

Metropolitan Hartford Area: 2005  
December 2007



# Congestion Management Process

for the Hartford Metro Area

***Joint program of CRCOG,  
CCRPA, MRPA***

Agenda:

1. Overview of CM process
2. Explain new monitoring efforts
3. Review findings of monitoring

# Metro Hartford CMP

Transportation Monitoring & Management Report

Metropolitan Hartford Area: 2005  
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Capitol Region Council of Governments  
Central Connecticut Regional Planning Agency  
Midstate Regional Planning Agency

## Steps of CM process:

1. Monitor & assess transportation system performance.
2. Identify where improvements are needed & establish priorities for corrective actions.
3. Monitor effectiveness of corrective actions. *(not implemented)*

# Metro Hartford CMP: overview of process

## Step 1: Monitor & assess system performance

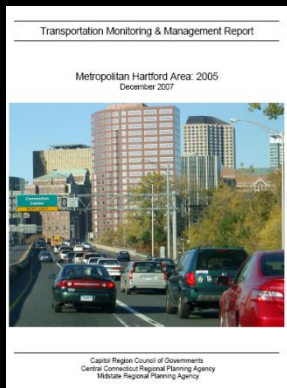
- Major new effort started after SAFETEA
- Collaboration of 3 MPOs & DOT
- Result of collaboration:
  - technically sophisticated process
  - uses GPS & ITS (*RTMS*) technology
  - sophisticated data processing & analysis

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## Step 2: Identify improvement needs & corrective actions

- Does not flow exclusively from monitoring report
- Largely integrated into regular studies & programs

### Corridor studies:

- Structured to meet CM goals
- Use appropriate performance measures
- Emphasize TSM, TDM, & operational options first & SOV capacity options last

### Project selection & programming .....

## Project selection & programming:

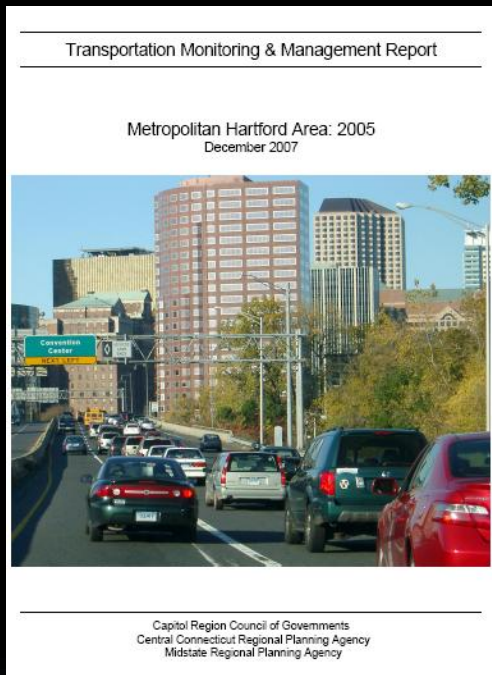
- STP & CMAQ selections favor operational & safety projects such as signal coordination & intersection improvements

## Regional Transportation Plan:

- Emphasized system management since 1994
- Successful outcomes of that policy:
  - ITS Strategic Plan
  - Regional Traffic Management System
  - Active incident management committee
  - Numerous traffic signal coordination projects
  - New GHTD system mgmt. project including AVL

# Explanation of New Monitoring Program

- Implemented in 2007
- Required 2 yrs & intense effort to develop
- Provides good baseline of conditions in metro area



## Geographic coverage:

- Entire Hartford metro area
- Joint effort of 3 MPOs:
  - Lead: CRCOG
  - Support: CCRPA, MRPA
- Supported by DOT Hwy Ops

