

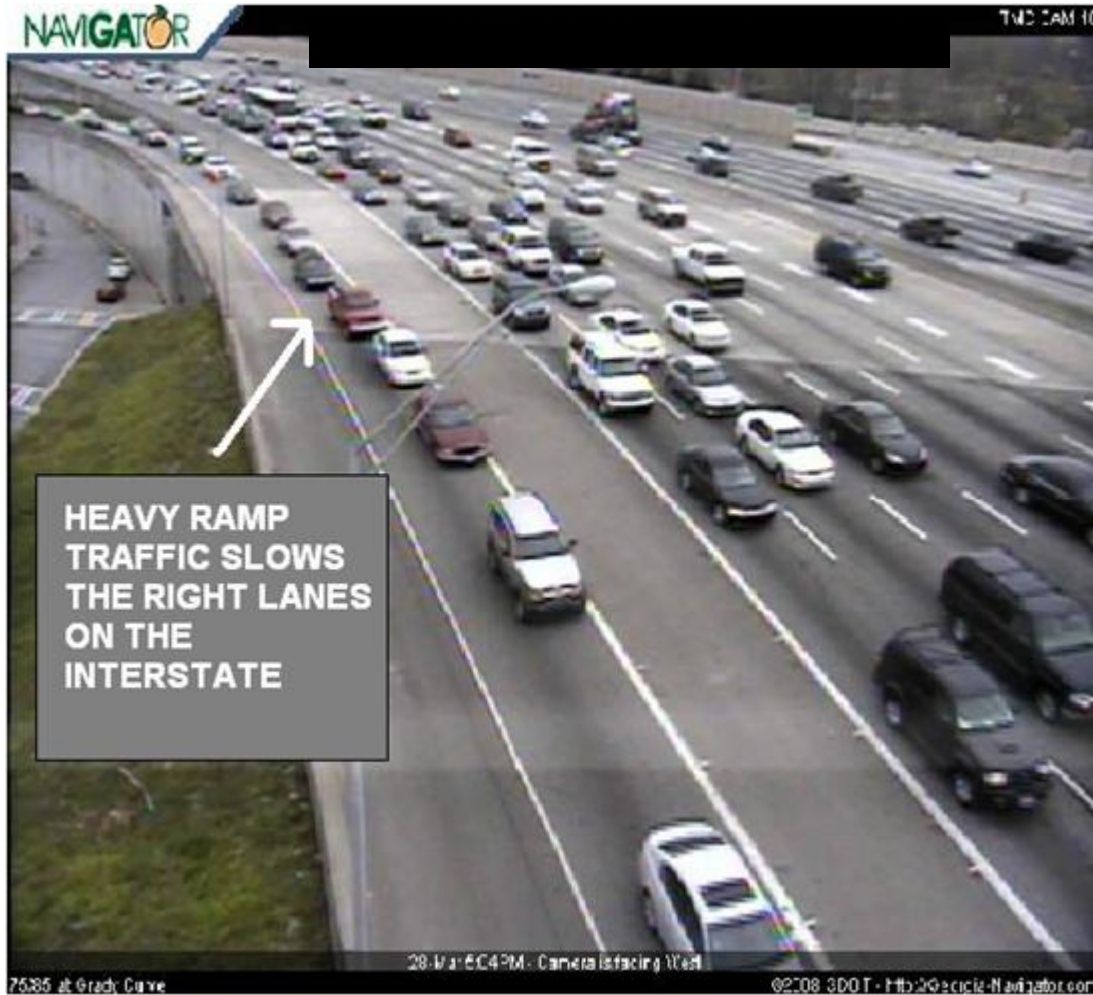
Ramp Metering in Metro Atlanta



Agenda

- **Why ramp meters?**
- **History**
- **Project Development**
- **Corridors that have been activated**
- **Challenges and strategies**
- **Preliminary results**
- **Remaining corridors to activate**

Why Ramp Meters?



How Do Ramp Meters Work?

