

HIGHWAY CARBON FOOTPRINTING

Study Report

Prepared for

**THE NEW YORK STATE
ENERGY RESEARCH AND DEVELOPMENT AUTHORITY**
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16. Abstract An effort was undertaken to engage an under-used technology, the TRANSIMS and the MOVES traffic models, in order to advance the utilization of this technology within the state of New York and to examine the value of carbon-footprinting as a metric for planning the highway network. A TRANSIMS model of the NYS Capital District was constructed. Field observations were made throughout the region and used to calibrate the model. The operation of the model was demonstrated for the staff of the Capital District Transportation Committee (CDTC). The full TRANSIMS model has been delivered to both the New York State Energy Research and Development Authority and the CDTC. The project began work on implementing the MOVES environmental model as an extension of the TRANSIMS model but was unable to complete this task as the Principal Investigator left the team for personal reasons.			
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ABSTRACT

An effort was undertaken to engage an under-used technology, the TRANSIMS and the MOVES traffic models, in order to advance the utilization of this technology within the state of New York and to examine the value of carbon-footprinting as a metric for planning the highway network.

A TRANSIMS model of the NYS Capital District was constructed. Field observations were made throughout the region and used to calibrate the model. The operation of the model was demonstrated for the staff of the Capital District Transportation Committee (CDTC). The full TRANSIMS model has been delivered to both the New York State Energy Research and Development Authority and the CDTC.

The project began work on implementing the MOVES environmental model as an extension of the TRANSIMS model but was unable to complete this task as the Principal Investigator left the team for personal reasons.

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SUMMARY

The 2002 State Energy Plan identifies New York State as having the highest transportation energy efficiency in the nation. While an enjoyable position to hold, it is without argument that more can be done to improve the State's transportation energy usage. The New York State Energy Research and Development Authority (NYSERDA) and the New York State Department of Transportation (NYSDOT) are committed to this aim. Many surface transportation projects or policies improve the state's transportation energy usage. These often result in improved mobility, energy use and emissions benefits. Emissions benefits are obtained primarily because the State's transportation system is overwhelmingly used by internal combustion engine driven vehicles. Most hybrid and most alternative fuel vehicles (biofuels, natural gas, etc) have carbon-based emissions.

The project demonstrates how an alternative metric, the carbon footprint of the highway system, may represent a new bottom line approach to transportation planning identifying opportunities to improve the State's transportation system. The concept of carbon footprinting the transportation system builds on the knowledge that mobility, energy usage and air quality are interrelated transportation phenomena.

The underutilized technology, TRANSIMS, is an activity-based traffic modeling system that has been developed under the sponsorship of the U.S. Department of Transportation (USDOT) and the U.S. Environmental Protection Agency (USEPA) to replace the outmoded four step modeling process that is being used throughout New York State. In addition to forecasting traffic, TRANSIMS enables the confident evaluation of traditionally difficult to analyze transportation systems, such as Intelligent Transportation Systems (ITS) projects or policies (such as value pricing or high occupant vehicle toll lanes).

These aforementioned project types (there are many more) are difficult to evaluate at the same level of intellectual rigor routinely performed for other transportation related activities because they rely upon changes in the drivers behavior. For example, it is difficult to quantify with any degree of confidence the energy, mobility/system reliability and environmental benefits of a variable message sign system. We all know there are benefits associated with these systems, but nearly all supporting analysis underlying existing or proposed systems will fall apart when given close scrutiny. This underutilized tool and the carbon footprinting technique will introduce to New York a level of capability that it does not currently enjoy. The framework set forth in the State's Energy and Transportation Plans demand sound projects that are supported by highly defensible tools. The current modeling tool results in missed opportunities to improve New York's transportation system, energy usage, and air quality.

The project successfully developed a full TRANSIMS model of the Capital Region and delivered the same to the local metropolitan planning organization, the Capital District Transportation Committee (CDTC). Unfortunately the Principle Investigator departed the team before finishing the work on the MOVES model and that aspect of the project cannot be completed.

INTRODUCTION

It is well established that energy use, the environment, economic activity and transportation are firmly linked activities which have feedback loops embedded. That is, changes with one parameter will affect another parameter and changes in that parameter will, in turn affect the initial parameter. An illustrative example could involve the following scenario:

A favorable economic climate creates increased commercial truck activity. Increased transportation consumes more fuel, which increases carbon based emissions and other pollutants. The supported economic activity will then tend to expand further, creating increases in the aforementioned activities.

This process will tend to repeat until A) an external influence limits increases in one of these parameters or B) a limitation emerges that limits the ability of one of these parameters to increase. An example of the latter could involve the limits to fuel availability (or its cost-effective availability). Limited fuel availability will slow economic activity and make transportation activity more expensive, which in turns further limits economic activities.

Most surface transportation activities rely upon petroleum-based fuels. While zero or low emission fuel alternatives are being commercialized, their presence within the transportation system remains in infancy. Additionally, some of the most promising approaches still emit greenhouse gases (hybrids, natural gas, ethanol, etc). In essence, the surface transportation system is providing a significant carbon footprint and will continue to do so in the foreseeable future.

In a society that requires that we plan for sustainability in our cities and our transportation network it is obligatory that we account for the carbon footprint as we plan, design and maintain our highways. In order to build carbon footprinting into our transportation planning the transportation engineers must have the ability to model the traffic flow down to the micro-scale of individual lanes and individual cars so that the energy consumption of the vehicles can be calculated and the efficiency of the system tabulated.

This project introduces the microsimulation model TRANSIMS and the emissions model MOVES to the NYSDOT and the CDTC. With the Capital District highway network modeled and tested in TRANSIMS the CDTC will be receiving a significant boost towards the goal of incorporating sustainability considerations into their planning process.

MODEL CONSTRUCTION

Microsimulation traffic modeling techniques such as TRANSIMS operate on a detailed model of the highway network which has each road, intersection, and lane modeled in detail. The first step in developing the model is to populate lane connectivity tables based upon an existing map database.

