

# Transportation Strategies to Reduce GHG Emissions: NYSDOT



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# NYS Multi-Modal Transportation System

Diverse, Complex and Vital



7,632 State Bridges  
9,800 Local Bridges



40,000 State lane miles  
200,000 local lane miles



# NYSDOT's Climate Change & Energy Efficiency Initiative

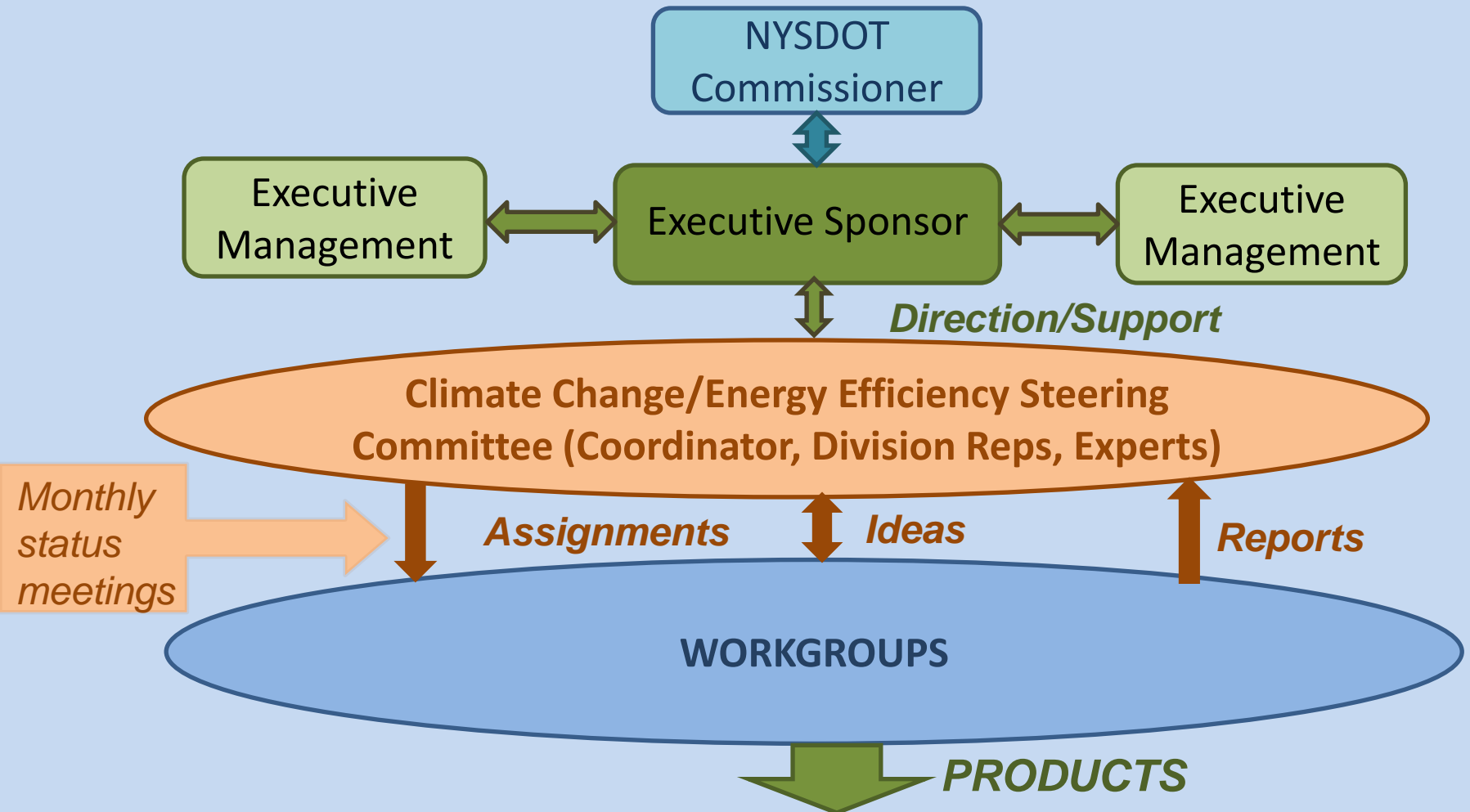


Climate Change/Energy Efficiency Team Mission:

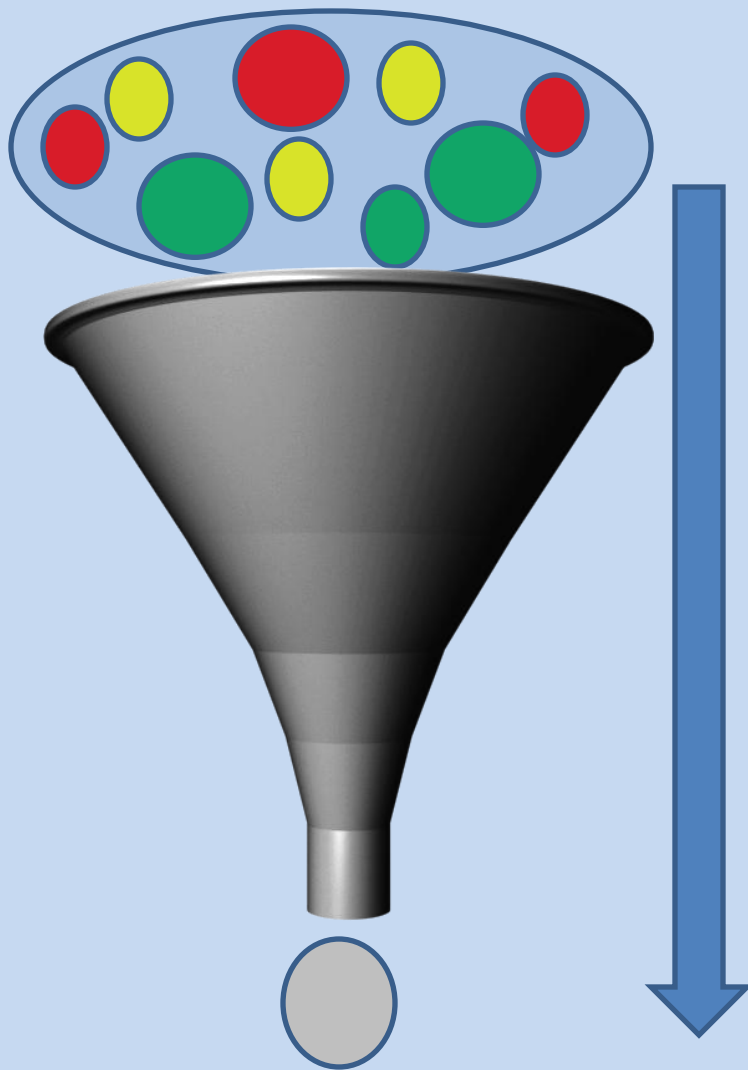
*“To have the Department and the State’s transportation sector reduce its emissions of greenhouse gases and its reliance on petroleum.”*



