

NYC Fleet

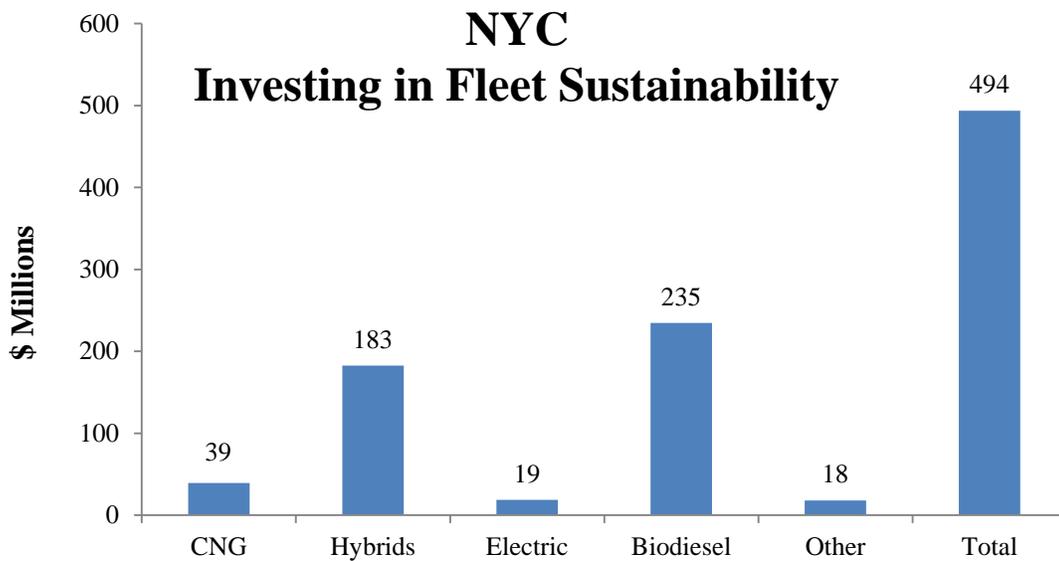
Benefits of hybrid gas-electric cars

June 2014

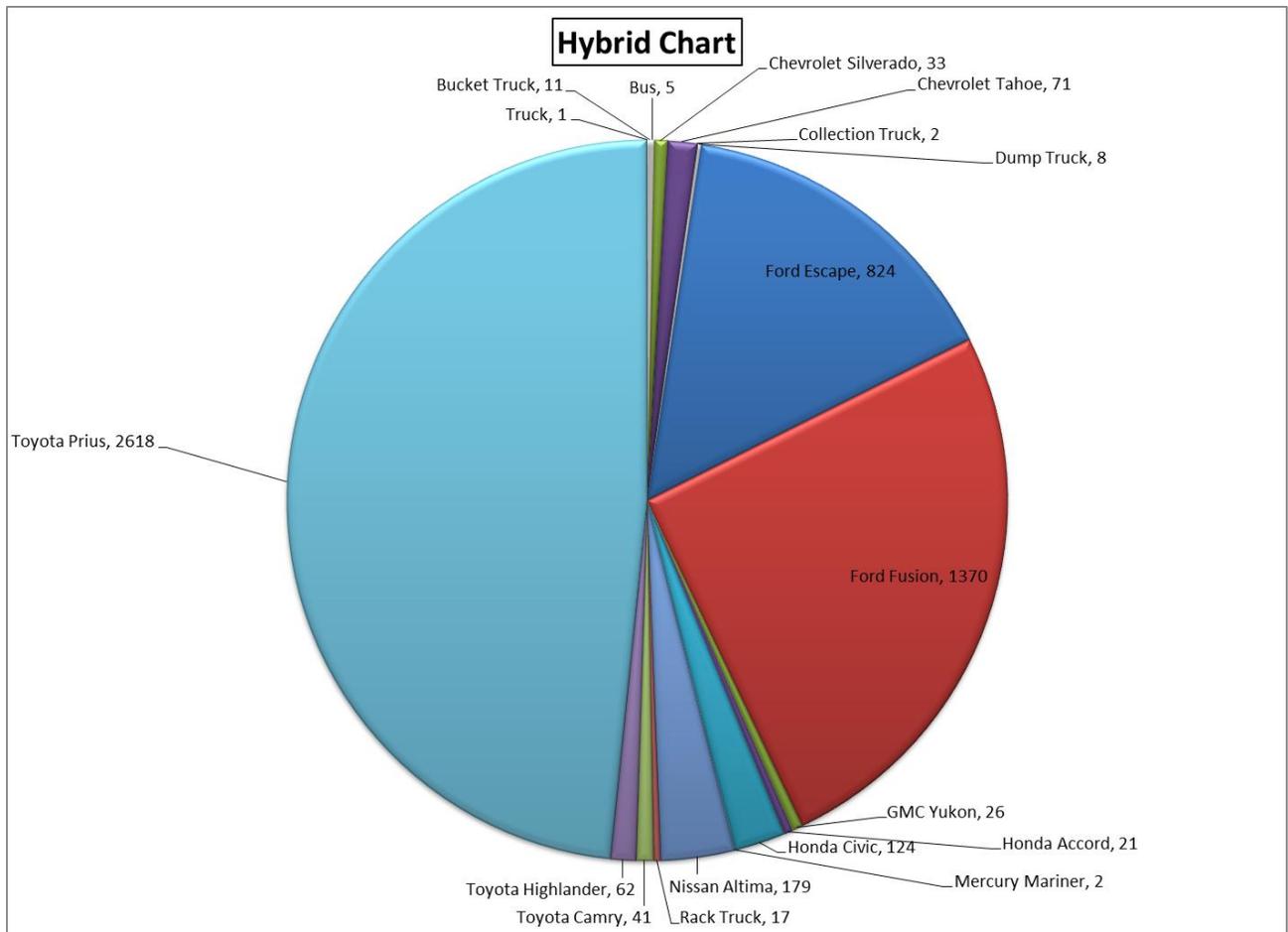
Introduction

In the last 13 years, NYC has made a major investment in hybrid gas electric vehicles for its municipal fleet, the largest in the United States with nearly 27,000 vehicles. The City’s fleet sustainability program has worked within the framework of a series of Local Laws passed in partnership with the City Council in the years 2003, 2005 and 2013. DCAS also coordinates its fleet sustainable policies with the Office of Long Term Planning and Sustainability in the Mayor’s Office and through a Clean Fleet Transition Plan (CFTP) which was codified in the City’s Fleet Management Manual.

During this period, NYC has purchased 6,880 hybrid gas-electric vehicles at a cost of \$183 million. The majority of these vehicles have been hybrid gas-electric sedans such as the Toyota Prius or the Ford Fusion Hybrid. Hybrid gas-electric vehicles are one part of a multi-faceted fleet sustainability investment that also includes biodiesel, compressed natural gas, diesel-electric hybrids, diesel particulate filters, and other approaches. In total, the City has spent nearly half a billion dollars on fleet sustainability.



