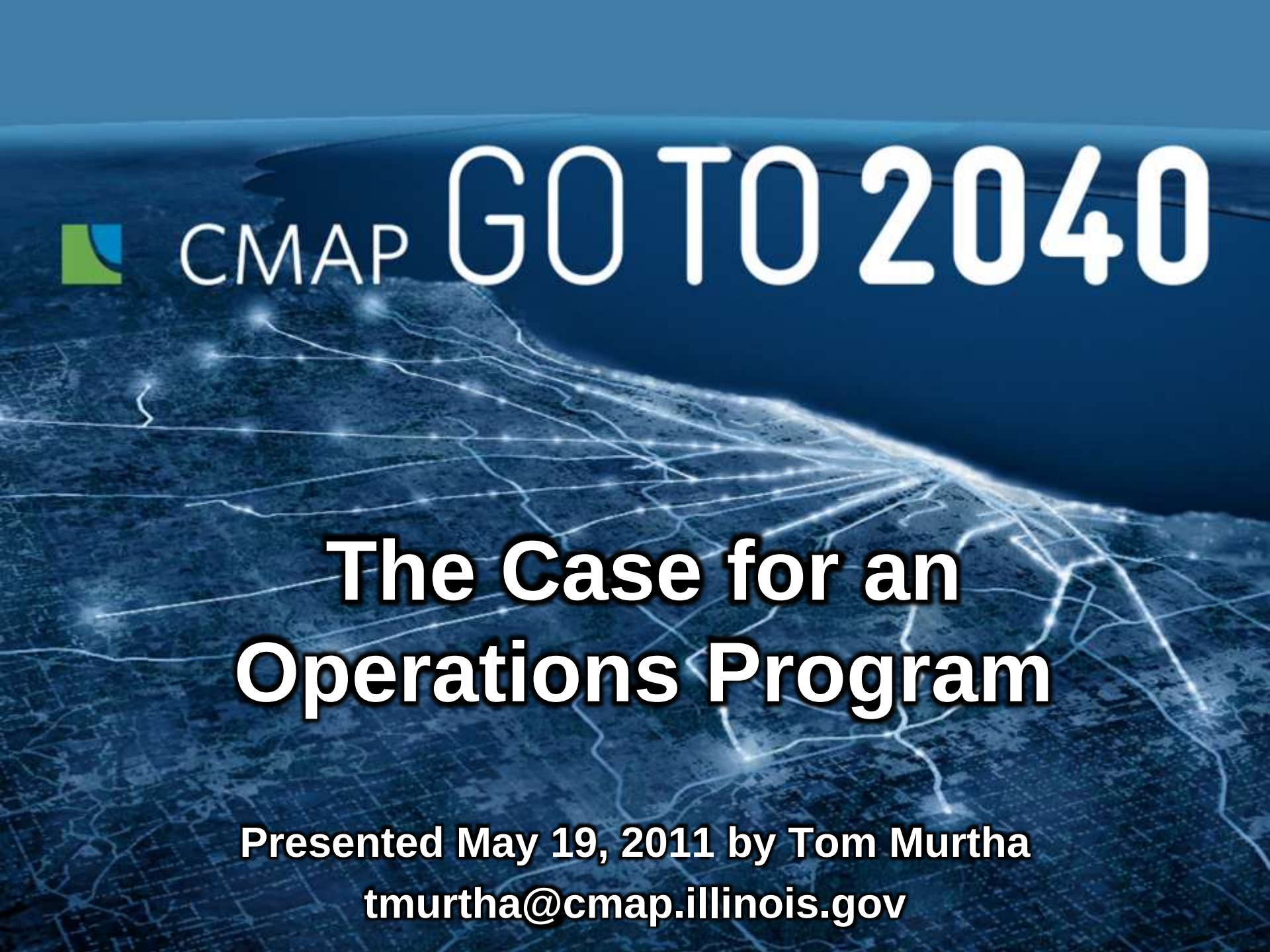


The Case for an Operations Program

Presented May 19, 2011 by Tom Murtha

tmurtha@cmap.illinois.gov

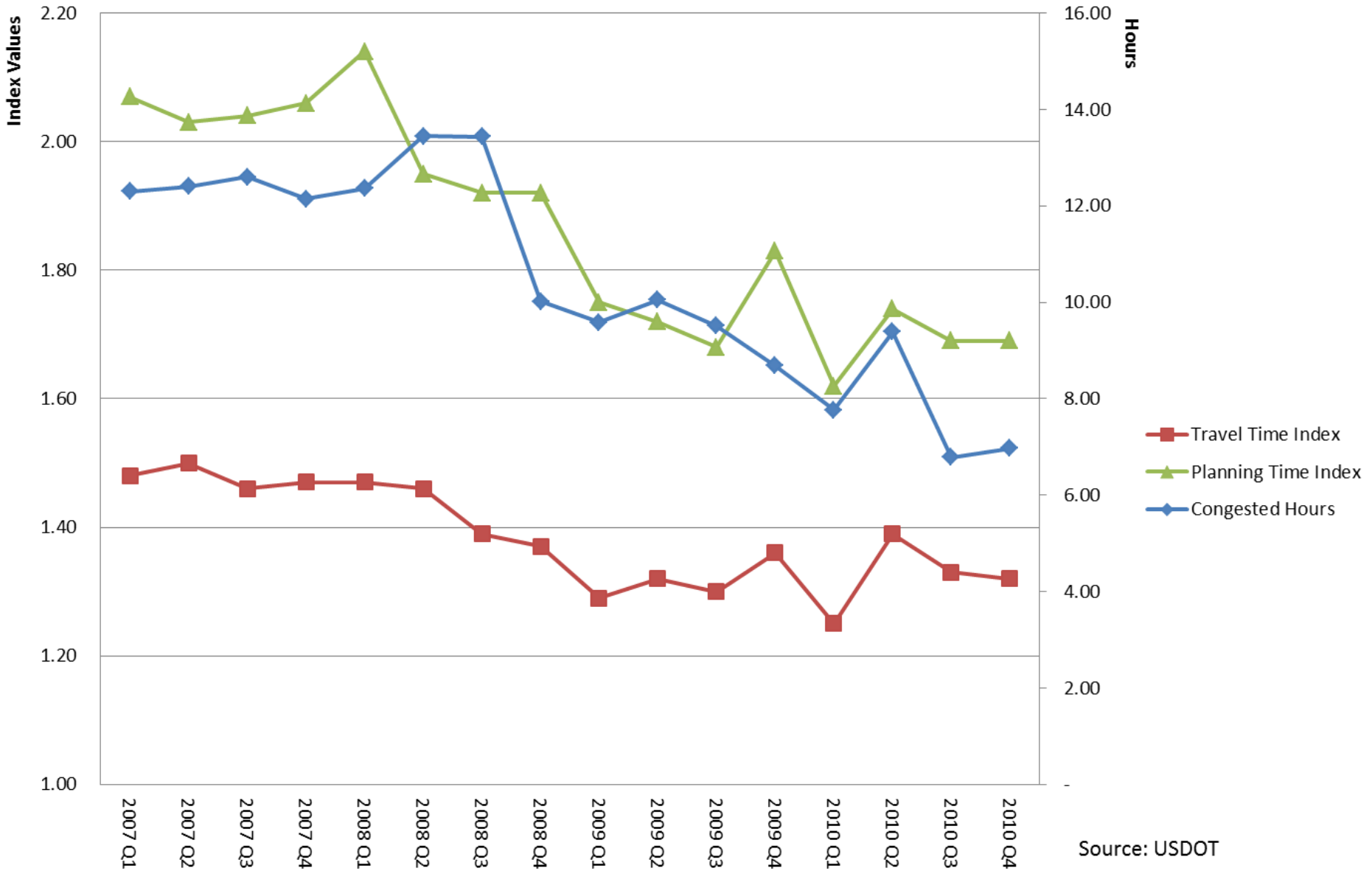
The Congestion Problem

- Estimated costs for metropolitan Chicago: $7.3 billion per year
  - Wasted time
  - Wasted fuel
  - Environmental damage
- Estimated jobs lost in metropolitan Chicago: 87,000
  - Excess labor costs
  - Excess transportation costs