# Getting It Done: NYSDOT's CC/EE Team Approach



## NEPA and project review

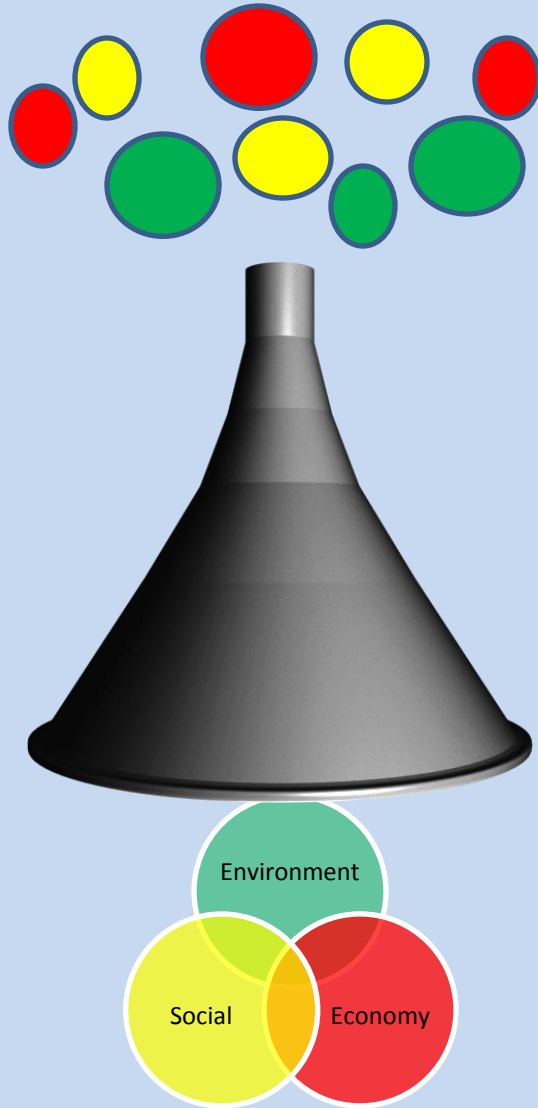


**Permittable Project**

## “Walk Forward” . . .

- Select project
- Work through system
- Get permittable project
- This process doesn't ask:
  - Is it the best TBL project?
  - Maximize social, economic and environmental benefits?
- This paradigm focuses on:
  - Least damage while achieving Transportation objective.



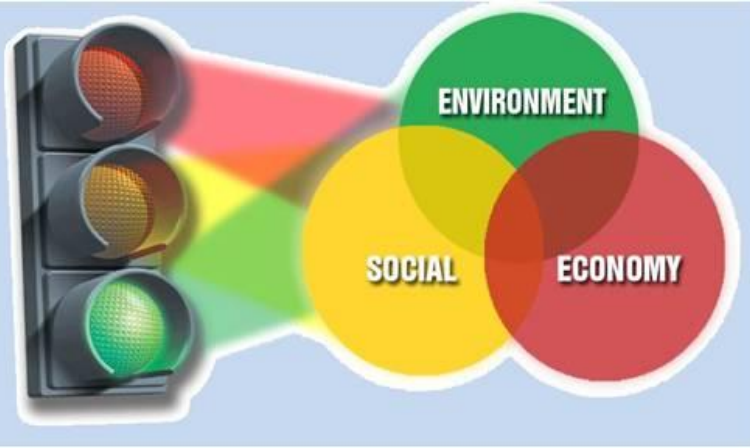


# “Walk Back”...

- What are the needs?
  - Environmental quality
  - Community viability
  - Economic development
- Look at the systems
  - Transportation
  - Ecosystems
  - Community network