For this project the Navteq and ALIS 2009 base maps were combined to create the TRANSIMS network. In the case of each base map dataset there are deficiencies, but they combine to provide a reasonably accurate representation of the highway network in the Capital District. Where questions of accuracy arose the network was checked and calibrated through on-site field visits and an extensive review of aerial photography.

In the process of integrating the two base maps into a link/node dataset Calmar developed an automated approach to merging the underlying point data that define the line segments which, in turn, represent the road links. Each section of road in each base map is defined by a series of measured points in latitude and longitude. To combine two different representations of a road (one from Navteq and one from ALIS) Calmar put all of the lat/long points from both datasets into a single string of points, fit the points with a smooth curve, and then extracted points at regular intervals. The result is a smoother, more complete base map and a more accurate link/node table as an input into TRANSIMS.

Calmar went further to verify the traffic control at intersections by using publicly accessible satellite and street image data from the internet. Specifically, each intersection was observed with satellite imagery available from web sites such as Google and Bing. In most cases, the engineers were able to clearly determine whether or not the intersection was controlled by a traffic light. In a few cases, further checking was performed by viewing the intersection through Google Streetview. With these tools on each engineer's desktop it was possible for the traffic control of each intersection in the Capital District to be verified in a couple of days at a significant savings to the project.

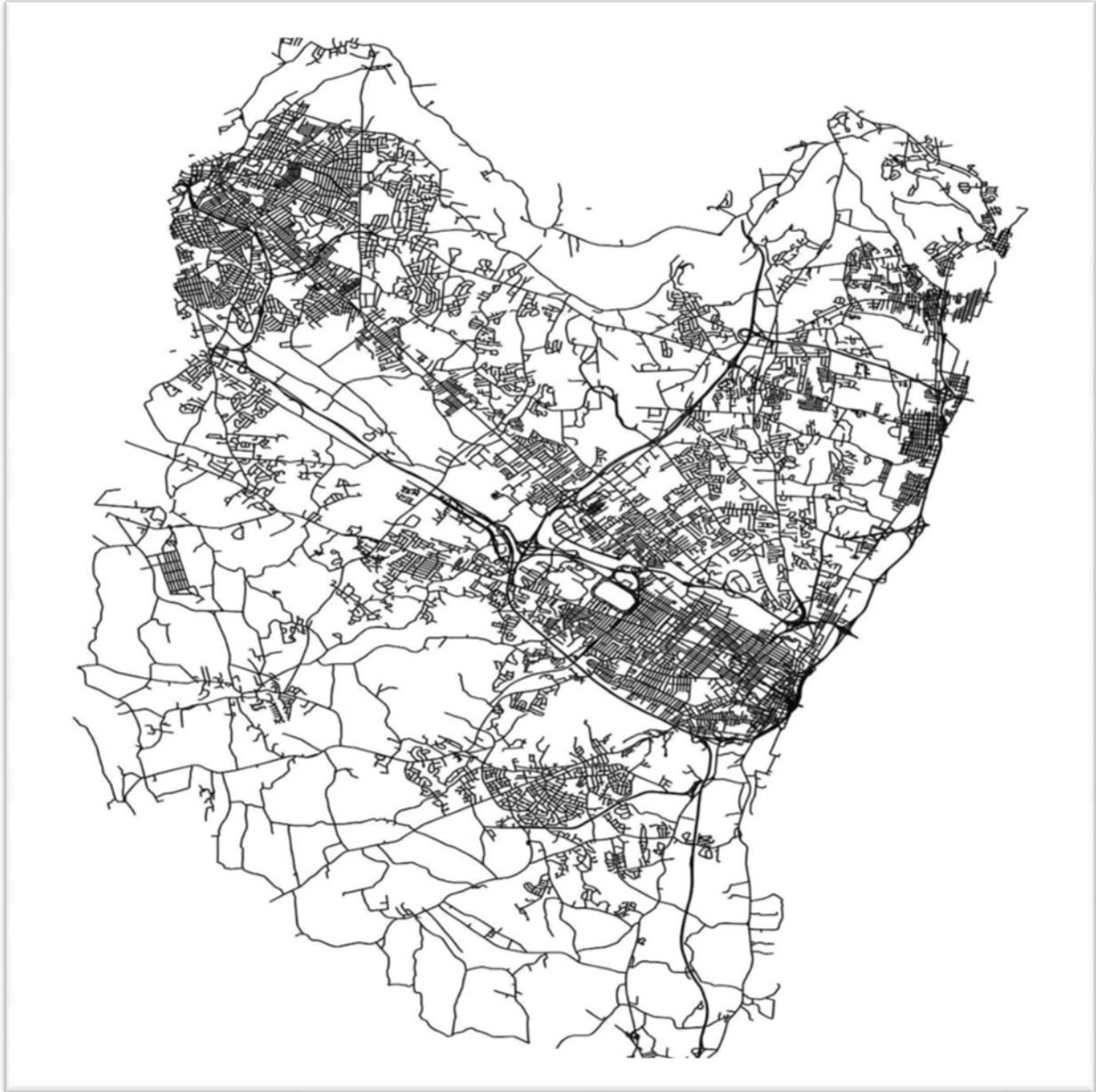


Figure 1. Capital District Road Network as Modeled

During the network build/compile process the highway network is constructed through a combination of links and nodes which represent the streets and intersections. The microsimulation model expands on this by resolving the road, or links, down to the lane level by constructing lane connectivity tables. This is in addition to the simple link/node constructs found in traditional four step assignment models (such as the current CDTC STEP model). Microsimulators require full lane connectivity detail at the intersections. The delays computed by microsimulating the traffic through the intersections replace node impedances found in traditional four step models.

