METROPOLITAN RECYCLING

CNG (Compressed Natural Gas) Presentation

Prepared for

NYC Commercial Refuse – Clean Truck Workshop

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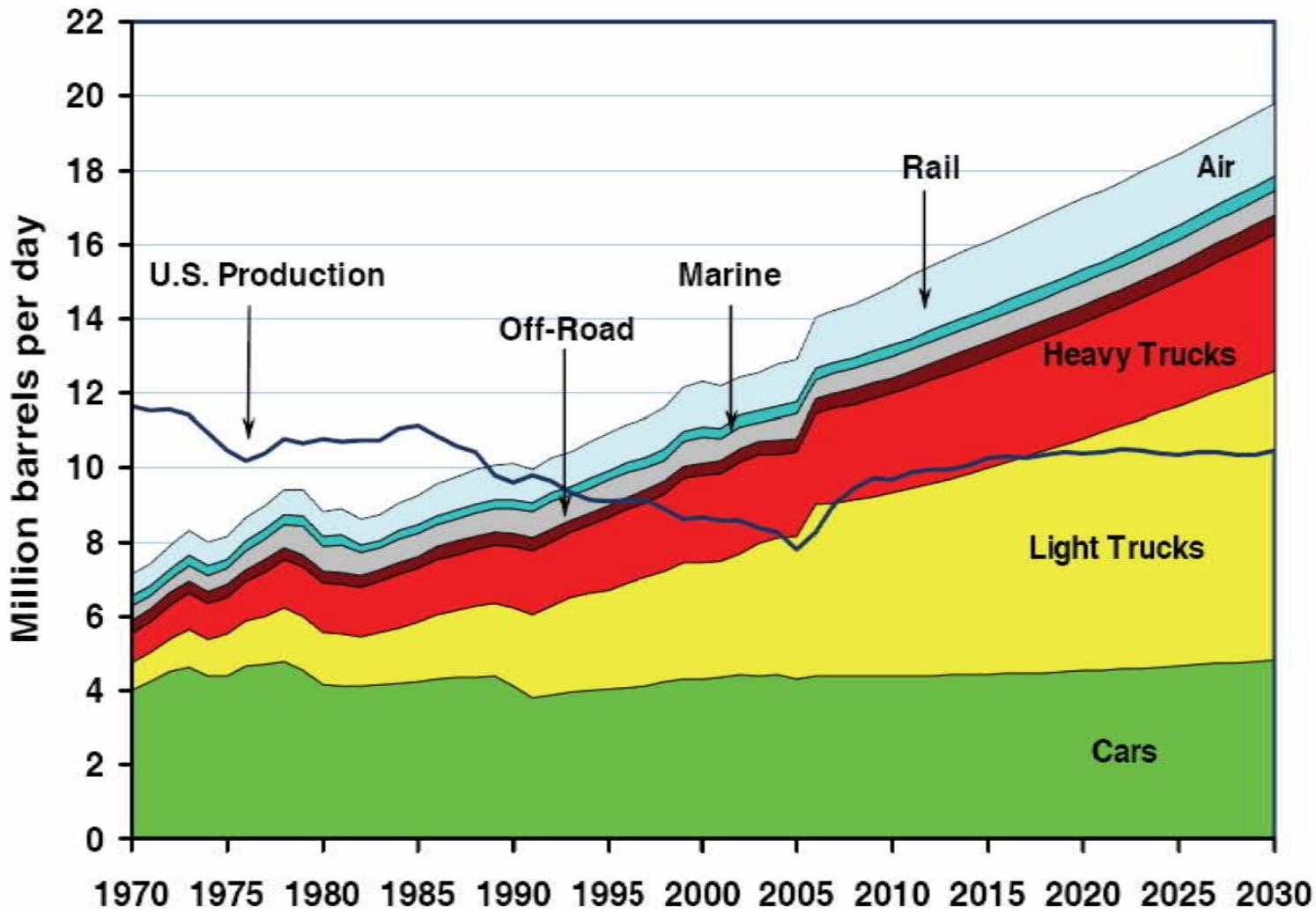
Forces of Change

