Hunts Point
GREEN FLEETS STUDY
Critical Data, Critical Time

Funded by: The New York Metropolitan Transportation Council 9/11 Memorial Academic Planning Awards

Administered by: NYC Department of Transportation

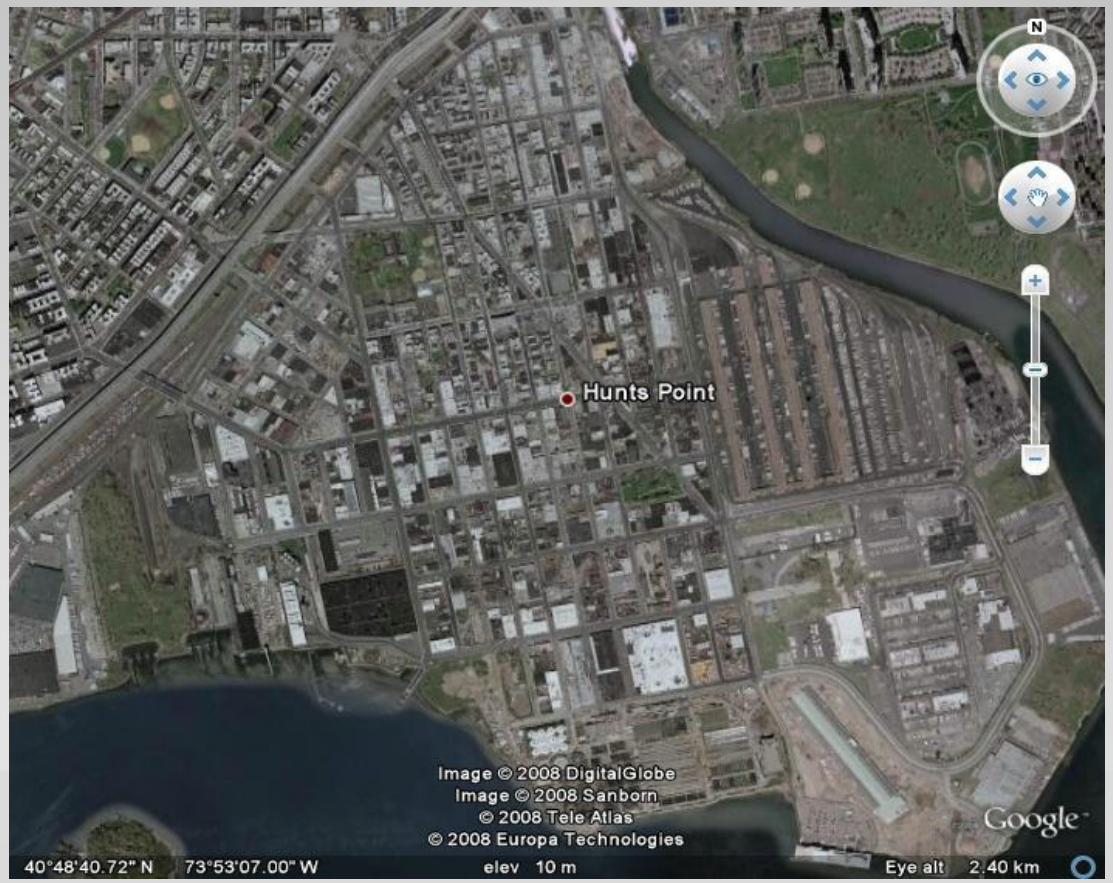
Project Manager: Hunts Point Economic Development Corp.

Project Consultant: Future Fuels Consulting

Study conducted in Hunts Point, Bronx NY, from 2008 to 2010

Background

- Hunts Point: Fresh Food for 20+ Million customers
- 250 food wholesalers, a total of 700 industrial businesses, 20,000 employees
- Not One Fleet but Many: competitive, decentralized management, sharing a common location/infrastructure
- HPEDC is a nonprofit corp. that has been administering the Hunts Point industrial park since 1988.



