



HAMPTON ROADS MODEL RELEASE NOTES (Ver. 1.1)

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Model Release Notes

Since model ver. 1.0 was released in December 2013, two major revisions were made in 1) toll facilities, 2) capacity and free flow speed on some links, and 3) EE trip calculation in version 1.10. Detailed revision was described as below. Please note that Model Methodology Report was not revised with updated model results. Updated model results are provided at the end of this release note.

Toll Facility Revision for Future Year Models

Tolls went into effect on Midtown and Downtown Tunnels in February 2014. In addition, new toll will be charged on Dominion Blvd (at the Steel Bridge) after 2017. These three toll facilities were incorporated into future networks (2018, 2028, and 2034) as shown in Figure 1. Toll facilities have fixed rates by different mode (auto and truck. Table 1 shows toll rates by mode and time of day, which are applied to all future networks. It is noted that the original published toll rate for Midtown and Downtown Tunnel were applied by HRTPO (the temporary reduced rates for 2014 were not applied). Since toll is collected by E-ZPass, a non-stop toll payment system managed by VDOT, it is assumed that there is no additional delay at toll gates.

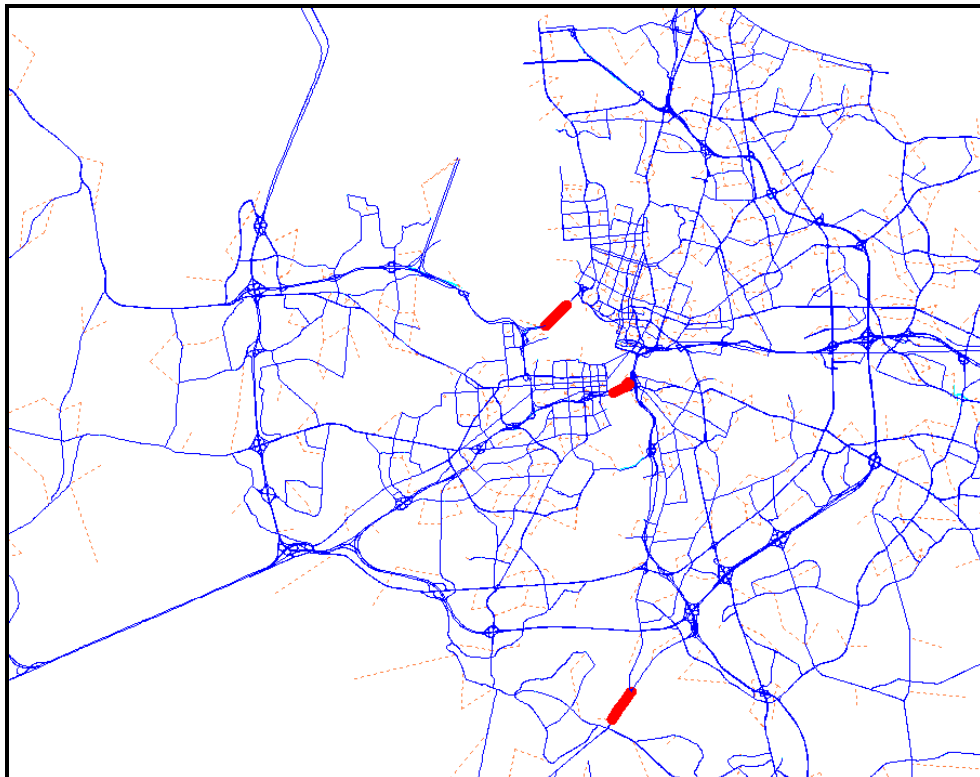


Figure 1. New toll facilities on future networks

Table 1. Toll rates by mode and time of day (unit: cents)

