

TransModeler Training

2-Project Setup & Introduction to Trip Table

presented to

Caltrans, District 1-Eureka

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Project Settings - Setup

The screenshot shows the 'Project Settings' dialog box with the 'Setup' tab selected. The 'Scenario' dropdown is set to 'AM'. The 'Scenario Folder' path is 'C:\Projects\Eureka\FromSean\KosterSubareaOD_Conv'. The 'Simulation Period' shows a 'Start Time' of 07:00:00 and an 'End Time' of 09:00:00. Under 'Initial State', the 'Empty' radio button is selected, with a 'Warm-up Period (min)' of 0.0. The 'Preload' radio button is also visible with a 'Maximum Preload Time (min)' of 20.0. The 'Loaded' radio button is unselected. There are also fields for 'Filename' and a 'Show Optional Project Settings' section with checkboxes for 'Routing', 'Transit', and 'Parameters'. At the bottom, there are buttons for 'File Manager...', 'Scenario Log...', 'OK', and 'Cancel'.

- Scenario Management
(If scenarios have different networks, e.g. one link has additional lane, a separate folder should be created)
- Folder Location
- Simulation Period
- Initial State (please refer to the manual to understand the differences between these options)

Project Settings - Network

The screenshot shows the 'Project Settings' dialog box with the 'Network' tab selected. The 'Scenario' dropdown is set to 'Simulation Project'. The 'Road Network' section has 'Database' set to 'Eureka.dbd'. The 'Speed and Capacity' section has four dropdowns: 'Free Flow Speed' (Use road class parameters), 'Capacity' (Use road class parameters), 'Lane Capacity' (Use segment per-lane capacity), and 'Lane Sat. Flow' (Use default saturation flow). The 'Segment and Link Variables' list includes '[AB_Count_700 / BA_Count_700]', '[AB_PKTIME / BA_PKTIME]', '[AB_PKCAP / BA_PKCAP]', and 'Weight'. The 'Node Variables' list is empty. The 'Turning Movement Variables' section has a 'Table' dropdown and a 'Max. Speed' dropdown set to '(mph)'. The 'OK' and 'Cancel' buttons are at the bottom.

➤ Database

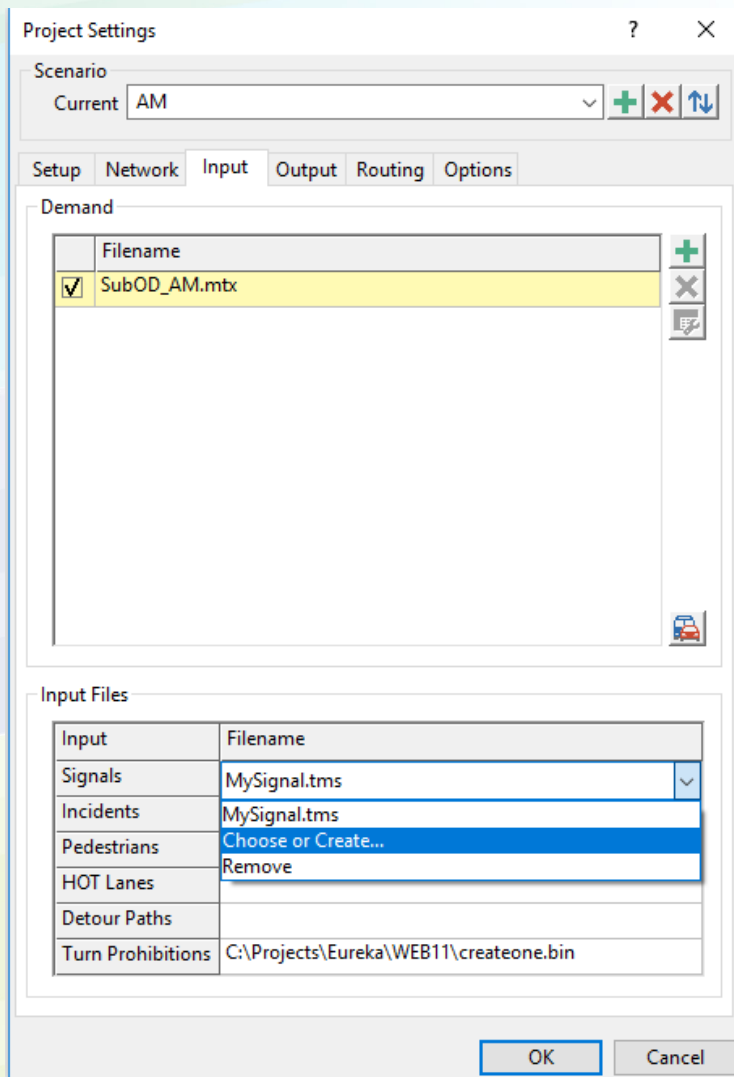
- Speed and Capacity Allocation (in microsimulation, capacity and saturation flow rate are optional. They are used in mesoscopic, macroscopic analysis, as well as in the static ODME)

FFS is only used to create the shortest path if no historical travel time data is provided. FFS can be set at individual segment level, or at link user classification level.

