

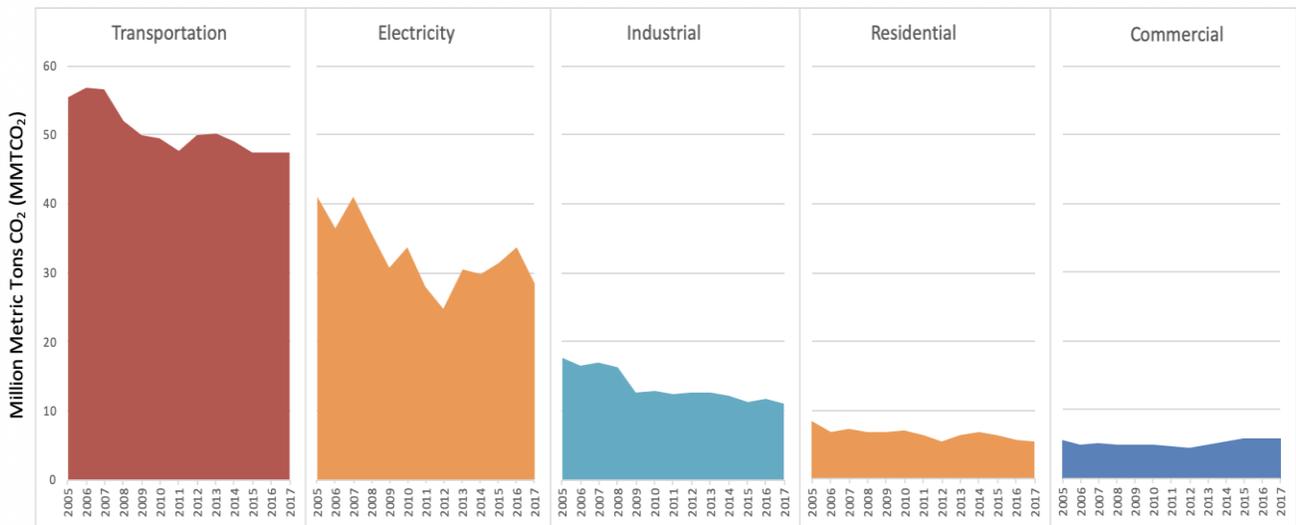
Virginia Alternative Transportation Fuels Report 2020

Prepared by Virginia Clean Cities (VCC) for the Virginia Department of Mines, Minerals, and Energy on March 1, 2021

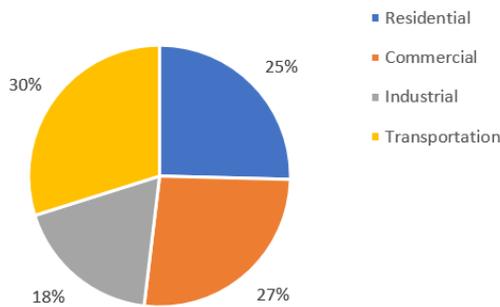
Transportation forms an integral part of Virginia's economy and environment and the transportation sector is the largest end-use energy-consuming sector in the Commonwealth according to the 2018 Virginia Energy Plan. In 2018, Virginia's drivers spent \$37.4 million on 14.5 million gallons of imported gasoline and diesel per day to fuel their vehicles. Each gallon of gasoline produces 19 pounds of carbon dioxide (CO₂), making transportation the largest energy user, the largest source of carbon dioxide, and a large expense for a product produced out of state or out of the country.

VCC connects with voluntary fleet leaders, biofuel producers, and station operators to present this status of fleets, fuel production, and stations in the transition to cleaner, domestic and/or renewable fuels. Data was collected by VCC staff through infrastructure development, emails and phone from January 1, 2020 to December 31, 2020.

