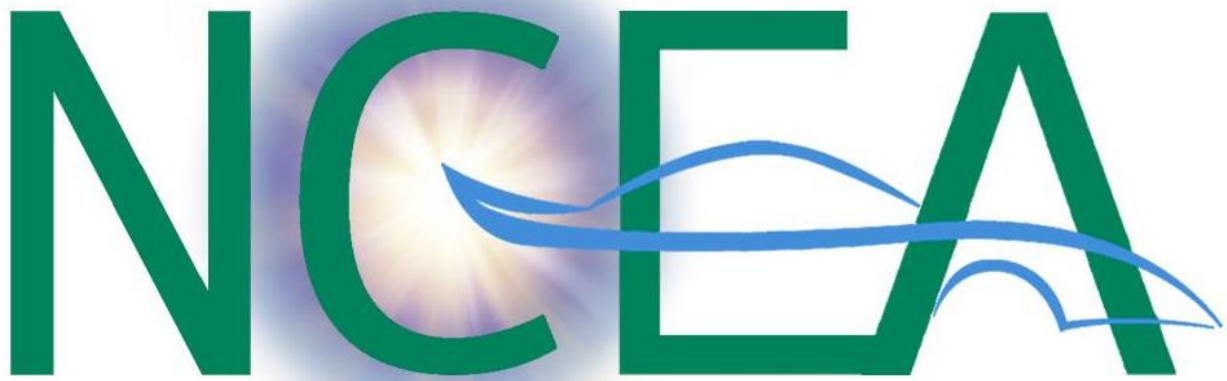


Nebraska Community Energy Alliance
Electric Vehicle Infrastructure Report
July 2021 Edition



Nebraska Community Energy Alliance

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NEBRASKA COMMUNITY ENERGY ALLIANCE

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This report includes the following documents:

- Project Executive Summary
- Project Description and Summary savings
 - Introduction
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 - Unique User Data (Commercial and Utility/Residential)
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- Appendices
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Executive Summary

The mission of the Nebraska Community Energy Alliance (NCEA) is to build and promote advanced technologies for housing and transportation that save energy, reduce CO₂ pollution and cut costs, (<http://www.necommunity.energy/mission/>). NCEA believes that demonstrating these technical advances at the local level is the best way to accelerate the market in Nebraska. Establishing the economic and environmental benefits of advanced technologies, such as electric vehicles and smart charging stations, at this level will serve the mission of the NCEA and the mission of the Nebraska Environmental Trust (NET), a grant funder. NET offers funding under the Air Quality category, requiring CO₂ emissions reductions and economic benefits in return for funding this category. NCEA, in compliance with grant requirements, publishes monthly electric vehicle charging data from the NET-funded projects.

NCEA is in the fifth phase of building a statewide charging infrastructure for electrified transportation through the award of its fifth grant from NET. When completed, an estimated total of 40 electric vehicles (EVs), nine compressed natural gas vehicles (CNG), one refueling CNG station, 79 Level-2 ChargePoint™ networked charging stations, and 5 DC fast charging stations will be deployed across Nebraska. In addition, in partnering with Omaha Public Power District (OPPD), Nebraska Public Power District (NPPD), and Fremont Municipal Utility, as part of a rebate program, an additional 196 EVs, 590 ChargePoint™ Home charging stations and 40 ChargePoint™ networked charging stations will be deployed.

Data for the commercial charging infrastructure for the participating members in all five grants has been collected since 2014, while data from the residential charging infrastructure has been collected since 2018. This data is processed and analyzed on a monthly basis. The results are compared to that of conventional-fuel vehicles (CVs), diesel vehicles (DVs), and ethanol (E85) fuel vehicles to develop the economic and environmental savings. Table A shows the total calculated savings.

Table A: Total Economic and Environmental Benefits for Grant Participating Members in all Five Grants.

	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
		CO ₂	CO	SO ₂	NO _x	CH ₄	VOC
Savings Excluding Residential Rebate Program	\$108,550	443,356	8,182	(587.76)	(509.64)	(0.99)	369.63
OPPD_ Residential Rebate Program Savings	\$709,371	2,352,239	39,124	(6,141.17)	(2,710.20)	(107.71)	2,407.96
NPPD_ Residential Rebate Program Savings	\$47,347	156,134	2,448	(81.26)	(252.47)	(0.69)	146.36
Fremont_ Residential Rebate Program Savings	\$6,970	23,874	401	(50.80)	(21.25)	(3.29)	25.41
Total Saving	\$872,239	2,975,603	50,155	(6,860.99)	(3,493.56)	(112.68)	2,949

In addition to the data from the participating members, data from other existing stations in Nebraska is collected and analyzed since 2013. Tables B-J provide a summary of analysis on all collected data. There are some discrepancies between each month's data. This is due to data availability for newly installed and/or activated charging stations and timing when new installed stations start to report and or commercial/residential stations not being connected to the network for a period of time.

Table B: Cumulative Charging Infrastructure Usage and Benefits for all Participating Commercial Charging Stations.

Charging Station Location	Number of Charging Ports	Number of Charging Sessions	Energy Usage (kWh)	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
					CO ₂	CO	SO ₂	NO _x	CH ₄	VOC
Allen Schools	2	1,097	11,418	\$4,035	22,470	462.19	(25.97)	(1.12)	1.37	15.54
Auburn Board of Public Works	4	585	3,068	\$1,177	5,818	63.37	(3.98)	1.45	(0.11)	3.84
Aurora	3	237	992	\$408	1,150	20.35	(2.70)	(3.77)	(0.07)	1.23
Ashland	3	1,150	11,939	\$4,217	15,389	264.55	(37.65)	(14.19)	(0.07)	14.74
Bellevue	4	1,295	12,080	\$3,959	25,594	571.21	(33.69)	18.47	1.87	16.91
B & R Stores	6	390	4,461	\$1,935	2,096	89.76	(11.58)	(6.85)	(1.02)	5.58
Central City	2	33	522	\$163	1,264	31.44	(1.18)	1.59	0.13	0.78
Central Community College	8	237	1,503	\$647	1,743	30.83	(4.08)	(5.71)	(0.11)	1.86
Dakota County	2	343	4,220	\$1,506	6,868	123.64	(10.69)	(7.92)	0.18	5.44
Ferguson House, Lincoln office of NCEA	2	584	4,871	\$1,770	7,995	177.15	(6.00)	(9.01)	0.59	6.46
Fremont	4	1,312	20,601	\$7,233	23,748	399.19	(50.65)	(21.37)	(3.28)	25.29
Gothenburg	-	0	0	\$720	6,020	155.11	(5.30)	8.68	0.64	3.56
Gretna	5	2,335	21,018	\$7,507	26,558	515.34	(61.32)	(19.85)	(0.56)	22.00
Hastings	2	146	1,329	\$515	1,147	31.65	(3.44)	(0.43)	(0.01)	1.67
Holdrege	2	114	1,005	\$367	1,645	31.43	(2.46)	(1.42)	0.06	1.31
Kearney	8	2,710	23,251	\$8,735	35,471	599.59	(57.10)	(51.15)	0.71	29.44
LES	12	1,892	29,782	\$11,070	36,904	814.58	(18.38)	(144.04)	2.83	37.40
Lexington	4	932	10,325	\$3,361	17,373	325.09	(25.08)	(14.35)	0.68	13.45
Lincoln	22	6,938	74,070	\$28,144	82,822	1,736.18	(51.40)	(366.31)	5.72	91.25
Lincoln Public Schools	7	365	2,903	\$1,213	4,214	59.97	(2.49)	(0.98)	(0.10)	3.61
MCC	15	2,004	21,896	\$8,058	27,298	433.39	(70.79)	(32.77)	(0.88)	26.68
Nebraska City	5	2,084	21,006	\$8,795	50,751	717.32	(37.00)	28.56	1.83	27.99
Norfolk	2	36	449	\$123	771	9.59	(0.74)	(7.98)	0.01	0.56
Nebraska Safety Center at UNK	2	48	231	\$87	301	4.70	(0.60)	(0.80)	(0.01)	0.28
NP Dodge	3	126	3,103	\$1,070	3,542	61.92	(9.33)	(4.55)	(0.21)	3.81
NPPD	23	1,207	14,094	\$5,367	20,461	291.15	(12.07)	(4.74)	(0.49)	17.53
Minden	3	30	165	\$62	191	3.38	(0.45)	(0.63)	(0.01)	0.20
OPPD	4	4,904	27,371	\$8,978	53,461	1,172.15	(81.18)	29.23	3.63	37.53
City of Omaha	18	596	7,875	\$2,953	9,830	160.63	(20.81)	(28.30)	(0.38)	9.73
Omaha Zoological Society	4	491	3,960	\$1,515	4,245	79.50	(11.32)	(5.71)	(0.32)	4.88
Papio-Missouri NRD	2	2,194	21,240	\$7,887	26,635	419.80	(68.92)	(32.08)	(0.93)	25.87
Seward	9	952	13,129	\$4,338	22,976	446.58	(31.52)	(12.32)	1.12	17.32
South Sioux City	11	3,609	45,106	\$15,415	79,398	1,528.74	(108.44)	(34.68)	3.83	59.42
UNMC	4	303	2,757	\$977	3,069	55.16	(8.12)	(4.02)	(0.20)	3.39
UNO	8	2,599	22,036	\$7,690	27,859	437.08	(72.43)	(32.07)	(0.67)	26.81
Valley	2	217	1,768	\$605	2,925	58.65	(5.53)	(0.07)	0.13	2.35
Wayne	2	164	2,262	\$1,889	8,787	64.17	(5.13)	(39.86)	0.25	2.85
Total	219	44,259	447,838	\$164,489	668,790	12,446.50	(959.52)	(821.09)	16.15	568.55

Table C: Analysis for DC Fast Chargers and all Level 2 Charging Stations.

