

# ISTHA Traffic Operations Performance Management Tool



*Illinois  
Tollway*  
October 2013

# Management Through Measurement



Objective: Accurately quantify ITS return on investments through performance metrics

- ◆ Improved Operations – Safety, Mobility, Reliability
- ◆ Improved ITS Maintenance – Reliability and Accuracy
  - Systems
  - Devices
  - Networks
- ◆ Key Performance Indicators
  - Response Time and Resolutions
  - Personnel Deployments



# Operational Measurements



Illinois Tollway Delcan TIMS Performance Measures HOME DASHBOARDS DESIGNER ADMIN accountadmin@birst.com

VOS Events Devices Flasher

Event Distribution

Route: Events\_Map BubbleChart

Illinois Tollway Delcan TIMS Performance Measures (Production) HOME DASHBOARDS DESIGNER ADMIN accountadmin@birst.com

VOS Events Devices Flasher DashboardTest

Speed Volume Occupancy I-90 Speed Profile

description: EB, WB

archive\_date: All, 2013-10-02, 2013-10-01

### VOS\_I-90 Speed Profile Radar\_Line and Area

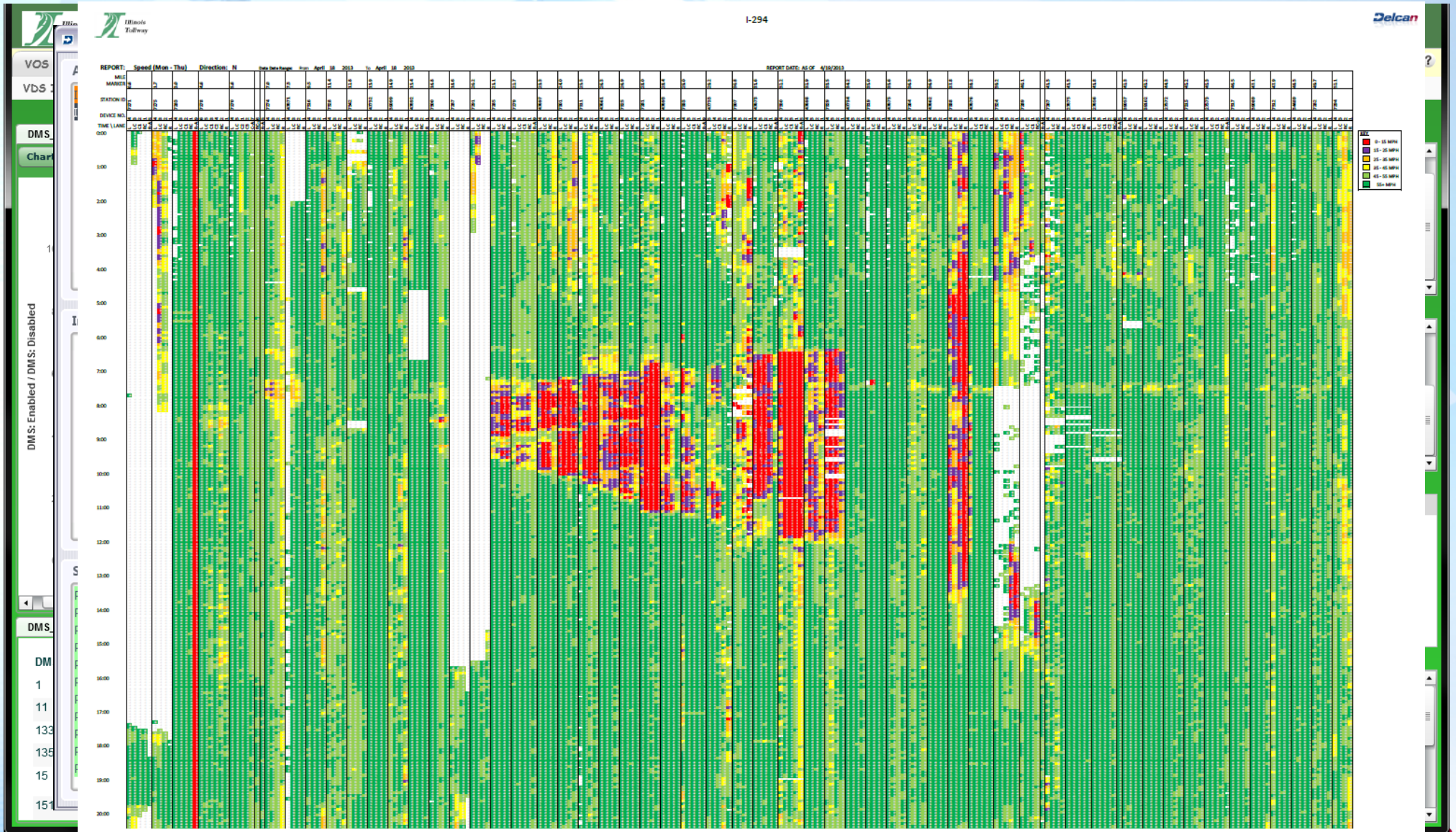
milepost	Ave Speed	Max Speed	Min Speed
3	55	70	50
4	65	85	55
5	65	85	55
6	65	85	55
7	65	85	55
8	65	85	55
9	65	85	55
10	65	85	55
11	65	85	55
12	65	85	55
13	65	85	55
14	65	85	55
15	65	85	55
16	65	85	55
17	65	85	55
18	65	85	55
19	65	85	55
20	65	85	55
21	65	85	55
22	65	85	55
23	65	85	55
24	65	85	55
25	65	85	55
26	65	85	55
27	65	85	55
28	65	85	55
29	65	85	55
30	65	85	55
31	65	85	55
32	65	85	55
33	65	85	55
34	65	85	55
35	65	85	55
36	65	85	55
37	65	85	55
38	65	85	55
39	65	85	55
40	65	85	55
41	65	85	55
42	65	85	55
43	65	85	55
44	65	85	55
45	65	85	55
46	65	85	55
47	65	85	55
48	65	85	55
49	65	85	55
50	65	85	55
51	65	85	55
52	65	85	55
53	65	85	55
54	65	85	55
55	65	85	55
56	65	85	55
57	65	85	55
58	65	85	55
59	65	85	55
60	65	85	55
61	65	85	55
62	65	85	55
63	65	85	55
64	65	85	55
65	65	85	55
66	65	85	55
67	65	85	55
68	65	85	55
69	65	85	55
70	65	85	55
71	65	85	55
72	65	85	55
73	65	85	55
74	65	85	55
75	65	85	55
76	65	85	55
77	65	85	55