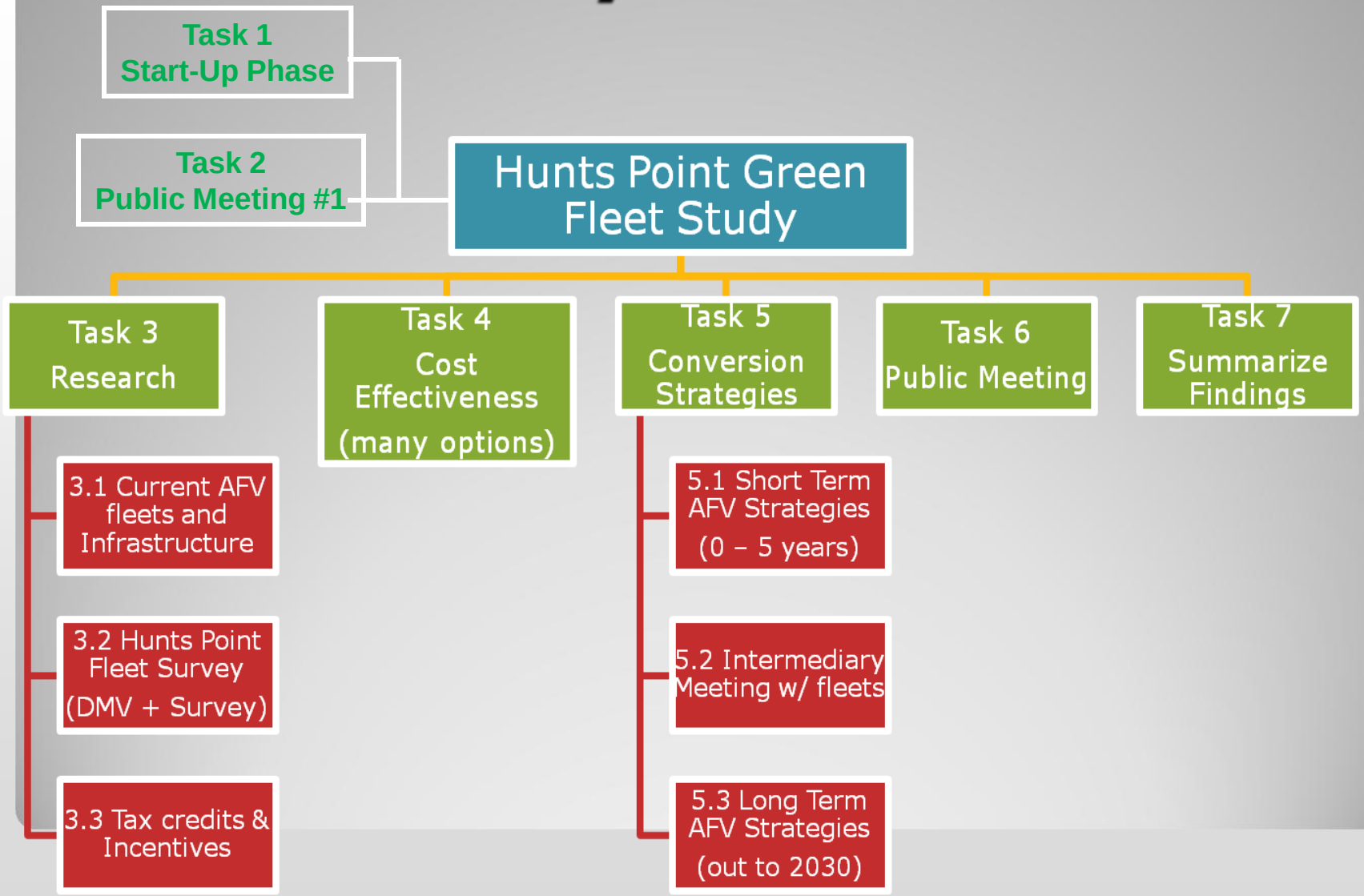
HPEDC = Hunts Point Economic Development Corporation