- Actions...

Transportation Actions/Decisions That Support a Sustainable Society





# If the game is serious, You need to keep Score.

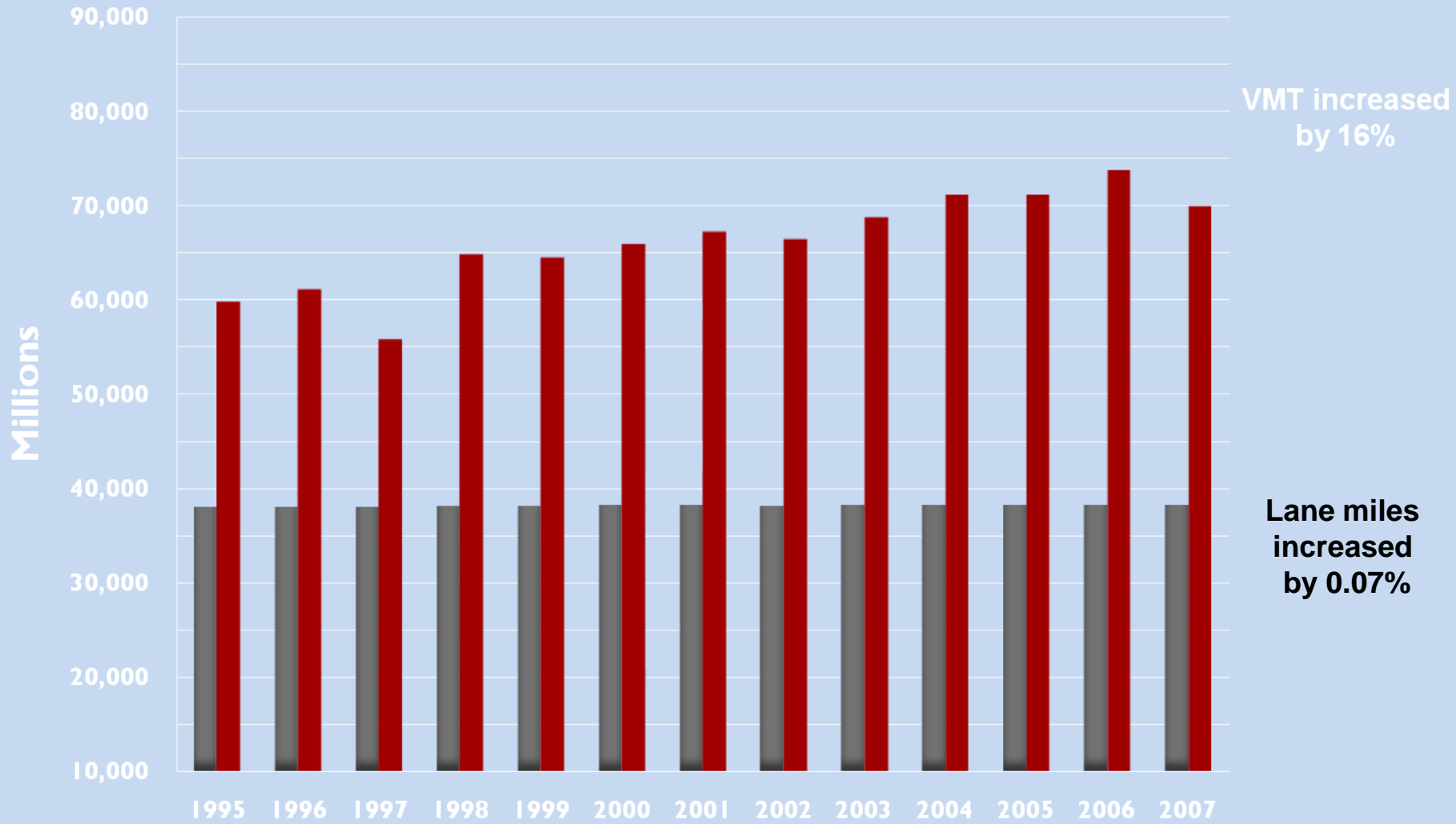
Economy	Current State / Metric?	Desired State
Access to jobs and labor		
Transportation Preservation (Maintenance backlog)		
Transit passenger miles		
<b>Environment</b>		
Petroleum consumption reduction		
Air Quality - CO2 emissions		
Water Quality		
Habitat Quality		
<b>Social Equity (Includes Livability &amp; Safety)</b>		
Fatality and injury reductions per VMT		
Improved mobility for all including the disadvantaged and disabled		
Generational Equity		
Access to affordable transportation		