Within TRANSIMS, utilities are provided to estimate the lane connectivity from the overall link description tables. In general, these utilities work well (say, 95 percent of the time), but not perfectly. It is well known within the TRANSIMS community that lane connectivity editing is necessary step in finalizing any TRANSIMS network and this is performed near the end of the network development process/early to mid calibration. The lane connectivity issues are identified by running the model and locating points in the model where excessive queuing is forming and/or vehicles are being removed from the microsimulation (there is a time out function within TRANSIMS that removes a vehicle being microsimulated if it does not move after 240 seconds).

In this project, 65 intersections required recoding. Below is mini-case study concerning some sample land connectivity issues found. It illustrates before/after some very detailed network edits that are required to make the TRANSIMS model fully perform as intended.

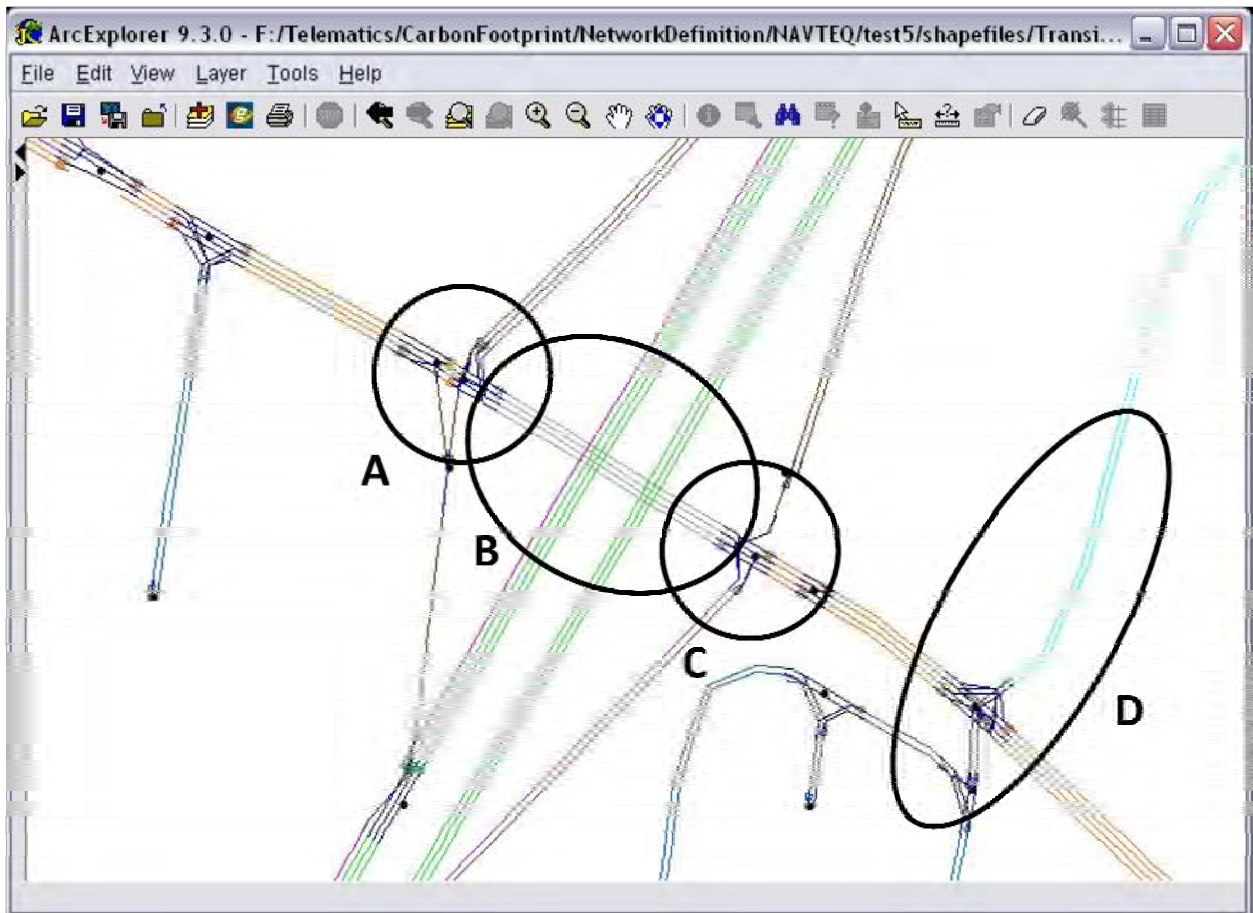


Figure 2A. NY-7/I-87 Interchange Before Editing

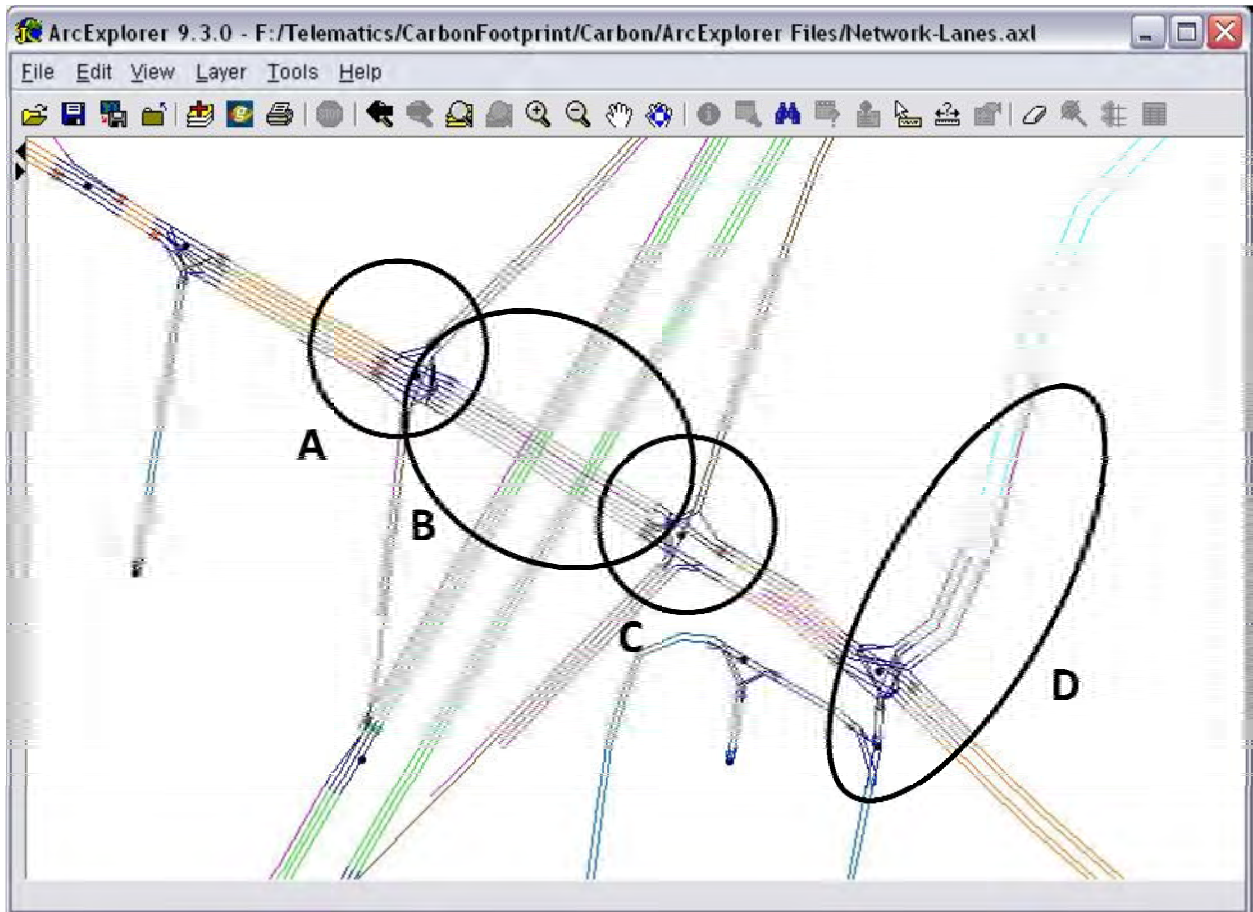


Figure 2B. NY-7/I-87 Interchange After Editing

