Texas Department
of Motor Vehicles
HELPING TEXANS GO. HELPING TEXAS GROW.

2019

Alternatively Fueled Vehicle Report

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The Texas Department of Motor Vehicles

The Texas Department of Motor Vehicles is a dynamic state agency with the mission "to serve, protect and advance the citizens and industries in the state with quality motor vehicle related services." In addition to licensing vehicle dealers, awarding grants to law enforcement to combat motor vehicle crimes, and issuing operating authority and oversize/overweight permits to motor carriers, the department oversees the issuance of more than 25 million vehicle registration stickers and almost eight million vehicle titles annually.

Executive Summary

The Texas Department of Motor Vehicles reports the number of alternatively fueled vehicles (AFV) registered in Texas to the Texas Legislature annually pursuant to Texas Transportation Code §502.004 (Appendix G). The Fiscal Year (FY) 2019 report compares data from FY 2016 through FY 2019 to illustrate a four-year trend in the number of AFVs registered in Texas. For the purposes of this report, AFVs are motor vehicles capable of using fuels other than gasoline or diesel fuel and hybrid vehicles.

The number of AFVs registered in Texas at the end of FY 2019 was 259,800. Although AFVs represent only 1.04% of the total number of vehicles registered in Texas, the number of AFVs registered in Texas has grown 22.3% from FY 2016 (Chart 1), compared to only a 4.4% growth in the number of total vehicles registered (Chart 2).

Chart 1

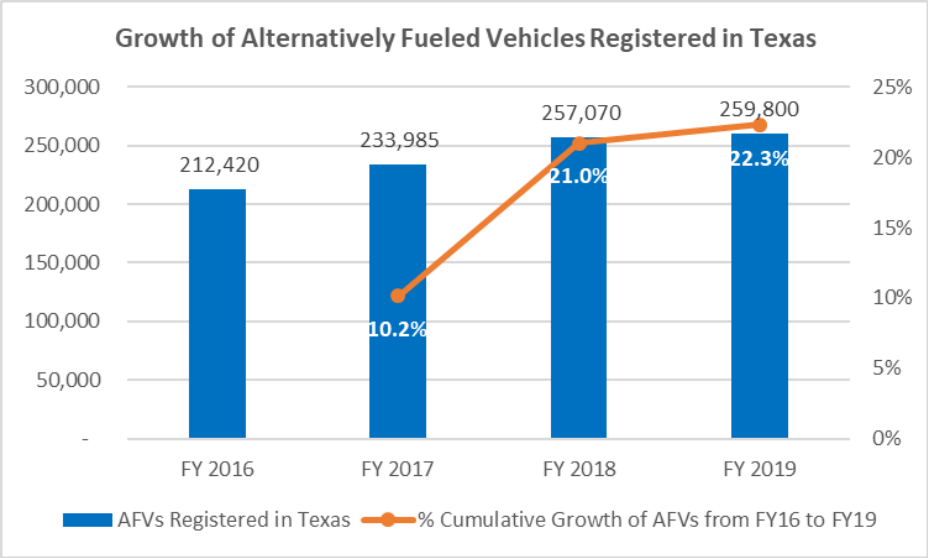


Chart 2

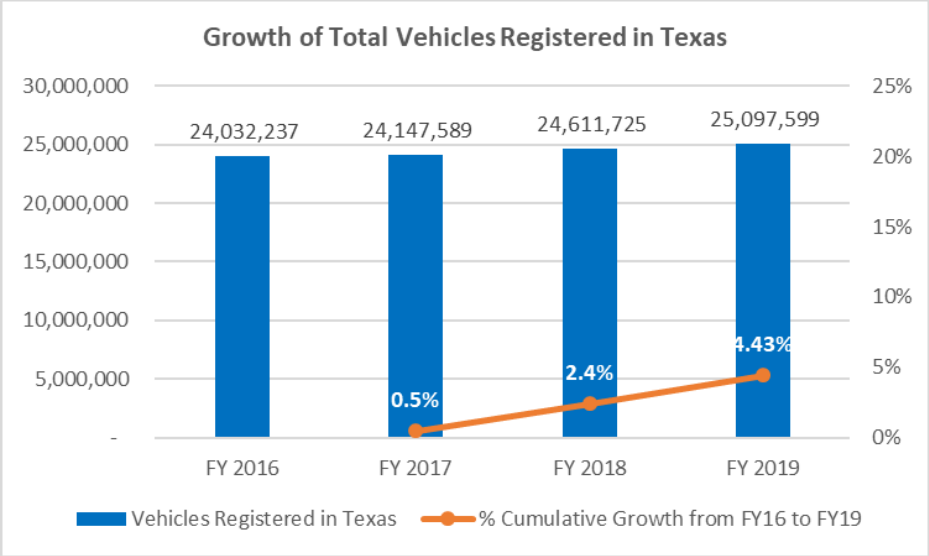


Chart 3 exhibits the makeup of AFVs registered in Texas by fuel type. Hybrid electric and gas maintains the largest percentage with 87% of AFVs registered in Texas, but that percentage has decreased by 7% since 2016, while electric vehicles have grown 7% since 2016.