➤ Link/Node Variable (for ODME)

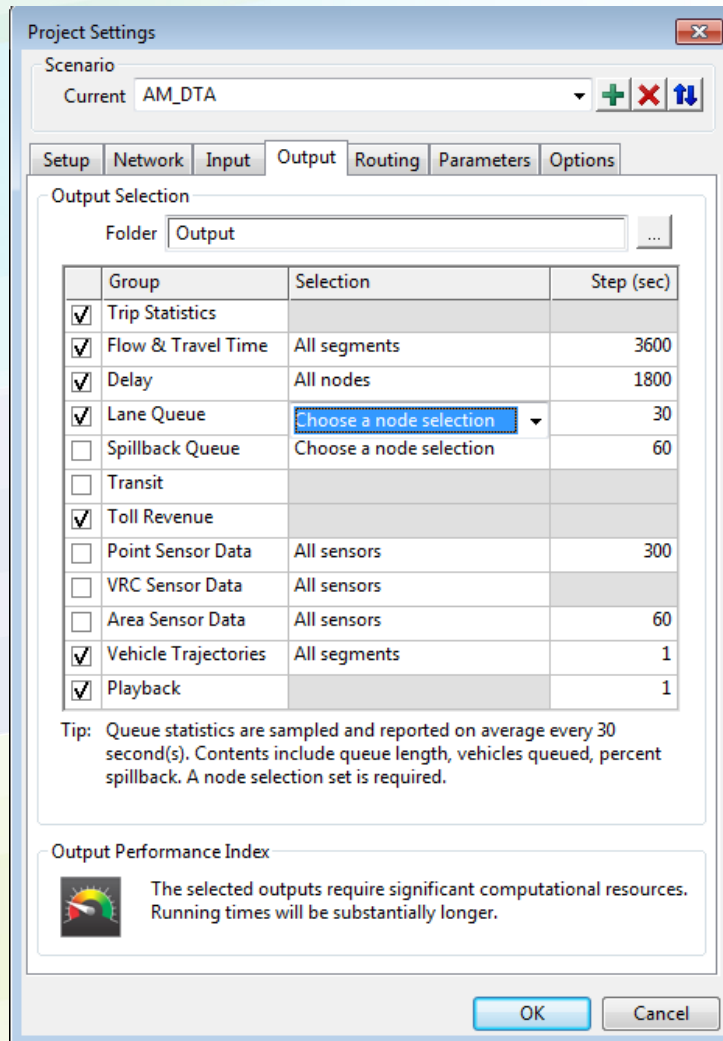
- Turning Movement (comparison, ODME)

Project Settings - Input

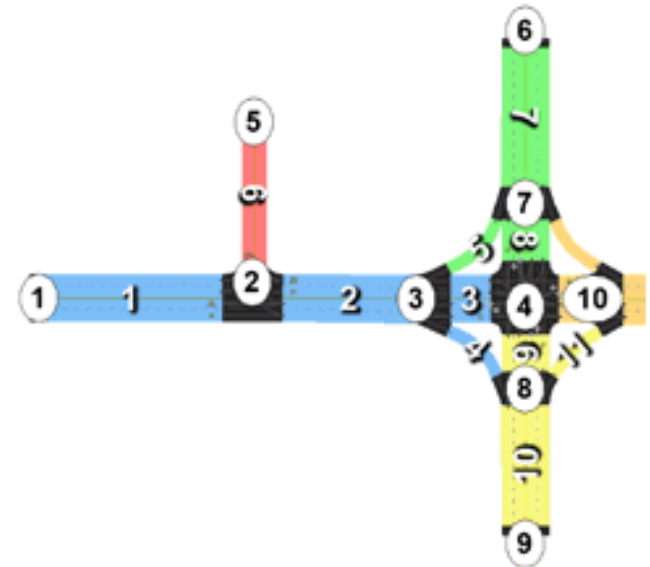


- Add .mtx or trip.bin
- Signal (.tms)
- Pedestrian volume(.ped)
- Turn Penalties (.bin, if there is any segment sequence that should be prohibited)

Project Settings - Output



- Selection Set (can be all)
- Duration
- Trajectory
- Playback
- Superlink



Project Settings - Routing

The screenshot shows the 'Project Settings' dialog box with the 'Routing' tab selected. The 'Scenario' is set to 'AM'. Under 'Route Choice', the 'Method' is 'Stochastic Shortest Path', 'Minimize' is 'Travel Time', and 'Link Exclusions' is 'None'. The 'Travel Time and Turning Delay' section includes a table for 'Historical' data with a 'Choose...' button, and input fields for 'First Time Field(s)', 'Start Time' (00:00:00), 'Num. Intervals', and 'Interval (min)'. The 'Global Turning Delays' section contains a table with the following data:

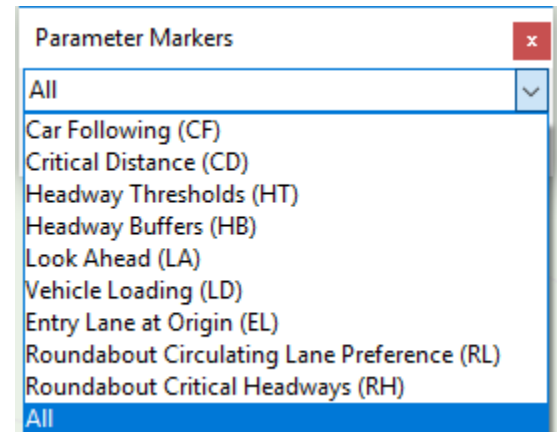
Movement	Delay (sec)
Right Turn	10.0
Through	0.0
Left Turn	30.0
U-Turn	60.0

There is a checked checkbox for 'Enforce global turning delays as minimum'. The dialog has 'OK' and 'Cancel' buttons at the bottom.

- Recommended method
- Use generalized cost in case of toll or operational cost
- Starting from FFS or historical travel time (from DTA) is available?
- Edit user group VOT through Parameters → Route Choice → Driver Group (only in presence of toll or operational cost)

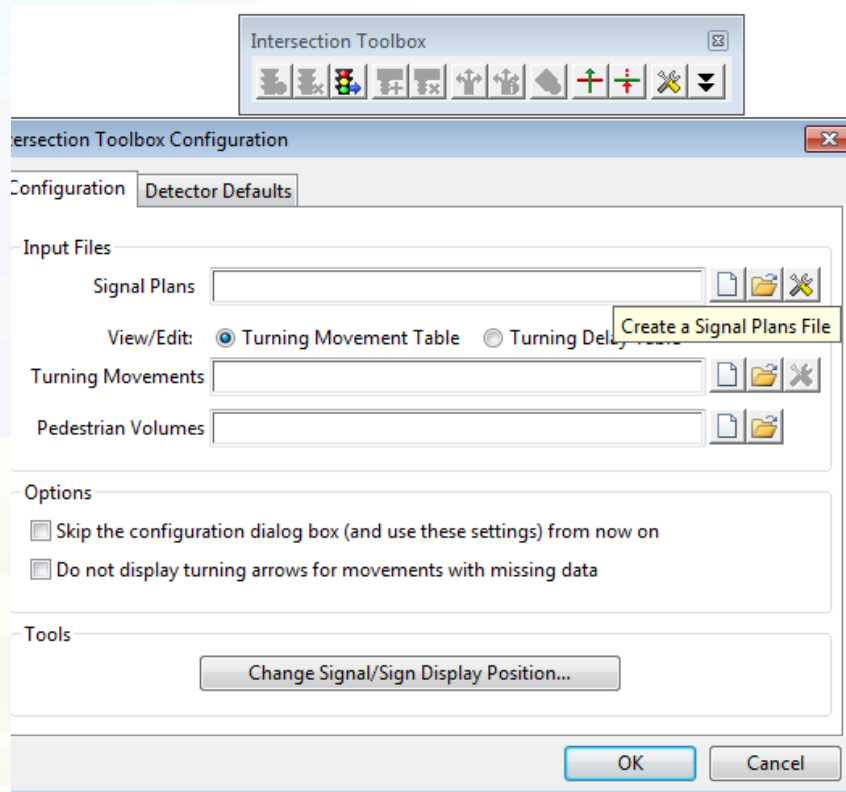
Parameters-Overview

- General (network related: model mechanics, microscopic parameters, speed distribution)
- Vehicle (fleet, mechanical characteristics)
- Driver (route choice, driving behavior, compliance)
- Route Choice (Freeway Bias, VOT distribution, etc.)
- Global mesoscopic/macrosopic parameters
- Local Parameters Adjustment (if justified)
Parameters → Parameters Markers Toolbar
- Each scenario can have a .xml file that stores all parameters.





