NYC DCAS
Citywide Administrative Services

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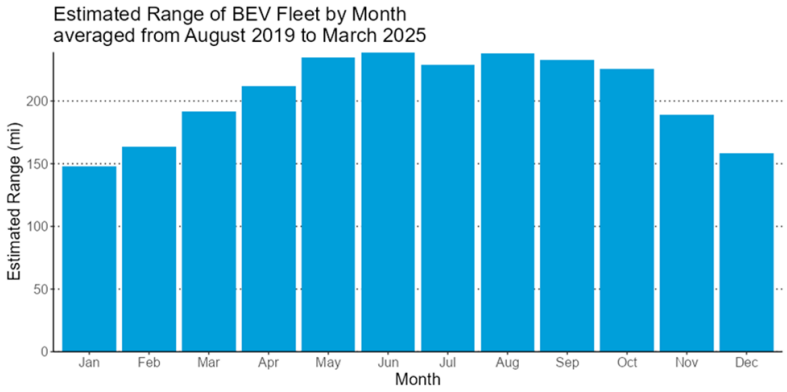
NYC Fleet Newsletter

July 10, 2025 - Issue 501

Understanding Electric Vehicle Battery Operations: New DCAS Report

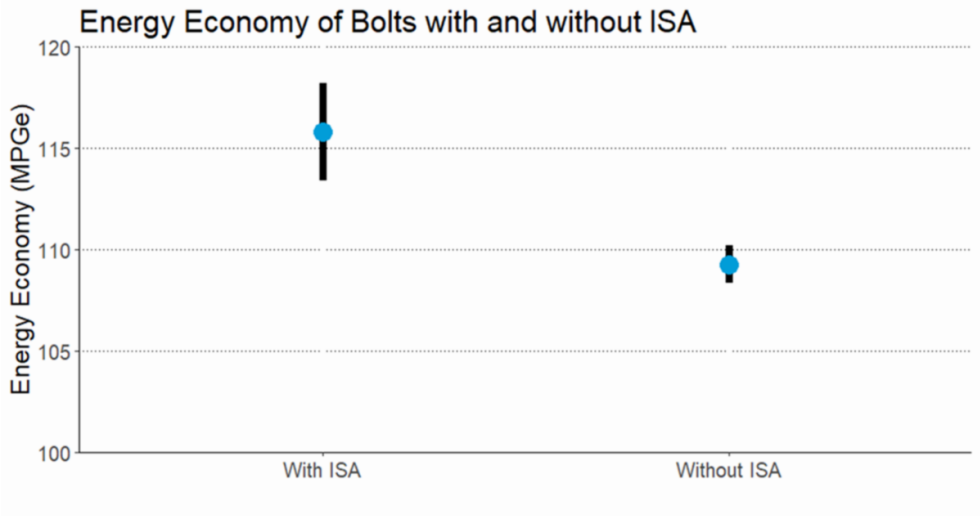
By Keith T. Kerman



NYC operates over 5,500 vehicles with plug-in electric batteries and nearly 10,000 when hybrid electric vehicles are included. As the city continues on its path to electrification through Local Law 140, it is essential to have a comprehensive understanding of how batteries operate over time and how this may impact fleet and City operations.

Using our real-time telematics, the Fleet Office of Real-Time Tracking (FORT) has conducted **a study of electric battery vehicles in actual City operation across over 6.5 million miles of use**. This report combines clean and safe fleet transition in accordance with **Executive Order 53 of 2020**.

We found that electric vehicles (BEV) are the most fuel-efficient of all propulsion systems, dramatically exceeding the performance of plug-in hybrids (PHEV), hybrids (HEV), gasoline, or diesel units. The actual mile-per-gallon equivalent (MPGe) for electric vehicles was 9 times that of gasoline vehicles. Operationally, we observed a clear weather impact on battery performance, with range and efficiency significantly higher in warm weather than in cold weather. Agencies will need to plan for more charge-ups and less range in the winter. Our fleet vehicles also experienced some battery degradation over time, but it appears to be a limited and manageable issue.



In a particularly promising finding, we recorded a 6% fuel economy benefit in vehicles equipped with intelligent speed assist (ISA), demonstrating that safety and fuel efficiency are mutually reinforcing.
More details on the findings are below:

Summary findings:

In Actual Use, BEVs Perform Best Against EPA Fuel Economy Ratings: BEVs, on average, achieved 91 MPGe in actual operations, 14% lower than the average EPA ratings. BEVs achieve actual MPGes dramatically closer to their EPA ratings than any other fuel type.

Battery Electric Vehicles (BEVS) Are Most Efficient By Far						
	Number of Vehicles	Distance (mi)	Fuel Used (gal or gal equivalent)	Actual MPG or MPGe	EPA Rating	Percent Difference
BEV	1,110	5,717,375	62,840	91	105	-14%
Gas	495	2,640,616	267,820	10	21	-54%
Hybrid	650	4,875,917	313,984	16	32	-51%
PHEV	936	6,282,161	308,195	20	91*	-78%

Cold Weather Impacts Batteries up to 33%: Cold weather has a clear and consistent impact on battery range and fuel efficiency for electric (BEV) vehicles. The average impact is 33% across all EV models. This has significant planning implications for winter and cold-weather operations. The gas and diesel units analyzed did not exhibit comparable cold weather impacts.

Degradation of Batteries over Time was a Limited Concern: Electric batteries showed a limited amount of degradation over time, from 0 to 4.8 miles, equivalent to degradation per year.

Weather Impacts Battery Depletion During Idling: While idling, an electric vehicle (BEV) does not produce tailpipe emissions, unlike a gas or hybrid vehicle. However, it still consumes energy. Idling is more energy-intensive in cold weather.

Crash performance of EVs and hybrids was comparable: The analysis did not find appreciable differences in crash impacts between EVs and hybrids. However, EVs do report much higher instances of harsh acceleration than hybrids. This is likely impacted by instant torque and the impacts of one-pedal driving.

Intelligent Speed Assistance (ISA) Improves Fuel Economy: Chevrolet Bolts equipped with ISA achieved a 6% improvement in fuel economy compared to Bolts without ISA. This finding shows that ISA has both safety and fuel economy benefits.

These findings reinforce the benefit of electric vehicles for efficient fleet operations and show the essential ways that emissions and safety technologies can work together. Alternatively, it makes clear that operations such as snow plowing will be extraordinarily challenging to electrify with current technology.

Please review the full **report** and supporting documentation. Thanks to Tomomi Landsman, who led this analysis, and also Executive Director Alfredo Melian, Director of the FORT Matthew Aronberg, Dilshad Basheer, and Nate Koszer.

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Week in Review | June 28 - July 4

Last week was a short week, but we still delivered huge things for New Yorkers:

- Our "**Best Budget Ever**" was passed unanimously by the City Council with smart investments that will make NYC safer and more affordable and improve quality of life. There's so much good stuff in this budget, I can't sum it all up here!
- The first six months of 2025 has seen important **decreases in crime across major categories** and the lowest number of shooting victims ever recorded in our city's history. Plus, June had decreases in every major crime category.
- **Summer Streets will be back** for five Saturdays this summer, and it's going to be bigger than ever! We're closing over 400 blocks to celebrate the 400th anniversary of NYC, so don't miss out on a super fun event for all.

Click below to learn about DCAS' FY24 Annual Report

DCAS Celebrates the Release of FY24 Annual Report | City of New York

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