

NYCSANITATION

NEW YORK'S STRONGEST

DSNY'S FLEET SUSTAINABILITY PROGRAM

Deputy Commissioner Rocco DiRico
Support Services

Chief Spiro Kattan
Clean Fuels & Technologies

Game-Changing Initiatives for Solid Waste
The Cooper Union
June 10, 2015

OVERVIEW

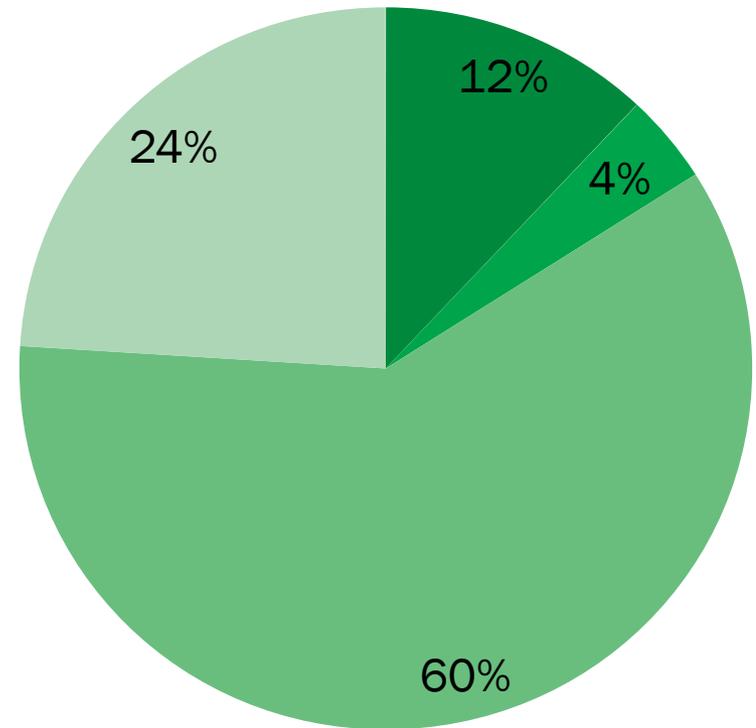
- About Support Services (BME & BBM)
- Vision Zero (Safety First)
- OneNYC (80x50 GHG Reduction)

BUREAU OF MOTOR EQUIPMENT

- ~ 7,600 pieces of equipment (on-road and off-road)
- ~ 800 skilled trades (auto mechanics, machinists, blacksmith, etc.) and administrative staff
- 89 Manned repair locations
- 16-hr x 6-days week operation
- Vehicle and equipment maintenance & repair
- Equipment and parts contracts
- Vehicle and equipment specifications
- R&D and environmental fleet initiatives
- Named “Center of Excellence” (fleet consolidation plan)

BUREAU OF MOTOR EQUIPMENT

Rear-loading	1,682
Front-loading	102
Recycling	466
Salt Spreaders	424
Street Sweepers	464
Other Heavy	1,432
Medium Duty	287
Light-Duty (<8,500)	929
Subtotal	5,786
Fleet Consolidation Plan	1,819
Total	7,605



- Light Duty
- Medium Duty
- Heavy Duty
- Consolidated

2012 Fleet Consolidation

Department of Education
 Department of Parks & Recreation
 Department of Health & Mental Hygiene
 Department of Environmental Protection

BUREAU OF BUILDING MANAGEMENT

- ~ 200 DSNY buildings citywide
- ~ 250 skilled trades (plumbers, electricians, carpenters, etc.) and administrative staff
- 8-hr x 5-days week operation
- On-call 24/7
- Service and Procurement Contracts
- De-bundling of electrical circuits (load management)
- LED lighting
- Motion-controlled light switches
- Natural Gas boiler conversions
- Solar power
- Wind power
- Geothermal



BME AND BBM AT WORK



Auto Mechanic



Machinist



Metal Work Mechanic



Carpenter

VISION ZERO

NEW YORK— Mayor Bill de Blasio today released his administration's Vision Zero Action Plan, laying out a comprehensive roadmap to drastically reduce traffic-related deaths on New York City streets.