- New generation of energy and appealing warranti incentives
- Customer demand for cleaner trucks
- EPA improving efficiency
- Customer appeal
- Lower fuel costs
- Domestic fuel sources
- Maintenance savings
- Quieter
- Lower emissions

“Turtle" in NYC

US Petroleum Production and Transportation Consumption



Benefits of Alternative Fuels

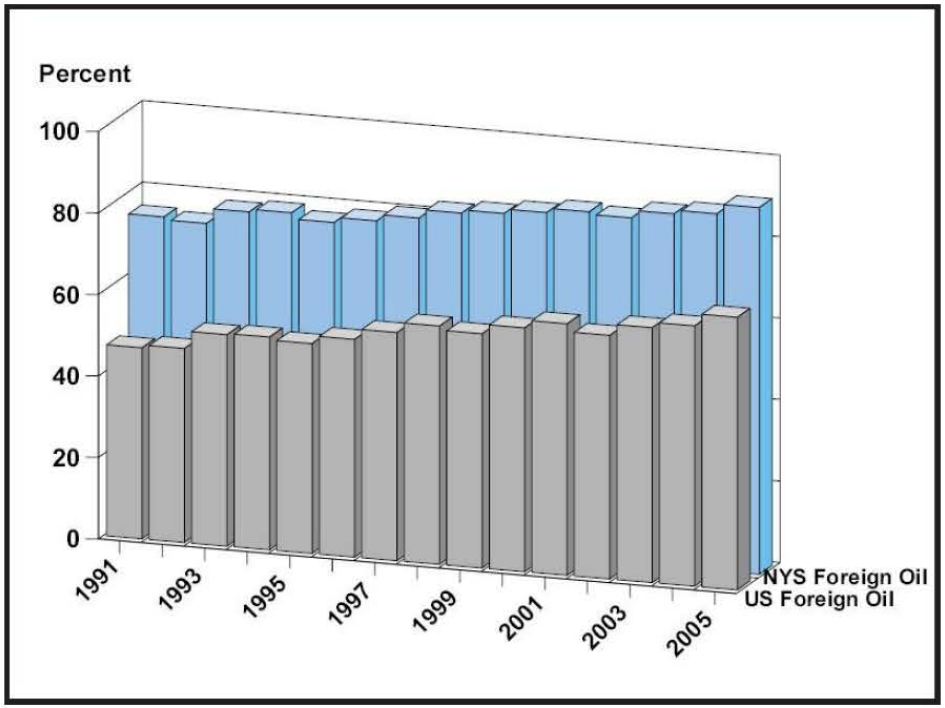
•A typical hauling truck travelling an average of 85 miles per day, will reduce greenhouse-gas emissions by 25% .

•On average, one truck fueled by natural gas can reduce in excess of *5 tons* of NOx and Particulate Matter (PM) per year, compared to a diesel-fueled truck.

•The company has displaced use of more than 420,00 equivalent gallons of diesel fuel over the first 6 years of operation and by replacing such old trucks, will cut PM and NOx by over 1.8 tons, 137 tons respectively.

NY State and Petroleum Product Charts

New York State vs.
US % of Imported Petroleum Products,
1991-2005



New York State % of Imported vs.
Domestic Petroleum Products,
1991-2005

Year	Total Domestic[1] %	Total Foreign %	OPEC[2] %	Non-OPEC[3] %
1991	24.8	75.2	47.0	28.2
1992	25.5	74.5	45.3	29.2
1993	21.8	78.2	46.4	31.8
1994	21.1	78.9	45.0	33.9
1995	22.6	77.4	43.9	33.5
1996	21.3	78.7	40.9	37.8
1997	19.7	80.3	41.7	38.6
1998	17.6	82.4	43.4	39.0
1999	16.8	83.2	42.5	40.7
2000	15.7	84.3	43.4	40.9
2001	14.6	85.4	44.0	41.4
2002	15.2	84.8	37.9	46.9
2003	13.3	86.7	39.9	46.8
2004	12.4	87.6	42.8	44.8
2005	10.0	90.0	44.9	45.1