## System or network coverage:

- Arterial system: very limited
- Freeway system: majority

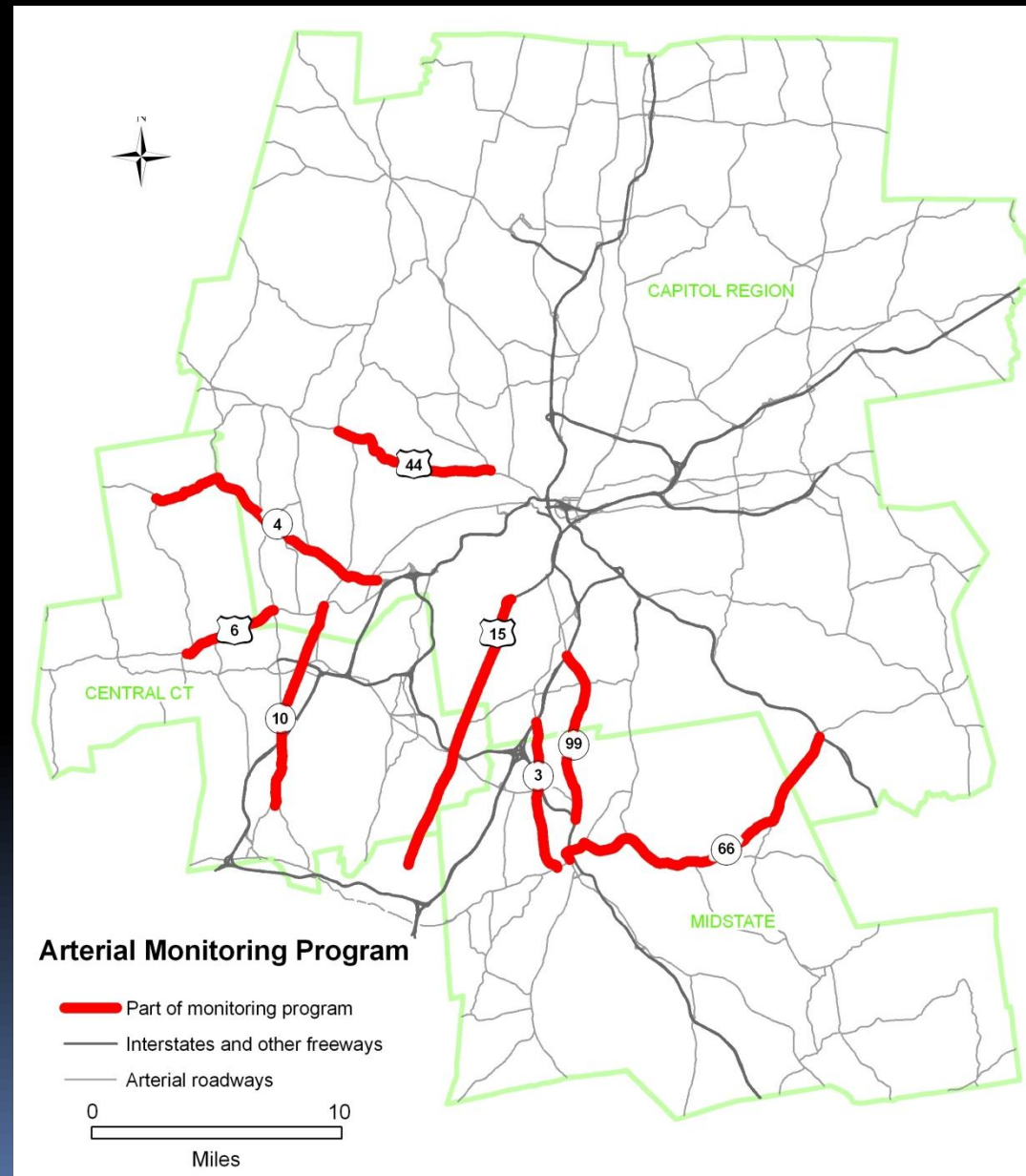
# Arterial System

## Geographic coverage:

- Limited to major arterials
- Labor-intensive data collection

## MPO collaboration:

- MPOs share data collection duties
- CRCOG compiles and analyzes data



# Arterial System

## Data collection method:

- Drive corridor in peak periods
  - *Goal: 5-10 observations per peak*
- GPS units used to collect raw data
- Over 68 miles of road monitored

Route	Length (mile)
RT 15	11.3
RT 4	10.7
RT 6	4.0
RT 44	7.3
RT 10	8.8
RT 66	13.5
RT 9	6.1
RT 99	6.8
<b>ALL</b>	<b>68.5</b>

# Arterial System

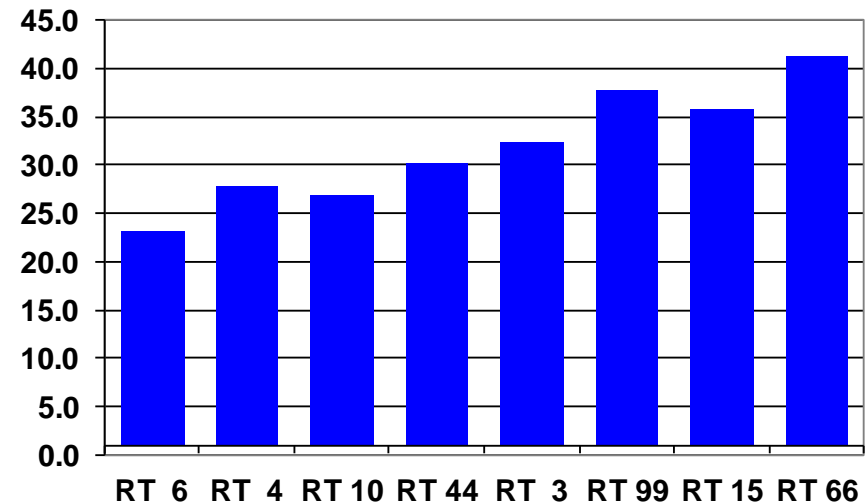
## Performance measures:

1. Average speed (mph)
2. Delay (hours)
3. Travel time index

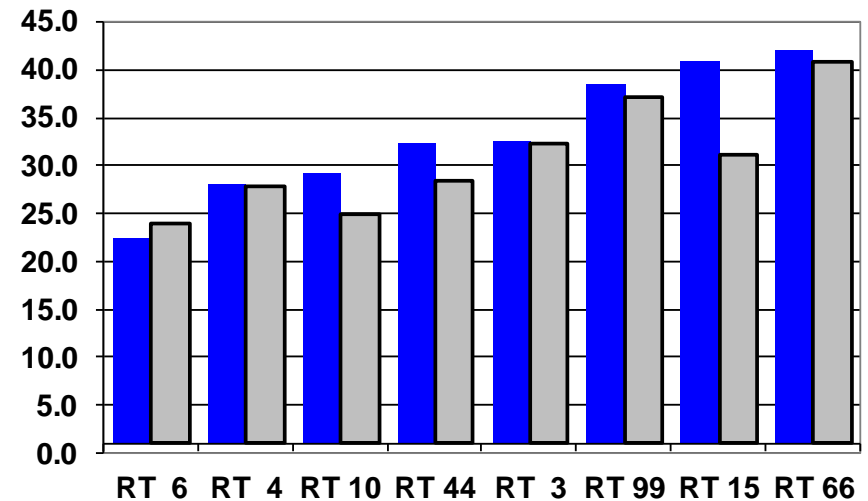
## 1. Average Speed:

- Not a good performance measure
- Reflects type of facility as well as traffic conditions

Speed (mph): Combined AM & PM Peaks



Speed (mph): AM & PM Peak Periods

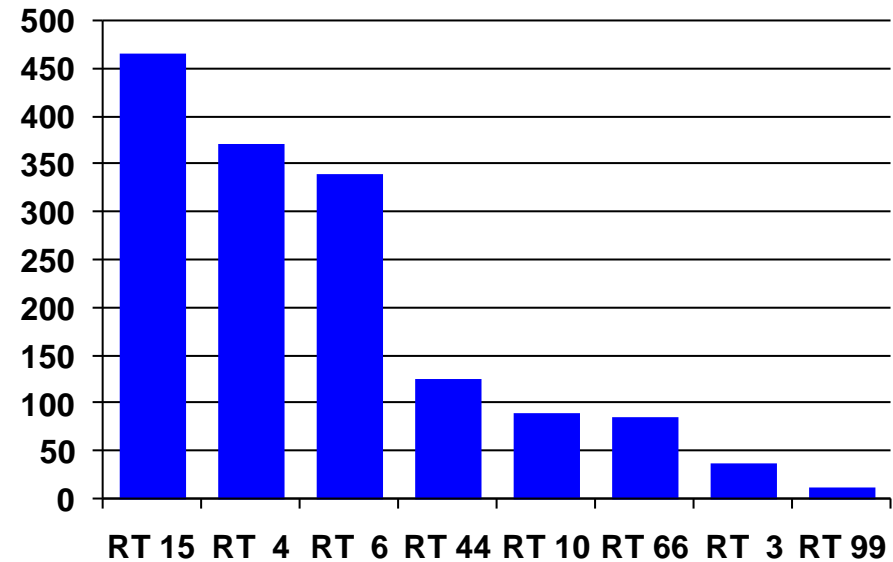


# Arterial System

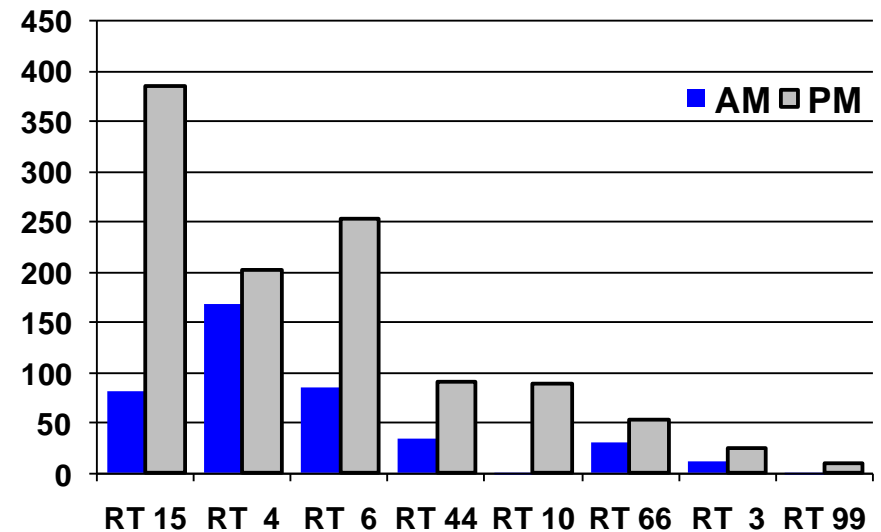
## 2. Delay (hours):

- Good performance measure
- Can track trends over time
- Can evaluate effect of corrective measures

Delay (Hours): Combined AM-PM Periods



Delay (Hours): AM & PM Peak Periods



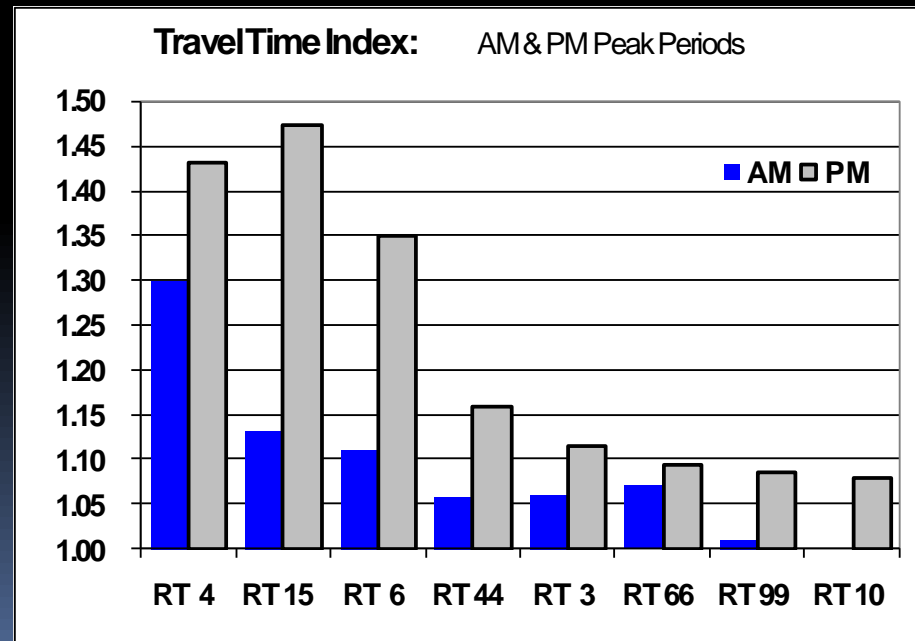
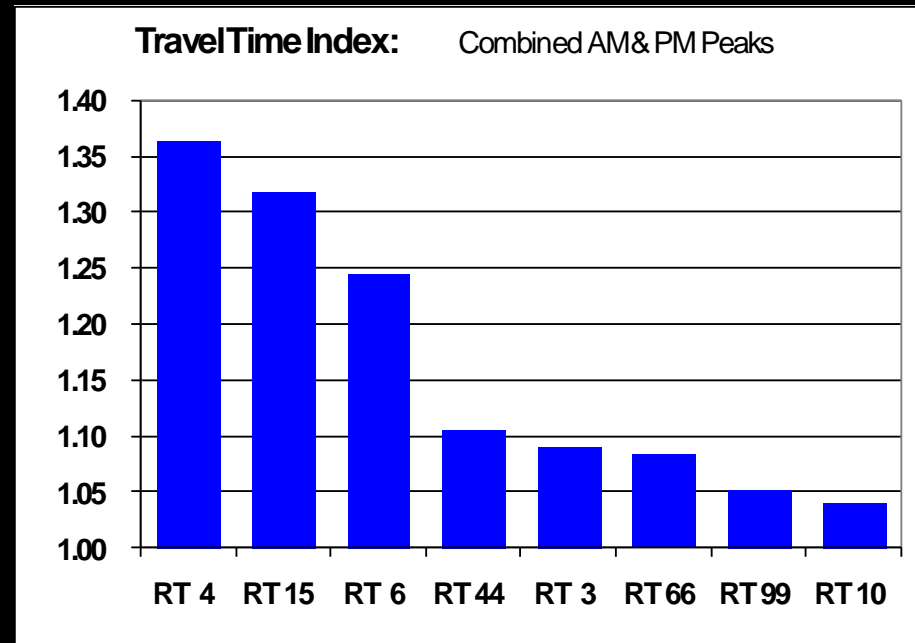
# Arterial System