February 18, 2014

NEW CAB DESIGN FOR SWEEPERS



New design left side window



New design right side window



Old design left side window

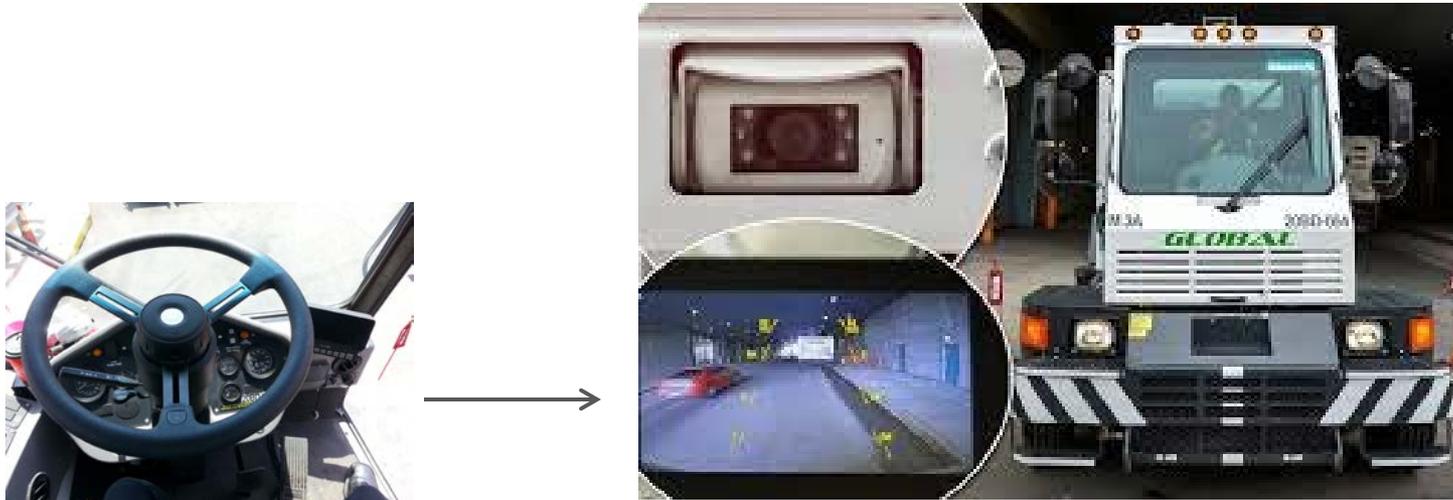


Old design right side window

13% Improved visibility
86 units in service
Deployed in 2015

REAR-VIEW CAMERA

- All sweepers with new cab design feature rear-view camera
- 86 units in service



PM10 CERTIFIED STREET SWEEPERS

- Designed to minimize and control the amount of “fine” airborne particles generated during sweeping operation
- Utilizes special type pick-up broom, drape, gaskets, seals and additional spray nozzles
- Certified by California, SCAQMD



NEW CAB DESIGN FOR COLLECTION



Current design (LEU)



New design (LR)

Improved visibility
Cab ergonomics
Tilt/telescopic steering
Larger interior
LED headlamps
Launch in FY16

DISC BRAKES AND WHEEL: NUT INDICATORS

Disc Brakes = ~ 800 collection trucks and counting

- First in the refuse industry
- Improved braking
- Reduced cost
- Less noise



Loose Wheel-Nut Indicators = all HD vehicles



FRONT-LOADER BACKING SAFETY FEATURE

“Global Search Eye”

- If an object is detected while backing up, the brakes are applied automatically
- An audible alarm and warning lamps alerts the driver
- System is turned on by placing gear shift lever in reverse.



TRUCK SIDE GUARDS

Bill de Blasio Announces Next Phase of 'Vision Zero': Truck Side Guards.



DEFENSIVE DRIVER TRAINING

- Mandatory 6-hour onsite defensive driver training
- Expanded 2-hour driver education on “Vision Zero” and Departmental policies and procedures



PORTABLE HYDRAULIC GENERATOR

- Parker Hannifin
- Hydraulic drive
- 30kW (output)
- 110/208 Volts
- 8 -10 hours run time (50 gal.)