Due to the close proximity of the I-87 exit ramps and the Latham Farms road, the model was unable to correctly estimate the number of lanes at the ramp terminus, Route 7 and the intersecting streets. This interchange area is well known for its very high volumes and is roughly at full buildout (no more lanes can be added, according to AASHTO standards) for highway geometry at this nature. Insufficient through and turn lanes were present on Route 7 at all intersections (see B for an example). Inexplicably, no right turn lanes were computed for the southbound Northway exit ramp to Route 7 (see A) and right turn connectivity was omitted from westbound Route 2 to the northbound Northway entry ramp (see C). At the Latham Farm road intersection, insufficient turn lanes were computed for Route 2 and Latham Farm Roads (See D).

A second example of corrections that were necessary is the Latham Circle interchange. For this traffic circle the original lane connectivity configuration (Figure 3A) was correctly estimated by the TRANSIMS model. Latham traffic circle contains two lanes with connections to intersecting streets being to the outside lane. For reasons unknown, the microsimulator could not properly route traffic through the circle while recognizing that traffic on the inner lane may merge to the outer lane in order to exit to one of the connecting streets. Instead, through traffic would simple queue and eventually time out (disappear). This is an apparent glitch in the microsimulator and it appears to be related that the limitation that intersections must be 30 meters or further apart.

