



November 1, 2017

To: Senate Transportation Committee, House Transportation and Energy Committee, and Joint Budget Committee

From: June Taylor, Executive Director, DPA

Subject: **Fiscal Year 2017 Vehicle Acquisition Report**

This report is submitted pursuant to 24-30-1104 (2) (c) (II), C.R.S. and 24-30-1104 (2) (c) (V), C.R.S. concerning State fleet vehicle acquisitions. The Department of Personnel & Administration (Department) is directed by statute to “adopt a policy to significantly increase the utilization of alternative fuels and that establishes increasing utilization objectives for each following year.” The Department is required to purchase vehicles that operate on compressed natural gas (CNG), plug-in hybrid electric vehicles (PHEV), battery electric vehicle (BEV) or other alternative fuels if cost is not more than 10 percent above the cost of a comparable dedicated petroleum fuel vehicle.

State Fleet Management (SFM) collaborates with each agency to maximize the use of alternative fuel vehicles (AFVs) in the State fleet and to ensure each replacement vehicle can perform adequately in the field.

### **SUMMARY OF FISCAL YEAR 2017 VEHICLE ACQUISITIONS**

In Fiscal Year 2016-17 the Department placed orders for (0) compressed natural gas (CNG) vehicles within previously approved budgeted appropriations.

The Department has experienced challenges with respect to CNG vehicle costs exceeding the 10 percent threshold and fewer CNG vehicle platforms being offered by manufacturers. In addition, the State's vehicle ordering timeline continues to be a challenge in aligning with grant funding opportunities. Due to the significant additional equipment costs, without the offset of this funding resource to the vehicle purchase price, procurement of this AFV platform is challenging.

In Fiscal Year 2016-17 CNG purchases were not cost-effective. Industry indicators point to CNG displacing approximately 1% of the vehicles within the light duty market place in the coming years.

The Department placed orders for (221) E85 Flexible Fuel Vehicles (FFV), subject to availability. This result was achieved due to the fuel's cost neutrality, and the equipment up-fit compared to the dedicated petroleum vehicle cost, being less than 10 percent at a cost of \$0 to \$3258, with an average of \$326 per vehicle. This represents 39.89% of all vehicle orders.



Hybrid vehicles have become a viable option for many operational duties. This year (136) were ordered. The comparable life-cycle cost on the models ordered was less than 10 percent compared to their gasoline equivalents' life-cycles. This represents 24.55% of all vehicle orders. As Hybrid vehicle platforms have become more common place, their associated cost has decreased and their on-board technology has become more efficient. The industry has demonstrated a focus on this pairing of electrification and the internal combustion engine as an efficient means to reduce fuel consumption.

Building on the previous year's original Plug-in Hybrid Vehicle (PHEV) purchases, the Department has identified (5) PHEVs representing 1.08% of fleet purchases. FY 2016-2017 is the first year these vehicles hold their own unique classification for reporting purposes.

The Department ordered (192) dedicated petroleum vehicles this year that represents 34.48% of all vehicle orders, with the Colorado Department of Public Safety ordering (126) of those vehicles. Of the (192) the Department ordered, (146) were Gasoline and (46) were diesel vehicles for various agencies. This represented 26.17% and 8.3% of all vehicle orders respectively.

## **DPA PROCEDURES & POLICIES ON ORDERING NEW VEHICLES**

The Department's vehicle ordering process is governed by 24-30-1104, C.R.S. and the Governor's executive orders<sup>1</sup>, focusing on alternative fuel vehicles (AFV), emphasizing a menu approach for the appropriate vehicle selection. As there is a vast array of job duties required of the State's vehicle fleet, a menu approach allows agencies to identify the correct AFV available for their needs.

Statute requires the Department to purchase AFV capable vehicles whenever the base cost or life-cycle cost for the AFV is within 10 percent of the cost of the regular gasoline alternative. This will allow the State to take advantage of Colorado's vast reserves of natural resources, reduce our dependence on petroleum, creating new jobs, and reducing our carbon footprint.