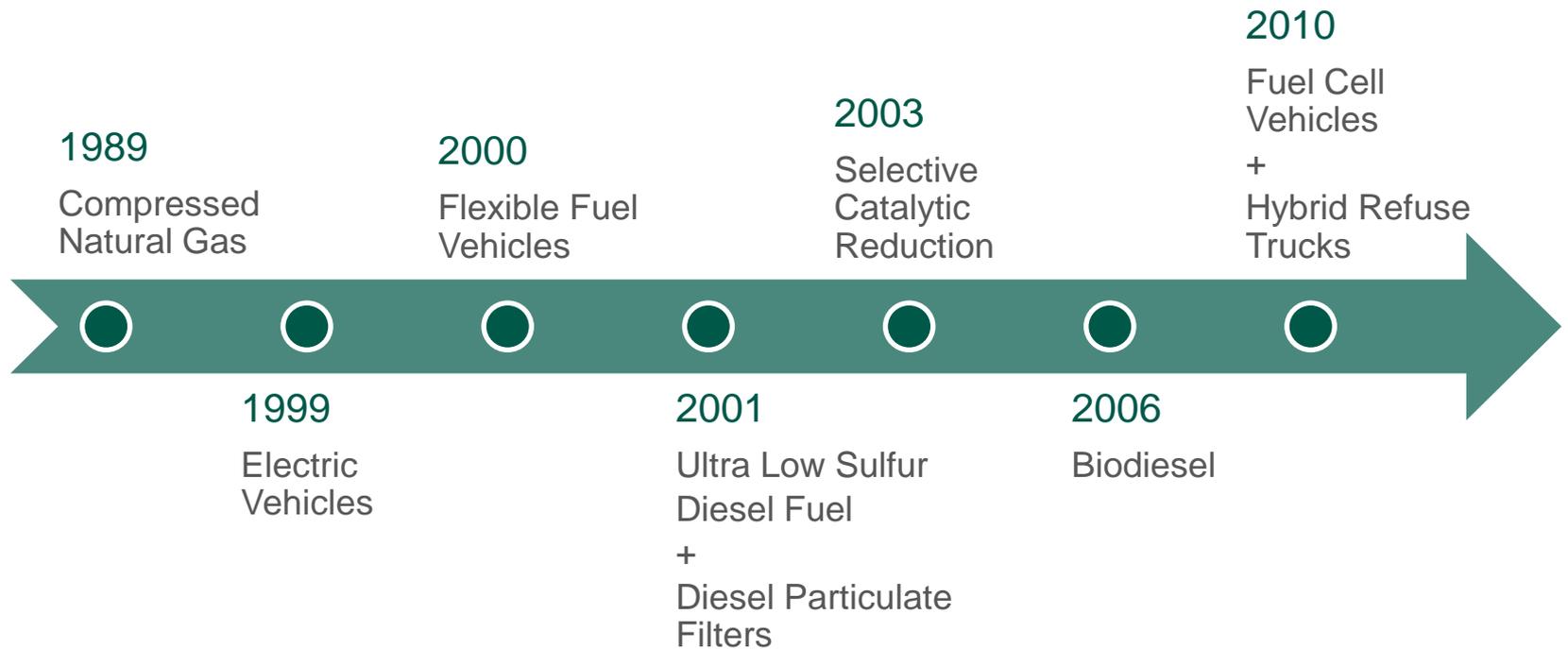


NYC LOCAL LAWS / INITIATIVES

- LL 77 of 2003 = Retrofit all Off-road diesels w/BART
- LL 39 of 2005 = Retrofit all On-road diesels w/BART
- LL 38 of 2005 = < 14k GVW must be GREENEST in class
- LL# 73 of 2013 = Biodiesel **B5** (7/14) **B20** (7/16)
- **OneNYC** of 2015 = GHG reduction **80% x 2050**

A LOOK BACK IN TIME...