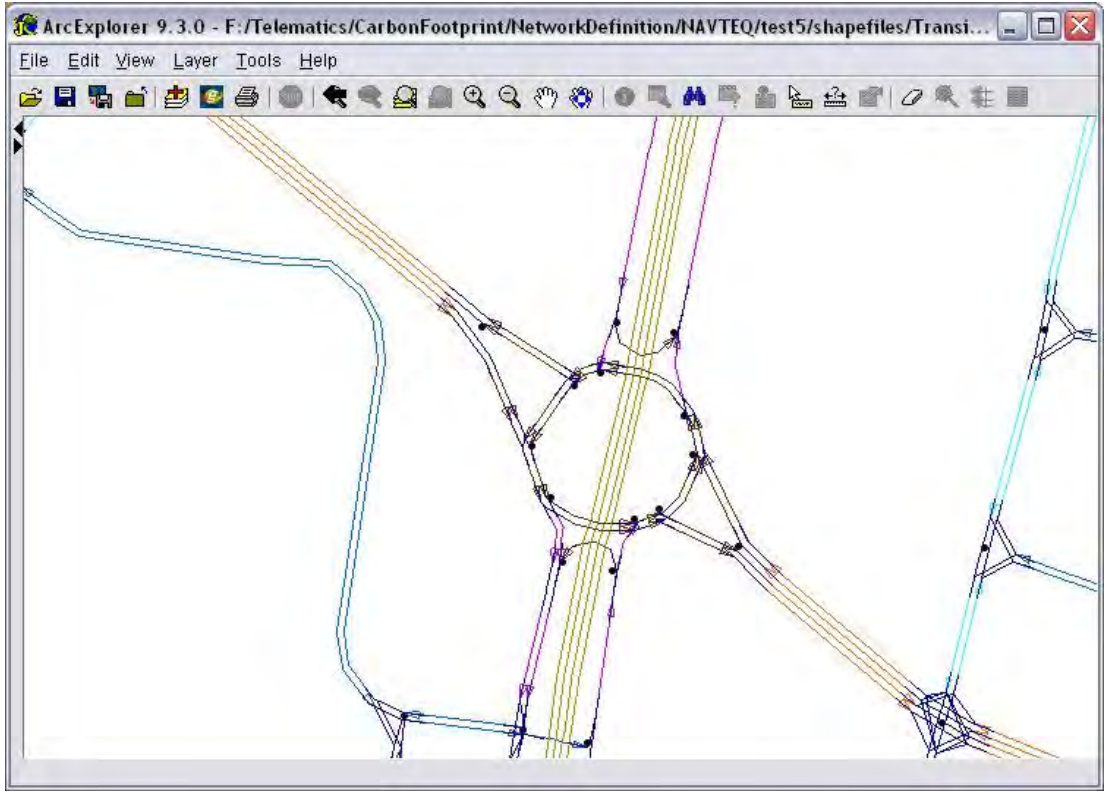


Figure 3A. Latham Circle Before Edits

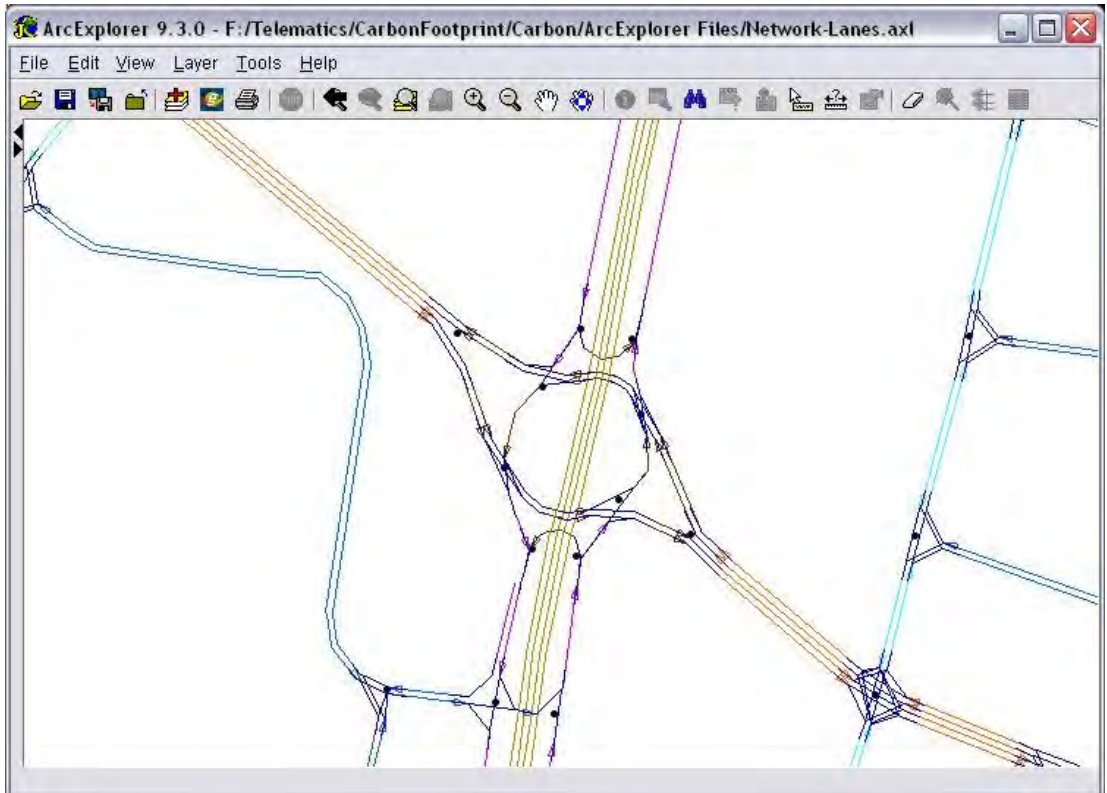


Figure 3B. Latham Circle After Edits

After study of the issue's cause, a work around was developed to provide for the movements and connectivity topology while eliminating the apparent glitch in the microsimulator. A portion of the circle was made one lane and the entering street connected just after the connection for traffic exiting the circle. This work-around results in some microsimulation delay fidelity loss, as the friction between vehicles within the circle and vehicles entering or exiting the traffic circle can be pronounced. On the whole this loss is very minor and isolated in nature.

In summary the TRANSIMS lane connectivity compiler worked very well. However, its current logic is not sufficiently mature to handle very complex intersections. As performed by other practitioners, the best way to identify where the compiler introduced errors is to run the microsimulator and identify where vehicles cannot get through during the microsimulation process. Staff learned that some degree calibration is required. Also, several iteration of the router are required to be run before introducing the microsimulator. If the microsimulator is run too early in the process, then false errors will be returned , as it is not uncommon for the first few model iterations to have extremely high link V/C ratio (>2.0). As with any traffic microsimulator, the one in TRANSIMS will queue traffic if roadway has insufficient capacity to carry the traffic.

MODEL CALIBRATION

Model runs were performed, with initial emphasis to correct any initial coding issues and insuring trips arriving into or leaving the study area were at an appropriate magnitude. Figure 2 provides an overview of the traffic model assignment, with some of the external districts provided to frame a geographic reference. This is a bandwidth plot of the assigned volumes. The blue lines of varying width show streets that received traffic volumes. The black lines show streets that did not receive any traffic volume estimates for the PM peak hour (which is being modeled here). The absence of traffic on these streets is not particularly troubling, as the vast majority are local streets that were coded in to provide a highly dispersed pattern of traffic sources and sinks. This is caused in most cases by the non-assignment of activity centers at these locations. The project team may decrease the minimum link length to increase the likelihood of an activity center being assigned to these streets. This has to be weighed against the possibility of assigning activity centers to other locations where they were previously removed via manual techniques.

In preparation of calibration activities intensifying, seven (three north to south and four east to west) screenlines were established to evaluate large scale intra study area flows. These will eventually be used to refine the calibration among the links comprising the screenlines. During the assignment of screenline elements (links comprising the screenlines), an interesting phenomenon was encountered with local neighborhood streets being identified. Streets of this nature seldom have independent traffic volumes and are not present in the original CDTC source material. While noted, they will not be used to any appreciable extent for the comparative exercise that screenlines require.