	Auto												Truck			
	AM			MD			PM			NT			AM	MD	PM	NT
	SOV	HOV2	HOV3+	SOV	HOV2	HOV3+	SOV	HOV2	HOV3+	SOV	HOV2	HOV3+				
Midtown & Downtown	184	184	184	159	159	159	184	184	184	159	159	159	736	477	736	477
Dominion Blvd.	100	100	100	100	100	100	100	100	100	100	100	100	150	150	150	150

Source: HRTPO

FFS Revision for Base and Future Years

During the validation of base year model, adjustment factor 1.2 was applied to free flow speed (FFS) 64 mph on I-64 corridor between I-264 and I-464 as shown in Figure 2 and thus, FFS was finalized as to 76.4 mph. After couple of feedbacks from end users and internal review, adjustment factor was lowered to 1.1 from 1.2. As a result, FFS was adjusted to 70.4 mph from 76.4 mph. And it was found that adjustment factor was not applied to future year networks (2018, 2028, and 2034). In summary, FFS on selected I-64 corridor was revised as below.

- 76.4 mph → 70.4 mph for base year 2009
- 60.0 mph → 70.4 mph for future years 2018, 2028, 2034

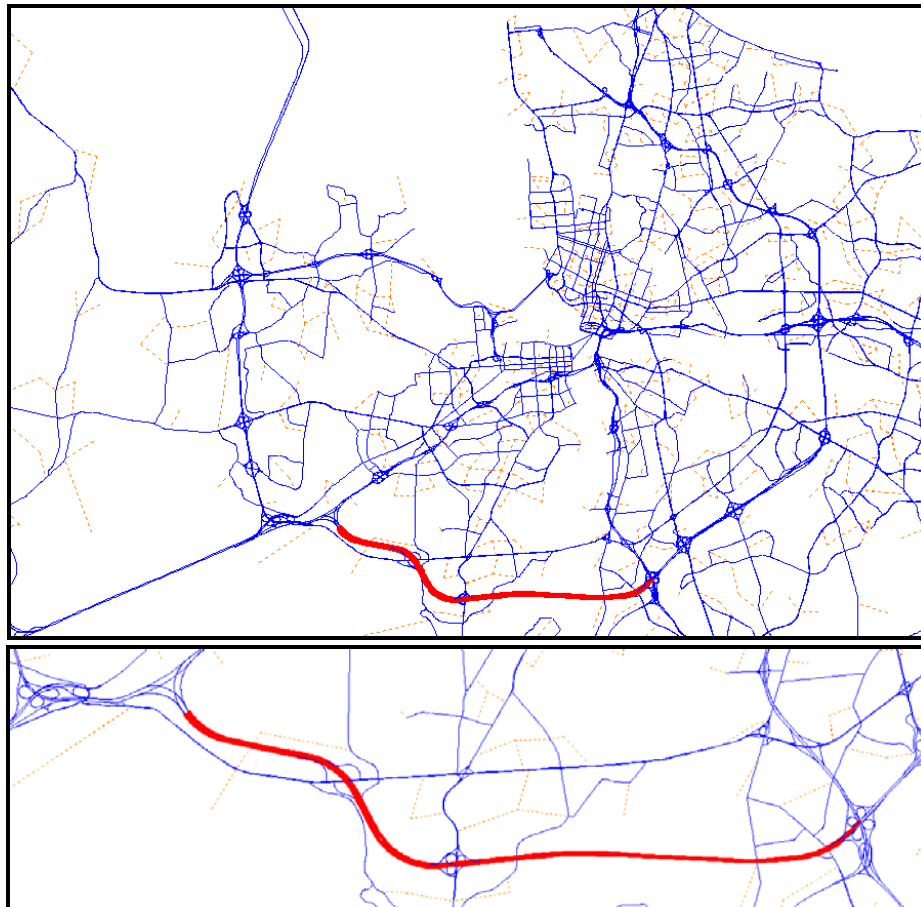


Figure 2. Corridor where revised Free Flow Speed

EE Trip Generation Process

In model Ver. 1.0, same seed matrix was used to calculate EE trip matrix using FRATAR method for both base year and future year models. It was based on the assumption that E-E trip patterns of base year model will be the same as in the future years. However after new Route 460 was added in future networks 2018 or after, new external cordon station (TAZ 1491) was added. It is expected that new route causes traffic divert to existing competitive routes near the subject route. In other words, traffic pattern would be changed after introducing new Route 460. Thus, new seed matrix was prepared for future year after new Route 460 introduced. Diversion rates from competitive routes were borrowed from the Route 460 Revenue Study by C&M, Inc.¹