The Road to Green



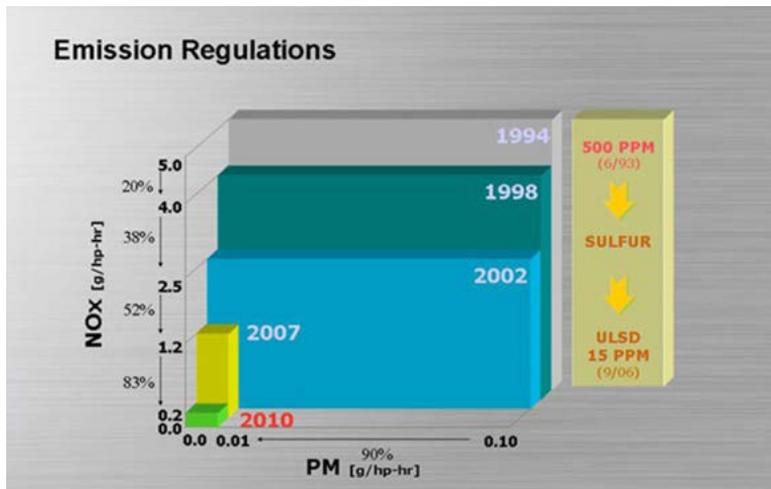
LL 77 AND 39: ~ 1,400 DIESEL EXHAUST RETROFITS



Diesel Particulate Filter Retrofit Kit



REFUSE TRUCKS EMISSION PROFILE



Federal Regulations

EPA Tier	PM (g/bhp-hr)	NOx (g/bhp-hr)	Emission Controls	DSNY Refuse Fleet
1998	0.10	4.00	Electronic Controls	-
2004	0.10	2.00	Exhaust Gas Recirculation	-
2007	0.01	1.20	Diesel Particulate Filter	100%
2010	0.01	0.20	Selective Catalytic Reduction	55%

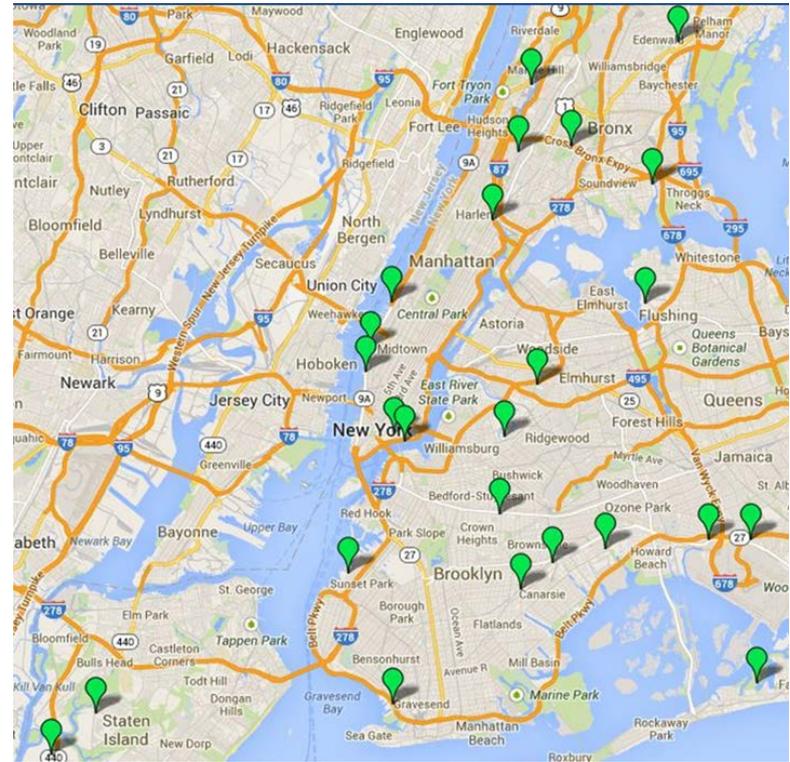
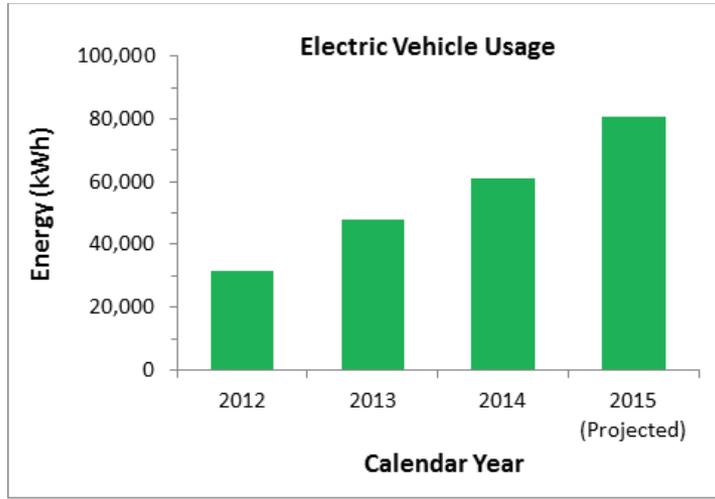
LOCAL LAW 38



