

# FY 2022

## FLEET REPLACEMENT SCHEDULE

A Report to the Governor, House Appropriations Committee,  
and Senate Finance Committee



**October 1, 2021**

**Colonel Gary T. Settle**  
**Superintendent**



# COMMONWEALTH OF VIRGINIA

Colonel Gary T. Settle  
Superintendent

(804) 674-2000

## DEPARTMENT OF STATE POLICE

P.O. Box 27472, Richmond, VA 23261

Lt. Colonel Tracy S. Russillo  
Deputy Superintendent

October 1, 2021

TO: The Honorable Ralph Northam, Governor of Virginia

The Honorable Janet D. Howell  
Chairwoman of the Senate Finance Committee

The Honorable Luke Torian  
Chairman of the House Appropriations

Pursuant to House Bill 1800 Item 426.R. of the 2021 Virginia Acts of Assembly, I am respectfully submitting herewith a report on the *Fleet Replacement Schedule*.

Respectfully,

A handwritten signature in cursive script that reads "Gary T. Settle".

Superintendent

GTS/TAB

Enclosure

# Executive Summary

## Fleet Replacement Schedule

The Department of State Police (Department) is facing new funding challenges replacing the patrol vehicles for its Troopers. The three areas presenting challenges include Ford Motor Company (Ford) discontinuing the Police Interceptor sedan model; Ford not producing and delivering 170 out of 342 vehicles as expected prior to July 1, 2021, due to a global microchip shortage; and the projected costs of maintaining an aging fleet with one fourth of our patrol vehicles over 100,000 miles.

In 2019, Ford discontinued production of the Police Interceptor sedan model, which began the search for a suitable replacement police pursuit rated patrol vehicle. The costs of the new 2020-2021 Ford Interceptor Utility patrol vehicle is 53% more than the 2019 Ford Interceptor sedan. Furthermore, due to the redesign of the vehicle, most of the supplemental emergency equipment that was reused in the previous vehicle, will not transfer, and cannot be utilized in the newly designed vehicle. This results in additional costs for equipping new vehicles. After months of careful research and evaluation, it was determined the 2020 Ford Interceptor Utility SUV was the only viable for the Troopers based on vehicle safety, availability, dealer support, maintenance, performance and overall lifetime costs.

Additionally, Ford agreed to produce and deliver 342 vehicles prior to July 1, 2021. However, due to COVID-19 and the global microchip shortage, delivery has been significantly delayed. After continuous follow-up with Ford, the Department has received confirmation that the remainder of the order (170 vehicles) will be delivered by the winter of 2021.

Currently, one fourth of the Department's patrol vehicle fleet has over 100,000 miles and is costing the Department approximately \$1,050,000.00 annually with service and repair for these higher mileage, heavy-duty emergency vehicles. Should these high mileage vehicles remain in service beyond the Department's current vehicle replacement policy of 130,000 miles, the Department's repair and maintenance costs will continue to increase for repairing major components such as engines, transmission, emissions systems and air conditioning.

The Department usually forecasts 18 months in advance with the annual vehicle needs because of how our fiscal years end, eVA vehicle renewal contract dates, vehicle manufacturer order banks, production and delivery times, and cut-off dates. Utilizing this method ensures the vehicles are ordered, received and properly equipped by the Department's installation technicians in the established timeframe. This vehicle order is scheduled to be placed before November 1, 2021, contingent on the contract renewal through the Virginia Division of Purchases and Supply (DPS), so the vehicles can be received by spring 2022.

Emergency vehicles must be safe, dependable and ready to respond at a moment's notice. The Department cannot minimize potential vehicle failures or safety issues with aging, high mileage vehicles while the Troopers are responding to emergencies, service calls or routine patrol duties. In light of the various challenges, the Department is requesting additional funding to address the deficit in refreshing the fleet so as not to risk and jeopardize the safety and lives of the Troopers and the public.

In the FY2022 budget, the Department was appropriated \$6.4 million, which is only sufficient to purchase 137 Ford Interceptor patrol SUVs. With the anticipated allotment of the additional \$7.1 million that is contingent upon submission of this report, the Department will be able to purchase another 153 vehicles, for a total of 290. However, the Department needs an average of 366

vehicles per year just to maintain its current replacement schedule. On average, the annual deficit will continue to mount, driving up actual replacement mileage far beyond the current 130,000 miles. Therefore, it is recommended that the original appropriation of \$9.5 million be fully restored.

## Reporting Requirements

Originally, with Item 426. R. \$9,488,184 was included in the appropriation in the second year as supplemental funding to the base funding for patrol vehicle replacement and equipment due to the projected cost increase (53%) associated with new replacement vehicles. However, the above figure was reduced, and \$7,117,484 was unallotted until submission of this report.

- The Department shall develop a detailed fleet replacement schedule.
- The Department shall report this vehicle replacement schedule to the Governor, the Chairwoman of the Senate Finance Committee, Chairman of the House Appropriations and the Director, Department of Planning and Budget, by October 1, 2021.

This report shall include, but not be limited to:

1. The number of vehicles it replaces per year.
2. The estimated useful life of a patrol vehicle (including average mileage).
3. The incremental additional cost per vehicle (including upgrades and costs associated with changing vehicle types).
4. How the replacement schedule is impacted by the trooper vacancy rate.
5. The anticipated graduation rate from the basic trooper school.
6. The average time for equipment installation
7. The number of vehicles replaced due to vehicle accident and damage.

## Background

The Department is facing new funding challenges replacing the patrol vehicles for its Troopers. Due to Ford discontinuing their Ford Interceptor Police Pursuit sedan, production issues on multiple fronts, and an aging fleet, the Department has needed to adapt its strategy for the fleet replacement schedule and funding.

