



2014 Alternative Transportation Fuels Report

A Comprehensive Report of Alternative Fuel
Fleet Vehicles, Fuel Production, and Stations in Virginia

Prepared for:
The Virginia Department of Mines, Minerals, and Energy



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SECTION I: ALTERNATIVE FUEL FLEET VEHICLES SUMMARY

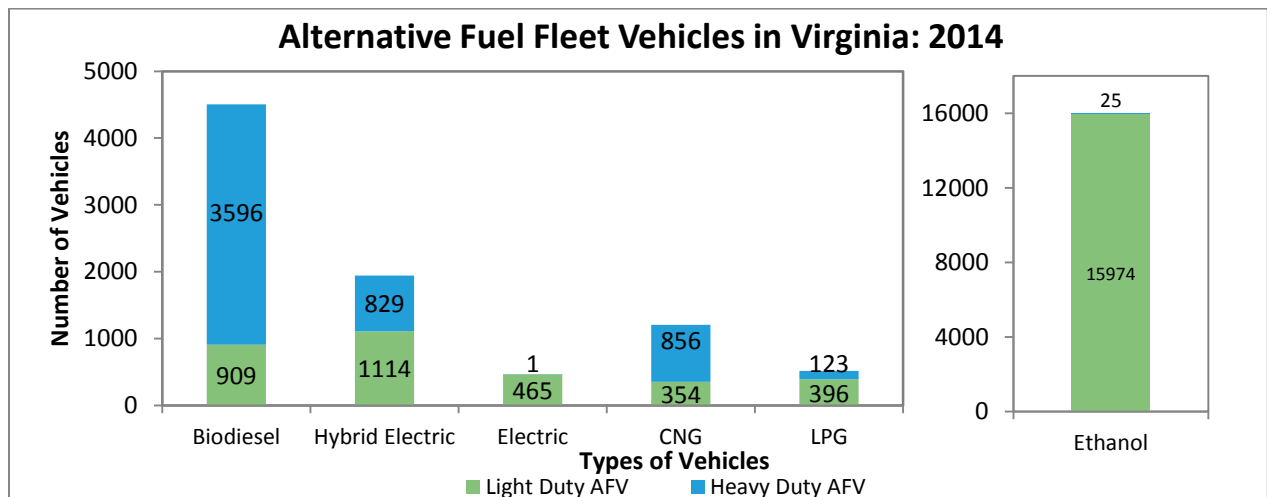
For the year ending December 31, 2014, the Commonwealth of Virginia saw an increase in the number of tracked alternative fuel fleet vehicles by 50.7%. The current percentage of alternative fuel vehicles used in Virginia fleets is 37.2%, with a two-year average of 26.7% and a five-year average of 24.5%. All alternative fuel vehicle types exhibited growth in 2014 with the exception of biodiesel vehicles. This decline in biodiesel use was seen in previous years and it appears to coincide with a decline in biodiesel stations statewide that was identified in 2012. The vehicles reported are in service with private business fleets and local, state and federal government fleets. The significant growth in this report is primarily related to the new inclusion of reported vehicles from an aggregated total of federal fleets.

Table 1-1. Growth of Reported Virginia Alternative Fuel Fleet Vehicles: 2014¹

Year	CNG	E85	HEV	ELEC	BD	LPG	AFV Total
2013	1057	8540	1605	287	4351	509	16349
2014	1210	15999	1943	466	4505	519	24642
Percent Growth	14.47%	87.34%	21.06%	62.37%	3.54%	1.96%	50.72%

The majority of the growth in these tracked alternative fuel fleet vehicles was in the number of E85 vehicles reported, which increased by a total of 87.34% from 2013. Ethanol vehicles are often used for EPACT compliance in fleets and therefore, are widely adopted. Electric vehicles also showed growth at high rates, with 179 new fleet vehicles reported in 2014. The values reported above are adjusted to correct for one fleet's out-of-state CNG and hybrid electric fleet vehicles that were inadvertently reported as Virginia vehicles in 2013. The graph below shows the total alternative fuel fleet vehicles broken into light and heavy duty classifications. A light duty vehicle is considered to be a class 1 through class 3 vehicle while a heavy duty vehicle is class 4 through class 8. Due to the large number of E85 vehicles tracked for this year, ethanol vehicles are displayed on a separate axis within the same figure.