HEV/Plug-in/Electric		
eStar	Electric	1
Transit Connect	Electric	2
Leaf	Electric	18
Volt	Extended Range	21
Fusion	Extended Range	11
Camry	HEV	5
Civic	HEV	18
Highlander	HEV	18
Fusion	HEV	151
Escape	HEV	227
Prius	HEV	347

88% of LD Fleet

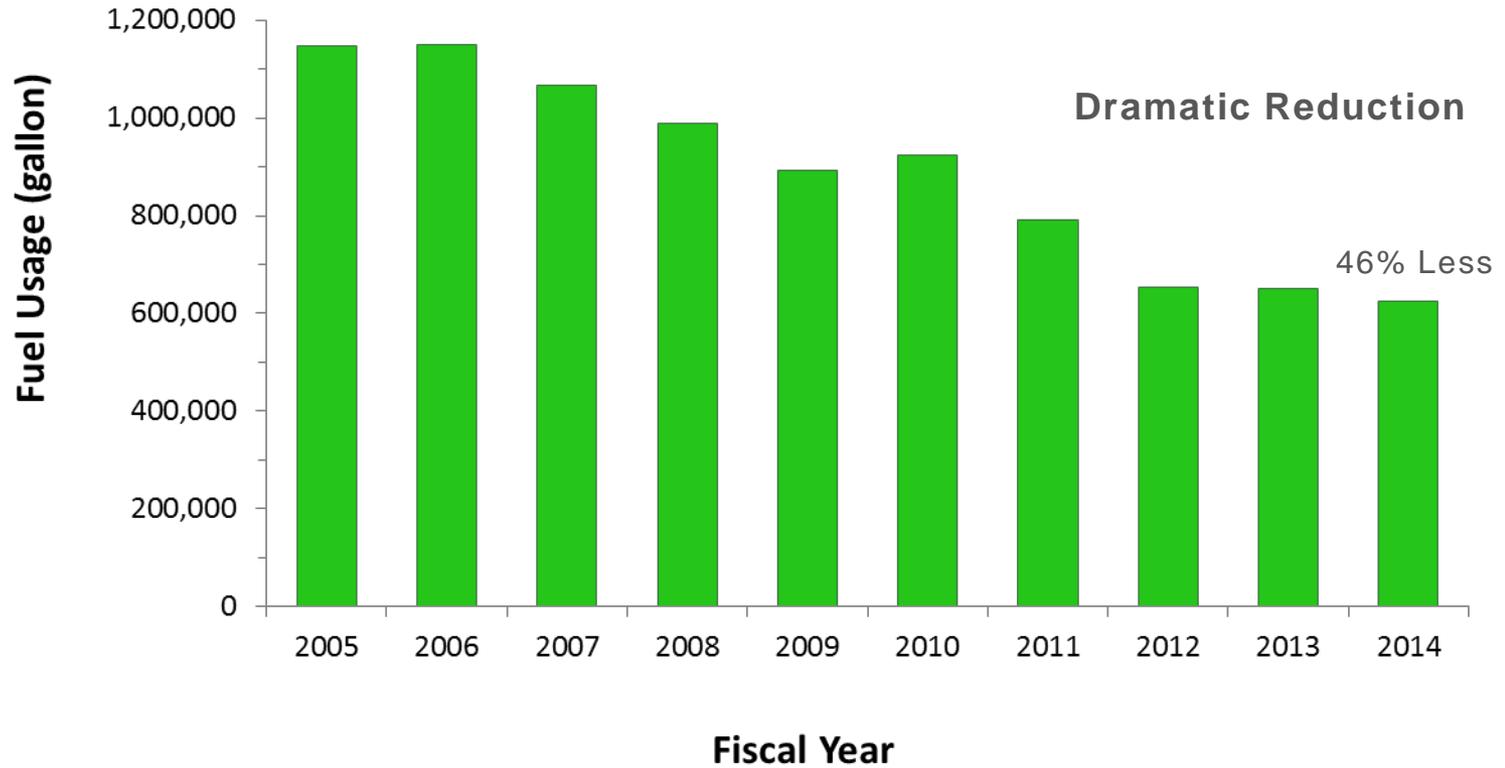
49 LEVEL 2 EV CHARGING STATIONS



EV Chargers

**11 new chargers
installations in FY16**

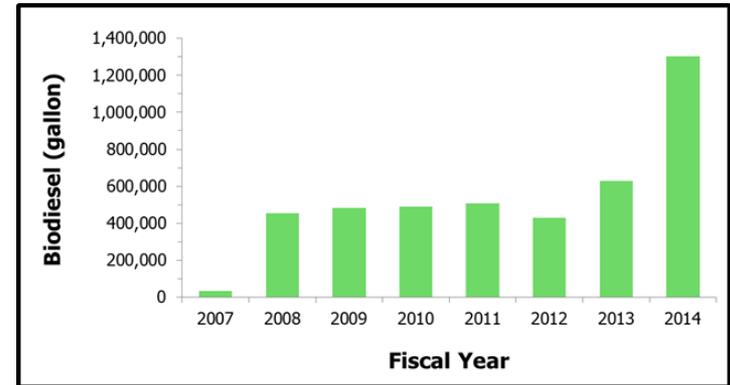
UNLEADED FUEL USAGE



BIODIESEL: LL 73

B5 & B20 (Soy-based)

- B5 pilot 2006
- B20 pilot 2007
- Small scale pilots (captive fleet)
- B20 April to November
- B5 December to March
- Displaced over 4 million gallons of fossil-based diesel



Pros

- Renewable
- Safe to handle
- Step towards energy security

Cons

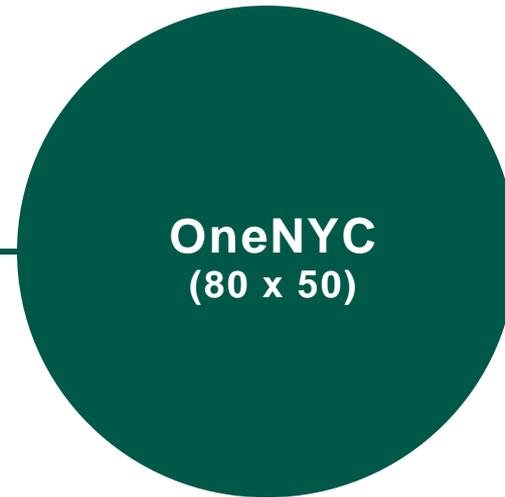
- Hydroscopic (absorb water)
- Less favorable cold weather properties (B20)
- Requires good housekeeping (reduce bacterial growth in UST)



B20

ACHIEVING ONENYC

Rear-loading	1,682
Front-loading	102
Recycling	466
Salt Spreaders	424
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Other Heavy	1,432
Medium Duty	287
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COMPRESSED NATURAL GAS



CNG Fleet

Refuse Trucks	44
Street Sweepers	4
TOTAL	48

CNG Stations

DSNY	1
Clean Energy	3
Con Edison	5
TOTAL	9

Challenges

Need additional HD fast fill stations
Safeguard repair facilities from methane leaks

HEAVY-DUTY HYBRIDS



World's First + Export Power

Vehicle	Fuel	Type	Design	Chassis	Mfg.	# Units
Street Sweeper	Diesel	Hybrid-electric	Series	Global Environmental Products	US Hybrid	13
Rack Trucks			Parallel	Kenworth	Eaton	8
Tire Trucks				Crane Carrier	BAE	5
Refuse Trucks			CNG	Hybrid-hydraulic	Mack Trucks	Bosch Rexroth
	Crane Carrier	1				

TOTAL 79

Lesson learned :