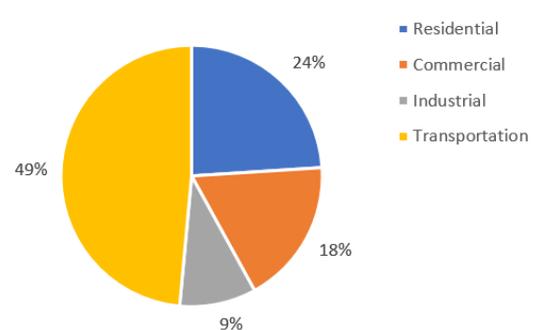
Virginia's Carbon Dioxide Emissions by Fossil Fuel Combustion Sector 2005-2017



Virginia Energy Consumption by End-Use Sector, 2018



Virginia Expenditures on Energy by End-Use Sector, 2018



Front page graphics are most recent available info from Energy Information Administration eia.gov

SECTION I: ALTERNATIVE FUEL FLEET VEHICLES SUMMARY

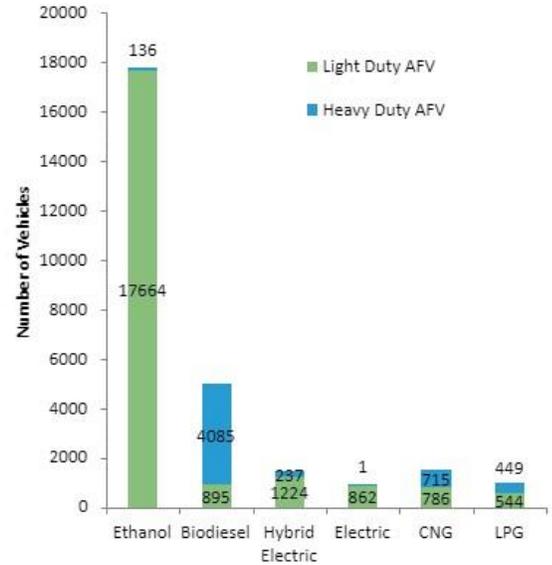
For the year ending December 31, 2020, the Commonwealth of Virginia saw a minor increase in the number of tracked alternative fuel fleet vehicles by 2.3%. At 27,598 vehicles in 101 green fleets, the current percentage of alternative fuel vehicles used in tracked clean fuel Virginia fleets is 42.3 percent of their vehicles. Ethanol, biodiesel, electric and propane vehicles made minor net gains in the past year, while decreases were seen in natural gas and in hybrid vehicles. The vehicles reported are in service with clean fleets, designated by operating five or more clean fuel vehicles, and include business fleets and local, state and federal government fleets.

Table 1-1 and Figure 1-1. Alternative Fuel Fleet Vehicles: 2020

Fuel Type	CNG	E85	HEV	ELEC	BD	LPG	AFV Total
2019 Totals	1466	17675	1456	706	4954	717	26970
2020 Totals	1501	17800	1461	863	4980	993	27598
1-Year Difference	35	125	5	157	26	276	628
% Growth	2.4%	0.7%	0.3%	22.2%	0.5%	38.5%	2.3%

The graph to the right 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 vehicles while a heavy-duty vehicle is class 4 through class 8.

Alternative Fuel Fleet Vehicles in Virginia - January 2020



SECTION II: RENEWABLE BIOFUEL PRODUCTION SUMMARY

Virginia is host to a rich agricultural economy and numerous corporations and entrepreneurs developing biofuels from plant or recycled materials as a replacement for or mixture with traditional transportation fuels of gasoline or diesel. Virginia research universities have developed advanced biofuels technologies. Currently there are three biodiesel facilities in operation in Virginia, which produced 2.4 million gallons, a 27% utilization of capacity. Synergy Biofuels in Pennington Gap has come back online with a plant in 2020. Renewable natural gas production will begin soon in the Commonwealth through a partnership between Dominion Energy and Smithfield Foods. The U.S. Energy Information Administration (EIA) estimates Virginia produced 7.3 trillion Btu of biofuel energy in 2018, EIA reports no Virginia oil energy production.