Commercial Charging Station Type	Number of Charging Ports	Number of Charging Sessions	Energy Usage (kWh)	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
					CO2	CO	SO2	NOx	CH4	VOC
Level 2 Charger	210	42,687	418,545	\$153,213	636,454	11,834.55	(878.06)	(773.70)	18.46	532.24
DC Fast Charger	9	1572	29,293	\$11,277	32,337	611.96	(81.45)	(47.39)	(2.3131)	36.3117
Total	219	44,259	447,838	\$164,489	668,790	12,446.50	(959.52)	(821.09)	16.15	568.55

Table D: Detail Usage and Benefits for the DC Charging Stations.

Participating Members	Number of Charging Stations	Number of Charging Sessions	Energy Usage (kWh)	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
					CO2	CO	SO2	NOx	CH4	VOC
Ashland (DC)	1	607	7,665	\$2,730	10,060	174.30	(24.19)	(8.60)	0.01	9.49
Gretna (DC)	1	511	11,414	\$4,224	12,116	229.35	(32.37)	(16.41)	(0.96)	14.08
Aurora (DC)	1	26	834.397	\$345	967	17.11	(2.27)	(3.17)	(0.06)	1.04
South Sioux City (DC)	1	126	2,212.59	\$901	2,565	45.38	(6.01)	(8.41)	(0.16)	2.74
B & R Stores (DC)	2	187	4,216.71	\$1,829	1,981	84.84	(10.95)	(6.47)	(0.96)	5.27
Kearney (DC)	2	34	1,349.21	\$587	1,564	27.67	(3.67)	(5.13)	(0.10)	1.67
Auburn (DC)	1	81	1,600.47	\$661	3,083	33.30	(2.00)	0.80	(0.09)	2.01
Total	9	1572	29,293	\$11,277	32,337	611.96	(81.45)	(47.39)	(2.31)	36.31

Table E: Cumulative Charging Infrastructure Usage and Benefits for the OPPD Rebate Program from Apr`2018 to July 2021.

Commercial Charging Station Type	Number of Charging Ports	Number of Charging Sessions	Energy Usage (kWh)	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
					CO2	CO	SO2	NOx	CH4	VOC
<u>2018</u>	<u>128</u>	<u>10,487</u>	<u>119,050</u>	<u>\$49,141</u>	<u>179,364</u>	<u>2,567</u>	<u>(457)</u>	<u>(204)</u>	<u>(3)</u>	<u>159</u>
<u>2019</u>	<u>112</u>	<u>45,921</u>	<u>547,841</u>	<u>214,065</u>	<u>809,407</u>	<u>11,583</u>	<u>(2,063)</u>	<u>(919.2)</u>	<u>(11.7)</u>	<u>715.5</u>
<u>2020</u>	<u>127</u>	<u>48,022</u>	<u>611,578</u>	<u>196,752</u>	<u>762,276</u>	<u>12,464</u>	<u>(1,984)</u>	<u>(939)</u>	<u>(33)</u>	<u>768</u>
Jan`2021	14	5,033	72,011	\$24,165	69,934	1456.76	(190.39)	(101)	(7.40)	89.26
Feb`2021	19	5,726	84,955	\$31,407	82,573	1720.05	(224.80)	(119.26)	(8.73)	105.39
Mar`2021	28	6,788	87,513	\$35,332	84,169	1753.29	(229.14)	(121.56)	(8.90)	107.43
Apr`2021	15	7,079	96,924	\$38,303	91,666	1909.46	(249.55)	(132.39)	(9.69)	117.00
May`2021	0	7,203	97,245	\$41,570	94,518	1968.86	(257.31)	(136.51)	(10)	120.64
Jun`2021	0	6,929	91,880	\$39,056	89,289	1859.95	(243.08)	(128.96)	(9.44)	113.96
Jul`2021		6,476	89,288	\$39,070	86,784	1807.76	-236.26	-125.34	-9.18	110.76
<u>Total</u>	<u>444</u>	<u>149,409</u>	<u>1,894,741</u>	<u>\$709,371</u>	<u>2,352,238.74</u>	<u>39,123.62</u>	<u>(6,141.17)</u>	<u>(2,710.20)</u>	<u>(107.71)</u>	<u>2,407.96</u>

Table F: Cumulative Charging Infrastructure Usage and Benefits for the NPPD Rebate Program from Mar`2018 to July 2021.

Commercial Charging Station Type	Number of Charging Ports	Number of Charging Sessions	Energy Usage (kWh)	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
					CO2	CO	SO2	NOx	CH4	VOC
<u>2018</u>	<u>4</u>	<u>869</u>	<u>3,875</u>	<u>1,504</u>	<u>3,512</u>	<u>79.96</u>	<u>(2.82)</u>	<u>(24.80)</u>	<u>0.37</u>	<u>4.67</u>
<u>2019</u>	<u>6</u>	<u>1,664</u>	<u>8,906</u>	<u>3,449</u>	<u>7,704</u>	<u>182.64</u>	<u>(0.23)</u>	<u>(73.37)</u>	<u>0.78</u>	<u>10.66</u>
<u>2020</u>	<u>20</u>	<u>2,406</u>	<u>31,561</u>	<u>10,762</u>	<u>37,006</u>	<u>649.71</u>	<u>(14.55)</u>	<u>(129.31)</u>	<u>0.75</u>	<u>38.56</u>
Jan`2021	2	441	6,851	\$2,401	9,945	141.52	(5.8677)	(2.3034)	(0.2383)	8.5223
Feb`2021	2	413	6,144	\$2,375	8,919	126.92	(5.2621)	(2.0657)	(0.2137)	7.6427
Mar`2021	1	613	10,697	\$4,467	15,529	220.98	(9.1620)	(3.5967)	(0.3721)	13.3070
Apr`2021	2	640	11,325	\$4,686	15,983.28	227.43	(9.4295)	(3.7016)	(0.3830)	13.6955
May`2021	7	748	11,900	\$5,053	16,637.09	236.74	(9.8152)	(3.8531)	(0.3987)	14.2558
Jun`2021	4	793	13,219	\$5,875	19,190.83	273.08	(11.3218)	(4.4445)	(0.4599)	16.4440
Jul`2021	0	855	14,950	\$6,774	21,704.11	308.84	(12.8045)	(5.0266)	(0.5201)	18.5975
<u>Total</u>	<u>48</u>	<u>9,636</u>	<u>121,200</u>	<u>\$47,347</u>	<u>156,133.97</u>	<u>2,447.81</u>	<u>(81.2637)</u>	<u>(252.4739)</u>	<u>(0.6916)</u>	<u>146.3604</u>

Table G: Cumulative Charging Infrastructure Usage and Benefits for the Fremont Rebate Program from Aug`2019 to July 2021.

Commercial Charging Station Type	Number of Charging Ports	Number of Charging Sessions	Energy Usage (kWh)	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
					CO2	CO	SO2	NOx	CH4	VOC
<u>2019</u>	<u>4</u>	<u>242</u>	<u>4,635</u>	<u>\$1,582</u>	<u>5,177.09</u>	<u>86.94</u>	<u>(11.7985)</u>	<u>(6.1574)</u>	<u>(0.7336)</u>	<u>5.60</u>
<u>2020</u>	<u>1</u>	<u>458</u>	<u>9,795</u>	<u>\$2,914</u>	<u>11,195.62</u>	<u>188.15</u>	<u>(24.3160)</u>	<u>(10.9402)</u>	<u>(1.5558)</u>	<u>11.97</u>
Jan`2021	0	29	652	\$210	781.71	13.15	(1.5307)	(0.4328)	(0.1044)	0.8160
Feb`2021	0	23	600	\$200	671.31	11.30	(1.3145)	(0.3717)	(0.0896)	0.7007
Mar`2021	0	35	632	\$250	758.73	12.77	(1.4857)	(0.4201)	(0.1013)	0.7920
Apr`2021	0	43	878	\$344	1,052.99	17.72	(2.0620)	(0.5830)	(0.1406)	1.0991
May`2021	0	60	1,212	\$502	1,452.66	24.45	(2.8446)	(0.8042)	(0.1939)	1.5163
Jun`2021	0	57	1,252	\$515	1,501.38	25.27	(2.9400)	(0.8312)	(0.2004)	1.5672
Jul`2021	0	49	1,070	\$453	1,282.25	21.58	(2.5109)	(0.7099)	(0.1712)	1.3384
<u>Total</u>	<u>5</u>	<u>996</u>	<u>20,726</u>	<u>\$6,970</u>	<u>23,873.73</u>	<u>401.32</u>	<u>(50.8030)</u>	<u>(21.2504)</u>	<u>(3.2908)</u>	<u>25.4076</u>

Table H: Summary of Monthly and Cumulative Commercial and Utility/Residential Usage.

