Using Real Time Data To Improve Work Zone Safety

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AASHTO/MoDOT Work Zone Meeting

Traffic.com's Objective

Provide

A bridge

between

Sources of traffic data

Both agency data and our own

and

Needs of agencies and the public.

Presentation Overview

- Real Time Data Case Studies
- Using Information Service Providers
- Additional Data Services from FHWA ITIP Program

Case Study I- Illinois Tollway

The Problem

Maximize Availability of Through Lanes During Construction

The Solution

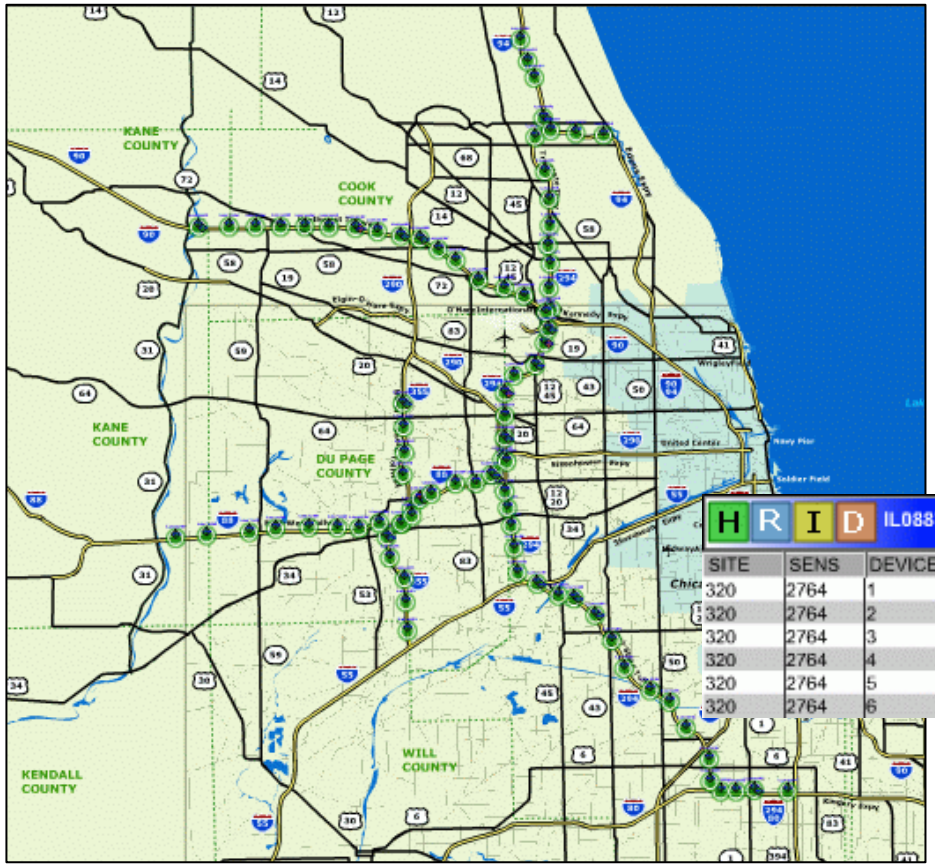
Use Recent Hourly Real Time Data To Determine Number of Lanes and Hours of Closure

Step I

- Determine Appropriate Devices
  - Section - ideally section under construction
  - Major Intersections
  - Lane Geometry
  - Same Day - Prior Week
  - Similar Weather

Available Sensors in Chicago Area

Locating Appropriate Sensor



- Region-wide Map
- Individual Sensor Access
- Lane-by-lane Data
- Speed, Volume and Lane Occupancy

