# Delaware Department of Transportation Transportation Management Program
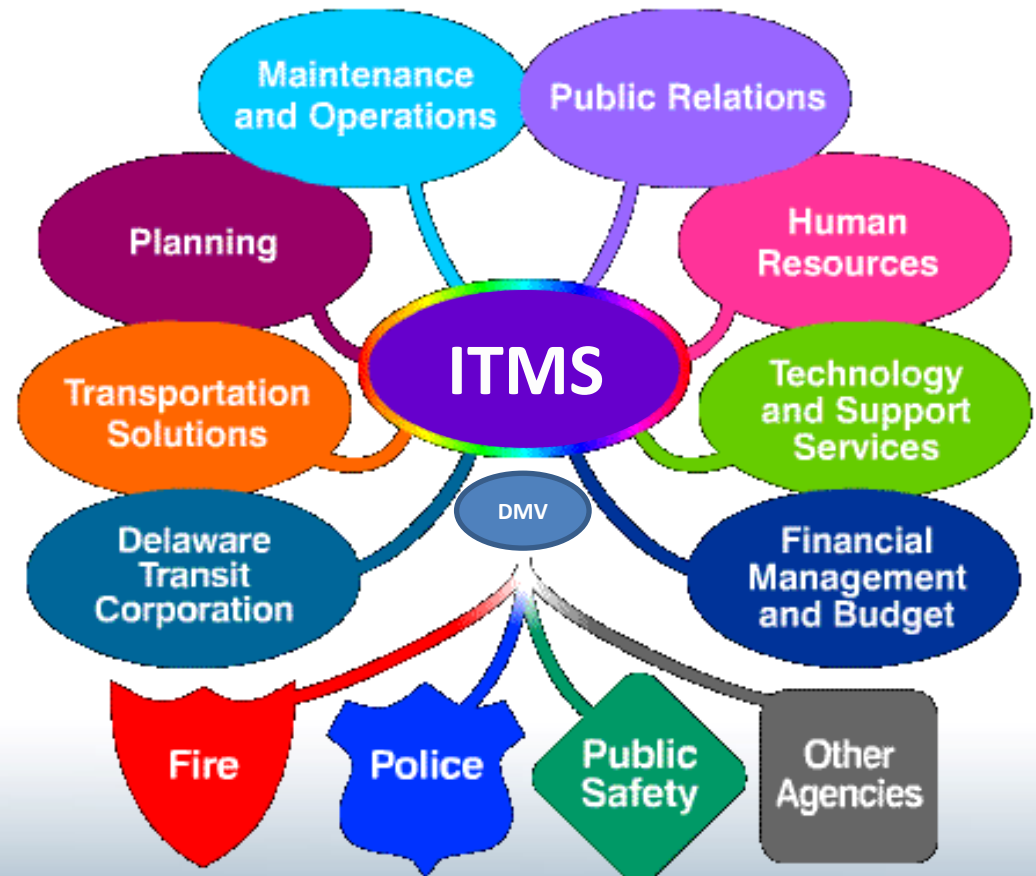
*Delmarva Freight & Goods Movement Task Force Meeting*

*December 4, 2013*

# Overview

- ITMS Background
- Relationship to Freight and Goods Movement
- ITMS priorities

# Transportation Management Program Background

# What is ITMS?

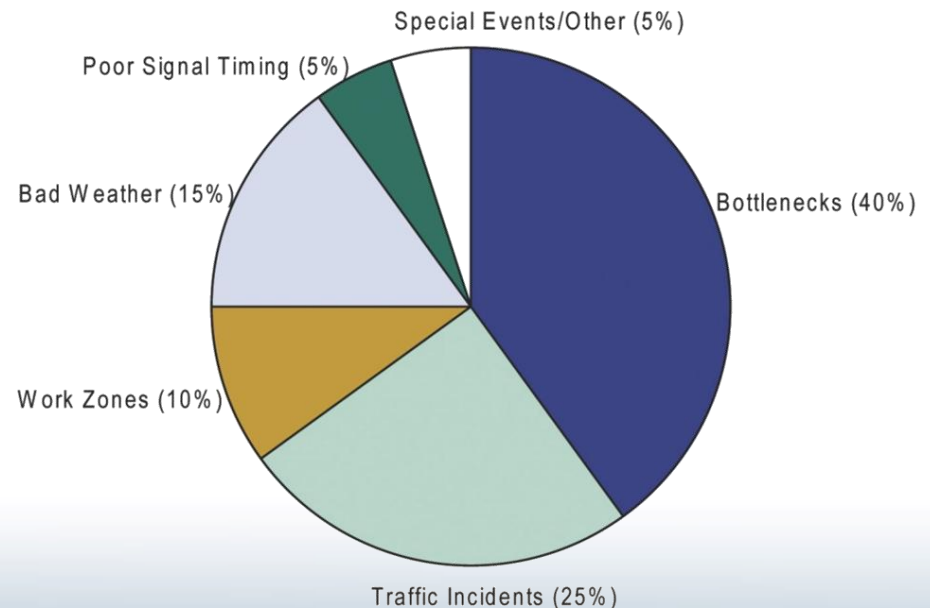Answer: *Delaware's Integrated Transportation Management System*

- ITMS <u>is</u> Delaware's ITS program. Delaware emphasizes *integration* and *management*, just as much as *technology*.

# Congestion is Increasing Faster than Capacity…

…and most congestion (60%) is for reasons other than a traditional "bottleneck".

*In 2010, the nation spent 4.8 billion hours and 1.9 billion gallons of fuel sitting in traffic, which resulted in a congestion cost of $101 billion dollars*
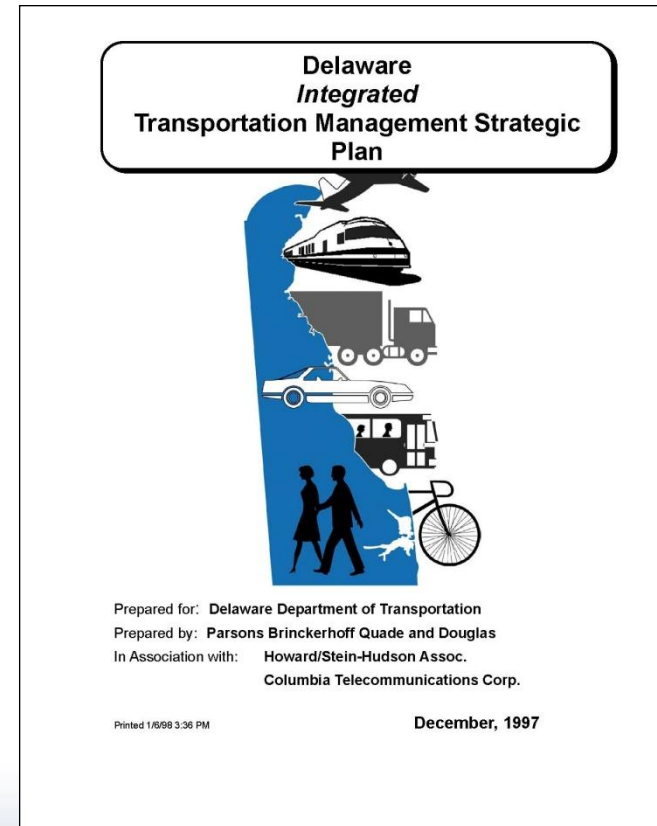
*2011 Urban Mobility Report, Texas Transportation Institute*



Special Events/Other (5%)
Poor Signal Timing (5%)
Bad Weather (15%)
Work Zones (10%)
Traffic Incidents (25%)
Bottlenecks (40%)

*Note: Based on latest available information*

# Integrated Transportation Management Strategic Plan (1997)

- Required a foundation for a shared mission and vision between all of Delaware's Transportation Management System stakeholders.

