after being substantiated may constitute a basis for CAMPO to deny new CAMPO Adopted Plan TDM license agreement applications for three years from the substantiated date.
- *Advance Notification of Use/Project Application.* The MODEL USER agrees to notify CAMPO modeling staff BEFORE using or applying the CAMPO TDM on any new project, study, or effort and to state clearly what type of model will be used, according to

the structure below: CAMPO ADOPTED PLAN TDM or CAMPO DERIVATIVE TDM. If a derivative model, MODEL USER agrees to include a description of the type of derivative model approach being used (A, B, or C), as well as a rationale for this choice, describing the modifications to be made to the CAMPO TDM and why these changes maintain the integrity of the CAMPO TDM. CAMPO reserves the right to challenge the extent of modifications within each category at any time. Lack of response from CAMPO does not constitute agreement that the MODEL USER has met the standard to refer to their use as being a CAMPO TDM. If the MODEL USER makes modifications without express written concurrence from CAMPO that such changes conform to the model structure outlined in Exhibit 1 and Exhibit 2, then the MODEL USER bears the responsibility if their model application is later determined to be a DIVERGENT MODEL VARIATION or NON-CONFORMING MODEL.

- *Notification of Conclusion of Use/Project Application.* The MODEL USER agrees, at the CONCLUSION of using or applying the CAMPO TDM on any project, study, or effort, to provide CAMPO staff documentation regarding any revisions, assumptions or alternative analyses that were implemented during model application, and, upon CAMPO request, to provide CAMPO all model files necessary to replicate the MODEL USER results.
- *Submittal of Documentation/Materials.* If CAMPO so specifies, the MODEL USER agrees to submit to CAMPO all results of the model application for review and concurrence before releasing the results to any other parties. CAMPO at its discretion may choose to re-run the MODEL USERs model application to verify the proper use of the CAMPO TDM as part of its review and concurrence process.
- *Acceptance.* The MODEL USER agrees that the CAMPO TDM is being accepted as is and understands that CAMPO makes no guarantees as to the accuracy of the results obtained through use of the CAMPO TDM.
- *Indemnity.* To the extent permitted by law the MODEL USER shall indemnify and hold harmless CAMPO, its officers, employees, and agents against any and all claims, damages, liability, and court awards, including all costs, expenses, and attorney's fees, incurred as a result of the MODEL USERs use of the CAMPO TDM.

CAMPO TDM Model Sharing Framework

The MODEL USER agrees to an understanding of and to abide by the CAMPO TDM Model Sharing Framework as summarized in Exhibit 1 and detailed in Exhibit 2, which are included here and referenced in the General Conditions above.

CAMPO TDM Model Sharing Support Services

The MODEL USER acknowledges the availability of additional CAMPO TDM Model Sharing Services and Tools related to this Framework, including (some with associated costs):

- CAMPO ADOPTED PLAN TDM availability through password-protected Web download
- CAMPO TDM Documentation through password-protected Web download
- CAMPO TDM User Group Update Notifications for users with current License Agreements

- Training on CAMPO TDM application
- Technical Support and Assistance
- Opportunity to Discuss Proposed Model Use Prior to Application
- Model Review and Approval of results

See CAMPO documents on the Travel Demand Model Sharing Costs Summary and Fee Schedule for further information on these support services and tools.

User-Specific/Project-Specific Conditions for Model Use

Because of the varied needs of MODEL USERS for the CAMPO TDM, the following conditions have been specified to best fit the needs of the MODEL USER.