## Discontinuation of Ford Interceptor Police Pursuit Sedan

In 2019, Ford discontinued production of the Police Interceptor sedan model (Figure 1) which began the Department's search for a suitable replacement police pursuit rated patrol vehicle. The Department networked with other law enforcement agencies, states and localities; contacted vehicle manufacturers such as, Ford, Dodge and Chevrolet; and researched information from Michigan State Police's annual vehicle testing and evaluations<sup>1</sup>.

### Figure 1

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<sup>1</sup> Police Vehicle Evaluation Model Year 2019

## 2019 Ford Interceptor Sedan



## Police Pursuit Dodge Charger

The Department's Driver Training Facility Staff had the opportunity to thoroughly evaluate a 2019 Police Pursuit Dodge Charger V-8 HEMI sedan, as well as a police pursuit rated Chevrolet Tahoe PPV (Figure 2). Initial testing by the Department's Driver Training Facility Staff appeared promising with the Police Pursuit Dodge Charger sedan (Figure 3); however, it was discovered later that Dodge was not offering a V-8 all-wheel drive transmission package. The Department determined the all-wheel drive option with the previous Ford Interceptor sedan is advantageous because of the vehicle stability, traction control and other safety benefits provided to the Troopers.

**Figure 2**

*2020 Chevrolet Tahoe PPV*



**Figure 3**

*2019 Police Pursuit Dodge Charger V-8 Hemi©*



The Police Pursuit Dodge Charger sedan had the lowest purchase price and the smallest dealer network compared to the other vehicle manufacturers evaluated. However, after speaking with other law enforcement fleet management that utilize the Police Pursuit Dodge Charger sedan, they acknowledged the overall cost of ownership, frequency of service and maintenance costs were more expensive than other police pursuit vehicles, especially as mileage increased.

Furthermore, the Virginia Department of General Services transitioned from purchasing Police Pursuit Dodge Chargers because of their knowledge and experience maintaining and servicing these vehicles was more expensive when compared to other vehicles. Also, during our vehicle evaluation period (April 2018-September 2019), Dodge was experiencing major production and shipment delays, with Police Pursuit Dodge Chargers taking longer than six months for vehicle delivery. After further research by our Telecommunications Engineers, it was found the Dodge Charger HEMI® V-8 has the potential to cause intermediate interference with our emergency radios, which would hinder emergency communications. All of these factors eliminated the Police Pursuit Dodge Charger sedan as a suitable replacement for the outgoing Ford Interceptor sedan.

The Fleet Management Team keeps abreast and informed of other viable vehicle manufacturers and as of August 2021, Dodge still does not offer the option of an all-wheel drive powertrain in the new 2022 Dodge Charger Police Pursuit V-8 HEMI sedan.

### [Police Pursuit Chevrolet Tahoe](#)

With Chevrolet ending the production of the Police Pursuit Impala sedan in 2016, currently the only Police Pursuit Vehicle (PPV) Chevrolet offers is the Tahoe. Chevrolet offers a PPV Tahoe in rear wheel drive and four-wheel drive versions and both were evaluated by the Driver Training Facility Staff. With the safety advantages of all-wheel drive with the Ford Interceptor sedan, the four-wheel drive PPV Tahoe was the closest option considered. However, the vehicle's height was considerably higher than the other vehicles evaluated. This vehicle had noticeable body roll and sway during rapid maneuvers and the higher center of gravity affected the stability and handling of the vehicle at higher speeds.

According to the National Highway Transportation Safety Administration (NHTSA),<sup>2</sup> the 2020 PPV Tahoe was rated three out of five stars for rollover protection and an overall four-star safety crash rating. Both the Dodge Charger and Ford Interceptor Utility SUV had an overall NHTSA five-star safety rating.

Also, the results from the 2019 Michigan State Police vehicle testing evaluations found the PPV Tahoe's rear wheel drive and four-wheel drive models could not compete with braking distance of the Police Pursuit Dodge Charger sedan and Ford Interceptor Utility SUV. The PPV Tahoe had the greatest, longest stopping distance from 60 mph to a complete stop.

Additionally, the global microchip shortage affected Chevrolet much sooner than other vehicle manufacturers. Due to the GM vehicle strike in October 2019 and COVID-19 in 2020, Chevrolet began shutting down the 2020 Tahoe assembly plant in March 2020. This created a shortened vehicle production period, resulting in a reduced vehicle supply with the 2020 Chevrolet Tahoe model year. When Chevrolet reopened the vehicle assembly plant for the all new redesigned 2021 models in June 2020, the color option of Chevrolet's "silver ice metallic" (essentially silver) was not available. This presents an issue because that particular color is the base color for our Safety Division's Motor Carrier marked patrol units and similar in color to Ford's "Ingot Silver" on our marked patrol vehicles. Since Chevrolet did not offer the required color option, the Department would not have purchased the Tahoe, because all the new vehicles would require repainting. Chevrolet again shut down the assembly plant for the 2021 Tahoe in January 2021, exacerbating the shortened vehicle production period and resulted in limited availability.

### [Ford Interceptor Utility SUV](#)

After months of careful research and evaluation, it was determined the 2020 Ford Interceptor Utility SUV (Figure 4) was the best option for our Troopers based on vehicle safety, availability, dealer support, maintenance, performance and overall costs. However, the costs of the new 2020 Ford Marked Interceptor Utility SUV patrol vehicle increased 53% from the 2019 Ford Marked Interceptor patrol sedan. To further complicate matters, due to the discontinuation of the sedan style, most of the supplemental emergency equipment that was traditionally transferred from previous vehicles, cannot be utilized in the newly implemented SUV. This creates additional costs for installation and up-fitting.

