



California Energy Commission Clean Transportation Program

**FINAL PROJECT REPORT** 

# COMPRESSED NATURAL GAS FUELING STATION UPGRADE AT THE CITY OF VISALIA

Prepared for: California Energy Commission Prepared by: City of Visalia



Gavin Newsom, Governor August 2020 | CEC-600-2020-051

# **California Energy Commission**

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### PREFACE

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007) created the Clean Transportation Program, formerly known as the Alternative and Renewable Fuel and Vehicle Technology Program. The statute authorizes the California Energy Commission (CEC) to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state's climate change policies. Assembly Bill 8 (Perea, Chapter 401, Statutes of 2013) reauthorizes the Clean Transportation Program through January 1, 2024, and specifies that the CEC allocate up to \$20 million per year (or up to 20 percent of each fiscal year's funds) in funding for hydrogen station development until at least 100 stations are operational.

The Clean Transportation Program has an annual budget of about \$100 million and provides financial support for projects that:

- Reduce California's use and dependence on petroleum transportation fuels and increase the use of alternative and renewable fuels and advanced vehicle technologies.
- Produce sustainable alternative and renewable low-carbon fuels in California.
- Expand alternative fueling infrastructure and fueling stations.
- Improve the efficiency, performance and market viability of alternative light-, medium-, and heavy-duty vehicle technologies.
- Retrofit medium- and heavy-duty on-road and nonroad vehicle fleets to alternative technologies or fuel use.
- Expand the alternative fueling infrastructure available to existing fleets, public transit, and transportation corridors.
- Establish workforce-training programs and conduct public outreach on the benefits of alternative transportation fuels and vehicle technologies.

The CEC issued Program Opportunity Notice PON-12-605 to provide funding opportunities for projects that establish the infrastructure necessary to store, distribute and dispense compressed or liquefied natural gas. To be eligible for funding under the Clean Transportation Program, a project must be consistent with the CEC's Clean Transportation Program Investment Plan, updated annually. In response to PON-12-605, the Recipient submitted an application that was proposed for funding in the CEC Notice of Proposed Awards on August 2, 2013. The agreement was executed as ARV-13-025 on June 5, 2014.

### ABSTRACT

The final report describes the purpose and activities for the upgrade to the City of Visalia compressed natural gas fueling station. The station is located at 439 North Cain Street, Visalia, CA, 93292. The CEC agreement is ARV-13-025.

The increased number of time fill compressed natural gas posts and upgrade of the compressed natural gas fueling hoses, valves and control system support the demand for the City of Visalia's refuse trucks and transit fleet. A new compressor and upgrade to the dispenser were added under this project. The upgrade increased fleet fueling card acceptance and improved the fueling experience.

Keywords: Compressed natural gas, City of Visalia.

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### **EXECUTIVE SUMMARY**

The City of Visalia experienced demand for Compressed Natural Gas at their compressed natural gas station that exceeded the station's ability to provide enough fuel for its customers including the City of Visalia Compressed natural gas vehicles, Tulare County Area Transit, Kings Area Rural Transit, an AT&T van fleet, other private fleets, and the general public. The station experienced long wait times and this affected the City's ability to enter into future fuel purchase agreements.

In February 2013, Visalia applied for grant funding from the Energy Commission to upgrade the compressed natural gas station located at 439 North Cain Street, Visalia, CA and was awarded \$300,000 to purchase a hydraulic intensifier compressor, a new fuel management system, logistics controller, and firmware for the project. The City also received an additional \$700,000 from the San Joaquin Valley Air Pollution Control District. The objective included upgrading the dispenser and improving customer fueling experience.

Construction began in the Summer of 2016 with a completion date of December 31, 2016. As a result of this project the compressed natural gas fills and flow rate are improved and the public experiences reduced fueling times.

The amount of compressed natural gas fuel dispensed at this facility was 75,367 gasoline gallon-equivalents in December 2015 before the project. After the project, the amount dispensed increased to 88,900 gasoline gallon-equivalents in December 2016.