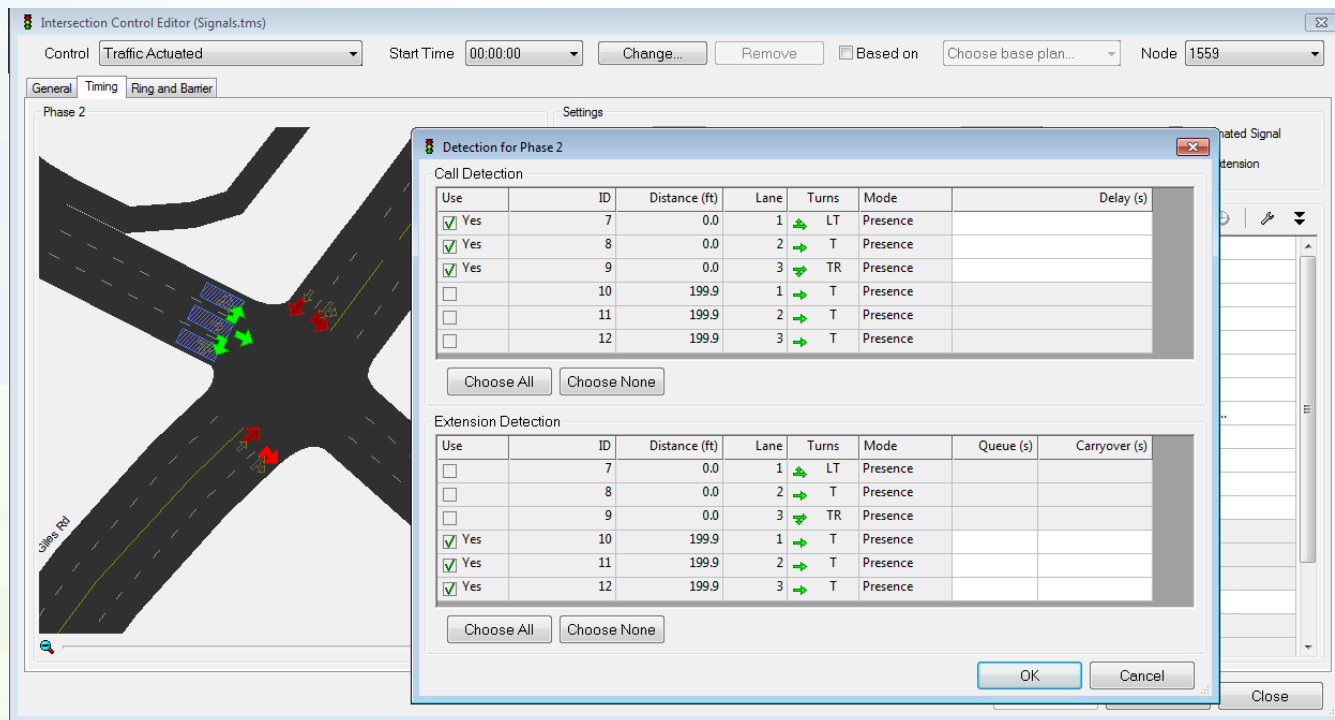
Network Editing – Signal Timing

- Project → Intersection Control → Toolbox
 - » If no .tms file is available, you can create one.



Network Editing – Signal Timing

- Detectors can be defined and assigned to the signal timing, either through road editor toolbox  or through intersection control toolbox . They are saved in a separate layer “Sensors”.



Intersection Control Editor (Signals.tms)

Control: Traffic Actuated | Start Time: 00:00:00 | Change... | Remove | Based on: Choose base plan... | Node: 1559

General | Timing | Ring and Banner

Phase 2

Settings

Detection for Phase 2

Call Detection

Use	ID	Distance (ft)	Lane	Turns	Mode	Delay (s)
<input checked="" type="checkbox"/>	7	0.0	1	LT	Presence	
<input checked="" type="checkbox"/>	8	0.0	2	T	Presence	
<input checked="" type="checkbox"/>	9	0.0	3	TR	Presence	
<input type="checkbox"/>	10	199.9	1	T	Presence	
<input type="checkbox"/>	11	199.9	2	T	Presence	
<input type="checkbox"/>	12	199.9	3	T	Presence	

Choose All | Choose None

Extension Detection

Use	ID	Distance (ft)	Lane	Turns	Mode	Queue (s)	Carryover (s)
<input type="checkbox"/>	7	0.0	1	LT	Presence		
<input type="checkbox"/>	8	0.0	2	T	Presence		
<input type="checkbox"/>	9	0.0	3	TR	Presence		
<input checked="" type="checkbox"/>	10	199.9	1	T	Presence		
<input checked="" type="checkbox"/>	11	199.9	2	T	Presence		
<input checked="" type="checkbox"/>	12	199.9	3	T	Presence		

Choose All | Choose None

OK | Cancel

Network Editing – Signal Timing

- Creating plan from templates

Intersection Control Editor (Elp_st.tms)

Control: Traffic Actuated Start Time: 00:00:00 Node: 1220

General | Timing | Ring and Barrier

Phase 2+5 in Barrier 1

Ring and Barrier Table

Create from Template: <Choose template for a new ring and barrier table>

Number of Rings: 2 Barriers: 2

Rings \ Barriers	B 1	B 1	B 2
R1	2		
R2	5	6	8

Timing Diagram (0 to 60 seconds):

- Ring 1 (R1): Green (0-15s), Yellow (15-20s), Red (20-25s)
- Barrier 2 (B2): Green (0-20s), Yellow (20-25s), Red (25-30s)
- Barrier 5 (B5): Green (0-20s), Yellow (20-25s), Red (25-30s)
- Barrier 6 (B6): Green (0-20s), Yellow (20-25s), Red (25-30s)
- Barrier 8 (B8): Green (0-20s), Yellow (20-25s), Red (25-30s)

Map Labels: Vista del Sol Dr, Joe Bartle Blvd

Buttons: Save, Summary, Close

Network Editing – Signal Timing

Once you enter an intersection delay .bin file in the project settings, HCM Adjustment and LOS tabs are automatically created. If detailed information available, LOS can be calculated here, or can be calculated by the user, after outputting the intersection delays.