Chart 3

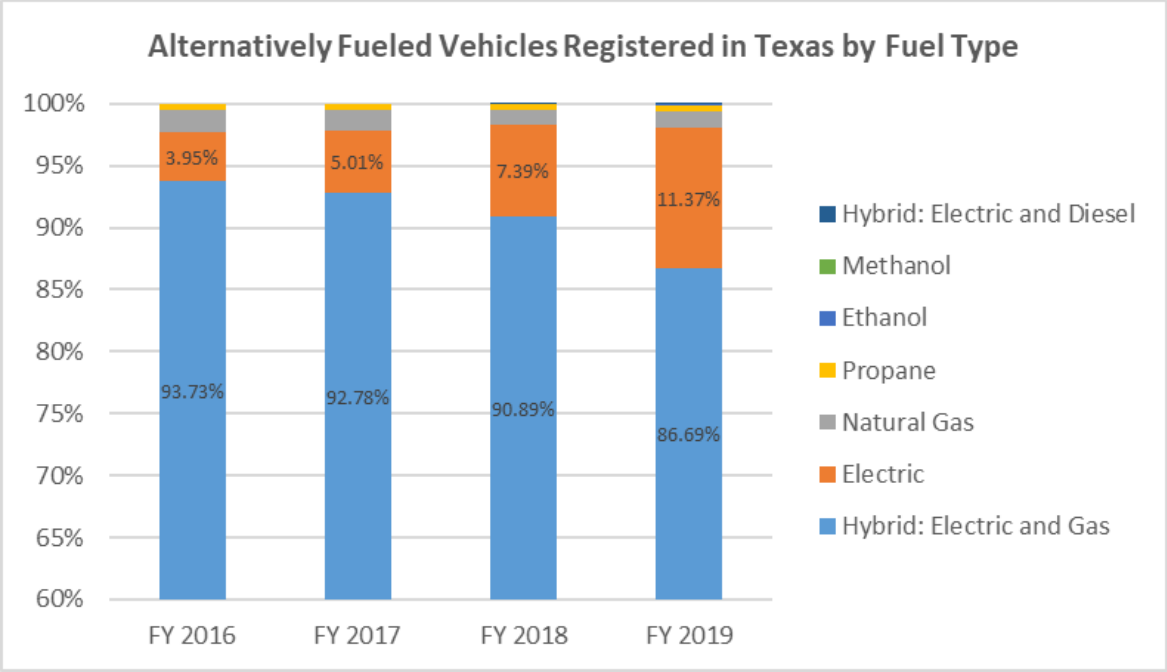
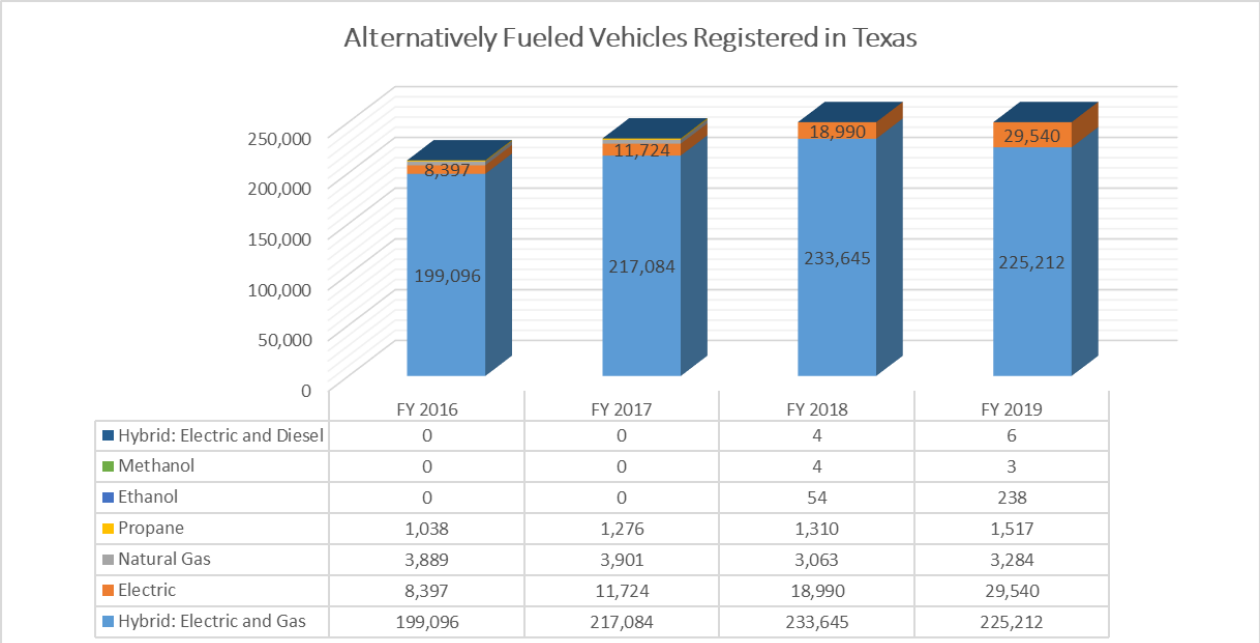


