Date: September 15, 2016

To: Jason Learned

From: Barry Plath / Tim Palermo

Subject: **Florida Statewide Model (FLSWM) and Central Florida Regional Planning Model (CFRPM) 2010 Heavy Truck Performance Comparison**

This technical memorandum briefly documents the 2010 validation performance of the CFRPM and FLSWM in regards to heavy trucks in District 5. The District is requested that we explore any value associated with incorporating the heavy truck trip table from the FLSWM or to continue with the standard heavy truck component found in the current version of the CFRPM. The heavy truck results are presented at the District level and by facility type for Root Mean Square Errors (RMSEs) and volume-to-count (V/C) ratios. Additionally, select V/Cs were tabulated for I-4 and major arterials in Orange and Osceola counties in order to compare the performance of each model at specific sites.

Heavy Truck Results by Facility Type

Table 1 presents the 2010 V/C ratios and RMSEs by facility type for both the FLSWM and the CFRPM and summarizes the performance of both at the district level. For the VCs and RMSEs the table has color codes comparing how each model performs across the facility types and at the district level. Green indicates better performance and pink indicates worse performance. The facility types with the highest count volumes are 12, 21 and 31. The results are mixed with the CFRPM performing better in some instance and the FLSWM in others.

Select VCs at Specific Sites

Table 2 shows how each model performs at two sites on I-4. These are the only two count sites on I-4 in Orange and Osceola counties that have truck data associated with them. The CFRPM has a better VC ratio in three of four instances. For arterial roads, the focus was the western part of Orange and Osceola counties. A sampling of the arterials was made in these areas where truck count data was available. The CFRPM has better performance in a majority of the instances.

Upon review of these tables, the CFRPM consultant coordination committee determined that incorporation of FLSWM truck tables into the CFRPM model stream would not yield a measureable improvement in its truck forecasting capabilities. In the comparisons given in the tables, the standard truck model in the CFRPM performs just as well, if not better than the FLSWM, and keeping the CFRPM truck model would save both time and money in the process.

Table 1

2010 Model Performance Comparison - FLSWM versus CFRPM

Heavy Truck Only Validation Statistics

		Truck Volume		Truck Count		Number of Truck Counts		Volume/Count Ratio		RMSE	
Facility Type (FLSWM designations)	**FTYPE #**	**FLSWM**	**CFRPM**	**FLSWM**	**CFRPM**	**FLSWM**	**CFRPM**	**FLSWM**	**CFRPM**	**FLSWM**	**CFRPM**
Urban Freeway	11	6,185	6,622	9,456	9,456	4	4	0.654	0.700	42.1	36.7
Other Freeway	12	124,677	55,228	110,617	107,779	33	32	1.127	0.512	46.6	55.0
Controlled Access Expressway	16	3,257	891	1,826	1,663	4	2	1.784	0.536	136.2	65.7
Divided Arterial Unsignalized (55mph)	21	114,638	146,726	121,185	119,377	464	458	0.946	1.229	116.7	109.4
Divided Arterial Class I	23	6,777	10,870	9,322	9,322	34	34	0.727	1.166	65.1	69.9
Divided Arterial Class II	24	3,789	494	1,524	1,524	2	2	2.486	0.324	213.6	95.6
Undivided Art. Unsig. w/Turn Bays	31	30,521	32,345	28,615	27,268	136	132	1.067	1.186	100.7	83.1
Undivided Art. Class I w/Turn Bays	32	81	474	581	581	2	2	0.139	0.817	122.0	26.6
Undivided Art. Class II w/Turn Bays	33	58	1,081	571	571	4	4	0.101	1.893	138.0	105.1
Undivided Art. Class I w/o Turn Bays	36	2,849	2,021	1,750	1,750	8	8	1.628	1.155	108.0	30.5
Major Local Divided Roadway	41	191	1,600	975	829	14	8	0.196	1.929	167.4	152.7
Other Local Divided Roadway	44	1,517	305	1,341	912	4	2	1.131	0.334	64.6	94.2
One-Way Facilities	60	1,786	2,838	2,465	2,465	8	8	0.724	1.151	87.1	88.8
Frontage Road	67	54	451	286	286	2	2	0.189	1.580	123.0	106.9
Freeway-Freeway High-Speed Ramp	79	1,428	222	2,383	2,383	1	1	0.599	0.093	0.0	0.0
Freeway Toll Facility	91	919	1,323	1,386	1,386	2	2	0.663	0.954	49.0	6.5
Other Freeway Toll Facility	92	20,024	13,695	21,417	21,417	32	32	0.935	0.639	61.5	56.0
District Total		**318,751**	**277,185**	**315,699**	**308,969**	**754**	**733**	1.010	0.897	104.0	111.6

Better

Worse

Table 2

Select 2010 Heavy Truck Volume-to-Count Ratios

I-4 and other major arterials

COSITE	COUNTY	CFRPM VC	FLSWM VC	Location
750130	Orange	0.779	0.783	I-4 south of Sand Lake
750130	Orange	0.787	0.686	I-4 south of Sand Lake
753007	Orange	0.634	0.561	I-4 south of Turnpike
753007	Orange	0.630	0.617	I-4 south of Turnpike
750251	Orange	1.069	0.935	US 17/92 north of Holden
750251	Orange	1.059	0.976	US 17/92 north of Holden
750521	Orange	0.907	1.233	John Young north of SR 50
750521	Orange	0.924	1.195	John Young north of SR 50
750558	Orange	0.883	0.832	US 17/92 south of Taft
750558	Orange	0.927	0.782	US 17/92 south of Taft
750669	Orange	0.987	0.536	SR 429 north of CR 535
750669	Orange	0.983	0.442	SR 429 north of CR 535
920007	Osceola	0.810	0.201	US 192 west of Simpson
920007	Osceola	0.892	0.298	US 192 west of Simpson
921002	Osceola	0.701	0.626	US 17/92 west of Pleasant Hill
921002	Osceola	0.693	0.678	US 17/92 west of Pleasant Hill
925016	Osceola	0.846	0.186	US 192 east of John Young
925016	Osceola	0.823	0.253	US 192 east of John Young

Better

Worse

Neutral