Green Fleet Study Goals

- Deliver a Short Range (2011 -15) and a Long Term (2016 – 2030) **plan** for HP Fleet Operations that will
  - Lower emissions
  - Lower GHG, lower petroleum use
  - Achieve PlaNYC 2030 target (-30% GHG)
- Offer actionable recommendations to transition Hunts Point fleets into cleaner, cost-effective truck technologies and fuels that will address two impacts:
  - GREEN: reduction of carbon fuels used => reduction in GHGs
  - CLEAN: reduction in emissions of air-polluting elements (EPA standards)

GHG = green house gases
EPA = U.S. Environmental Protection Agency

Study Process

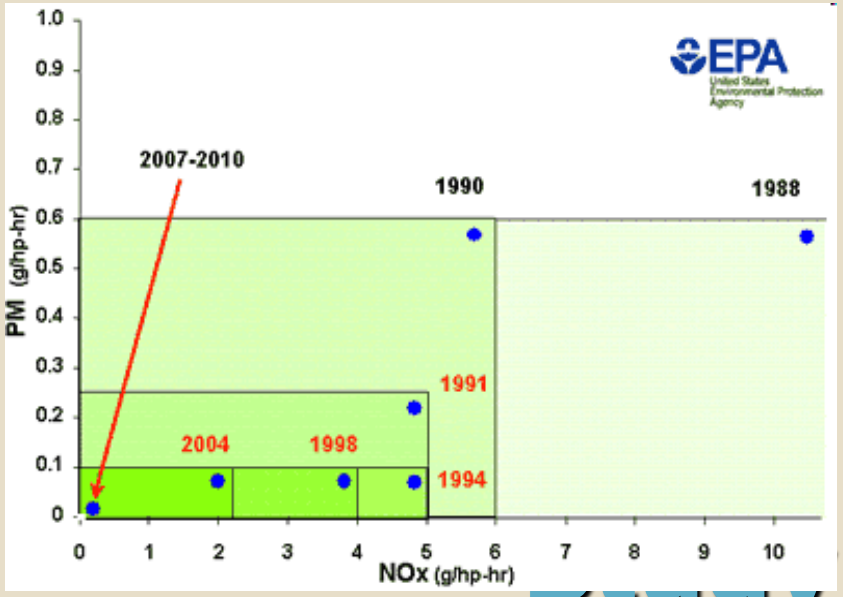


DMV = NYS Dept of Motor Vehicles
AFV = Alternative Fleet Vehicles

An Unprecedented Challenge? No

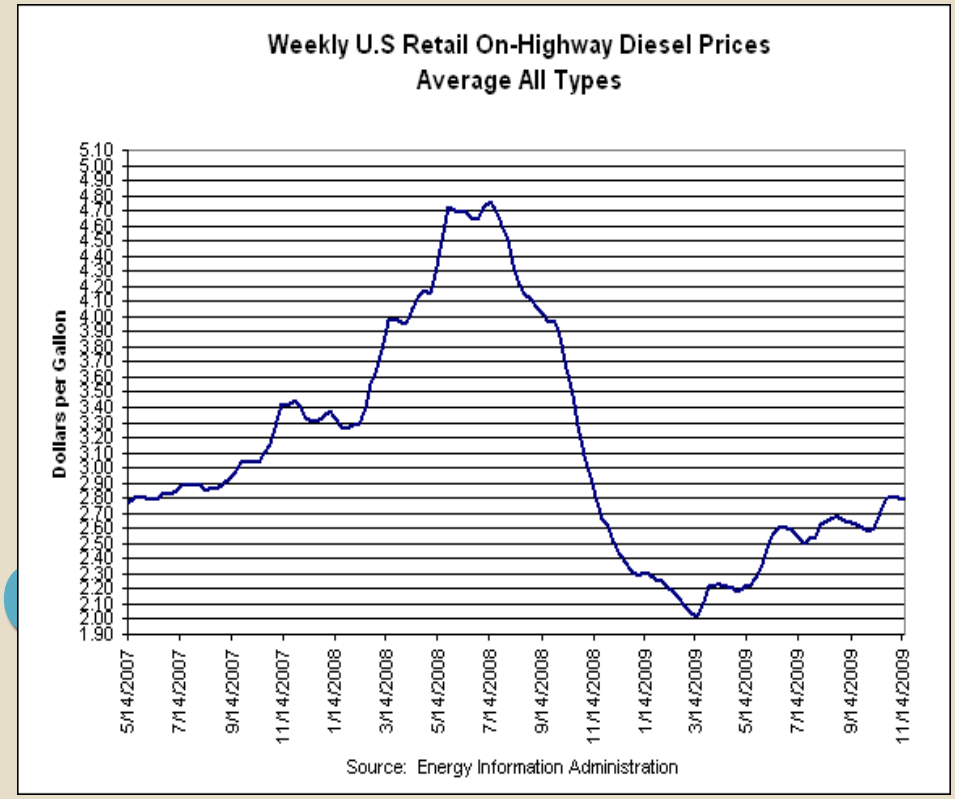
Context of Study

- Emissions
  - EPA -MY 2010 trucks already 97% lower
  - New vehicle alternates – HEV, PHEV, BEV
  - Biofuels, NG, Electricity



MY = model year
HEV = hybrid electric vehicle
PHEV = plug-in hybrid electric vehicle
NG = natural gas
BEV = battery electric vehicles

- Cost
  - $70 - 147 bbl petroleum
  - Fossil fuel >> GHG
  - Economic Security
  - Energy Security



Visualizing Petroleum w/ Totes (275 gal)

- 1 car/yr=3 totes 
- 1 truck/yr=12 > 
- 1 tote = 275 gals = ~1800 lbs of fuel
- 3 totes = 825 gals = ~5400 lbs of fuel
- 12 totes = 3300 gals = ~ 201,450 lbs of fuel

1 gal = ~ 6.5 lbs
1 gal diesel = 23 lbs CO2
1 gal gasoline = 20 lbs CO2

Study Methodology

INPUTS

- Fleet interviews
- DMV data
- Incentives Review
- Economic Factors
- Technology Review

GREEN FLEETS STUDY

OUTPUTS

- FINDINGS
- RECOMMENDATIONS

Hunts Point Green Fleets Study

FINDINGS

Major Findings (1)

- No current usage of On-Road alt fuels
  - Electric Fork Lifts, NEVs
- ~2000 trucks domiciled
- Est 6-8 million gallons/yr in Hunts Point
- Three types of fleets