The upgrade increased the amount of transit fleet fueling and accommodates slow-fill solid waste trucks. The upgrade has also allowed more than one vehicle to fuel at a time simultaneously.

# **CHAPTER 1: Project Introduction**

In 2013, the City of Visalia received CEC grant ARV-13-025. The grant funded the upgrade of the City's compressed natural gas (CNG) fueling station located at 439 North Cain Street, Visalia, CA. The project also facilitated the adoption of CNG fueling for transit and refuse hauling.

The project included the procurement of three quad hose slow fill posts, a new hydraulic intensifier compressor, a fuel management system, an Allen Bradley compact logistics controller, four storage vessels, and a CNG dispenser. Figure 1 shows an engineering drawing for the fueling station.





# **CHAPTER 2: Engineering and Construction**

Engineering and construction by Sonnikson and Stordahl began engineering and construction in July of 2016 with Hayward Electric and City Service Paving as subcontractors. Fastech fueling provided the 46.4 standard cubic feet storage vessels, guad hose slow fill posts, and the CNG dispensing system with purge fan assembly. Southern California Gas is the utility provider. Trillium CNG commissioned the station and operates the station.

Although the budget for engineering and construction was \$819,350, the City's expenditures exceeded this amount. The San Joaquin Air Pollution Control District contributed \$700,000 toward the project. The CEC grant amount was \$300,000. This paid for the compressor, fuel management system, and the Allen Bradley Compact Logistics Controller.

Lane Engineers carried out the site grading and paving for the expansion of the slow fill area, located on the west side as seen in Figure 2. The City staff assisted with the site plan checks. The following figures 2-6 show construction and equipment installation at the site. Construction was complete in November of 2016.



#### Figure 2: Grading of the Slow-fill Area of the Station

Figure 3: Back of Slow-fill Area



Source: City of Visalia



### Figure 4: Backlot Canopy Footings

Figure 5: Dispenser Footings



Source: City of Visalia





Source: City of Visalia

Figure 7 shows Trillium CNG's proprietary fast-fill hydraulic intensifier compressor delivery on August 17, 2016.

### Figure 7: Hydraulic Compressor



Source: City of Visalia

Figure 8 shows the COMDATA Smart Sight controller which communicates with dispensers and Point of Sale systems.



#### Figure 8: Controller

Source: City of Visalia

Figures 9 and 10 show the fast fill CNG dispenser with two hoses for simultaneous fueling.



Figure 9: CNG Dispenser

Source: City of Visalia



### Figure 10: CNG Dispenser

Source: City of Visalia

Figure 11 shows the quad hose slow fill posts for solid waste CNG trucks and CNG trolleys.



Figure 11: Quad Hose Fill Posts

# CHAPTER 3: Data Collection and Analyses

Trillium CNG collected the operational data and analyzed the economic and environmental impacts. Table 1 shows the average use by public and private vehicles. Appendix A provides the number of vehicles fueled daily.

Month	Public Station Vehicles/Transactions (average/day)	Private Station/Fleet Vehicles /Transactions (average/day)
December 2016	22	54
January 2017	25	49
February 2017	20	51
March 2017	27	52
April 2017	21	50
May 2017	24	54
6 month average	23	52

 Table 1: Average Public and Private Station Number of Vehicles per Day

Source: City of Visalia

Before the station upgrade, the annual fuel throughput was 989,720 therms or 791,776 gasoline gallon-equivalents (GGE). After the upgrade, the City of Visalia projects throughput at 953,776 GGE per year for 40 CNG transit buses, three CNG trolleys, 30 CNG refuse trucks, and 25 light duty AT&T vehicles. The City also anticipates increased throughput resulting from marketing activities by Trillium CNG, the City of Visalia's CNG fueling station managing contractor.

Since the upgrade, more private-sector businesses use the facility. The City of Visalia will continue to add new vehicles in both the Transit and Solid Waste Divisions. Other potential users include four heavy-duty buses and four refuse trucks from the City of Tulare InterModal Express, as well as eight medium duty vehicles from Tulare County Area Transit.