Figure 1-1. Alternative Fuel Fleet Vehicles in Virginia: 2014¹

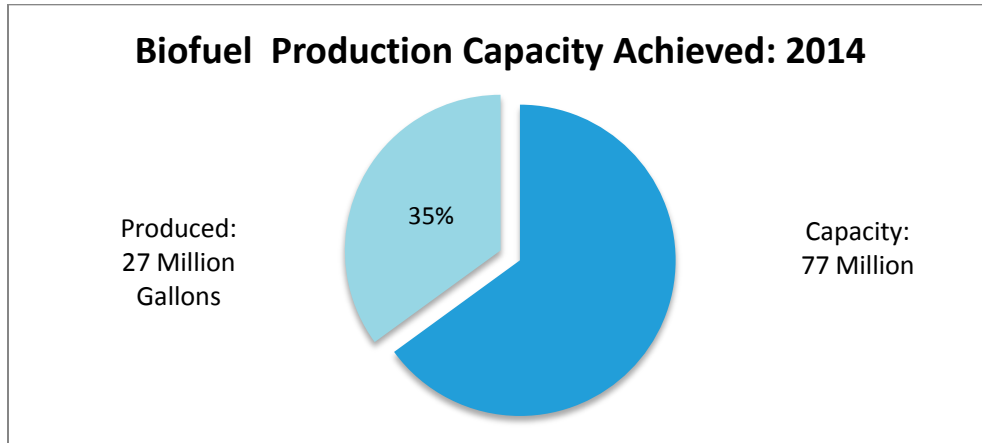


¹ Data collected by Virginia Clean Cities through online survey, phone calls, and personal contact from January 1, 2014 to December 31, 2014

SECTION II: BIOFUEL PRODUCTION SUMMARY

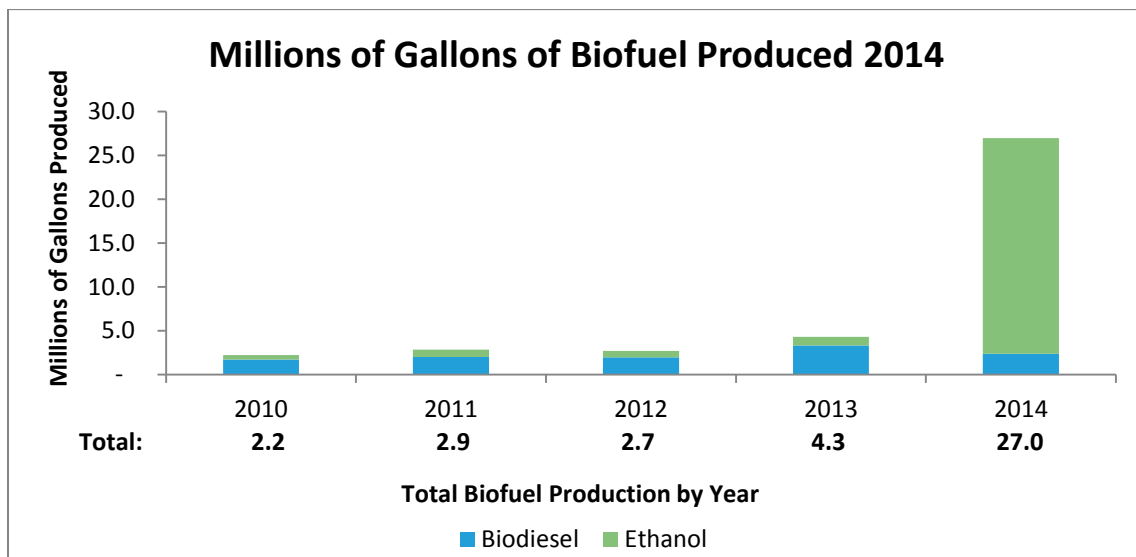
Two small biodiesel facilities and two ethanol facilities are currently in operation within the Commonwealth of Virginia. These facilities have a production capacity of nearly 77 million gallons, but produced 27 million gallons of fuel in 2014. Therefore, production in Virginia in 2014 was approximately 35% of total capacity for biofuel, increasing 13% over the capacity produced from last year.

Figure 2-1. Biofuel Production Capacity Achieved in Virginia: 2014²



The chart below shows gallons of biofuel produced in Virginia in both ethanol and biodiesel facilities over the last five years. The production of ethanol increased drastically due to the opening of a new facility in 2014. As a result, biofuel production increased by nearly 700% from 2013. The graph below shows the breakdown of ethanol and biodiesel production, with the total amount of fuel produced per year displayed in millions of gallons.