Source: Metropolitan Planning Council, *Moving at the Speed of Congestion*

Chicago Metropolitan Agency for Planning

Chicago Region Freeway/Tollway Congestion Indicators, 2007-2010



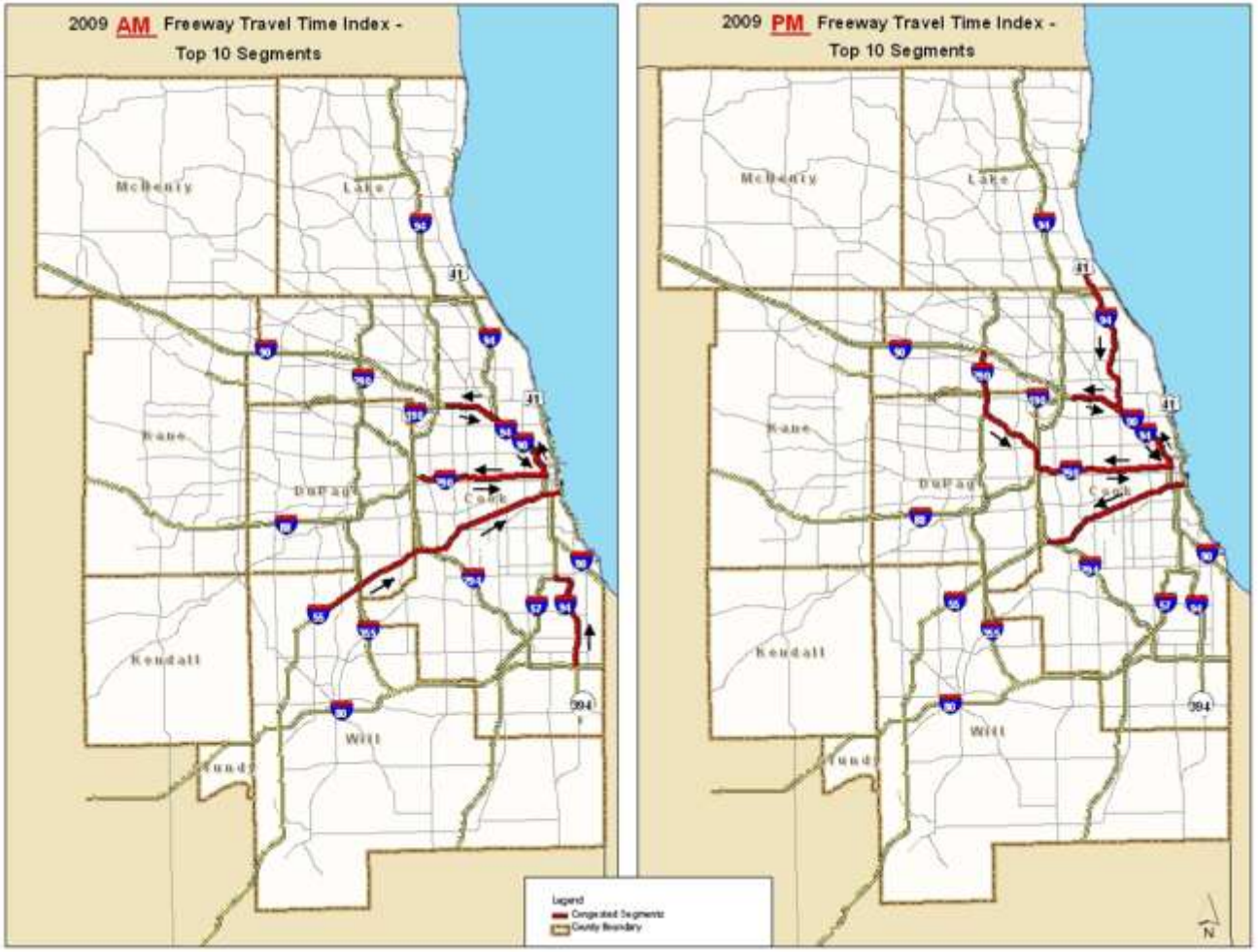
Source: USDOT

The Congestion Problem – Measured by the Travel Time Index

Table 4-3. 2009 PM Travel Time Index (TTI) - Top 10 segments			
FREEWAY	**SEGMENT DESCRIPTION**	**TTI**	**Avg. peak time is X% longer than free-flow time**
I-90 Kennedy, East-Inbound	From I-190 to I-94/Edens Expressway	3.56	256%
I-290 Eisenhower, East-Inbound	From Wolf Rd. to Canal St.	2.48	148%
I-94 Edens, East-Inbound	From Deerfield Rd to I-90 Kennedy	2.37	137%
I-290 Eisenhower, West-Outbound	From Canal St. to Wolf Rd.	2.31	131%
I-55 Stevenson, South-Outbound	From US 41/LSD to I-294	2.19	119%
I-90 Kennedy, West-Outbound	From I-94/Edens Expressway to I-190	2.04	104%
I-90/94 Kennedy Locals, East-Inbound	From I-94/Edens Junction to I-290	2.01	101%
I-90/94 Kennedy Reversibles, West-Outbound	From Ogden Ave to Montrose Ave	1.87	87%
I-90/94 Kennedy Locals, West-Outbound	From I-290 to I-94/Edens Junction	1.87	87%
I-290, East-Inbound	From I-90/Jane Addams to Wolf Road	1.71	71%

* See CMAP website (Congestion Management Process section) for individual freeway segment extents