	Month of July, 2021		Cumulative		Combined Savings		
	Commercial	Residential	Commercial	Residential	Month of July, 2021	Cumulative	
Number of Charging Sessions	1,666	5,698	44,259	160,041	7,364	204,300	
Energy Usage (in kWh)	19,970	82,960	447,838	2,036,667	102,930	2,484,505	
Environmental Benefits: Emissions Reductions (in lbs.)	CO ₂	24,428	80,661	668,790	2,532,246	105,089	3,201,037
	CO	408.83	1,611	12,447	41,973	2,020	54,419
	VOC	24.85	98.60	568.55	2,580	123	3,148
Economic Savings	\$8,666	\$26,776	\$164,489	\$763,689	35,442	928,178	

Table I: Summary of Monthly and Cumulative Energy Usage for each individual station.

Community	Station Name	Activation Date	Total Energy Usage	
			Current Month-July (kWh)	Cumulative Since Installation (kWh)
Allen Consolidated Schools	ALLEN SCHOOLS	Jun-16	0	11,384
Auburn Board of Public Works	METRO CAFE / STATION 1	Jun-19	117.761	1,157
	METRO CAFE / BWP DC CHARGER	Jan-21	285.019	972
	METRO CAFE / BRNVILLE DEPOT	Sep-21	54.071	61
Aurora	DC FAST 1	Jan-21	134.254	544
	LEVEL 2	Nov-20	38.586	98
Ashland	DOWNTOWN / ACRC QUICK CHAR	Feb-17	267.432	7,451
	DOWNTOWN / ACRC PARKING	Feb-17	114.79	3,889
Bellevue	1500 Wall Street 2	Oct-14	0	10,431
	University of Bellevue		0	0
B & R Stores	RUSS'S MARKET / RUSS MARKET 2	Feb-21	24.03	72
	RUSS'S MARKET / RUSS MARKET 1	Feb-21	518.851	1,578
	RUSS'S MARKET / SUPER SAVER L3	Feb-21	210.875	816
	RUSS'S MARKET / SUPER SAVER L2	Feb-21	66.112	71
Central City	City Hall	Feb-15	0	304
Central Community College	Columbus RG1		211.569	544
	CENTRAL CC / CCC COLUMBUS	Sep-20	27.231	118
	CENTRAL CC / KERNEY CNTR	Jan-21	58.783	133
	CENTRAL CC / CCC - HASTINGS	Oct-20	43.389	134

Community	Station Name	Activation Date	Total Energy Usage	
			Current Month-July (kWh)	Cumulative Since Installation (kWh)
Dakota County	COUNTY COURT	May-16	305.309	3,895
Ferguson House, Lincoln office of NCEA	FERGUSON HOUSE	Dec-15	128.346	4,634
Fremont	FREMONT MALL 1	Aug-18	857.265	15,878
	DOWNTOWN 1	Aug-18	132.06	976
Gothenburg			0	0
Gretna	OUTLET MALL	Jun-16	205.082	6,181
	GREтна DC FAST	Feb-20	1673.855	9,114
	CITY HALL	Jun-16	33.594	2,991
Hastings	EV CHARGER / HASTINGS MUSEUM	Sep-16	191.898	1,113
Holdrege	3RD AVE PARKING	Nov-15	66.19	785
Kearney	COK / LEC	Sep-20	68.584	1,538
	COK / CITY HALL	Jun-16	117.238	18,665
	COK / YOUNES NORTH	Apr-21	176.407	176
	COK / YOUNES NORTH2	Apr-21	138.944	215
	COK / YOUNES SOUTH	Apr-21	369.195	385

Community	Station Name	Activation Date	Total Energy Usage	
			Current Month- July (kWh)	Cumulative Since Installation (kWh)
LES	HAYMKT GREEN 2 / LES STATION A	Aug-14	317.259	15,321
	HAYMKT GREEN 2 / LES STATION B	Aug-14	153.163	12,073
	HAYMKT GREEN 2 /EAST PRKG #1	May-21		0
	HAYMKT GREEN 2 /EAST PRKG #2	May-21	104.34	147
	HAYMKT GREEN 2 /EAST PRKG #3	May-21	64.218	69
	HAYMKT GREEN 2 /EAST PRKG #4	May-21		0
	HAYMKT GREEN 2 /EAST PRKG	May-21		0
	HAYMKT GREEN 2 / WEST PRKG #1	Jun-21	62.705	63
	HAYMKT GREEN 2 / WEST PRKG #2	Jun-21	25.23	25
	HAYMKT GREEN 2 / WEST PRKG #3	Jun-21	68.176	68
	HAYMKT GREEN 2 / WEST PRKG #4	Jun-21	0	0

Community	Station Name	Activation Date	Total Energy Usage	
			Current Month-July (kWh)	Cumulative Since Installation (kWh)
Lexington	LEXCHARGE01 / LEXCHARGE02	Feb-15	38.755	3,594
	LEXCHARGE01 / LEX CHARGE 0304	Jan-16	411.37	6,137
Lincoln	CARRIAGE	Dec-16	163.76	1,016
	CENTER	Dec-16	260.114	2,564
	CORNHUSKER	Dec-16	255.022	11,920
	COUNTY LOT	Dec-16	6.554	3,841
	HAYMARKET	Dec-16	816.84	7,439
	LARSON	Dec-16	72.181	10,417
	LUMBER	Dec-16	265.996	10,603
	MARKET PLACE	Feb-18	163.786	2,549
	QUE	Dec-16	642.52	7,415
	UNIVERSITY SQ	Dec-16	383.114	11,915
	GARAGESTATIONS / FLEET 1	Apr-21		5
Lincoln Public Schools	East HS RG1	Aug-20	58.246	100
	Lincoln HS RG1	Aug-20	16.615	224
	LPS Operations RG1	Aug-20	95.781	166
	North Star HS RG1	Aug-20	221.405	618
	Northeast HS RG1	Aug-20	17.375	70
	Southeast HS RG1	Aug-20	1.694	197
	Southwest HS RG1	Aug-20	38.823	308
MCC	BLDG 14	Jul-20		88
	BLDG 20	Jul-20	8.473	136
	EVC	Jan-19	91.714	2,461
	FOC NORTH	Sep-17	154.225	8,950
	FOC SOUTH	Sep-17	263.593	8,803
	MIDDLE LEVEL 2	Jul-21	0.04	0
	NORTH EXPRESS	Jul-21	3.87	4
	SOUTH LEVEL 2	Jul-21	0.026	0
Nebraska City	DOWN TOWN LOT	Feb-15	638.413	12,043
	CITY HALL	Jan-13	179.519	4,395
	BEST WESTERN	Mar-15	282.073	3,337

Community	Station Name	Activation Date	Total Energy Usage	
			Current Month-July (kWh)	Cumulative Since Installation (kWh)
Norfolk	ADMINISTRATION	Apr-21	130.288	449
UNK	NSC RANGE / NSC RANGE 1	Nov-19	8.748	177
NP Dodge	NP DODGE / 8601	Sep-20	54.989	197
	NP DODGE / 87 DODGE	Oct-19	10.688	2,873
NPPD	NPPD STATION 1 / SCOTTSBLUFF 1	Dec-20	91.693	302
	NPPD STATION 1 / OGALLALA 1	Oct-19	8.763	162
	NPPD STATION 1 / NOC 1	Oct-19	66.932	1,609
	NPPD STATION 1 / KOC STATION 1	Dec-19	0	294
	NPPD STATION 1 / CGO2	Nov-20	198.867	768
	NPPD STATION 1 / CGO SOUTH LOT	Apr-18	116.88	10,754
	NPPD STATION 1 / 1ST AND NORFOLK	Jun-21	21.081	21
	NPPD STATION 1 / HUDDLE HOUSE	Jun-21	11.482	11
	NPPD STATION 1 / HUDDLEHOUSE DC1	Jun-21	173.352	173
	NPPD STATION 1 / HUDDLEHOUSE DC2	Jun-21	0	0
Minden	CITY OF MINDEN / GTW1	Nov-20	0	128
OPPD	OPPD ELKHORN / OPPD ELK-2	Jun-16	34.53	10,148
	OPPD ELKHORN / OPPD ELK-1	May-16	111.714	13,976
City of Omaha	16TH AND HOWARD	Sep-20	699.52	6,098
	OMAHA PARK 6	Jun-21	14.03	14
	OMAHA PARK 7	Jun-21	74.612	75
	OMAHA PARK 8	Jun-21	175.48	175
	OMAHA PARK 4-1	Jul-21	79.98	80
	OMAHA PARK 4-2	Jul-21	170.431	170
	OMAHA PARK 1-1	Jul-21	79.98	80
	OMAHA PARK 1-2	Jul-21	0	0