Chart 4 summarizes AFV registration data from FY 2016 through FY 2019. The 22% increase in the number of registered AFVs is driven by electric vehicles, which grew by 21,143 or 252% from FY 2016 to FY 2019.

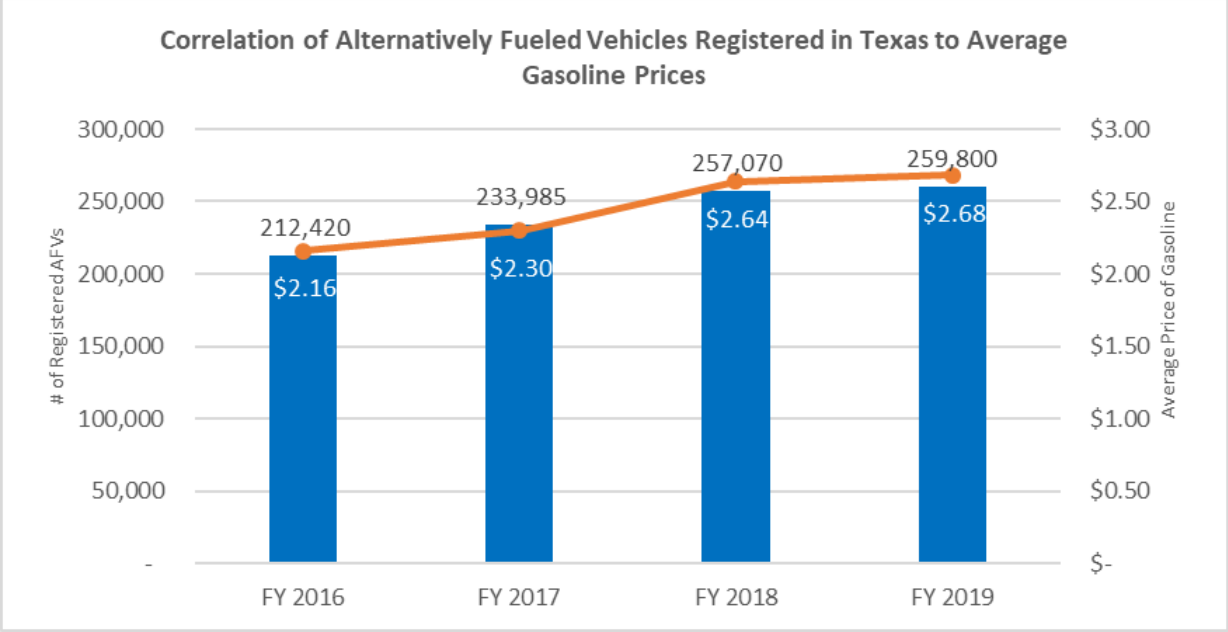
Chart 4



	FY 2016	FY 2017	FY 2018	FY 2019
Hybrid: Electric and Diesel	0	0	4	6
Methanol	0	0	4	3
Ethanol	0	0	54	238
Propane	1,038	1,276	1,310	1,517
Natural Gas	3,889	3,901	3,063	3,284
Electric	8,397	11,724	18,990	29,540
Hybrid: Electric and Gas	199,096	217,084	233,645	225,212

While it is difficult to conclude with certainty within the scope of this report the drivers behind the growth of AFVs registered in Texas over the last four years, there appears to be a strong correlation between the price of gasoline and the number of registered AFVs (Chart 5).