EITHER CONDITION 1 OR CONDITION 2 MUST BE SPECIFIED

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| <p><u>Check:</u></p> <p>Adopted Plan TDM <input type="checkbox"/></p> <p>OR</p> <p>Derivative TDM Type A B C <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> | <p>Condition 1 – Project-Specific TDM Application Agreement</p> <p>Name of Project: _____</p> <p>End of License Agreement for This Project (date): _____</p> <p><u>If Derivative TDM Type A or B</u>, MODEL USER, at their own risk or after discussing with CAMPO staff, agrees to ensure that TDM modifications satisfy the CAMPO TDM sharing structure and maintain the CAMPO TDM integrity. Derivative TDM Types A and B are anticipated to be the most common type of CAMPO model application. CAMPO staff is available to review and discuss the proposed (or completed) changes to the TDM to ensure conformity as a Derivative TDM.</p> <p><u>If Derivative TDM Type C</u>, MODEL USER agrees to (none, either, or both are acceptable options):</p> <p><input type="checkbox"/> Advance Review of Approach -- request a review of their proposed TDM approach by CAMPO staff to ensure conformity as a Derivative TDM.</p> <p><input type="checkbox"/> Post-Completion Review of Approach and Results -- request a review of their proposed TDM approach by CAMPO staff to ensure conformity as a Derivative TDM.</p> |
| <p><u>Check if:</u></p> <p>Condition 2 Applies: <input type="checkbox"/></p> | <p>Condition 2 – Open-Ended TDM Application Agreement</p> <p>End of License Agreement Period (date): _____</p> <p>MODEL USER is authorized under this License Agreement to apply the CAMPO TDM to multiple projects/studies during the term of this license agreement, under the General terms and conditions specified above, as well as any specific conditions as noted below.</p> <p>MODEL USER, at their own risk or after discussing with CAMPO staff, agrees to ensure that TDM modifications satisfy the CAMPO TDM sharing structure and maintain the CAMPO TDM integrity. CAMPO staff is available to review and discuss the proposed (or completed) changes to the TDM to ensure conformity as a Derivative TDM.</p> |

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| <p><u>Check if:</u></p> <p>Additional Special Conditions Apply:</p> <p><input type="checkbox"/></p> | <p>Additional Specific Conditions</p> <p><input type="checkbox"/> _____</p> <p>_____</p> <p><input type="checkbox"/> _____</p> <p>_____</p> <p><input type="checkbox"/> _____</p> <p>_____</p> |
|---|---|

Signatures

LICENSOR (CAMPO)

LICENSEE

By: _____

By: _____

Title: _____

Title: _____

Organization:

LICENSEE

By: _____

Title: _____

Organization _____

Exhibit 1 CAMPO TDM Model Sharing Framework

| Model Types | Applicable Scenarios |
|---|---|
| CAMPO Adopted Plan TDM | <p>The Adopted Plan Model includes Base Year Calibration and Forecast Year Plan Analysis Model Runs and Analysis of Output Directly from These Runs. Potential uses include:</p> <ul style="list-style-type: none"> • Background Traffic/Distribution for Site -Specific Analysis • Noise and Air Quality Conformity Analysis in Support of Plan <p>User may refer to the model used under these scenarios as: “CAMPO Adopted Plan TDM”.</p> |
| CAMPO Derivative TDM (for Alternatives Analysis) | <p>A regional TDM serves as a tool for multiple jurisdictions and entities, both public and private, to examine transportation scenarios and solutions, referred to here as “Alternatives Analysis”. Potential applications which maintain the CAMPO TDM integrity while allowing alternatives testing include:</p> <ul style="list-style-type: none"> • Type A – Minor Highway/Transit Edits with Static Plan Trip Tables Under this option, the user may make minor highway and/or transit edits which are not anticipated to have substantial regional impacts to trip distribution or mode choice (as agreed to in advance by CAMPO staff). User will assign static trip tables from the CAMPO Adopted Plan TDM using CAMPO’s assignment algorithm. • Type B – Localized Demographics Edits User may make localized and minor demographic and highway/transit edits. Region- and county-wide control totals must be maintained and user must apply the full CAMPO Model Stream, including the Feedback Loop. • Type C – Other Alternatives Scenarios With prior discussion and approval by CAMPO modeling staff, the CAMPO TDM may be modified for a particular study purpose and still operate as a Derivative TDM. <p>User may refer to the model used under these scenarios as: “CAMPO Derivative TDM” or “CAMPO Alternatives Analysis Model”.</p> |
| Divergent Model Variations (Non-Conforming) | <p>Non-conforming Uses of the CAMPO TDM Include But Are Not Limited To:</p> <ul style="list-style-type: none"> • Alteration or Adjustment of TDM Inputs, Settings, or Component Algorithms, including the Application Model Stream • Alteration of TDM Output or Mid-Stream Input/output Data • Using CAMPO TDM Output as Input to Other Models/Software Platforms • Extraction and Use of Model Components as a Basis for a New TDM, including Local-Area Sub-Models or Future CAMPO TDMs <p>Unless expressly provided permission as part of a formal license agreement and within the above Derivative Model Types context, user does not have permission to use the CAMPO TDM or cite any findings or results from the model being from the CAMPO TDM. User intentionally claiming a Non-Conforming use of CAMPO TDM as an allowed use and refuses to correct such claims after being substantiated may constitute a basis for CAMPO to deny new CAMPO Adopted Plan TDM license agreement applications for three years from the substantiated date.</p> |