- **Most effective when turned on just before heavy rush-hour traffic begins.**
- **Cycle from red to green every 3-5 seconds, allowing one vehicle at a time to merge onto the freeway.**
- **Yellow is not used, except on the very first cycle.**



Benefits of Ramp Meters

- **Reduced congestion on the Interstate**
- **More reliable travel times**
- **Faster overall travel times**
- **Reduced merging accidents such as rear-ending and side-swiping**
- **Lower vehicle emissions due to less stop and go traffic**



Quick History

- **Latest ramp meters not the first in metro Atlanta**
 - **Prior to Navigator – a few scattered meters in the 1960's and 1970's, more of a safety measure for short merges**
 - **5 were turned on in 1996 on I-75 northbound**
 - **4 more activated on Downtown Connector in 2005**

Ramp Meters Projects

- **Part of the Governor's Fast Forward program**
- **“Early implementation” phase**
- **All corridors in metro Atlanta considered**
- **Recurring congestion primary decision-tool**
 - **Only a few corridors dropped out (I-285 southside and I-675)**

Design Considerations

- **Some additional ramps dropped out of consideration during design phase**
 - **“slip” ramps – such as I-85 frontage road system**
 - **Ramps with very short storage**
 - **C/D ramps**
- **No “geometrical” changes allowed**
 - **No widening**
 - **Some striping changes allowed if shoulders maintained**
- **Acceleration distances**
 - **AASHTO Green Book compliance maintained**

Construction

- **16 projects let during 2006-2008 time**
 - **161 total ramp meters**

- **Two types of projects developed**
 - **Stand-alone ramp meter installations**
 - **Inclusion in Navigator expansion projects**
 - **Cameras, message signs, detection, fiber, etc**

Current Ramp Meter Locations

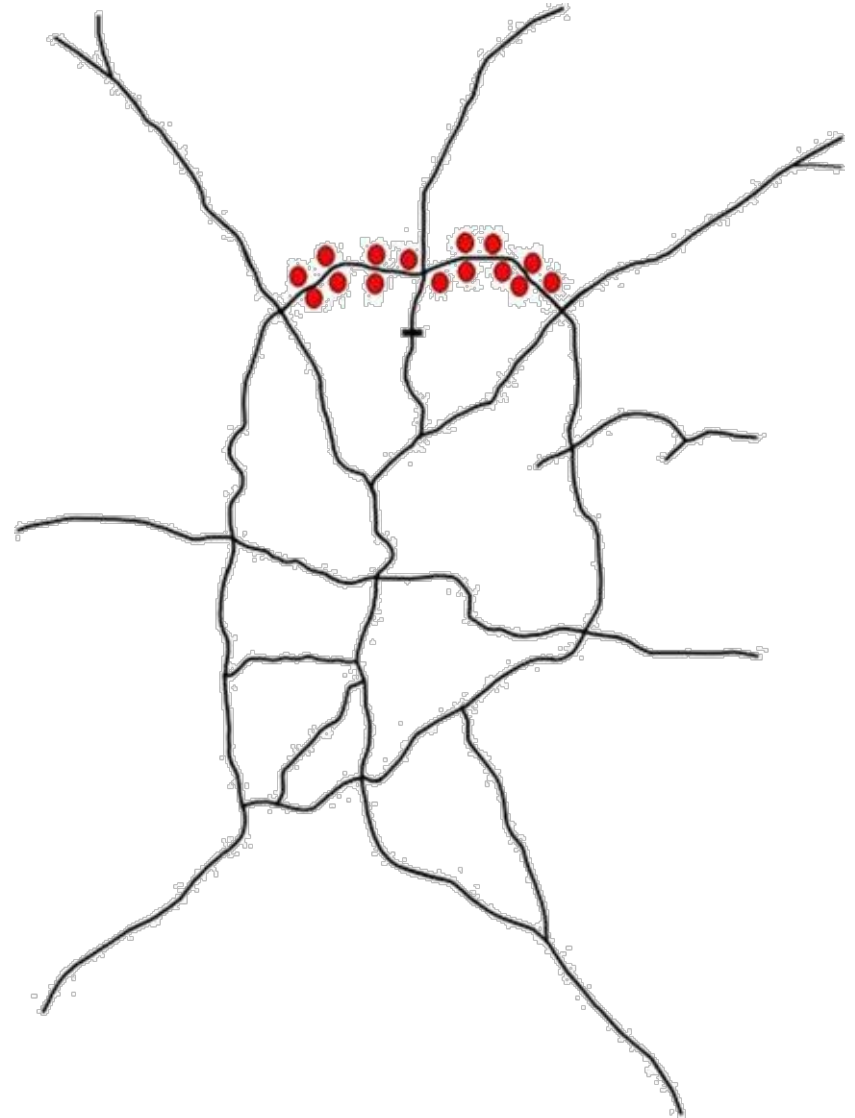
72 Ramp Meters:

- 4 on I-75 NB, Midtown to Cumberland Mall (1996)
- 4 on I-75/85 southbound (2005)
- 14 on I-285 north side – June 16, 2008
- 11 on I-85 northeast – July 7, 2008
- 11 on I-285 east side – July 28, 2008
- 8 on I-75 south side – September 29, 2008
- 20 on I-75 northwest – October 2, 2008



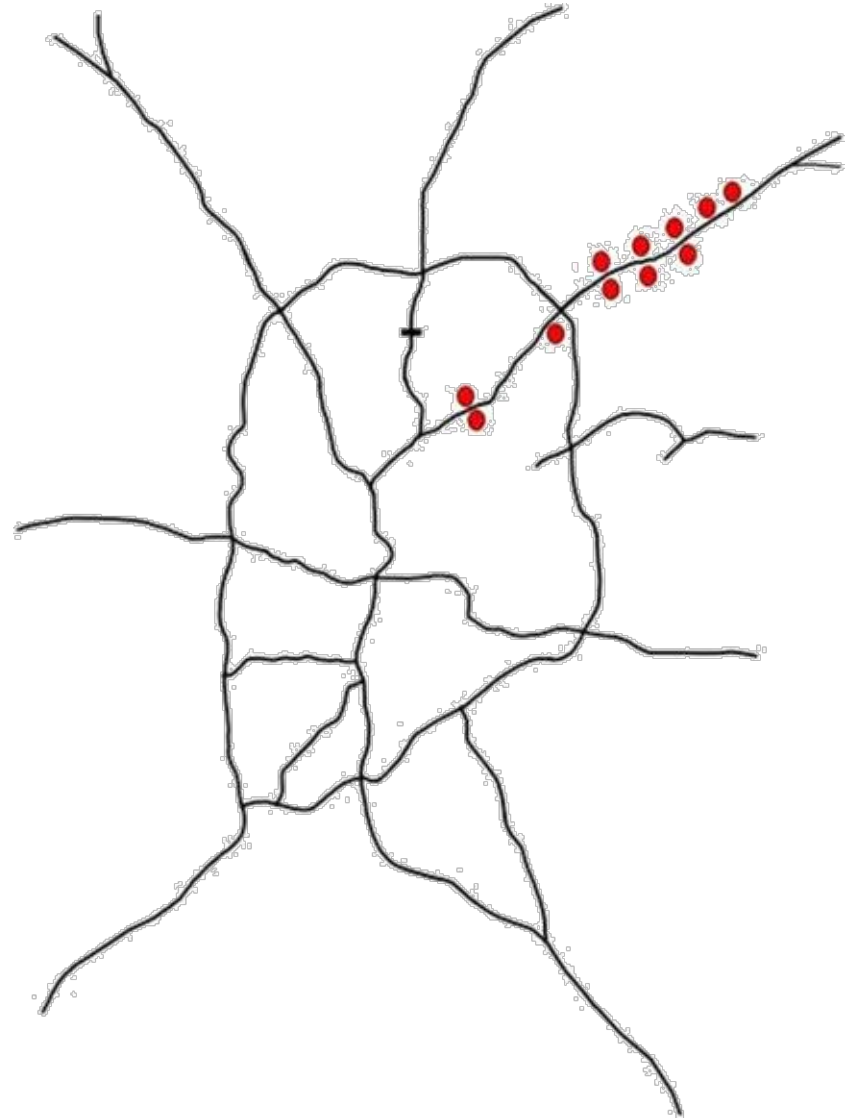
I-285 “top end”

Northside Dr. /New Northside Dr
Riverside Dr
Roswell Rd
Glenridge Dr
Peachtree Dunwoody Rd
Ashford Dunwoody Rd
Chamblee Dunwoody Rd
N Peachtree Rd
Peachtree Industrial Blvd
Buford Hwy