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<sup>2</sup> <https://www.nhtsa.gov/vehicle/2021/CHEVROLET/TAHOE/SUV/4WD#safety-ratings-rollover>

**Figure 4**

*2020 Ford Interceptor Utility SUV*

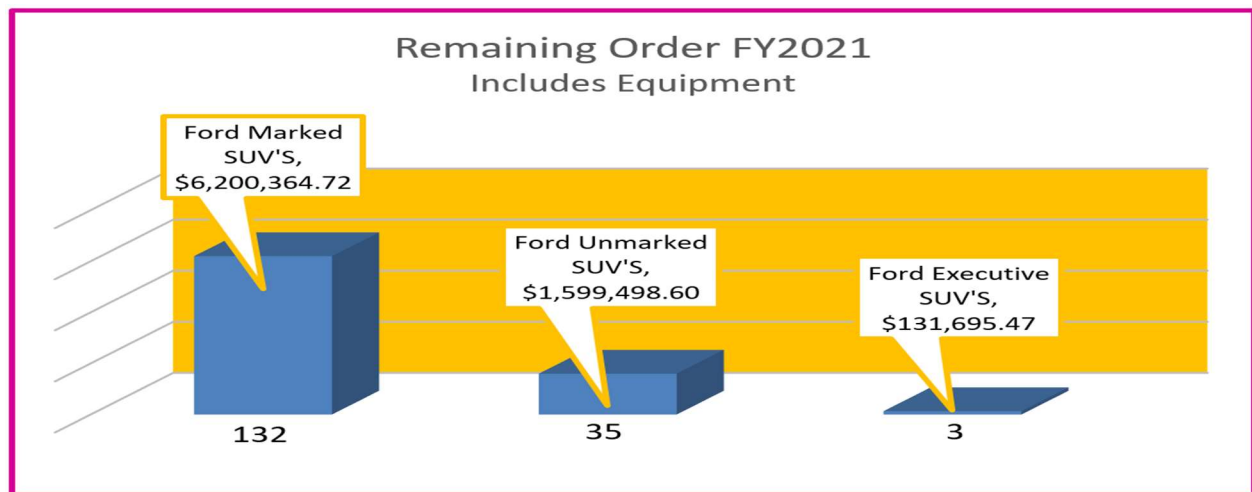


### Production Issues

In June 2021, the Department submitted a decision brief describing the circumstances regarding Virginia State Police's 2021 vehicle order. The Department requested to retain funding for the balance of remaining vehicles from Ford. In December 2020, the Department ordered 342 Ford Interceptor Utility SUV patrol vehicles and Ford was able to manufacturer and deliver 172 vehicles before the end of our fiscal year, June 2021. Ford was unable to complete our entire order because of the global microchip shortage.<sup>3,4</sup>

Ford began temporarily shutting down assembly plants for many of their vehicle models during spring of 2021, including the Chicago assembly plant where our Ford Interceptor Utility SUV vehicles are built.<sup>5</sup> The lack of availability with some electrical components needed to complete assembly of the vehicle caused manufacturing plants to shut down due to the global microchip shortage.<sup>6</sup> During the first week of August 2021, Ford reopened their Chicago vehicle assembly plant to resume vehicle production. Ford is committed to manufacturing and delivering the remaining 170 vehicles owed from the FY2021 vehicle order by winter of 2021, which equates to \$7,931,558.79 with equipment (Figure 5).

**Figure 5**



<sup>3</sup> The Global Microchip Shortage, Explained—and What It Means for Your Next Car Purchase

<sup>4</sup> Car Shopping: How Long Will the Inventory Shortage Last?

<sup>5</sup> Chicago Assembly Plant to Shut Down Again Over Semiconductor Shortage, Laying Off Thousands

<sup>6</sup> Worsening Computer Chip Crisis Shows Supply Chains Are Still At Risk