- The plan defined Delaware's Transportation Management:

  Mission

  Vision

  Goals

  Strategies for Implementation

- Defined a Statewide Transportation Management Program managed from a central Transportation Management Center (TMC).



**Delaware *Integrated* Transportation Management Strategic Plan**

Prepared for: **Delaware Department of Transportation**
Prepared by: **Parsons Brinckerhoff Quade and Douglas**
In Association with: **Howard/Stein-Hudson Assoc.**
**Columbia Telecommunications Corp.**

Printed 1/6/98 3:36 PM                    **December, 1997**

# Delaware Long Range Transportation Plan 2010

Policy Principle #4:
Cost-Effective Objectives:

- "Use cost-effectiveness as a key indicator when prioritizing projects or choosing among alternatives optimizing the investment of resources across all modes and balancing fiduciary responsibilities"

- "Maintain and use existing resources and equipment as a means toward cost effectiveness"

- "Take advantage of technology as a means of providing efficient service"
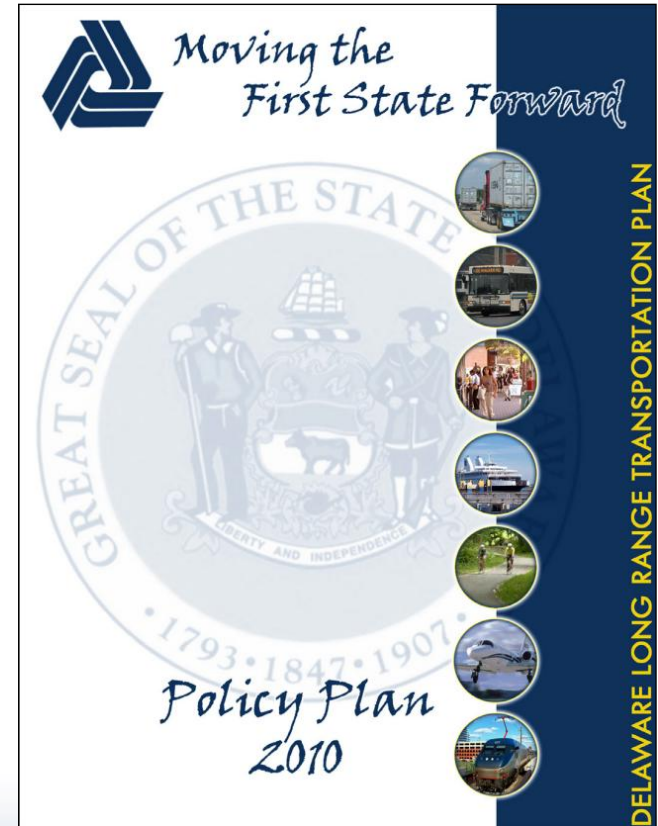
# Federal Initiatives

- Designing for Operations

- Active Traffic Management and Managing Travel Demand (ATDM)

- Every Day Counts

- Planning for Operations

- Real-Time Traveler Information

- Road Weather Management
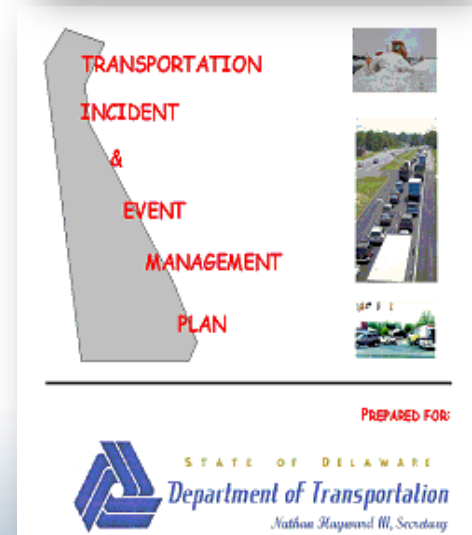
# Transportation Management Program

- Capital Transportation Program (CTP) Project includes:
  - 24-hour statewide Transportation Management Center (TMC)
  - Integrated Transportation Management System (ITMS) – planning, design, implementation, operations and maintenance of statewide intelligent transportation system (ITS)
  - Transportation incident and event planning and operations
  - Transportation Homeland Security planning and operations
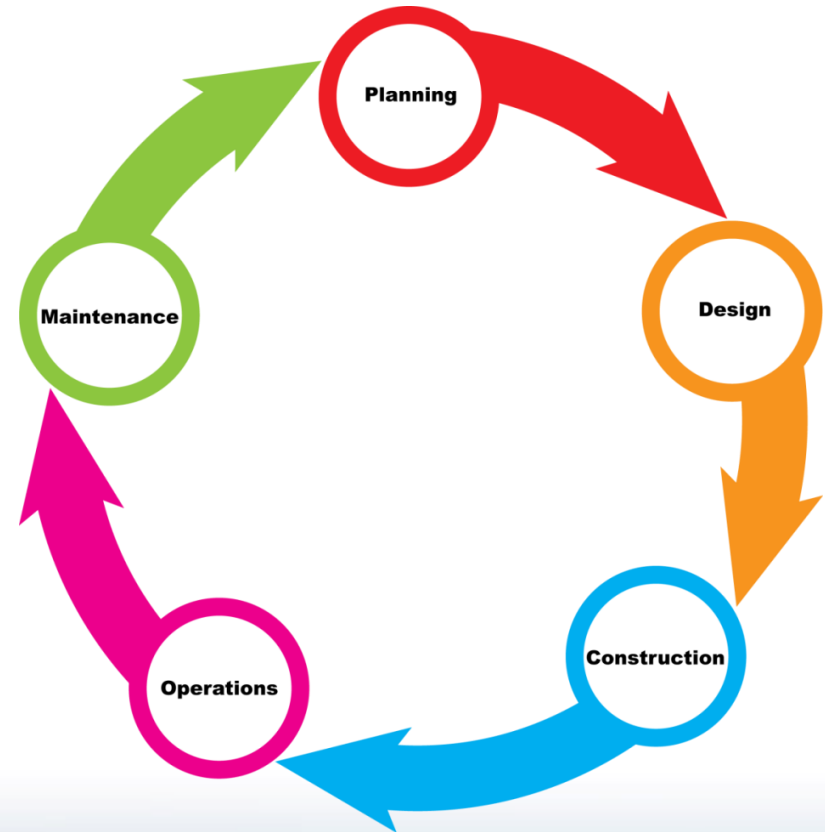
# Transportation Management Operational Concept

## *Transportation Incident and Event Management Plan (TIEMP)*

- Defines how DelDOT will operate during incidents and events.

- Establishes the Transportation Management Team (TMT) concept.
    - Provides for the safe movement of persons and vehicles from the affected area(s).
    - Provides access for emergency responders.