### VOS\_I-90 Speed Profile IPass\_Line Area

milepost	Ave Speed	Max Speed	Min Speed
5	55	95	50
6	55	95	50
7	55	95	50
8	55	95	50
9	55	95	50
10	55	95	50
11	55	95	50
12	55	95	50
13	55	95	50
14	55	95	50
15	55	95	50
16	55	95	50
17	55	95	50
18	55	95	50
19	55	95	50
20	55	95	50
21	55	95	50
22	55	95	50
23	55	95	50
24	55	95	50
25	55	95	50
26	55	95	50
27	55	95	50
28	55	95	50
29	55	95	50
30	55	95	50
31	55	95	50
32	55	95	50
33	55	95	50
34	55	95	50
35	55	95	50
36	55	95	50
37	55	95	50
38	55	95	50
39	55	95	50
40	55	95	50
41	55	95	50
42	55	95	50
43	55	95	50
44	55	95	50
45	55	95	50
46	55	95	50
47	55	95	50
48	55	95	50
49	55	95	50
50	55	95	50
51	55	95	50
52	55	95	50
53	55	95	50
54	55	95	50
55	55	95	50
56	55	95	50
57	55	95	50
58	55	95	50
59	55	95	50
60	55	95	50
61	55	95	50
62	55	95	50
63	55	95	50
64	55	95	50
65	55	95	50
66	55	95	50
67	55	95	50
68	55	95	50
69	55	95	50
70	55	95	50
71	55	95	50
72	55	95	50
73	55	95	50
74	55	95	50
75	55	95	50
76	55	95	50
77	55	95	50
78	55	95	50