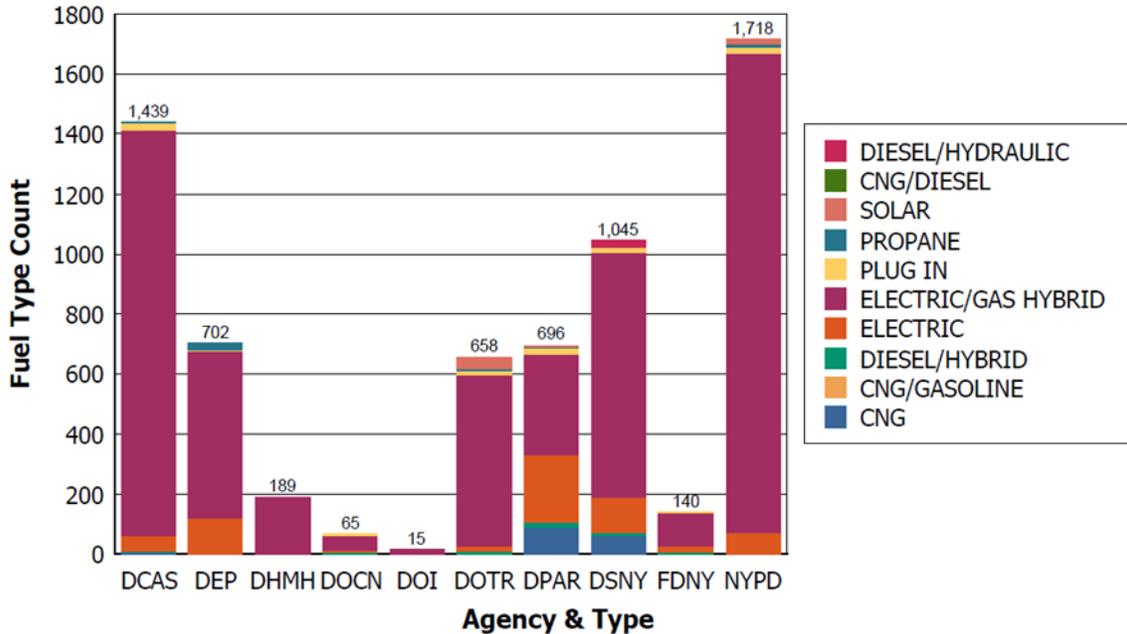
In this report, NYC Fleet examines the return on investment and cost effectiveness of hybrid gas-electric sedans as compared to their gas counterparts. A chart of the City’s current active hybrid gas-electric fleet by model is below. This report also includes data regarding our smaller hybrid SUV fleet where that information is available.



NYC's Fleet program consists of 8 major fleet agencies that operate 90% of the City fleet. This group is coined the Fleet Federation. Nearly 50 agencies operate the rest of the fleet. These fleets are coordinated through NYC Fleet at the Department of Citywide Administrative Services (DCAS) which has charter responsibility for the City's fleet, garages, fueling, and fleet procurement citywide.

All fleet agencies operate hybrid and alternative fuel vehicles including the New York City Police Department (NYPD) and Fire Department (FDNY) even though the fleets in these agencies are exempt from the local laws. In fact, the largest alternative fuel fleet is at NYPD, which has the City's largest fleet in total with over 8,400 units.

Fleet by Alternative Fuel Types



Summary

The City spends more for the initial purchase of hybrid vehicles. While there is a great deal of variation on City bids across years and makes, hybrid replacement sedans in the analysis below were on average \$3,373 more expensive to procure originally than their gas counterparts or predecessors. In at least one case, the Ford Fusion, the hybrid version of the sedan is \$11 thousand more expensive than the gas sedan on City contract.

The increase in initial investment, however, is more than offset by a series of other factors. These include:

- Down-sizing: The City has combined hybrid investment with also right and down-sizing many sedans, for example from full size to mid-size or compact sedans. The City’s largest investment in hybrids has been with the Toyota Prius which was equal to or more compact than the sedans it has replaced.
- Fuel economy: Hybrid sedans are achieving 65% to 130% improved fuel economy as compared to gas sedans in actual use in NYC fleet operations.
- Reduced maintenance costs.
- Improved vehicle service rates and improved resiliency, especially during hot weather.
- Improved resale auction value through public online auction.

When all factors are considered, hybrid gas-electric sedans are saving money for NYC as well as reducing total fuel use. They also are proving to be more reliable and resilient vehicles. The City is spending less on fuel and maintenance while reclaiming more on resale.