Chart 5



Methodology

A Vehicle Identification Number (VIN) is a unique alphanumeric identifier that has been assigned by vehicle manufacturers since 1954. While its form and function has changed over time, the standard 17-character VIN motorists are familiar with today was developed by the National Highway Traffic Safety Administration and has been required for all over-the-road vehicles including passenger cars, multi-purpose passenger vehicles, trucks, buses, incomplete vehicles and motorcycles since its implementation in 1981.

Data Limitations Related to VIN Decoding

Third party VIN decoding software is used to return the fuel types of vehicles registered in Texas. The software is able to decode VINs back to 1966; however, there were 4.5 million (18.1%) registered vehicles where the fuel type could not be determined or was not indicated. It's also important to note that some motor vehicle records cannot be decoded for various reasons: errors in the automated decoding process; VINs assigned by the manufacturer that do not include the fuel type; and, VINs assigned by the department that do not include vehicle-specific information. Also, some vehicles in the database, such as trailers, are not self-propelled and do not utilize fuel.

The department expects to see the number of decoded fuel types increase in future years as improvements are made to the decoding process.

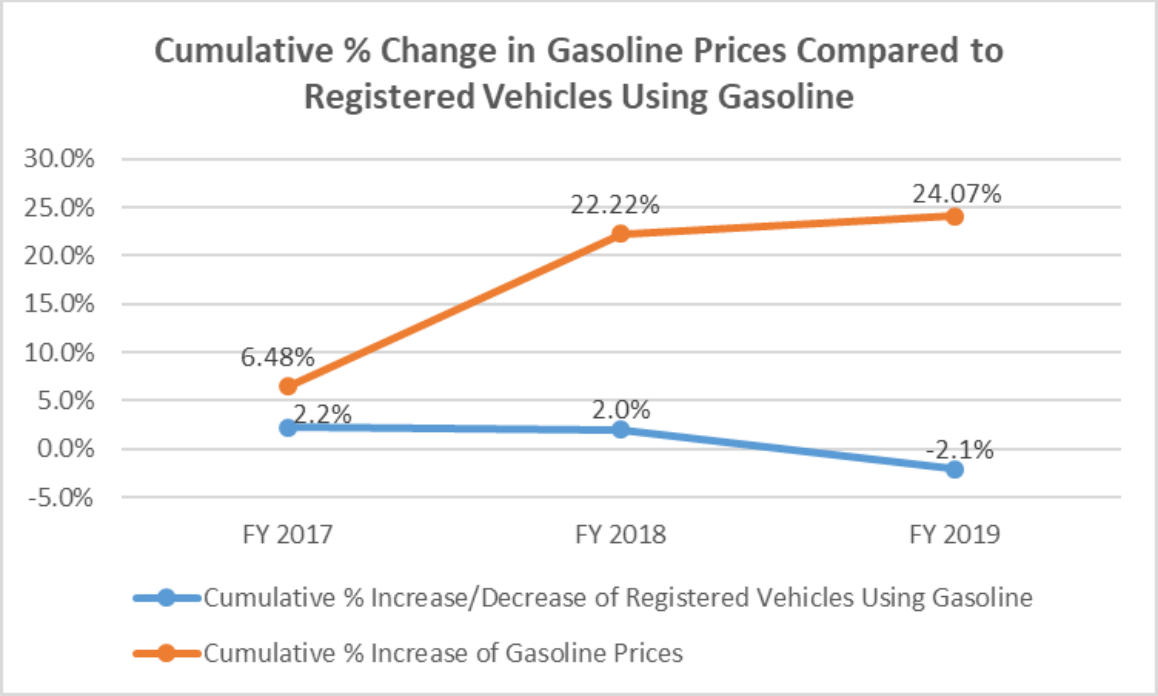
Fuel Types and Associated Registered Vehicles

Since the first self-propelled vehicles were constructed, engineers have experimented with various types of fuel, from coal used to heat the boilers of steam engines, to hydrogen fuel cells. Below are brief descriptions of the various fuel types in use today. The fuels identified as alternative for purposes of this report include electricity, natural gas, propane, ethanol, methanol and hybrid vehicles. Fuel descriptions and fuel prices were sourced from the U.S. Department of Energy's Alternative Fuels Data Center.