- Defines the responsibilities and guidelines for TMTs.
    - Communication
    - Response
    - Resources

*This plan is available online – look for "Project Documents"*
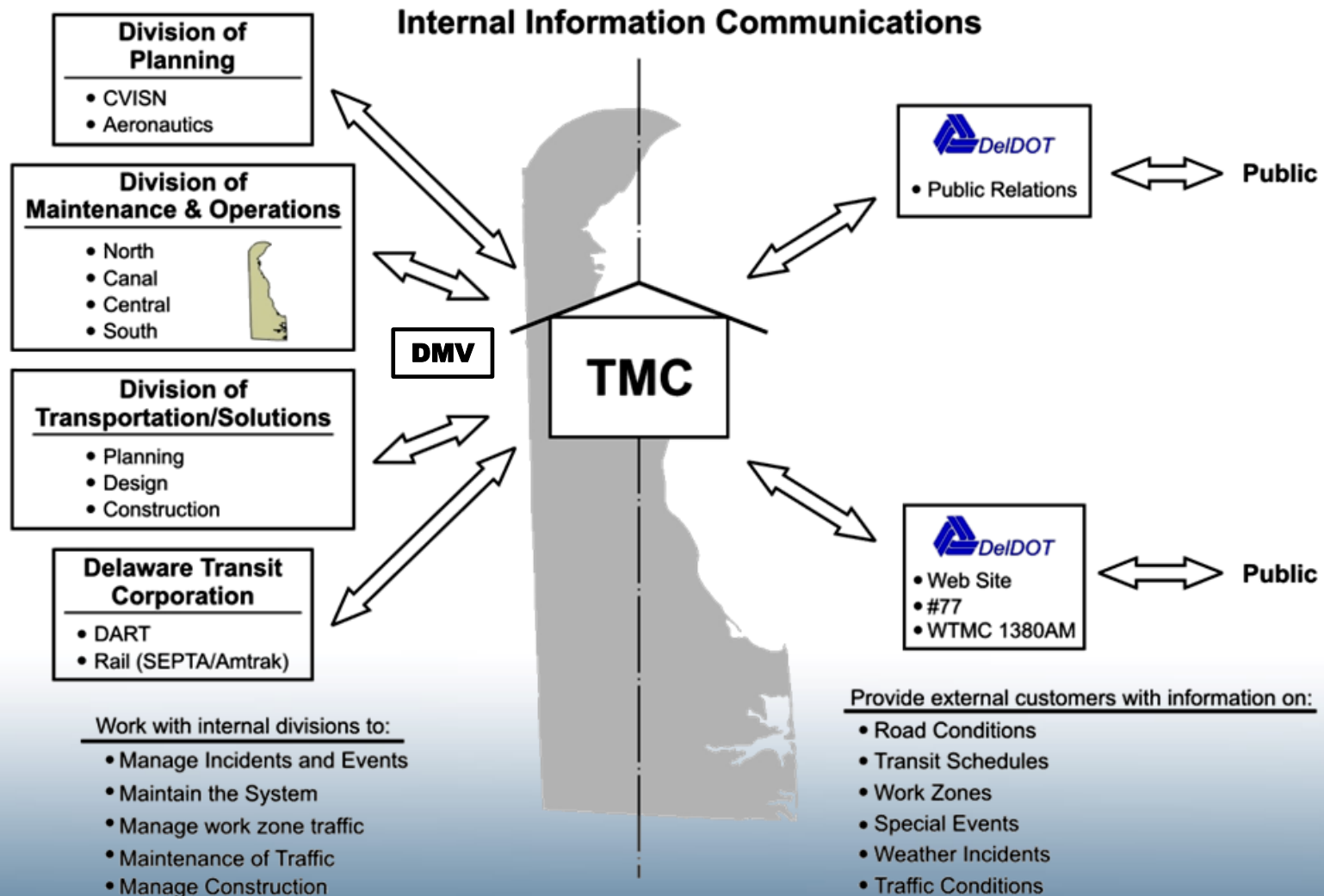*http://tmt.deldot.gov*

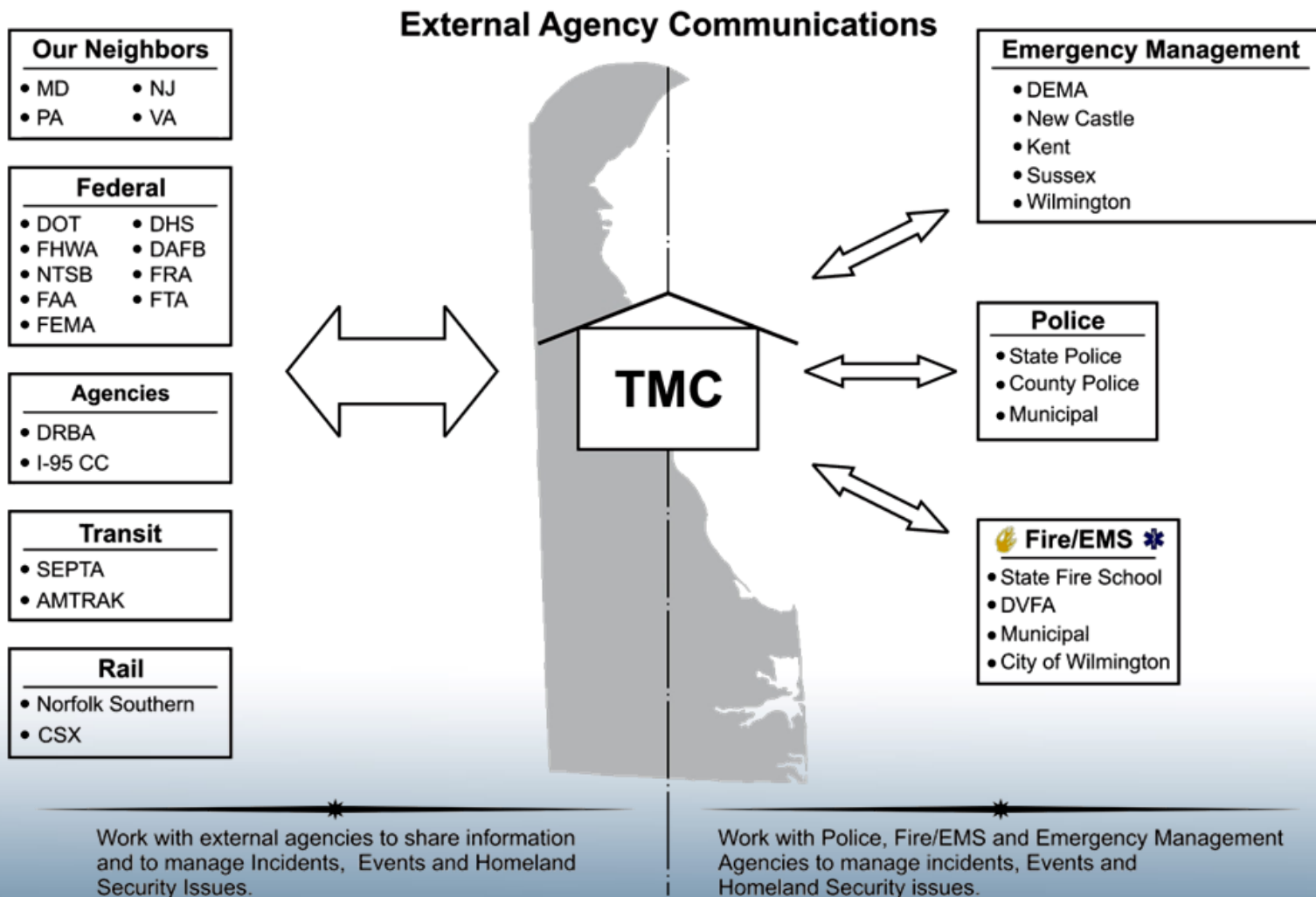# Transportation Management Center (TMC)

- 24/7 statewide operation

- Coordinates and manages DelDOT's response to any incident or event that impacts Delaware's multimodal transportation system

- Monitors and controls all ITMS intelligent transportation systems

- Transportation incident and emergency management planning and operations

- Transportation Homeland Security planning and operations

# ITMS Relationships - Internal



**Internal Information Communications**

**Division of Planning**
- CVISN
- Aeronautics

**Division of Maintenance & Operations**
- North
- Canal
- Central
- South

**Division of Transportation/Solutions**
- Planning
- Design
- Construction

**Delaware Transit Corporation**
- DART
- Rail (SEPTA/Amtrak)

DMV

**TMC**

DelDOT
- Public Relations

**Public**

DelDOT
- Web Site
- #77
- WTMC 1380AM

**Public**

Work with internal divisions to:
- Manage Incidents and Events
- Maintain the System
- Manage work zone traffic
- Maintenance of Traffic
- Manage Construction