Reducing Reliance on Diesel Fuel

Greenhouse Gases Reduction (CO_2, NH_4)[28]	Particulate (Soot) Reduction (tons/ fleet)[29]		Nitrogen Oxides Reduction (tons/fleet)[30]		Total Fuel Use (gallons/fleet)[31]	
	1-year	7-year	1-year	7-year	1-year	7-year
The most recent estimates of greenhouse gas reductions when replacing diesel trucks with new natural gas trucks is 11 to 23% according to a study conducted for the California Energy Commission.	0.52	3.65	20.83	145.83	62,300	436,100
	0.15	1.04	5.95	41.66	17,800	124,000
	0.52	3.65	20.83	145.83	62,300	436,100
	0.45	3.12	17.86	124.99	53,400	373,800
	0.60	4.17	25.13	175.92	60,000	420,000
	0.00	0.00	11.61	81.25	60,000	420,000
	0.27	1.87	19.64	137.49	60,000	420,000
	2.50	**17.50**	**121.85**	**852.96**	**335,800**	**2,350,600**

The Benefits:

- Smog-producing NOx emissions are reduced up to 50% compared to 2010 diesel engines and even more compared to the older diesel engines replaced.
- Greenhouse gas emissions (GHG) are reduced up to 25% over standard diesel engines.
- Once fleets are equipped to use a gas, rather than a liquid, fuel, they are poised to move to even cleaner and renewable fuels going forward: biomethane, a clean renewable fuel made using the gases from landfill and other organic wastes, hythane, a blend of natural gas and hydrogen, and ultimately hydrogen.

Geraldine- For the Cure in NYC

Cost Savings

- In early 2008 MPR was one of the first private carters in NYC to convert 30% of our 40 truck fleet from diesel powered to CNG powered vehicles.
- We received government support to cover incremental costs of the trucks and new fueling stations.
- Federal tax incentives have helped reduce the incremental costs of using natural gas and other alternative fuel vehicles.
- With diesel fuel prices soaring, we see an average of $78,000 in annual fuel savings.
- State-of-the-art regulating CNG fuel system pressure, filtration and engine design not only ensure proper operation but reduce maintenance costs as well.