# Perspective...

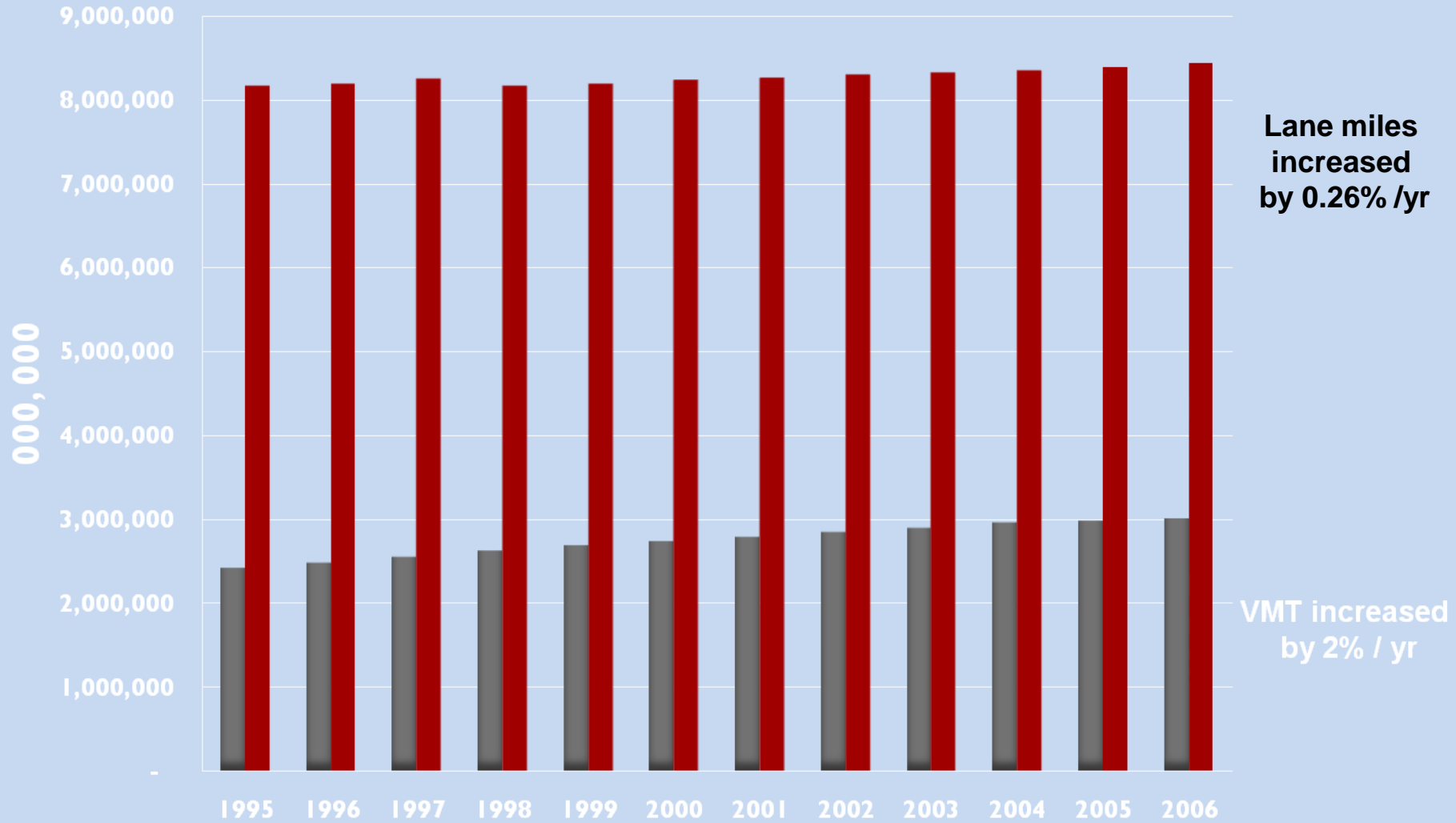
- $\text{CO}_2 / \text{gal gasoline} = 2,421 \text{ grams} \times 0.99 \times (44/12) = 8,788 \text{ grams} = 8.8 \text{ kg/gallon} = 19.4 \text{ pounds/gallon}$  or **approx 20 lb.../ gal**
- NYS Tran. = **38% NYS** (93 Mil metric tons)
- A 700 mile Statewide expansion of comprehensive ITS is estimated to reduce 221,634 tons of  $\text{CO}_2$  per year (0.2%) at a cost effectiveness of \$364 per ton...

# Highway expansion in NYS - Not



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
■ Lane Miles	37,908	37,977	37,996	38,079	38,104	38,125	38,151	38,120	38,127	38,131	38,190	38,159	38,183
■ Annual VMT	59,819	61,067	55,769	64,746	64,490	65,828	67,195	66,444	68,658	71,132	71,133	73,668	69,875

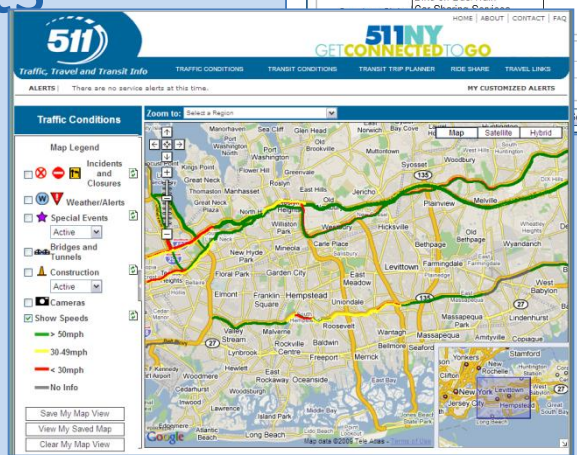
# Minimal Highway expansion in US



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
■ US_VMT (000,000)	2,422,823	2,485,848	2,561,695	2,631,522	2,691,056	2,746,925	2,797,287	2,855,508	2,896,450	2,964,488	2,989,430	3,014,116
■ Ln_Mi	8,158,181	8,177,823	8,242,437	8,160,836	8,177,983	8,224,245	8,251,865	8,295,171	8,315,121	8,338,821	8,371,718	8,420,589

# Reduce VMT – Transit / Ridesharing / Bike, Ped.

- Funding
- Facilitation (511)
- Bike Paths
- Park and Ride Lots
- High Speed Rail
- Smart Growth