Gasoline

Gasoline, a transparent, petroleum-derived liquid that is used primarily as a fuel in internal combustion engines, is the most common type of vehicle fuel and is used by almost 17 million (67.12%) vehicles across the state. Although the average price of gasoline increased 24% from FY 2016 to FY 2019, the percentage of vehicles registered with the fuel type of gasoline decreased by only 2% over the same time period (Chart 6).

Chart 6



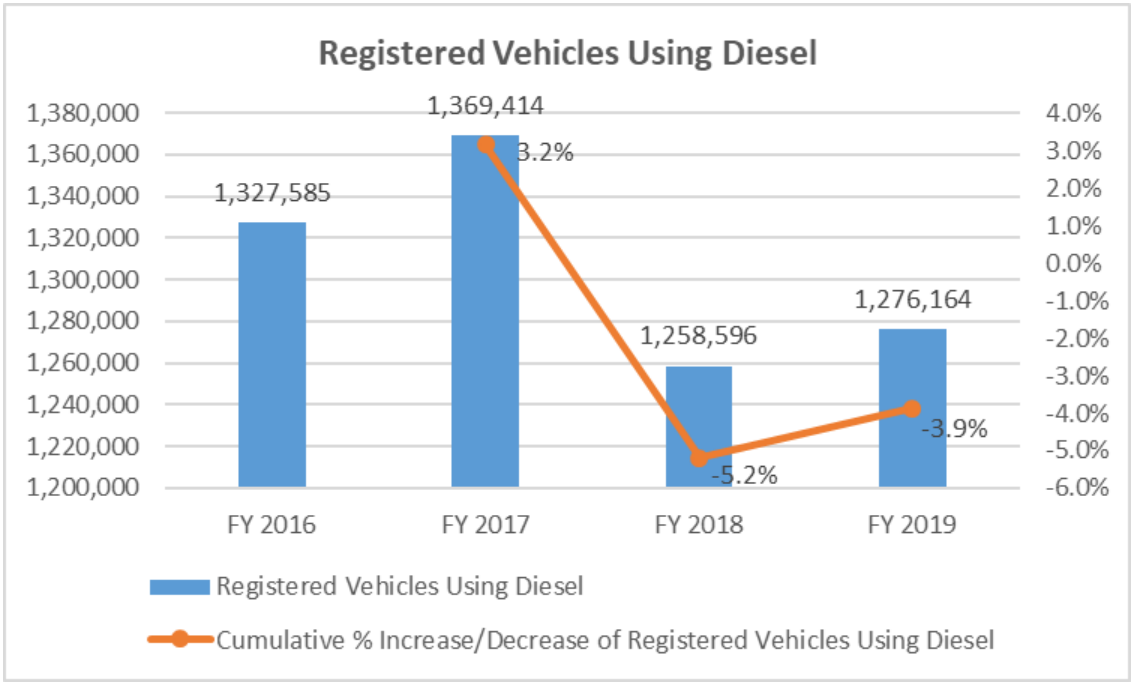
Flexible (Flex)

Flexible fuel vehicles are designed to operate using either gasoline or gasoline-ethanol blends containing up to 85% ethanol. Approximately 2.2 million (8.64%) vehicles in Texas can use flexible fuel and the total number of vehicles registered in Texas that can use gasoline and/or flexible fuel is over 19 million (75.76%).

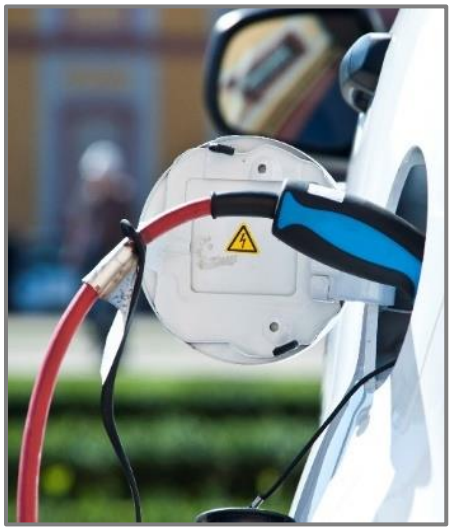
Diesel

Diesel includes products commonly referred to as kerosene, light cycle oil, #1 diesel fuel, #2 diesel fuel, aviation jet fuel, renewable diesel, biodiesel, distillate fuel, cutter stock, heating oil or simply diesel fuel. There are almost 1.3 million (5.08%) diesel fueled vehicles registered in Texas. This is a 1.4% increase from FY 2018 and a decrease of almost 4% from FY 2016 (Chart 7). The average price of diesel increased 32% from FY 2016 to FY 2019, but due to the popularity of pickup trucks in Texas, it remains to be seen if the overall declining trend in diesel fueled vehicles registered in Texas continues.