Wholesale

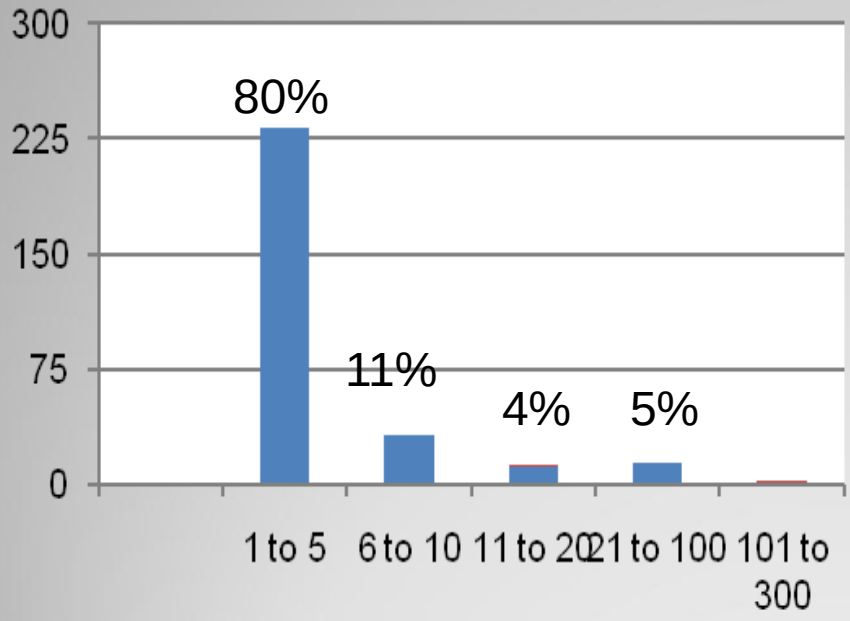
Passenger Transportation

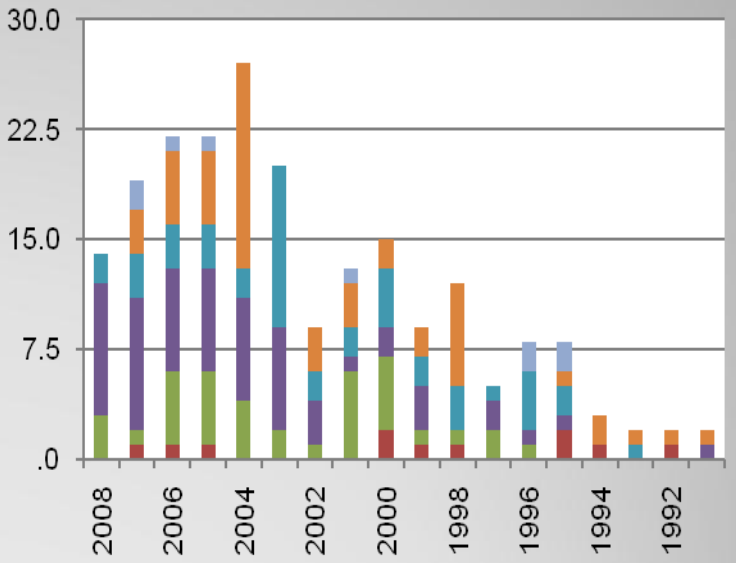
Vocational

NEV = neighborhood electric vehicles
Vocational Fleets = all trucks not belonging to Wholesale or Passenger Transportation categories. Including, but not limited to: tow trucks, construction trucks, service trucks, utility trucks.

Major Findings (2)