# Promote Alternative Fuels - NYSDOT Fleet

- > 700 light-duty CNG/hybrid/biofuel vehicles
- 25 medium and heavy-duty alternative fuel vehicles
- Dispensed >8.3 M gals CNG, saving \$8.3 M
- Built 60 CNG stations
  - 11 open to public
  - Collaborate with NYS OGS



# Compressed (CNG) & Liquid Natural Gas (LNG)



Working with NYSDEC to draft siting permit regulations for new LNG facilities

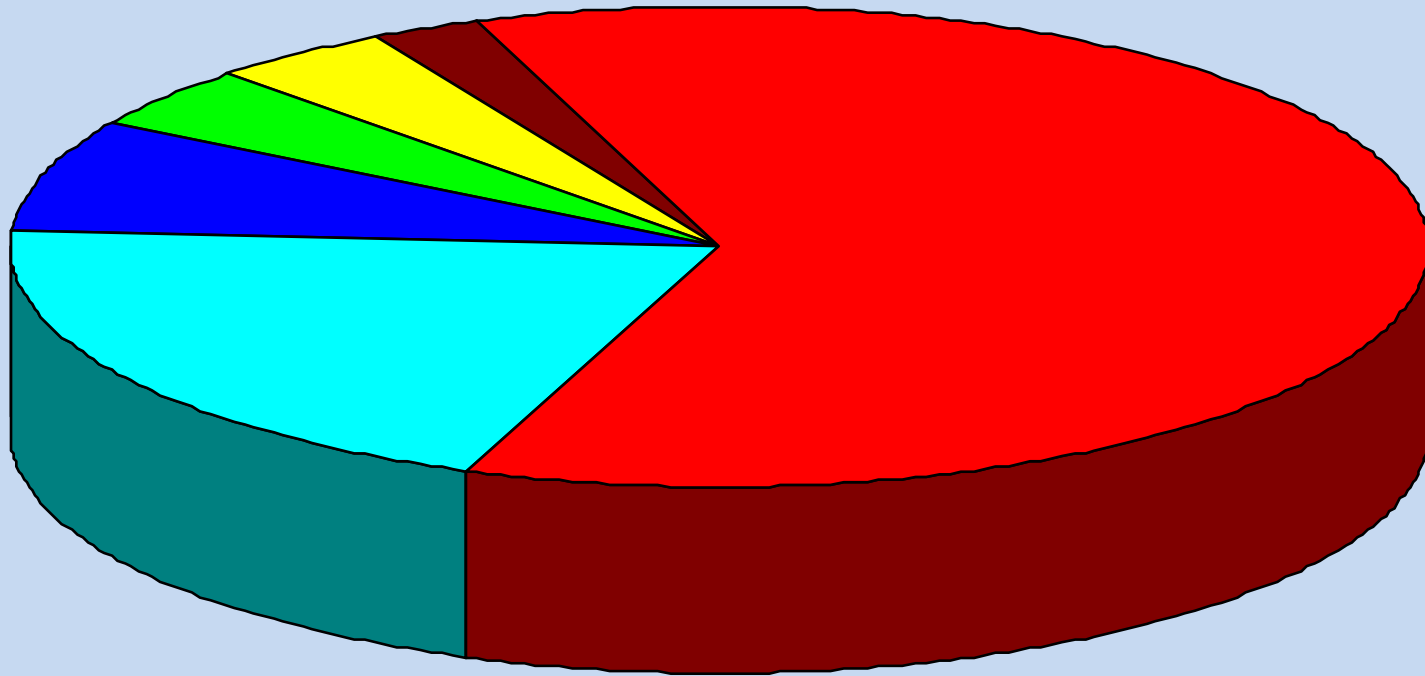
Converted 25 snowplows to dual fuel (20% diesel and 80% natural gas)





# U.S. 2002 Diesel Consumption by Mode

CNG / LNG switch = 1.8 Bill Metric tons CO<sub>2</sub> / day



■ M/H Trucks

■ Off-Highway

■ Rail

■ Lt Vehicles

■ Water

■ Buses



# Promote Vehicle Efficiency

## New York's Clean Pass Program

- Innovative, multi-agency (NYSDOT, NY DMV, NYSDEC) program
- Allow eligible low-emission, energy-efficient vehicles to use the 40-mile Long Island Expressway High Occupancy Vehicle (LIE/HOV) lanes regardless of the number of occupants in the vehicle.
- The program will result in an estimated reduction of 6,000 tons of greenhouse gas emissions and savings in excess of 500,000 gallons of gasoline.