Chart 7



Electricity



Electric vehicles are wholly powered by electricity and use battery packs to store and release energy. There are 29,540 (0.12%) electric vehicles registered in Texas. Although still a fraction of the total vehicles registered in Texas, this category represents the largest percentage of increase of any alternatively fueled vehicle type year-over-year. The number of electric vehicles registered in Texas has grown by 21,143 (252%) since FY 2016. There are a number of factors that may be attributable to growth in this category, including rising gasoline prices, vehicle options with lower price points, and greater environmental awareness by consumers.

Hybrid: Gasoline and Electric

Gasoline and electric hybrids can use either fuel type, or both in combination, to propel a vehicle as determined by the design of the vehicle. There are varying degrees in which the vehicle utilizes the electric motor versus the gasoline-powered motor. In some instances, the two motors work together in parallel with both motors providing power to the drivetrain. In other instances, the gasoline motor is only used as a source of recharging the batteries for the electric motor. There are 225,212 (0.90%) gasoline and electric hybrid vehicles registered in Texas. This represents an increase of 13.12% from FY 2016.

Hybrid: Diesel and Electric

These hybrid vehicles are analogous to gasoline and electric hybrids but utilize diesel fuel rather than gasoline. There are 6 diesel and electric hybrid vehicles registered in Texas.

Propane

Propane is a hydrocarbon gas that is stored under pressure inside a tank where it turns to liquid. As pressure is released, the liquid propane vaporizes and turns into gas that is used for combustion. There are 1,517 (0.01%) propane fueled vehicles registered in Texas.

Convertible

Convertible vehicles have engines that are easily converted from gasoline to propane and represent 3,830 (0.02%) of currently registered vehicles. This is a 41.52% decrease from FY 2016 but flat as a percentage of total registered vehicles.

Natural Gas

Natural gas primarily consists of methane that is compressed and used by or through a compressed natural gas (CNG) system. It can be used in the form of CNG or liquefied natural gas (LNG) to fuel cars and trucks. Conventional gasoline and diesel vehicles can be retrofitted for CNG; however, VIN decoding would not indicate that the engine had been converted. There are 3,284 (0.01%) compressed natural gas fueled vehicles currently registered in Texas.

Ethanol

Ethanol can be produced from many high-starch plant sources and is primarily used as an octane enhancer when blended with gasoline but can also be used in higher concentrations by vehicles designed to accommodate its use. There are 238 ethanol fueled vehicles registered in Texas. This is a 341.75% increase from last year but flat as a percentage of total registered vehicles.

Methanol

Methanol, also known as wood alcohol, has chemical and physical properties similar to ethanol. There are 3 methanol fueled vehicles registered in Texas.

Hydrogen Fuel Cell

Hydrogen fuel cells harness a chemical reaction to create electricity and propel a vehicle making them similar to hybrid electric vehicles. This is a relatively new technology for use in the motor vehicle industry and, therefore, there are not many vehicles available to general consumers. The Texas Department of Motor Vehicles has no records indicating there are any vehicles currently registered in Texas using this fuel type.

Appendix A – Vehicles Registered in Texas by Fuel Type – FY 2019

FUEL TYPE	NUMBER OF REGISTERED VEHICLES	PERCENT OF TOTAL
Alternative Fuels		
Hybrid: Electric and Gas	225,212	0.90%
Electric	29,540	0.12%
Natural Gas	3,284	0.01%
Propane	1,517	0.01%
Ethanol	238	0.00%
Methanol	3	0.00%
Hybrid: Electric and Diesel	6	0.00%
Subtotal, Alternative Fuels	**259,800**	**1.04%**
Gasoline	16,845,463	67.12%
Flexible	2,168,253	8.64%
Diesel	1,276,164	5.08%
Convertible	3,830	0.02%
Hydrogen Fuel Cell	-	-
Fuel Type Not Disclosed*	329,708	1.31%
Fuel Type Unknown**	4,214,381	16.79%
Subtotal, Non-Alternative Fuels	**24,837,799**	**98.96%**
Total Number of Registered Vehicles	**25,097,599**	**100.00%**

* The VIN decoding process returned the fuel type in question as “undisclosed.”