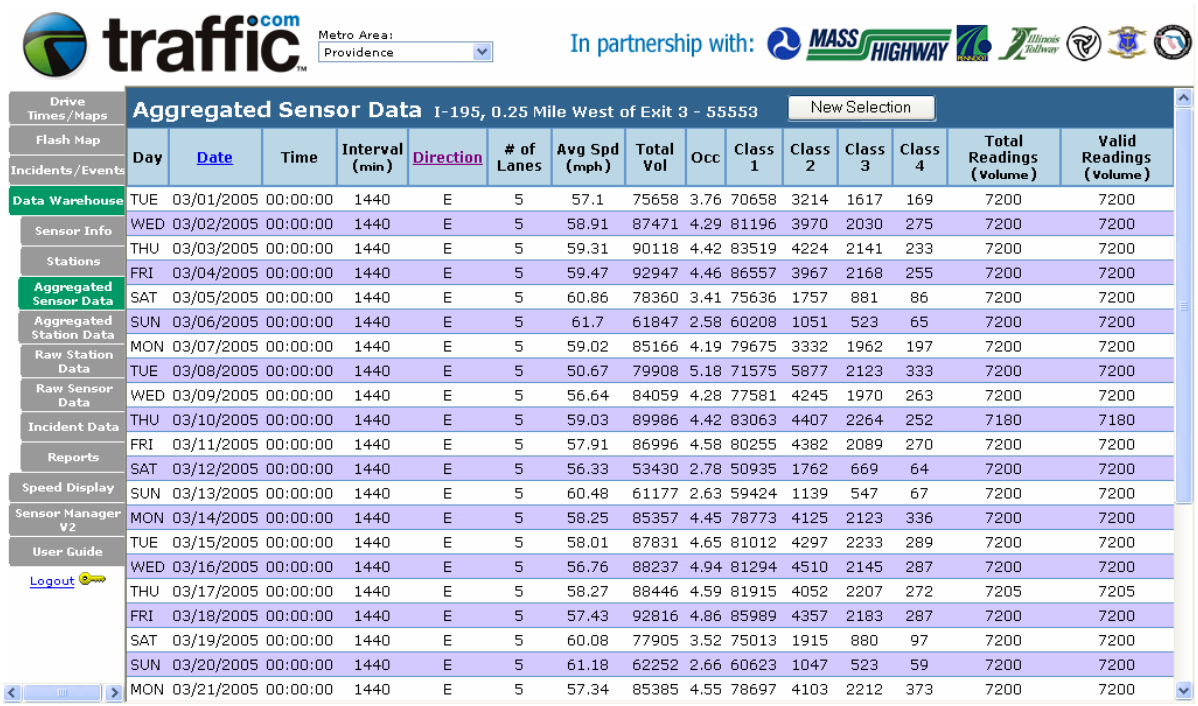
HRID IL088700 [7314] 3.25 Miles West of Route 59

SITE	SENS	DEVICE	DIR	POS	LN TYPE	SPD	VOL	OCC	C-1	C-2	C-3	C-	TIME
320	2764	1	East	RIGHT	THRU	59	6	2.0	6		0		11:59:07 AM
320	2764	2	East	CENTER	THRU	53	10	3.0	10		0		11:59:07 AM
320	2764	3	East	LEFT	THRU	50	9	3.0	8		1		11:59:07 AM
320	2764	4	West	RIGHT	THRU	51	13	6.0	13		0		11:59:07 AM
320	2764	5	West	CENTER	THRU	63	15	9.0	13		2		11:59:07 AM
320	2764	6	West	LEFT	THRU	81	13	3.0	13		0		11:59:07 AM

Step 2

- Download Data
  - Excel spread sheet
- Determine Hourly Volume
  - Divide by 1,500 vehicles/hr to determine lanes needed
- Map Permitted Lane Closures

Type of Data Available



Aggregated Sensor Data I-195, 0.25 Mile West of Exit 3 - 55553 [New Selection]

