



The Energy Committee appreciates the Select Board's request for input on the Brandon Police Department's desire to purchase a new police vehicle. The Committee's review of a potential alternative fuel, i.e. electric, vehicle will assure residents the town's "Green Fleet" policy has been strictly followed.

That policy states "Replacement vehicles shall achieve the greatest level of emission reductions possible while still meeting the operational needs of the Town and being cost-effective".

(<https://www.townofbrandon.com/wp-content/uploads/2020/01/TOWN-OF-BRANDON-GREEN-FL-EET-POLICY.pdf>)

Breaking down the three parts of the policy, we can say with confidence that electric vehicles possess the highest level of emission reductions. But will an EV patrol car meet the operational needs of the BPD and will the purchase be cost-effective?

EV DEMONSTRATED ADVANTAGES

More than a dozen police departments across the country have added all-electric vehicles to their patrol fleets, either Tesla or Ford EVs. The research uncovered a number of recent pertinent articles and videos which are listed at the end of the analysis. The articles and testimonials are from comments made by Police Chiefs who made the purchase decision and the Patrol officers who drive the cars.

Here is how they describe the benefits of purchasing and operating an EV for police work.

- Acceleration to pursuit speed is high on the list
 - An EV can get up to speed far more quickly than its gas counterpart
 - Performance models of Tesla and Ford (3.5 seconds each) beat gas-powered cars (6 seconds) in 0-60 mph acceleration
- Lower fuel, oil change and other maintenance costs
 - Limited maintenance required as the electric motor has many fewer parts
 - Reduced out-of-service downtime for maintenance
- Reported increased longevity, a minimum of double service life vs the standard for gas-powered vehicles
 - Tesla is saying personal vehicles are proving to be "million mile" cars, far beyond what gas cars can claim

- Savings from EVs' increased longevity should cut the capital budget for vehicle replacement in half
- Zero carbon dioxide emitted into the community
 - Helps Brandon achieve Vermont's transportation carbon reduction goal (<https://anr.vermont.gov/content/transportation-and-climate-initiative>)
- Operational savings are sufficient to offset an EV's initial price disadvantage compared with gas engine models
 - The price difference payback return is under 2 years due to the savings on fuel and maintenance

EV PERCEIVED DRAWBACKS

Concerns about EVs for use by police departments mainly revolve around range, battery performance in cold weather, added weight of required equipment, secure prisoner transport and low ground clearance. Responses to these concerns are noted as follows:

RANGE

- Based on the feedback from Tesla and Ford EV police buyers, range exceeds 300 miles, 3 times the average distance needed per shift

BATTERY PERFORMANCE IN COLD WEATHER

- According to the Norwegian Automobile Federation, tests show EVs lose about 20% of their driving range and take longer to charge in cold temperatures
 - While a significant percentage, Brandon's winters should not reduce the range below the average travelled during a daily shift
 - The Westport (CT) PD learned during the winter months the vehicle was able to consistently run two consecutive patrol shifts without needing to be recharged

EXCESS WEIGHT

- Westport's equipment retrofitter managed to minimize excess weight by utilizing Tesla's onboard computer for many functions such as lights, sirens, etc.
 - Ford's MACH-E requires a separate computer
 - Use of ballistic glass (added weight of (400-1200 lbs) and bulletproof doors may not be a requirement for Brandon

SECURE PRISONER TRANSPORT

- Streamlined EV profiles make insertion of a prisoner "cage" difficult. If the BPD requires a secure way to transport prisoners, a cage could be added to an SUV or the F150.

LOW GROUND CLEARANCE

- Neither the Ford Mach-E (5.7") or Tesla (5.5") has adequate ground clearance for off-road use. When higher clearance is needed, the suggestion is to utilize an Explorer or the truck.

CARMAKER INFORMATION

Manufacturers' electric vehicle product lineups were reviewed to see who offers a police version. **Ford** and **Tesla** deliver the most well-thought out, best service supported, well-equipped and comprehensive packages for police departments.

FORD was the first carmaker to create a dedicated line of police vehicles back in 1950 and currently holds a 63% share of the segment. Equipping law enforcement has been a profitable business for Ford and it offers ready-for-the-road fully-equipped models.

