

# VISSIM – Modeling HOT Lanes

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**Freeway Simulation Subcommittee AHB20(2)**

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# VISSIM HOT Lane Modeling Options

## HOT Lane Modeling Options

1. Static Routes

## Choice: HOT Lane or GP Lanes?

**Static:** HOT Usage Defined Prior to Simulation

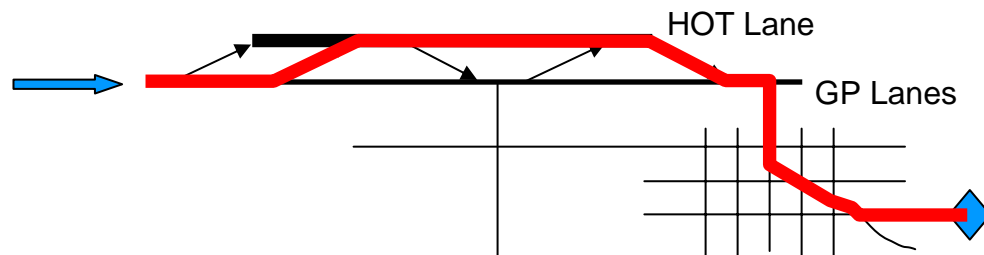
2. Dynamic Routes + Choice Model

**Dynamic:** Downstream Section Toll Price



3. Dynamic Traffic Assignment + Choice Model

**Dynamic:** Downstream Path Cost

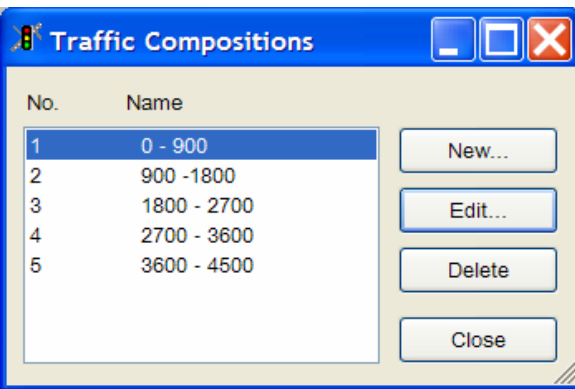
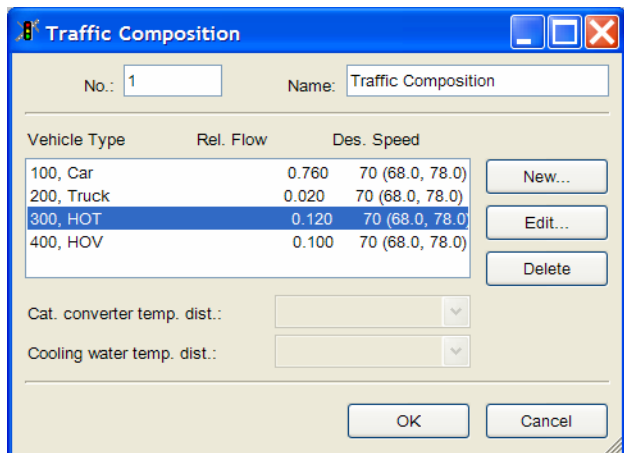
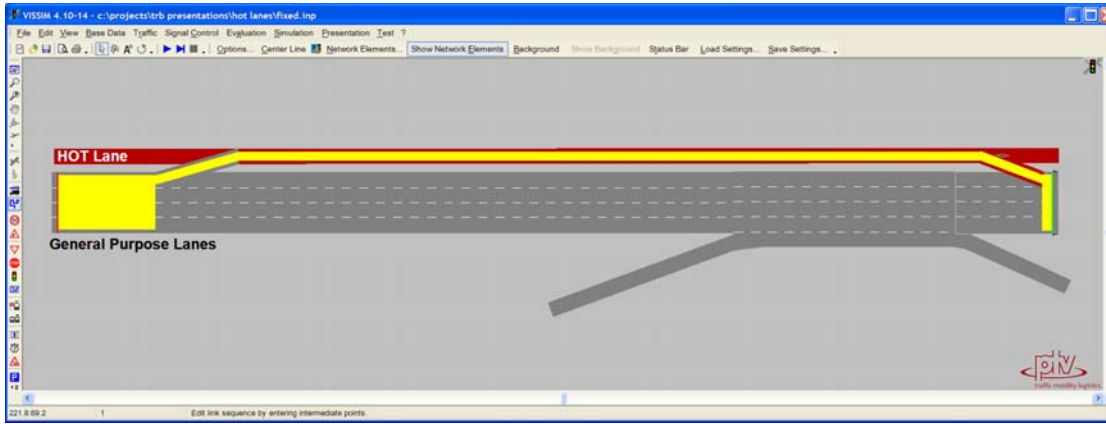