# Operational Measurements

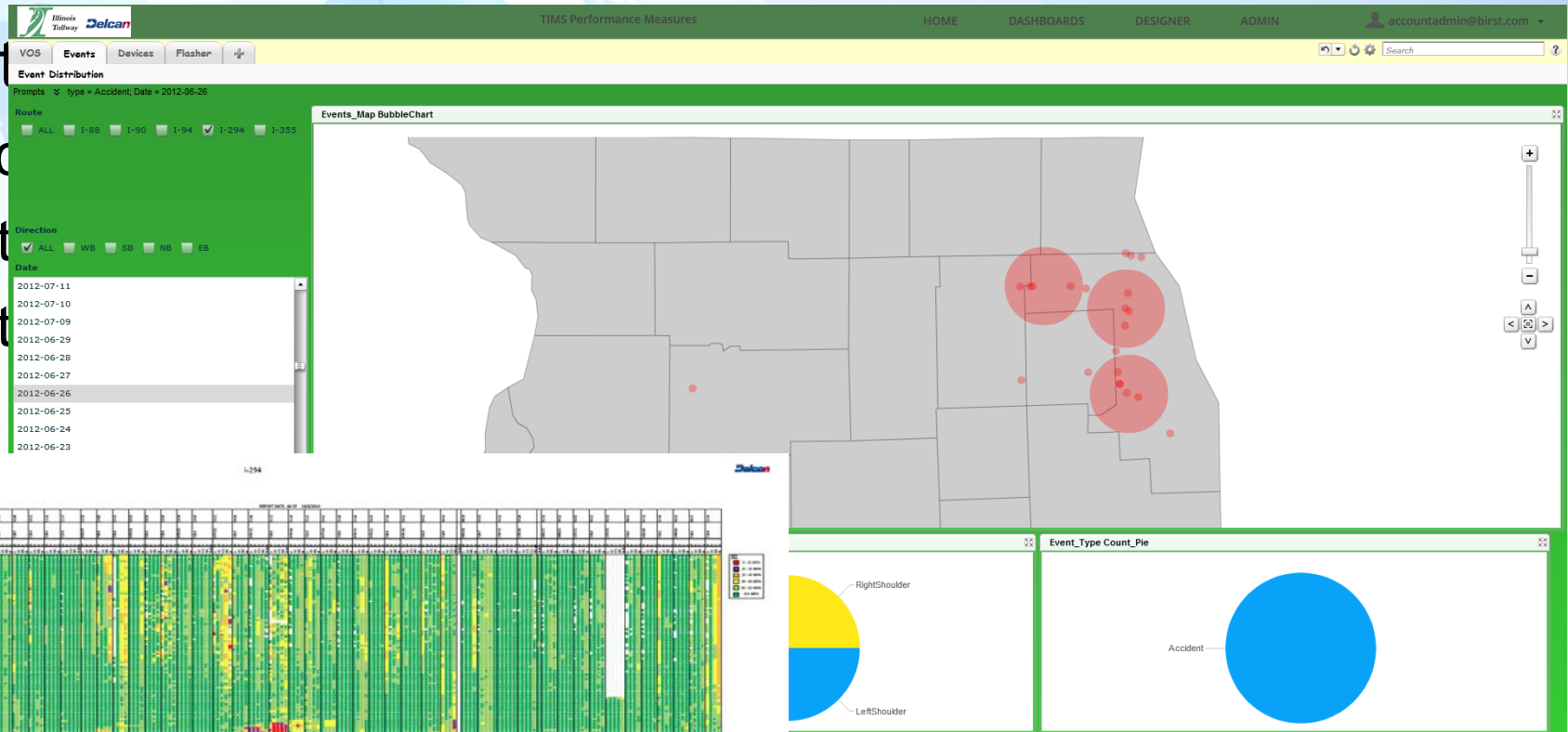


# Performance related to Incidents

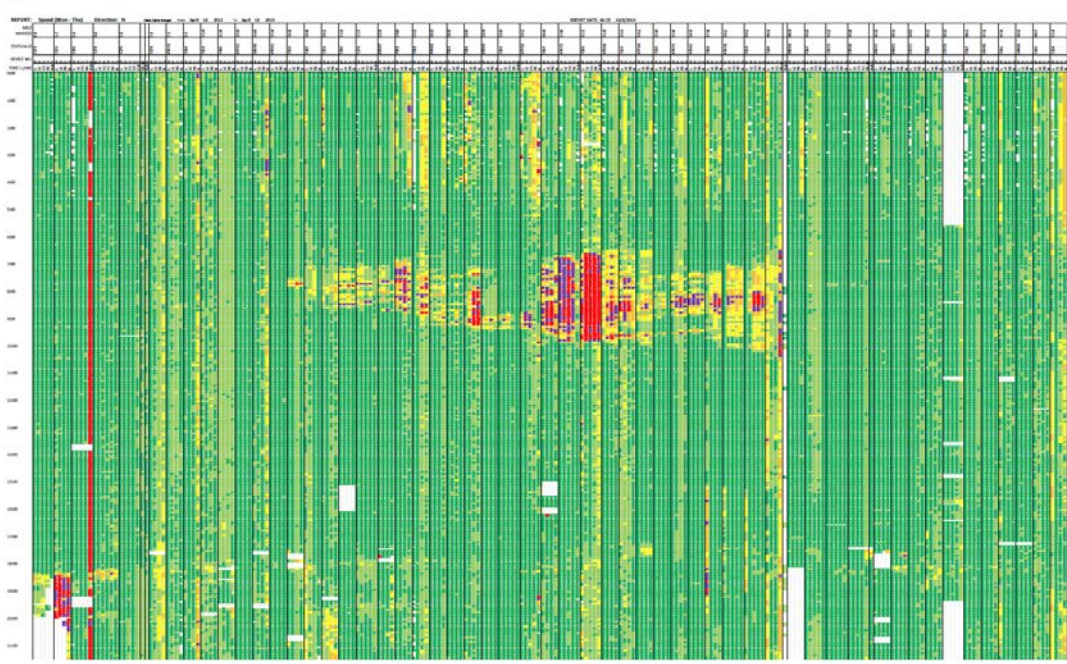


## ◆ Incident

- Impact
- Event
- Event



Delay



# Route Performance



## Route Performance



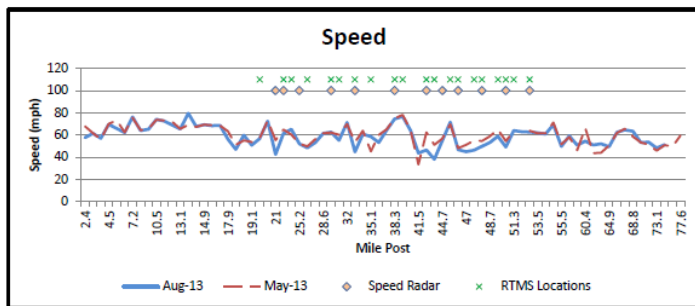
### I - 90 East

September 2013

Weekday (M-Th) AM Peak (7:00-9:00am)

Mile Post Range	
Start MP:	2.4
End MP:	77.6

Date Range	
Before:	5/1/2013 - 5/19/2013
After:	8/1/2013 - 8/31/2013



Performance Change	
Change in Speed (mph)	-1.6
% Change	-2.60%

Speed Key	
0-35 mph	Red
35-45 mph	Yellow
45-55mph	Green
55-65 mph	Light Green
> 65 mph	Dark Green

Average Spot Speed											