Provide external customers with information on:
- Road Conditions
- Transit Schedules
- Work Zones
- Special Events
- Weather Incidents
- Traffic Conditions

# ITMS Relationships - External



**External Agency Communications**

**Our Neighbors**
- MD
- NJ
- PA
- VA

**Federal**
- DOT
- DHS
- FHWA
- DAFB
- NTSB
- FRA
- FAA
- FTA
- FEMA

**Agencies**
- DRBA
- I-95 CC

**Transit**
- SEPTA
- AMTRAK

**Rail**
- Norfolk Southern
- CSX

**TMC**

**Emergency Management**
- DEMA
- New Castle
- Kent
- Sussex
- Wilmington

**Police**
- State Police
- County Police
- Municipal

**Fire/EMS**
- State Fire School
- DVFA
- Municipal
- City of Wilmington

Work with external agencies to share information and to manage Incidents, Events and Homeland Security Issues.

Work with Police, Fire/EMS and Emergency Management Agencies to manage incidents, Events and Homeland Security issues.

# The TMC Performs Three Critical Functions

## Monitoring

*Did the tow truck arrive?*
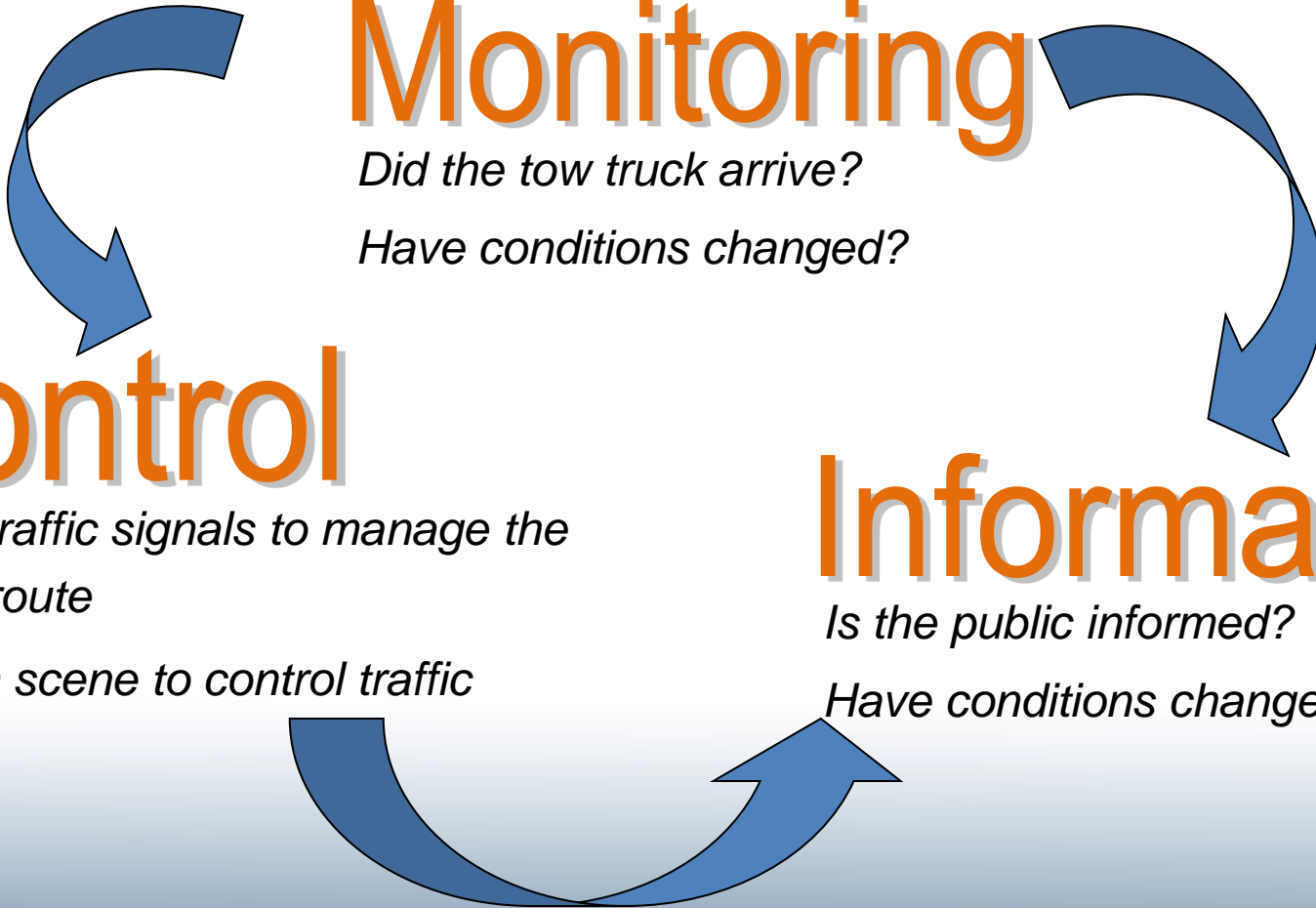
*Have conditions changed?*

## Control

*Adjust traffic signals to manage the detour route*

*Staff on scene to control traffic*

## Information

*Is the public informed?*

*Have conditions changed?*

# Relationship to Freight and Goods Movement

# Transportation Management Benefits All Travelers

- 24-7 Operations

  - Control

  - Monitoring

  - Information

- Planning and Teamwork

  - Transportation Management Teams

  - Incident Plans and Procedures

# Control Systems

- Traffic signal system

- Transit schedule adherence/AVL system

- Gate control monitoring

- Variable speed limit sign system

- Incident/event management system

- "Back office" administration

# "Back Office" Control – CVISN

- CVISN is a collection of state, federal, and private information systems and communications networks that support commercial vehicle operations in three key areas:

    1. ***Electronic Credentialing:*** Allows carriers to apply for and receive credentials electronically

    2. ***Safety Information Exchange:*** Improves the exchange of safety and credential information among state agencies and between states & FMCSA

    3. ***Electronic Screening:*** Automatically screen vehicles at roadside and allow safe and legal vehicles to bypass weigh stations without stopping (*E-ZPass* for trucks)

# "Back Office" Control – PRISM

- Integrates Commercial Vehicle Registration Process and Motor Carrier Safety Improvement Process (MCSIP)
  - Identify motor carriers and hold responsible for safety of their operations
  - Track performance of unsafe carriers
  - Treatment ranges from "Warning Letters" to **revocation of registration** for unsafe carriers by State of Delaware & FMCSA
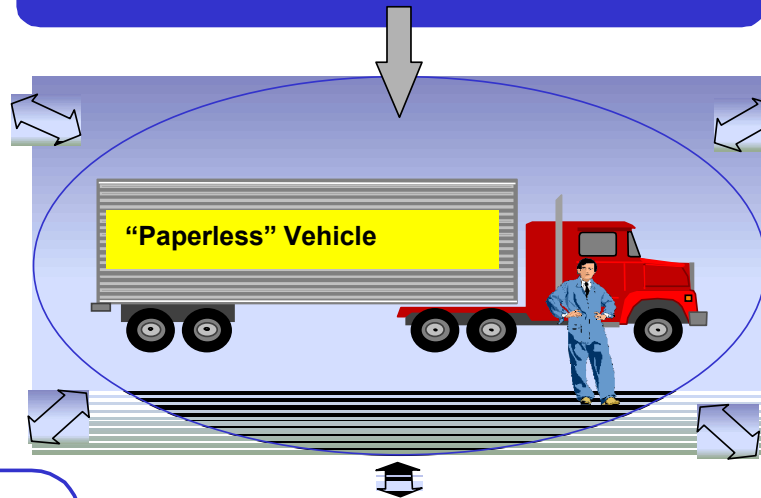
# CVISN Vision:
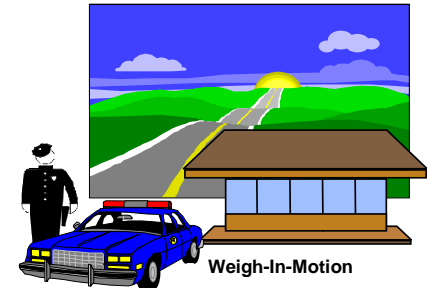# Safe & Efficient Shipping Operations