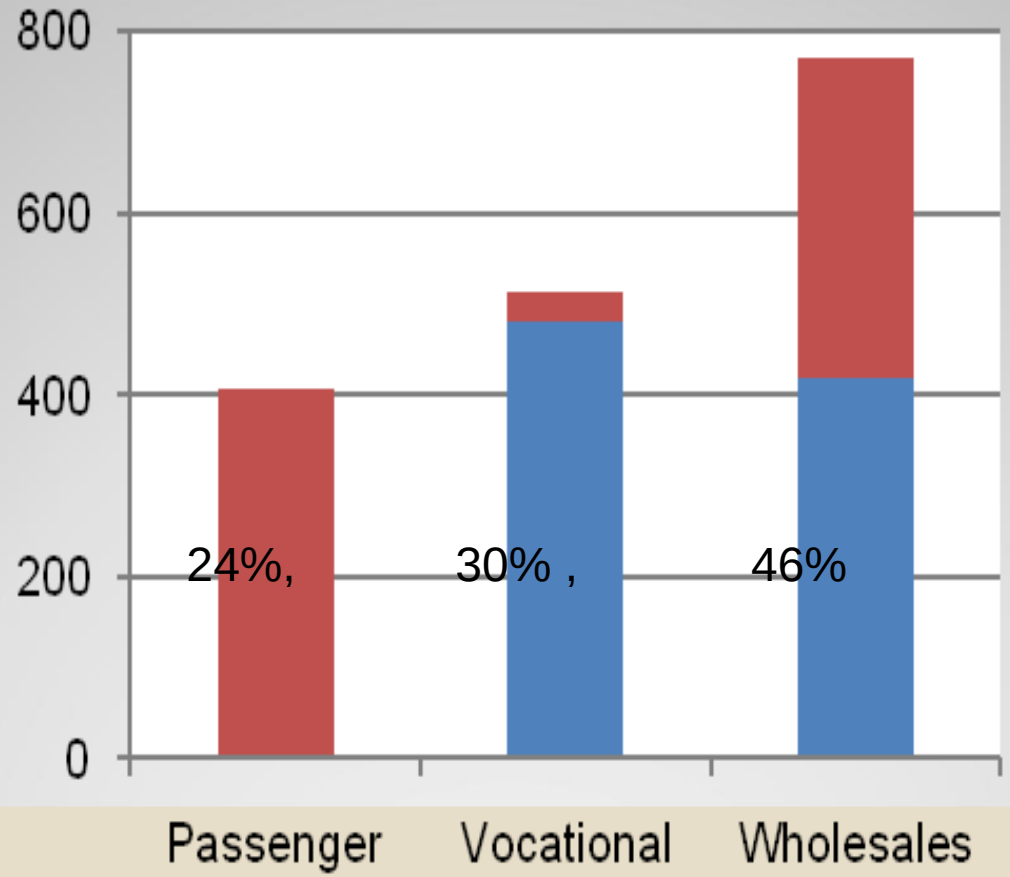
- Fleet Size
- Truck Age by Class





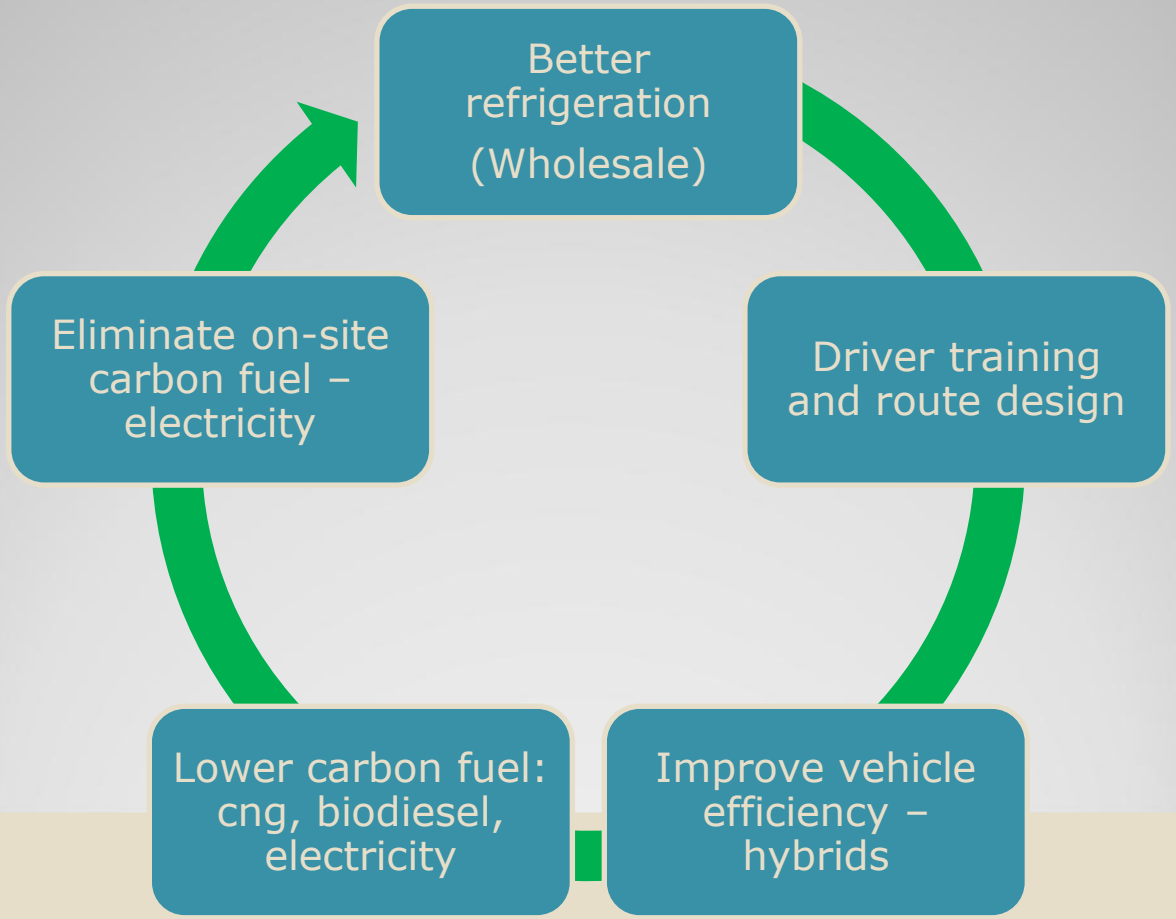
Major Findings (3)

- Fleet Type Distribution



How to "green" a Fleet

- Reduce Carbon Use



How to "green" a Fleet (cont'd)