The Congestion Problem – Measured by the Travel Time Index



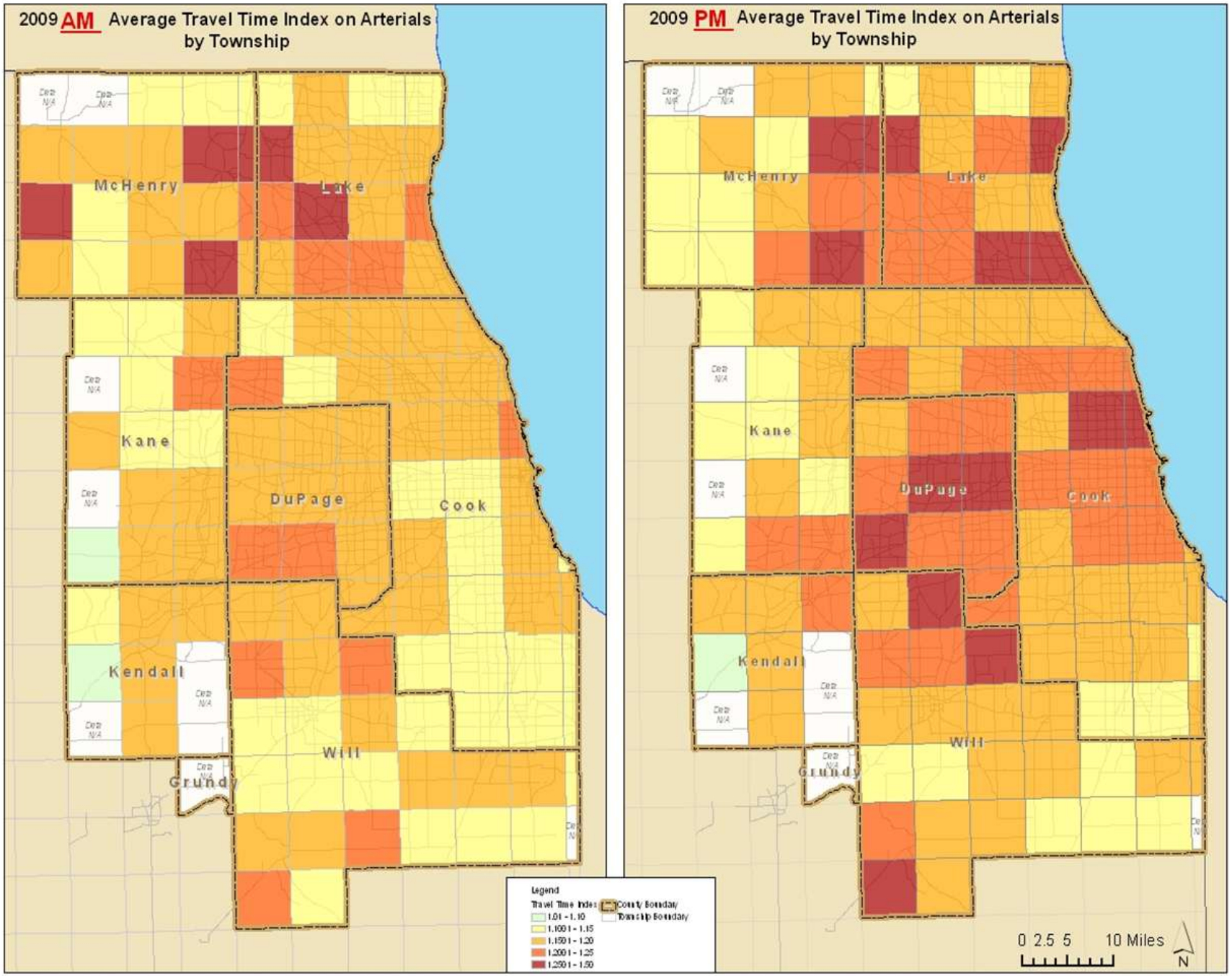
May, 2011

Chicago Metropolitan Agency for Planning

The Congestion Problem – Measured by the Planning Time Index

Table 4-5: 2009 PM Planning Time Index (PTI) - Top Ten Unreliable Travel Times				
FREEWAY	SEGMENT DESCRIPTION	2009 PM - PTI	2009 FREE FLOW TRAVEL TIME (minutes)	BUFFER TIME NEEDED (minutes)
I-90 Kennedy, East-Inbound	From I-190 to I-94/Edens Expressway	6.05	4.99	25
I-94 Edens, East-Inbound	From Deerfield Rd. to I-90/ Kennedy Expressway	3.88	16.47	47
I-290 Eisenhower, West-	From Canal St. to Wolf Rd.	3.81	13.02	37
I-55 Stevenson, South-Outbound	From US41/LSD to I-294	3.75	16.2	45
I-94/90 Kennedy, East-Inbound	From I-94/Edens Junction to I-290	3.70	8.01	22
I-94/90 Kennedy, West-Outbound	From I-290 to I-94/Edens Junction	3.70	8.24	22
I-290 Eisenhower, East-Inbound	From Wolf Rd to Canal St.	3.49	13.41	33
I-90/94 Kennedy reversible, West -Outbound	From Ogden Ave to Montrose Ave	3.36	5.88	14
I-290 Eisenhower, East-Inbound	From Wolf Rd to I-90/Jane Addams	3.04	15.55	32
I-190, East-Inbound	From O'Hare Airport to I-90/ Kennedy Expressway	2.91	2.69	5

* See CMAP website (Congestion Management Process section) for individual freeway segment extents


2009 AM Average Travel Time Index on Arterials by Township
McHenry
Lake
Kane
DuPage
Cook
Kendall
Will
Grundy
Data N/A
Legend
Travel Time Index
1.01 - 1.10
1.1001 - 1.15
1.1501 - 1.20
1.2001 - 1.25
1.2501 - 1.50
County Boundary
Township Boundary
2009 PM Average Travel Time Index on Arterials by Township
0 2.5 5 10 Miles
N

Addressing the Congestion Problem

- High Investment Strategies
  - Major Capital Projects
- Low-Tech Solutions
  - Roundabouts
  - Land Use
  - Walking, Bicycling
- Intelligent Transportation Systems

Addressing the Congestion Problem

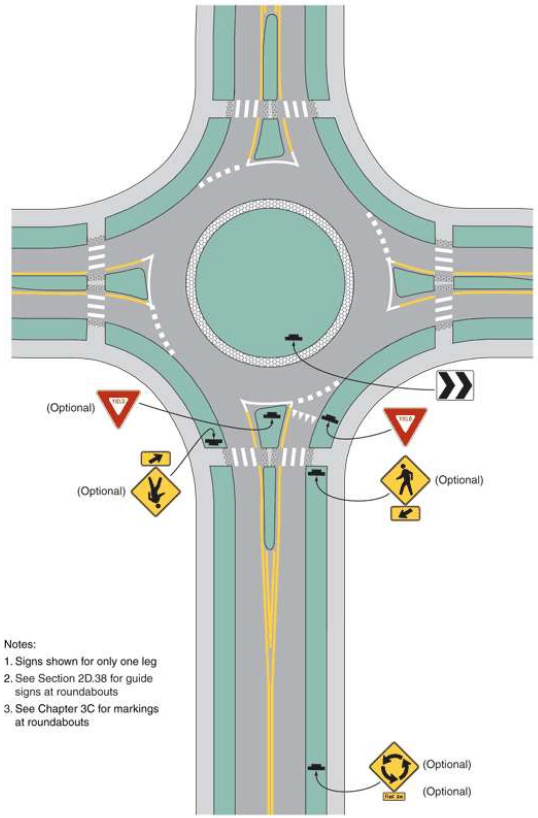
Major Capital Projects:

18 Projects

$10.5 Billion

Addressing the Congestion Problem: Roundabouts

Figure 2B-22. Example of Regulatory and Warning Signs for a One-Lane Roundabout



Images: FHWA (MUTCD); Lake County Division of Transportation

Chicago Metropolitan Agency for Planning

ITS: Desired Results

- Reduced Congestion
- Improved Safety
- Economical Mobility
- More Effective Planning

How:

- Better decisions by drivers using better information
- Better decisions by transportation system managers using better information

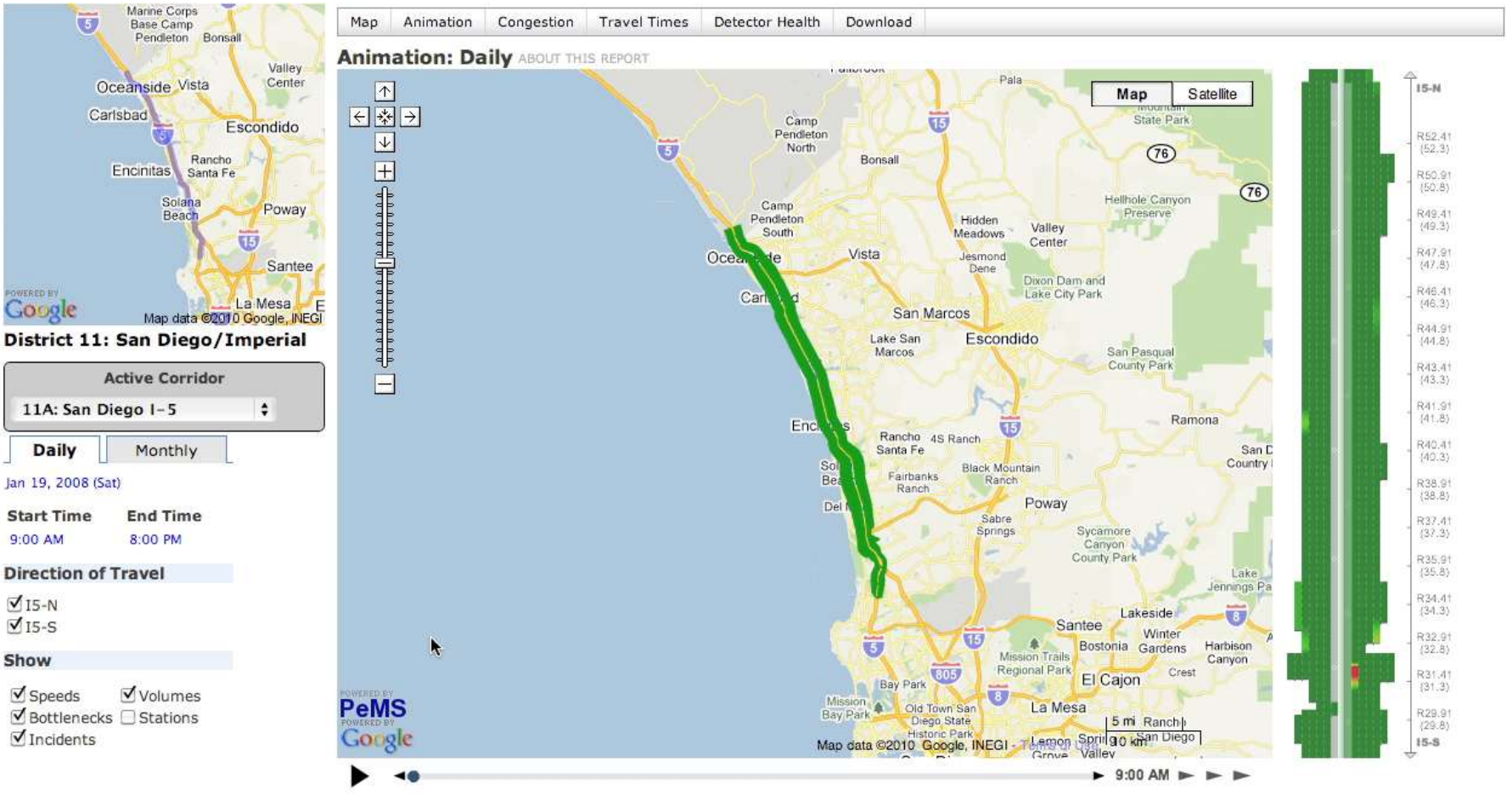
Addressing Congestion: Direct Program Options