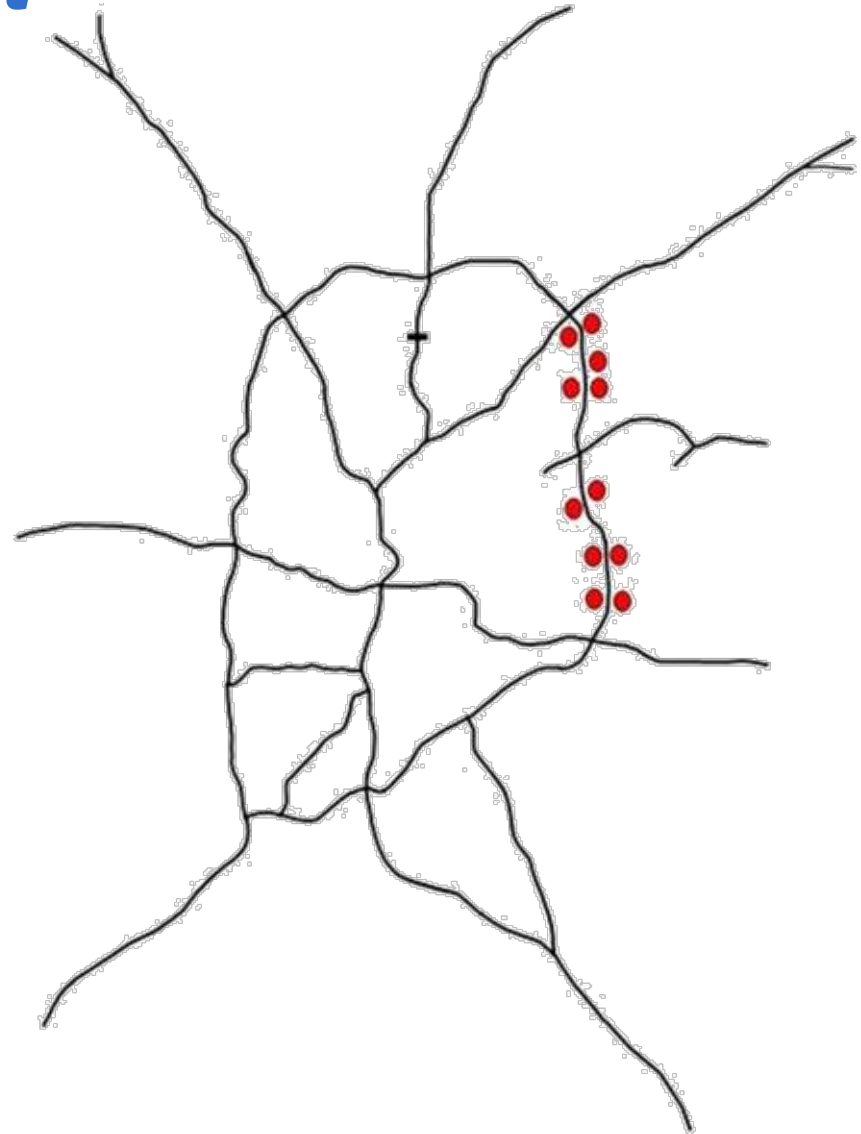
I-85 DeKalb/Gwinnett

North Druid Hills Rd
Chamblee Tucker Rd
Jimmy Carter Blvd
Indian Trail Rd
Beaver Ruin Rd
Steve Reynolds Blvd
Pleasant Hill Rd



