



Washington
**Green
Transportation
Program**



Tesla EVs: Meeting the Use Case of Emergency and Law Enforcement Vehicles

The [Green Transportation Program](#) tracks information to help public fleet managers across Washington understand the costs and benefits of adding electric vehicles (EVs) to their fleets. This factsheet provides information about:

- [General O&M Costs of EVs](#)
- [Tesla Model 3 Performance and O&M Costs](#)
- [Public Fleets](#)
- [Summary](#)

General O&M Costs of EVs

EVs generally have lower operating and maintenance (O&M) costs compared to gasoline-equivalent vehicles. Electricity is a much cheaper fuel than petroleum products, but the cost of electricity varies depending on how the electricity is delivered. Here's a basic comparison:

Cost of **gasoline** (\$/gal)/average miles per gal = cost per mile
[\$3.50/25 = \$0.14/mile]

Gasoline = 14 cents per mile

Cost of **electricity** (\$/kWh) / average miles per kWh = cost per mile
[\$0.09/3.5 = \$0.026/mile]

Electricity = 2.6 cents per mile

The cost of maintaining EVs also tends to be lower because these vehicles have fewer moving parts—no plugs, no transmission, etc. They still require cabin filters and wipers, but even the brakes and tires can last longer because of the regenerative braking system. The electric motors and batteries could have issues, but most original equipment manufacturers are offering long warranties that cover the drivetrain and batteries against excessive degradation.

In a major study of EVs done by *Consumer Reports*, researchers found that while an EV may cost 10 to 40 percent more than an equivalent gas vehicle, the total cost of ownership For the EV is typically less. The study also found that maintenance and repair costs for EVs are about half those of gas-fueled vehicles over the life of the vehicle.

The average dollar savings for light-duty passenger EVs is approximately \$4,600.



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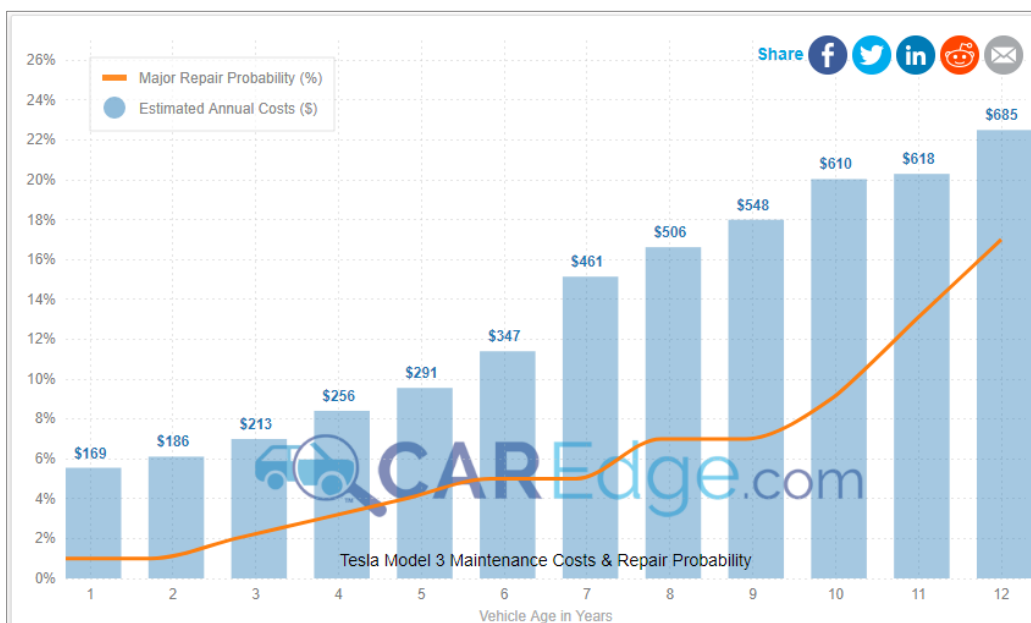
Tesla Model 3 Performance and O&M Costs

O&M costs for Tesla EVs, including the Model 3, follow this same pattern. Several writers have looked into Model 3 maintenance costs. According to CarEdge, the Model 3 maintenance schedule (below) supports a very favorable comparison of estimated annual maintenance costs and a low probability of a major repair.