<https://www.nysdot.gov/programs/clean-pass>



# NYSDOT Emissions Reduction: Traffic / ITS



- 6000 NYSDOT owned signals
- LED replacements
- High R Sheeting
- Signal timing
- Ramp Metering
- Incident Response
- Commercial Vehicle Operations
- Congestion Management



# NYSDOT Emissions Reduction: Climate Change Parameters for Project Selection

- Consideration of GHG emissions as part of project development.
- GHGs reported for TIPs and Plans.
- Exploring mechanisms to incorporate climate and energy considerations and guidance into program update progress.

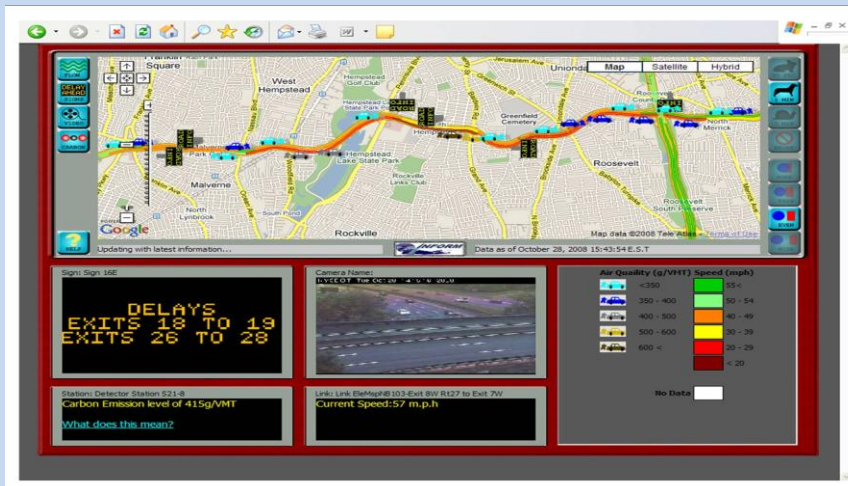
# NYSDOT Emissions Reduction: Facilities



- **EO 111: Green and Clean State Buildings and Vehicles**
- **~ 35% Building Energy Usage Reduction since 01/02**
- **Behavioral Change (education, thermostat controls)**
- **Energy Efficiencies (insulation, windows, lighting upgrades)**

# Education

- INFORM (Information For Motorists) - one of the nation's largest and most advanced traffic information systems for motorists covering Long Island's 50-mile central corridor.



<http://www.informny.com/>



# Partnerships



- Overlapping authority of potential strategies
- Increase credibility of chosen strategies
- Increase potential funding opportunities
- Examples:



- RGGI / TCI (Transportation Climate Initiative)
- I- 95: Eco Driving
- Columbia University: *Adaptation Study*
- NYSERDA: *ClimAID*
- NYPA Solar Initiative
- 511NY



# Partnerships...

- SEP (State Energy Plan)
  - Expand/promote green transportation choices
  - Increase use of alt fuels
  - Investigate ROW for renewable energy development
  - Develop/test sustainable transportation tech & systems
- CAP (Climate Action Plan)
  - 80 X 50 economy wide goal
  - Catalog of transportation/land use potential actions
  - Operations, infrastructure, financing, land use, all modes



# Transportation in service to a sustainable society...



# Supporting A Sustainable Society

	Economic					Environment				Social		
Program Area	Preserve (safe) Infrastructure	Improve Mobility	Improve System (incl. Mode) Connectivity	Improve Reliability	Improve Mode Choice	Improve Ground & Surface Water	Improve Air Quality (GHG/CO2 Reduction)	Improve Habitat	Reduce Petroleum Consumption	Safety: Prevent Accidents	Improve Community Cohesion	Improve Quality of Life (Access to jobs, education, recreation)
Engineering												
Design							X					
Construction							X					
Environment							XX					
Tech Ser							XX					
Structures												
Operations												
Fleet Mgt							X					
Transp Maint							XX					
Traffic							XXX					
Intermodal							X					
Planning												
Modal Serv							XX					
Traffic (ITS)												
Freeway Mgt							XX					
Crash Prev.							X					
RWIS							XX					
Transit Mgt							XXX					
TIMs							XXX					
ETO							X					
511							XXXX					
CVO							XXX					