Day	Date	Time	Interval (min)	Direction	# of Lanes	Avg Spd (mph)	Total Vol	Occ	Class 1	Class 2	Class 3	Class 4	Total Readings (Volume)	Valid Readings (Volume)
TUE	03/01/2005	00:00:00	1440	E	5	57.1	75658	3.76	70658	3214	1617	169	7200	7200
WED	03/02/2005	00:00:00	1440	E	5	58.91	87471	4.29	81196	3970	2030	275	7200	7200
THU	03/03/2005	00:00:00	1440	E	5	59.31	90118	4.42	83519	4224	2141	233	7200	7200
FRI	03/04/2005	00:00:00	1440	E	5	59.47	92947	4.46	86557	3967	2168	255	7200	7200
SAT	03/05/2005	00:00:00	1440	E	5	60.86	78360	3.41	75636	1757	881	86	7200	7200
SUN	03/06/2005	00:00:00	1440	E	5	61.7	61847	2.58	60208	1051	523	65	7200	7200
MON	03/07/2005	00:00:00	1440	E	5	59.02	85166	4.19	79675	3332	1962	197	7200	7200
TUE	03/08/2005	00:00:00	1440	E	5	50.67	79908	5.18	71575	5877	2123	333	7200	7200
WED	03/09/2005	00:00:00	1440	E	5	56.64	84059	4.28	77581	4245	1970	263	7200	7200
THU	03/10/2005	00:00:00	1440	E	5	59.03	89986	4.42	83063	4407	2264	252	7180	7180
FRI	03/11/2005	00:00:00	1440	E	5	57.91	86996	4.58	80255	4382	2089	270	7200	7200
SAT	03/12/2005	00:00:00	1440	E	5	56.33	53430	2.78	50935	1762	669	64	7200	7200
SUN	03/13/2005	00:00:00	1440	E	5	60.48	61177	2.63	59424	1139	547	67	7200	7200
MON	03/14/2005	00:00:00	1440	E	5	58.25	85357	4.45	78773	4125	2123	336	7200	7200
TUE	03/15/2005	00:00:00	1440	E	5	58.01	87831	4.65	81012	4297	2233	289	7200	7200
WED	03/16/2005	00:00:00	1440	E	5	56.76	88237	4.94	81294	4510	2145	287	7200	7200
THU	03/17/2005	00:00:00	1440	E	5	58.27	88446	4.59	81915	4052	2207	272	7205	7205
FRI	03/18/2005	00:00:00	1440	E	5	57.43	92816	4.86	85989	4357	2183	287	7200	7200
SAT	03/19/2005	00:00:00	1440	E	5	60.08	77905	3.52	75013	1915	880	97	7200	7200
SUN	03/20/2005	00:00:00	1440	E	5	61.18	62252	2.66	60623	1047	523	59	7200	7200
MON	03/21/2005	00:00:00	1440	E	5	57.34	85385	4.55	78697	4103	2212	373	7200	7200