Community	Station Name	Activation Date	Total Energy Usage	
			Current Month-July (kWh)	Cumulative Since Installation (kWh)
Omaha Zoological Society	OMAHA ZOO STA 2	Nov-19	294.093	1,648
	MAIN LOT STAT 1	Nov-19	285.183	1,265
Papio-Missouri NRD	NRD 1 / CHALCO HILLS 1	Jan-17	838.26	19,418
Seward	SEWARD / CONCORDIA UNIV.	Mar-13	273.894	7,863
	SEWARD / DOWNTOWN	Mar-15	0	740
	SEWARD / MUNICIPAL BLD	Feb-15	0	2,865
	SEWARD / SENIOR HIGH	Mar-13	0	429
	SEWARD / SEWARD LIBRARY	Mar-13	47.668	2,014
South Sioux City	SO. SIOUX CITY / CITY HALL	Mar-19	12.049	4,491
	FC STATION 1	Nov-20	316.655	1,444
	LAW ENFORCEMENT	Apr-15	557.165	28,246
	LIBRARY	Mar-19	51.82	2,806
	RIVERVIEW WTP	Dec-14	0	3,263
	SO. SIOUX CITY / STATION 2	Nov-20	33.373	1,026
UNMC	MAINPLANT	Feb-20	63.926	988
	PARK LEAVENWORT	Feb-20	221.707	1,225
UNO	PSG1 / LOT M	Jul-18	188.355	6,600
	PSG1 / SCOTT CAMPUS	Jul-17	40.409	9,420
	PSG1 / SCOTT CAMPUS 2	Apr-18	52.533	3,732
	PSG1 / WEST GARAGE	Jul-18	19.511	1,813
Valley	CITY HALL / VALLEY	May-16	0	1,742
Wayne	WAYNE, NE / WAYNE	Sep-13	0	1,241

Considering that the combined national average for conventional vehicles is 25.1 miles per gallon based on the combined fuel economy average (city and highway) of all the vehicle types (make and model) published in the Fuel Economy Guide for the year 2020, and the combined fuel economy for all electric vehicles is 3.412 miles per kilowatt hour (mi/ kWh) based on the combined fuel economy average (city and highway) of all the electric vehicle types (make and model) in the same report, a general comparison is made using the equation below to generate Table J.

$$\text{Miles driven based on } \$50 = \frac{50}{0.089038} * 3.412 = \frac{50}{0.655} * 25.1 = 1916 \text{ miles}$$

Table J: Summary of Yearly Gas and Electricity Prices and the Corresponding Miles Driven.

Year	Gas Price (Gallon)	Electricity Price (kWh)	Conventional Vehicle (CV) (Miles Per Gallon)	Battery Electric Vehicle (Miles Per kWh)	Miles driven based on \$50	
					Gas	Electricity
2017	\$2.36	0.091333	23.246	3.323	492	2025
2018	\$2.62	0.092176	23.312	3.323	444	1802
2019	\$2.49	0.092176	23.272	3.323	468	1802
2020	\$2.09	0.089038	25.1	3.412	601	1916
Parity	\$0.655	0.089038	25.1	3.412	1916	1916

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1. Project Description and Summary Savings

1.1. Introduction

The Nebraska Community Energy Alliance (NCEA) was founded in Jan 2014 as an interlocal cooperative agency. Today, it has 35 participating members that span the entire state of Nebraska, as shown in Figure 1 and Table 1.

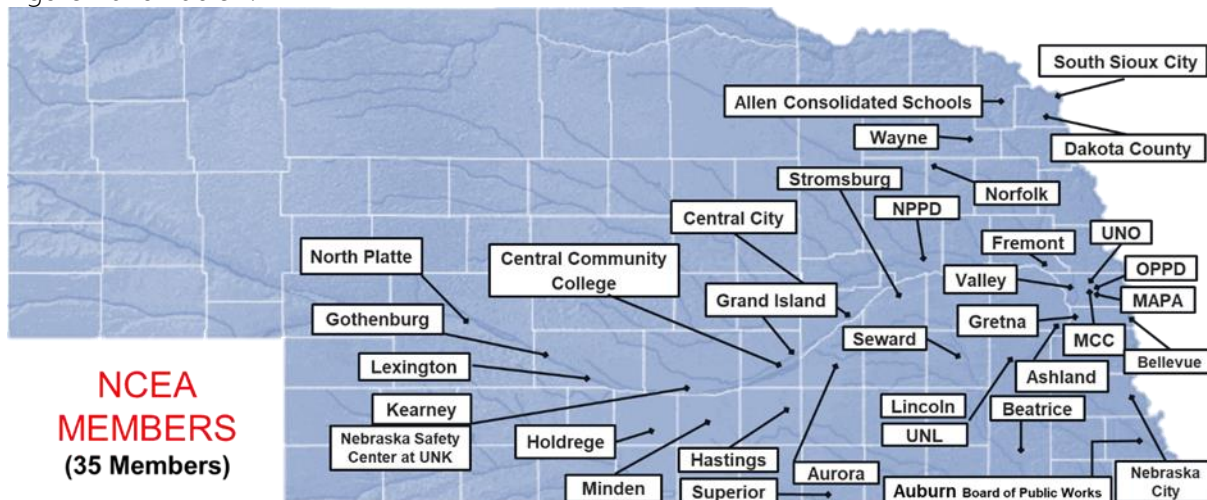


Figure 1: Nebraska Map Showing the 37 NCEA Participating Members.

The mission of the Nebraska Community Energy Alliance (NCEA) is to build and promote advanced technologies for housing and transportation that save energy, reduce CO₂ pollution and cut costs, (<http://www.necommunity.energy/mission/>). This mission is clearly articulated by Lance Hedquist, city administrator for South Sioux City, founder of NCEA and current member, *“Communities have a choice to simply exist or to lead. Our projects demonstrate leadership and help motivate and excite our citizens.”*

NCEA believes demonstrating the economic and air quality benefits of advanced fuel vehicles at the local level is the best way to accelerate the market in Nebraska. This mission is being achieved in part using grant funding from the Nebraska Environmental Trust (NET) and in compliance with the requirements of the Air Quality funding category as well as NET’s mission “to conserve, enhance and restore the natural environments of Nebraska.” (<http://www.environmentaltrust.org/about/index.html>).

Table 1: NCEA Members

NCEA Members (35)	
➤ Allen Consolidated Schools	➤ Metropolitan Community College
➤ Ashland	➤ Minden
➤ Auburn BPW	➤ Nebraska City
➤ Aurora	➤ Nebraska Safety Center at UNK
➤ Beatrice	➤ Nebraska Public Power District
➤ Bellevue	➤ Norfolk
➤ Central City	➤ North Platte
➤ Central Community College(CCC)	➤ Omaha Public Power District (OPPD)
➤ Dakota County	➤ Seward
➤ Fremont	➤ South Sioux City
➤ Gothenburg	➤ Stromsburg
➤ Grand Island	➤ Superior
➤ Gretna	➤ University of Nebraska at Omaha
➤ Hastings	➤ University of Nebraska-Lincoln
➤ Holdrege	➤ Valley
➤ Kearney	➤ Wayne
➤ Lexington	
➤ Lincoln	
➤ Metropolitan Area Planning Agency (MAPA) (includes cities and counties in Washington, Douglas, and Sarpy counties, including the City of Omaha)	

NCEA is in the fifth phase of building a statewide charging infrastructure for electrified transportation through the award of its fifth grant from NET. When completed, an estimated total of 40 electric vehicles (Evs), nine compressed natural gas vehicles (CNG), one refueling CNG station, 79 Level-2 ChargePoint™ networked charging stations, and 5 DC fast charging stations will be deployed across Nebraska. In addition, in partnering with Omaha Public Power District (OPPD), Nebraska Public Power District (NPPD), and Fremont Municipal Utility, as part of a rebate program, an additional 196 Evs, 590 ChargePoint™ Home charging stations and 40 ChargePoint™ networked charging stations will be deployed. Table 2 shows the participating members and their involvement.

Table 2: Summary of Involvement of Participating Members over All Grant Cycles.

Participating Members	Electric Vehicle	CNG Vehicles	Charging Stations	DC Fast Charger
Allen Consolidated Schools	1	-	1	
Ashland	-	-	1	1
Auburn Department of Public Works	-	-	2 (1 New)	1
Aurora	-	-	4 (2 New)	
Beatrice	1		1	
Bellevue	2	-	4	
Central City	1	-	1	
Central Community College	4		4	
Dakota County	1	-	1	
Ferguson House (Lincoln)	-	-	1	
Fremont	5	-	2	
Fremont Municipal Utility Rebate Program	11	-	10 – ChargePoint Home™	
Gothenburg	1	-	-	
Gretna	1	-	2	1
Hastings	3	-	1	
Holdrege	-	-	1	
Kearney	1	-	5	
Lexington	2	-	2	
Lincoln	1	-	16 (6 New)	
Metro Community College	1	-	2	
Minden	1		1	
Nebraska City	1	3 CNGs and one refueling station	2	
Norfolk	1		1	
NPPD	-	-	9 (6 New)	2
NPPD Rebate Program	35 (30 New)	-	80 (30 New) – ChargePoint Home™	
OPPD	3	-	8	
OPPD Rebate Program	150 (50 New)	-	500 (150 New)- ChargePoint Home™ (40) Workplace Charging stations	
Seward	2	-	2	
South Sioux City	4 1-Zero Motorcycle	2	3	
UNK	1	-	1	
Valley	1	-	1	
Wayne	1	4	-	
TOTAL	236 (196 Via Utility Rebate programs)	9	119 Commercial (40 via rebate to businesses) & 590 Residential	5

1.2. Existing Stations Summary

Figure 2 shows the locations of the commercial ChargePoint Stations in Nebraska. Table 3 provides detailed information on the location of each existing ChargePoint™ charging station installed as part of all grant phases along with the rate structure. Furthermore, the Table shows additional stations that NCEA and the research team access for data analysis. Finally, the Table provides the net revenue from charging (current month and **all time**) based on the rate structure.

