

# Version 2.3 model status report and Time-of-day model updates

Presented to the Travel Forecasting Subcommittee  
of the TPB Technical Committee  
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National Capital Region Transportation Planning Board (TPB)  
Metropolitan Washington Council of Governments (COG)

# Recap of items presented in Sept.

- Demographic model calibration
  - HH Size, Income, Vehicles Available sub-models
- Trip generation rates estimation
  - Production rates, attraction rates
- Trip generation sub-models
  - Non-motorized, I-X sub-models
- Time-of-Day model
  - TOD factors discussed, analyzed

# Comments received

- Weighted trip productions rates preferred over unweighted rates
- Proposed AM, PM peak period durations are excessive with respect to HOV facility hours of operations
- Proposed “single curve” I-X model should be further disaggregated to isolate external travel markets influenced by the Baltimore region
- HBW trip attractions are lower than expected

# Today's focus

- Updates:
  - time-of-day process
  - vehicle availability, I-X sub-models
  - Updates to trip generation rates
- Results of applying the estimated demographic, trip generation models to the land use
- Findings of traffic assignment tests: assignment of “observed” auto trips to the highway network
- Trip distribution parameters to be used in calibration

# Schedule

- Between now and January TFS
  - Trip distribution & mode choice calibration
  - Model application including speed feedback process
  - Model documentation

# Time of day process background

- Addressed after mode choice
- Daily auto trips (SOV, HOV2, HOV3+) split to TOD periods using 3-dimension factor scheme:
  - Mode (SOV, Shared Ride)
  - Purpose (HBW, HBS, HBO, NHW, NHO)
  - Direction (from home vs. to home direction)
- Version 2.3 model will use four time periods
  - AM peak, PM peak, Midday, Late/Wee hours

# V2.3 time period durations updated

## Initial/ Proposed Time Periods

Time Period		Duration
AM Peak	5 AM - 10 AM	5 Hours
Midday	10 AM - 3 PM	5 Hours
PM Peak	3 PM - 8 PM	5 Hours
Other hours	(remainder of day)	9 Hours

## Updated Time Periods

Time Period		Duration
AM Peak	6 AM - 9 AM	3 Hours
Midday	9 AM - 3 PM	6 Hours
PM Peak	3 PM - 7 PM	4 Hours
Other hours	(remainder of day)	11 Hours



# Auto Driver Total TOD Percentages

Pct. Of Trips in Motion by Purpose within Time Period

Purpose	Period				Daily %
	6-9am %	9-3pm %	3-7 pm%	Other Hrs.%	
HBW	58.18	13.12	30.20	25.70	29.17
HBS	5.29	15.67	14.86	20.62	14.30
HBO	25.72	30.99	27.97	39.55	30.38
NHW	7.62	15.28	13.63	4.20	11.58
NHO	3.19	24.94	13.34	9.93	14.57
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

For example, 58% of all travel in the AM Peak period is HBW purpose

Pct. Of Trips in Motion by Time Period within Purpose

Period	Purpose					Daily%
	HBW	HBS	HBO	NHW	NHO	
6-9am %	37.31	6.93	15.83	12.33	4.07	18.70
9-3pm %	14.68	35.87	33.29	43.14	55.33	32.63
3-7 pm%	34.04	34.29	30.29	38.8	29.87	32.89
Other Hrs.%	13.97	22.91	20.59	5.73	10.73	15.78
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

For example, 37% of all HBW travel occurs in the AM Peak period

Source: 2007/08 HTS



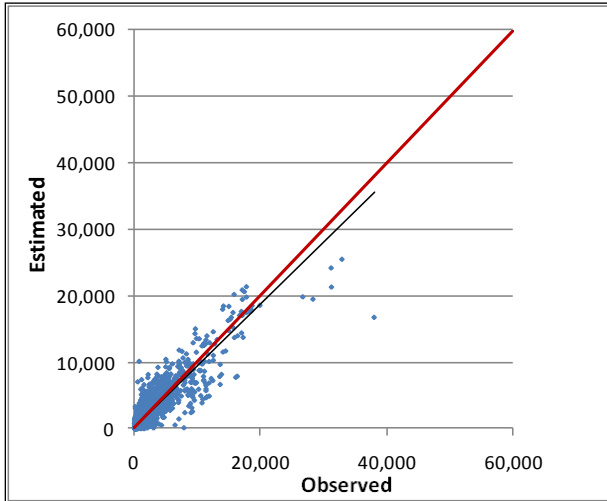
# Time period factors used in the model

(reflecting updated period durations)

