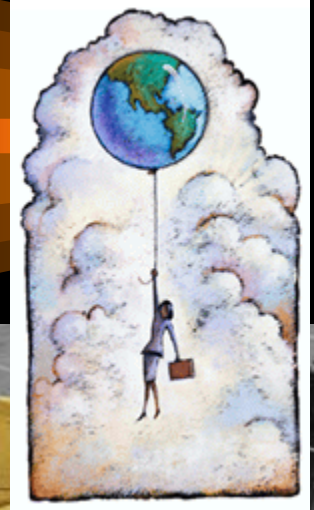


# A Mixed Bag:

## *Legislative and Regulatory Barriers in Implementing I&M Programs*

- By David S. Heller, AICP  
Principal Transportation Planner
- North Jersey Transportation Planning Authority-  
Newark, NJ
- NARC Conformity Case Study Workshop #3
- March 23, 2002



**New Jersey Enhanced Emissions  
& Safety Inspection Program**

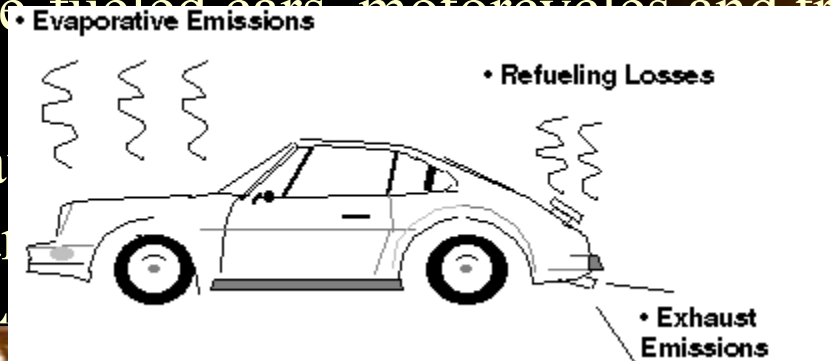
*New Jersey  
July 2001*

# *Northern New Jersey Region*

- “Severe” non-attainment area for Ozone
- “Non-attainment” for CO in New Jersey portion of New York metropolitan area
- CO “Maintenance” area for remainder of region

# Inspection & Maintenance: What is it?

- All gasoline-fueled cars, motorcycles and trucks registered in NJ must undergo emissions inspections every two years and be licensed by a licensed gas fitter.



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# *“Enhanced” = “Realistic” Driving Conditions*

- Dynamometer--Allows car to accelerate, tires to spin without vehicle actually moving
- Key component of “Enhanced” I&M test; simulates “actual” driving conditions
- Inspector tests emissions with a probe as engine accelerated to
- Computer and reflect car’s make and model



## *Why do we have I/M?*

- Required by Clean Air Act
- State needs it (in addition to other emission control measures--e.g. reformulated gasoline, Tier 2 (Low-sulfur fuels), etc., to meet air emissions targets
- Included in current ROP (Rate-of-Progress) SIP as a control measure

# History of I/M and Northern New Jersey

- **Dec. 1997**--EPA disapproved of NJ's proposed ozone reduction plan because State had fallen behind in implementation of I/M program
- **Enhanced I/M** a key component of both State and Federal VOC reduction programs
- **April 11, 1998-Sanctions:** Air quality conformity freeze on transportation projects began.

# To avoid further sanctions, NJTPA had to....

- Develop an acceptable SIP and secure EPA approval before end of 24 month period  
(All federal highway funds cut off, conformity lapses)
  
- Implement “enhanced” I/M program within 24-month period

## Remedial Actions implemented by NJ

- New Jersey--DEP able to recalculate SIP emissions budgets within 6 months from initiation of freeze
- SIP Revision--Clarify testing frequency during transition between *basic* and *enhanced* I/M
- NJ--able to discover other strategies which covered emissions shortfall until new I/M implemented.  
e.g... vehicle fuel cap (added to basic I/M program), emissions reductions gained from vehicle fleet turnover

# *Current Status of I/M program*

- In place, New Jersey has included in SIP emissions budgets
- System consists of centralized (State run) and decentralized (private) emissions inspection facilities
- 70% Centralized (Public)  
30% Decentralized (Private)
- 94% overall effectiveness

# *I/M Funding Breakdown*

- 1997: State committed \$50 million, at \$10 million/year (Congestion Mitigation and Air Quality)-(CMAQ)
- 1998: State committed \$225 million for 5 years, (\$45 million/year), State *receives* \$60 million/year
- 2002: State giving \$45 million/year for I&M
- Net percentage: *75%* of CMAQ funds going to I/M

# *Evaluation of I/M Program:*

## *Caveat:*

- No “official” assessment by NJTPA Board of Trustees
- Some obstacles in I/M implementation