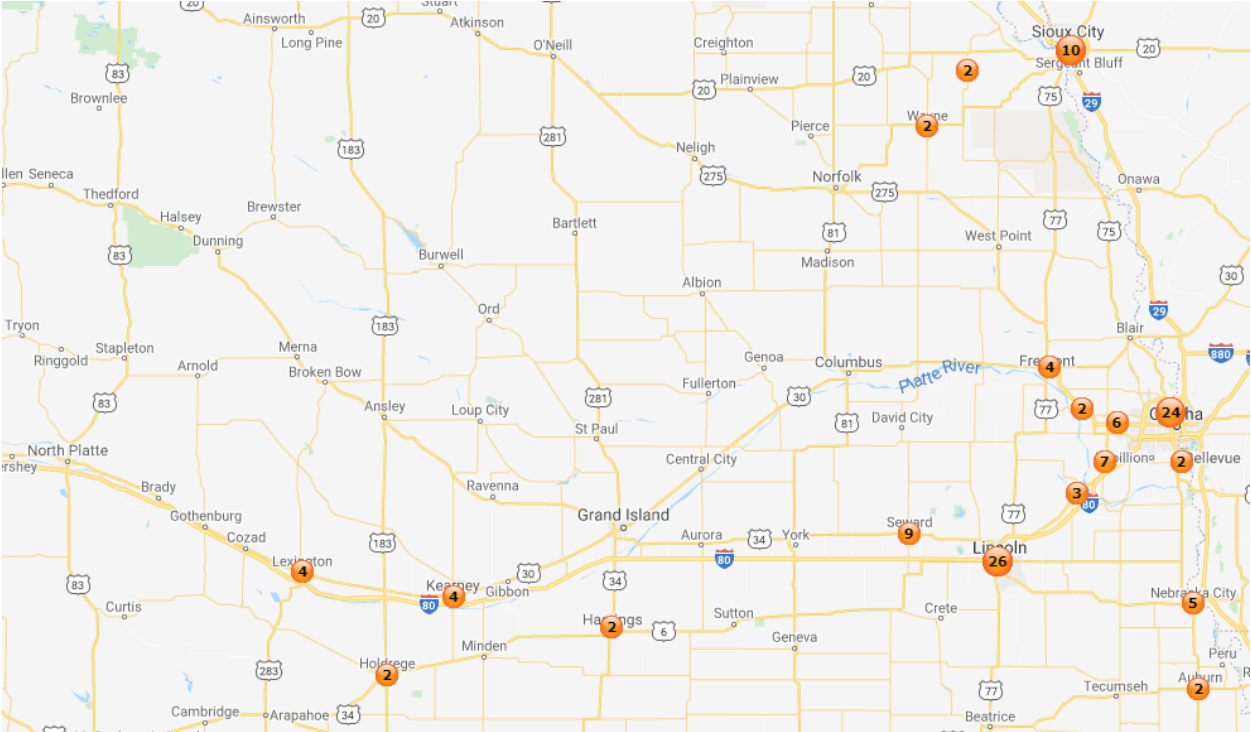


Figure 2: ChargePoint Charging Station Locations Across Nebraska, Numbers Shown Indicate Number of Charging Station ports.

Table 3: Charging Station Location and Rate Structure for All Existing Participating Charging Stations.

Charging Station Location	Address	Rate Structure	Net Revenue** for July 2021 (Since Jan 2013)	Number of Stations	Number of Ports	Grant Phase
Allen Consolidated Schools	126 E 5 th Street, Allen, NE – 68710	Free For All	\$0 (\$0)	1	2	II
Auburn Board of Public Works	817 Central Ave, Auburn, NE 68305	Free For All	\$ 26.38 (\$157.43)	1	2	IV
	125 South 1 st Street, Brownville, NE			1	2	
	830 Central Ave, Auburn, NE	All Days \$5.00/hr Station Parking While charging Free When not charging \$2.00/hr After 15 mins		1	1	
Aurora	1118 N St, Aurora, NE	<u>Level 2 stations</u> Energy Fee : All Days \$1.00/hr Min :\$2.00 Max: \$4.00	\$32.92 (\$278.55)	2	3	IV V
	1118 N St, Aurora, NE	<u>DC stations</u> Energy Fee : All Days \$0.07/min Min :\$4.00 Max: \$8.00				
Ashland	DC Fast Charger: S 13 th St, Ashland, NE 68003	Energy Fee: \$8.00/hr (Min: \$4.00, Max: \$8.00)	\$30 (\$2,783.74)	2	3	II
	Level 2 Station: S 13 th St, Ashland, NE 68003	Flat Fee: \$1.00				
Bellevue	North End of the 1500 Wall Street Building, Wall St, Bellevue, NE 68005	Free For All	\$0 (\$0)	1	2	I
B & R Stores	840 Fallbrook Blvd, Lincoln, Nebraska 68521, United States	\$0.05/min	\$442.91 (\$1,613.89)	1	2	
	840 Fallbrook Blvd, Lincoln, Nebraska 68521, United States	\$0.20/min		1	1	

	4400 S 33 rd Ct, Lincoln, Nebraska 68516, United States	\$0.05/min		1	2	
	4400 S 33 rd Ct, Lincoln, Nebraska 68516, United States	\$0.20/min		1	2	
Charging Station Location	Address	Rate Structure	Net Revenue** for July 2021 (Since Jan 2013)	Number of Stations	Number of Ports	Grant Phase
Central City	1515 17 th St, Central City, NE 68826. Located 1 block south and 1 block east of the intersection of Highway 14 and 30 (NO LONGER PRESENT IN DATABASE)	Free For All	\$0 (\$0)	1 (Unavailable)	2 (Unavailable)	I
Central Community College	550 S Technical Blvd, Hastings, NE	All Days \$1.00/hr Min / Max Fees Min \$2.00 Max \$20.00 per session	\$30 (\$177.05)	1	2	
	4500 63 rd St, Columbus, NE			1	2	
	3134 US-34, Grand Island, NE			1	2	
	1215 30 th Avenue, Kearney, NE			1	2	
Dakota County	1600-1698 Myrtle St, Dakota City, NE 68731. Located on North parking lot of the County Courthouse near the corner of 16 th and Maple Street in Dakota City	Flat Fee: \$1.00	\$7 (\$177)	1	2	II

Charging Station Location	Address	Rate Structure	Net Revenue** for July 2021 (Since Jan 2013)	Number of Stations	Number of Ports	Grant Phase
Ferguson House, Lincoln office of NCEA	700 S 16 th St, Lincoln, NE 68508. Located at parking lot of Ferguson House	First 4 hrs: \$0.25/hr Thereafter: \$1.00/hr Minimum \$1.00	\$18.97 (\$669.07)	1	2	I
Fremont	Station 1: 858 E 23 rd Street, Fremont, NE 68025 Station 2: 135 E 5 th St, Fremont, NE 68025	Station Parking: Free for 4hrs, Thereafter: \$1.00/hr Maximum: \$8.00	\$53.05 (\$613.8)	2	4	III
Gretna	Station 1: 204 N Mc Kenna Ave, Gretna, NE 68028 South side of building to the rear Station 2: 21041 Nebraska Crossing Drive, Gretna, NE 68028. End of Nebraska Crossing Drive take a right, this is east of Nebraska Crossing Buildings Station 3: 21417 Nebraska Crossing Drive, Gretna, NE 68028	<u>Level 2 stations</u> Energy Fee : All Days \$0.50/hr Station Parking: Free for 4hrs, Thereafter: \$4.00/hr Min :\$1.00 Max: \$50.00 <u>DC stations</u> Energy Fee : All Days \$4.00/hr Station Parking: Free for 4hrs, Thereafter: \$8.00/hr Min :\$2.00 Max: \$40.00	\$223.8 (\$1,521.39)	3	5	(2) II (1) IV
Hastings	1330 N Burlington Ave, Hastings, NE 68901. Located at South of the Museum in the south parking lot, next to the brick well house	\$1.00/hr Minimum: \$2.00 Maximum: \$4.00	\$36.92 (\$302.87)	1	2	II

Charging Station Location	Address	Rate Structure	Net Revenue** for July 2021 (Since Jan 2013)	Number of Stations	Number of Ports	Grant Phase
Holdrege	749-799 Railroad St, Holdrege, NE 68949. Located in the 3 rd Ave and East Ave parking lot on the west side	Free For All	\$0 (\$0)	1	2	I
Kearney	Station 1 : 1-99 E 23 rd St, Kearney, NE 68847. Located at Public parking lot north of City Hall	All Days \$1.00/hr Station Parking While charging Free When not charging \$0.50/hr After 1 hr(s) grace period	\$373.26 (\$578.16)	1	2	II
	Station 2 : 2025 A Avenue, Kearney, NE			1	2	V
	610 Talmadge St, Kearney, NE			1	2	
	911 W Talmadge Rd, Kearney, Nebraska 68845, United States			1	1	
	911 W Talmadge Rd, Kearney, Nebraska 68845, United States			1	1	
		All Days \$017/MIN Station Parking While charging Free When not charging \$0.50/hr After 1 hr(s) grace 26period Min / Max Fees Min\$2.50				
LES	601 P St, Lincoln, NE 68501. Green 2 Garage located on NE corner of Pinnacle Arena Dr and P Streets. Located on level ONE. Use the south entrance off of P Street.	Free For LES Fleet. All others: \$1.00/4 hrs	\$131.91 (\$3,837.47)	2	4	