SFM depends on the cooperation and collaboration of all other State departments and the Governor's Office to fulfill its mission. SFM is invested in functional partnerships and production of accessible analytics tools for the agencies Motor Vehicle Advisory Council (MVAC) and Greening Government Leadership Council (GGLC) to monitor their performance at the unit level. SFM also has produced documentation within the new vehicle ordering packets for the agencies. These specific instructions

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<sup>1</sup> Governor John Hickenlooper, Oct 28, 2015 Executive Order D2015-013 PG 2,II  
July 11, 2017 Executive Order D2017-015 PG 2 II,C



guide departments through the selection process so the most effective vehicle can be purchased and put into service.

AFV models must be reviewed and considered as the first level of choice during the vehicle selection processes. If it is determined that the AFV models available be to purchased as CNG, plug-in electric hybrid vehicle, or EV, will not meet the functional requirements of the department, the agency will review all vehicle options and another type of alternative fueled vehicle such as Hybrid or E85 (FFV) will be selected. The last option will be to purchase a gasoline or diesel petroleum consuming vehicle. If the available proposed AFV model will not work for the department, an additional form “Non-AFV Purchase Justification Form” must be completed and signed off on by the Executive Director of each agency.

### **AVAILABILITY OF CNG STATEWIDE**

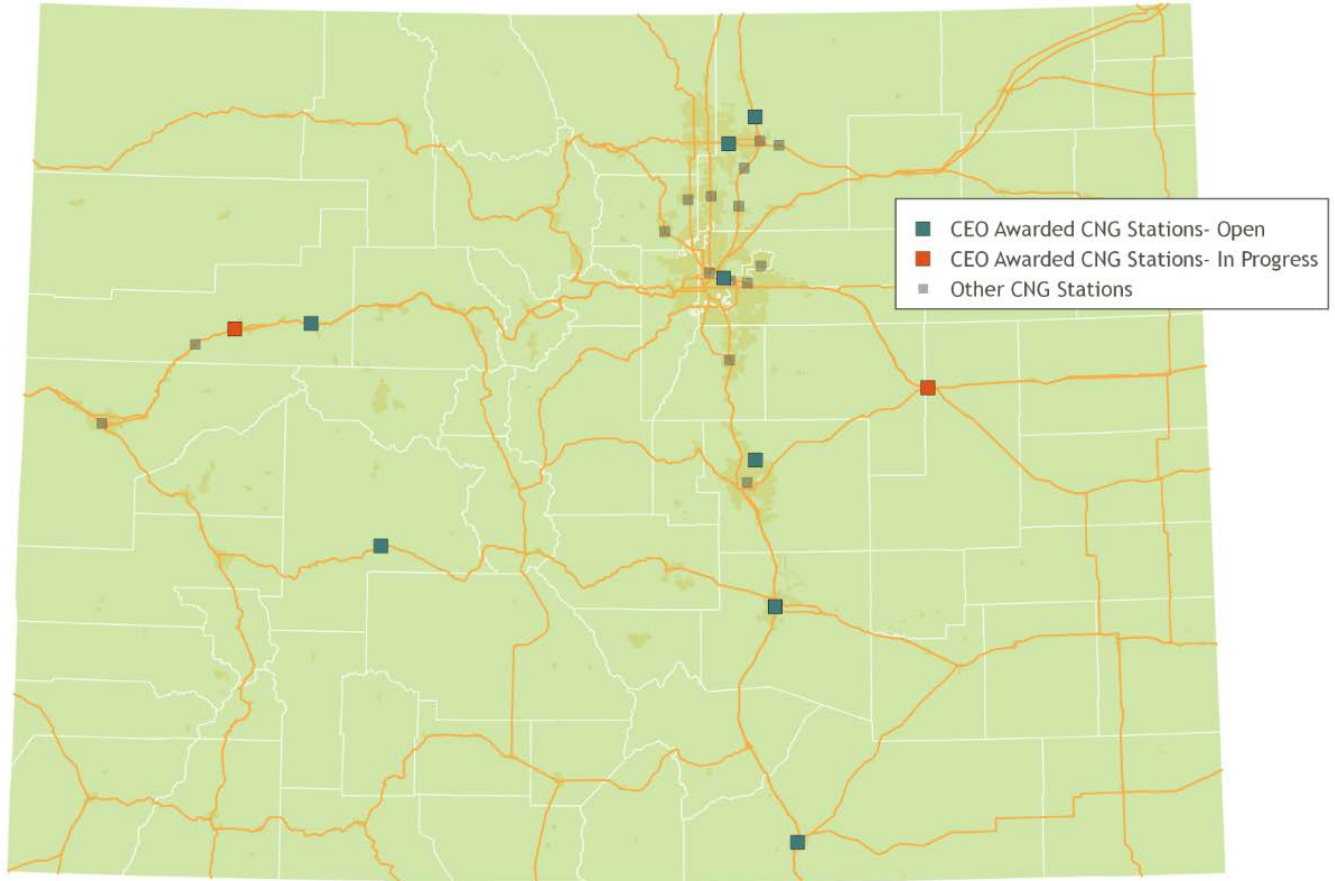
As of October, 5, 2017, there are 22 public access CNG fuel sites in operation statewide with additional stations in progress. The Colorado Energy Office, through the ALT Fuels Colorado grant program, has made awards to 10 stations across the state. Eight of these stations are operational: Glenwood Springs, Pueblo, Trinidad, Colorado Springs, Commerce City, Eaton, Gunnison, and Greeley. Two additional stations are in progress: Rifle and Limon. Because nearly all of the CNG vehicle models available can be purchased as dual fuel vehicles (i.e. they can utilize either CNG or gasoline), we have greater flexibility in the placement of these vehicles. The Energy Office will continue to work with public and private fleets and fuel providers to develop additional CNG stations at key locations along major transportation corridors throughout the state, helping to complete development of an intrastate network for CNG travel.