Speed Radar Location	MP	After	Before	Change	Speed Radar Location	MP	After	Before	Change		
21	US 19.6	56.0	57.1	-0.3	42.2	US 40.5	76.8	78.3	-1.5		
	DS 22.6	61.5	65.0	3.5		DS 42.3	46.6	62.4	-15.8		
23.6	US 22.6	61.5	65.0	3.5	44.3	US 42.9	38.2	51.2	-13.0		
	DS 24.8	65.3	60.4	-4.9		DS 45.3	71.6	69.7	2.0		
25.5	US 24.8	65.3	60.4	-4.9	45.7	US 45.3	71.6	69.7	2.0		
	DS 26.0	48.6	49.9	1.3		DS 45.7	46.9	48.2	-1.3		
29.9	US 29.0	62.8	62.3	-0.5	48.3	US 48.1	46.4	55.1	-8.7		
	DS 30.8	55.3	60.3	5.0		DS 48.3	#N/A	54.7	#N/A		
33.6	US 33.0	44.8	53.7	8.9	50.3	US 49.7	59.0	65.1	-6.1		
	DS 35.1	58.7	45.4	-13.3		DS 50.3	49.3	54.6	-5.3		
38.7	US 38.3	74.6	75.0	0.4	52.8	US 51.3	64.1	63.8	0.3		
	DS 40.5	76.8	78.3	1.5		DS 53.1	62.7	63.9	-1.2		