## 3. Travel Time Index:

- Good performance measure
- Ratio of travel time in peak to travel time in off-peak

Peak time / Off-peak time

- 1.25 = 25% more time to travel in the peak than in off-peak





# Freeway monitoring based on ConnDOT's RTMS

(Regional Traffic Management System)

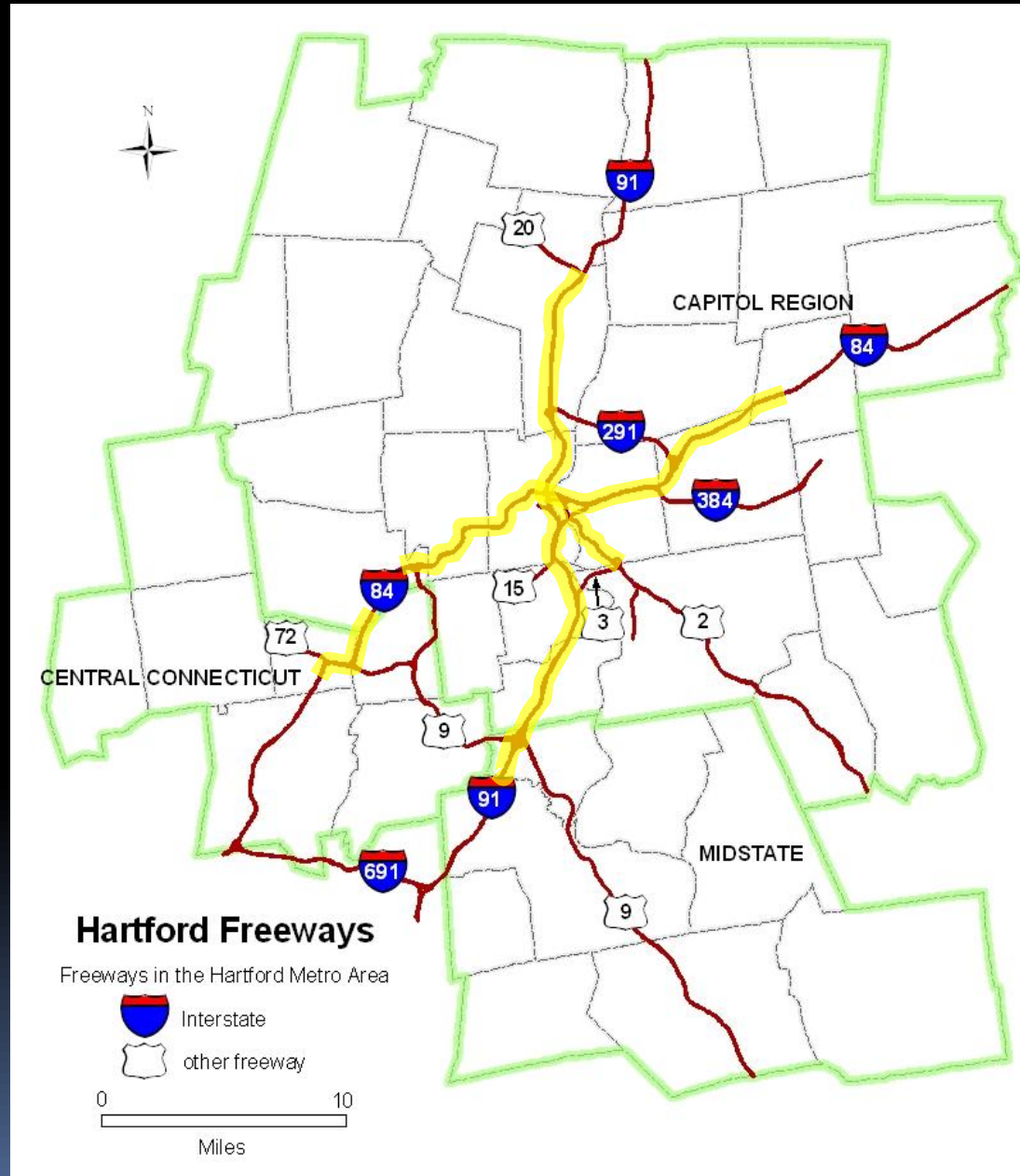
- RTMS run by highway operations center
- Primary function: monitor & manage daily traffic operations
- Secondary function: archive data for planning purposes
  - Goal from original ITS plan
  - **extraordinary database** to monitor & evaluate freeway performance