Tesla Model 3 Maintenance Schedule (from CarEdge)

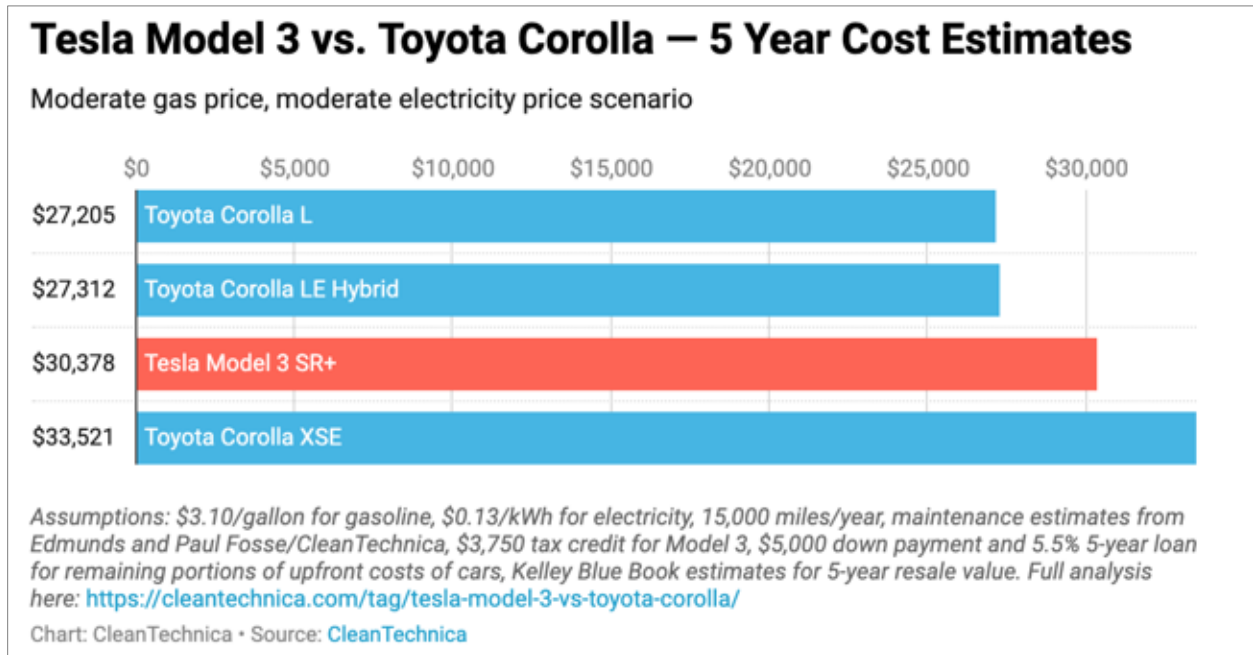
Mileage	Recommended Maintenance
12,000	Rotate Tires, Cold Weather Regions: Clean & Lubricate Brake Calipers
24,000	Rotate Tires, Replace Cabin Air Filter, Brake Fluid Test
36,000	Rotate Tires, Cold Weather Regions: Clean & Lubricate Brake Calipers
48,000	Rotate Tires, Replace Cabin Air Filter, Brake Fluid Test
60,000	Rotate Tires, Cold Weather Regions: Clean & Lubricate Brake Calipers
72,000	Rotate Tires, Replace Cabin Air Filter, Brake Fluid Test
84,000	Rotate Tires, Cold Weather Regions: Clean & Lubricate Brake Calipers
96,000	Rotate Tires, Replace Cabin Air Filter, Brake Fluid Test
108,000	Rotate Tires, Cold Weather Regions: Clean & Lubricate Brake Calipers
120,000	Rotate Tires, Replace Cabin Air Filter, Brake Fluid Test

Tesla Model 3 Maintenance Costs & Repair Probability



The figure below from [Clean Technica](#) provides a comparison of the Tesla Model 3 with different Toyota Corollas over five years. The comparison starts with this acknowledgment: “In no universe should a Tesla Model 3 be competing with a Toyota Corolla on cost. The Model 3 is, objectively, a vastly superior vehicle. It is far safer, tremendously quicker, has much higher tech, is larger, and is considerably more prestigious. The only reason we’re running this comparison is because, shockingly, the Tesla Model 3 *does* compete with the Toyota Corolla on cost.”

The article describes the study assumptions with downloadable Google worksheets. This graph illustrates their conclusion for the moderate gas and electricity cost.