There are many variations in specific vehicle costs, usages, maintenance histories, and auction sales achievements. The return on investment for each specific unit is distinct. However, the averages presented below in this report are as follows:

- Hybrid incremental purchase costs: \$3,373
- Lifetime (8 year) savings on fuel: (\$7,027)
- Lifetime (8 year) cost of maintenance: (\$5,032)
- Improved auction value: (\$2,126)
- *Average lifetime reduction in cost per hybrid (\$10,812)*

Purchase costs

Hybrid vehicles are more expensive to procure than their non-hybrid counterparts. The City procures through long term requirements fleet contracts bid by DCAS Procurement. There is a great deal of variation in purchase prices across models and years and actual costs depend on City outfitting of vehicles. Through the CFTP, the City has also looked to down-size vehicles as well as move to hybrids, so there are many cases where we transition to smaller and hybrid units. For example, the City has made switches from Chevy Impalas to Toyota Priuses.

In the chart below, we looked at 253 hybrid sedan purchases and compared the purchase price to comparable gas units, including down-size examples. In total, on average the City spent \$3,373 more per vehicle on sedan purchase. The biggest increase in costs is between hybrid and non-hybrid Ford Fusions. When we down-size as well as invest in hybrids, we actually spend less up front. We have also provided cost data for the Ford Escape hybrid SUV. It should be noted that the Ford Escape SUV is no longer offered as a hybrid.

Type	Model	Hybrid Price	# of Units	Hybrid Year	Gas Price	# of Units	Gas Year	Difference
SUV	Escape	29,683	97	2012	22,812	63	2013	6,871
Sedan	Fusion	29,828	125	2010	18,600	48	2010	11,228
Sedan	Prius vs Impala	24,060	128	2013	28,356	89	2013	-4,296

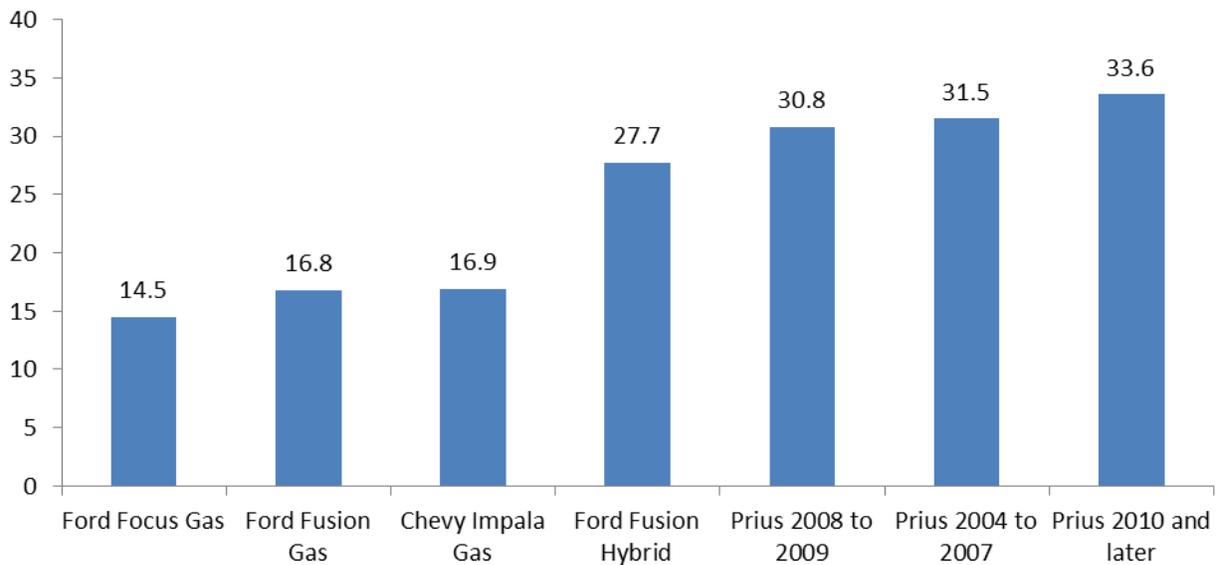
Fuel economy

Fuel economy and sustainability is the driving reason the City has invested in hybrid gas-electric sedans and vehicles. In addition to the hybrid investments, the City is investing in new fuel management systems for its in-house and private fuel sites. These systems are improving our ability to track actual fuel economy for City vehicles based on real use including impacts for air conditioning (A/C), heaters, and idling within the City traffic environment.