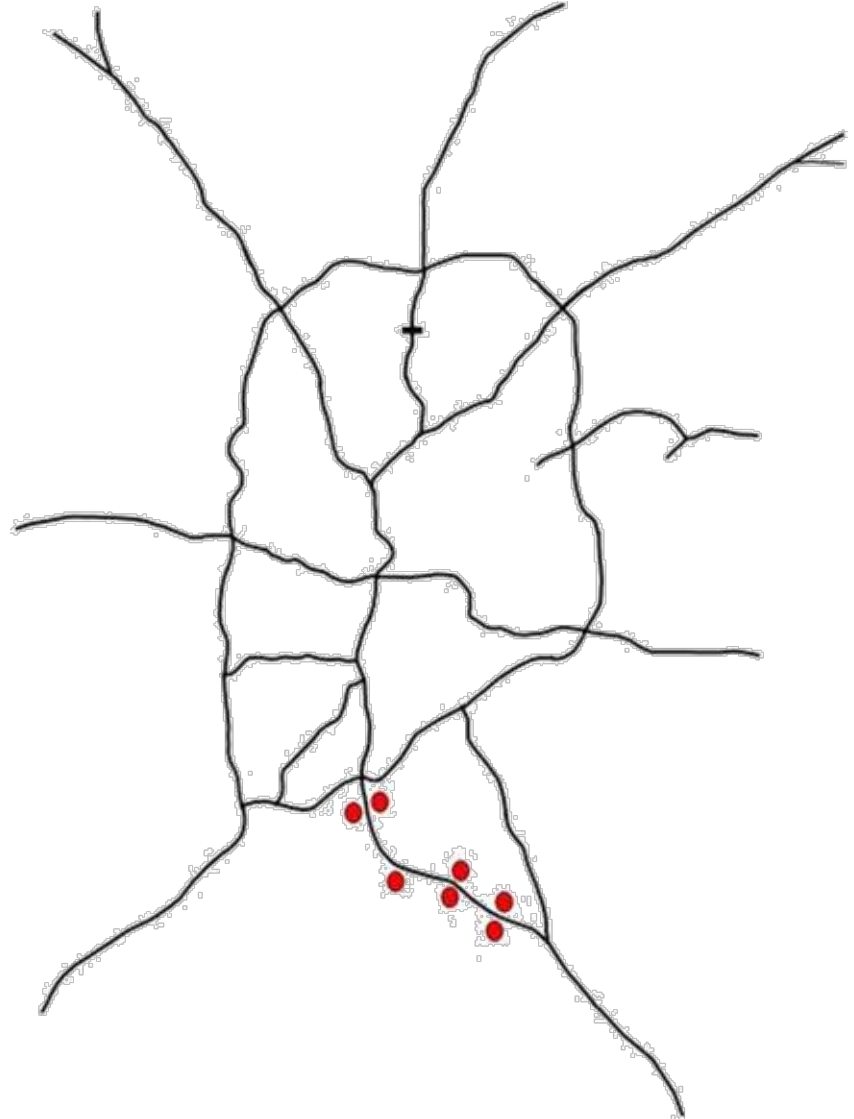
I-285 east

- Chamblee Tucker Rd
- Northlake Pkwy
- LaVista Rd
- E Ponce de Leon Ave
- Church St
- Covington Hwy
- Glenwood Ave