**Costs**

**2019 Ford Marked Interceptor Sedan**

Vehicle Purchase Price      \$25,705.58

**Figure 6**



**2020-2021 Ford Marked Interceptor Utility SUV**

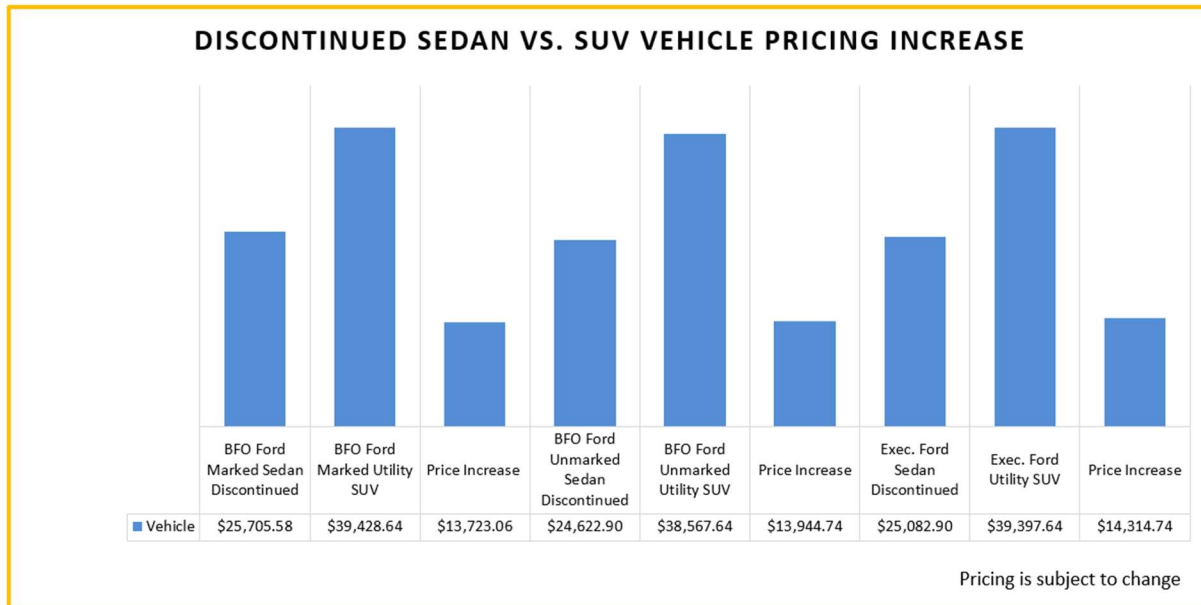
Vehicle Purchase Price      \$39,428.64

**Figure 7**



The pricing of police vehicles has increased drastically compared to a 2019 Ford Marked Interceptor sedan (Figure 6), costing \$25,705.58. The current purchase price of a new replacement vehicle (Figure 7) is \$39,428.64. The cost difference of the 2019 Ford Marked Interceptor sedan and the new 2020-2021 Ford Marked Interceptor Utility SUV is \$13,723.06 per vehicle, which is the most costly vehicle equipment configuration (Figure 8). The *difference* in price for 342 Ford Marked Interceptor Utility vehicles in lieu of the discontinued 2019 Ford Marked Interceptor sedan is \$4,693,286.52. It is anticipated the purchase price for a patrol vehicle will increase slightly in FY22.

**Figure 8**



Furthermore, surplus vehicle lighting and emergency equipment that is regularly reused and transferred to new vehicles, cannot be utilized in the newly redesigned vehicle because mounting and fitting issues. This requires our Department to purchase new equipment for secure and proper fitting in the newly redesigned vehicle.

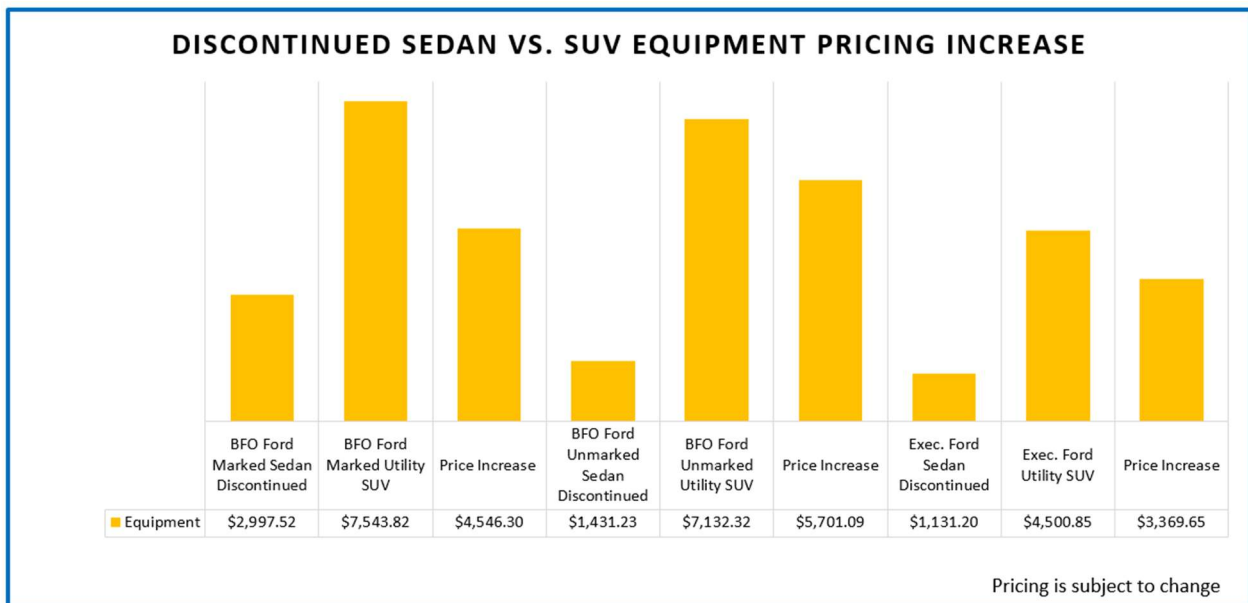
Equipment needed to complete the installation for a new, marked patrol vehicle is listed below:



Emergency Lighting and light/siren controller	\$ 3,721.55
Center console for radios/dock/controllers	\$ 673.15
Lockable and secure rifle/shotgun mount	\$ 429.98
Rear cargo divider/partition	\$ 392.62
Secure/lockable rear cargo radio cabinet w/fan	\$ 615.35
Front mounted push bumper	\$ 445.00
“PIT” stop sticks w/mounts	\$ 485.00
Wiring/Antennas/Cables/vehicle up fitting supplies	\$ 391.69
Mount and wiring for WatchGuard DV1 Video camera	\$ 364.48
Fire extinguisher w/mount	\$ 25.00

The total cost of the emergency lighting and complete vehicle up-fitting is \$7,543.82 per vehicle (Figure 9). **Note:** This cost does not include the price of radio, in-car video camera or radar equipment. The *difference* in equipment price to up-fit 342 Ford Marked Interceptor Utility SUV vehicles in lieu of the discontinued 2019 Ford Marked Interceptor sedan is \$1,554,834.60. It is anticipated the cost for equipment will increase slightly in FY22.

**Figure 9**



With the initial upfront costs of the specialized equipment, we will be able to reuse this equipment on replacement vehicles as long as the vehicle manufacture body style and design does not change.