# RTMS:

- 50 miles
- cameras
- traffic flow monitors
- message signs
- HAR

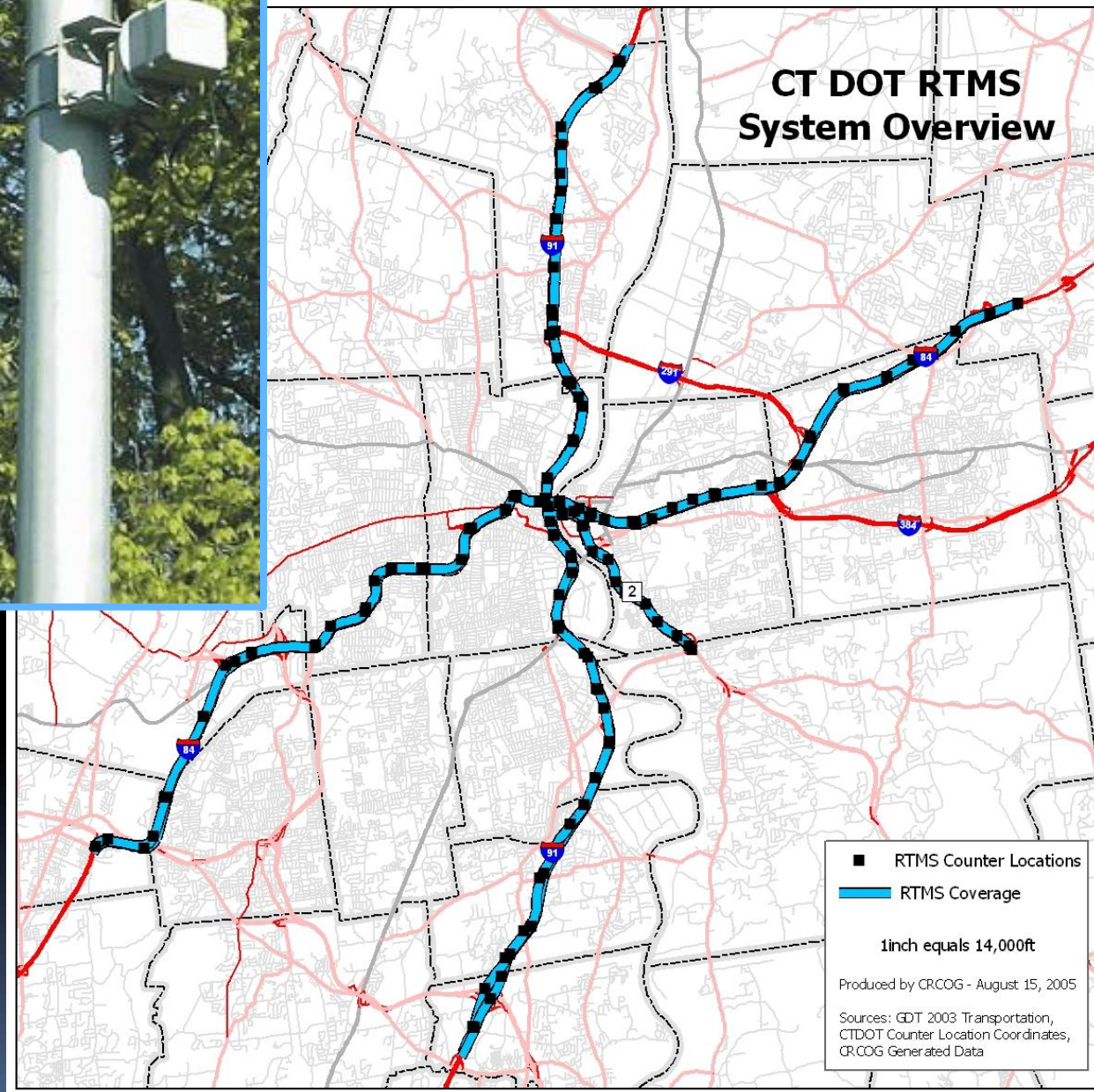
## Key to CMP:

- traffic flow monitors
- 144+ stations



# Traffic Flow Monitors:

- every ½-1 mile
- data recorded
  - Volume \*\*
  - Speed \*\*
  - Occupancy
- recorded for
  - each lane & direction
  - 5-sec intervals
  - 24 hours/day
  - 365 days/year





**RTMS:** *most data problems cleaned up for CMP project*

- **DOT collaboration:** meetings with DOT & their consultant to correct problems
- Special programming efforts by Ming Zhao
- **Result:** robust data set
  - over 80 days of observations
  - most suspect data eliminated