In 2015, the CEO commissioned the Colorado State Fleet Opportunity Assessment, a study to assess the best options for AFV deployment and the use of telematics and data collection in the State fleet. Fleet managers from several State agencies including CDOT and DPA advised on the methodology and results of the study. The outcome of this report indicated high potential for further deployment of dedicated AFV vehicles as well as bi-fuel AFV vehicles, which hold strong potential for increased deployment due to their flexibility, range, and potential for substantial increases in fuel economy in hybrid-electric scenarios. These findings can be used to guide SFM in future vehicle purchases and acquisition efforts. Initial results of these original purchases have demonstrated the key importance of fueling infrastructure in the relatively near proximity to the operational area of the vehicle. It has also illustrated the overwhelming importance the decision the driver of the vehicle makes when fueling the vehicle, especially when there are multiple fuel choices.





## Publicly Accessible Fast-fill CNG Stations



Sources: Alternative Fuel Data Center, Colorado Energy Office

In addition to the 22 stations shown on this map, there are approximately 10 private access CNG fuel sites in Colorado. To date, the State has not been able to secure agreements to use these facilities due to liability concerns in addition as well as the location of many are in locked, secured areas on private property. As an exception, SFM has been able to engage with the City and County of Denver and is utilizing its private CNG fueling facilities.



## INFRASTRUCTURE STRATEGY

The SFM works closely with the Colorado Energy Office, Department of Energy's Clean Cities Coalition, Regional Air Quality Council (RAQC), National Renewable Energy Laboratory (NREL), political subdivisions, and representatives from Alternative Fuel Vehicle (AFV) suppliers, infrastructure manufacturers, and developers to foster best practices and strategies to develop AFV infrastructure statewide. Since AFV fuel sites, particularly CNG, often require a baseline fuel commitment from fleets in order to legitimize operations, it is imperative for the growth of AFVs in Colorado that there are adequate concentrations of AFV vehicles in place at or near these fueling sites in order to ensure a sustainable alternative fuels market at the local level. The State of Colorado sets an example, by purchasing CNG vehicles, for a number of local governments, private fleets, and other states thereby building demand for AFV far beyond State fleet vehicles. Working closely with the departments and the Colorado Energy Office, SFM will continue to provide thorough guidance on the placement of these vehicles, in tandem with other public and private fleets, so potential fuel volumes may be combined in support of Colorado's alternative fuels market.