Control: Traffic Actuated Start Time: 11:25:00 Change... Remove Based on Choose base plan... Node: 4597

General Tums Timing Ring and Barrier HCM Adjustments LOS

Phase 4

Settings



Cycle (sec) 70 Coordinate Beginning of Yellow Yield Point Single Coordinated Signal Max Extension

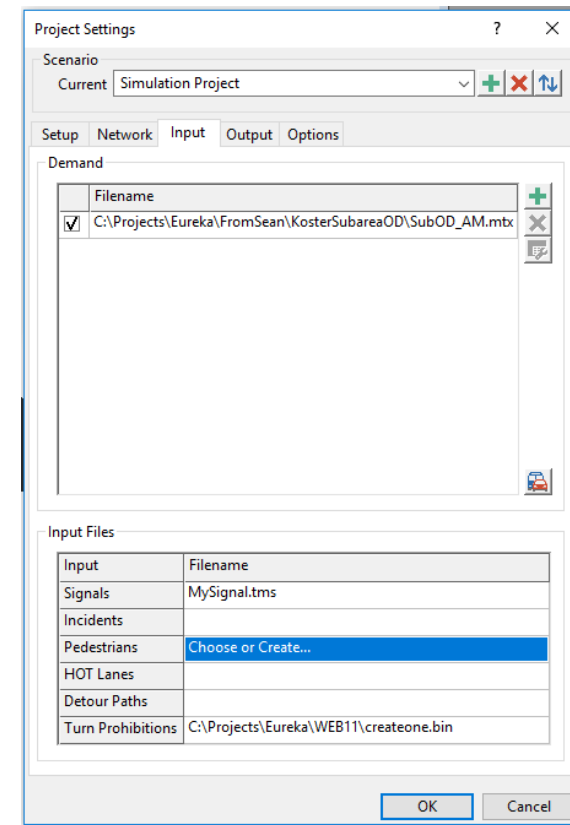
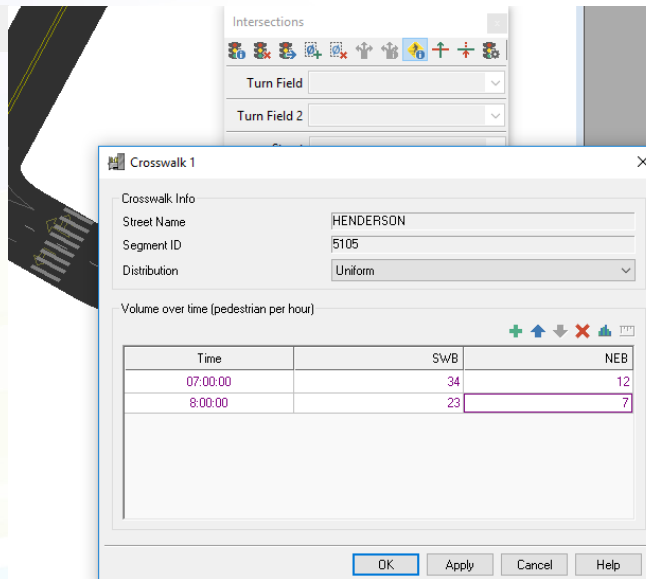
Offset (sec) 16

Phases

ID	4	6
Min Green	7	10
Max Extension		
Yellow	3.2	3.6
Red Clearance	1.9	1.6
Lost Time	5.1	5.2
Recall Mode	None	Min
Detectors	144,143,142; 191,189,190	50,49,194,193,192; 81,80,79,194,193,192
Memory Mode		
Extension	1	1
Simultaneous Gap Out	Yes	Yes
Added Initial	0	0
Max Initial		
Time before Reduction		
Reduce by / Every		
Min Gap		
Ped Walk + FDW		
Ped Links		
Coordinated	No	Yes
Split	26.1	44
Max Inhibit	No	
Opt Min Green	6	6

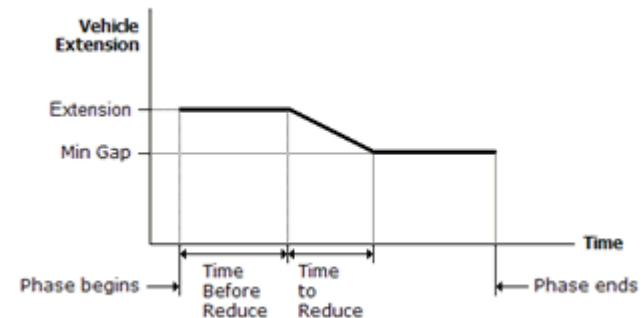
Signal Timing-Pedestrian Crossing

- Create crosswalk from the Road Editor toolbox. 
- Make sure there is a .ped file defined in the project setting, or create one.
- Via Intersection Control toolbox and by clicking at each crosswalk, you can edit the hourly pedestrian volume. 