- New vehicles – limited annual turnover (~5% a yr)
- Leased vehicles help turnover rate
- Legacy vehicles – retire the old, modify the recent via retrofits, repower.
- All diesel vehicles – Increase the renewable fuel content (biodiesel)
- Replace engines (~30% efficient) with electric motors (~90% efficient)
  - Lower Carbon NYC electricity

Incentives
2008 NYSERDA Awards

AWARDEE	TOTAL AMT $	OPERATOR	EQUIPMENT	FUEL	$ per TRUCK
PENSKE RENTAL	260000	CITY HARVEST	2 CL7 HEV W/ HEV REFRIG	PETRO/BIO	
			6 CL6 HEV W/ HEV REFRIG	PETRO/BIO	**$42,929 AVG**
FRITO-LAY	200000	FRITO-LAY	5 EVs Smiths	ELECTRICITY	**$40,059**
ANHEUSER-BUSCH	1160000	ABNY	22 RETROFIT CNG BEER TRUCKS	CNG	**$52,760**
FED-EX	1200000	FED-EX	50 HEV/E85	E-85	**$24,500**
BARTLETT DAIRY	1200000	BARTLETT	20 CNG TRUCKS + INFRA	CNG	**$60,000**
VERIZON	292000	VERIZON	10 CNG LIFT TRUCKS	CNG	**$29,280**
NEW DEAL LOGISTICS	303000	NEW DEAL	2 EVs + CHARGING STATION	ELECTRICITY	**N/A**
DERLE FARMS	1200000	DUKE	REFRIGERA-TED TRUCKS	CNG	**$60,000**

E-85 = ethanol fuel
CNG = compressed natural gas
BIO = bio-diesel

Other Findings

- Reduce truck idling where possible.
- INCENTIVE PROGRAMS Fed & NY.
- Two kinds of INCENTIVE PROGRAMS
  - As of Right – Tax rebates for ALL who qualify and submit
  - Competitive – A selection process. Not all receive the incentive.
- Hybrid drive vehicles – decrease fuel use and emissions no matter what fuel is used.
- EVs use much less energy/mile.
- Hunts Point can achieve the PlaNYC2030 goal of 30% reduction in Greenhouse Gases.

Findings - Observations

- Rigorous application processes – need for assistance
- Truck Refrigeration incentives missing
- Imported OEMs lagging US brands for HEV, fuels
- Challenge for small fleets to apply
- 90% of HP fleets have less than 5 trucks.
- Majority of trucks are leased (73%)

Cost Effectiveness – Fuel Price Sensitivity

No	fleet	Class	Refr	gals/month	Annual	Cost @ $3/gal	Cost @ $5/gal
1	Wholesale	3	Y	300	3600	$ 10,800.00	$ 18,000.00
2	Wholesale	5	Y	225	2700	$ 8,100.00	$ 13,500.00
3	Wholesale	7	Y	475	5700	$ 17,100.00	$ 28,500.00
4	Transport	3	N	150	1800	$ 5,400.00	$ 9,000.00
5	Transport	6	N	350	4200	$ 12,600.00	$ 21,000.00
6	Vocational	6	N	325	3900	$ 11,700.00	$ 19,500.00
7	Vocational	7	N	325	3900	$ 11,700.00	$ 19,500.00
8	Vocational	8	N	730	8760	$ 26,280.00	$ 43,800.00
			Sum	2880			
			Avg	360	4320	$ 12,960.00	$ 21,600.00

Fuel Cost Comparison

FUEL/TECHNOLOGY	ULSD USED - gallons	OTHER DGE USED	INFRA - STRUCTURE	% ALT FUEL	$/DGE est	Total Fuel Cost est	inc/decr
ULSD/CONVENTIONAL	3,000	0	BASE CASE	0	$ 3.00	$ 9,000	$ -
B5/CONV.	2,850	150	0	5	$ 3.00	$ 9,000	$ -
B20/CONV.	2,400	600	0	20	$ 3.10	$ 9,060	$ 60
CNG	0	3,300	CNG STATION	100	$ 2.00	$ 6,600	$ (2,400)
HEV	2,000	0	0	33	self-gen	$ 6,000	$ (3,000)
PHEV	1,000	1,000	ELEC CABLE	67	$ 1.00	$ 4,000	$ (5,000)
EV- hydro/solar/wind	0	2,000	ELEC CABLE	100	$ 1.00	$ 2,000	$ (7,000)
EV- NY mix	0	2,000	ELEC CABLE	100	$ 1.00	$ 2,000	$ (7,000)