These screenlines will be geospatially overlaid onto the original CDTC source material and volumes extracted for comparative purposes. The volumes extracted will entail the CDTC assignment proper and the balanced flow map data. Assignment by TRANSIMS onto specific links will be considered as acceptable when the TRANSIMS volumes fall between those two values.

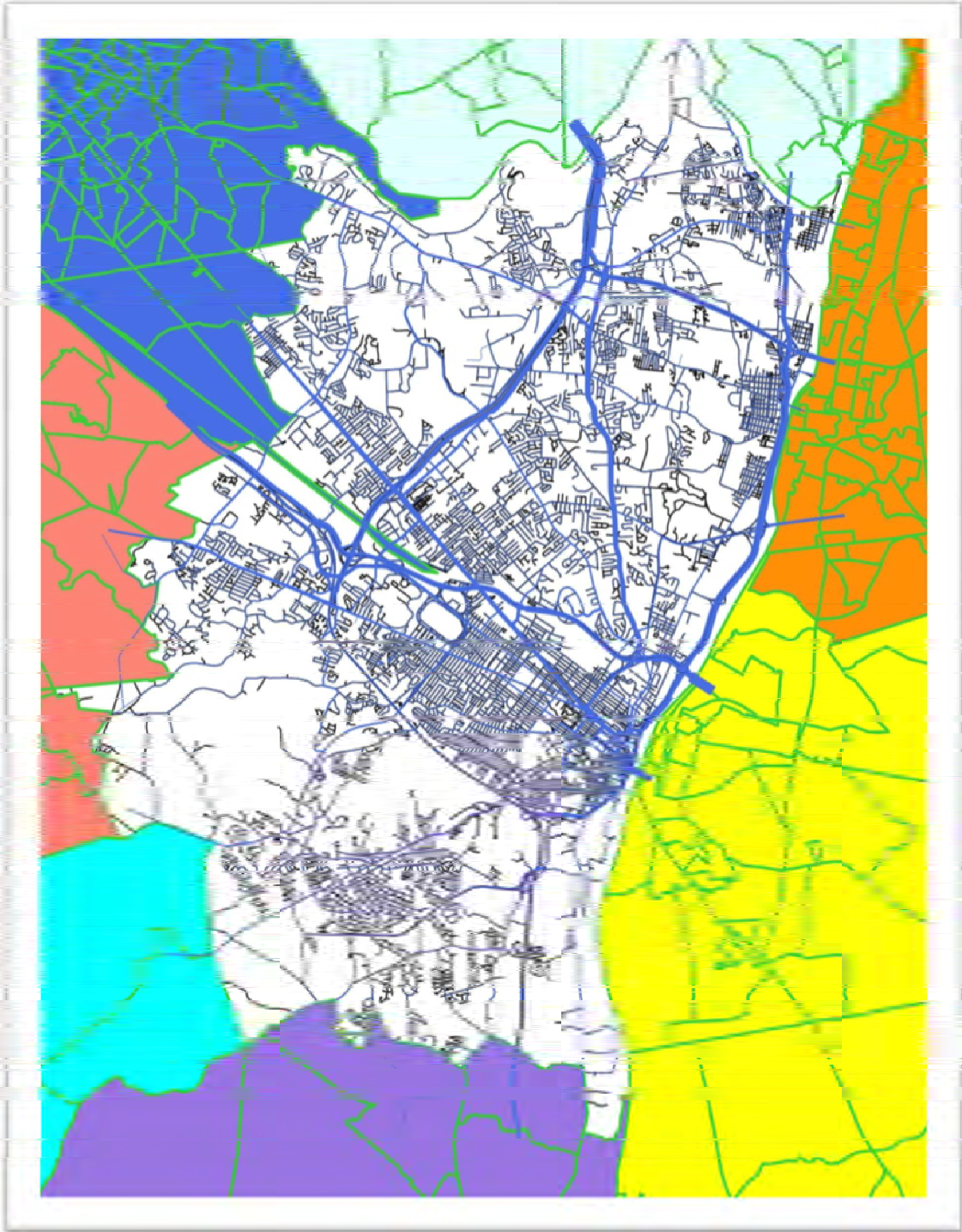


Figure 4. Overall Traffic Assignment

TECHNOLOGY TRANSFER

The original project plan provided the delivery of the TRANSIMS and the MOVES models to the CDTC as the primary deliverable. The project team has delivered the TRANSIMS model to the CDTC along with a library of execution scripts (Appendix A) which significantly ease the operation and editing of the system. Due to the departure of the Principal Investigator the team was not able to complete and deliver the MOVES model.

After a review of the model applications, it appears that the conditions on the ground at the CDTC have changed and the desire to move toward the TRANSIMS/MOVES model has diminished. The organization has a staff that is trained to operate their existing model and apparently the cost associated with maintaining the additional skill set that is required to operate TRANSIMS was greater than the organization could support.

CONCLUSIONS

It was necessary to terminate activity on the project due to the loss of the Principal Investigator. Fortunately before this key member was lost the entire TRANSIMS model was completed. This model has been delivered to both NYSERDA and the CDTC.

The application of the MOVES model supported by Calmar's HIVIS dataset is the portion of the work which was not completed. However, Calmar would like to note that a separate project with the University of California Riverside has presented the manner in which the HIVIS dataset can be advantageously applied to the MOVES model. The results of this effort will be presented at the 2012 Transportation Research Board meeting.

APPENDIX A: TRANSIMS QUICK-RUN/BATCH SCRIPTS

TRANSIMS QUICK-RUN

TRANSIMS is most naturally ran by using a combination of control files (*.ctl) and batch scripts (*.bat on a windows system). A control file provides a storage mechanism and method of entering a large number of variable inputs for all of TRANSIMS sub processes, and batch scripts provide a simple method of automatically executing an ordered set of processes.