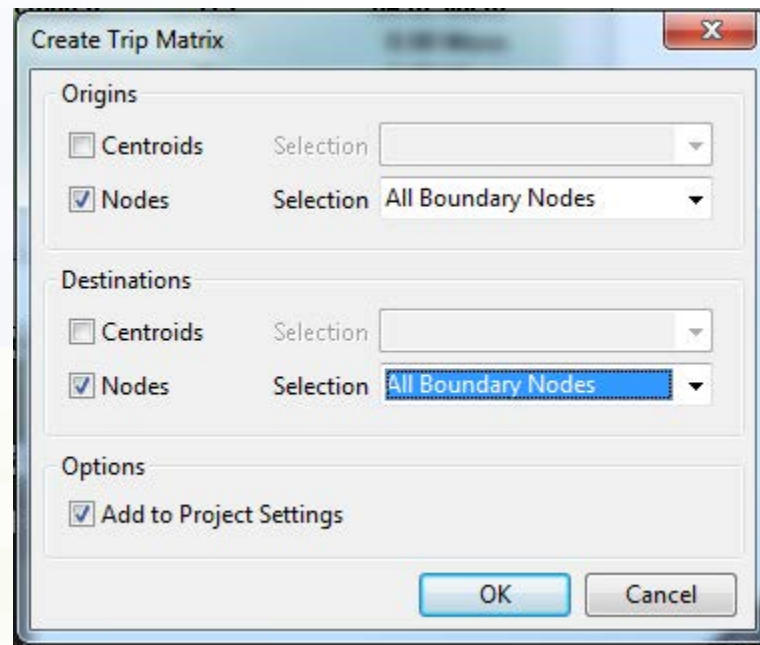
Network Editing – Signal Timing

- Refer to the Transmodeler Manual “**Glossary of Signalized Intersection Control Terms**”
- Recall mode
- Coordination
- Ped time/link
- Detection vs Extension detectors
- Extension (Maximum Green, Gap out)



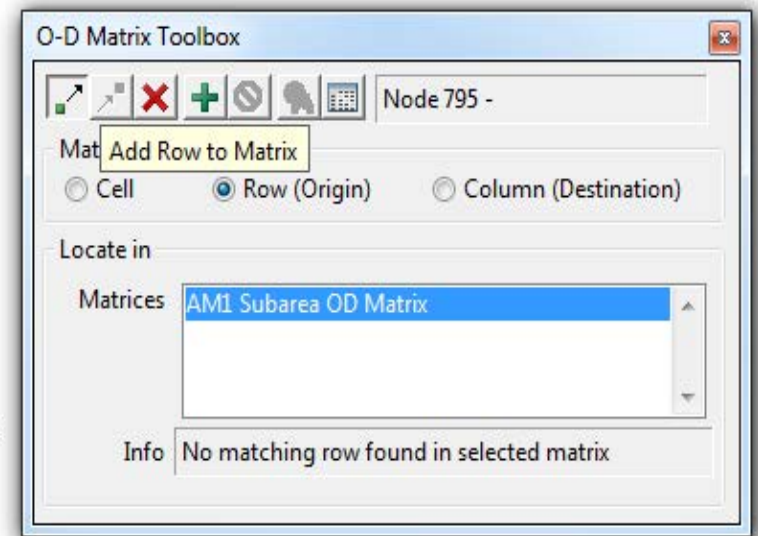
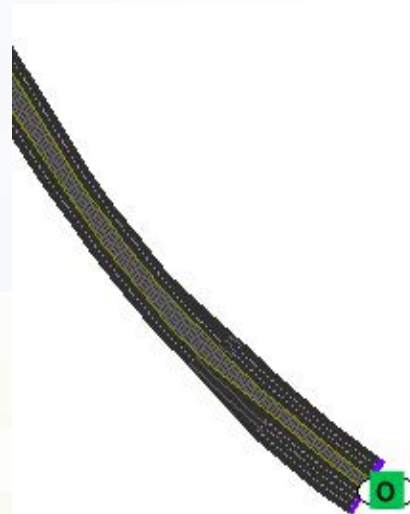
Matrix Creation

- Matrix can be created from Centroid or Node layer
- In Node layer, attribute Type = “Boundary” defines nodes that can be origin or destination.



Matrix Edit

➤ Demand → OD Matrix → Toolbox



Matrix-index

- **Change Matrix Index**
in the node or centroid dataview, you need to have a column that corresponds to the current matrix index (reference column), and a column based on which you want to change the index (correspond column).
- you can change the index for all ODs, or a selection set of ODs
- If you don't want to include some of the indices in the target matrix (you want to reduce the size of matrix) you can leave the value in the correspond column as null.
- When saving a matrix, you can save current or all indices.

Matrix-Aggregation/disaggregation

- Similar to index change, you need to have a column in node or centroid dataview.