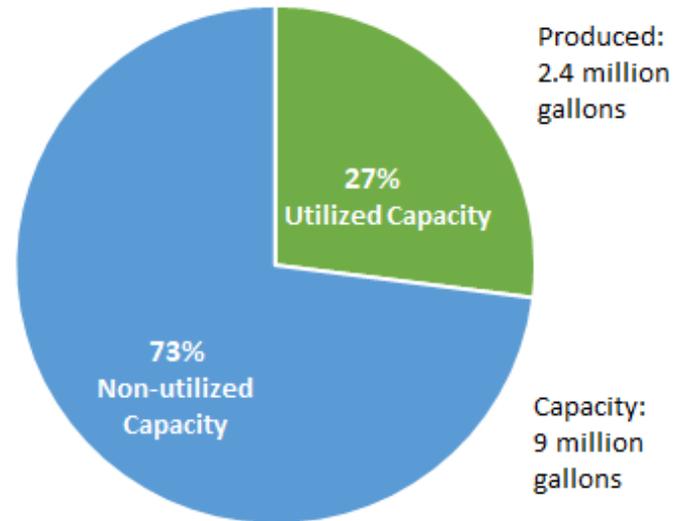
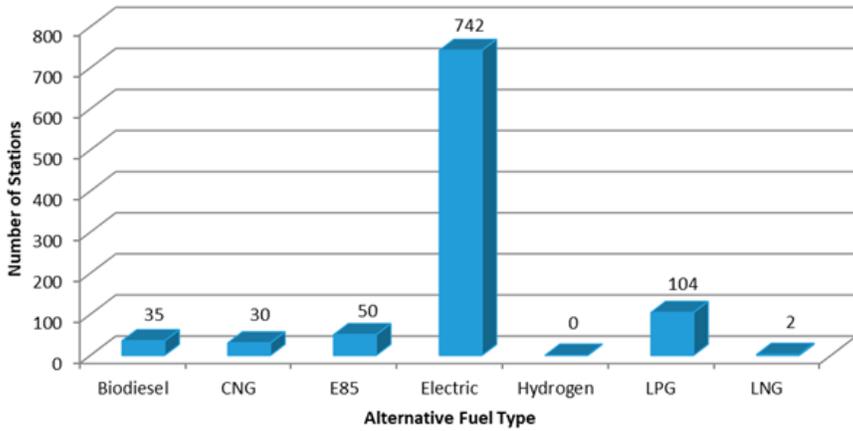


Figure 2-1. Biofuel Production Capacity Achieved in Virginia: 2020

SECTION III: ALTERNATIVE FUEL STATION SUMMARY

The total number of alternative fuel stations reported for the Commonwealth of Virginia in 2020 is 963. Of those stations, 790 are public and 173 are private access stations such as individual fleet facilities. Virginia had a growth of 69 electric vehicles charging stations, marking a 10.25% growth for the year. It is important to note that under low cost gasoline and diesel there have not been declines in alternative fuel station locations. Overall, there were net of 69 new stations reported in Virginia.



The largest future infrastructure projects are in electric, as additional stations from Electrify America and first stations from EVgo for electric charging and many more are planned.

Figure 3-1. Alternative Fuel Stations in Virginia: 2020

Year	B5-B20	CNG	E85	EV	H2	LPG	LNG	Total
2019	35	30	50	673	0	104	2	894
2020	35	30	50	742	0	104	2	963
Growth	0.0%	0%	0%	10%	0%	0%	0.0%	7.7%

Table 3-1. Alternative Fuel Station Growth in Virginia: 2020

Although some fuel types showed no growth, the net total number of alternative fuel stations in Virginia increased by 7.7%. Over the last years, electric vehicle charging stations have exhibited the largest growth and have become the most prevalent alternative fuel station in Virginia, attributed to the low cost of infrastructure, and the need for per-vehicle infrastructure at workplaces and destinations. Liquefied natural gas (LNG) and hydrogen stations have continually made up the smallest proportion of stations and this held true for 2020. 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. Growth Total of Virginia Alternative Fuel Stations by Fuel Type: 2020



SECTION IV: ALTERNATIVE FUEL STATION LOCATIONS

In order to observe the geographic distribution of these stations, clean fuel infrastructure maps are 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 the alternative fuel data center and at afdc.energy.gov/stations/ with data submitted throughout the year by Virginia Clean Cities.