- **Speed Harmonization**
- **Incident Management**
- Congestion Pricing/ Managed Lanes
- Adaptive Traffic Signal Control
- **Traveler Information (Variable Message Signs, Web Sites, Highway Advisory Radio)**
- **Traffic Management (Detection/Sensors)**
- **Data Integration (PSAP/TMC)**

Program Options: Incident Management

- Complexity of incident management – public safety, highway managers, local jurisdictions, motorists.
- Better decisions can come from better situational awareness and coordination among the many decision makers.
- Archived incident information can also be applied to improve tactics for addressing future incidents.

Program Options: Incident Management



California PeMS Movie Courtesy of Berkeley Transportation Systems

Chicago Metropolitan Agency for Planning

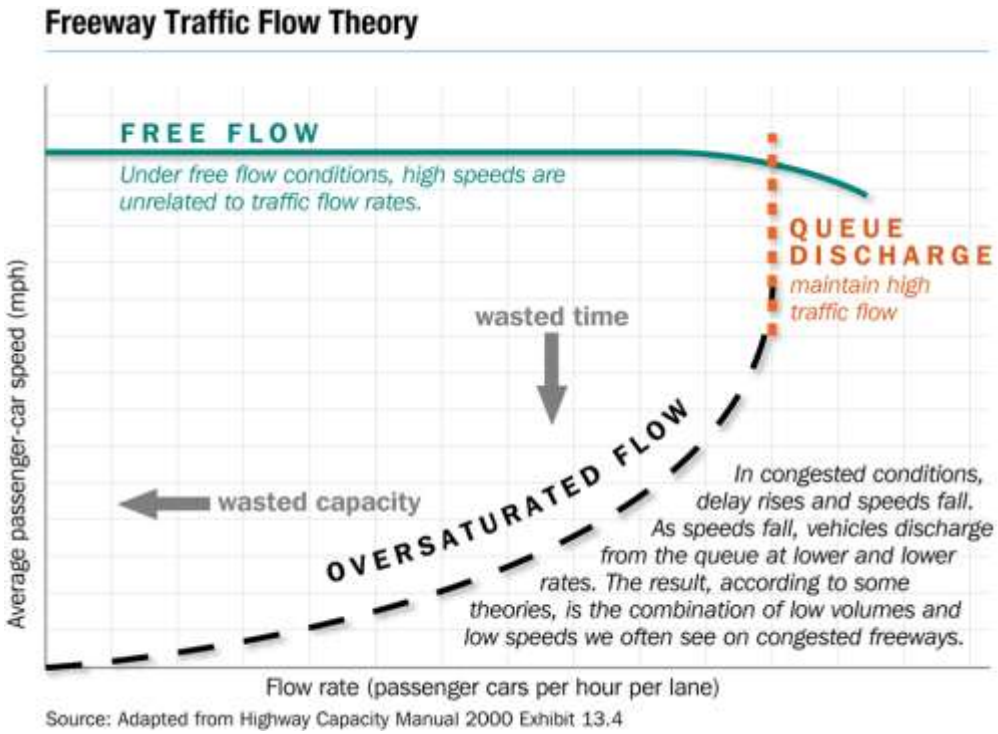
Program Options: Incident Management

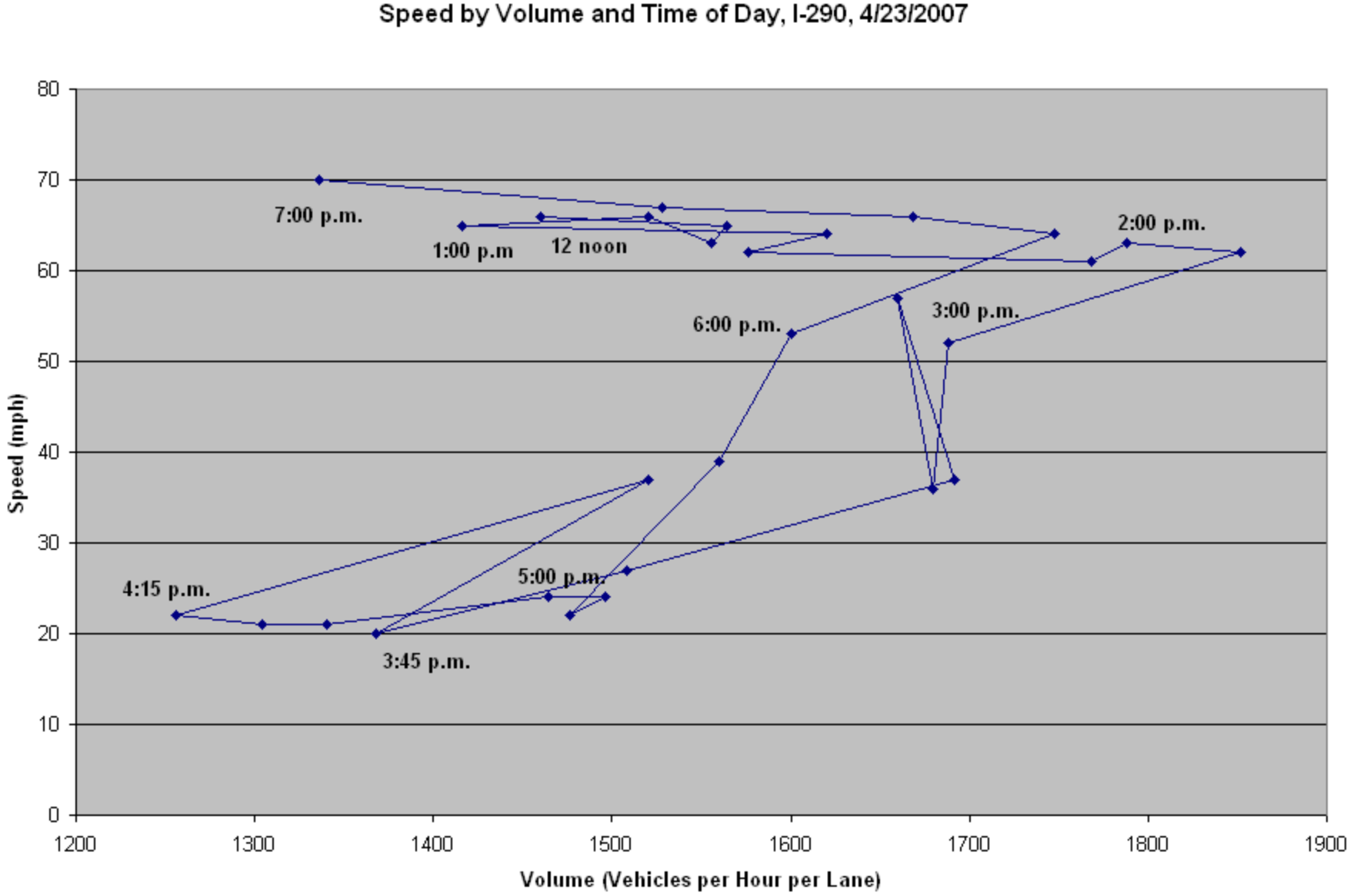
Chicago Region ADUS Movie Courtesy of Berkeley Transportation Systems