Ford's pursuit product, the Mustang Mach-E, was a highlight of the 2022 NY Auto Show this past week. At the show, the NYPD announced it has ordered 184 Mach-Es at a fully loaded cost per car of **\$62,500**.



TESLA, in 2018, the Fremont (CA) PD purchased a used 2014 Tesla in January 2018 to replace a 2007 Dodge Charger which had aged out. At the time, Tesla's was the only electric vehicle that met specifications for size, performance, battery range, and safety.

Since 2018, more than a dozen police departments, including Richmond, have added a Tesla patrol car. According to Bloomberg News, the New York City PD is weighing the purchase of as many as 250 fully electric Model 3 sedans at a cost per cruiser of **\$51,940** (armor package cost of \$10-20,000 not included) as NYC looks to transition to an all-electric fleet by 2035.

See "Additional Information" section for a link to the Westport PD video for a comprehensive review of their experiences since purchasing a Model 3 in 2019.



Other manufacturers either do not offer police-specific vehicles in the USA (**VW, Honda, Toyota, Subaru**) or their models are best suited for low-demand administrative or traffic enforcement tasks (**Toyota Prius, Nissan Leaf, Chevy Bolt**.)

- **Rivian**, a future major EV player owned by Amazon (20%+) and Ford (12%), is introducing an electric truck this year. There has been speculation a police version will be offered but the R1T model will not be available for several years at the earliest.

- **Dodge**, a past player, has announced its Charger gas model will end production by 2024. An all-electric replacement is in the works, no details are available, which could debut later that year.

CONCLUSION

Our review of electric vehicle options was helped by the legwork done by Chief Kachajian. We did not contact dealers for pricing or availability as this is a more properly a function for a town employee.

BPD's fleet currently includes two Ford Explorers and an F150 truck. Two Dodge Charger cruisers (one is out of service) are at the end of their operational life and the logical next purchase would be a sedan-style cruiser.

Reviewing the trial test results and feedback from police departments using EVs, has convinced us Brandon's next patrol car should be an EV based on demonstrated performance, operating costs and savings on maintenance costs.

However, we do not see a need to immediately move forward and the recommendation is to wait a year or two for the following reasons:

- There continues to be supply chain shortages of key auto parts, especially microchips (some of which are manufactured in Essex Junction by Global Foundries)
- High orders in the queue from cities such as NYC may affect availability and price
- The MACH-E is a new model and "ready-for-the-road" package availability is unknown
- TESLA Model 3 cars can be ordered for delivery between July and October. Retrofitting a Tesla to police requirements would add time to a cruiser being put into service.

The Energy Committee can continue to monitor developments to ensure no unforeseen issues with going electric come up, that any/all software-related issues are fully worked out, and for costs stemming from the conversion from street-to-police version have come down.

Thank you again for requesting the Energy Committee's input into this decision.

Regards,

James Emerson, Chair

Jack Schneider, Vice Chair

ADDITIONAL INFORMATION:

2022 NY Auto Show (video) (Ford Mustang Mach-E)

<https://www.autoblog.com/2022/04/19/nypd-ford-mustang-mach-e-police-patrol-car/?msclkid=07fb9c76bffe11ec864be207533eed4b>

Westport, CT Experience (video) (Tesla Model 3)

<https://www.bing.com/videos/search?q=westport+ct+tesla+police&docid=608005719732870746&mid=43EF68470FCAF05E140A43EF68470FCAF05E140A&view=detail&FORM=VIRE&msclkid=3efe5015bffe11ecb75edf2a0b17814a>

<https://www.tesmanian.com/blogs/tesmanian-blog/tesla-model-3-police-vehicle-brought-big-savings-to-westport>

<https://autorecent.com/2022/02/25/why-police-departments-are-beginning-to-adopt-electric-cars>

<https://cleantechnica.com/2021/07/20/police-departments-invest-in-teslas-to-save-fuel/>

<https://www.freep.com/story/money/cars/ford/2021/12/30/ford-mustang-mach-e-gts-new-york-city-fllet/9049168002/>

<https://www.caranddriver.com/rivian>