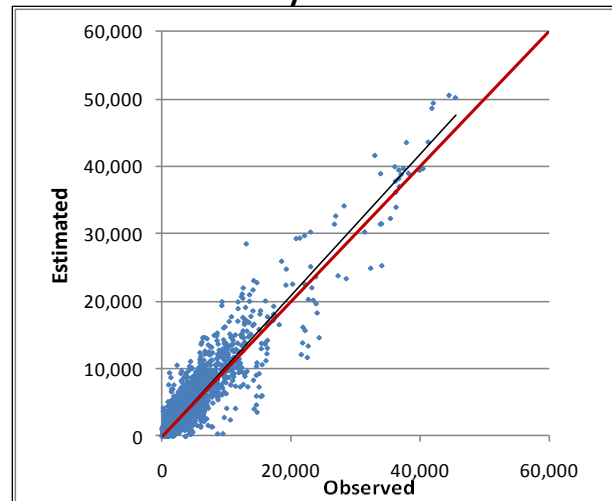
Purpose	Mode	Direction	AM	MD	PM	OP
HBW	Drive Alone	Home-NonHome	67.06	19.69	3.89	9.36
		NonHome -Home	1.59	8.20	69.67	20.54
	Carpool Person	Home-NonHome	58.06	25.85	7.90	8.19
		NonHome -Home	0.25	8.69	75.95	15.11
HBS	Drive Alone	Home-NonHome	20.84	43.46	22.08	13.62
		NonHome -Home	2.10	33.17	39.24	25.49
	Carpool Person	Home-NonHome	6.38	37.49	40.09	16.04
		NonHome -Home	0.30	29.26	35.89	34.55
HBO	Drive Alone	Home-NonHome	22.43	42.19	23.05	12.33
		NonHome -Home	9.34	29.41	31.68	29.57
	Carpool Person	Home-NonHome	33.57	30.60	26.06	9.77
		NonHome -Home	2.37	22.94	45.92	28.77
NHW	Drive Alone	Home-NonHome	12.93	42.82	38.36	5.89
		NonHome -Home	12.93	42.82	38.36	5.89
	Carpool Person	Home-NonHome	12.46	41.92	39.87	5.75
		NonHome -Home	12.46	41.92	39.87	5.75
NHO	Drive Alone	Home-NonHome	4.92	57.58	28.17	9.33
		NonHome -Home	4.92	57.58	28.17	9.33
	Carpool Person	Home-NonHome	3.69	47.29	35.48	13.54
		NonHome -Home	3.69	47.29	35.48	13.54

# Est./obs. assigned highway volumes by period - preliminary results:

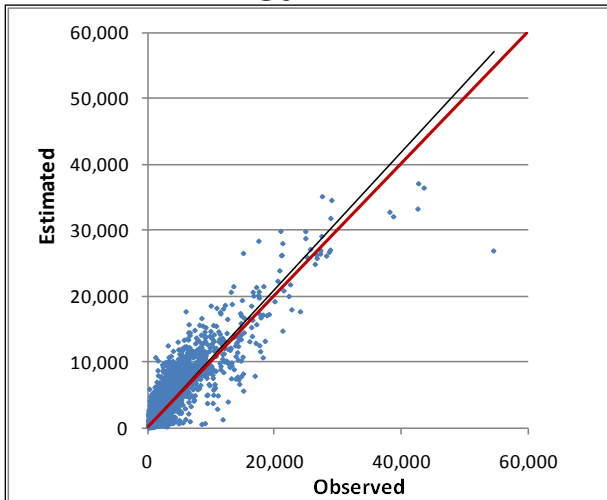
### AM Peak



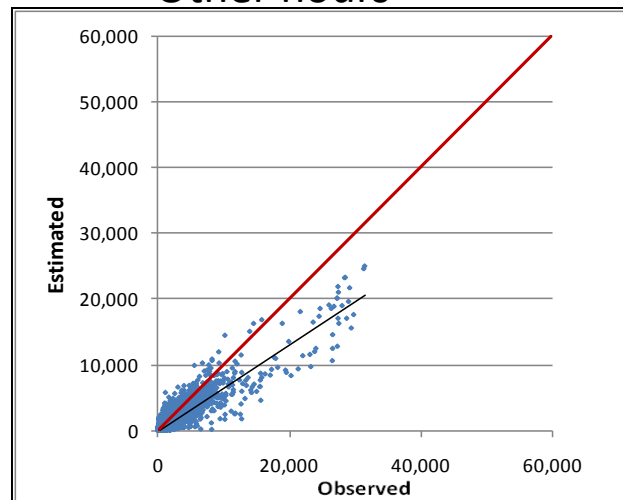
### Midday



### PM Peak



### Other hours



# Conclusions

- V2.3 modeled time of day time periods have been modified to better conform to HOV facility operations.
- HTS-based time period factors will likely require small adjustments based on highway assignment-related checks