- Raw Data
- Historical Data
- Incidents & Events
- Reports
- Sensor Information

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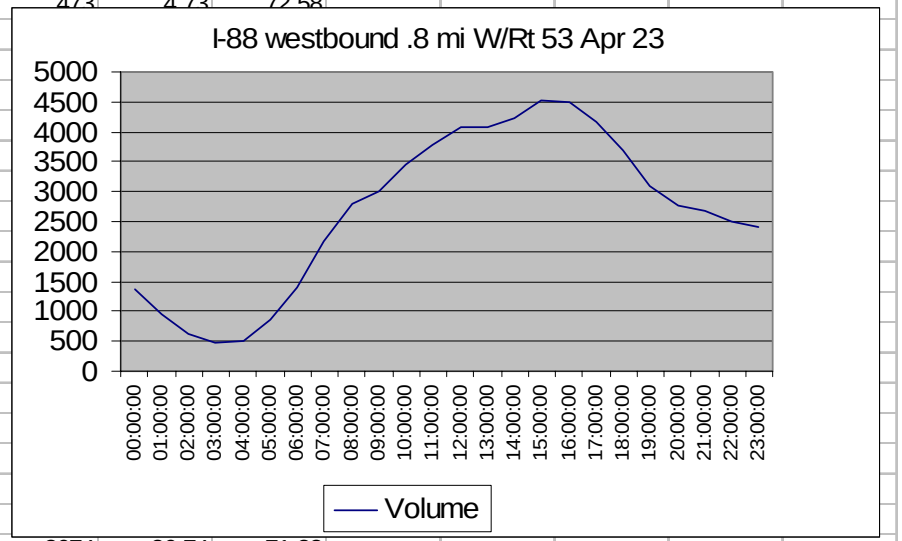
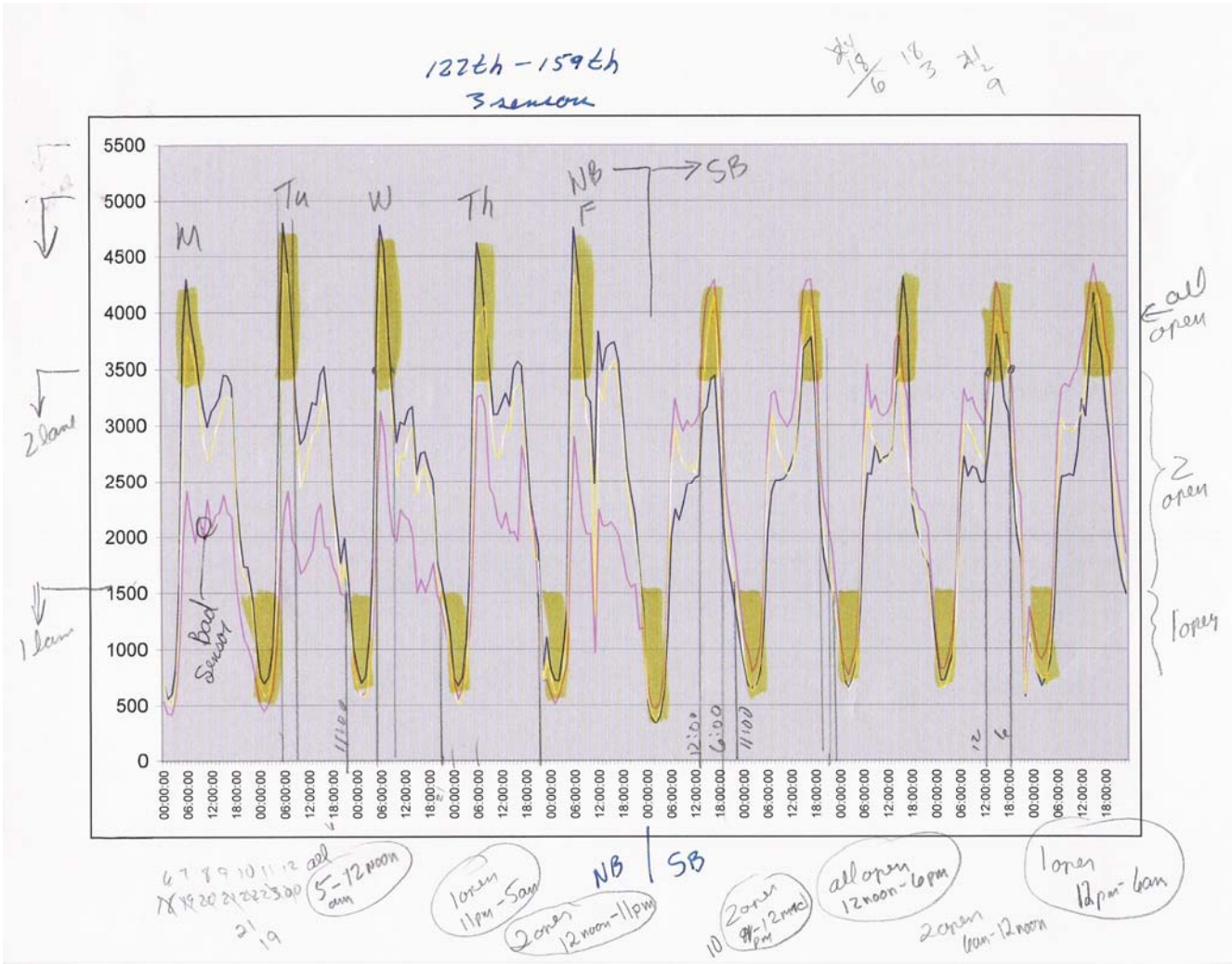
Data From Archive

					Direction	Time	Volume	Volume	Speed
7299					W	00:00:00	1364	13.64	70.17
0.8 Mile West of Lincoln Ave (Route 53)					W	01:00:00	960	9.6	70.41
SAT					W	02:00:00	618	6.18	70.73
4/23/2005					W	03:00:00	473	4.73	72.58
60					W	04:00:00			
3					W	05:00:00			
					W	06:00:00			
					W	07:00:00			
					W	08:00:00			
					W	09:00:00			
					W	10:00:00			
					W	11:00:00			
					W	12:00:00			
					W	13:00:00			
					W	14:00:00			
					W	15:00:00			
					W	16:00:00			
					W	17:00:00			
					W	18:00:00			
					W	19:00:00			
					W	20:00:00			
					W	21:00:00	2674	26.74	71.22
					W	22:00:00	2509	25.09	71.75
					W	23:00:00	2420	24.2	71.81