Figure 2-2. Millions of Gallons of Biofuel Produced in Virginia: 2014²

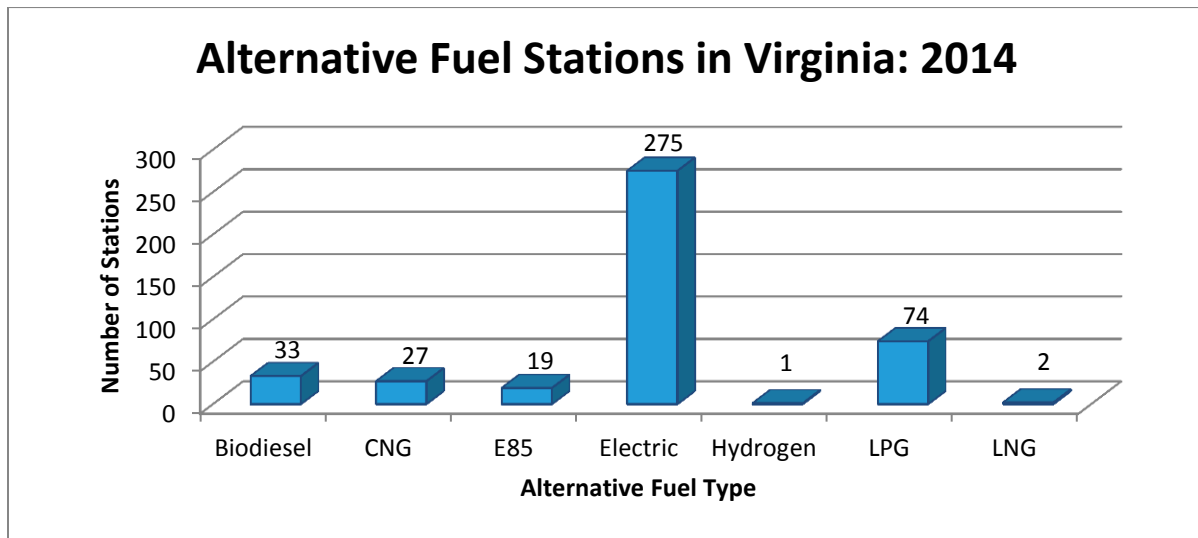


² Production data collected by Virginia Clean Cities through phone contact from January 1 to January 12, 2015

SECTION III: ALTERNATIVE FUEL STATION SUMMARY

The total number of alternative fuel stations reported for the Commonwealth of Virginia in 2014 is 431. Of those stations, 309 are public and 122 are private stations. Virginia had a growth of 56 electric vehicle charging stations, marking a 25.6% growth for the year. CNG stations also exhibited a large percent growth with 6 stations opening in 2014 for a growth of 28.6%. There was no growth in the number of biodiesel or LNG stations, and there was a slight decline in hydrogen and E85 ethanol stations but Virginia now has one E15 station. Around 70% of Virginia’s gasoline vehicles (4,851,013) are model year 2001 and newer and therefore are compatible with E15 ethanol. Overall, there were 61 new stations reported in Virginia in 2014.

Figure 3-1. Alternative Fuel Stations in Virginia: 2014³



The growth of each type of alternative fuel station from 2013 to 2014 can be seen below. Although some fuel types showed no growth or negative growth, the total number of alternative fuel stations in Virginia increased by 16.8% with the addition of 61 stations.

Table 3-1. Alternative Fuel Station Growth in Virginia: 2014³

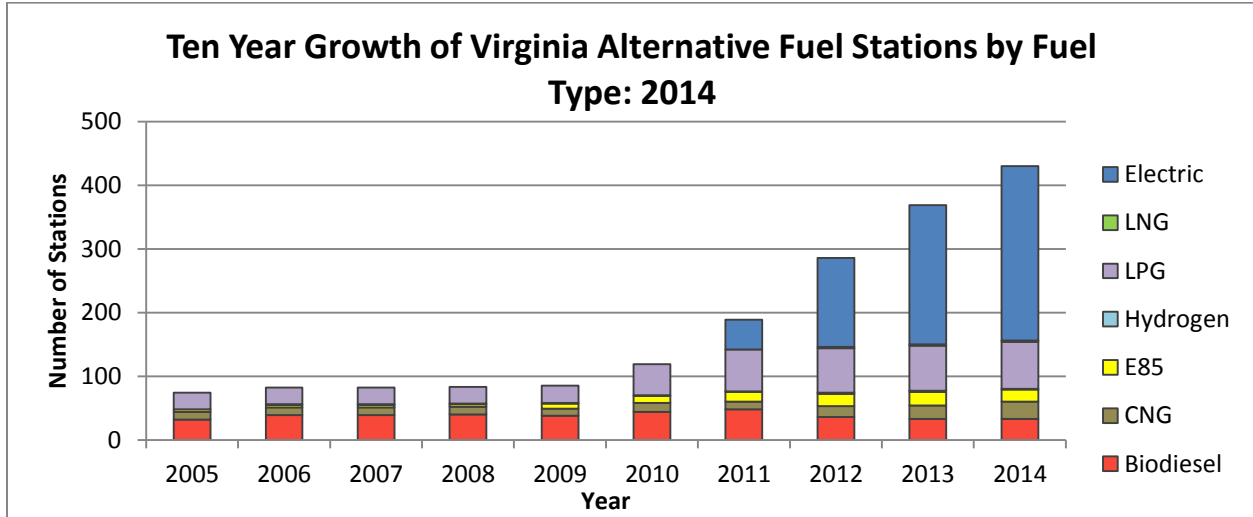
Year	Biodiesel	CNG	E85	Electric	Hydrogen	LPG	LNG	Total
2013	33	21	21	219	2	71	2	369
2014	33	27	19	275	1	74	2	431
Growth	0.0%	28.6%	-9.5%	25.6%	-50%	4.2%	0.0%	16.8%