Chicago Metropolitan Agency for Planning

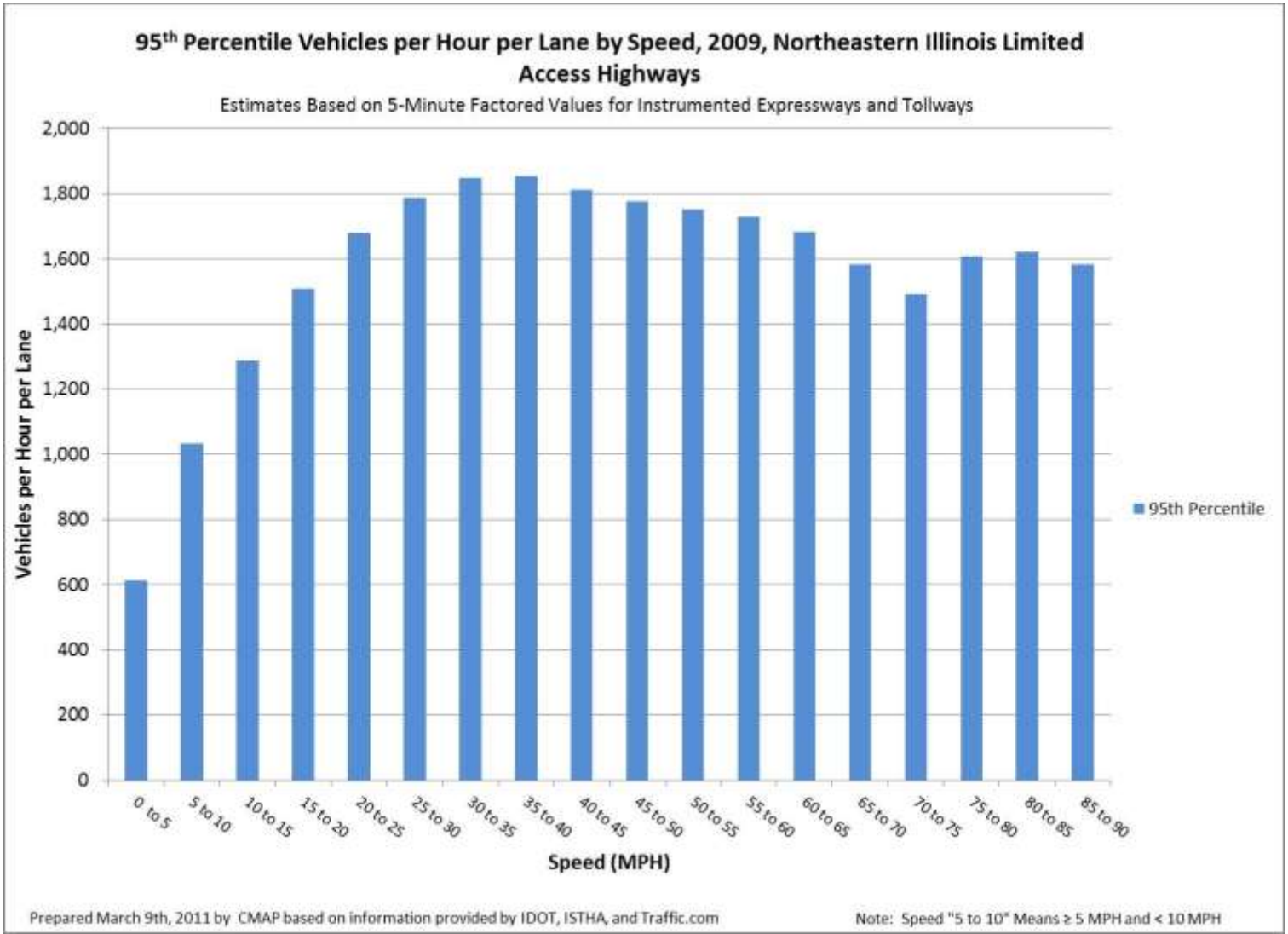
Freeway Management

- Managed lanes allow highway agencies to maintain congestion-free travel




Speed by Volume and Time of Day, I-290, 4/23/2007
Speed (mph)
Volume (Vehicles per Hour per Lane)
0
10
20
30
40
50
60
70
80
1200
1300
1400
1500
1600
1700
1800
1900
7:00 p.m.
1:00 p.m
12 noon
2:00 p.m.
3:00 p.m.
6:00 p.m.
4:15 p.m.
5:00 p.m.
3:45 p.m.

Program Options: Variable Speed Limits



Program Options: Variable Speed Limits

- Variable speed limits might harmonize speed reductions for crashes, roadwork, and other congestion, improving traffic flow and safety.

Image: Missouri DOT, I-270 Summer 2011

Program Options: Managed Lanes

- Pricing can balance lane supply/demand
- Policies can also be adopted to prioritize transit, carpooling, or freight transport for higher person- or value-throughput