# Option 1: Static/Fixed Routes

**STATIC ROUTES:** user defines proportion of demand assigned to HOT lane(s) by time

## Key Model Building Steps

1. Build Network
2. Define Vehicle Classes/TC (behavior)
3. Place Static Routes
4. Run VISSIM
5. Report Results

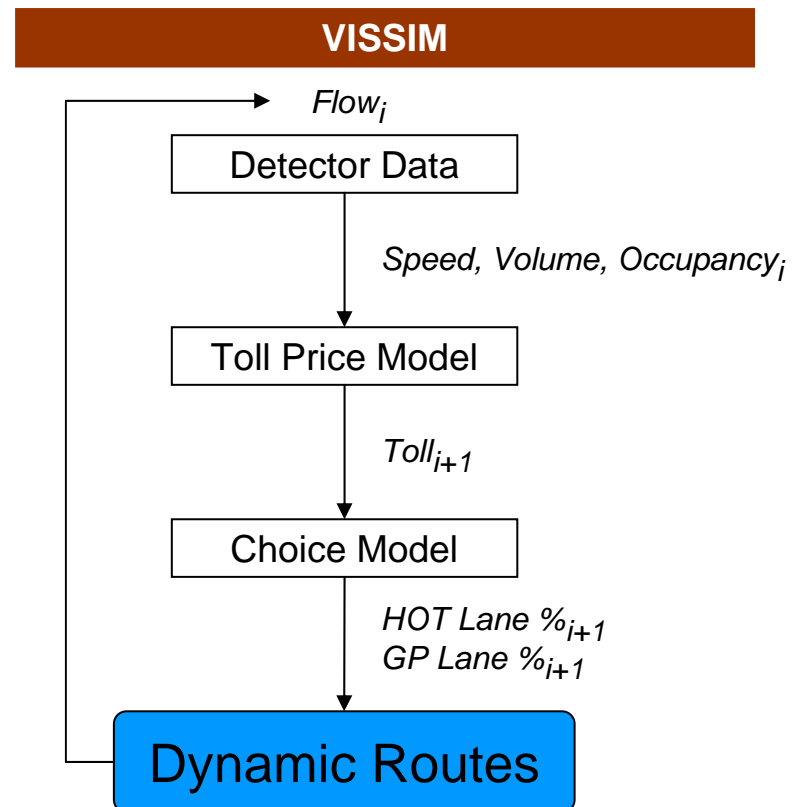


# Option 2: Dynamic Routes + Choice Model

**DYNAMIC ROUTES:** proportion of demand assigned to HOT lane(s) varies based on user defined rules/models  
 $f(\text{speed, volume, occupancy, toll, etc.})$

## Key Model Building Steps

1. Build Network
2. Define Vehicle Classes (behavior)
3. Place Detectors to Monitor Performance
4. Define Dynamic Toll Price Model
5. Estimate Choice Model (Survey, Logit Model)
6. Place Dynamic Routes
7. Run VISSIM
8. Report Results