Over the last 4 years, electric vehicle charging stations have exhibited the largest growth and have become the most prevalent alternative fuel station in Virginia. Liquefied natural gas (LNG) and hydrogen stations have continually made up the smallest proportion of stations and this held true for 2014. Liquefied propane gas (LPG) has shown growth since 2005 but the total number of stations has

³ Data collected by Virginia Clean Cities through use of AFDC station locator searches, phone calls, and personal contact from January 1, 2014 to December 31, 2014

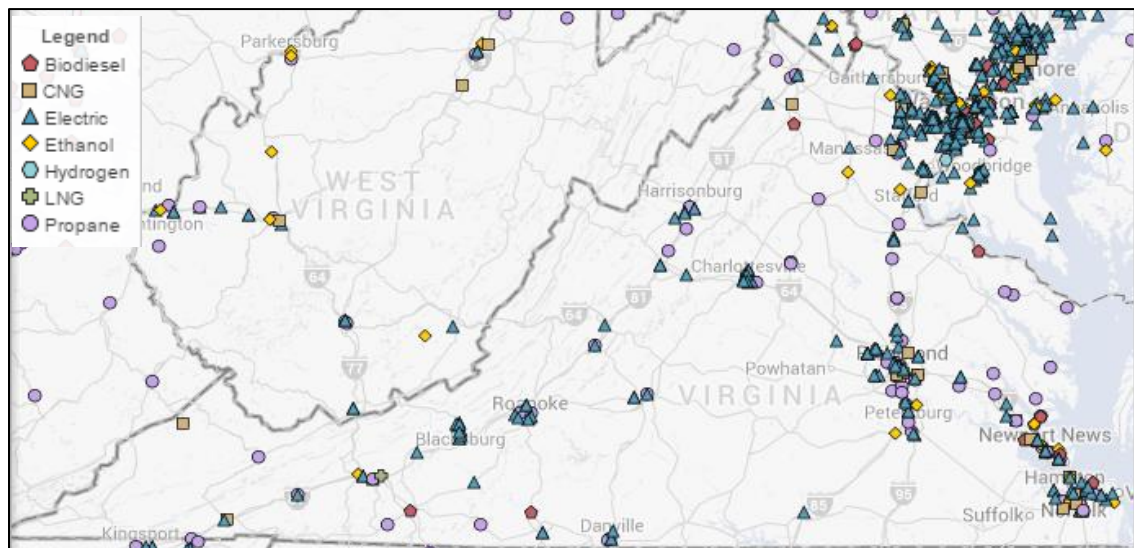
fluctuated over time. Overall, the total number of alternative fuel stations in Virginia has continued to increase as alternative fuel use continues to expand, as seen in Figure 3-2 below.

Figure 3-2. Ten Year Growth of Virginia Alternative Fuel Stations by Fuel Type: 2014



In order to observe the geographic distribution of these stations, a map is presented below. This map reflects planned and current stations that are both public and private. This map does not show all of the stations tracked by Virginia Clean Cities due to the fact that the Department of Energy only tracks stations with biodiesel blends with at least 20% biodiesel. The station totals presented in this report include all blends of biodiesel. This interactive mapping tool is hosted by the Department of Energy and can be found at <http://www.afdc.energy.gov/afdc/locator/stations/>.

Figure 3-3. 2014 Virginia Alternative Fuel Stations Map⁴



⁴ Virginia Alternative Fueling Station Locator, Alternative Fuels Data Center, U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy. Retrieved December 8, 2014 from <http://www.afdc.energy.gov/afdc/locator/stations/state>