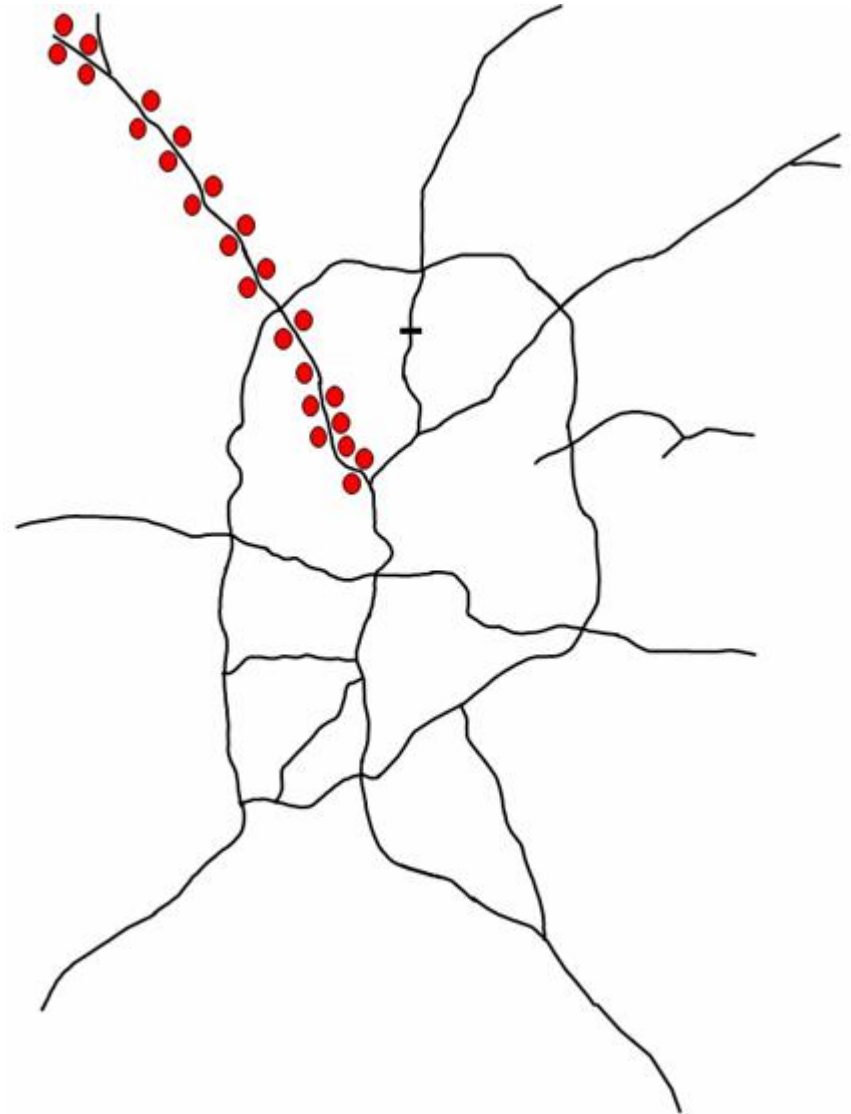
I-75 southside

Forest Pkwy
Old Dixie Hwy/US 41
Mt Zion Blvd
SR 138



I-75 from Northside to Chastain

Northside Drive
Moores Mill Rd
West Paces Ferry Rd
Mt. Paran Rd / Northside Pkwy
Cumberland Blvd
Windy Hill
Delk Rd
South Marietta Pkwy
North Marietta Pkwy
Canton Rd
Ernest Barrett Pkwy
Ernest Barrett Pkwy
Chastain Rd



Concerns/Actual Outcome

- **“The public won’t understand what to do at ramp meters”**
 - **Fairly intensive PR campaign in advance of turn-on**
 - **Motorist understand concept of red/stop; green/go**
- **“There will be lots of accidents on the ramp”**
 - **Did not occur**
 - **“Prepare to stop” signs warn approaching traffic**

Concerns/Actual Outcome

- **“Ramp meters won’t help”**
 - **Meters have relieved congestion on the freeway**
 - **Duration and frequency of congestion is reduced**
- **“They’ll just shift the problem from the freeway to the surface streets”**
 - **Most of the storage of vehicles occurs on the ramps, not the surface streets**
 - **In cases where traffic spilled onto surface streets, special “flush” patterns were developed to temporarily turn meters off**

Challenges

Public complaints have most often been received for:

- **Ashford Dunwoody Rd. to I-285 EB**
- **Roswell Rd. to I-285 WB**
- **Jimmy Carter Blvd., Beaver Ruin Rd., and N. Druid Hills to I-85 SB**
- **Peachtree Industrial Blvd. to 285 EB/WB**
- **Forest Pkwy to I-75 NB**

Timing Strategies

- **Speeding up the red/green cycles when the ramp fills up.**
- **Turning them off periodically to release the queue when the ramp starts to overflow**
- **“Traffic responsive” or “actuated” operation**

Results

285 Eastbound – PM peak – Roswell Rd to I-85

	Travel Time (s)	# of Stops	Avg Speed (mph)	Total Delay (s)
Before	967.3	8.6	29.0	414.9
After	687.0	3.4	40.9	153.6
Change	-280.3	-5.3	11.8	-261.3

Results

285 Westbound – AM peak – I-85 to Roswell Rd

	Travel Time (s)	# of Stops	Avg Speed (mph)	Total Delay (s)
Before	633.1	1.3	44.4	98.8
After	583.0	0.6	48.2	66.8
Change	-50.1	-0.7	3.8	-32.0