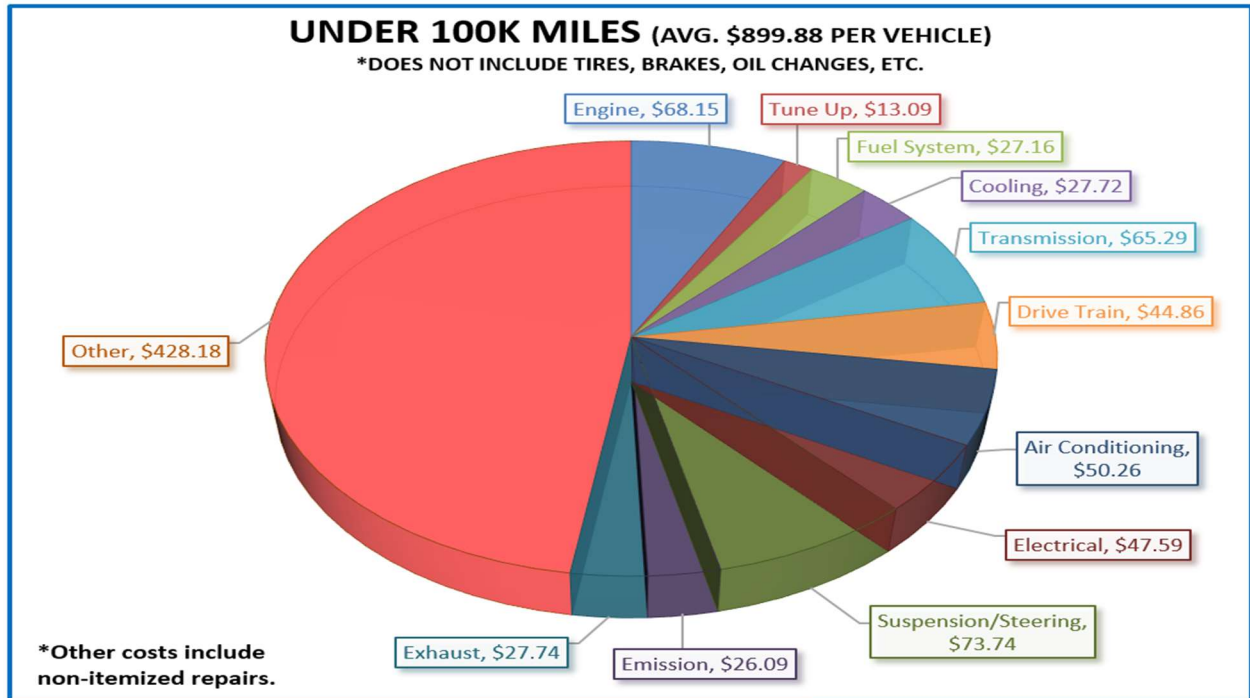
Therefore, the *difference* in cost to replace (\$4,693,286.52) and equip (\$1,554,834.60) 342 new Ford Interceptor Utility SUV vehicles in lieu of the discontinued 2019 Ford Interceptor sedan vehicles is \$6,248,121.12.

### Using Vehicles Beyond the Current Replacement Policy

Our Department could purchase fewer new vehicles this year and utilize aging, higher mileage vehicles longer, extending the vehicle’s service life. However, this has been done before, raising our patrol vehicle mileage replacement policy from which we have not been able to recover. Extending the vehicle mileages beyond the current 130,000 miles policy will cost the Department more in vehicle repairs and service and require the purchase of additional vehicles to replenish

the over mileage vehicles that were kept in service longer than the existing replacement schedule (Figures 10-12). Vehicles with less than 100,000 miles average \$899.88 per year in maintenance costs, excluding preventative maintenance related to tires, oil changes, etc. Comparatively, vehicles over 130,000 miles average \$7,359.45 per year in maintenance costs, which is a 718% increase.

