

2000 Base Year Model Update Versions

V 1.0.0 (TransCAD 4.7 build 267)

This is the first completed and calibrated version of the CCMPO TransCad model, which includes only the PM peak. This version was used for the initial screening of the Circ-Williston EIS project.

V 1.1.0 (TransCAD 4.7 build 267)

This is the first complete version of the CCMPO 2000 model (AM and PM) which was completed on 07/2005.

V 2.1.0 (TransCAD 4.7 build 267)

This version includes the Truck model in CCMPO 2000. This version also addressed all the enhancements that Smart Mobility observed during their review.

V 2.1.1 (TransCAD 4.7 build 267)

This version corrects an error that was observed by Dave Roberts relating to the trip generation spreadsheet being used during an integrated run. This was introduced in the truck version (2.1.0). The problem was that the macro inserted the external growth factor in the wrong cell. In addition, a correction was made in the documentation that describes the growth factor as “total growth” not “annual compounded growth”.

V 2.1.2 (TransCAD 4.7 build 267)

This version builds on V2.1.1 and includes two enhancements to the treatment of school trips in the AM model. The first enhancement is the addition of a school trip generation rate adjustment factor for cities and towns that do not provide school bus service (e.g. Essex Junction). Default home-to-school trip production rates in the model are approximately 30% lower than observed because school bus trips have been removed since school bus trips are not modeled. This adjustment is applied in the trip generation spreadsheet using a formula

in the cells for home-to-school productions (AM model only). Where appropriate, this adjustment can be removed for selected TAZs by modifying the formula in trip generation.

The other model improvement for school trips was to the mode choice model. School trips are significantly more likely than other non-work trips to be non-motorized trips, and vehicle trips to school are more likely to be shared ride vehicle trips than are trips for other purposes. The improvement that was made was to add a school trip constant to the non-work mode choice model to better reflect observed mode shares in the 1998 diary survey.

V 2.1.3 – 12/12/2005 (TransCAD 4.7 build 267)

This version updates the V2.1.2 documentation to include the peer review process undertaken for the 2000 base year as well as additional information on the Land Use Allocation Model.

V 2.2.0 – 1/17/2006 (TransCAD 4.7 build 267)

This version includes the following changes:

- Addition of Multiple Time Step procedure. Instructions for the use of this procedure have been added to this documentation. In order to run Multiple and Single Time Steps most efficiently, the “RunControls” file has replaced the “Inputs” file as the file in which the user controls a run. As documented in the report, the RunControls file automatically writes one or multiple Inputs files (now referred to as STSInputs files). In order to use any Single Time Step procedure (e.g. running a report or using the Run DMA Five Times procedure) alone, the user now specifies the RunControls and STSInputs files to be used.
- The method for implementing intersection delays has been modified. Caliper reports that the use of non-prohibition turn penalties can result in unstable assignment results, so we have switched to a procedure that adjusts free-flow travel time on individual links to incorporate intersection delay back onto links during assignment.
- AM Trip Production rates have been adjusted. As documented in the Trip Generation section of the report, AM counts are typically 80% of PM counts on the same links, but the unadjusted production rates yielded a similar amount of total trips in the AM and PM. Based on this finding we reduced AM production rates by 18%, yielding a better calibration to AM counts and allowing a better fit to the observed trip length distribution.

- After adjusting trip generation rates, distribution, mode split, and assignment parameters were readjusted to better match survey and count data. In doing this, we chose trip distribution and assignment parameters that are more consistent between the AM and PM time periods than ere previously used.
- A “Run Reports” procedure has been added, which produces a report that should be used as a first-order review of model runs. Outputs include summaries of each module as well as a check for links with no volumes or nodes which far exceed capacity.
- Other minor changes have been made to the documentation in response to comments made during the December 2005 training session.
- A new version naming convention has been adopted. The x.x.x version number can now be amended with a fourth character which will be
 - a – testing version for RSG internal use
 - b – draft version for RSG and CCMPO review
- Omission of the fourth character will mean the version is a full release intended for public use.

V 2.2.1 – 2/3/2006 (TransCAD 4.7 build 267)

- A procedure has been added which writes a log of each module or iteration which was run at the bottom of the Run Controls file along with a time stamp.

V 2.2.2 – 3/30/2006 (TransCAD 4.7 build 267)

- An error in a cell reference was corrected in the TGGetFiles Excel Macro. Housing from a future year LUX will now be copied into column AJ in the Land Use tab of the Trip Generation Spreadsheet during a multiple time step run.
- An issue in the PM trip generation spreadsheet related to the external growth multiplier factor in future years was corrected.
- A modification was made to the Land Use Allocation Module. It now prevents any individual zone from being allocated more land use than is allowed in the ALU. When land must be “re-allocated” to accommodate this, a log of the re-allocations is kept in the AllocationReport.txt. Future land use totals by zone can still exceed the ALU if the Base + Permitted Land Use exceeds the ALU. If the total land use specified (Base + Growth increment) is greater than the ALU regionally, an error message is displayed.