Figure 12 shows the throughput for the CNG station before and after the upgrade over the six months of data collection.



Source: City of Visalia

Table 2 shows the public and private consumption per month in GGE.

Monthly Average	Public Station Monthly Gasoline Gallon Equivalent	Private Station/Fleet Monthly Gasoline Gallon Equivalent
December 2016	10,196	78,704
January 2017	13,170	76,636
February 2017	8,524	71,010
March 2017	9,963	83,009
April 2017	8,448	76,074
May 2017	9,868	83,441
6 Months Total	60,169 GGE	468,874 GGE

#### **Table 2: Public and Private Station CNG Station Consumption**

The City of Visalia incorporated Trillium CNG's fast-fill Hy-C hydraulic compressor with low horsepower and high performance which is expected to lower long-term operation and maintenance costs<sup>1</sup>. Table 3 shows the station's energy consumption.

Month and Year	CNG Station Average kWh/Day	CNG Station Average GGE/Day	CNG Station Outage (Days/Month)
December 2016	1718	2868	0
January 2017	1718	2897	0
February 2017	1718	2840	0
March 2017	1718	2999	0
April 2017	1718	2817	0
May 2017	1718	3029	0
6 Months Average	1718	2908	0

Table 3: Total CNG Station Energy Consumption (daily average)

Source: City of Visalia

The station lifetime emission reductions including oxides of nitrogen, particulate matter, and volatile organic compounds (tons of NOx, PM, and VOC) is estimated to be 210 tons. The  $CO_2e$  emissions reduction is estimated to be 2,240 metric tons for the six months of data collection.

The upgrade allows replacing diesel refuse trucks and transit vehicles with cleaner burning CNG engines resulting in less air pollution. A June 2003 National Renewable Energy Laboratory study of Emission Reduction Benefits of the Washington Metropolitan Area Transit Authority Natural Gas buses shows CNG buses reduced oxides of nitrogen emissions by 53 percent, Total Particulate Matter by 85 percent, and carbon monoxide by 89 percent, compared with the diesel buses<sup>2</sup>.

<sup>&</sup>lt;sup>1</sup> <u>Trillium Website</u> (https://www.trilliumcng.com/en/our-customers/transit-cng)

<sup>&</sup>lt;sup>2</sup> <u>NREL report</u> (https://afdc.energy.gov/files/pdfs/36355.pdf)

# CHAPTER 4: Conclusions

The station upgrade project helps the City of Visalia achieve CNG fueling goals. The upgrade to the City's CNG dispenser, originally installed in 2004, included two compressors, generators and storage vessels and provided fuel for 32 slow-fill or time fill posts directly to the west of the facility, two fast-fill or high flow dispensers to the north and one fast-fill dispenser located on the facility parcel to serve other private or public fleets. At that time, the City had five CNG buses that were fueling at a gas company station. Since, the City purchased 43 CNG buses and 40 CNG solid waste vehicles.

After the ARV-13-025 kick off in June 2014, the City of Visalia learned an Elevation Certificate was required for the project to meet the Code of Federal Regulations Title 44, Part 60 for projects located within a flood zone. Additionally, the City responded to safety and access requirements for the station foundation, storage tanks, canopies, and lighting. The project experienced delays for six months. The City of Visalia Building Safety Division issued approval to build in February 2016.

The equipment was delivered in two phases. In 2015, the dispenser, storage vessels and fill posts were delivered. In 2016, the City of Visalia issued a request for proposal for the compressor, fuel management system, and control software. The final installation of all the equipment began in August 2016 and was completed in November 2016.

This project is a success for the City of Visalia and the local businesses that use CNG fueling. The upgrade provides fast fill capabilities. The amount of CNG dispensed at the station increased during the data collection period from December 2016 through May 2017 and was projected to increase by at least 20 percent by the end of 2017.