**Automated Fleet and Freight Administration**
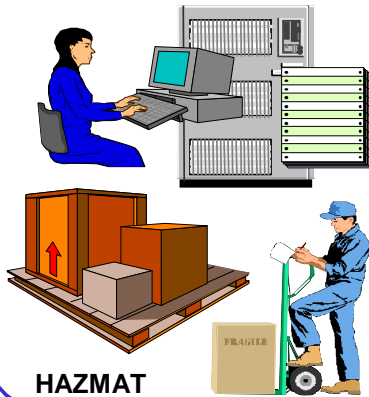
**HAZMAT**

Electronic Tag
Mobile Comm
Safety Equipment
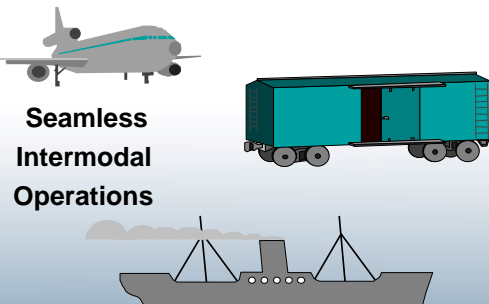
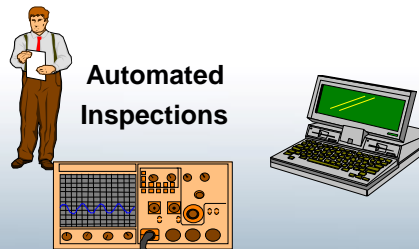Onboard Computer
Onboard Monitors
Onboard Navigation

**"Paperless" Vehicle**

**Electronic Screening**

Weigh-In-Motion

**Seamless Intermodal Operations**

**Automated Inspections**

**International Border Clearance**

# Monitoring System

- **Traffic**
  - Traffic volume
  - Occupancy (delay)
  - Speed
  - Classification
  - Travel time
  - Origin and destination
  - Real-time
  - Predictive

- **Weather**
  - Air temperature
  - Barometric pressure
  - Relative humidity
  - Precipitation type & volume
  - Pavement temperature
  - Subsurface temperature
  - Pavement surface
    - Dry, wet, ice
  - Stream & river
    - Depth & velocity
  - Tide height

# Expanding Statewide System

- Statewide electronic monitoring network
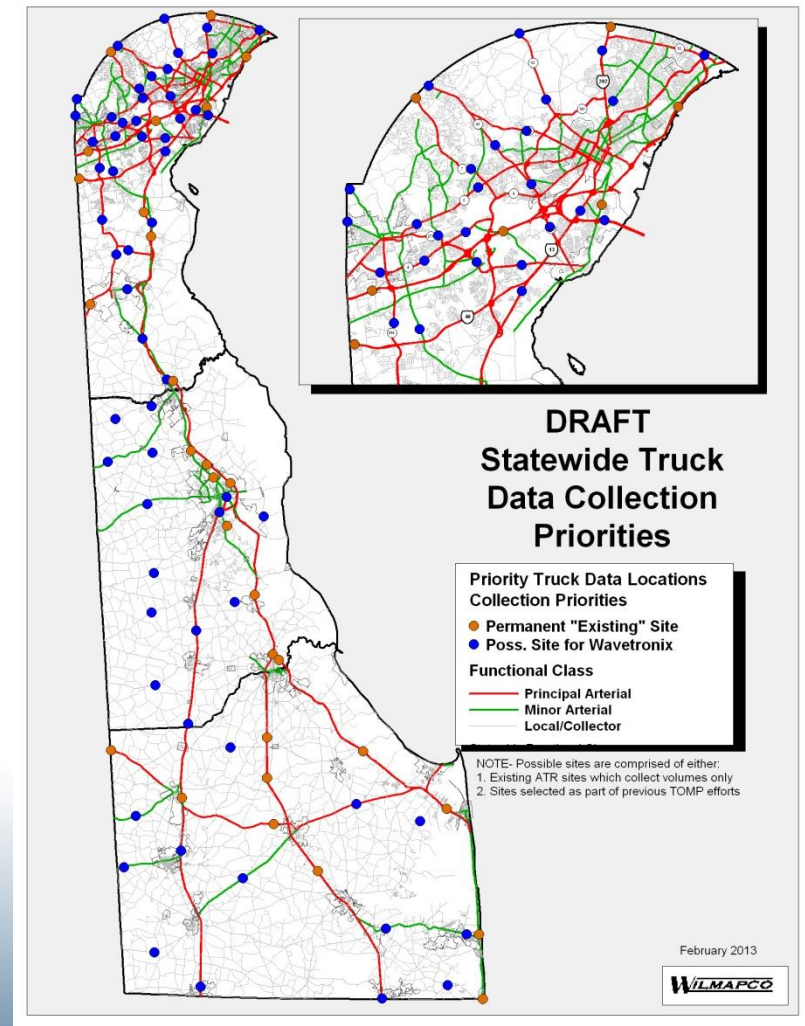  - Fixed and Portable:
    - Video Monitoring System
    - Roadway Weather Information System (RWIS)
    - Signal system loop detectors
    - Microwave (radar) detection on freeways
    - Automated traffic recorders statewide
    - Bluetooth detection
    - Near real-time road status
    - 330+ locations and growing
    - Leveraging existing ITMS spatial data – GIS
    - Permanent, portable in-vehicle "dash" cameras
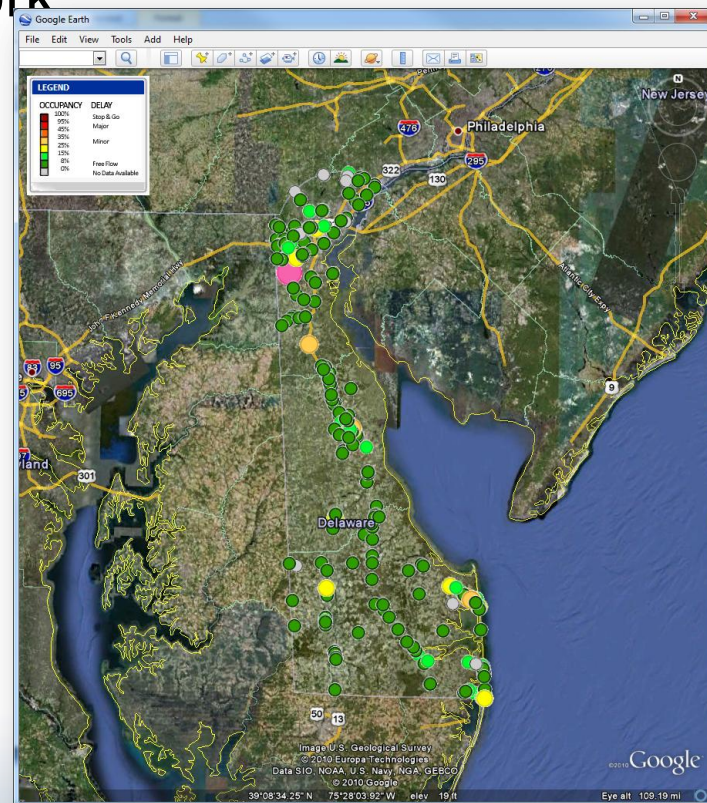
# Freight Traffic Monitoring