**Figure 10**



**Figure 11**

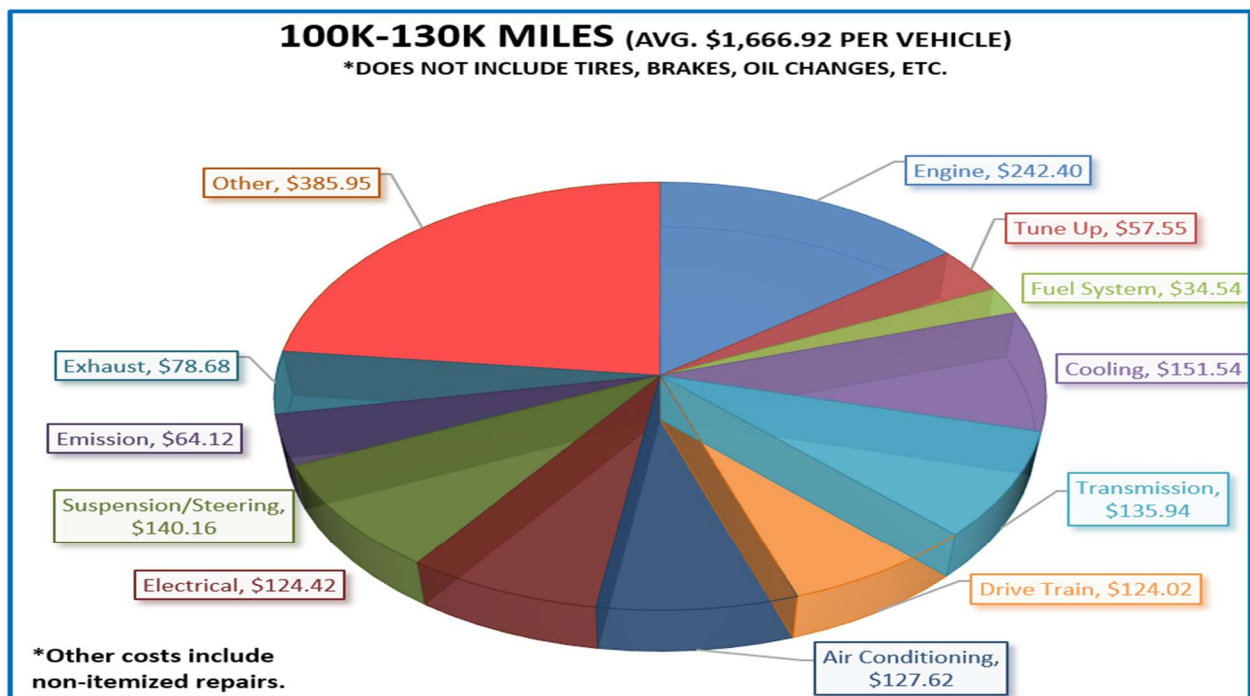
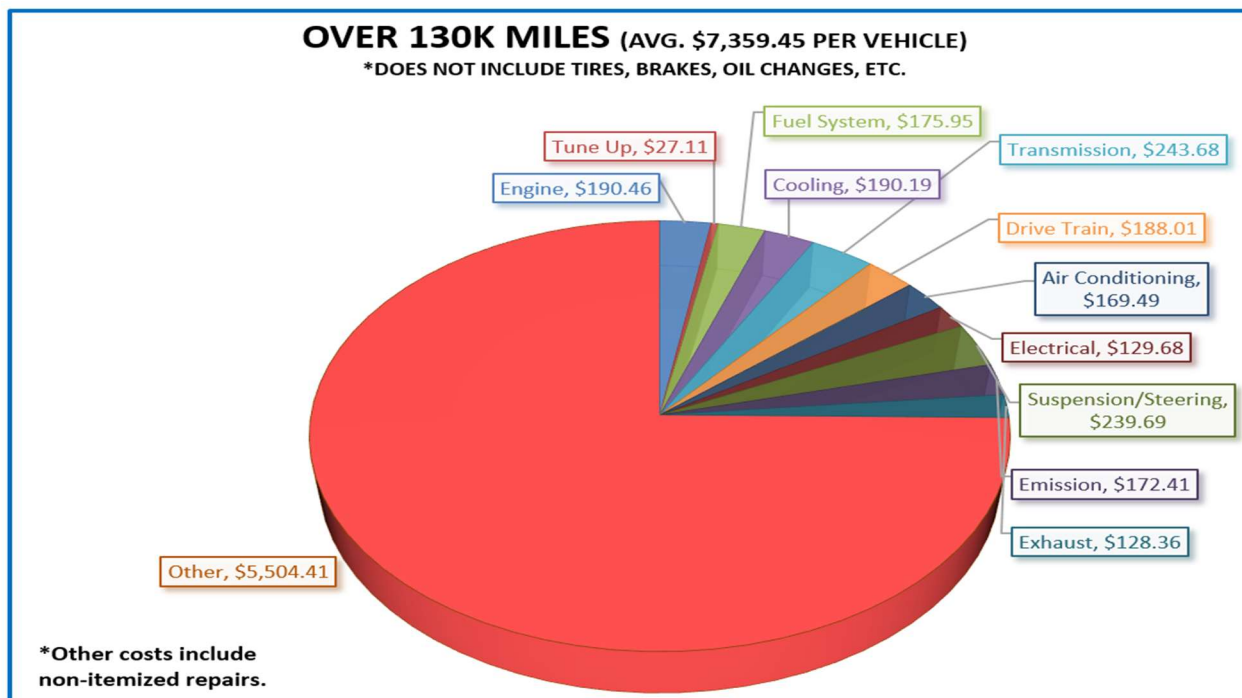


Figure 12



**Note:** Since the 2021 Ford Interceptor Utility SUV is a new model, the costs above are related to the 2019 Ford Interceptor sedan. As with the other cost differences between the two models, the Department expects maintenance costs to increase due to more advanced technology in the SUV.

The practice of extending a patrol vehicle's life causes our Troopers to "borrow" other Troopers' vehicles because their vehicles are out of service for costly repairs. Essentially, "hot seating" a vehicle causes continuous, non-stop usage of the vehicle, accelerating the vehicle's useful life with mileage, and accelerated wear and tear on the vehicle.

Emergency vehicles must be safe, dependable and ready to respond at a moment's notice. Many of our Troopers face sudden and unpredictable challenges and our vehicles are expected to perform and meet the same demands. High-speed acceleration, extreme braking, and quick maneuvering take a toll on aging vehicles. Moreover, as a result of rough road conditions and the demanding nature of police work, the flexing and fatigue on suspensions and chassis with high mileage vehicles can affect the Troopers' ability to respond safely to emergency situations.<sup>7,8</sup> Especially with aging vehicles, Troopers have questioned the safety and stability of the vehicle during high speeds. Having this knowledge, the Department must not risk and jeopardize the safety and lives of our Troopers or the public. Nor should the Department minimize any potential vehicle failures or safety issues with aging, high mileage vehicles while our Troopers are responding to emergencies, service calls or routine patrol duties.

### Vehicle Replacement

The Department purchased 342 vehicles in FY21, which were slated to replace regularly scheduled mileage (turn in), aging patrol vehicles. Full vehicle delivery was expected by June 30, 2021; however, 170 vehicles were delayed due to the global microchip shortage. This year the