V 2.2.3 – 4/4/2006 (TransCAD 4.7 build 267)

- The Trip Generation spreadsheet was modified to better document occupied residences and group quarters in future year time step runs. As a result of these changes, the TGGetFiles Excel Macro was modified to copy household data from a future year LUX into column AK of the Trip Generation Spreadsheet land use worksheet during a multiple time step run. This change was made for both the AM and PM Peak hour trip generation procedures, but common practice is to run the Multiple Time Step operation in conjunction with the PM Peak hour.
- Model documentation updated to correctly reference land use types in LUAM input and output files (PER and ALN files).

V 2.2.4 – 5/10/2006 (TransCAD 4.7 build 267)

The land use allocation module has been modified in the following three ways

- The LUAM will no longer subtract land use from zones where the user-indicated existing land use (.lux) plus permitted land use (.per) exceeds the allowable land use (.alu). The issue originated in V 2.2.2 of the model.
- An error-trapping feature has been added to prevent a run of LUAM when user-indicated existing plus permitted use exceeds allowable use for the entire region.
- The “Land Use” feature of the drop-down menu has been removed, so that any runs of the Land Use Allocation Module must be done within the context of a Multiple Time Step run.

V 2.2.5 – 8/28/2006 (TransCAD 4.7 build 267)

- Added back in the capability to run land-use as stand-alone feature in drop-down menu (so that an MTS run could be restarted from the land-use step if necessary)
- Made it so that the first DMA iteration would use free-flow travel times for skims (had to fix an iteration counter)
- Modified the TripGen macro to write out to the hundredth decimal place to eliminate rounding errors and assure attractions were scaled to productions
- Added functionality in TripGen to increase the trips to BIA based on projected growth in passengers
- Added parking-zone-based reallocation of trips

- Removed the final DM step to save run time; the fifth DMA iteration now outputs logsums which are read by LUAM
- Relaxed the assignment convergence criteria in DMA iterations 1 to 3, to save run time (the convergence criteria remain the same for the 4 th and 5 th iterations)

V 2.3.0 – 1/24/2008 (TransCAD 4.8 build 500)

- Brought the CCMPO model into TransCAD 4.8 build 500. This involved fixing a number of issues created by changed implementation of macros by Caliper.
- Added Rail as a functioning transportation mode. The rail process has park-and-ride lots included as well the right-of-way aspect of rail lines coded into the model.
- Included a built-in Select Link process.
- Updated the land use SIC coding. This is a re-categorization of the existing year 2000 employment data. The employment has been shifted between the different employment groupings (low, med-low, med-high, high) to better portray the actual conditions.
- Adjusted the Trip Generation household-#vehicle categorization in Land Use. If the total households in a given TAZ in the base year were below 100, then the town distribution is used throughout the model run for newly allocated households.
- Updated the TIP (2010) and MTP (2020) networks for reference purposes in completing planning studies.

V 3.0.0 – 3/30/2009 (TransCAD 5.0 build 1545)

- Brought the CCMPO model into TransCAD 5.0 build 1545. This involved fixing a number of issues created by changed implementation of macros by Caliper.
- Implemented a daily model and hourly assignments
- Revised the transit and roadway network databases
- Recalibrated the model to 2005 weekday conditions
- Modified the employment categories
- Implemented trip generation in TransCAD
- Recalibrated the land-use model based on a historical back-cast from 1990-2005

V 3.1 – 09/17/2010 (TransCAD 5.0 build 1545)

- Replaced the V 3.0.0 Graphical User Interface and Scenario Manager with the CCMPO Menu Bar user interface utilized in previous versions of the CCMPO travel model which only represented AM and PM peak hour travel conditions.
- Re-instituted the use of Multi-Time Step (MTS) and Single-Time Step (STS) input run control text files for scenario management/specification and model execution.
- Post-distribution non-motorized mode choice model was replaced with pre-distribution non-motorized mode choice model developed by Smart Mobility, Inc (SMI) that uses urban form variables such as housing density, employment density, and intersection density to estimate the location and magnitude of walk/bike trip-making.
- Replaced the existing link and node delay calculations with a single built-in TransCAD volume-delay function which calculates and applies the delay from links and nodes simultaneously. This improvement reduces model complexity and reduces model run time significantly.
- Trip Generation, Trip Distribution, Mode Choice and Vehicle assignment steps were recalibrated and model outputs were verified against observed data collected as part of the 2009 National Household Travel Survey Add-On that was purchased by CCMPO.
- New version numbering scheme was introduced. First digit changes when a major upgrade happens, such as a recalibration. Second digit changes when a relatively minor improvement is made. The GISDK code resource files will now also be appended with the model version number and a third digit. Third digit will be used when we modify the version of an RSC file because a bug is identified.

V 3.2 – 12/21/2011 (TransCAD 5.0 build 1545)

- Updated Transportation Demand Management reduction factors methodology to use attraction end of trip table and new .BIN file instead of matrix adjustment.

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