	Address	Rate Structure	Net Revenue** for July 2021 (Since Jan 2013)	Number of Stations	Number of Ports	Grant Phase
	9445 Rokeby Rd, Lincoln, Nebraska 68526, United States	Free For all		5	5	
Lexington	Station 1: 652-698 N Jefferson St, Lexington, NE 68850. Located in the alley between 6 th and 7 th , toward the west end of the block (near Jefferson Street)	Free for Lexington Fleet. All others: \$0.10/kWh. Minimum: \$0.40 Maximum: \$4.00	\$14.98 (\$585.66)	1	2	I
	Station 2: 2607 Plum Creek Pkwy, Lexington, NE 68850. Located on the east side of Holiday Inn Express			1	2	
Lincoln	Station 1 : 848 Q St, Lincoln, NE 68508. Located in Garage, near R St entrance	Free for City Council Fleet at <u>County Lot ONLY</u> . All others: \$0.25/hr for first 4 hours, then \$1.00/hr Minimum: \$1.00 Maximum: \$12.00	\$468.45 (\$10,461.1)	10	20	II
	Station 2 : 925 Q St, Lincoln, NE 68508. Located in Garage, near main entrance off 10 th Street between "P" and "Q" Street.					
	Station 3: 111 Q street, Lincoln, Nebraska 68508, United States. Located in Garage, near main exit					

	<p>Station 4: 1317 Q St, Lincoln, Nebraska 68508, United States. Located in Garage, near main entrance 2nd level.</p>					
	<p>Station 5: 101 N 14th St, Lincoln, Nebraska 68508, United States. Located in Garage, next to elevator</p>					
	<p>Station 6: 1120 N St, Lincoln, Nebraska 68508, United States. Located in Garage, near West entrance from 11th St.</p>					
	<p>Station 7: 700 N St, Lincoln, Nebraska 68508, United States. Located in Garage, near South entrance</p>					
	<p>Station 8: 1220 L Street, Lincoln, Nebraska 68508, United States. Located in Garage, 2nd floor near elevator</p>					
	<p>Station 9: 1128 L St, Lincoln, Nebraska 68508, United States. Located in Garage, near South entrance</p>					
	<p>Station 10: 921 L St, Lincoln, Nebraska 68508, United States. Located in Garage, near South stairs</p>					
	<p>Station 11 : 100 Oakcreek Dr, Lincoln, NE</p>			1	2	

Charging Station Location	Address	Rate Structure	Net Revenue** for July 2021 (Since Jan 2013)	Number of Stations	Number of Ports	Grant Phase
Lincoln Public Schools	Station 1 :5801 N 33 rd St, Lincoln, Nebraska 68504, United States	Station parking \$0.25/hr for first 4 hours, then \$1.00/hr	\$31.47 (\$190.78)	7	7	
	Station 2: 6345 Madison Ave, Lincoln, Nebraska 68507, United States					
	Station 3: 2229 J St, Lincoln, Nebraska 68510, United States					
	Station 4: 800 S 24 th St, Lincoln, NE					
	Station 5: 1000 S 70 th St, Lincoln, NE					
	Station 6: 2930 S 37 th St, Lincoln, NE					
	Station 7: 7001 S 14 th St, Lincoln, NE					
MCC	Station 1&2: 3035 Saratoga St, Omaha, NE	Free For All	\$0 (\$0)	2	4	
	Station 3: Cumberland Road, Omaha, NE			1	2	III
	Station 4: 5370 N. 30 th St., Omaha, NE			1	2	III
	Station 5: Bldg 14 Middle Rd, Omaha, NE			1	2	III
	Station 6: 2900 Edward Babe Gomez Ave					
	Station 7: 2900 Edward Babe Gomez Ave					

Charging Station Location	Address	Rate Structure	Net Revenue** for July 2021 (Since Jan 2013)	Number of Stations	Number of Ports	Grant Phase
Nebraska City	Station 8: 2900 Edward Babe Gomez Ave	Free For All	\$0 (\$0)	1	2	
	Station 2: 724 Central Ave, Nebraska City, NE 68410 Located at Downtown on the West side of the parking lot North of Central Avenue between 7 th and 8 th Street			2	3	I
	Station 3: 2515 S 11 th St, Nebraska City, NE 68410 Located on the east end of the Best Western parking lot					
NORFOLK	309 N 5th St	Station parking free for first 4 hours, then \$1.00/hr	\$8.52 (\$42.95)			
Nebraska Safety Center at UNK	Station 1 and 2: 3035 Saratoga St, Omaha, NE 68111 South parking lot of CASC building 23 on MCC Campus.	FREE FOR ALL	\$0 (\$0)	2	4	IV
NP Dodge	Station 1 : 8701 W Dodge Rd, Omaha, Nebraska 68114, United States	FREE FOR ALL	\$13.31 (\$126.93)	1	1	

	Station 2 : 8601 West Dodge Road, Omaha, Nebraska 68114, United States			1	2	IV
Charging Station Location	Address	Rate Structure	Net Revenue** for July 2021 (Since Jan 2013)	Number of Stations	Number of Ports	Grant Phase
NPPD	Station 1 : 1200 S Chestnut St, Norfolk, Nebraska 68701, United States	Station Parking First 4 hr \$0.50/hr Thereaftr \$1.00/hr Min / Max Fees Min \$2.00	\$475.47 (\$2,204.65)	1	2	V
	Station 2 : 414 15 th St, Columbus, Nebraska 68601, United States			1	2	
	Station 3: 1414 15 th St, Columbus, Nebraska 68601, United States			1	2	
	Station 4 : 900 4 th Ave, Kearney, Nebraska 68845, United States			1	2	
	Station 5 : 300 S Clarice Rd, Ogallala, Nebraska 69153, United States			1	2	
	Station 6 : 515 1 st Ave, Scottsbluff, Nebraska 69361, United States			1	2	
Minden	325 N Colorado Ave, Minden, Nebraska 68959, United States	Free For All	\$0 (\$0)	1	2	V
OPPD	Old Lincoln Hwy, Elkhorn, NE 68022. Station 1 Located on the west side of the transportation department parking stalls located directly south of the transportation garage. Station 2 Located on the east side of	Free For All	\$0 (\$0)	2	4	II

	transportation department parking stalls located directly south of transportation department garage					
Charging Station Location	Address	Rate Structure	Net Revenue** for July 2021 (Since Jan 2013)	Number of Stations	Number of Ports	Grant Phase
City of Omaha	Station 1 : 444 S 16 th St, Omaha, Nebraska 68102, United States	\$0.25 per hour for first 4 hours, then \$2 per hour	\$185.6 (\$0)	2	4	IV
	Station 2 : 321 N 17th St					
	Station 3 : 100 N 15th St					
	Station 4 : 1215 Capitol Ave					
	Station 5 : 1011 Jackson St					
	Station 6 : 1011 Jackson St.					
	Station 7 : 1506 Douglas St					
	Station 8 : 1506 Douglas St					
	Station 9 : 250N S 19th St					
Omaha Henry Doorly Zoo	Station 1 and 2: 3701 S 10 th St , Omaha, NE 68107 South parking lot of CASC building 23 on MCC Campus.	\$2 per hour for first 3 hours, then \$3.5 per hour	\$284.22 (\$1,943.24)	2	4	IV

Charging Station Location	Address	Rate Structure	Net Revenue** for July 2021 (Since Jan 2013)	Number of Stations	Number of Ports	Grant Phase
Papio-Missouri NRD	Station 1: Chalco Hills Recreation Area 8901 S 154 th St, Omaha, NE 68138	Free For All	\$0 (\$0)	1	2	
Seward	Station 1: 532 Northern Heights Drive, Seward, NE 68434. Located at Southeast Corner of High School East Parking Lot	Free For Connected Drivers. Others: \$2.00/session Flat Fee	\$16 (\$924)	3 (1 Unavailable)	6 (2 Unavailable)	
	Station 2: 700 E Hillcrest Dr, Seward, NE 68434. Located at Northeast Corner of Walz Field House Parking Lot					
	Station 3: 233 S. 5 th St., Seward, NE 68434. Located in Southwest Corner of West Library Parking Lot					
	Station 4: 546 Jackson Ave, Seward, NE 68434. 546 Jackson Ave, Seward, NE 68434			2	3	1
	Station 5: 142 N 7 th St, Seward, NE 68434. Located on the North West Corner of the Municipal Building					

<p>South Sioux City</p>	<p>Station 1: 701 W 29th St, South Sioux City, NE 68776</p>	<p>Level 2 stations Free For All</p> <p>DC stations All Days \$0.07/min</p>	<p>\$45.87 (\$936.81)</p>			
	<p>Station 2: 1615 1st Ave, South Sioux City, NE 68776</p>			<p>5</p>	<p>11</p>	<p>I</p>
<p>Station 3: Riverview Dr, South Sioux City, NE 68776</p>	<p>Station 4: 2121 Dakota Avenue, South Sioux City, NE 68776</p>					
<p>Station 5: 2501 Cornhusker Dr, South Sioux City, Nebraska 68776, United States</p>						
<p>University of Nebraska Medical Center (UNMC)</p>	<p>Station 1: 802 S 60th St, Omaha, NE 68106</p>	<p>\$0.50 per hour for first 4 hours, then \$3 per hour</p>	<p>\$53.16 (\$480.55)</p>			<p>1</p>
<p>UNO</p>	<p>Stations 1&2: 1010 S 67th St, Omaha, NE 68106. Just to the south, inside the west entrance on the east wall of the parking garage.</p>	<p>\$0.12/hr for 4 hrs. Thereafter, \$3.00/hr. Minimum: \$0.50 Maximum: \$50.00</p>	<p>\$66.45 (\$2,268.9)</p>	<p>4</p>	<p>8</p>	
<p>Valley</p>	<p>203 N Spruce St, Valley, NE 68064</p>	<p>\$0.25/hr. Minimum: \$1.00 Maximum: \$1.00 for every 4 hrs</p>	<p>\$3 (\$108.76)</p>	<p>1</p>	<p>2</p>	<p>II</p>

Wayne	W 3 rd St, Wayne, NE 68787. Located in parking lot along the south wall of garage behind City Hall	Flat Fee: \$1.00	\$0 (\$0)	1	2	
** Net revenue = Gross revenue – Flex Billing Service Fee			Total			
			\$3060.90 (\$33,277.17)			

2. Data Analysis

In collaboration with the Durham School of Architectural Engineering and Construction (DSAEC) at the University of Nebraska-Lincoln, data is collected, processed, and analyzed to document the economic and environmental benefits of utilizing existing charging stations infrastructure throughout Nebraska. More information is available at the project's main website (<http://necommunity.energy>). The following sections provide findings and trends pertaining to the EV charging infrastructure usage and savings/benefits.