Plot of Lanes Needed



Lane Closure Worksheet

Weekday	Type of Closure	Allowable Lane Closure Hours		
Monday through Friday - SB	One Lane	Maybe to 10 am	To	Under Review
	Two Lanes	None	To	None
Monday through Friday - NB	One Lane	No	To	No
	Two Lanes	None	To	None
Saturday - SB	One Lane	No	To	No
	Two Lanes	None	To	None
Saturday - NB	One Lane	9 AM	To	3 PM
	Two Lanes	None	To	None
Sunday – SB	One Lane	5 AM	To	2 PM Could go longer
	Two Lanes	None	To	None
Sunday - NB	One Lane	5 AM	To	1 PM Could go to 3 pm
	Two Lanes	None	To	None

Step 3- Using the Information

- Monitor Contractor
  - Compliance
  - Delay
- Monitor Excessive Speeds
- Information to Public
  - VMS
  - HAR
  - Use ISPs

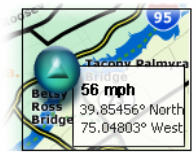
What does Traffic.com do?

Data Collection

DOT Information

Digital Traffic Pulse

Real-time speeds, volume & congestion

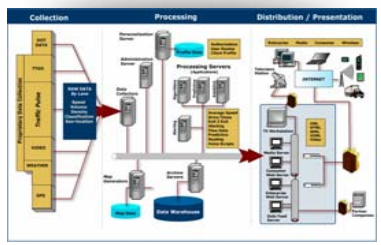


Probe Data (GPS)

Incidents & Alerts

Data Processing

TIMS



Products/Services

Stakeholder

511 Website

traffic.com

Case Study II- Woodrow Wilson Bridge

The Problem

New bridge connection required shutting I-95 eastbound for an entire weekend.

The Solution

Massive public awareness program.

Use real-time data to monitor impact.

Planned Coverage Area: DC ITIP

Color Key:
Red = Corridors Covered by ITIP using CHART data in current state
Blue = Corridors Covered if the following CHART locations are repaired
Green = Currently Deployed Corridors with ITIP Detection

Monitoring Success Of Campaign

Date	Time	Originally Projected Volume	Volume	WEEKEND DURING SWITCH (JUL 15-17) Speed	Volume	Diversion Rate (%) between 2 weekends	Diversion Rate (%) between originally projected and actual
7/8/2005	19:00:00	4571	4989	50.84	3587	28	22
7/8/2005	20:00:00	3786	3102	68.15	1950	37	49
7/8/2005	21:00:00	3529	3200	66.55	1649	48	53
7/8/2005	22:00:00	3024	2910	50.29	2622	10	13
7/8/2005	23:00:00	2382	2240	40.22	3027	-35	-27
7/9/2005	00:00:00	1812	1641	52.09	2182	-33	-20
7/9/2005	01:00:00	1198	1203	66.60	1003	17	16
7/9/2005	02:00:00	858	934	64.36	835	11	3
7/9/2005	03:00:00	808	750	64.11	583	22	28

ITIP Program- Source of Data

- Federal ITIP Program for traffic data
  - $2 million appropriated for data services in a metro area
  - Public/private partnership
  - Traffic.com deploys, operates and maintains sensor network
  - No O&M costs to Agency
  - Revenue share is re-dedicated to transportation
  - Traffic.com provides data to TV, radio, satellite radio, in-vehicle systems, and maintains public website
  - Agency gets unlimited real-time & archived data for internal use