### GLOSSARY

ALTERNATIVE AND RENEWABLE FUELS AND VEHICLE TECHNOLOGY PROGRAM (ARFVTP)-Now known as the Clean Transportation Program, created by Assembly Bill 118 (Nunez, Chapter 750, Statutes of 2007), with an annual budget of about \$100 million. Supports projects that develop and improve alternative and renewable low-carbon fuels, improve alternative and renewable fuels for existing and developing engine technologies, and expand transit and transportation infrastructures. Also establishes workforce training programs, conducts public education and promotion, and creates technology centers, among other tasks.

CALIFORNIA ENERGY COMMISSION (CEC)—The state agency established by the warrenalquist state energy resources conservation and development act in 1974 (public resources code, sections 25000 et seq.) responsible for energy policy. the cec's five major areas of responsibilities are:

- 1. forecasting future statewide energy needs.
- 2. licensing power plants sufficient to meet those needs.
- 3. promoting energy conservation and efficiency measures.

4. developing renewable and alternative energy resources, including providing assistance to develop clean transportation fuels.

5. planning for and directing state response to energy emergencies.

funding for the cec's activities comes from the energy resources program account, federal petroleum violation escrow account, and other sources.

COMPRESSED NATURAL GAS (CNG)—Natural gas that has been compressed under high pressure, typically between 2,000 and 3,600 pounds per square inch, held in a container. The gas expands when released for use as a fuel.

GASOLINE GALLON EQUIVALENT (GGE)—The amount of alternative fuel it takes to equal the energy content of one liquid gallon of gasoline. GGE allows consumers to compare the energy content of competing fuels against a commonly known fuel—gasoline. GGE also compares gasoline to fuels sold as a gas (natural gas, propane, and hydrogen) and electricity.

NITROGEN OXIDES (OXIDES OF NITROGEN, NOx)—A general term pertaining to compounds of nitric oxide (NO), nitrogen dioxide (NO2), and other oxides of nitrogen. Nitrogen oxides are typically created during combustion processes and are major contributors to smog formation and acid deposition. NO2 is a criteria air pollutant and may result in numerous adverse health effects

PARTICULATE MATTER (PM)—Unburned fuel particles that form smoke or soot and stick to lung tissue when inhaled. A chief component of exhaust emissions from heavy-duty diesel engines.

STANDARD CUBIC FOOT (SCF)—One cubic foot of gas at standard temperature and pressure  $(60^{\circ}F [15.6^{\circ}C]$ at sea level). Since both temperature and air pressure affect the energy content of a cubic foot of natural gas, the SCF is a way of standardizing. One SCF = 1,020 BTUs.

STANDARD CUBIC FEET PER MINUTE (SCFM)—The molar flow rate of a gas corrected to standardized conditions of temperature and pressure, thus representing a fixed number of moles of gas regardless of composition and actual flow conditions.

VOLATILE ORGANIC COMPOUNDS (VOCs)—Carbon-containing compounds that evaporate into the air (with a few exceptions). VOCs contribute to the formation of smog and/or may themselves be toxic. VOCs often have an odor and some examples include gasoline, alcohol and the solvents used in paints.

Appendix A (Tables A-1 through A-6) shows the Visalia public station averaging 714 transactions and 9,956 gallons per month between December 2016 and May 2017 and the private station averaging 1,601 transactions monthly with 80,264 gallons for the same period.