Regardless of the period, the economic and environmental benefits for each community and the overall benefits for the state of Nebraska highlight the impact these projects are having on improving our own environment and economic well-being.

2.1. Summary of Unique User Data (Commercial)

This section provides a summary of the number of unique users for each public ChargePoint charging station, the research team has access to, and for each NCEA participating member for the month of July 2021 and since installation (see Table 4). If a user uses a single station or multiple stations multiple times in a given month, he/she will only be counted once during that entire month. Once a new month starts, unique user counting will reset.

Table 4 summarizes the cumulative yearly unique user data in terms of the number of unique drivers and charging sessions, as well as the energy usage, since the start of the data collection from Apr`2013 to 2019 and then monthly for current year.

Table 4: Summary of Unique User Data, Charging Sessions and Energy Usage.

Year	Number of Unique Users	No of Charging Sessions	Energy Usage (kWh)
2013	19	618	3,410
2014	45	1,003	4,940
2015	97	1,962	14,114
2016	211	2,825	23,871
2017	427	4,361	34,715
2018	756	7,148	61,136
2019	1,137	9,471	108,238
2020	1,250	7,228	88,426
2021 (YTD)			
Jan 2021	<u>213</u>	<u>560</u>	<u>7,520</u>
Feb 2021	<u>176</u>	<u>528</u>	<u>7,504</u>
Mar 2021	<u>330</u>	<u>994</u>	<u>11,529</u>
Apr 2021	<u>395</u>	<u>1,161</u>	<u>14,632</u>
May 2021	<u>477</u>	<u>1,299</u>	<u>15,546</u>
Jun 2021	<u>627</u>	<u>1,569</u>	<u>17,820</u>
Jul 2021	<u>818</u>	<u>1,666</u>	<u>19,970</u>

Table 5, shows the monthly summary of the same categories for the month of July 2021. The summary includes the breakdown of the obtained data according to each participating station.

Table 5: Unique User and Energy Information for July 2021.

Charging Station Location	Number of Unique Users in July 2021	Number of Charging Sessions	Energy Usage (kWh)
Allen Consolidated Schools	0	0	0
Auburn Board of Public Works	16	31	327.639
Aurora	8	12	175.99
Ashland	13	19	289
Bellevue	0	0	0
B & R Stores	42	73	1,123
Central City*			0.00
Central Community College	14	45	297.48
Dakota County	3	12	170
Ferguson House, Lincoln office of NCEA	6	18	171
Fremont	24	78	1,185
Gothenburg			0.00
Gretna	72	116	1,202
Hastings	8	10	131
Holdrege	3	3	44.795
Kearney	53	104	1,512
LES	89	106	1,820
Lexington	10	12	202
Lincoln	77	163	2,924
Lincoln Public Schools	29	75	558
MCC	33	102	1,298
Nebraska City	21	64	1,201
Norfolk	5	7	130
Nebraska Safety Center at UNK	2	4	27.039
NP Dodge	6	7	16.35
NPPD	74	166	689.05
Minden	5	7	36.92
OPPD	4	26	8
City of Omaha	43	75	994
Omaha Zoological Society	50	74	532.652
Papio-Missouri NRD	37	92	944
Seward	6	10	262
South Sioux City	23	68	904
UNMC	21	34	369.194
UNO	19	49	395
Valley	2	4	31
Wayne	0	0	0
Total	818	1,666	19,970
Total number of charging ports: 219, (207 ports are available, 4 ports are inactive in Bellevue , 2 ports are inactive in Central City, 2 ports need service in Seward, 2 ports need service in Wayne, and 4 ports need service in LES). Charging station locations with “0” numbers indicate no reporting during this month.			

Figures 3, 4, and 5 show charging infrastructure installation and usage trends over the period of data collection (since Jan 2013).

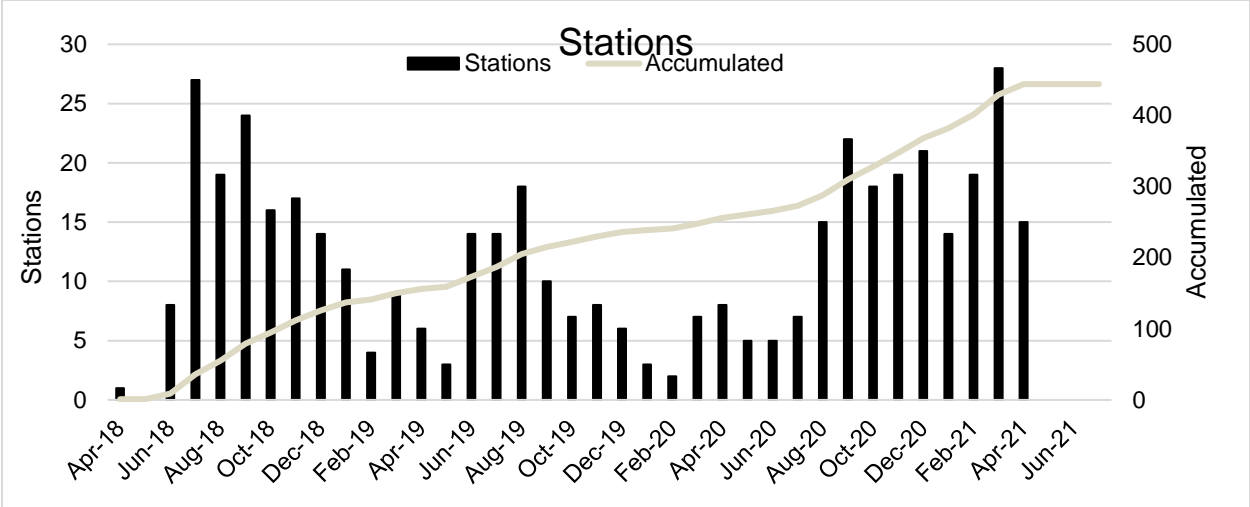


Figure 3: Number of Charging Stations Installed per Month Since Jan` 2013.

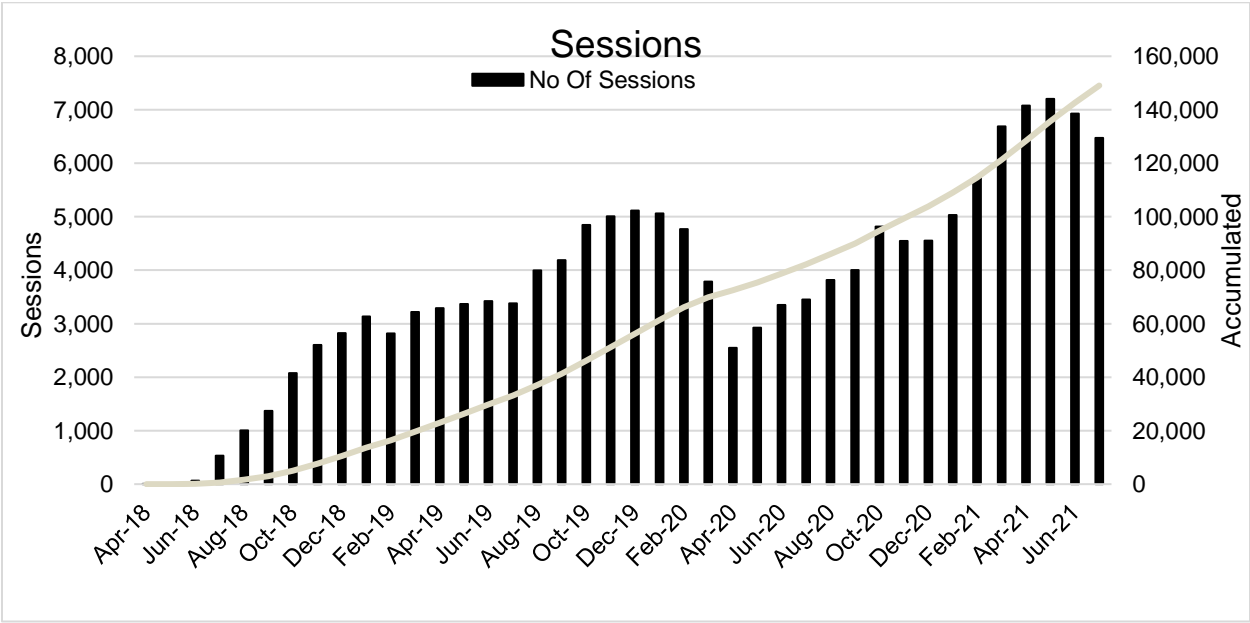


Figure 4: Number of Charging Sessions per Month Since Jan` 2013.