METROPOLITAN RECYCLING

Geraldine- For the Cure in NYC

What We Learned

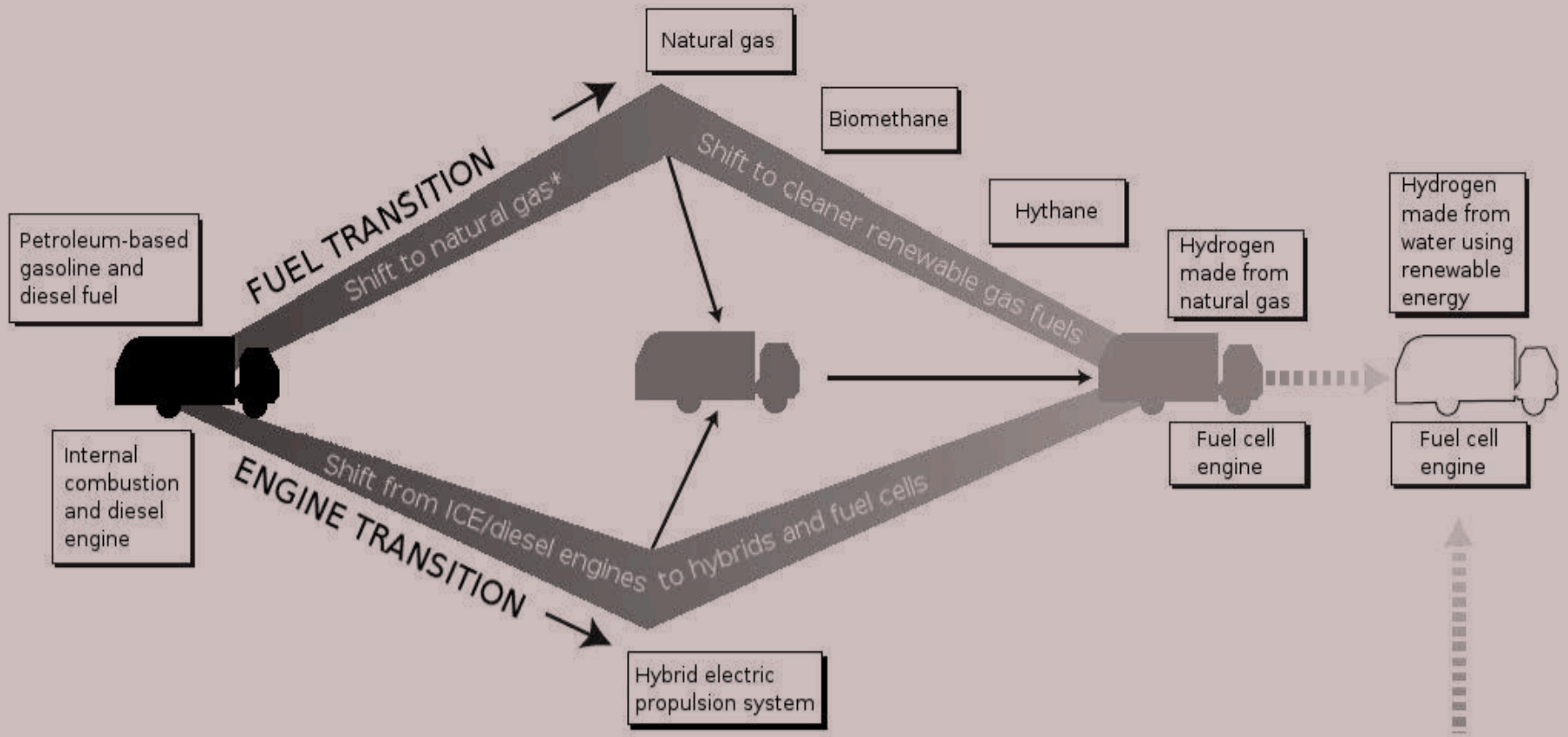
•Looking at air quality in 545 counties in the U.S. between 2000 and 2007, researchers found that people had approximately four months added to their life expectancy on average due to cleaner air. Women and people who lived in urban and densely populated counties benefited the most.

•If half of the 6,000 diesel refuse and recycling trucks operating in New York City were traded in for natural gas models, more than 16,600 tons of pollutants would be eliminated a year.

•If half of the refuse and recycling trucks in NYC shifted to natural gas, the annual fuel savings would be $30 million or more and eliminate the need for 23 gallons of expensive petroleum-based diesel fuel, most of it made from imported oil.

•Just by taking one diesel truck off the road, it is comparable to removing 325 cars.

Path to Pollution-Free Hydrogen Powered Vehicles



Taking this final step will require accellerated research and demonstration of distributed solar and other renewable energy sources so that, in one to two decades, renewable energy will be available as the power source to generate hydrogen.