<sup>7</sup> State of California Budget Change Proposal

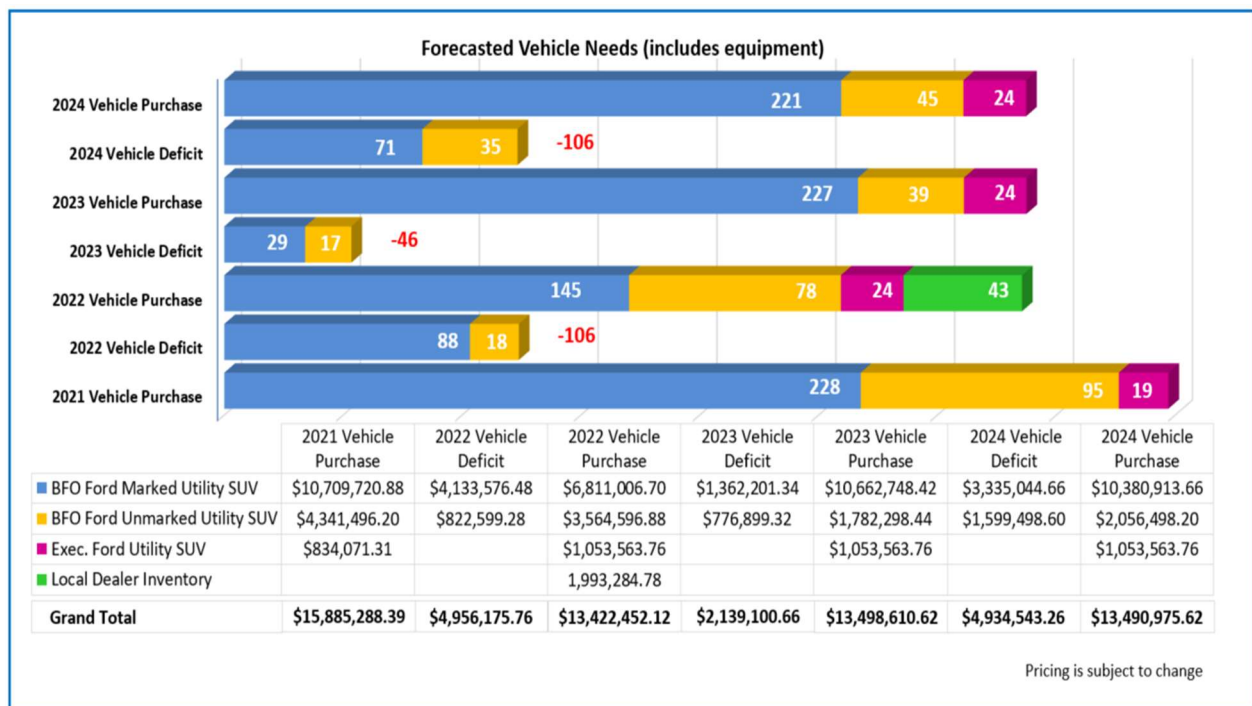
<sup>8</sup> CBS 58 Investigates: How Safe are the Squad Cars Driven by Milwaukee Police Officers?

Department is replacing 28 vehicles monthly due to mileage, age, excessive repair costs, and accidents. During FY22, our Department will require 336 new patrol vehicles. These baseline figures are assessed annually when placing the vehicle order and modified to reflect actual needs. In recent years, this number has fluctuated between 336 and 396, with an average of 366.

When the Department makes its annual vehicle purchase, the goal is to replace in-service patrol vehicles that have aged, have the highest mileage, and have become too expensive to operate. Unfortunately, the Department will experience a deficit beginning this year due to limited funding, which will result in a large quantity of patrol vehicles remaining "in-service" longer than anticipated.

Figure 13 shows a breakdown of the number and the different build type replacements the Department expects for the fleet through 2024, including the total cost.

**Figure 13**



Additionally, since the Department will continue operating vehicles beyond the 130,000 mile replacement policy, maintenance costs are expected to increase as shown in Figures 14 and 15.