Above mentioned changes were made in Trip Generation step. Under Trip Generation step, new seed matrix for 2034 year was prepared and replaced in the sub-step 'EE Trip Ends Generation Process' in execution order 4. Execution order 6 and 7 for updating future EE trip ends and matrix based on growth rates between the total external trips of base year and future year were removed.

Updated Model Run Statistics

The model run statistics of Base Year (2009) version 1.0 and 1.1 were summarized in Table 2 to Table 4, which show %RMSE and volume over count ratio per volume group, facility type, and area type after FFS of selected I-64 corridor was updated. Three toll facilities were added to future scenarios thus base year model results do not show impact from the tolls. There are minor changes in %RMSE but the same volume over count ratio between version 1.0 and 1.1.

Table 2. Comparison of %RMSE and Volume to Count Ratio by Volume Group

Range	Records	%RMSE		Volume / Count Ratio	
		Ver 1.0	Ver 1.1	Ver 1.0	Ver 1.1
1 - 5,000	1,599	72.13	72.16	1.15	1.15
5,000 - 10,000	754	42.19	42.70	1.05	1.06
10,000 - 20,000	639	28.15	28.32	1.00	1.01
20,000 - 30,000	172	26.19	25.60	0.95	0.94
30,000 - 40,000	55	19.53	19.03	1.02	1.00
40,000 - 50,000	45	13.06	14.22	1.00	0.97
50,000 - 60,000	19	19.92	21.65	0.99	0.96
60,000 - 70,000	3	22.82	22.19	0.90	0.90
70,000 - 80,000	3	7.28	13.47	0.94	0.88
All	3,289	39.04	39.45	1.02	1.02

¹ Virginia's Office of Transportation Public-Private Partnerships, Route 460 Investment Grade Traffic and Revenue Study, Prepared by C&M Associates, Inc., 2012

Table 3. Comparison of %RMSE and Volume to Count Ratio by Facility Type

Facility Type	Records	%RMSE		Volume / Count Ratio	
		Ver 1.0	Ver 1.1	Ver 1.0	Ver 1.1
Interstate	150	18.96	19.30	1.06	1.03
Minor Freeway	72	26.79	26.70	0.98	0.98
Principal Art	394	29.37	29.96	1.04	1.05
Major Art	180	37.99	38.20	0.96	0.96
Minor Art	1,248	40.33	40.54	1.00	1.01
Major Collector	228	75.79	75.94	0.96	0.96
Minor Collector	974	60.92	60.72	1.02	1.03
Local	36	65.40	65.30	1.09	1.08
H.S. Ramp	1	13.12	17.84	0.87	0.82
L.S. Ramp	6	57.53	56.66	0.98	0.98
All	3,289	39.04	39.44	1.02	1.02

Table 4. Comparison of %RMSE and Volume to Count Ratio by Area Type

Area Type	Records	%RMSE		Volume / Count Ratio	
		Ver 1.0	Ver 1.1	Ver 1.0	Ver 1.1
CBD	10	65.73	65.91	0.52	0.51
OBD	525	35.91	36.87	1.01	1.01
Urban	702	36.01	35.93	1.00	1.01
Sub Urban	781	38.49	39.57	0.98	0.99
Rural	1,271	41.99	41.58	1.08	1.07
All	3,289	39.04	39.45	1.02	1.02