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# Overview of Findings

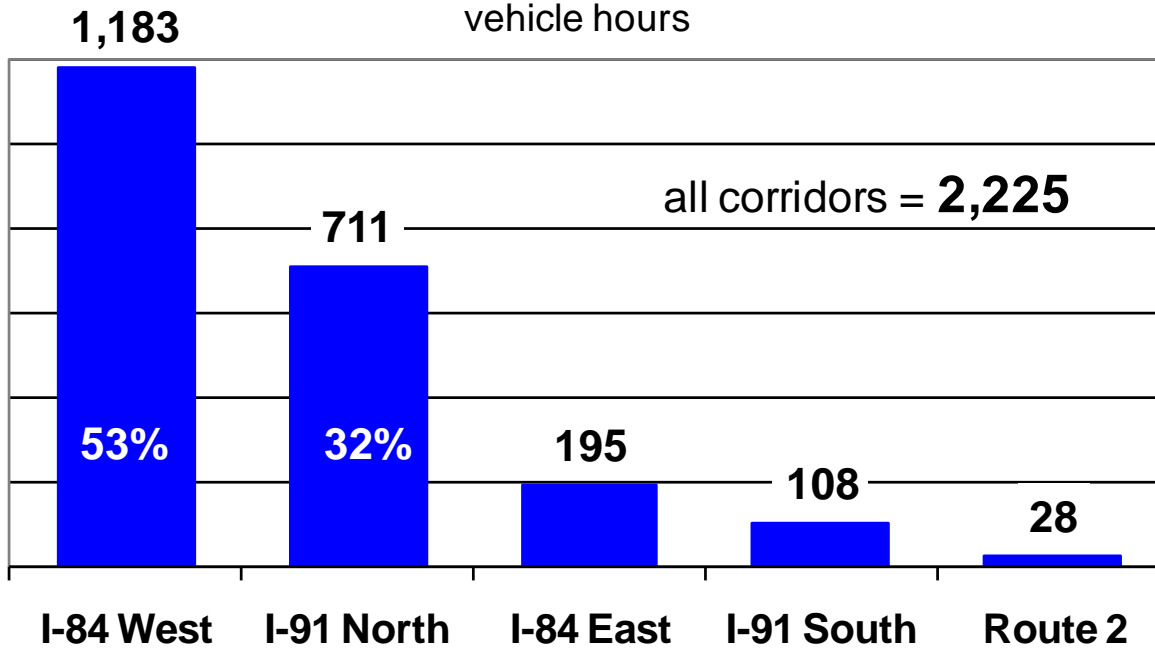
**Delay:** *primary evaluation measure*

- **Vehicle hours of delay**

Estimated total daily delay = **2225 hours**

# Delay by Corridor

**Total Daily Delay**  
vehicle hours



**I-84 West :**

1183 hrs

53%

**I-91 North:**

711 hrs

32%

combined = 85%

## 2nd Performance Measure

# Travel Time Index

**TTI** = peak time/offpeak time

1.00 = no congestion

1.25 = 25% more time in peak

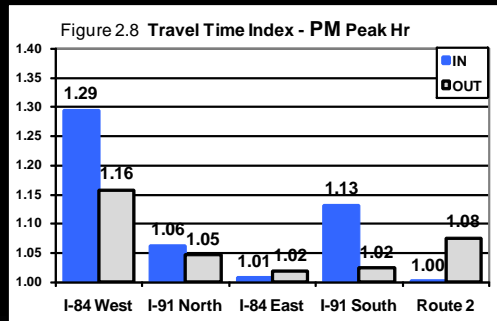
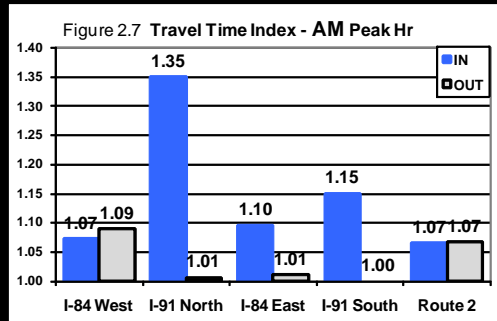
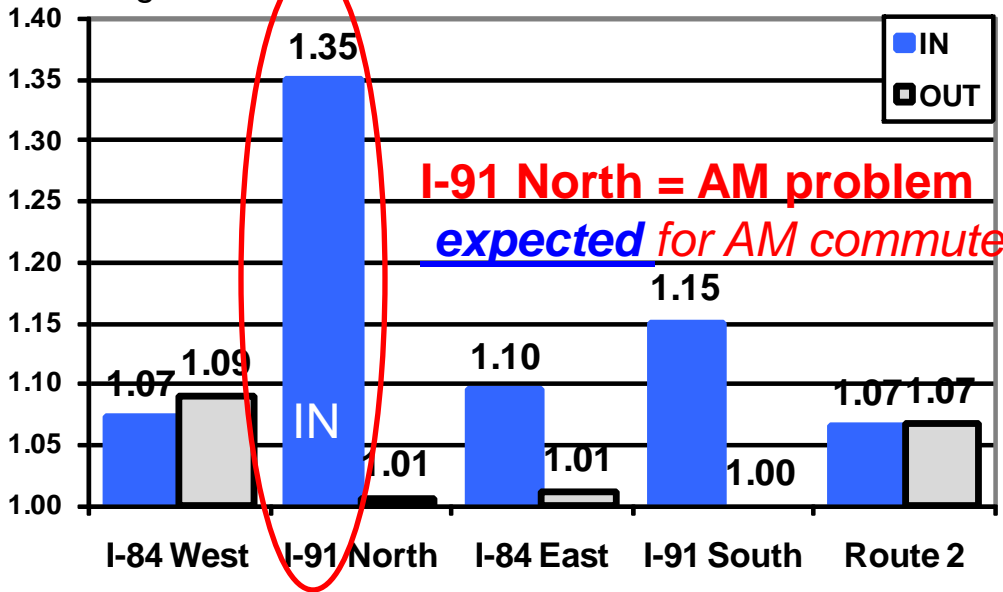