Program Options: Managed Lanes

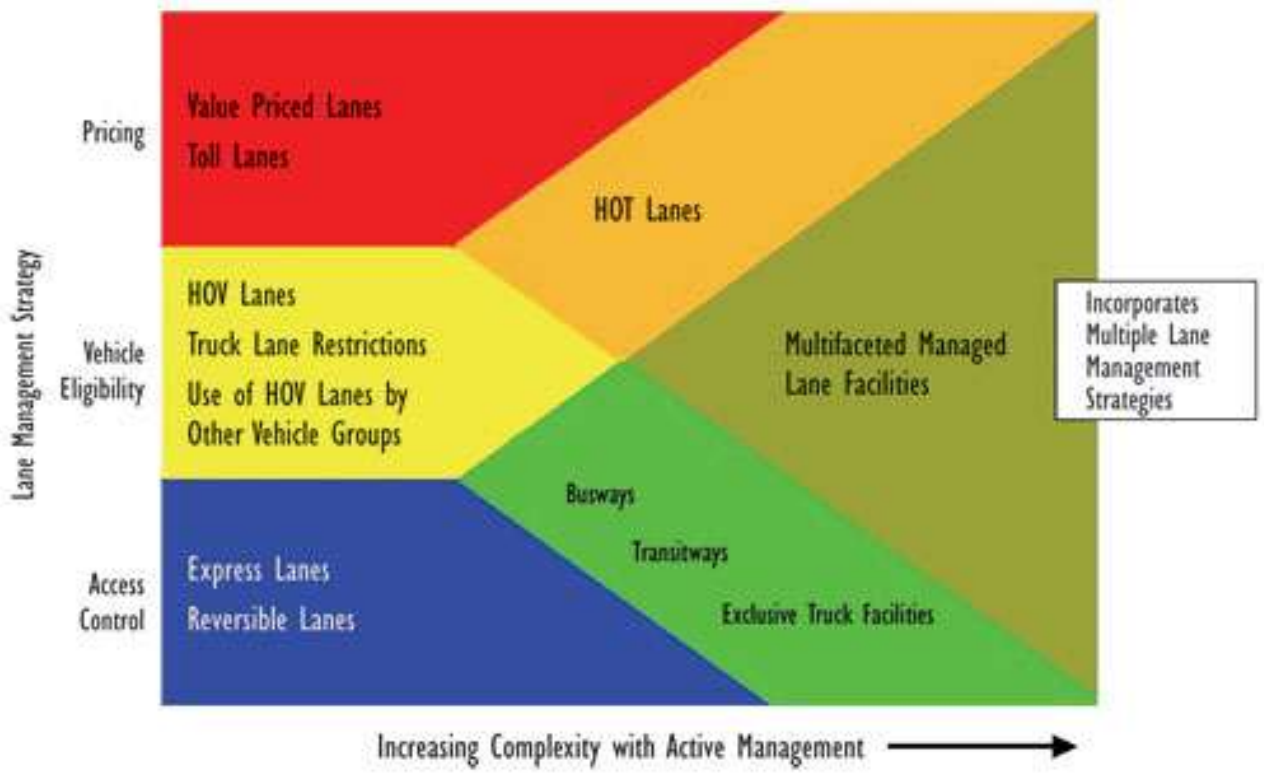
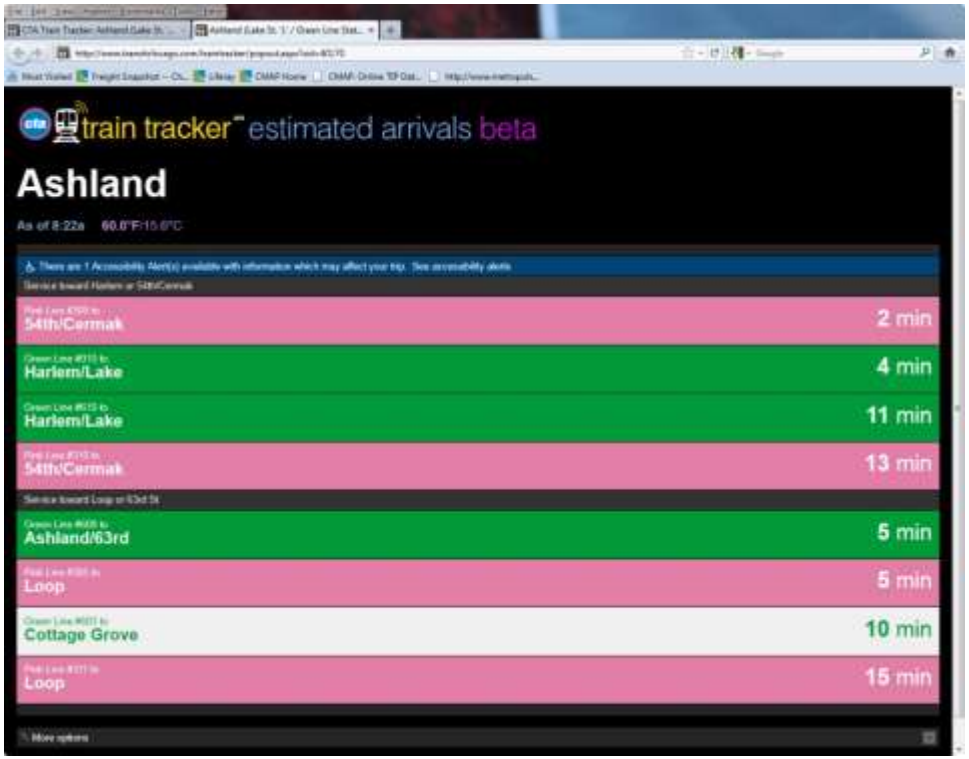


Image Source: FHWA

Program Options: Travel Information

Travel information consists of decision tools for choices regarding time, route, and mode of travel.



Lake County **PASSAGE** Live Traffic

1620 AM

Scheduled Roadwork | Roadwork Details | **E-mail Notifications** NEW! | About Passage

Last Refresh: 5/7/2011 5:28:05 PM

Slow Fast | Map Types | Legend/Options

East | West

Rollins @ Jewel
Looking East

Larger View

Co Hwy 55 · Co Hwy 31 · W Rollins Rd · Gateway Park · Barron Blvd · Co Hwy 66 · Fourth Lake · Miltmore Lake · Nielsen · Crozier Dr · Francis Dr · Paradise Ln · W Park Dr · W Danny Ln · W Nielson Dr · Honey Ln · W Kenneth Ln · Carillon Dr · Longfield Ln · Enfield Ln · E Clover Ln · E Daisy Ln

Map data ©2011 Google - Terms of Use

New Features

- E-mail Notifications
- iPhone App – *Download Now!*
- Android App – Coming Soon

Contact Us

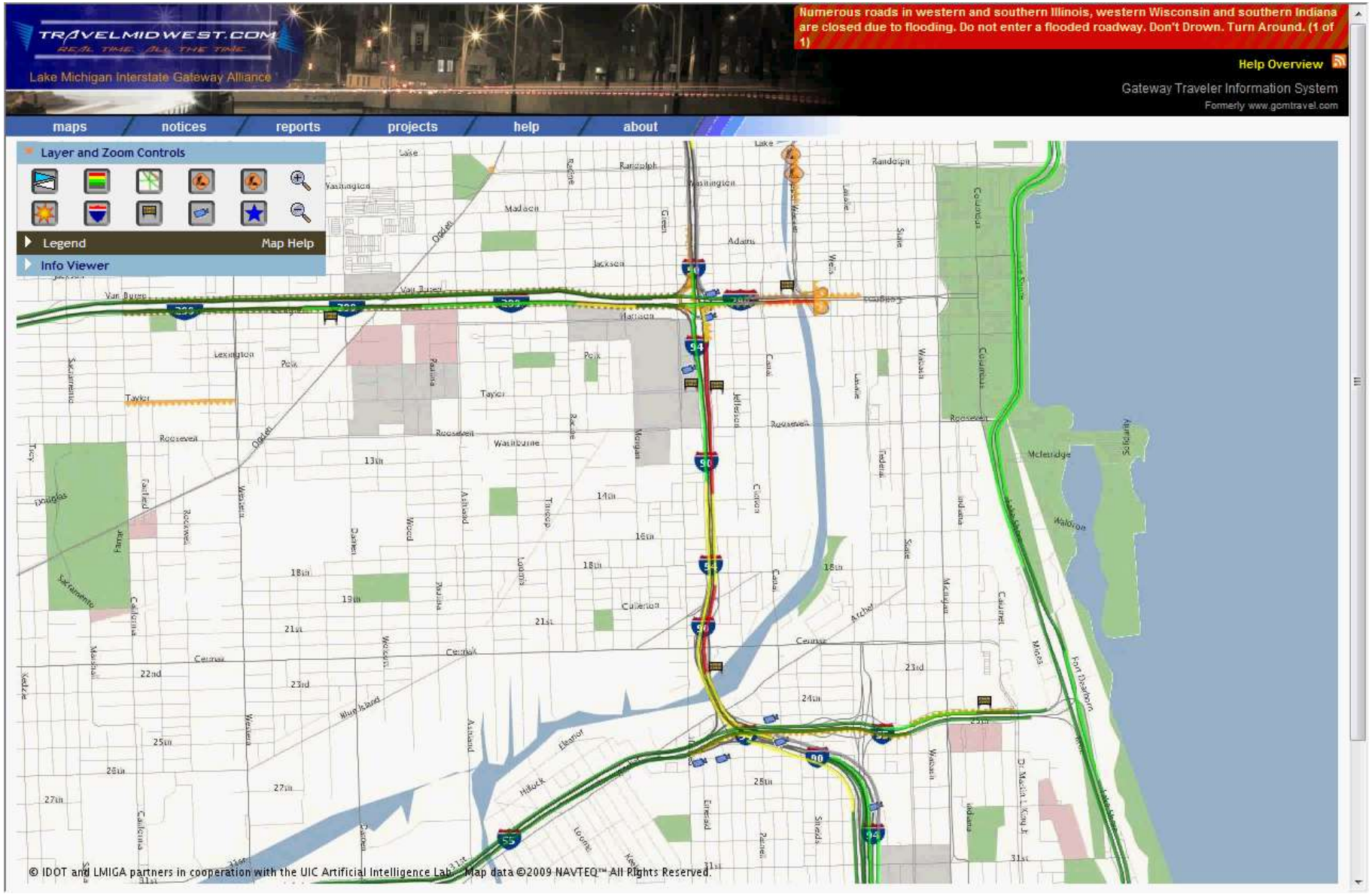
Share Traffic Alerts

Lake County *PASSAGE*
Phone: 847.377.7000
Hours: Weekdays 6am - 7pm
passage@lakecountyil.gov