Figure 14

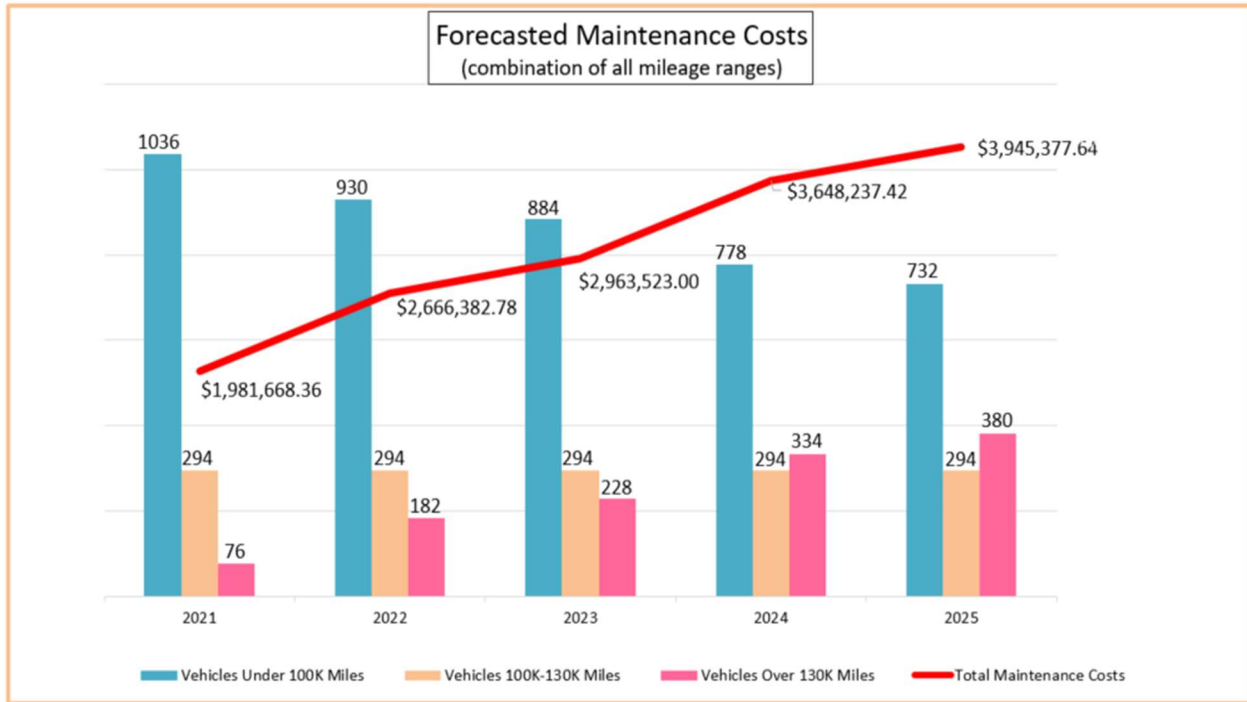
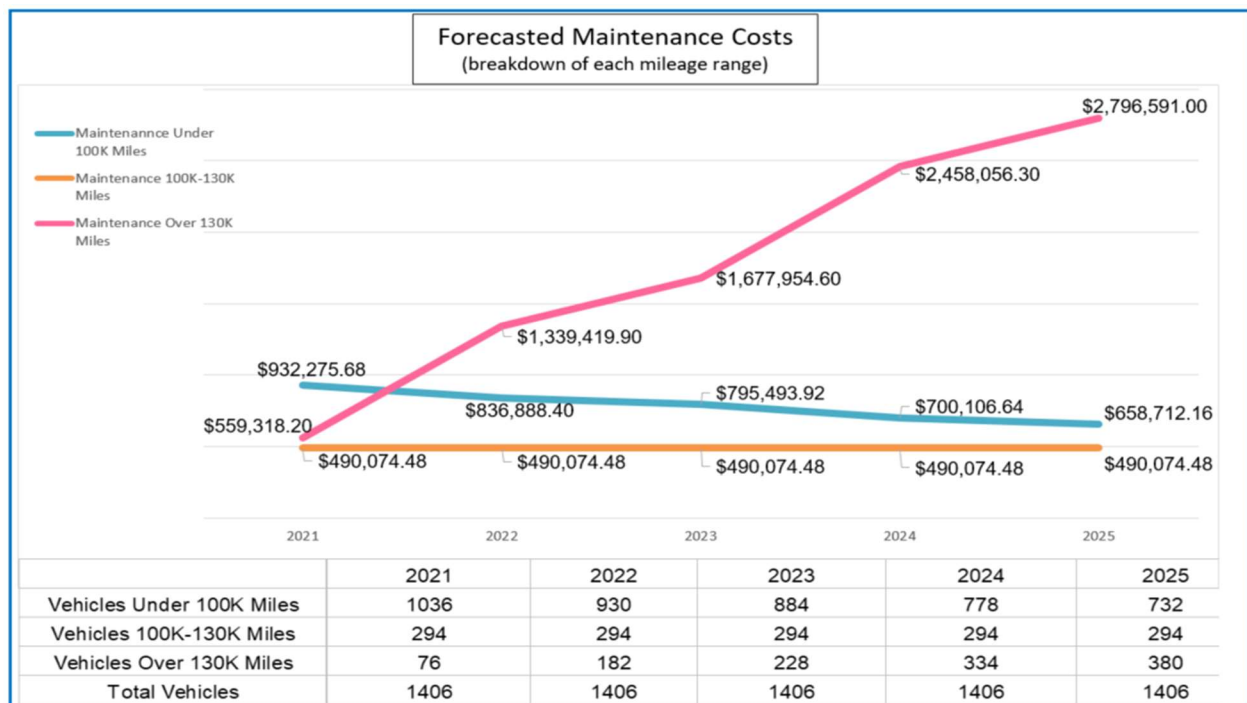


Figure 15



### Average Time for Equipment Installation

Our Vehicle Installation Facility is responsible for equipping our patrol vehicles. On average, it is requiring 40 hours to build a Ford Marked Interceptor Utility SUV. The Department builds approximately 600 vehicles annually. This includes our agency vehicles as well as STARS User

Agencies requiring vehicle radio equipment installation or removal of the STARS radio system. Once vehicle manufacturers have available parts and begin delivering new vehicles again, we anticipate a large surge of requests from STARS User Agencies this fall and winter for radio equipment installations. Since the Department has already ordered SUV up-fitting equipment, technicians have completed training associated with equipment installation for the Interceptor Utility SUV, and Ford has committed to deliver 170 outstanding patrol vehicles, it is the only viable option for the Department to remain with the Ford Interceptor Utility SUV. Upon recovery and stabilization of the vehicle market from the global microchip shortage, should another suitable patrol vehicle from another manufacturer appear to be a practicable alternative for our Department and the Commonwealth, it will be thoroughly researched, tested and evaluated.

### **Impact of the Department's Vacancy Rate on Vehicle Purchases**

The Department has seen significant increases in its trooper vacancy rate over the past several years. While these vacancies create major operational challenges for the Department, they have also contributed to an increased supply of used vehicles to re-issue to the remaining workforce. This has allowed the Department to keep its annual vehicle orders in the 336-396 range.

The Department usually forecasts 18 months in advance with the annual vehicle needs because of how our fiscal years end, eVA vehicle renewal contract dates, vehicle manufacturer order banks, production and delivery times, and cut-off dates. Utilizing this method ensures the vehicles are ordered, received and properly equipped by the Department's installation technicians in the established timeframe. This vehicle order is scheduled to be placed before November 1, 2021, contingent on the contract renewal through the Virginia Division of Purchases and Supply (DPS), so the vehicles can be received by spring 2022.

### **Conclusion**

The increased costs of the Ford Interceptor SUV are such that the current appropriation is insufficient to allow the Department to continue to meet its needs for a safe, reliable, and efficient vehicle fleet. Without an additional appropriation, the Department will be forced to extend vehicle operation well beyond 130,000 miles. This creates significant safety concerns, given the daily mechanical stresses that patrol vehicles endure. It also dramatically increases the anticipated repair costs while lowering resale value. The Department needs an average of 366 vehicles per year just to maintain its current replacement schedule. On average, the annual deficit will continue to mount, driving up actual replacement mileage far beyond the current 130,000 miles. Therefore, it is recommended that the original appropriation of \$9.5 million be fully restored.

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