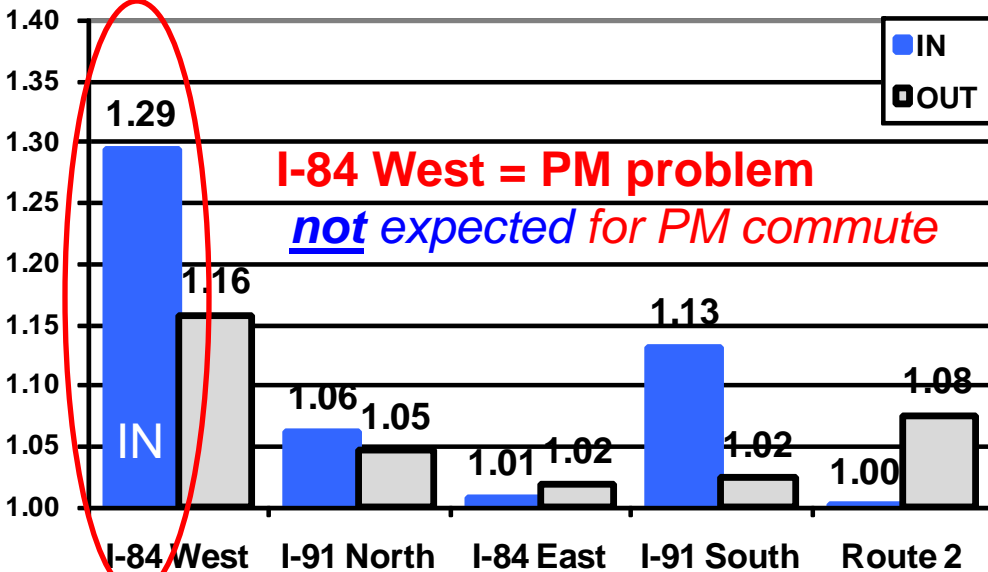
Figure 2.7 Travel Time Index - AM Peak Hr