- ## Truck data types
  - Length
  - FHWA classification (by axle)
  - Weight
- ## Frequency of collection
  - Full-time/real-time
  - Full-time/historical
  - Temporary studies



DRAFT
Statewide Truck
Data Collection
Priorities

**Priority Truck Data Locations Collection Priorities**
- Permanent "Existing" Site
- Poss. Site for Wavetronix

**Functional Class**
- Principal Arterial
- Minor Arterial
- Local/Collector

NOTE- Possible sites are comprised of either:
1. Existing ATR sites which collect volumes only
2. Sites selected as part of previous TOMP efforts

February 2013

WILMAPCO

# Providing Customer Information

- WTMC 1380 AM – primary license
  - Statewide synchronized repeater sites

- Real-time website
  - http://www.deldot.gov
  - Interactive traffic maps
    - Incidents, cameras, closures, roadway, weather, traffic delay
    - Freeway travel times
  - http://deldot.gov/mobile
  - Live traffic cameras
  - WTMC 1380 AM

- Twitter, Facebook

- Smartphone applications
  - Android and iPhone
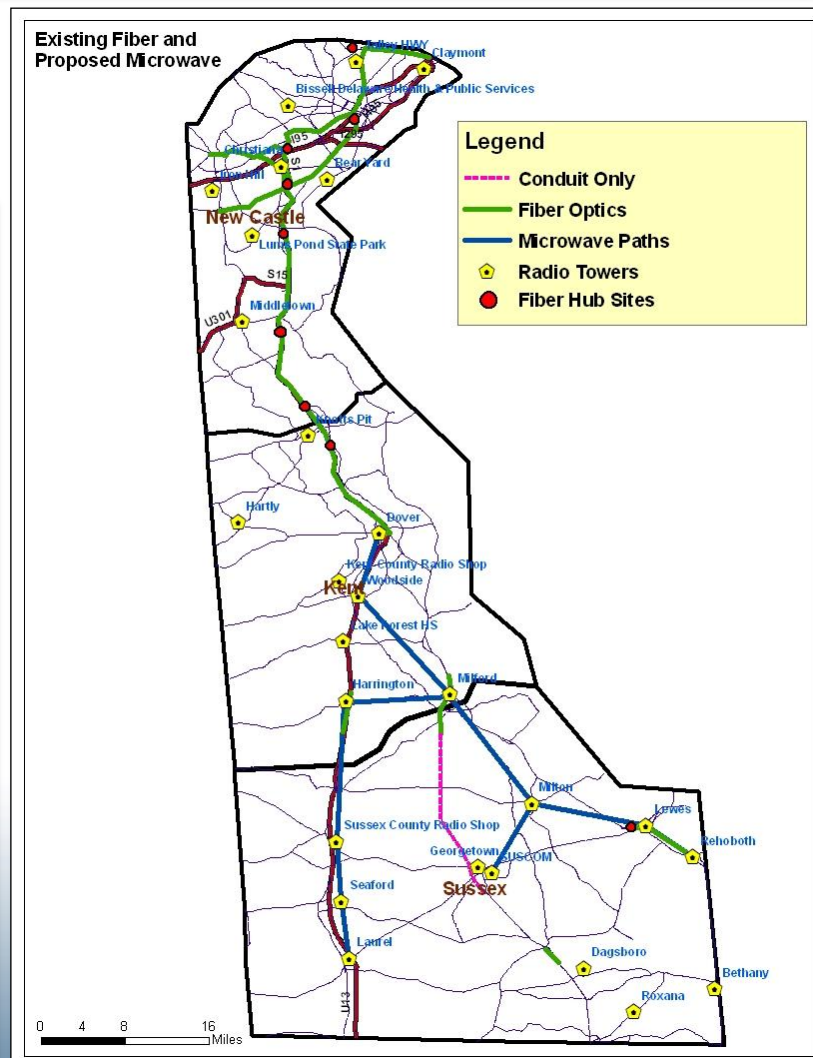
- Electronic Changeable Message Signs
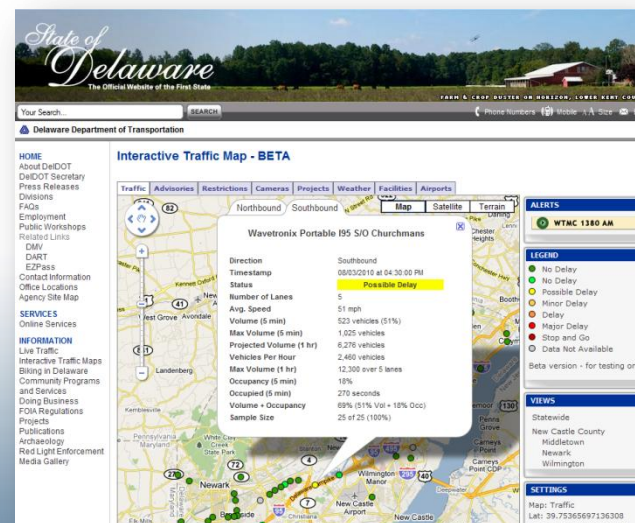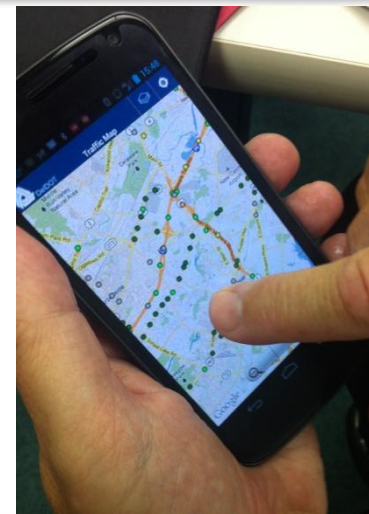
# Multi-Agency Electronic Information Exchange

- Email groups

- New world Computer Aided Dispatch (CAD)

- Incident master

- Electronic Operations (EOPS) application

- Smartphone applications

- Extranet

# Statewide Telecommunications

- ## Fiber and wireless:
  - Field devices
  - TMC
  - Emergency Operations Centers
  - State police barracks
  - DelDOT buildings
  - Other states







Existing Fiber and Proposed Microwave

**Legend**
- - - - Conduit Only
- Fiber Optics
- Microwave Paths
- Radio Towers
- Fiber Hub Sites

# Transportation Homeland Security and Incident Management

- Partnerships and relationships
  - Continue improving transportation management teams
  - Delaware Intelligence Analysis Center (DIAC)
  - Continue regional coordination
    - I-95 Corridor Coalition
    - Integration with adjoining states (MD, PA, NJ)
  - Event planning

- Training
  - TMC staff
  - DelDOT 1st responders

# Transportation Management Teams

- Multiagency responders collaborating on transportation-related incident management

- Meetings to discuss incidents, construction projects, detours, special initiatives