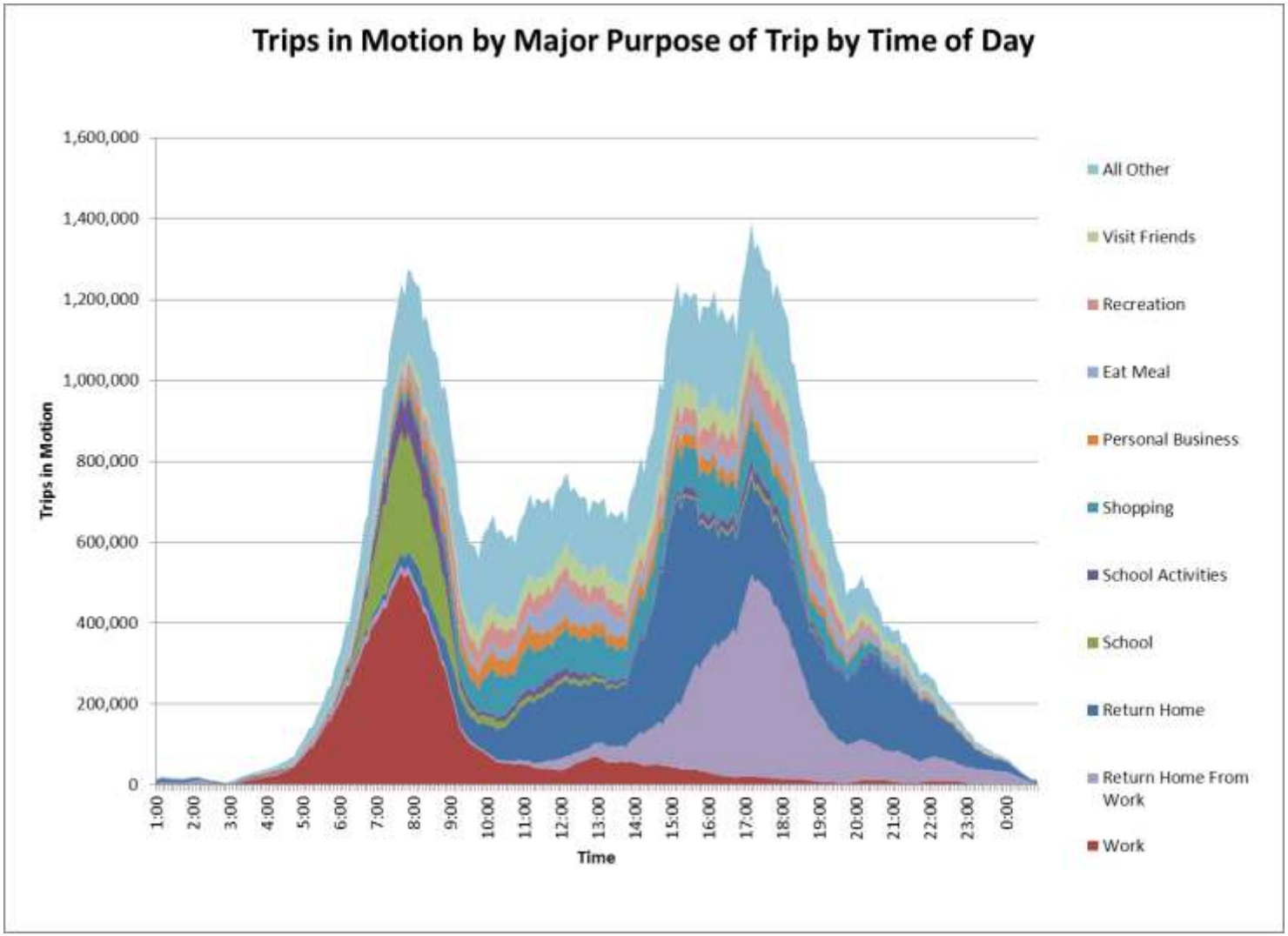
Please take our survey.

Related Links

- *PASSAGE* Mobile Version
- Lake County Division of Transportation
- Illinois Department of Transportation (IDOT)
- US Department of Transportation
- Illinois Tollway
- Travel Midwest
- Amtrak
- Metra
- Pace RIDESHARE
- Regional Transportation Authority (RTA)

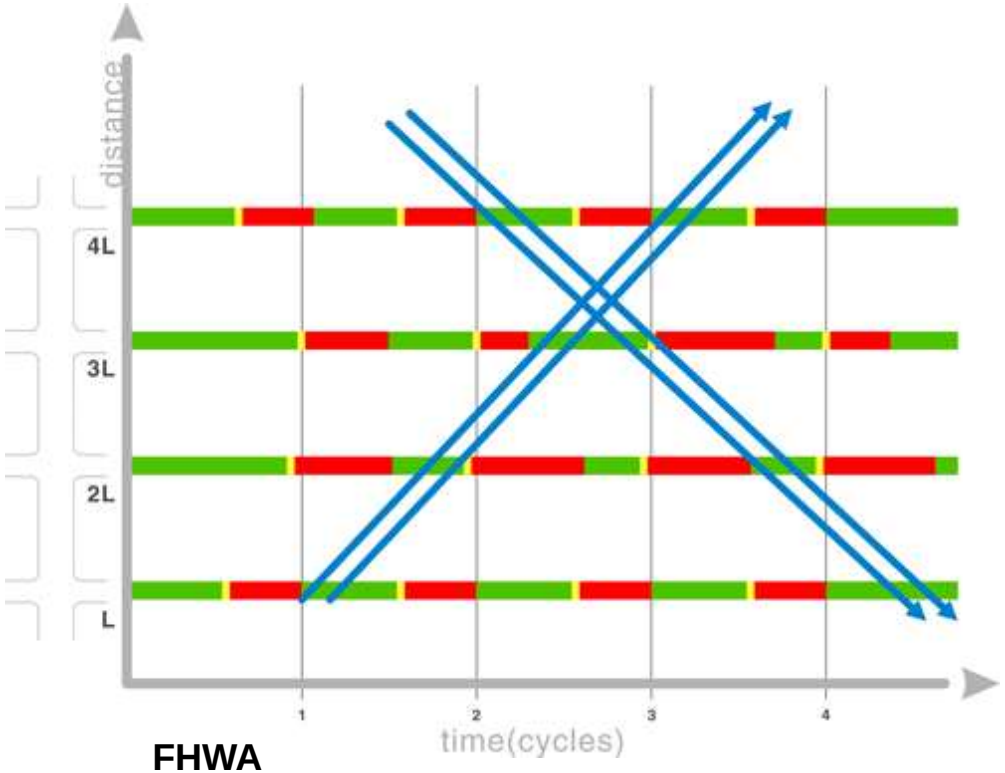

TRAVELMIDWEST.COM
REAL TIME. ALL THE TIME.
Lake Michigan Interstate Gateway Alliance
Numerous roads in western and southern Illinois, western Wisconsin and southern Indiana are closed due to flooding. Do not enter a flooded roadway. Don't Drown. Turn Around. (1 of 1)
Help Overview
Gateway Traveler Information System
Formerly www.gcmtravel.com
maps
notices
reports
projects
help
about
Layer and Zoom Controls
Legend
Map Help
Info Viewer
© IDOT and LMIGA partners in cooperation with the UIC Artificial Intelligence Lab. Map data ©2009 NAVTEQ™ All Rights Reserved.

Travel Information: One size does not fit all.



Program Options: Adaptive Traffic Signal Control

Adaptive signal control analyzes current traffic demand data to adjust traffic signal timing to optimize traffic flow in coordinated traffic signal systems.



FHWA

Program Options: Adaptive Traffic Signal Control

- Several vendors offering different algorithms
- May vary signal cycle lengths, phasing, lead-lag turn phases, and without a single offset.