	Table A-1. Dally Usage - December 2010								
	PUBLIC STATI	ON	PRIVATE STATION					ENTIRE CNG STATION	
Date:	# Vehicles/Transactions - Public Station	Total Gallons - Public Station	# Vehicles/Transactions • Private Station Fast-Fill	Private Station/Fleet • Time-Fill Gallons	Private Station/Fleet • Fast-Fill Gallons	Total Gallons - Private Station	Total Station Transactions:	Full Station Outage/Days Station Inoperative	CNG Station Average kWh
12/1/2016	20	325	46	1289	1868	3158	66	0	1718
12/2/2016	19	280	52	309	2062	2370	71	0	1718
12/3/2016	19	193	45	279	1573	1852	64	0	1718
12/4/2016	6	69	37	7	1234	1241	43	0	1718
12/5/2016	27	361	36	1129	1401	2531	63	0	1718
12/6/2016	31	413	54	1379	1948	3327	85	0	1718
12/7/2016	25	332	50	1295	1907	3202	75	0	1718
12/8/2016	26	358	48	1317	1854	3171	74	0	1718
12/9/2016	34	510	54	677	1898	2575	88	0	1718
12/10/2016	18	174	54	88	1926	2014	72	0	1718
12/11/2016	9	94	38	32	1181	1213	47	0	1718
12/12/2016	24	362	46	1272	1478	2750	70	0	1718
12/13/2016	20	291	61	1280	2121	3401	81	0	1718
12/14/2016	32	420	46	1254	1780	3034	78	0	1718
12/15/2016	35	487	51	1351	1979	3331	86	0	1718
12/16/2016	26	348	62	849	2326	3175	88	0	1718
12/17/2016	16	170	50	108	1820	1928	66	0	1718
12/18/2016	5	71	41	45	1205	1249	46	0	1718
12/19/2016	23	338	47	1227	1540	2767	70	0	1718
12/20/2016	19	411	58	1320	1932	3251	77	0	1718
12/21/2016	37	550	64	1284	1889	3173	101	0	1718
12/22/2016	30	474	54	1089	2016	3104	84	0	1718
12/23/2016	31	501	64	675	2042	2717	95	0	1718
12/24/2016	11	217	52	146	1549	1695	63	0	1718
12/25/2016	3	31	0	40	0	40	3	0	1718
12/26/2016	25	523	47	1141	1353	2494	72	0	1718
12/27/2016	26	465	52	1226	1639	2865	78	0	1718
12/28/2016	20	335	59	1252	2133	3385	79	0	1718
12/29/2016	23	408	53	1254	1753	3006	76	0	1718
12/30/2016	29	450	52	831	1951	2782	81	0	1718
12/31/2016	14	235	52	92	1810	1903	66	0	1718

#### Table A-1: Daily Usage – December 2016

	PUBLIC STATI	ON		PRIVATE STAT	PRIVATE STATION			ENTIRE CNG STATION		
Date:	# Vehicles/Transactions - Public Station	Total Gallons - Public Station	# Vehicles/Transactions - Private Station Fast-Fill	Private Station/Fleet - Time-Fill Gallons	Private Station/Fleet - Fast-Fill Gallons	Total Gallons - Private Station	Total Station Transactions:	Full Station Outage/Days Station Inoperative		
1/1/2017	6	114	0	35	0	35	6	0		
1/2/2017	16	345	39	1149	1445	2594	55	0		
1/3/2017	22	430	61	1210	1815	3025	83	0		
1/4/2017	23	396	58	1244	1925	3169	81	0		
1/5/2017	36	512	59	1365	1975	3340	95	0		
1/6/2017	27	463	59	696	2159	2855	86	0		
1/7/2017	14	218	48	97	1349	1446	62	0		
1/8/2017	10	107	33	2	1004	1006	43	0		
1/9/2017	31	540	47	1361	1458	2820	78	0		
1/10/2017	26	451	62	1194	2019	3213	88	0		
1/11/2017	38	671	59	919	1821	2741	97	0		
1/12/2017	31	632	51	1369	1952	3321	82	0		
1/13/2017	40	627	58	856	2101	2957	98	0		
1/14/2017	5	143	48	52	1419	1471	53	0		
1/15/2017	9	220	44	13	1283	1296	53	0		
1/16/2017	25	371	47	1163	1432	2595	72	0		
1/17/2017	32	564	56	1143	1708	2850	88	0		
1/18/2017	28	391	50	1328	1809	3137	78	0		
1/19/2017	37	550	56	1337	1966	3303	93	0		
1/20/2017	30	523	55	760	2017	2777	85	0		
1/21/2017	16	194	51	48	1581	1629	67	0		
1/22/2017	6	263	39	22	1123	1144	45	0		
1/23/2017	27	431	45	1192	1468	2660	72	0		
1/24/2017	28	662	54	1196	2094	3290	82	0		
1/25/2017	44	623	53	1204	1845	3049	97	0		
1/26/2017	38	543	54	1293	1975	3268	92	0		
1/27/2017	36	615	67	726	2130	2856	103	0		
1/28/2017	20	284	45	259	1544	1803	65	0		
1/29/2017	13	303	39	51	1104	1156	52	0		
1/30/2017	25	454	49	1199	1528	2727	74	0		
1/31/2017	23	531	57	1239	1865	3105	80	0		
TOTAL	762	13,170	1,543	25,723	50,914	76,636	2,305	0		