In 2012, Governor Hickenlooper and Governor Fallin of Oklahoma worked together to develop the unprecedented, bi-partisan, multi-state memorandum of understanding to aggregate the purchasing power of 22 states to promote CNG vehicle technology, help move the country closer to energy independence, and increase access to a locally developed, low-cost, and environmentally beneficial source of fuel energy. By increasing demand for CNG vehicles, the signatory states could in turn drive automakers to make available more models capable of using CNG at a reduced cost. Furthermore, local governments and private fleets followed the Governors' example, signing onto a fleet MOU committing to support CNG throughout the state. As a major natural gas producer, Colorado benefits from these initiatives by supporting jobs, reducing emissions, and providing long term, low cost fuel for consumers and fleets.

In October of 2017, the Governors from Colorado, Utah, Nevada, Montana, Wyoming, New Mexico, Idaho and Arizona signed the Regional Electric Vehicle Plan for the West (REV West) MOU. This MOU provides a framework for creating an Intermountain West Electric Vehicle Corridor to make it possible to drive an electric vehicle across the Signatory States' major transportation corridors. Also in 2017, Governor Hickenlooper signed an Executive Order with a directive for a statewide electric vehicle plan to build out key charging corridors that facilitate economic development and boost tourism across the state while reducing harmful air pollution. The electrification of these corridors is expected to reduce range anxiety and drive further adoption of EVs while helping transform the market by allowing smaller communities to plug into the regional system.



This planning and support for the build out of EV infrastructure and elimination of range anxiety provides direction for the State and other public and private fleets to purchase more EV fleet vehicles. Working closely with the departments and the Colorado Energy Office, SFM will provide guidance on the proper placement of these vehicles and additional charging equipment for fleet charging in order to maximize successful deployment. One such example would be the continued expansion of the PHEV platform. The flexibility of the PHEV's dual fuel sources is a promising bridge technology to capitalize on the expansion of the Electric Vehicle (EV) charging infrastructure, by supplementing a portion of petroleum fuel consumption with electrical charging.

## **EXEMPTIONS**

SFM is required to purchase an alternative fuel vehicle if either the increased base cost of such vehicle or the increased life-cycle cost of such vehicle is not more than ten percent over the cost of a comparable dedicated petroleum fuel vehicle. The executive director shall adopt a policy to allow some vehicles to be exempted from this requirement. Current exemptions include:

- Colorado Department of Public Safety law enforcement “patrol”, “undercover”, and “specialized” vehicles like crime scene labs and Haz Mat vehicles are exempted from this requirement until such time AFV vehicles are available and proven reliable and certified. However, CDPS is required to purchase AFV vehicles wherever practicable except for the exemptions listed above.
- Non-CDPS Law enforcement “certified patrol” vehicles used by State agencies are exempt from this requirement until such time AFV vehicles are available and proven reliable and certified for this function. At this time this will include Chevy Police Caprice and Impala models, Ford Police Interceptors, Police Dodge Chargers, Chevy Police Tahoe, Ford Police Expedition and Interceptor Utility, and Police Dodge Durango. Note: Currently there are no “Pursuit” rated CNG models available for patrol vehicles from the manufacturer. This is a standard of the Colorado State Patrol to perform the required task. The Ford Police Responder, A hybrid platform police vehicle, was reviewed by CSP, and the platform was deemed incapable of performing the strategic mission of the agency.
- This also may cover vehicles that have specialized equipment affixed to the vehicle making it less suitable for general transportation. These vehicles are essentially a “tool on wheels” or “mobile shop” that would be difficult to accommodate large additional fuel tank and battery storage configurations and be certified by the OEM. Examples include a drilling unit, water





tanks, lab/research equipment, plumbing or telecommunications equipment, and patient and prisoner transport vehicles.