** Unknown fuel types are the result of an error in the VIN decoding process, the VIN not designating a fuel type, or, most likely, the vehicle in question not being self-propelled such as a trailer.

Appendix B – Vehicles Registered in Texas by Fuel Type – FY 2018

FUEL TYPE	NUMBER OF REGISTERED VEHICLES	PERCENT OF TOTAL
Alternative Fuels		
Hybrid: Electric and Gas	233,645	0.95%
Electric	18,990	0.08%
Natural Gas	3,063	0.01%
Propane	1,310	0.01%
Ethanol	54	0.00%
Methanol	4	0.00%
Hybrid: Electric and Diesel	4	0.00%
Subtotal, Alternative Fuels	**257,070**	**1.04%**
Gasoline	17,510,554	71.15%
Flexible	2,231,880	9.07%
Diesel	1,258,596	5.11%
Convertible	4,473	0.02%
Hydrogen Fuel Cell	-	-
Fuel Type Not Disclosed*	336,527	1.37%
Fuel Type Unknown**	3,012,625	12.24%
Subtotal, Non-Alternative Fuels	**24,354,655**	**98.96%**
Total Number of Registered Vehicles	**24,611,725**	**100.00%**

* The VIN decoding process returned the fuel type in question as “undisclosed.”

** Unknown fuel types are the result of an error in the VIN decoding process, the VIN not designating a fuel type, or, most likely, the vehicle in question not being self-propelled such as a trailer.

Appendix C – Vehicles Registered in Texas by Fuel Type – FY 2017

FUEL TYPE	NUMBER OF REGISTERED VEHICLES	PERCENT OF TOTAL
Alternative Fuels		
Hybrid: Electric and Gas	217,084	0.90%
Electric	11,724	0.05%
Natural Gas	3,901	0.02%
Propane	1,276	0.01%
Ethanol	-	0.00%
Methanol	-	0.00%
Hybrid: Electric and Diesel	-	0.00%
Subtotal, Alternative Fuels	**233,985**	**0.97%**
Gasoline	17,237,827	71.39%
Flexible	2,215,878	9.18%
Diesel	1,369,414	5.67%
Convertible	5,756	0.02%
Hydrogen Fuel Cell	-	-
Fuel Type Not Disclosed*	715	0.00%
Fuel Type Unknown**	3,084,014	12.77%
Subtotal, Non-Alternative Fuels	**23,913,604**	**99.03%**
Total Number of Registered Vehicles	**24,147,589**	**100.00%**

* The VIN decoding process returned the fuel type in question as “undisclosed.”

** Unknown fuel types are the result of an error in the VIN decoding process, the VIN not designating a fuel type, or, most likely, the vehicle in question not being self-propelled such as a trailer.

Appendix D – Vehicles Registered in Texas by Fuel Type – FY 2016

FUEL TYPE	NUMBER OF REGISTERED VEHICLES	PERCENT OF TOTAL
Alternative Fuels		
Hybrid: Electric and Gas	199,096	0.83%
Electric	8,397	0.04%
Natural Gas	3,889	0.02%
Propane	1,038	0.00%
Ethanol	-	0.00%
Methanol	-	0.00%
Hybrid: Electric and Diesel	-	0.00%
Subtotal, Alternative Fuels	**212,420**	**0.88%**
Gasoline	16,622,760	69.17%
Flexible	2,127,669	8.85%
Diesel	1,327,585	5.52%
Convertible	6,549	0.03%
Hydrogen Fuel Cell	-	-
Fuel Type Not Disclosed*	555	0.00%
Fuel Type Unknown**	3,734,699	15.54%
Subtotal, Non-Alternative Fuels	**23,819,817**	**99.12%**
Total Number of Registered Vehicles	**24,032,237**	**100.00%**

* The VIN decoding process returned the fuel type in question as “undisclosed.”

** Unknown fuel types are the result of an error in the VIN decoding process, the VIN not designating a fuel type, or, most likely, the vehicle in question not being self-propelled such as a trailer.