### Table A-2: Daily Usage – January 2017

	PUBLIC STA	TION		PRIVATE S	TATION		El	NTIRE CNG STA	TION
Date:	# Vehicles/Transactions - Public Station	Total Gallons - Public Station	# Vehicles/Transactions - Private Station Fast- Fill	Private Station/Fleet - Time-Fill Gallons	Private Station/Fleet - Fast- Fill Gallons	Total Gallons - Private Station	Total CNG Station Gallons	Total Station Transactions:	Full Station Outage/Days Station Inoperative
2/1/2017	29	351	50	1149	1750	2900	3251	79	0
2/2/2017	30	465	47	1278	1904	3182	3646	17	0
2/3/2017	30	432	63	735	2145	2880	3312	93	0
2/4/2017	14	190	49	86	1633	1719	1910	63	0
2/5/2017	12	189	36	0	1118	1118	1307	48	0
2/6/2017	21	369	43	1238	1421	2659	3029	64	0
2/7/2017	16	309	61	1267	2050	3317	3626	11	0
2/8/2017	27	401	59	1071	1927	2998	3400	86	0
2/9/2017	23	328	54	1222	1903	3126	3453	11	0
2/10/2017	29	430	55	754	1924	2678	3108	84	0
2/11/2017	9	128	52	83	1783	1867	1995	61	0
2/12/2017	8	142	36	7	1084	1092	1234	44	0
2/13/2017	28	421	40	1183	1439	2621	3042	68	0
2/14/2017	20	344	50	1208	2039	3248	3592	70	0
2/15/2017	22	359	61	1248	1943	3191	3550	83	0
2/16/2017	24	407	57	1421	1933	3354	3761	81	0
2/17/2017	22	370	60	760	2072	2832	3203	82	0
2/18/2017	11	103	46	60	1442	1502	1605	57	0
2/19/2017	5	77	36	0	1194	1194	1271	41	0
2/20/2017	8	103	44	1238	1200	2438	2541	52	0
2/21/2017	32	499	49	1091	1645	2736	3235	81	0
2/22/2017	25	293	59	1433	1928	3361	3655	84	0
2/23/2017	30	452	64	1290	2156	3446	3898	94	0
2/24/2017	29	404	60	643	2050	2693	3096	89	0
2/25/2017	12	151	47	103	1550	1653	1804	59	0
2/26/2017	4	59	38	54	1096	1151	1210	42	0
2/27/2017	25	368	41	1241	1490	2730	3098	66	0
2/28/2017	25	378	59	1289	2036	3325	3704	84	0
Total	570	8,524	1,416	23,152	47,857	71,010	79,533	1,986	0