| Exhibit 2 Checklist of CAMPO Shared Model Components | Plan | Derivative TDMs | | |
|--|------|--------------------|--------------------|-----|
| | | A | B | C |
| Geographic/Attribute Data | | | | |
| Use Adopted Plan TDM Internal Zonal Demographics | ✓ | n/a | Minor changes only | TBD |
| Use Adopted Plan TDM Internal Zone Boundaries and Number | ✓ | n/a | ✓ | TBD |
| Use Adopted Plan TDM Highway Geography/Attribute Data | ✓ | Minor changes only | Minor changes only | TBD |
| Use Adopted Plan TDM Transit Geography/Attribute Data | ✓ | ✓ | ✓ | ✓ |
| Use Adopted Plan TDM Highway Speed/Capacity Table | ✓ | ✓ | ✓ | ✓ |
| Use Adopted Plan TDM Transit Speed Assumptions | ✓ | ✓ | ✓ | ✓ |
| Model Stream Application | | | | |
| Use "All Stages" with Feedback "On" (all required steps) | ✓ | | ✓ | TBD |
| Use "Single Stages" Application | | ✓ | | |
| Trip Generation | | | | |
| Use Adopted Plan TDM Trip Generation Output Directly | ✓ | n/a | n/a | TBD |
| <u>Or, if Making Changes to Stage Inputs:</u> | | | | |
| Use Adopted Plan TDM TripCal Assumptions/Controls | ✓ | n/a | ✓ | ✓ |
| Perform All Sub-Models (HH Size, HH Inc, Workers per HH) | ✓ | n/a | ✓ | ✓ |
| Perform Trip Generation using TripCal5 | ✓ | n/a | ✓ | ✓ |
| Trip Distribution | | | | |
| Use Adopted Plan TDM Trip Distribution Output Directly | ✓ | n/a | n/a | TBD |
| <u>Or, if Changes Made to Inputs:</u> | | | | |
| Use Adopted Plan TDM ATOM2 Assumptions/Controls | ✓ | n/a | ✓ | ✓ |
| Perform Trip Distribution using ATOM2 | ✓ | n/a | ✓ | ✓ |
| Use Adopted Plan TDM External Through Trip Tables Directly | ✓ | n/a | ✓ | TBD |
| Perform "Import Person Trips to MTX" Step | ✓ | n/a | ✓ | ✓ |
| Mode Choice | | | | |
| Use Adopted Plan TDM Mode Choice Output Directly | ✓ | n/a | n/a | n/a |
| <u>Or, if Making Changes to This Stage:</u> | | | | |
| Skim Highway Network | ✓ | n/a | n/a | n/a |
| Skim Transit Route System | ✓ | n/a | n/a | n/a |
| Apply Autos per Household Model (if demographics changed) | ✓ | n/a | ✓ | ✓ |
| Perform Market Segmentation (if transit was edited) | ✓ | n/a | ✓ | ✓ |
| Use Adopted Plan TDM Mode Choice Inputs/Settings | ✓ | n/a | ✓ | ✓ |
| Perform Mode Choice using CAMPO TDM Mode Choice Model | ✓ | n/a | ✓ | ✓ |
| Trip Tables | | | | |
| Use Adopted Plan TDM Trip Tables (all modes) | ✓ | ✓ | n/a | n/a |
| <u>Or Create Applicable Trip Tables</u> | ✓ | n/a | ✓ | ✓ |
| Assignment | | | | |
| Perform Applicable Assignments (CAMPO TDM Algorithm) | ✓ | ✓ | ✓ | ✓ |

✓ = Step is Required to Conform to CAMPO Model Type "n/a" = Not Applicable
"Minor" = Minor edits, with CAMPO staff reserving the discretion to determine what qualifies
"TBD" = To Be Determined based upon discussion with CAMPO staff

NOTE: Any use of the CAMPO model which does not fit into the above usage type structure shall be considered a "Non-Conforming or Divergent Use"; see License Agreement for limitations and penalty.