Figure 4-1. Biodiesel (B20) and Ethanol (E85) Stations

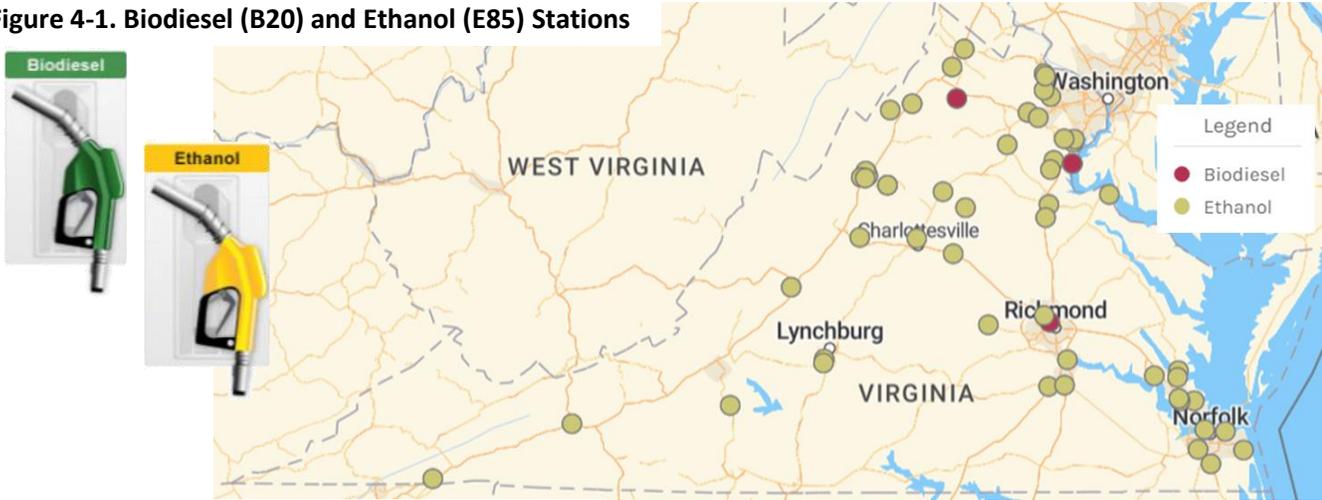


Figure 4-2. Electric and Hydrogen Fueling Stations

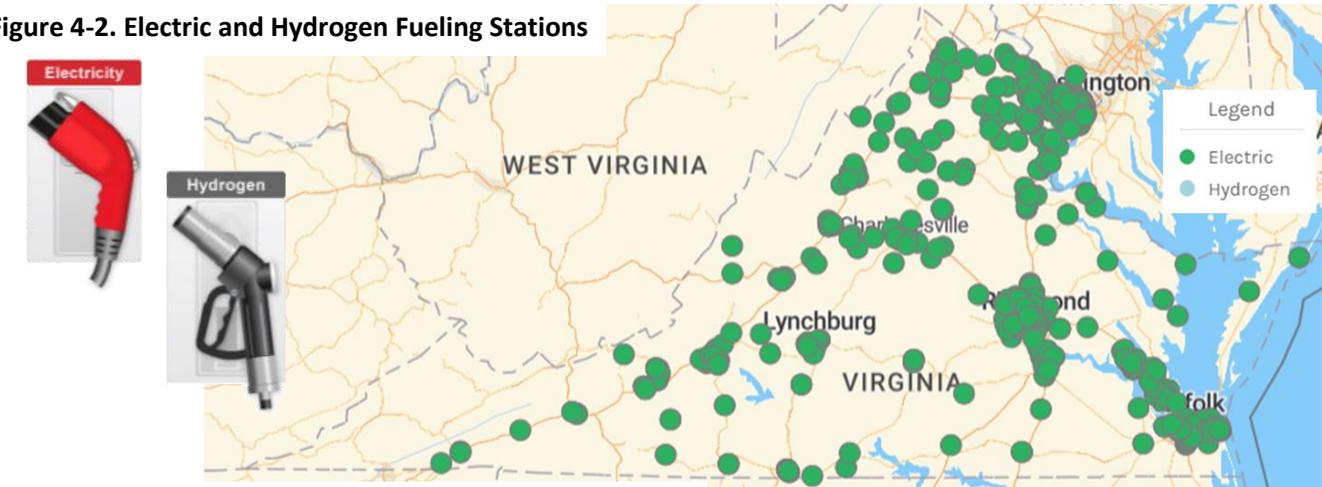


Figure 4-3. Natural Gas (CNG), Liquefied Natural Gas (LNG), and Propane (LPG) stations