For the quickest execution of the model that was delivered to NYSERDA and CDTC, two steps are required:

- 1) Execute the batch script, **setup\RunAll.bat**
This script builds the batch script and control files used in step 2.
- 2) Execute the batch script, **batch\RunAll.bat**
This script (output of step 1) executes a 10 iteration model run:
 - a) Builds shapefiles of the network (with and without lanes)
 - b) Convert trips from OD tables to TRANSIMS demand files
 - c) Iteration 1: Initial routing
 - d) Iteration 2-5: Iterative routing (feedback loops)
 - e) Iterations 6-10: Iterative micro-simulation/routing (feedback loops)
 - f) Build snapshots of iteration 6 results
 - g) Build snapshots of iteration 10 (final) results
 - h) Build snapshots for videos of final results
 - i) Build all videos of final results (the folder **videos\Movies** may need to be created)

There are several forms of outputs for a complete model run:

- 1) GIS shapefiles of the network, with and without lanes, are in the **network\shapefiles** folder.
- 2) The results of the modeling are stored in the **results** folder, with select GIS shapefiles in the **shapefiles** sub folder.
- 3) Requested and modified trips (TRANSIMS network demand files), used for intermediate processing, are stored in the **demand** folder.
- 4) Printout files (*.prn) will have been created for each TRANSIMS process that was executed (including setup). These can be found in the **control** folder (and the **setup** folder).

BATCH SCRIPT DESCRIPTIONS

Setup Scripts

All Setup scripts auto-generate control files and batch scripts for TRANSIMS sub processes.

setup\Clean.bat

Cleanup all generated control files, scripts, and outputs files

setup\RunAll.bat

Generates files for a complete model run

- Uses the control file: **setup\RunAll.ctf**
- Builds the batch script: **batch\RunAll.bat**
- Can be duplicated by manually running the following setup scripts
 1. setup\ConvertTrips.bat
 2. setup\RouteAll.bat
 3. setup\RouterRuns_2-5.bat
 4. setup\MsimRuns_6-10.bat
 5. setup\OutputSum_6.bat
 6. setup\OutputSum_10.bat
 7. setup\OutputVideo_10.bat

setup\ArcNet.bat

Generates files for building shapefiles of the network

- Uses the control file: **setup\ArcNet.ctf**
- Builds the batch script: **batch\ArcNet.bat**

setup\ConvertTrips.bat

Generates files for building shapefiles of the network and converting trips from input OD tables to initial TRANSIMS demand files

- Uses the control file: **setup\ConvertTrips.ctf**
- Builds the batch script: **batch\ConvertTrips.bat**

setup\RouteAll.bat

Generates files for building all initial routes, i.e. iteration 1

- Uses the control file: **setup\RouteAll.ctf**
- Builds the batch script: **batch\RouteAll.bat**

setup\RouterRuns_2-5.bat

Generates files for feedback runs 2 thru 5, utilizing only the router (and not the micro-simulator), i.e. iterations 2-5

- Uses the control file: **setup\RouterRuns.ctf**
- Builds the batch script: **batch\2-5.RouterRuns.bat**
- Can be modified to change the number of feedback runs by editing the text “2..5” to denote the desired iterations. Note that doing so may break dependent processes.

setup\MsimRuns_6-10.bat

Generates files for feedback runs 6 thru 10, utilizing both the micro-simulator and the router, i.e. iterations 6-10

- Uses the control file: **setup\MsimRuns.ctl**
- Builds the batch script: **batch\6-10.MsimRuns.bat**
- Can be modified to change the number of feedback runs by editing the text “6..10” to denote the desired iterations. Note that doing so may break dependent processes.

setup\OutputSum_6.bat

Generate files for result summaries of data after iteration 6

- Uses the control file: **setup\OutputSum.ctl**
- Builds the batch script: **batch\6.OutputSum.bat**
- Can be modified to generate files for result summaries of data after any micro-simulation iteration by editing the text “6” to denote the desired iteration

setup\OutputSum_8.bat

Generate files for result summaries of data after iteration 8

- Uses the control file: **setup\OutputSum.ctl**
- Builds the batch script: **batch\8.OutputSum.bat**
- Can be modified to generate files for result summaries of data after any micro-simulation iteration by editing the text “8” to denote the desired iteration

setup\OutputSum_10.bat

Generate files for result summaries of data after iteration 10

- Uses the control file: **setup\OutputSum.ctl**
- Builds the batch script: **batch\10.OutputSum.bat**
- Can be modified to generate files for result summaries of data after any micro-simulation iteration by editing the text “10” to denote the desired iteration

setup\OutputVideo_8.bat

Generates files to build videos for the results of the micro-simulation run of iteration 8

- Uses the control file: **setup\OutputVideo.ctl**
- Builds the batch script: **batch\8.VideoSnapshots.bat**
- Can be modified to generate files for videos of any micro-simulation iteration by editing all occurrences the text “8” to denote the desired iteration

setup\OutputVideo_10.bat

Generates files to build videos for the results of the micro-simulation run of iteration 10

- Uses the control file: **setup\OutputVideo.ctl**
- Builds the batch script: **batch\10.VideoSnapshots.bat**
- Can be modified to generate files for videos of any micro-simulation iteration by editing all occurrences the text “10” to denote the desired iteration

setup\OutputVideo_10-quick.bat

Generates files to quickly build videos for the results of the micro-simulation run of iteration 10

- Uses the control file: **setup\OutputVideo-quick.ctl**
- Builds the batch script: **batch\10.VideoSnapshots-quick.bat**
- Quick videos only build videos of data between 5:00pm and 5:30pm
- Can be modified to generate files for quick videos of any micro-simulation iteration by editing all occurrences the text “10” to denote the desired iteration

Video Helper Scripts

To build a video, the micro-simulator must output snapshots of every vehicle location every second (or the resolution desired). This is handled by the VideoSnapshots generated scripts. These scripts build the frames and videos for specific locations and time ranges within the network.