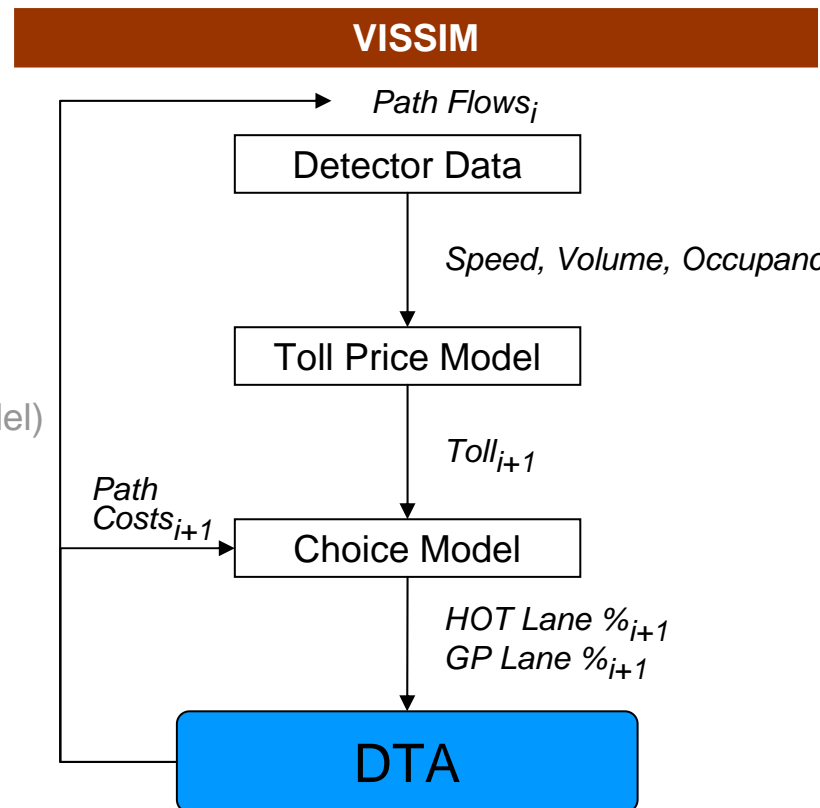


# Option 3: DTA + Choice Model

**DYNAMIC TRAFFIC ASSIGNMENT:** HOT lane demand based on path costs (distance, time, toll...) from assigning OD matrices, route guidance

## Key Model Building Steps

1. Build Network
2. Define Vehicle Class ODs
3. Place Detectors to Monitor Performance
4. Define Dynamic Toll Price Model
5. Estimate Choice Model (Survey, Logit Model)
- ~~6. Place Dynamic Routes~~
6. Run VISSIM to Convergence
7. Report Results



# Which VISSIM Option Should I Use?

## Answer Based On:

- > Available data
- > Purpose of analysis
- > Budget
- > Schedule

# Thank You



PTV+NuStats Hospitality Suite

Monday and Tuesday, 5 - 10 pm  
Hilton Hotel, 10th Floor, Presidential Suite 0174

# VISSIM HOT Lane Modules

**Hot lane Editor**

HOT LANE EDITOR

LOS	TD	HOT Lane \$
A	0 <= 5	0.5
B	5 <= 18	1.0
C	18 <= 22	1.5
	22 <= 30	2.0
D	30 <= 35	3.0
	35 <= 40	3.5
E	40 <= 45	4.0
	45 <= 50	5.0
F	50	6.0

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OK

**Files for NEMA Controller**

Program File: hotlane.exe

NEMA Editor: NEMA.dll

Edit Parameters

Data File 1: C:\temp\hotlane.txt

Data File 2:

Debug Mode

OK Cancel

**Hotlane Information**

Traffic Density: 36.6

Hot Lane \$: 3.50

Volume: 143

OK

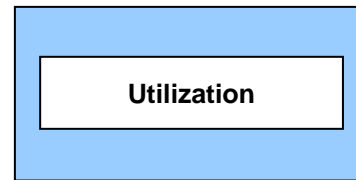
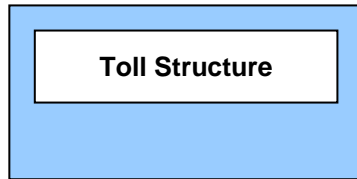
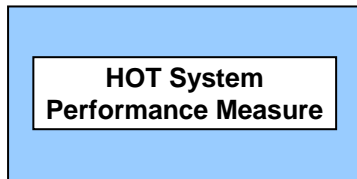
v0.2

# HOT Lane Data Needs – *Control*

**HOT System Performance Measure**

**Toll Structure**

**Price Elasticity Algorithm → Utilization**



LOS	TD
A	0 - 11
B	>11 - 18
C	>18 - 22
	>22 - 26
D	>26 - 30
	>30 - 35
E	>35 - 40
	>40 - 45
F	>45

HOT Lane \$
\$0.50
\$1.00
\$1.25
\$1.75
\$2.00
\$2.50
\$3.00
\$3.50
\$4.00