ULSD = ultra low sulfur diesel
B5 = bio-diesel 5% ; B20 = bio-diesel 20%
DGE = diesel gallon equivalent

Incentives – The Big "IF"

	Incremental Cost before incentives	fed tax rebates & creds	Fed Grants	NYSERDA grants EST	BEST CASE Incremental Cost after incentives	Incr/Decr% GHG Tailpipe	Potential Vehicles Involved
ULSD/CONVENTIONAL	$ -	$ -	$ -	$ -		0%	All Diesel
B5/CONV.	$ -	$ -	$ -	$ -		-5%	All Diesel
B20/CONV.	$ -	$ -	$ -	$ -		-20%	All Diesel
CNG	$ 60,000	$32,000 max (may double)	50% up to $200k	75%	$ 3,500	-22%	~60/yr
HEV	$ 60,000	$30K max	50% up to $200k	75%	$ 3,750	-33%	~60/yr
PHEV	$ 100,000	up to $30K + $10k	50% up to $200k	75%	$ 7,500	-67%	~60/yr
EV-hydro/solar/wind	$ 100,000	$30K max	50% up to $500k	75%	$ 7,500	-100%	~60/yr
EV- NY mix	$ 100,000	$30K max	50% up to $500k	75%	$ 7,500	- 60%	~60/yr
		QAFMV	ARRA				

ROI / Break Even Analysis

- Decision factors for fleet managers:
  - Total Fuel Cost (market) @ 3,000 gals/year
  - Incremental cost (OEM)
  - Incentive level (gov't)

Tech nology	Fuel $ Saving	Best Case Incremental Cost $ after incentives	Break-even	Worst Case Incremental Cost $ after incentives	Break-even
CNG	(2,400)	3,500	1.5 yr	14,000	5.8 yrs
HEV	(3,000)	3,750	1.25	15,000	4
PHEV	(5,000)	7,500	1.5	30,000	4
EV- hydro/solar /wind	(7,000)	7,500	1.1	35,000	4.6
				* No NYS $	

ROI = return on investment.
OEM = origin equipment manufacturer

RECOMMENDATIONS

GFS Main Recommendations

		when
1	Organize a Hunts Point Green Fleet Council	Now
2	Provide fleet-wide driver training to save fuel	Now
3	Use B5 fuel now, eventually increasing to B20	Now
4	Consider the wide range of new vehicle types optimized for each fleet type.	2011 - 2015
5	Purchase alternative fuel/ adv. technology vehicles using INCENTIVES	2011 - 2015
6	Provide incentives for truck refrigeration. Increased truck fuel efficiency can be achieved by upgrading truck refrigeration technology.	Now
7	Publicize the progress that Hunts Point makes to encourage other fleets to adopt similar policies	Now

Other GFS Recommendations

		when
8	After treatment retrofit of diesel trucks 5+ years old	Short term
9	Combine bio diesel with hybrid drive and alternative engines (electric, CNG) for maximal GHG/emissions impact.	Short term
10	Repower trucks (CNG, hybrid electric assist) with sufficient remaining operating lives.	Short term
11	Equip new vehicles with hybrid or electric drive to reduce energy used.	Short term
12	Assist Hunts Point fleets in applying for government incentives. 80% of fleets are very small (<5 trucks) and don't have administrative capacity to complete complex application forms.	Short term
13	Assist incentive granting agencies in designing incentive programs.	Short term
14	Coordinate maintenance training incentive programs	Short term

Other GFS Recommendations

		when
15	Track and disseminate the technical reliability and financial ROI of alternative technology vehicles.	Short/medium term
16	Centralize – under the responsibility of one government agency - and constantly update a portal of information on all available incentives, with cost-effectiveness calculators.	Short/medium term

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