**I-91 = highest TTI (1.35)**

**AM - Inbound**

Figure 2.8 Travel Time Index - PM Peak Hr

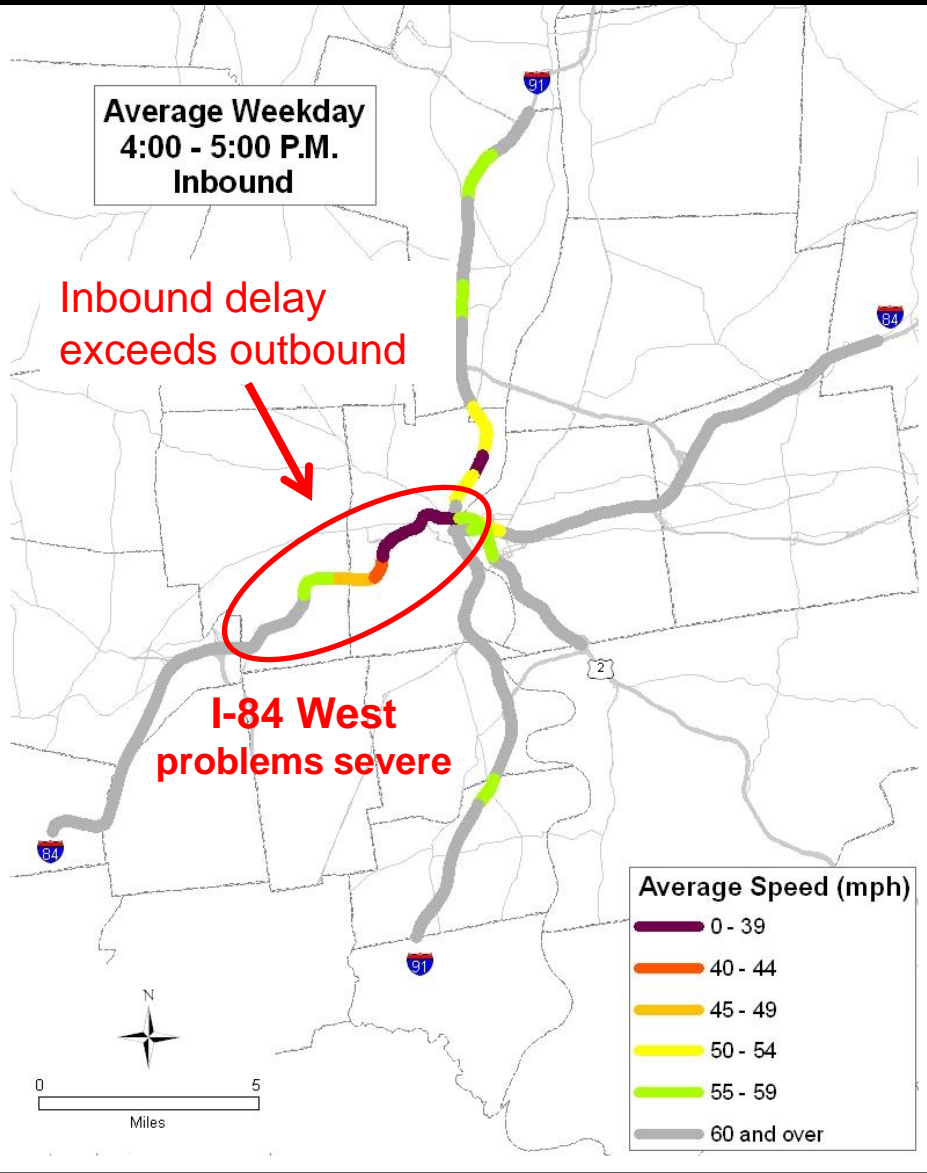


**I-84 = 2<sup>nd</sup> highest (1.29)**

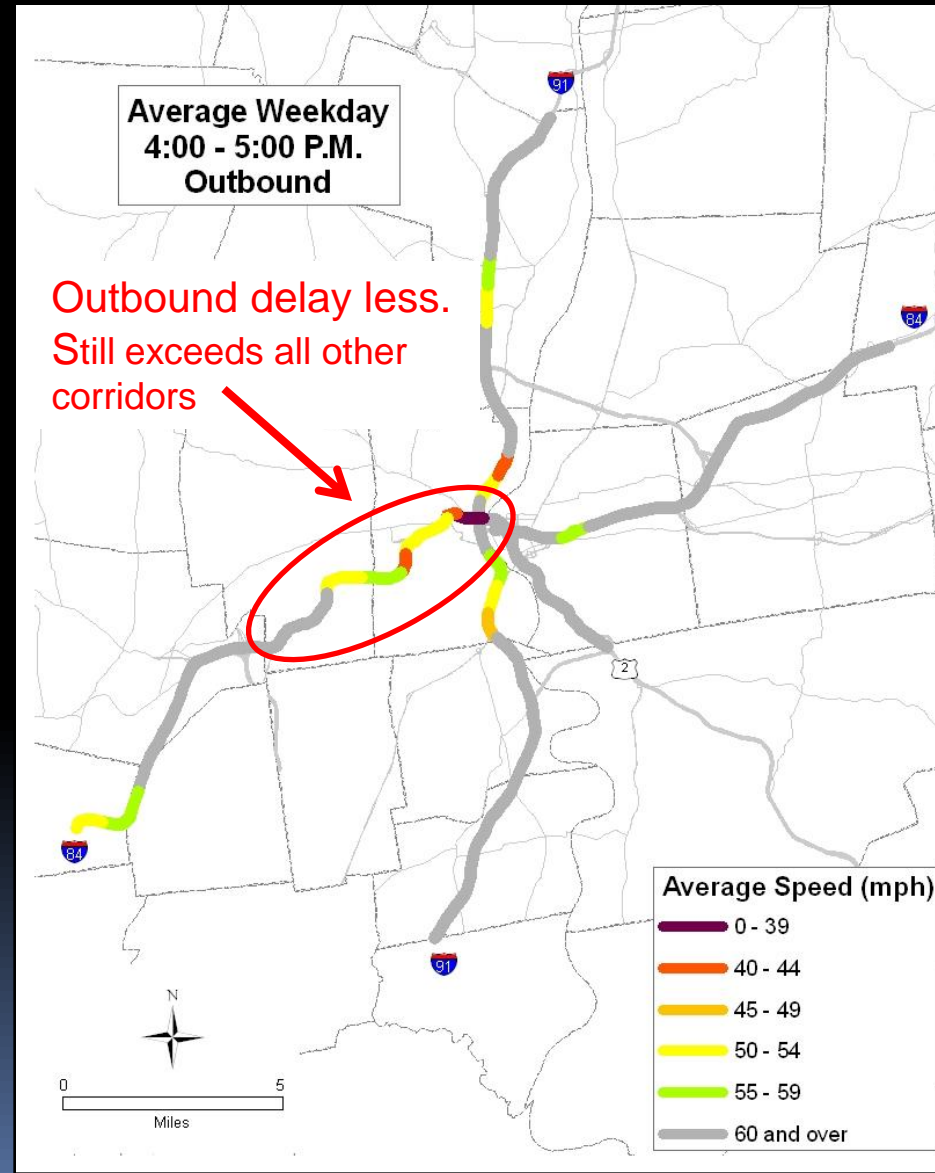
**PM - Inbound**

# 3rd performance measure: **Average Speed** (PM peak speeds)

## **Inbound**



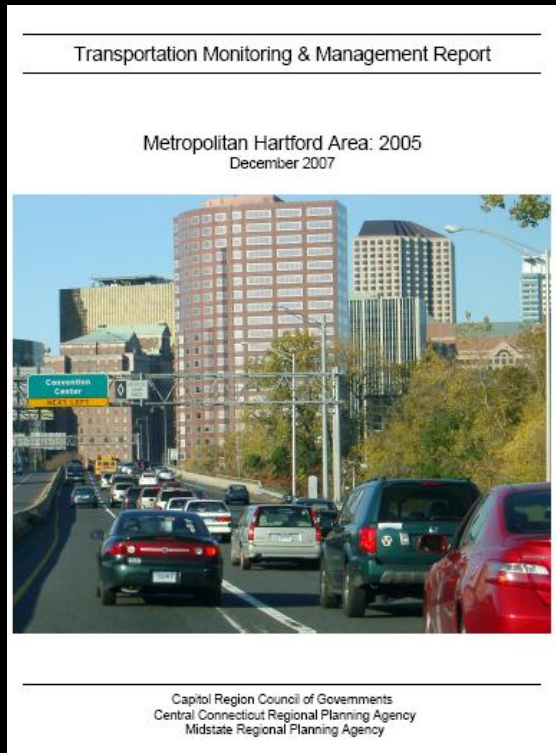
## **Outbound**







# CMP: *Where to from here?*



## Continue to develop & improve CMP:

- Travel time reliability measures
- Recurring vs nonrecurring congestion
- Add safety measures

## Start to track trends over time:

- Congestion increasing? How fast? Where?
- Eventually measure impacts of improvements