- Improving incident management reduces congestion and travel delay

# Because of These Relationships



- ITMS is critical for planning and managing:
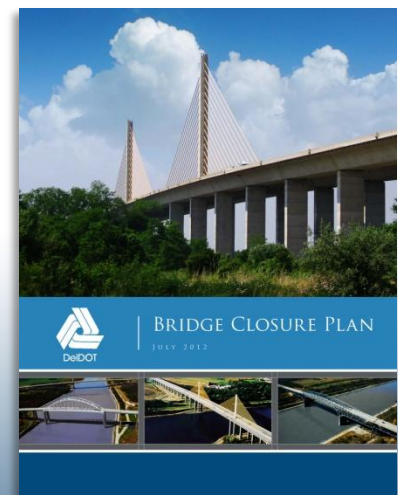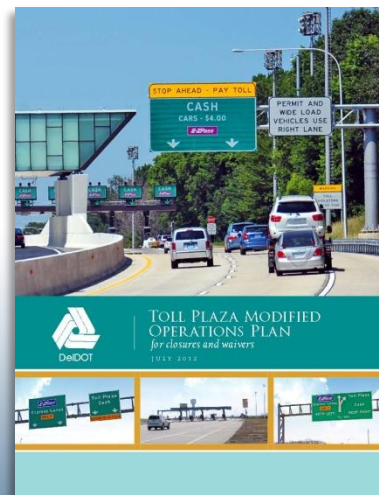  - Emergencies
  - Evacuations
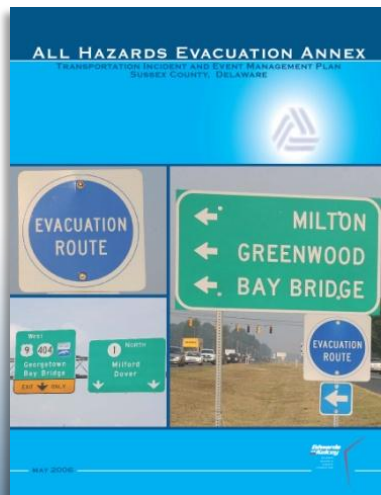  - Planned Special Events
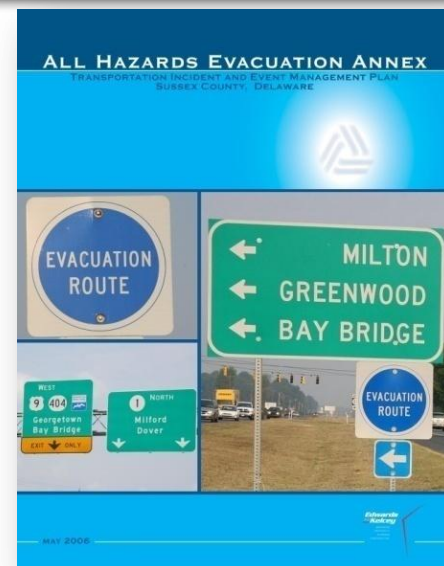


**DOVER INTERNATIONAL SPEEDWAY**

# Incident Plans and Procedures

- Response plans for natural/manmade events
- Emergency operations and communications
- Routing, detour, and traveler information to facilitate the movement of people and goods

# Transportation Homeland Security and Incident Management

- Portable monitoring of work zones, emergencies and planned events



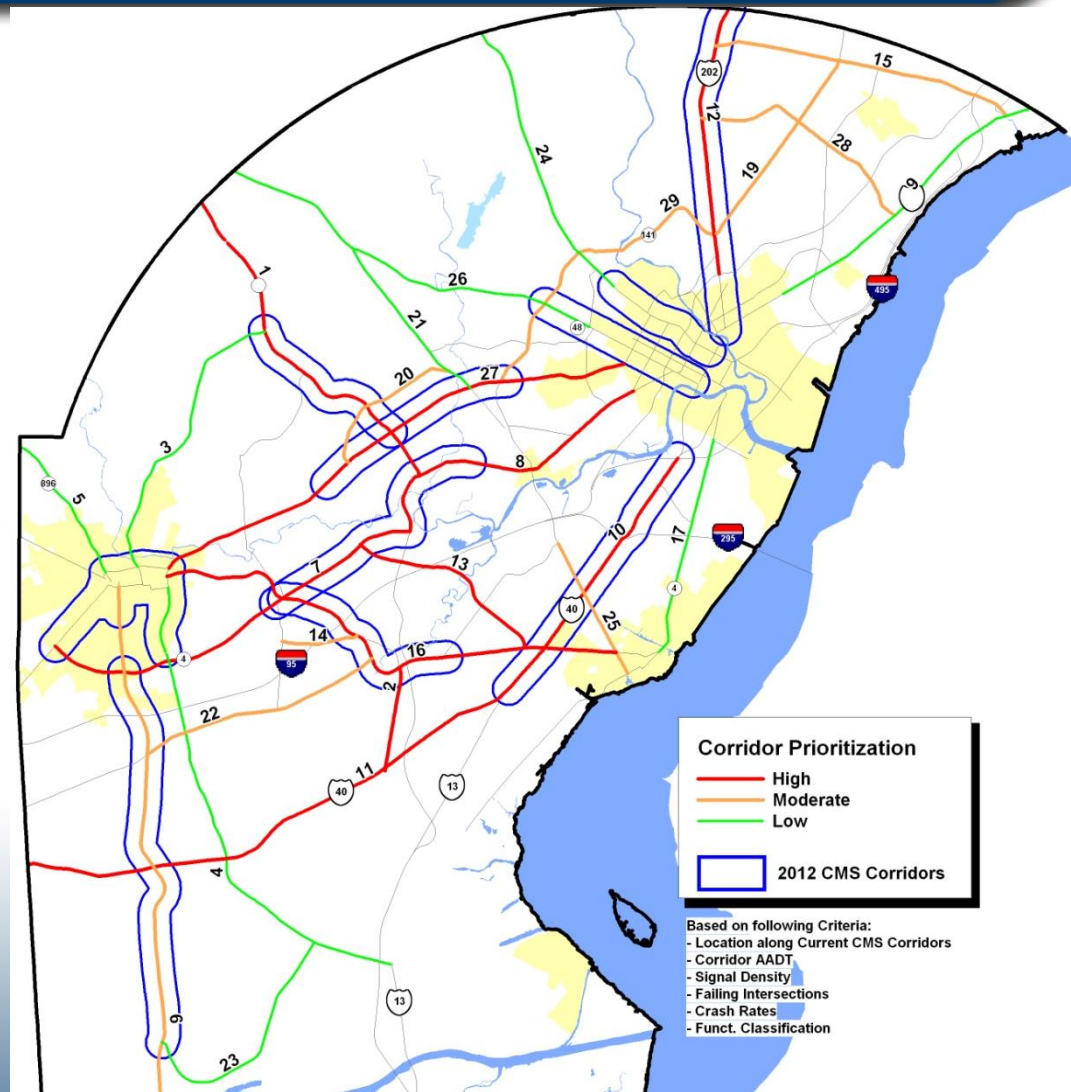**VMS**            **Radar Detector**            **Video Camera**            **WTMC 1380 AM**