### Table A-3: Daily Usage – February 2017

	PUBLIC STATI	ION		PRIVATE STAT	ION		EN	ITIRE CNG STA	TATION	
Date:	# Vehicles/Transactions - Public Station	Total Gallons - Public Station	# Vehicles/Transactions - Private Station Fast-Fill	Private Station/Fleet - Time-Fill Gallons	Private Station/Fleet - Fast-Fill Gallons	Total Gallons - Private Station	Total CNG Station Gallons	Total Station Transactions:	Full Station Outage/Days Station Inoperative	
3/1/2017	35	384.66	52	1367	1813	3180	3565	87	0	
3/2/2017	33	420.193	61	837	2165	3002	3422	94	0	
3/3/2017	30	378.986	56	652	1994	2646	3025	86	0	
3/4/2017	13	137.55	51	71	1521	1593	1730	64	0	
3/5/2017	9	81.519	44	84	1269	1353	1434	53	0	
3/6/2017	40	495.946	46	1469	1499	2969	3465	86	0	
3/7/2017	38	483.391	54	1197	1873	3070	3553	92	0	
3/8/2017	45	467.759	54	1216	1872	3087	3555	99	0	
3/9/2017	29	310.633	59	1252	2109	3361	3672	88	0	
3/10/2017	28	401.708	58	736	2023	2759	3160	86	0	
3/11/2017	15	151.026	48	120	1405	1525	1676	63	0	
3/12/2017	7	74.602	35	3	1044	1047	1122	42	0	
3/13/2017	39	492.224	45	1257	1586	2843	3336	84	0	
3/14/2017	34	442.845	51	1374	2060	3434	3877	85	0	
3/15/2017	40	453.004	59	1338	2019	3357	3810	99	0	
3/16/2017	25	355.331	58	1265	2051	3316	3671	83	0	
3/17/2017	30	326.252	65	692	2173	2865	3191	95	0	
3/18/2017	14	130.038	44	272	1534	1807	1937	58	0	
3/19/2017	14	164.284	37	71	1172	1243	1407	51	0	
3/20/2017	33	444.033	46	1363	1688	3050	3494	79	0	
3/21/2017	29	343.304	64	1448	2338	3786	4129	93	0	
3/22/2017	23	296.082	58	1388	1907	3295	3592	81	0	
3/23/2017	26	335.092	62	1257	2188	3445	3780	88	0	
3/24/2017	24	288.502	57	751	1922	2674	2962	81	0	
3/25/2017	12	113.769	48	43	1479	1522	1636	60	0	
3/26/2017	9	91.761	42	2	1109	1111	1202	51	0	
3/27/2017	34	383.619	25	1406	519	1925	2309	59	0	
3/28/2017	28	350.82	73	1274	2853	4128	4479	101	0	
3/29/2017	32	465.963	55	1273	1984	3257	3723	87	0	
3/30/2017	32	337.156	59	1539	1902	3441	3778	91	0	
3/31/2017	31	361.101	57	733	2188	2921	3282	88	0	
Total	831	9,963	1,623	27,751	55,258	83,009	92,972	2,454	0	

### Table A-4: Daily Usage – March 2017

	PUBLIC STATION			ENTIRE CNG STATION					
Date:	# Vehicles/Transactions - Public Station	Total Gallons - Public Station	# Vehicles/Transactions - Private Station Fast-Fill	Private Station/Fleet - Time-Fill Gallons	Private Station/Fleet - Fast-Fill Gallons	Total Gallons - Private Station	Total CNG Station Gallons	Total Station Transactions:	Full Station Outage/Days Station Inoperative
4/1/2017	18	168	47	4	1374	1378	1546	65	0
4/2/2017	7	81	37	5	1129	1134	1215	44	0
4/3/2017	28	391	49	1211	1573	2784	3176	77	0
4/4/2017	26	355	60	1307	2231	3538	3892	86	0
4/5/2017	35	418	54	1380	1924	3304	3723	89	0
4/6/2017	22	314	64	1364	2333	3697	4010	86	0
4/7/2017	24	349	58	774	2119	2893	3243	82	0
4/8/2017	10	111	44	23	1419	1442	1553	54	0
4/9/2017	7	69	36	122	1104	1226	1296	43	0
4/10/2017	22	360	47	1270	1588	2858	3218	69	0
4/11/2017	26	356	49	1174	1887	3062	3418	75	0
4/12/2017	26	378	50	1299	2006	3305	3682	76	0
4/13/2017	26	390	53	1310	1957	3267	3657	79	0
4/14/2017	21	365	64	741	2160	2901	3266	85	0
4/15/2017	15	150	44	6	1510	1516	1666	59	0
4/16/2017	5	35	0	33	0	33	68	5	0
4/17/2017	21	306	46	1122	1674	2796	3102	67	0
4/18/2017	24	345	59	1309	2335	3644	3988	83	0
4/19/2017	31	436	59	1335	2051	3386	3822	90	0
4/20/2017	26	391	55	1292	2114	3406	3797	81	0
4/21/2017	28	340	62	539	2215	2754	3094	90	0
4/22/2017	11	118	41	151	1408	1559	1677	52	0
4/23/2017	10	112	40	6	1199	1205	1317	50	0
4/24/2017	27	402	42	1491	1659	3150	3552	69	0
4/25/2017	24	295	61	1124	2191	3315	3609	85	0
4/26/2017	28	375	55	1424	2077	3501	3877	83	0
4/27/2017	29	394	68	1330	1998	3328	3722	97	0
4/28/2017	32	418	59	744	2289	3032	3450	91	0
4/29/2017	11	129	46	4	1379	1383	1512	57	0
4/30/2017	9	95	43	63	1215	1279	1374	52	0
Total	629	8,448	1,492	23,957	52,117	76,074	84,522	2,121	0