Aggregate Matrix File: Sub-Area AM OD Matrix ? X

Aggregation Type

Sum Mean Minimum Maximum Count

	Rows	Columns
Dataview	Centroids	Centroids
Matrix ID Field	ID	ID
Aggregation Field	AggregatedZone	AggregatedZone

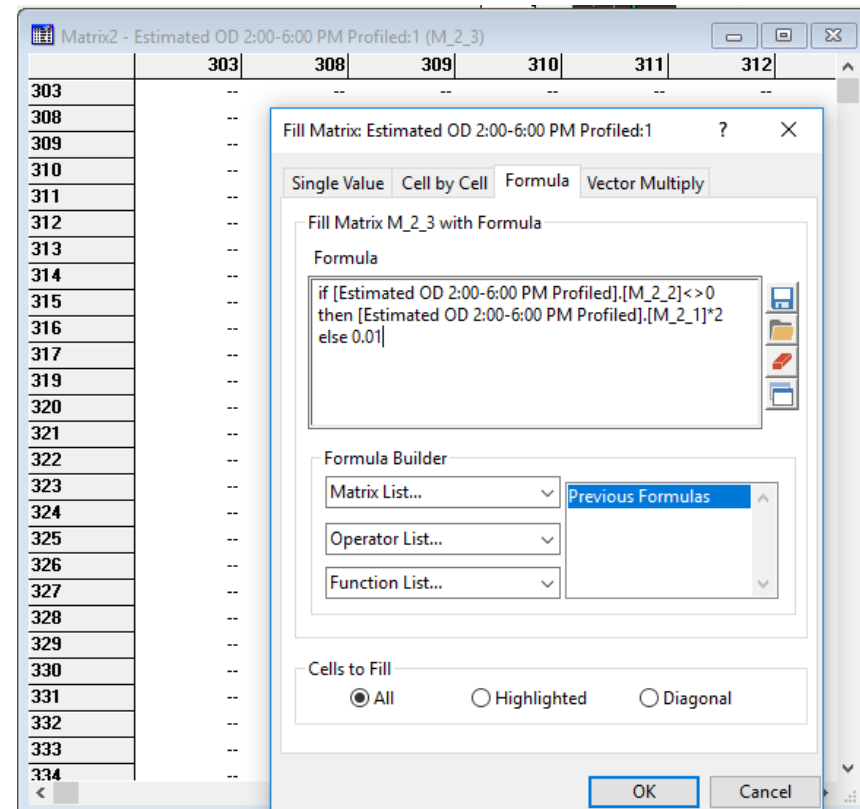
Aggregate Matrices

Demand (Total AM)

OK Cancel

Matrix-Filling

- If two matrices have the same size, one can be calculated based on, or copied from the other one.
- Helpful when all or some cells are equal or multipliers of cells from another matrix (e.g. when a global growth is applied to current trip table to create the future trip table), or when you want to compare matrices before/after ODME, or after manual matrix adjustment.



Demand

- .mtx files from TransCAD can be used directly in TransModeler
- They can be divided into shorter intervals (e.g. 15 or 30 minutes) to better replicate the demand fluctuation in real world
- Demand → OD Matrix → Trip Matrix settings

Trip Matrix Settings

Setup | Contents | Paths | Curve

Time Interval
Start Time (hh:mm:ss) 15:30:00
End Time (hh:mm:ss) 19:30:00

Matrix Unit
 Hourly Rate (vehicles per hour)
 Total Count (vehicles in interval)

Time Distribution
 Constant Over Time
 Curve-based
 Time-dependent Matrices

General Parameters
Unit Scaling Factor 1.000
Standard Deviation 0.000

Generate Departure Headways by
 Origin (recommended for fractional trips)
 O-D (recommended for integer trips)

Departure Headway Distribution
 Deterministic
 Random (Uniform)
 Random (Negative Exponential)

OK Cancel

Demand – User Classes

Trip Matrix Settings

Setup Contents Paths

General

File Name: C:\Projects\150141 El Paso MPO Model+DTA\DTA Task\TCOutput-Nov08\AMVehTrips.MTX