## Route Performance



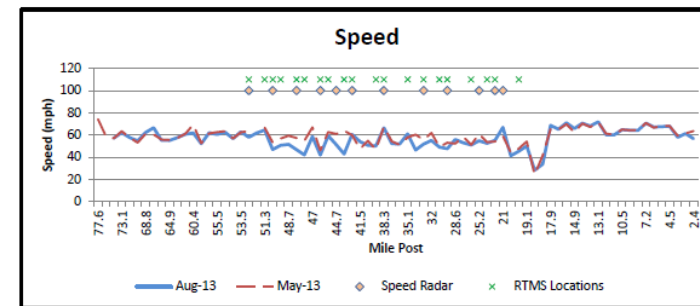
### I - 90 West

September 2013

Weekday (M-Th) AM Peak (7:00-9:00am)

Mile Post Range	
Start MP:	77.6
End MP:	2.4

Date Range	
Before:	5/1/2013 - 5/19/2013
After:	8/1/2013 - 8/31/2013



Performance Change	
Change in Speed (mph)	-2.9
% Change	-5.00%

Speed Key	
0-35 mph	Red
35-45 mph	Yellow
45-55mph	Green
55-65 mph	Light Green
> 65 mph	Dark Green

Average Spot Speed											
Speed Radar Location	MP	After	Before	Change	Speed Radar Location	MP	After	Before	Change		
21	US 19.6	45.5	47.9	-2.5	42.2	US 40.5	50.1	47.0	3.1		
	DS 22.6	55.4	54.3	-1.0		DS 42.3	60.6	60.1	0.5		
23.6	US 22.6	55.4	54.3	-1.0	44.3	US 42.9	42.9	64.0	-21.1		
	DS 24.8	52.6	53.7	1.1		DS 45.3	59.5	62.8	-3.4		
25.5	US 24.8	52.6	53.7	1.1	45.7	US 45.3	59.5	62.8	-3.4		
	DS 26.0	51.1	51.3	0.2		DS 45.7	42.0	46.3	-4.4		
29.9	US 29.0	47.8	53.2	5.3	48.3	US 48.1	42.2	54.9	-12.7		
	DS 30.8	49.1	49.3	0.2		DS 48.3	#N/A	57.5	#N/A		
33.6	US 33.0	51.8	55.8	4.0	50.3	US 49.7	50.9	57.0	-6.1		
	DS 35.1	61.1	57.9	-3.2		DS 50.3	46.9	53.6	-6.6		
38.7	US 38.3	66.5	67.6	1.0	52.8	US 51.3	64.6	66.6	-2.1		
	DS 40.5	50.1	47.0	-3.1		DS 53.1	58.0	63.7	-5.7		

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# Route Performance comparison



- ◆ Route performance at Key interchanges
- ◆ Summary indicators
  - Average Spot VOS
- ◆ Graphical representation of Volume, Occupancy and Speed

# Route performance comparison



## Route Performance



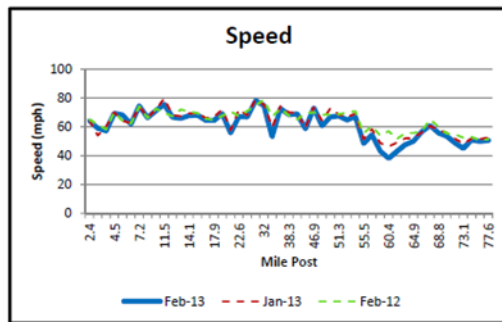
I - 90 East

February 2013

Weekday (M-Th) AM Peak (7:00-9:00am)

Mile Post Range	
Start MP:	2.4
End MP:	77.6

Date Range	
Start Date:	2/1/13
End Date:	2/28/13

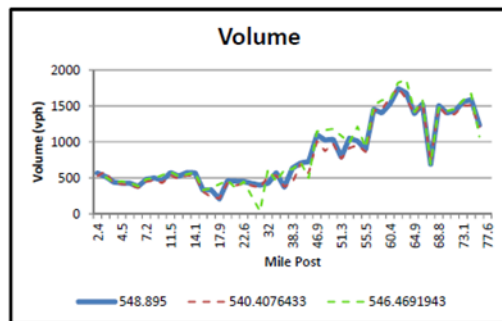


Average Spot Speed				
Location	MP	Feb-13	Jan-13	Feb-12
S Beloit	3.2	59.0	54.1	#N/A
US Bus. 20	16.5	64.6	66.1	65.7
US 20 Bypass	20.2	55.8	57.8	70.6
Elgin	54.6	67.2	69.2	70.8
I-290 (IL 53)	68.8	55.8	57.9	60.2
O'hare	77.6	50.6	52.5	51.4