The Bottom Line

Natural Gas
Powered Vehicles

•Good for the bottom line

Up to $1.50 or more less per gallon than diesel

•Good for the environment

23% less greenhouse gas emissions than diesel

•Good for truck drivers

No unhealthy diesel fumes to breathe, quiet running

•Good for community health

Significantly less asthma and cancer-causing emissions

•Good for Americas

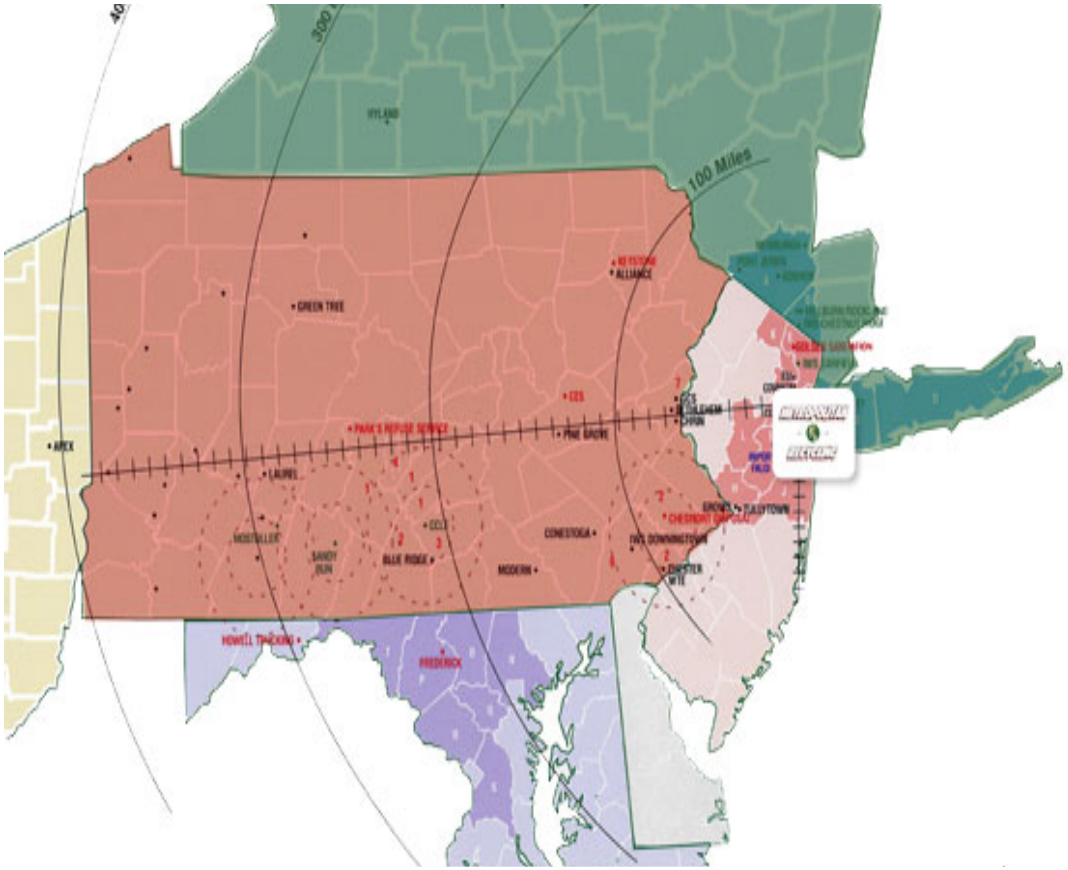
Support energy independence

The greatest physical example of Metropolitan's commitment to environmental responsibility remains our conversion to natural gas powered vehicles.

Other Green Practices

Landfill Diversion

- Through our daily recycling and material-recovery efforts, Metropolitan actively diverts recyclable material from landfills.
- In 2012 more than 160,000 tons of material were diverted from landfills and were recycled into new products made with post-consumer waste.
- By re-using materials and recycling materials, such practices remain the most sensible diversion methods known today.



Other Green Practices

Solar Energy Systems
at Metropolitan

- In 2010 we completed the installation of photovoltaic solar panels on the rooftop of our corporate headquarters in Brooklyn.
- At a cost of $1.5 million, this state-of-the-art system provides 1/3 of Metropolitan's annual demand for electricity, reducing our dependence on public utilities.
- The installation of multiple large scale solar panel systems on all of the Metropolitan buildings was the first largest system of its kind in NYC.
- To demonstrate our commitment and to invite public awareness of the installation, we have hosted meetings at our corporate office with Con Edison and with the New York State Public Services Commission.

Future Plans

•Metropolitan currently operates with a 40 truck fleet, 30% of our fleet has been converted from diesel powered vehicles to compressed natural gas powered vehicles back in early 2008.

•With ongoing fueling of our trucks with natural gas, we are committed to reducing as many airborne pollutants as possible.

•Our goal is to have 100% of Metropolitans fleet powered by natural gas.

•By using the cleanest of all fossil fuels, Metropolitan will continue on our path to cleaner air, reducing greenhouse gas emission and energy independence, leading by example.

•Continuing to demonstrate and educate private hauling companies on becoming environmentally sensitive and economically responsible.

•Metropolitan will continue our on going commitment to sustaining the Earths environment and help pave the way to a truly sustainable transportation future .