In every case, hybrid sedans are achieving or exceeding expected fuel efficiency in actual City operations. For example, the Ford Fusion hybrid is achieving 65% improvement in fuel economy in actual use from the non-hybrid Ford Fusion. Toyota Prius units achieve close to double the fuel economy of Ford Focus or Chevy Impala non-hybrids.

Based on the data below, a Ford Fusion hybrid is achieving 27.7 MPG as compared to our gas Fusions at 16.8. The City's general guideline for keeping a light duty unit is 8 years and 80,000 miles based on our published Fleet Management Manual. Of course, the City keeps many vehicles well longer than that. Based on the guideline, a Fusion hybrid would burn 1,874 fewer gallons over the 8 years and 80,000 miles than the gas Fusion. Assuming \$3.75 per gallon for gas, the lifetime savings is \$7,027. In fact, the savings are likely to be greater. The hybrid investment is a one shot up front investment. Fuel costs are likely to continually increase over the 8 years.

NYC Fleet, Actual MPG, FY14



Cost of maintenance

The City installed a new fleet management system, NYC Fleet Focus, which went into full operation in November 2013. This new system also includes data from our previous system called MCMS. We looked at the comparative costs to maintain hybrid versus non-hybrid vehicles as reported through the

fleet management system. On average, hybrid sedans were \$629 per year less expensive to maintain than non-hybrid sedans. Over the standard 8 year life, the savings would be \$5,032. The savings were especially prominent in the non-NYPD fleet.

For SUVs, for which we have no current hybrid contract option, hybrids were only slightly less expensive. In this case, NYPD units were less expensive to maintain and non-NYPD units slightly more expensive. This likely reflects the extensive off-road use of SUVs for DOT, Parks, DEP and DSNY.

	NYPD	Others	City
Hybrid Sedan	\$1,498.06	\$1,018.38	\$1,079.59
Gas Sedan	\$1,682.71	\$1,782.84	\$1,708.39
Sedan	\$1,653.23	\$1,178.82	\$1,378.06
Hybrid SUV	\$1,466.94	\$2,000.44	\$1,924.41
Gas SUV	\$2,020.66	\$1,950.82	\$1,983.45
SUV	\$1,872.23	\$1,983.52	\$1,951.24
All Hybrids	\$1,491.22	\$1,213.35	\$1,249.64
All Gas	\$1,725.75	\$1,837.53	\$1,760.24
Total	\$1,684.67	\$1,363.10	\$1,489.99

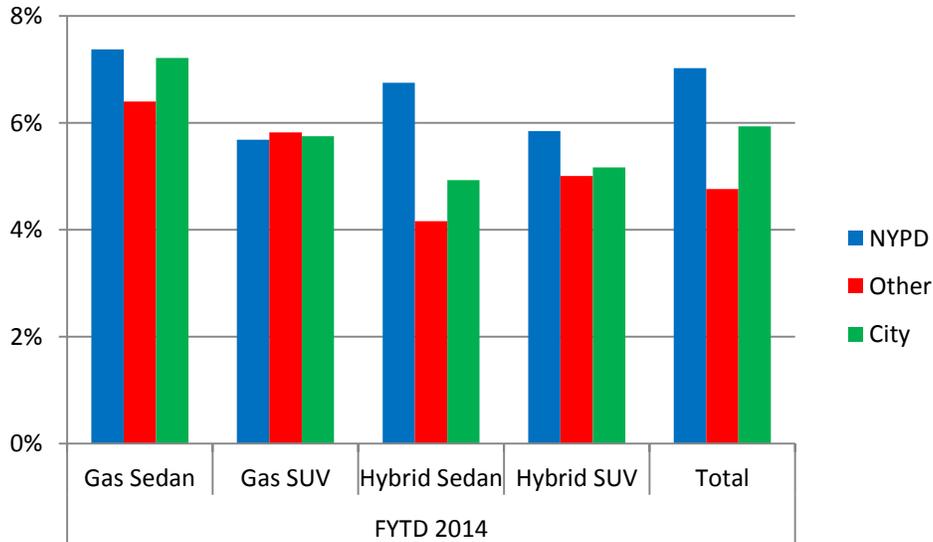
Vehicle out of service rates and resiliency