Speed Key	
Red	0-35 mph
Yellow	35-45 mph
Light Green	45-55 mph
Green	55-65 mph
Dark Green	> 65 mph

### Performance Change

Jan → Feb	Ave. Δ speed		% Change	
	-1.9 mph		-3%	
2012 → 2013	Ave. Δ speed		% Change	
	-2.4 mph		-4%	



Average Spot Volume				
Location	MP	Feb-13	Jan-13	Feb-12
S Beloit	3.2	567	527	#N/A
US Bus. 20	16.5	326	307	331
US 20 Bypass	20.2	461	430	467
Elgin	54.6	1050	914	987
I-290 (IL 53)	68.8	691	721	690
O'hare	77.6	1234	1210	1074

Volume Key	
Light Blue	0-1000 vph
Medium Blue	1000-1500 vph
Dark Blue	1500-2000 vph
Very Dark Blue	> 2000 vph

### Performance Change

Jan → Feb	Ave. Δ volume		% Change	
	33.6 vph		4%	
2012 → 2013	Ave. Δ volume		% Change	
	-59.1 vph		-7%	



## Route Performance



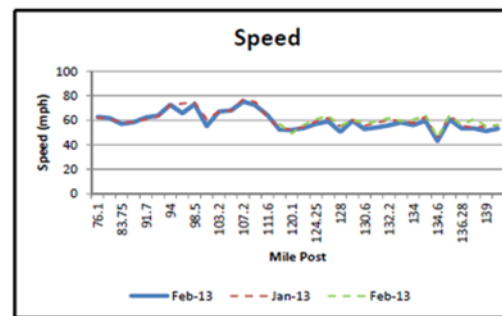
I - 88 East

July 2013

Weekday (M-Th) AM Peak (7:00-9:00am)

Mile Post Range	
Start MP:	76.1
End MP:	139.7

Date Range	
Start Date:	2/1/13
End Date:	2/28/13

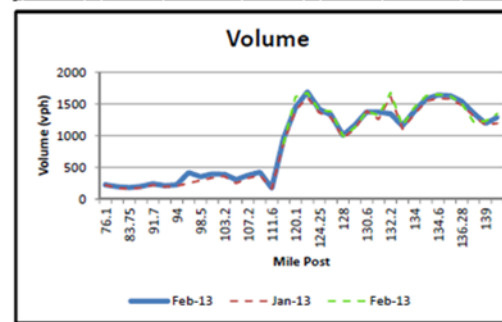


Average Spot Speed				
Location	MP	Feb-13	Jan-13	Feb-12
I-39	79.75	61.8	61.4	#N/A
DeKalb	93.1	63.7	63.0	#N/A
Cnty Line Rd	101	55.1	60.7	#N/A
Aurora	118.3	52.1	53.3	56.5
I-355	132.2	55.9	60.3	61.8
I-294	139.7	53.2	56.0	56.2

Speed Key	
Red	0-35 mph
Yellow	35-45 mph
Light Green	45-55 mph
Green	55-65 mph
Dark Green	> 65 mph

### Performance Change

Jan → Feb	Ave. Δ speed		% Change	
	-1.4 mph		-2%	
2012 → 2013	Ave. Δ speed		% Change	
	1.2 mph		2%	



Average Spot Volume				
Location	MP	Feb-13	Jan-13	Feb-12
I-39	79.75	195	174	#N/A
DeKalb	93.1	209	193	#N/A
Cnty Line Rd	101	394	335	#N/A
Aurora	118.3	957	883	877
I-355	132.2	1343	1619	1674
I-294	139.7	1286	1195	1345

Volume Key	
Light Blue	0-1000 vph
Medium Blue	1000-1500 vph
Dark Blue	1500-2000 vph
Very Dark Blue	> 2000 vph

### Performance Change

Jan → Feb	Ave. Δ volume		% Change	
	20.5 vph		2%	
2012 → 2013	Ave. Δ volume		% Change	
	-493.3 vph		-56%	