# *Evaluation of I/M Program*

- Positive:
  - Big bang for buck (unlike other Transportation Control Measures--e.g. Employer Trip Reduction, Vanpooling)
  - One of most effective strategies for reducing air pollution
  - Equivalent to removing pollution from as many as 600,000 cars every year, in typical urban area
- Negative:
  - Just addresses air quality
  - Doesn't address other issues, such as congestion
  - Uses up all CMAQ funds (Congestion Mitigation and Air Quality)
  - Other CMAQ projects--e.g. transit service, feeder service could resolve air quality and congestion
  - Major inconvenience to traveling public--NJ: long lines, delays

## *Evaluation of I/M Program (cont.)*

- State investigation:  
*“There is no hard evidence that the I/M program has had a measurable impact on air quality.”<sup>1</sup>*
- Emissions reduction attributable to I/M programs are from zero to one-half of reductions predicted by models<sup>2</sup>
- Almost half of New Jersey’s car fleet are post-1996--which are generally cleaner and have new federally mandated emissions controls
- Allegations of impropriety surrounding the award of the contract has spurred a State investigation into the process

<sup>1</sup>Source: *New Jersey Star-Ledger*, March 14, 2002

<sup>2</sup>Source: *“Evaluating Vehicle Emissions Inspection and Maintenance Programs.” Executive Summary. National Academy of Sciences 2001*

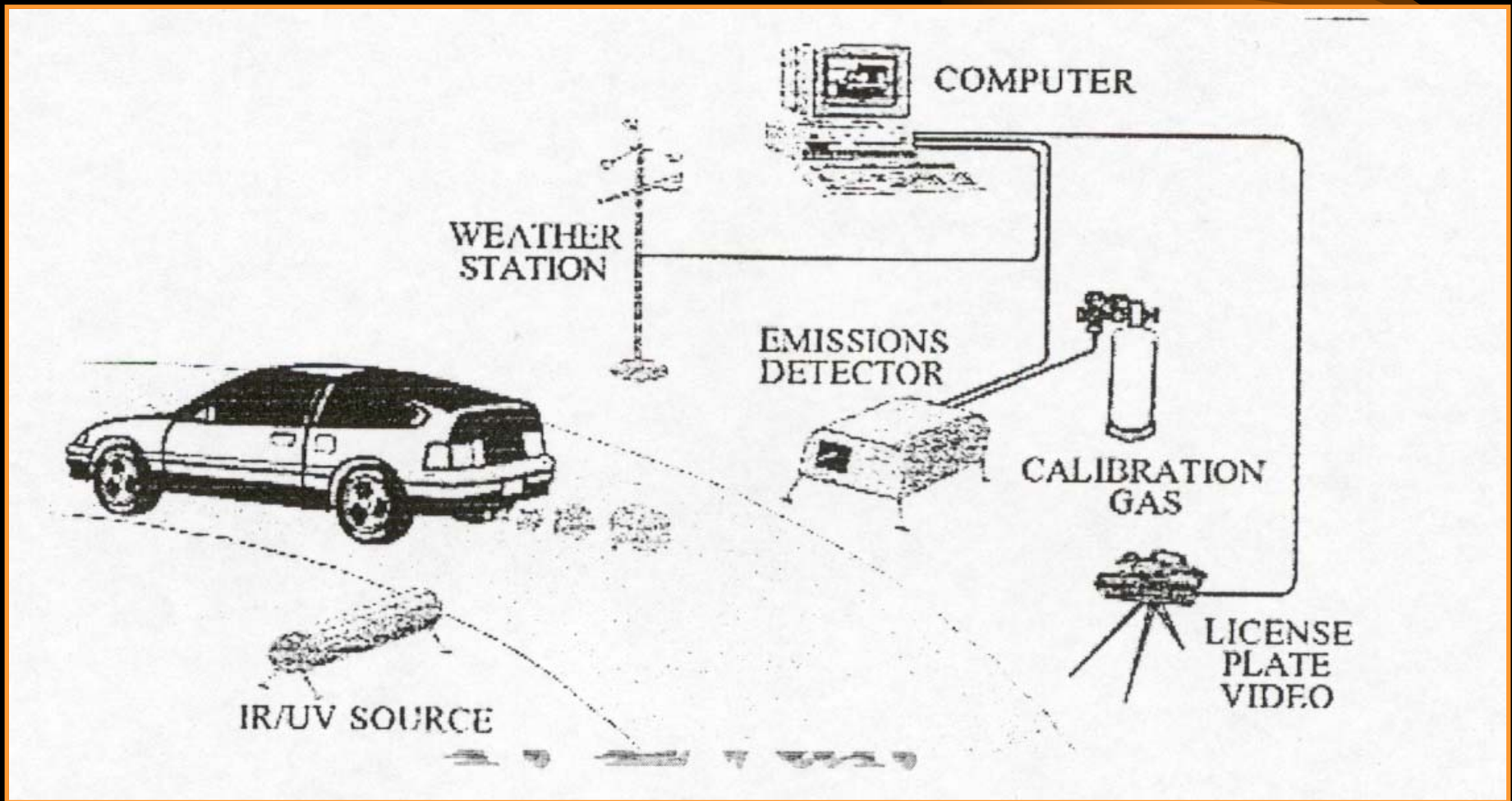
# *Future Directions*

- Transition from tailpipe test to On-Board Diagnostic Test (OBD) Test
- Purpose: Assure proper emission control system operation for vehicle's lifetime by monitoring emission-related components and systems for deterioration and malfunction
- Sensors plus actuators, along with diagnostic software in on-board computer
- Sensors (Oxygen sensor) and actuators (e.g. fuel injector) sense operation of specific components; signals motorist when emission standards exceeded