Because electricity prices in Washington are generally below \$0.10/kWh, this comparison could be even more favorable for the Tesla Model 3.

Public Fleets

The Green Transportation Program tracks and catalogs public fleet experiences with Tesla vehicles in anticipation of publishing case studies for our [website](#). While it may be challenging for public fleets to purchase Tesla-branded vehicles because of possible image factors, an increasing number of fleets have made strides using Tesla vehicles in police departments. We have collected news reports of Tesla purchases by the following police or sheriff departments in the following U.S. cities:

Fremont, CA

Berea, KY

Holland, MI

Bargersville, IN

Broken Arrow, OK

Logan City, OH

Westport, CT

Seaside, CA

Ipswich, MA

Boulder, CO

Eden Prairie, MN

New York, NY

Hastings-on-Hudson, NY

The City of Spokane, WA, ordered four Tesla Model Ys for their police department. The Snohomish County Sheriff has also procured a Tesla Model Y for their department. These are relatively new additions to these fleets so these departments are not yet ready to share their observations.

The first three departments listed above have years or experience with multiple Tesla vehicles, which they have shared publicly. The **City of Fremont, CA**, used a Tesla Model S for a pilot project, as detailed in [this report](#) from November 2020.

These tables show data from the pilot program and beyond compared to calculated annual averages for a standard gas Ford police pursuit vehicle. Fremont police concluded that the pilot program was a success, and the Tesla patrol vehicle met the needs of police services.

Tables from the City of Fremont Police Department Electric Patrol Vehicle Pilot Program

Factors	2014 Tesla Model S 85	Gas Ford PPV
Vehicle Cost	\$61,478.50 ²	\$40,500
Standard Equipment Build Cost	\$35,000*	\$35,000
Modifications Above/Beyond Standard Equipment Build Cost	\$6,774.48*	\$0
OEM Range	265 miles (85kWh battery)	344 miles (18.6 tank cap)

² Tesla and City of Fremont Motor Vehicle Purchase Agreement on December 13, 2017

Actual Annual Energy/Avg. Annual Fuel Cost	\$1,036 <i>Cost of energy consumed while charging</i>	\$5,133 <i>Calculated assuming \$3.00 per gallon</i>
Avg. Annual Repair/Maintenance Cost	\$4,865	\$2,915
Actual Annual Costs of Energy/ Avg. Fuel and Maintenance/Repair Costs	\$5,901	\$8,048
Avg. Annual Maintenance Downtime	39.125 Days (10.72%)	66 days (17.98%)
Avg. Annual Operational CO2 Emissions	0 lbs.	42,198 lbs.

**Some costs were donated as part of the Pilot Program.*

The **Bargersville Police Department** in Bargersville, IN, started their transition to EVs with a Tesla Model 3. On the first anniversary of their program, the department prepared the following comparison of the Model 3 to their existing Dodge Charger pursuit vehicle. After the initial success of their program, they purchased three additional Model 3s.

This [YouTube video](#) features the Bargersville police chief talking about how the Model 3 fits their needs, how they adapted the Model 3 for police use, and how they manage charging of the vehicles.

Comparison of Bargersville Police Department Model 3 to Existing Dodge Charger Pursuit Vehicle

Dodge Charger													
Date	19-Aug	19-Sep	19-Oct	19-Nov	19-Dec	20-Jan	20-Feb	20-Mar	20-Apr	20-May	20-Jun	20-Jul	20-Aug
Gas	\$ 450	\$ 320	\$ 489	\$ 530	\$ 706	\$ 514	\$ 423	\$ 425	\$ 222	\$ 118	\$ 200	\$ 201	\$ 447
Oil	-	\$ 37	-	\$ 38	\$ 38	-	\$ 37	-	\$ 37	-	\$ 37	-	\$ 37
Maintenance	\$ 6	-	\$ 122	-	\$ 88	-	\$ 72	-	\$ 1,935	-	\$ 33	-	\$ 17
Rolling Cost	\$ 456	\$ 813	\$ 1,424	\$ 1,992	\$ 2,824	\$ 3,339	\$ 3,871	\$ 4,295	\$ 6,489	\$ 6,607	\$ 6,877	\$ 7,079	\$ 7,580
Tesla Model 3													
Date	19-Aug	19-Sep	19-Oct	19-Nov	19-Dec	20-Jan	20-Feb	20-Mar	20-Apr	20-May	20-Jun	20-Jul	20-Aug
Electricity	\$ 57	\$ 61	\$ 50	\$ 51	\$ 125	\$ 66	\$ 55	\$ 74	\$ 52	\$ 53	\$ 44	\$ 70	\$ 66
Maintenance	-	-	-	-	-	-	-	-	-	-	-	-	-
Rolling Cost	\$ 57	\$ 118	\$ 169	\$ 220	\$ 344	\$ 411	\$ 465	\$ 540	\$ 592	\$ 645	\$ 689	\$ 759	\$ 825
Rolling Savings	\$ 398	\$ 694	\$ 1,255	\$ 1,772	\$ 2,480	\$ 2,928	\$ 3,405	\$ 3,756	\$ 5,898	\$ 5,963	\$ 6,189	\$ 6,320	\$ 6,755