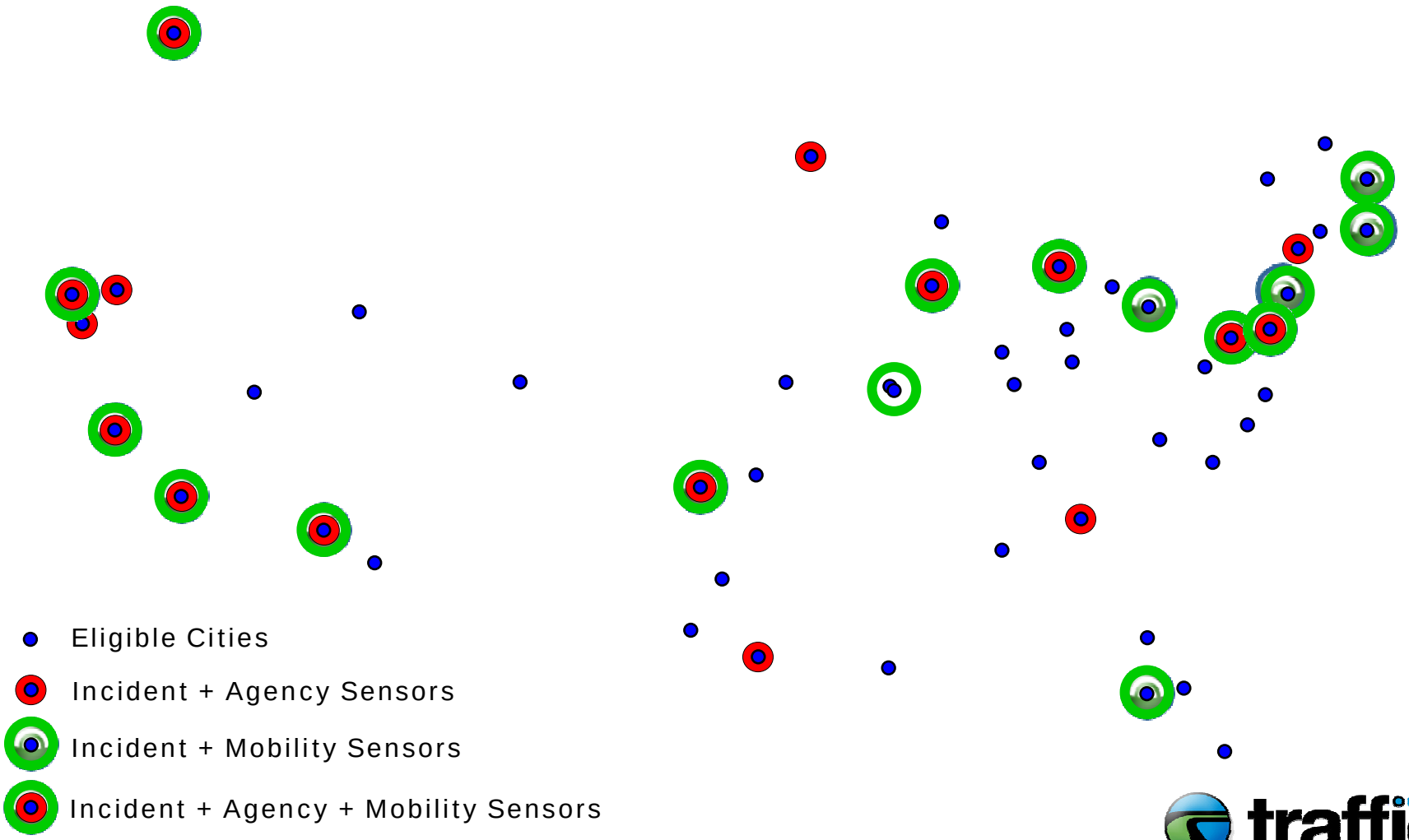
The ITIP Technology

- Non-intrusive in ROW
- 15” square base, flexible
- Solar powered
- Wireless communication
- Modular components
- Cover all lanes
- Workzone safety