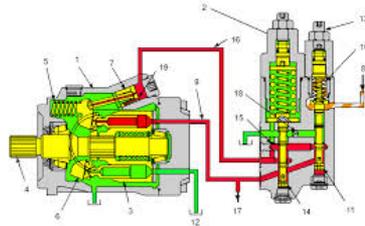
Duty cycles very critical in achieving maximum fuel economy efficiencies

MINIMIZING PARASITIC LOSSES – ADOPTED

Pack @ Idle



Power On Demand



Neutral @ Stop



= LESS

FUEL

FUNDS

CO₂

NOISE

START/STOP ENGINE OFF TECHNOLOGY



- 1 unit pilot
- Regenerative-braking System
- Turn engine off when vehicle not moving
- Restart when the brake pedal is released



IDLE FREE SALT SPREADERS

- 90 unit pilot (22 complete)
- Keeps cab warm without engine idling
- Enables use of all existing lights and safety equipment
- No iced or fogged windows
- Saves fuel
- Comply with all City, municipal and state idling laws
- Reduce CO2 emissions for a cleaner environment
- CARB compliant



17,000 BTU coolant heater



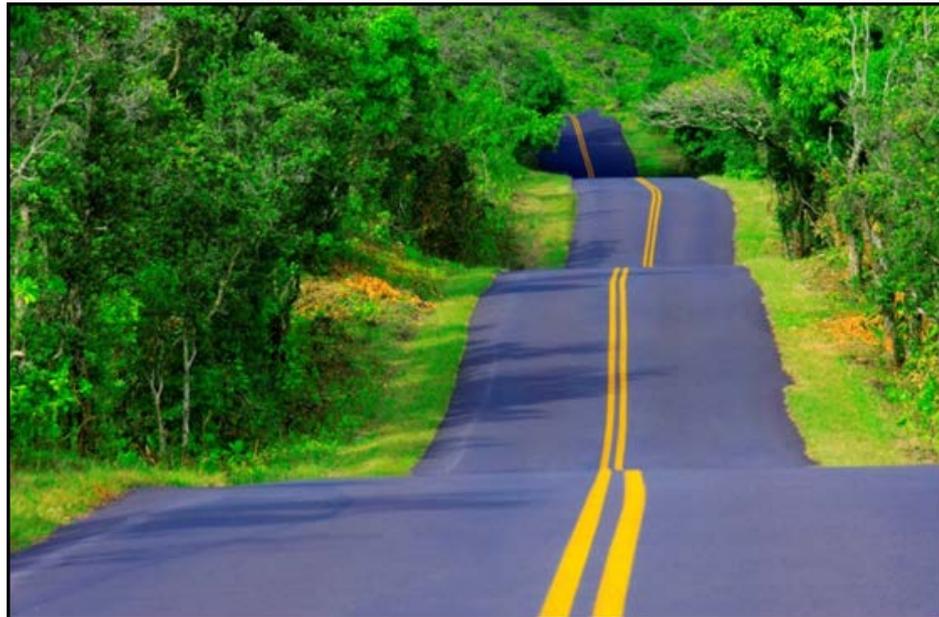
HD VEHICLE EMISSIONS TESTING FACILITY

- Single-axle chassis dynamometer
- 72" diameter rollers
- 100K lbs. Max GVW
- HC, CO, PM, NO_x, CO₂ & MPG
- Troubleshooting noise & vibration



ROAD TO SUSTAINABILITY

1. Research
2. Planning
3. Pilots
4. Training
5. Testing
6. Funding
7. Deployment



ACHIEVING 80 X 50 GOALS

1. Less idling
2. Alternative Fuels
3. Hybrid vehicles
4. Electric vehicles
5. Fleet right-sizing
6. Reduce travel miles



No Single Solution!

FLEET AWARDS AND RECOGNITIONS

- 2005 EPA: Region 2 Environmental Quality Award
- 2009 Fleet Owner Magazine: Vocational Fleet of the Year
- 2010 Motor Week Magazine: Clean Cities Success Stories
- 2010 Government Fleet Magazine: #16 Government Green Fleet
- 2012 100 Best Fleets
- 2013 U.S. EPA Northeast Diesel Collaborative: Breath Easy Leadership Award
- 2014 Green Fleet Magazine: Fleet Sustainability Award

THANK YOU

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