

# Meadowlands Adaptive Signal System for Traffic Reduction

# MASS<sup>T</sup>R



## TIGER<sub>2</sub>

May 2011



## Overview

Background	Location
Objective	Phasing
Alternatives	Design
Technology	Procurement
Benefits	Construction
	Schedule

## Background



- Hackensack Meadowlands Transportation Planning District Act (2005)
- Meadowlands District Transportation Plan (Adopted November 2007)
- MTPD Regulations (Enacted January 2009)
- Transportation Mitigation Assessments – MTPD Fund (Ongoing Collection)



## Objective

Efficiently Reduce:

- Roadway congestion
- Delays
- Travel time
- Fuel consumption
- Airborne emissions

Using:

- Proven technology
- Cost-effective methods



Without:

- Sprawl-inducing roadway widening
- Significant infrastructure spending
- Additional right-of-way acquisition



## Traffic Signal Timing Alternatives



Existing District Signals are **Fixed** and **Semi-Actuated**  
Technology is outdated and inefficient



Alternatives to upgrading the signals include:

**Full-Actuation:** Adding detection cameras

**Inter-connect:** Adding communication connection between signals

**Responsive Control:** Creating extensive signal timing plans

**Adaptive Control** incorporates the above components with intelligent software, resulting in the optimum cost/benefit

## Available Technology



### Adaptive Traffic Signal Control

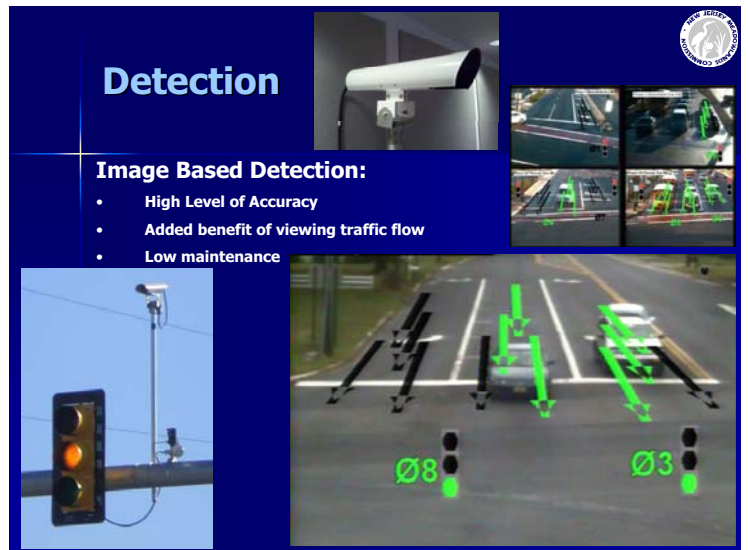
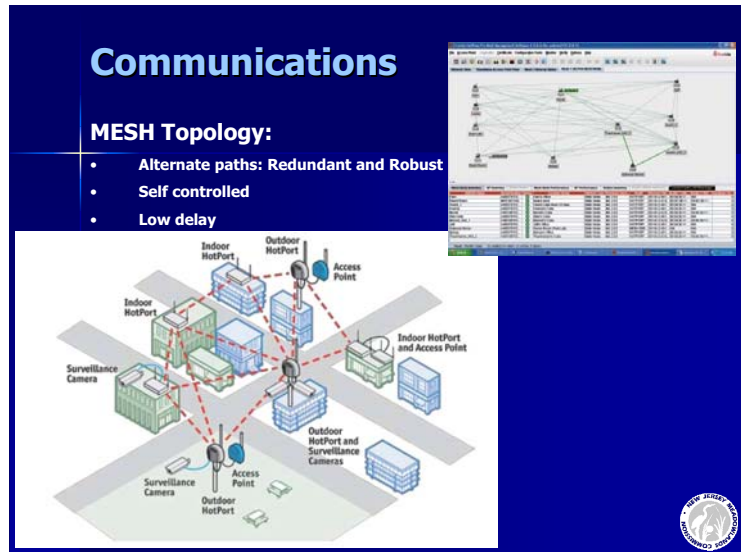
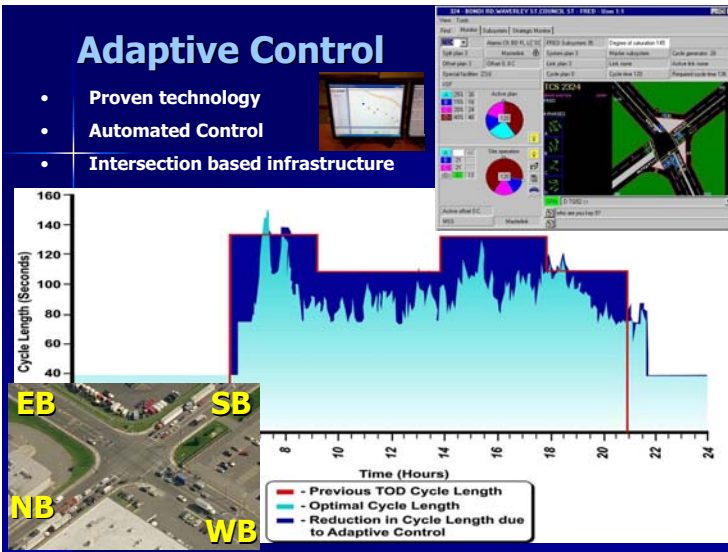
ACS-Lite, InSync, OPAC, SCATS, SCOOT