- Other unknown potential exemptions will be considered on a case by case basis only.

The table below identifies the number of acquisitions by fuel type configuration or hybrid vehicles by department for FY17.

**FY 2016-17 ACQUISITIONS BY FUEL TYPE / HYBRID BY DEPARTMENT**

Dept	Fuel Type / Hybrid							Total
	CNG	E85	Diesel	Hybrid	PHEV	Electric	GAS	
CDPS	0	16	14	9	0	0	112	151
DOAG	0	2	0	5	0	0	2	9
DOC	0	54	7	28	2	0	3	94
DOE	0	2	0	0	0	0	0	2
CDPHE	0	1	0	6	1	0	0	8
DOHE	0	17	0	5	0	0	2	24
DOHS	0	13	0	14	0	0	2	29
DOL	0	0	0	0	0	0	0	0
DOLA	0	2	0	1	0	0	0	3
DOLE	0	0	0	12	0	0	0	12
DOMA	0	0	0	0	0	0	3	3
DONR	0	73	20	2	0	0	19	114
DOR	0	10	0	17	0	0	2	29
DORA	0	1	0	2	0	0	0	3
DOS	0	0	0	2	0	0	0	2



DOT	0	30	2	25	1	0	0	58
GOV	0	0	3	0	0	0	0	3
DPA	0	0	0	7	2	0	0	9
JUD	0	0	0	1	0	0	0	1
<b>Totals =</b>	<b>0</b>	<b>221</b>	<b>46</b>	<b>136</b>	<b>6</b>	<b>0</b>	<b>145</b>	<b>554</b>

0.00%    39.89%    8.30%    24.55%    1.08%    0.00%    26.17%

### AFV VEHICLE ACQUISITIONS – FY 2007-08 to FY 2016-17

Since January of 2008 Colorado has been committed to purchasing AFV available in the market place. Fueling infrastructure continues to be a major hurdle when investing in AFV technologies. Additionally budget constraints can play a role in the investment in emerging technologies. Examples such as the economic crash in FY 2008-09, the State only approved vehicles to be replaced in FY 2010-11 and FY 2011-12 if they had an impact on life, health, or safety. Most of these vehicles were for the Department of Public Safety, State Patrol Division with limited AFV opportunity, the majority E-85. Broader AFV acquisitions resumed in FY 2012-13. See table below for a summary of vehicle acquisitions from FY 2007-08 to FY 2016-17.

The SFM Program was able to purchase a total of 3,252 alternative fueled vehicles capable of reducing significant quantities of petroleum from FY 2007-08 to FY 2016-17. E-85 continues to be a viable option as an AFV, with some reduction in fuel infrastructure noted. As stated above, the industry has dedicated a significant effort to the expansion of vehicle electrification. That has lead to more applications and a broader spectrum of choices for implementation. It has also allowed for the economies of scale to be better realized. This has allowed for purchases of 2,091 Hybrid purchases from FY 2007-08 to FY 2016-17. The PHEV platform is showing continued growth with a total of 18 vehicles between FY 2007-08 and FY 2016-17.





**SUMMARY OF VEHICLE ACQUISITIONS – FY 2007-08 to FY 2016-17**

Fiscal Year	AFV					NON-AFV		Total Acquisitions
	CNG	E85	Hybrid	PHEV	Electric	Diesel	Gasoline	
2008	0	284	30	0	0	52	288	654
2009	0	303	213	0	0	44	335	895
2010	0	245	86	0	0	5	215	551
2011	0	98	4	0	0	30	109	241
2012	1	113	12	0	2	9	180	317
2013	81	220	53	0	0	21	191	566
2014	153	233	61	0	0	16	217	680
2015	35	246	69	0	0	40	331	721
2016	48	128	158	12	1	44	274	665
2017	0	221	136	6	0	46	145	554

**Totals    318    2,091    822    18    3    307    2,285    5,844**