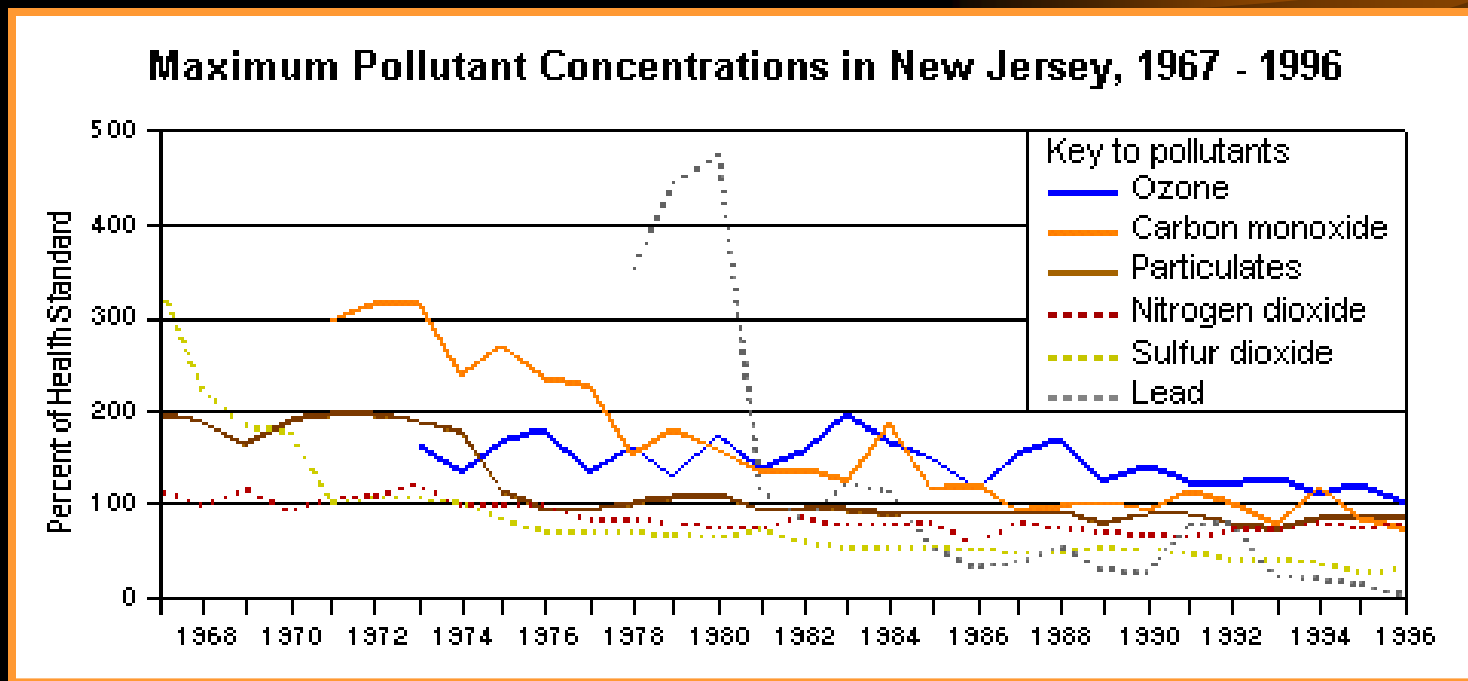
# *Other Technologies*

- **Remote Sensing Devices (RSD)**
  - Vehicles passes through specialized emissions detector
  - Vehicle emissions measured remotely by passing infrared light source across a highway to an infrared source detector
  - From measurements, concentrations of HC and CO in exhaust calculated.
  - Relatively non-intrusive method of obtaining measurements of in-use vehicle emissions.

# REMOTE SENSING DEVICE (RSD) ILLUSTRATION



# Are we making progress?



Source: NJ Department of Environmental Protection, Bureau of Air Quality Monitoring

## *Recommendations and Conclusions*

- Tighter monitoring by State of I/M program
- Further investigation/ research of I&M program effectiveness
- New inspection technology (e.g. OBD system)
- Exploration of alternative emissions reduction technologies, such as alternative fuels, low-emission vehicles
- Further transit options to alleviate air pollution (e.g. light rail, feeder bus service)
- Land Use activities: NJ State Development and Redevelopment Plan- “Smart Growth”

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