### Table A-5: Daily Usage – April 2017

	PUBLIC ST	ATION		PRIVATES	STATION	.,	ENTIRE CNG STATION		TATION
Date:	#Vehicles/Transactions - Public Station	Total Gallons - Public Station	# Vehicles/Transactions Private Station Fast-Fill	Private Station/Fleet	Private Station/Fleet - Fast-Fill Gallons	Total Gallons - Private Station	Total CNG Station Gallons	Total Station Transactions :	Full Station Outage/Days Station Inoperative
5/1/2017	28	416	46	1091	1658	2749	3165	74	0
5/2/2017	30	421	68	1313	2370	3683	4104	98	0
5/3/2017	29	295	58	1262	2275	3538	3833	87	0
5/4/2017	28	444	62	1156	2088	3244	3688	90	0
5/5/2017	24	394	62	871	2492	3363	3758	86	0
5/6/2017	10	136	64	46	1842	1888	2024	74	0
5/7/2017	11	132	46	110	1171	1281	1412	57	0
5/8/2017	24	301	44	1262	1542	2804	3105	68	0
5/9/2017	29	403	62	1339	2255	3594	3997	91	0
5/10/2017	28	389	59	1242	2049	3291	3680	87	0
5/11/2017	37	411	61	1215	2162	3378	3789	98	0
5/12/2017	31	398	64	873	2264	3137	3535	95	0
5/13/2017	13	142	52	128	1503	1631	1773	65	0
5/14/2017	6	77	42	3	1121	1124	1202	48	0
5/15/2017	34	454	52	1268	1612	2880	3334	86	0
5/16/2017	32	370	63	1347	2322	3670	4040	95	0
5/17/2017	33	418	54	1095	1828	2923	3341	87	0
5/18/2017	37	396	60	1459	2243	3702	4098	97	0
5/19/2017	21	314	60	638	2040	2677	2991	81	0
5/20/2017	5	69	46	195	1536	1730	1799	51	0
5/21/2017	2	39	39	83	1240	1324	1362	41	0
5/22/2017	37	581	49	1223	1660	2883	3464	86	0
5/23/2017	23	363	68	1308	2372	3680	4043	91	0
5/24/2017	29	450	57	1287	2078	3364	3814	86	0
5/25/2017	35	579	68	1560	2260	3820	4400	103	0
5/26/2017	25	346	64	620	2299	2919	3265	89	0
5/27/2017	17	174	48	101	1371	1472	1646	65	0
5/28/2017	9	88	49	25	1289	1313	1401	58	0
5/29/2017	9	104	0	0	0	0	104	9	0
5/30/2017	33	434	58	1270	1957	3227	3661	91	0
5/31/2017	24	332	57	1329	1821	3150	3482	81	0
Totals	733	9,868	1,682	26,719	56,722	83,441	93,309	2,415	

#### Table A-6: Daily Usage – May 2017