The **Westport Police** in Westport, CT, also used Model 3s for their foray into electrification. Here are links to two good articles detailing their experiences and savings:

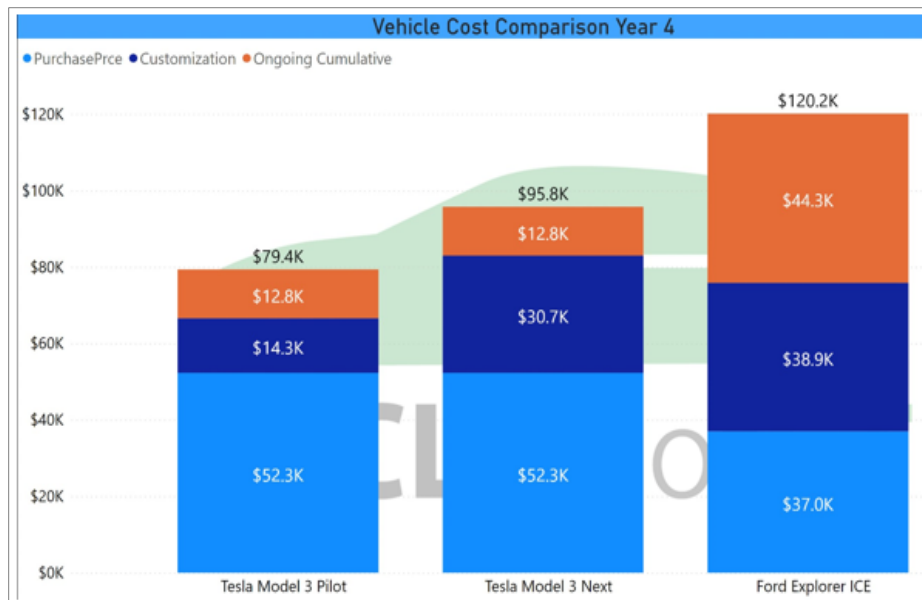
- [Tesla Police Vehicle Saves Westport Tens of Thousands of Dollars](#)
- [Police Department Says Moving To Tesla Model 3 Brought Big Savings](#)

They found that the Tesla vehicles were more expensive up front, but were cheaper to modify for police use compared to the Ford Explorer. Between the lower customization cost, savings on fuel and lower maintenance costs, they determined that a Model 3 would cost the police department \$95,800 all in after four years (see chart below). Compare that to the estimated \$120,200 cost to buy, modify, maintain and run a Ford Explorer for four years—a \$24,400 difference, or savings of \$6,100 per year.

These conclusions are compelling:

- The purchase premium is recouped in one year.
- After four years, the savings are enough to pay for another Tesla.
- One EV saves 23.5 tons of CO₂ emissions annually.

Four-Year Cost Comparison Documented by the Westport Police Department



Summary

The experiences of these and other public fleets help make the case that using Tesla vehicles can be justified because they meet the needs of the emergency and law enforcement vehicle use case and do it at much lower cost than traditional vehicles.

[Let us know](#) if we can help with vehicle procurement, infrastructure evaluation or other aspects of your fleet's transition to electric vehicles. We provide a growing array of resources on the [Green Transportation Program website](#).



The Washington State legislature passed legislation in 2019 directing the WSU Energy Program to establish and administer a technical assistance and education program for public agencies on the use of alternative fuels and vehicles. The Green Transportation Program provides education and assistance about alternative fuels and vehicles to all public agencies in the state, including cities, counties, tribes, transit agencies, ports, school districts, colleges and universities, utilities and PUDs, and other political subdivision.

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