# Transportation Management Priorities

# ITMS Priorities

1. Keep existing systems working

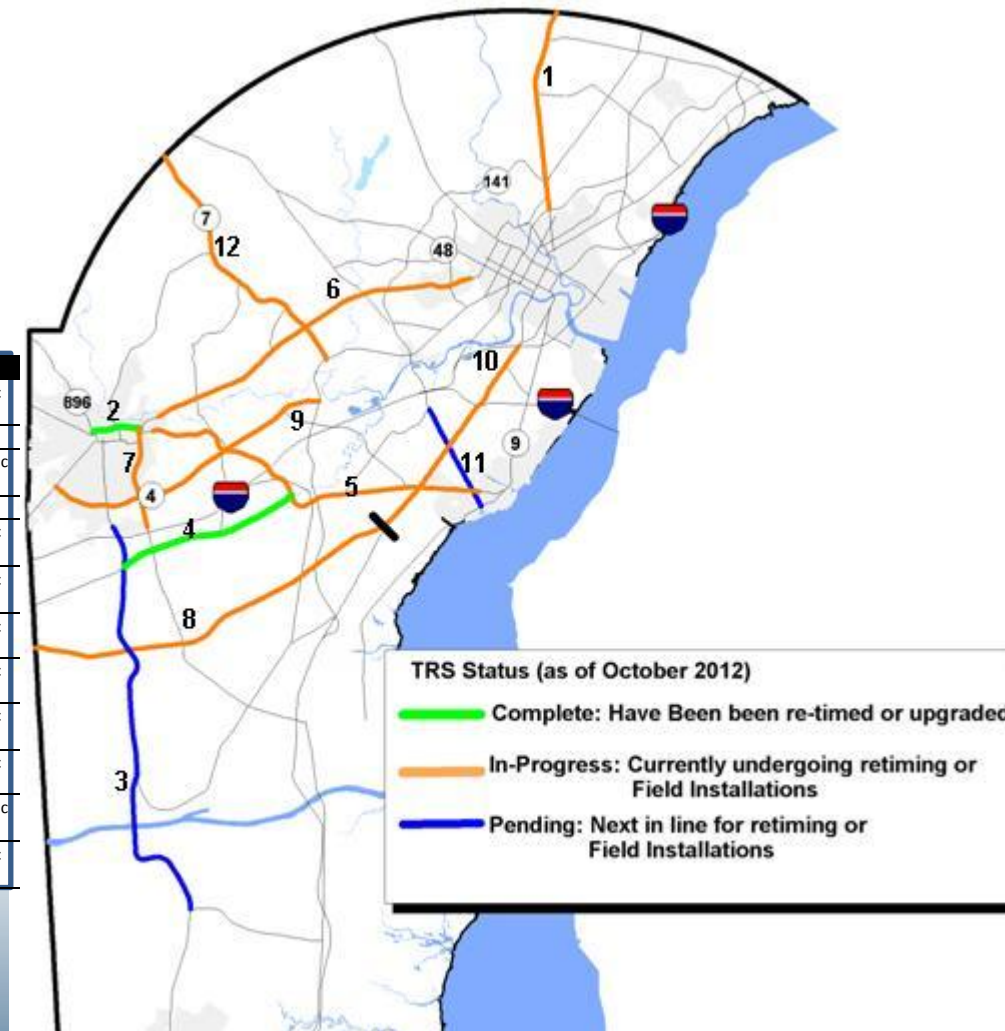2. Expand/enhance existing systems

3. Implement new systems

# ITMS Priorities

| ID | Route | Segment limits | Segment Length |
|----|-------|----------------|----------------|
| 12 | US 202 | Wilmington Line to PA line | 5.1 |
| 27 | SR 2 (Kirkwood Highway) | Newark to Wilmington Line | 9.54 |
| 8 | SR 4 | SR 7 to Wilmington Line | 5.79 |
| 2 | SR 7 | SR 273 to US 40 | 1.93 |
| 16 | SR 273 | SR 273(Newark) to SR 141 | 9.4 |
| 10 | US 13 | South of Wilmington, I-495 to US 40 split | 5.25 |
| 7 | SR 4 | Elkton Rd. to SR 7 | 7.48 |
| 11 | US 40 | MD line to US 13 split | 9.93 |
| 1 | SR 7 | SR 4 Split to PA Line | 6.65 |
| 13 | Churchmans Rd. | SR 4 to SR 273 | 3.89 |
| 25 | SR 141 | SR 37 to SR 9 | 2.76 |
| 15 | SR 92 (Naamans Rd.) | US 202 to US 13 | 5.7 |
| 29 | SR 141 | SR 2 to US 202 | 6.00 |
| 22 | Old Baltimore Pike | SR 896 to SR 273 | 4.62 |
| 19 | Foulk Rd. | US 202 to Naaman's Road | 3.99 |
| 14 | Chapman Rd. | Salem Church Rd. to SR 273 | 1.43 |
| 28 | Silverside Rd | US 202 to US 13 | 4.56 |
| 20 | Milltown Rd. | SR 2 to SR 41 | 2.94 |
| 6 | SR 896 | South of Newark to Boyd's Corner | 12.92 |
| 21 | SR 41 | PA line to SR 2 | 6.15 |
| 4 | SR 72 | South of Newark to US 13 | 9.06 |
| 26 | SR 48 | SR 41 split to Wilmington border | 4.83 |
| 9 | US 13 | North of Wilmington to PA line | 5.89 |
| 18 | SR 299 | US 301 to US 13 | 3.71 |
| 17 | SR 9 | Terminal Ave. to Chesnut St. | 4.17 |
| 3 | SR 72 | North of Newark | 5.61 |
| 24 | SR 52 | Wilmington border to PA line | 5.51 |
| 5 | SR 896 | North of Newark | 2.92 |
| 23 | SR 71 | US 13 to SR 896 | 4.73 |

**Corridor Prioritization**
- High (red)
- Moderate (orange)
- Low (green)
- 2012 CMS Corridors (blue)

Based on following Criteria:
- Location along Current CMS Corridors
- Corridor AADT
- Signal Density
- Failing Intersections
- Crash Rates
- Funct. Classification

# ITMS Priorities

| Map ID | Corridor | Length (mi) | TRS/DSTEP | Status |
|---|---|---|---|---|
| 1 | US 202 | 5.1 | TRS | In Progress—undergoing retiming and/or field installations for traffic responsive operation |
| 2 | Cleveland Avenue | 1.2 | DSTEP | Completed in 2010 |
| 3 | DEL. 896 | 10.8 | | Pending— next in line for retiming and/or field installations for traffic responsive operation |
| 4 | Old Baltimore Pike | 4.7 | TRS | Completed in 2011 |
| 5 | DEL. 273, Christiana | 9.2 | TRS & DSTEP | In Progress—undergoing retiming and/or field installations for traffic responsive operation |
| 6 | DEL. 2, Kirkwood HW | 8.8 | | In Progress—undergoing retiming and/or field installations for traffic responsive operation |
| 7 | DEL. 72 | 2.6 | TRS & DSTEP | In Progress—undergoing retiming and/or field installations for traffic responsive operation |
| 8 | US 40, Pulaski HW | 9.9 | TRS | In Progress—undergoing retiming and/or field installations for traffic responsive operation |
| 9 | DEL. 4 | 7.6 | TRS & DSTEP | In Progress—undergoing retiming and/or field installations for traffic responsive operation |
| 10 | US 13 | 5.4 | TRS | In Progress—undergoing retiming and/or field installations for traffic responsive operation |
| 11 | DEL. 141, Basin Rd. | 2.8 | | Pending— next in line for retiming and/or field installations for traffic responsive operation |
| 12 | DEL. 7, Limestone Rd | 6.9 | TRS | In Progress—undergoing retiming and/or field installations for traffic responsive operation |



TRS Status (as of October 2012)

Complete: Have Been been re-timed or upgraded

In-Progress: Currently undergoing retiming or Field Installations

Pending: Next in line for retiming or Field Installations

# Transportation Management Program Priorities FY11-15

- Expand the statewide signal system and transportation system monitoring devices

- Transportation Homeland Security and incident management

- Provide customer information
  - Agency to agency
  - Media
  - Public

- Transit schedule adherence system

- Telecommunications

# How to Stay Tuned

- [www.deldot.gov](www.deldot.gov)

- [www.deldot.gov/mobile](www.deldot.gov/mobile)

- WTMC 1380 AM

- Twitter

- Facebook

- RSS Feed