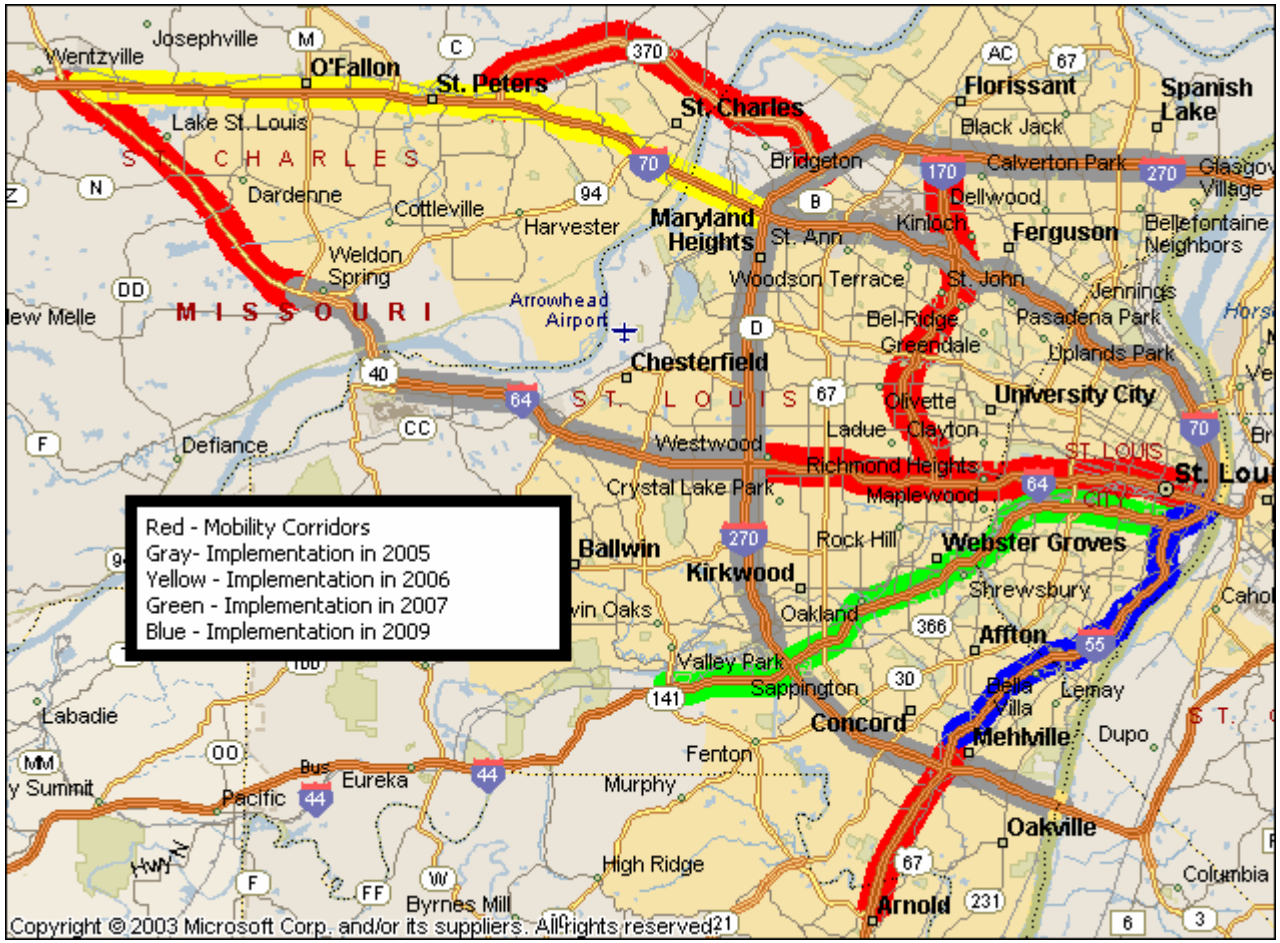
Opportunities for Agencies

- **Operating Cities:** Boston, Chicago, Los Angeles, Philadelphia, Pittsburgh, Providence, Tampa, San Diego, San Francisco, St. Louis, and Washington (DC).
- **Cities Under Contract:** Baltimore, Detroit, Oklahoma City, Phoenix, and Seattle.
- **Funded Cities:** Birmingham, Cleveland, Dallas/Ft. Worth, Denver, Houston, Indianapolis, Las Vegas, Miami, New York/Northern New Jersey, Northern Kentucky/Cincinnati, Orlando, and Salt Lake.
- **Substitute Cities:** Albany, Atlanta, Austin, Burlington, Charlotte, Columbus, Greensboro, Hartford, Jacksonville, Kansas City, Louisville, Milwaukee, Minneapolis-St. Paul, Nashville, New Orleans, Norfolk, Raleigh, Richmond, Sacramento, San Jose, Tulsa, and Tucson.

Collection: Sensor & Incident Data



Collection: ITIP and MoDOT



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- Real Time Data Case Studies
- Using Information Service Providers
- Additional Data Services from FHWA ITIP Program

Successful Public/Private Partnerships

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