Description: AM period vehicle trips

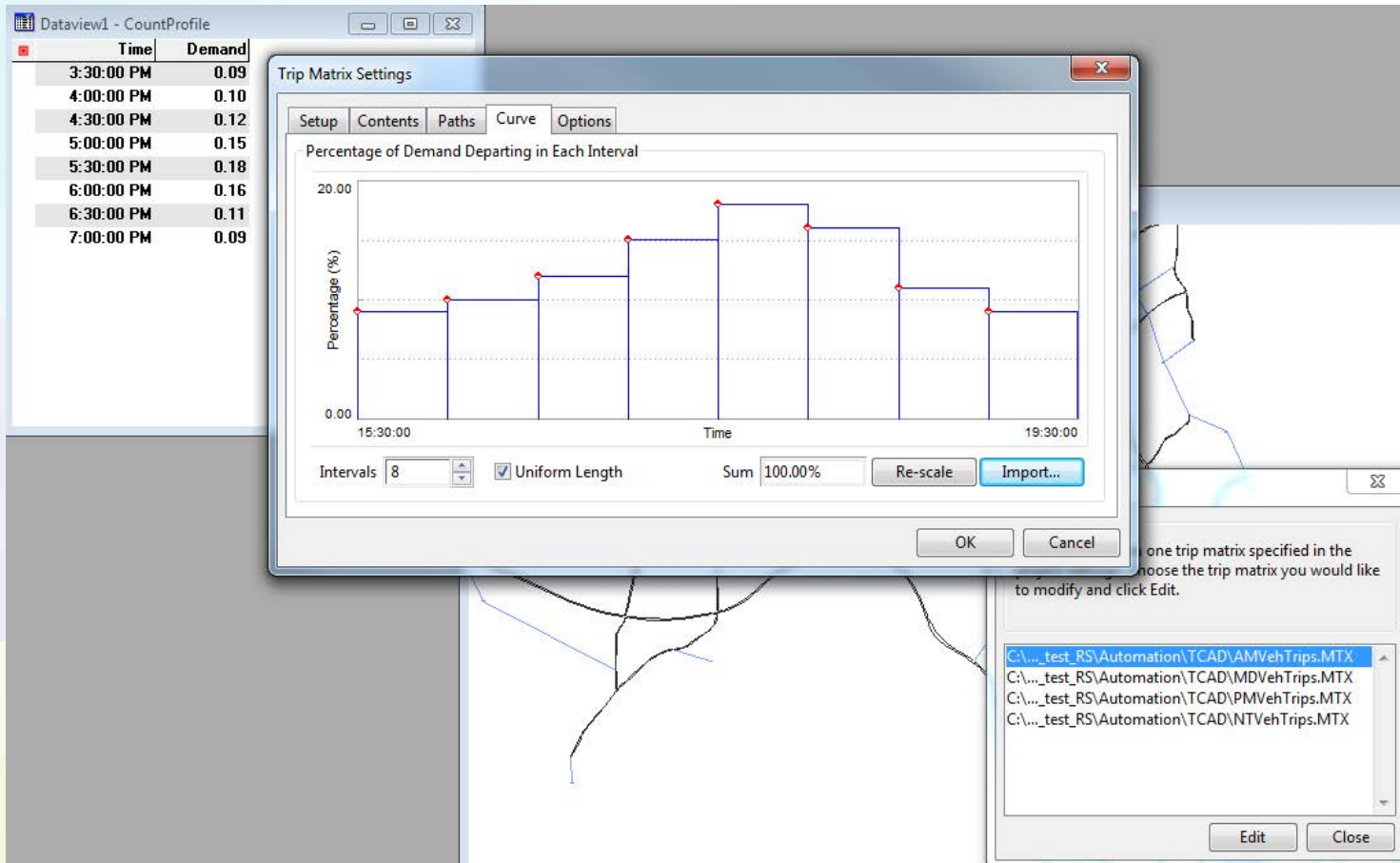
Number of Matrices: 15

	Matrix Name	Vehicle Class	Driver Group	HOV	ETC	User A	User B	Probe
<input checked="" type="checkbox"/>	SOV_I1			No				
<input checked="" type="checkbox"/>	SOV_I2			No				
<input checked="" type="checkbox"/>	SOV_I3			No				
<input checked="" type="checkbox"/>	SOV_I4			No				
<input checked="" type="checkbox"/>	SOV_I5			No				
<input checked="" type="checkbox"/>	SOV_NonWork			No				
<input checked="" type="checkbox"/>	HOV2			2+				
<input checked="" type="checkbox"/>	HOV3			3+				
<input checked="" type="checkbox"/>	LTK	ST		No				
<input checked="" type="checkbox"/>	MTK	ST		No				
<input checked="" type="checkbox"/>	HTK	TT		No				
<input checked="" type="checkbox"/>	E/I_Auto							
<input checked="" type="checkbox"/>	E/I_Truck	TT		No				
<input checked="" type="checkbox"/>	THRU_AUTO							
<input checked="" type="checkbox"/>	THRU_TRUCK	TT		No				

OK Cancel

- Vehicle Class
- Informed/Uninformed Drivers
- HOV Eligibility (Lane layer)
- User A/B for lane restriction
- Only 1 user group (passenger car) in Eureka project

Demand Profile



Demand – Matrix Estimation

Single Class Matrix Estimation

Inputs

Method: N Conjugate UE

Delay Function: Bureau of Public Roads (BPR)

Matrix File: Sub-Area AM OD Matrix

Matrix: Demand (Total AM)

Count: [AB_Count_700 / BA_Count_700]

Demand Interval: 1.00 (hours)

Parameters

Name	Field	Value
Time	[AB_PKTIME / BA_PKTIME]	n/a
Capacity	[AB_PKCAP / BA_PKCAP]	n/a
Alpha	None	0.15
Beta	None	4

Assignment Settings

Iterations: 100 Rel. Gap: 0.0001

Function: N-Conjugate 2

O-D Matrix Estimation Settings

Single Path Multiple Paths Gradient

Iterations: 10 Convergence: 0.0001

Options

Outputs

Report Cold Start Cold Start Period (sec): 505

Produce Tabulation

Create Themes

Estimate for no-count OD pairs

Save Iteration Log

Weights

By Link/Segment Field: Weight

Value Change Constraints

Matrix File	Lower Bound	Upper Bound
None	None	None

Matrix:

Movement Count Table

MyTurning C:\...bareaOD_Converted\MyTurning.bin

Count Field: Count_700