video\buildVideo.bat

Build a single video from micro-simulation snapshots

- Inputs:
 1. Start time (in seconds from midnight)
 2. End time (in seconds from midnight)
 3. View window’s minimum X value (in UTM)
 4. View window’s maximum X value (in UTM)
 5. View window’s minimum Y value (in UTM)
 6. View window’s maximum Y value (in UTM)
 7. Name of the video
 8. Bit rate of the video (default = 5MB per seconds)
 9. Frame rate of the video (default = 10 frames per second)
- Resulting video files are stored in the sub folder **video\Movies** (may need to be manually created)

video\buildVideoGroup.bat

Build a set of videos for a specific time range

- Inputs:
 1. Start time (in seconds from midnight)
 2. End time (in seconds from midnight)
 3. Video name suffix for the group
- Calls the **video\buildVideo.bat** script for a programmed set of locations

video\buildAllVideos.bat

Call the **video\buildVideoGroup.bat** script for a programmed set of time ranges

Generated Scripts

All generated scripts call specific sets of TRANSIMS processes based on control files in the “control” directory.

batch\ArcNet.bat

Builds shapefiles for the network, with and without lanes

- TRANSIMS processes:
 - ArcNet.exe

- control files:
 - Net.ArcNet-NoLanes.ctl
 - Net.ArcNet-Lanes.ctl

batch\ConvertTrips.bat

Builds shapefiles for the network, with and without lanes, and converts OD trips to TRANSIMS demand files

- TRANSIMS processes:
 - ArcNet.exe
 - ConvertTrips.exe
- control files:
 - Net.ArcNet-NoLanes.ctl
 - Net.ArcNet-Lanes.ctl
 - ConvertTrips.ctl

batch\RouteAll.bat

Run the router for all trips to initialize the model run, i.e. iteration 1

- TRANSIMS processes:
 - Router.exe
 - PlanSum.exe
 - ArcPlan.exe
- control files:
 - 1.Router.ctl
 - 1.PlanSum.ctl
 - 1.ArcPlan.ctl

batch\2-5.RouterRuns.bat

Run the router for a subset of trips for the feedback loop for iterations 2 thru 5

- TRANSIMS processes:
 - PlanSelect.exe
 - Router.exe
 - PlanPrep.exe
 - PlanSum.exe
 - ArcPlan.exe
- control files (where [n] is the feedback iteration, 2 thru 5):
 - [n].PlanSelect.ctl
 - [n].Router.ctl
 - [n].PlanMerge.ctl
 - [n].PlanSum.ctl
 - [n].ArcPlan.ctl

batch\6-10.MsimRuns.bat

Run the router for a subset of trips and the micro-simulator for the feedback loop for iterations 6 thru 10

- TRANSIMS processes:
 - PlanSelect.exe

- Router.exe
- PlanPrep.exe
- Microsimulator.exe
- PlanSum.exe
- ArcPlan.exe
- ArcProblem.exe
- control files (where [n] is the feedback iteration, 6 thru 10):
 - [n].PlanSelect.ctl
 - [n].Router.ctl
 - [n].PlanMerge.ctl
 - [n].PlanSort.ctl
 - [n].Msim.ctl
 - [n].PlanSum.ctl
 - [n].ArcPlan.ctl
 - [n].ArcProblem.ctl

batch\6.OutputSum.bat

Build summary files for the micro-simulation results of iteration 6

- TRANSIMS processes:
 - LinkSum.exe
 - ArcSnapshot.exe
 - ArcDelay.exe
- control files:
 - 6.LinkSum.ctl
 - 6.ArcSnapshot.ctl
 - 6.ArcDelay.ctl

batch\8.OutputSum.bat

Build summary files for the micro-simulation results of iteration 8

- TRANSIMS processes:
 - LinkSum.exe
 - ArcSnapshot.exe
 - ArcDelay.exe
- control files:
 - 8.LinkSum.ctl
 - 8.ArcSnapshot.ctl
 - 8.ArcDelay.ctl

batch\10.OutputSum.bat

Build summary files for the micro-simulation results of iteration 10

- TRANSIMS processes:
 - LinkSum.exe
 - ArcSnapshot.exe
 - ArcDelay.exe
- control files:
 - 10.LinkSum.ctl

- 10.ArcSnapshot.ctl
- 10.ArcDelay.ctl

batch\8.VideoSnapshots.bat

Run the micro-simulator for all vehicle locations and build all videos for the results of iteration 8

- TRANSIMS processes:
 - Microsimulator.exe
 - ArcSnapshot.exe
- control files:
 - 8.VideoMsim.ctl
 - 8.VideoArcSnapshot.ctl
- Also executes the script **video\buildAllVideos.bat**

batch\10.VideoSnapshots.bat

Run the micro-simulator for all vehicle locations and build all videos for the results of iteration 10

- TRANSIMS processes:
 - Microsimulator.exe
 - ArcSnapshot.exe
- control files:
 - 10.VideoMsim.ctl
 - 10.VideoArcSnapshot.ctl
- Also executes the script **video\buildAllVideos.bat**

batch\10.VideoSnapshots-quick.bat

Run the micro-simulator for all vehicle locations between 5:00pm and 5:30pm and build all videos for the results of iteration 10

- TRANSIMS processes:
 - Microsimulator.exe
 - ArcSnapshot.exe
- control files:
 - 10.VideoMsim-quick.ctl
 - 10.VideoArcSnapshot-quick.ctl
- Also executes the script **video\buildAllVideos.bat**

batch\RunAll.bat

Run the full 10 iteration model, equivalent to manually executing the following in order:

- 1) batch\ConvertTrips.bat
- 2) batch\RouteAll.bat
- 3) batch\2-5.RouterRuns.bat
- 4) batch\6-10.MsimRuns.bat
- 5) batch\6.OutputSum.bat
- 6) batch\10.OutputSum.bat
- 7) batch\10.VideoSnapshots.bat