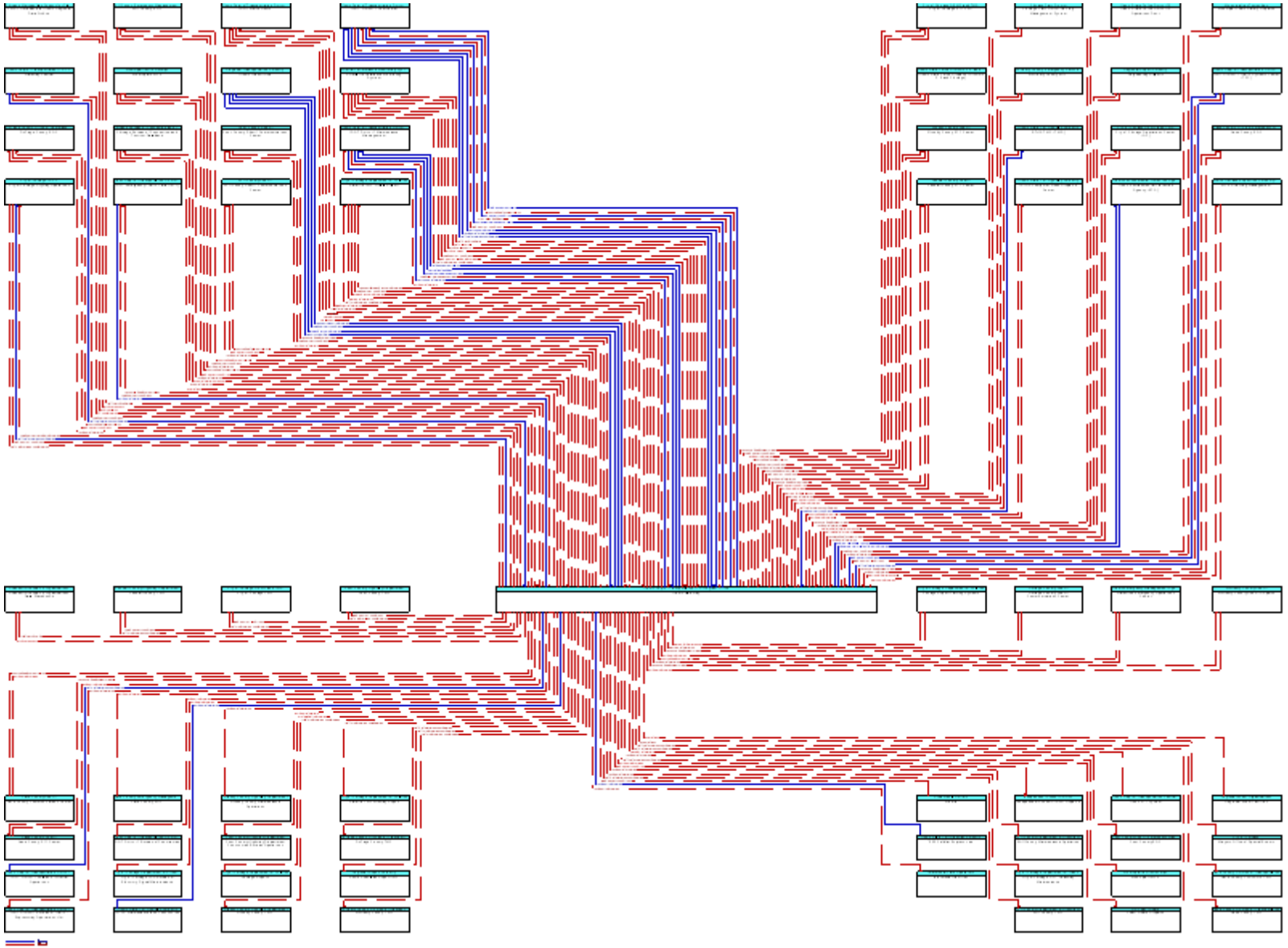
The fewer the constraints, (leading lefts, RR preemption, ped phases), the greater the benefits

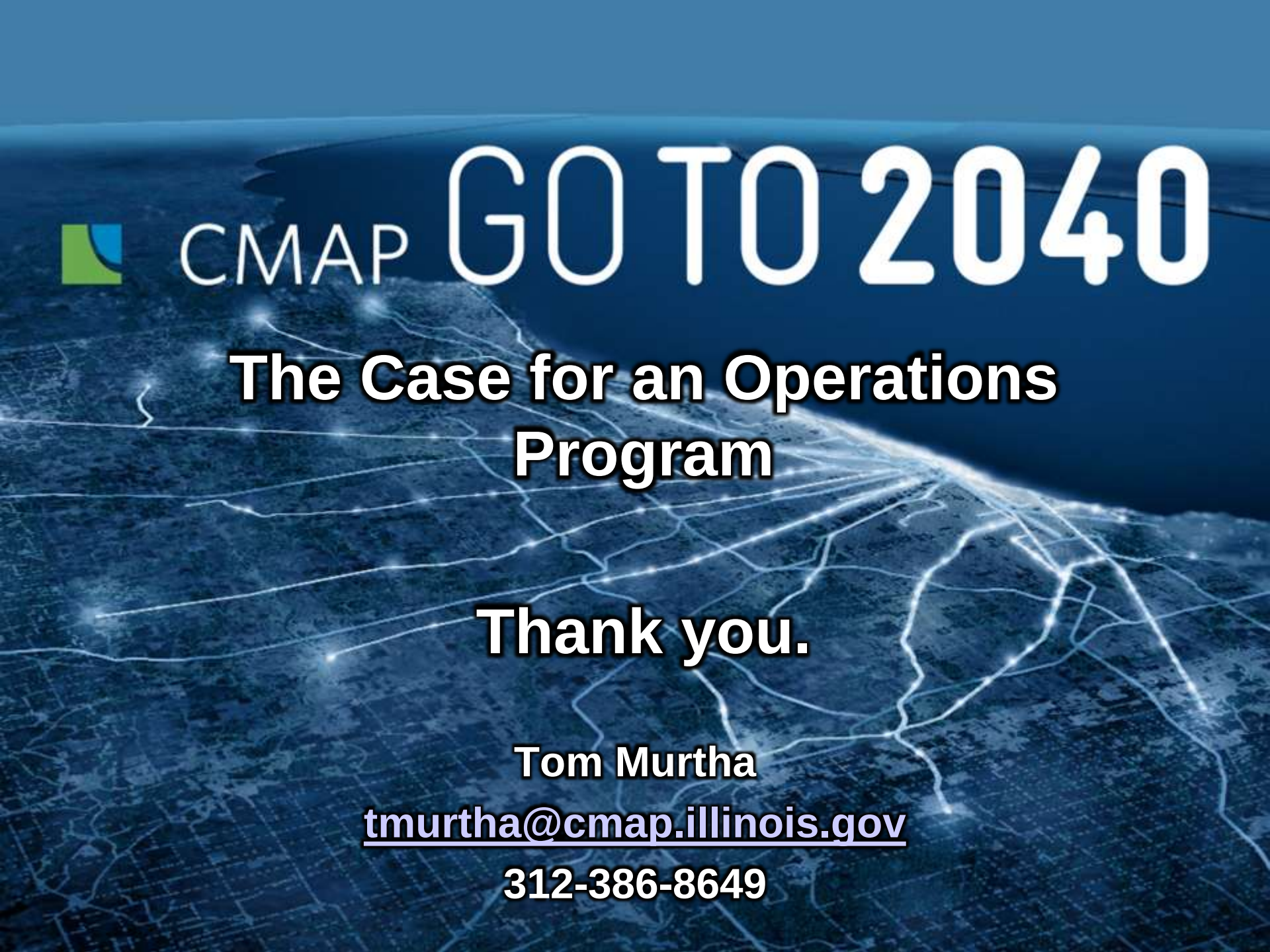
Program Options: Adaptive Traffic Signal Control

- Who? Local Communities, Counties, IDOT
- Why? Reduce delay by 10% or more (optimization at the same time can reduce delay by 50%)
- Trade-offs:
  - User experience at traffic signal may be less predictable
  - May require more staff

ITS Architectures

- ITS Architectures have been developed at the national, state, and regional levels.
- Regional architecture posted at http://data.cmap.illinois.gov/ITS/default.aspx.
- The architecture represents a shared vision of how each agency's systems will work together in the future, sharing information and resources to provide a safer, more efficient, and more effective transportation system for travelers in the region.





The Case for an Operations Program

Thank you.

Tom Murtha

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