### Communications

Copper, Fiber, Wireless (Technology: SiSo, MiSo, SiMo, MiMo) (Topology: Point to Point, Point to Multipoint, MESH)

### Vehicle Detection

Inductive, Microwave, Image Based, Wireless



# System Benefits

Projected Benefit	Annual Result
20% Reduction in Delay	➔ \$20 Million Savings
20% Reduction in Travel Time	
40% Reduction in Stops	
12% Reduction in Fuel Usage	➔ 1.2 Million+ Gallon Reduced
14% Reduction in Airborne Emissions	➔ 10,000+ Tons Reduced

400,000+ Vehicles Daily  
\$12.5 Million System Cost  
Benefit Cost Ratio of 18 over 20 year lifecycle

# Milestones

- USDOT TIGER II Grant (Awarded October 2010)
- NJTPA Transportation Improvement Program (Listed January 2011)
- NEPA Categorical Exclusion Document (Received February 2011)



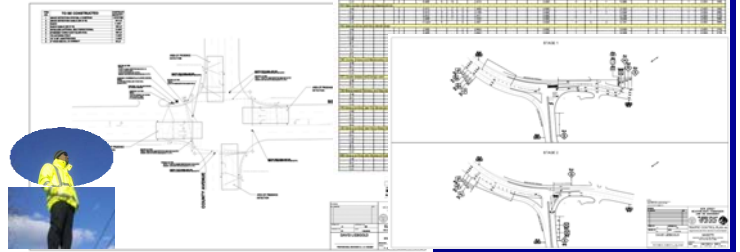
## Locations/ Phasing

- Phase 1: Secaucus (29)
- Phase 2: Southwest (31)  
NB and HM
- Phase 3: Northwest (25)
- Phase 4: US 1&9 (43)



## Design/Engineering

- Systems Engineering
- Specifications
- Electrical Plans
- Conduit-Fill Calculations
- Traffic Control Plans



## Procurement Framework

Procurement Item	Work Distribution	Method of Award	Contract Form	Contract Type
Adaptive Traffic Control System	System Manager	RFQ/RFP Negotiated /Best Value	Phased	Fixed Price/ Unit Price
Detection System	System Manager	RFQ/RFP Negotiated /Best Value	Phased	Fixed Price/ Unit Price
Communication System	System Manager	RFQ/RFP Negotiated /Best Value	Phased	Fixed Price/ Unit Price
Construction Phases 1, 2, 3, & 4	Low-Bid Contractor	Low-Bid	Phased	Fixed Price/ Unit Price
Traffic Management Center Equipment	Commodity (COTS)	Existing State Contracts	Purchase Order	Fixed Price/ Unit Price

## Construction



### Communication

- Antenna Pole & Extension Installation
- Radio & Antenna Installation and Wiring
- System Setup

### Vehicle Detection

- Camera Installation and Wiring
- Camera Setup

### Adaptive Control

- Signal Controller and Hardware Installation
- Software & System Setup



## Schedule



Systems:	Procurement	June	2011
Phase 1:	Procurement	July	2011
	Construction	Fall	2011
Phase 2:	Operation	Winter	2011
	Complete	Spring	2013
Phase 3:	Complete	Summer	2013
Phase 4:	Complete	Winter	2013

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