The City operates 10,525 sedans and SUVs, with 51% being hybrid units and 49% non-hybrid. Excluding enforcement NYPD units, 77% of the fleet is hybrid. The City reports the daily in and out of service rates each day internally and publicly on the internet. The report includes rates by agency and key vehicle types.

We compared out of service rates in FY14TD (through May) for gas sedans and SUVs to hybrid units. In every case, we have lower out of service and better performance for the hybrid units than the gas units. For example, gas sedans citywide were out of service 7.2% of the time as compared to 4.9% for hybrids. This has been especially true during the hot summer months where hybrids are less prone to overheating. In July 2013, the City experienced an extended heat wave. Hybrid vehicle out of service for non-Police sedans was 4% as compared to 7.5% for gas units.

Greater reliability and reduced servicing not only reduces direct repair costs but reduces costs for operators due to disruption in core work activities and in time spent transporting vehicles for repair. As the number of heat alert days continues to grow, hybrids will prove more resilient units thanks to the electric battery assuming vehicle operations during idling.

FY14TD	Out of service days			Fleet Count		
	NYPD	Other	City	NYPD	Other	City
Gas Sedan	7.37%	6.40%	7.21%	3,494	693	4,187
Gas SUV	5.69%	5.82%	5.75%	477	471	948
Hybrid Sedan	6.75%	4.16%	4.93%	1,289	3,091	4,380
Hybrid SUV	5.84%	5.01%	5.16%	191	819	1,010
Total	7.02%	4.76%	5.93%	5,451	5,074	10,525



		Out of Service Rates		
		NYPD	Other	City
Summer 2013	Type			
June 2013	Gas Sedan	7.0%	5.5%	6.7%
	Gas SUV	5.8%	6.6%	6.2%
	Hybrid Sedan	8.0%	4.0%	4.9%
	Hybrid SUV	3.8%	4.0%	4.0%
	All Sedans and SUVs	7.0%	4.5%	5.8%
July 2013	Gas Sedan	6.9%	7.5%	7.0%
	Gas SUV	5.5%	6.4%	5.9%
	Hybrid Sedan	6.1%	4.0%	4.7%
	Hybrid SUV	5.0%	4.3%	4.4%
	All Sedans and SUVs	6.5%	4.8%	5.7%
August 2013	Gas Sedan	6.5%	5.1%	6.3%
	Gas SUV	3.8%	6.2%	5.0%
	Hybrid Sedan	5.3%	4.4%	4.7%
	Hybrid SUV	5.1%	3.5%	3.8%
	All Sedans and SUVs	6.0%	4.5%	5.3%

Auction Resale Value

In 2012, the City moved from in-person live auction to online national auction with Property Room. Based on the City's contract for online auction with Property Room, hybrid sedans are attaining more than 3 times the auction resale value of gas sedans. Each hybrid is achieving more than \$2,000 additional resale value on average. Hybrid resale value is on average \$3,067 excluding NYPD vehicles which are often stripped for components prior to sale. For non-NYPD units, hybrids achieve \$2,126 in improved resale value over gas counterparts. There were 753 units in this analysis which represents sales on a national internet market site.

Auction Sedan Average Sales Price

Sedans	Average Sales Price	Count
Gas	\$824.60	1547
Hybrid	\$2,793.01	379
Plugin	\$5,400.00	1
Total Average	\$1,214.12	1927

Auction Sedan Average Sales Price*

Sedans	Average Sales Price	Count
Gas	\$941.12	455
Hybrid	\$3,067.00	297
Plugin	\$5,400.00	1
Total Average	\$1,785.54	753

*NYPD removed

We do not yet have sufficient data to make these comparisons with hybrid SUVs.