Results Summary

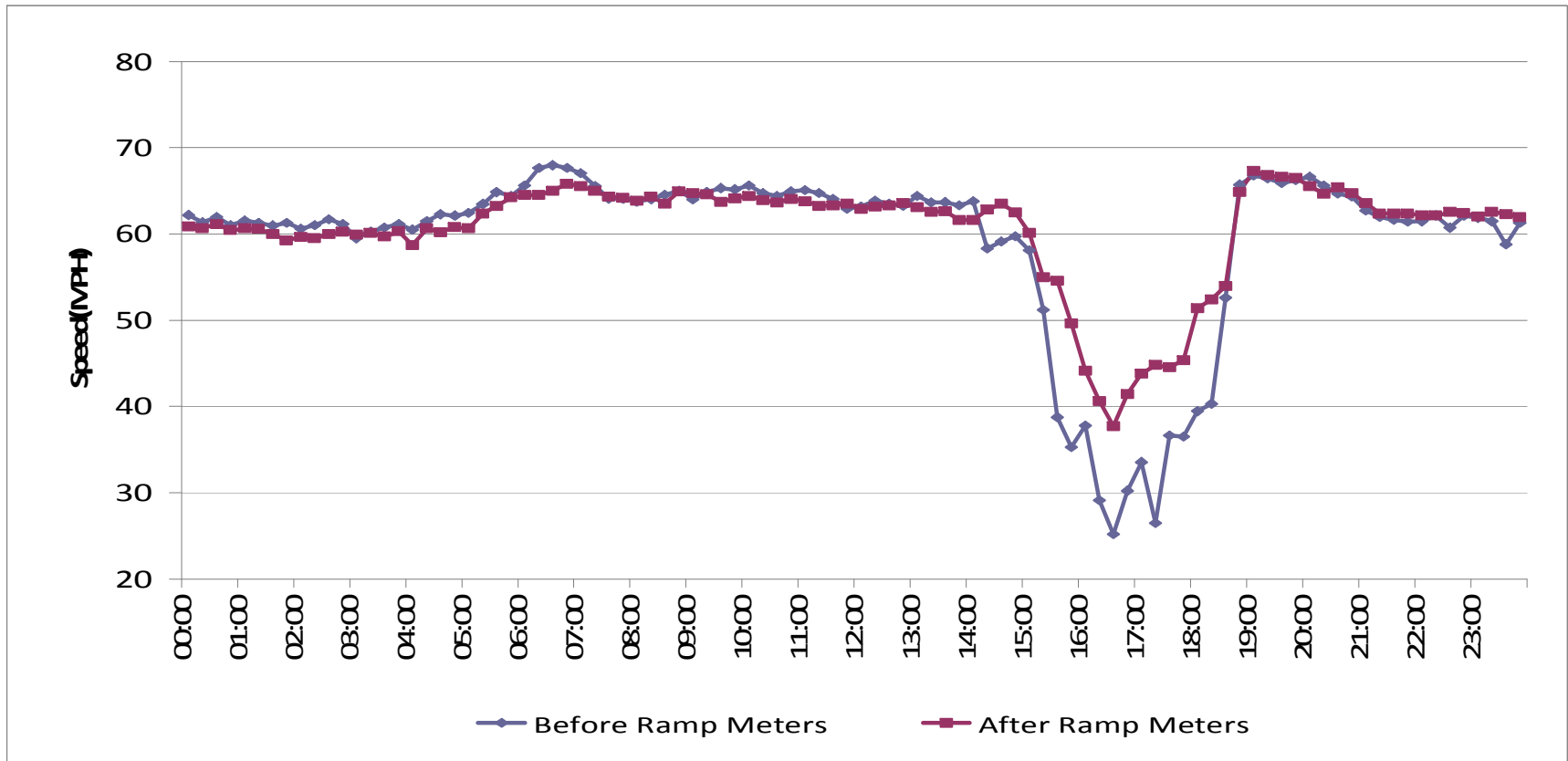
- **Travel time reductions ranged from:**
 - **50 to 358 seconds**
 - **8 – 35%**
- **# of stop reductions ranged from:**
 - **0.7 to 5.3**
- **Total delay reductions ranged from:**
 - **14 to 276 seconds**
 - **11 to 82%**