Appendix E – Year-Over-Year Comparison – Vehicle Count

FUEL TYPE	FY 2016 REGISTERED VEHICLES	FY 2017 REGISTERED VEHICLES	FY 2018 REGISTERED VEHICLES	FY 2019 REGISTERED VEHICLES
Alternative Fuels				
Hybrid: Electric and Gas	199,096	217,084	233,645	225,212
Electric	8,397	11,724	18,990	29,540
Natural Gas	3,889	3,901	3,063	3,284
Propane	1,038	1,276	1,310	1,517
Ethanol	-	-	54	238
Methanol	-	-	4	3
Hybrid: Electric and Diesel	-	-	4	6
Subtotal, Alt. Fuels	**212,420**	**233,985**	**257,070**	**259,800**
Gasoline	16,622,760	17,237,827	17,510,554	16,845,463
Flexible	2,127,669	2,215,878	2,231,880	2,168,253
Diesel	1,327,585	1,369,414	1,258,596	1,276,164
Convertible	6,549	5,756	4,473	3,830
Hydrogen Fuel Cell	-	-	-	-
Fuel Type Not Disclosed*	555	715	336,527	329,708
Fuel Type Unknown**	3,734,699	3,084,014	3,012,625	4,214,381
Subtotal, Non-Alt. Fuels	**23,819,817**	**23,913,604**	**24,354,655**	**24,837,799**
Total Vehicles Registered	**24,032,237**	**24,147,589**	**24,611,725**	**25,097,599**

* The VIN decoding process returned the fuel type in question as “undisclosed.”

** Unknown fuel types are the result of an error in the VIN decoding process, the VIN not designating a fuel type, or, most likely, the vehicle in question not being self-propelled such as a trailer.

Appendix F – Year-Over-Year Comparison – Percentage of Change

FUEL TYPE	FY 2016 to FY 2017	FY 2017 to FY 2018	FY 2018 to FY 2019	FY 2016 to FY 2019
Alternative Fuels				
Hybrid: Electric and Gas	9.03%	7.63%	-3.61%	13.12%
Electric	39.62%	61.98%	55.56%	251.79%
Natural Gas	0.31%	-21.48%	7.22%	-15.56%
Propane	22.93%	2.66%	15.80%	46.15%
Ethanol	-	-	340.74%	-
Methanol	-	-	-25.00%	-
Hybrid: Electric and Diesel	-	-	50.00%	-
Subtotal, Alt. Fuels	**10.15%**	**9.87%**	**1.06%**	**22.30%**
Gasoline	3.70%	1.58%	-3.80%	1.34%
Flexible	4.15%	0.72%	-2.85%	1.91%
Diesel	3.15%	-8.09%	1.40%	-3.89%
Convertible	-12.11%	-22.29%	-14.38%	-41.52%
Hydrogen Fuel Cell	-	-	-	-
Fuel Type Not Disclosed*	28.83%	46,966.71%	-2.03%	59,306.85%
Fuel Type Unknown**	-17.42%	-2.31%	39.89%	12.84%
Subtotal, Non-Alt. Fuels	**0.39%**	**1.84%**	**1.98%**	**4.27%**
Total Vehicles Registered	**0.48%**	**1.92%**	**1.97%**	**4.43%**

* The VIN decoding process returned the fuel type in question as “undisclosed.”

** Unknown fuel types are the result of an error in the VIN decoding process, the VIN not designating a fuel type, or, most likely, the vehicle in question not being self-propelled such as a trailer.

Appendix G – State Tax Rates on Motor Vehicle Fuels

Gasoline, diesel, and gasoline blends, such as e85 or flexible fuel, are taxed by the state at a rate of $0.20 per gallon (see Tax Code §§ 162.102 & .202).

Compressed Natural Gas and Liquefied Natural Gas are taxed by the state at $0.15 per gallon equivalent (see Tax Code § 162.353).

Motor vehicle fuel types other than those noted above are not presently taxed by the State of Texas.

Appendix H – Texas Transportation Code § 502.004

TRANSPORTATION CODE

TITLE 7. VEHICLES AND TRAFFIC

SUBTITLE A. CERTIFICATES OF TITLE AND REGISTRATION OF VEHICLES

CHAPTER 502. REGISTRATION OF VEHICLES

SUBCHAPTER A. GENERAL PROVISIONS

Sec. 502.004. INFORMATION ON ALTERNATIVELY FUELED VEHICLES.

(a) In this section, "alternatively fueled vehicle" means a motor vehicle that is capable of using a fuel other than gasoline or diesel fuel.

(b) The department by rule shall establish a program to collect information about the number of alternatively fueled vehicles registered in this state.

(c) The department shall submit an annual report to the legislature that includes the information collected under this section. The report must, at a minimum, show the number of vehicles registered in this state that use:

(1) electric plug-in drives;
(2) hybrid electric drives;
(3) compressed natural gas drives; and
(4) liquefied natural gas drives.

Added by Acts 2015, 84th Leg., R.S., Ch. 507 (H.B. 735), Sec. 1, eff. September 1, 2016.