Results Summary

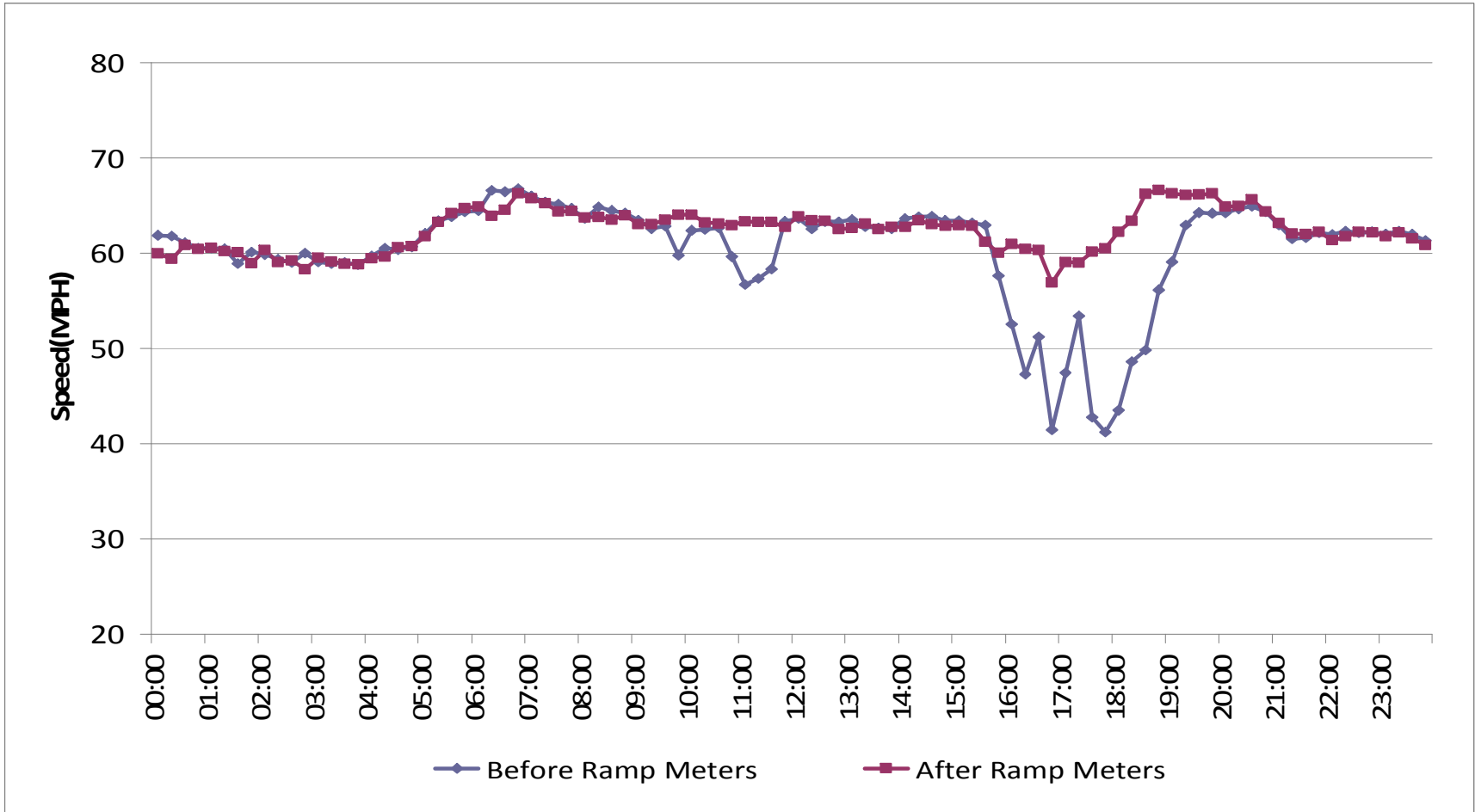
- **Emissions data also collected**
 - **Hydrocarbon (g) reductions ranged from:**
 - **5 to 31%**
 - **Oxides of Nitrogen (g) reductions ranged from:**
 - **5 to 38%**
 - **One corridor increased 6%**
- **Carbon Monoxide (g) reductions ranged from:**
 - **1 to 15%**
 - **Two corridors had increases (1% and 13%)**

Duration of Congestion

- NaviGator detection data studied for 3 weeks before and after ramp meters



Duration of Congestion






Frequency of Congestion

285 WB near Riverside Dr - PM Rush Hour

Sept 2007

SUN	MON	TUES	WED	THU	FRI	SAT
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	1	2				

62% of days moderately or severely congested

	Holiday
	Good
	Below 40 mph
	Below 25 mph

Sept 2008

	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

28% of days moderately or severely congested

Next Corridors

- **I-75/85 Downtown Connector: October 20, 2008**
- **I-575: October 27, 2008**
- **I-285 southwest: November, 2008**
- **I-85 southside: November, 2008**
- **US 78, GA 400 & I-20: Early 2009**

Ramp Metering in Metro Atlanta

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Street Smarts, Inc.
October 20, 2008



QUESTIONS?