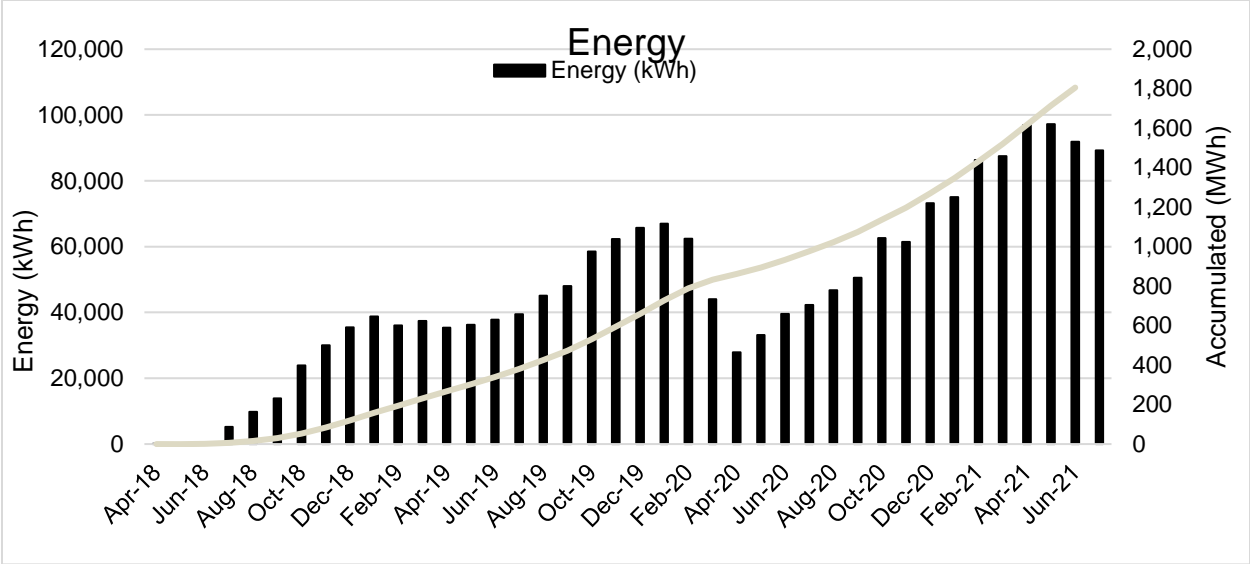


Figure 5: Energy Usage per Month Since Jan` 2013.

2.2. Summary of Unique User Data (Utility/Residential)

This section focuses on the utility rebate programs.

➤ OPPD Rebate Program

Table 6a shows the charging infrastructure usage summary for the data obtained since the inception of the rebate program for OPPD in Apr 2018. Cumulative Number of Installed Stations might vary from month to month because of the number of stations that lose connection to the network.

Table 6a: Summary of Installed OPPD Residential Charging Stations and Energy Usage per Month Since Apr` 2018.

	Number of Installed Stations Each Month	Cumulative Number of Installed Stations	Number of Charging Sessions	Energy Usage (kWh)
<u>2018 Total</u>	-	<u>126</u>	<u>10,487</u>	<u>119,049</u>
<u>2019 Total</u>	-	<u>236</u>	<u>45,921</u>	<u>547,841</u>
<u>2020 Total</u>	-	<u>368</u>	<u>48,022</u>	<u>611,576</u>
Jan` 2021	14	382	5,033	75,049
Feb` 2021	19	401	5,726	86,290
Mar` 2021	28	429	6,689	87,513
Apr` 2021	15	444	7,079	96,924
May` 2021	0	444	7,203	97,245
Jun` 2021	0	444	6,929	91,880
Jul` 2021		444	6,476	89,288
<u>Total</u>		<u>444</u>	<u>149,409</u>	<u>1,894,741</u>

The data shown in Table 6a is presented in Figures 6a, 7a, and 8a. Figure 6a shows the number of charging infrastructure installed since the inception of the rebate program as well as the cumulative number of charging stations; Figure 7a and Figure 8a show the trends of charging sessions and energy usage respectively, over the same time period.

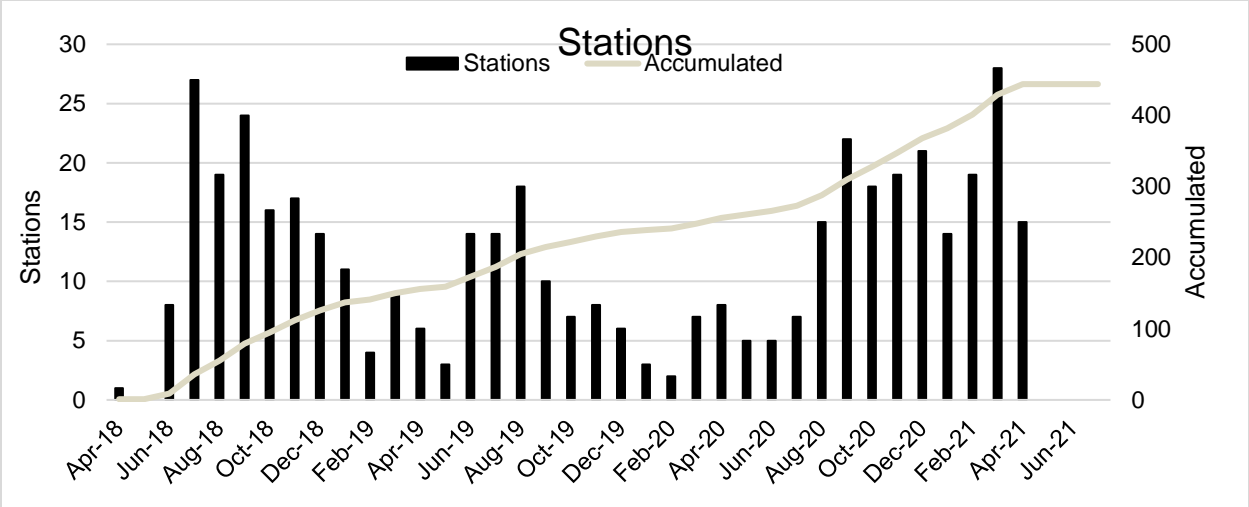


Figure 6a: Number of Charging Stations Installed per Month Since Apr 2018.

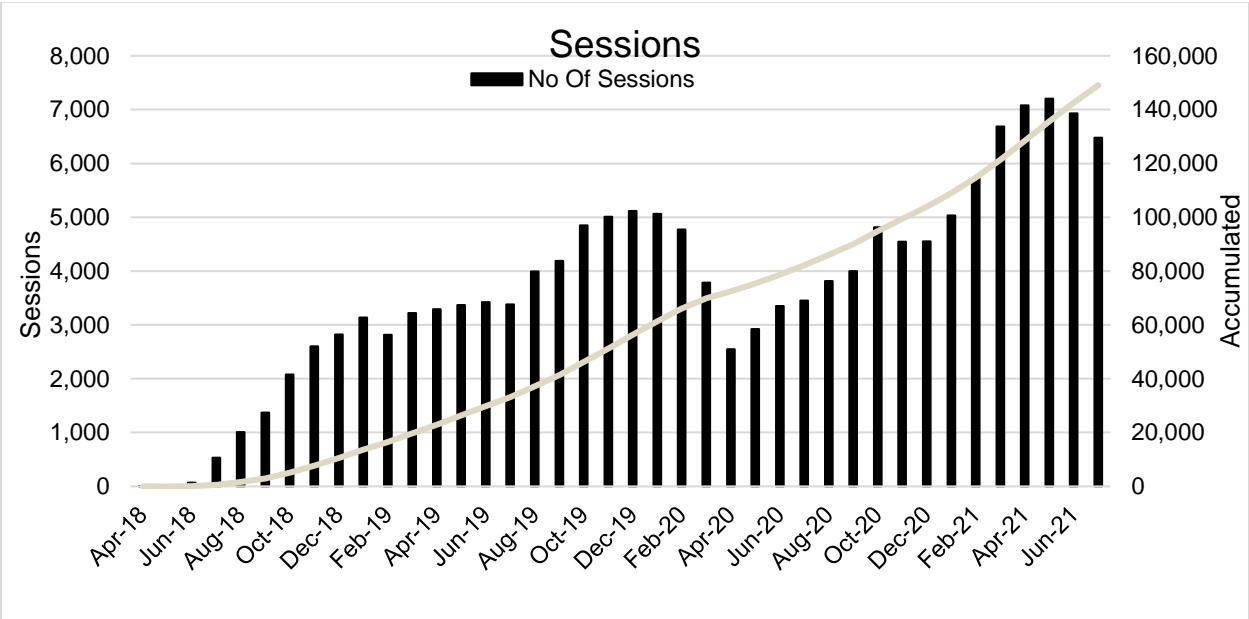


Figure 7a: Number of Charging Sessions per Month Since Apr 2018.

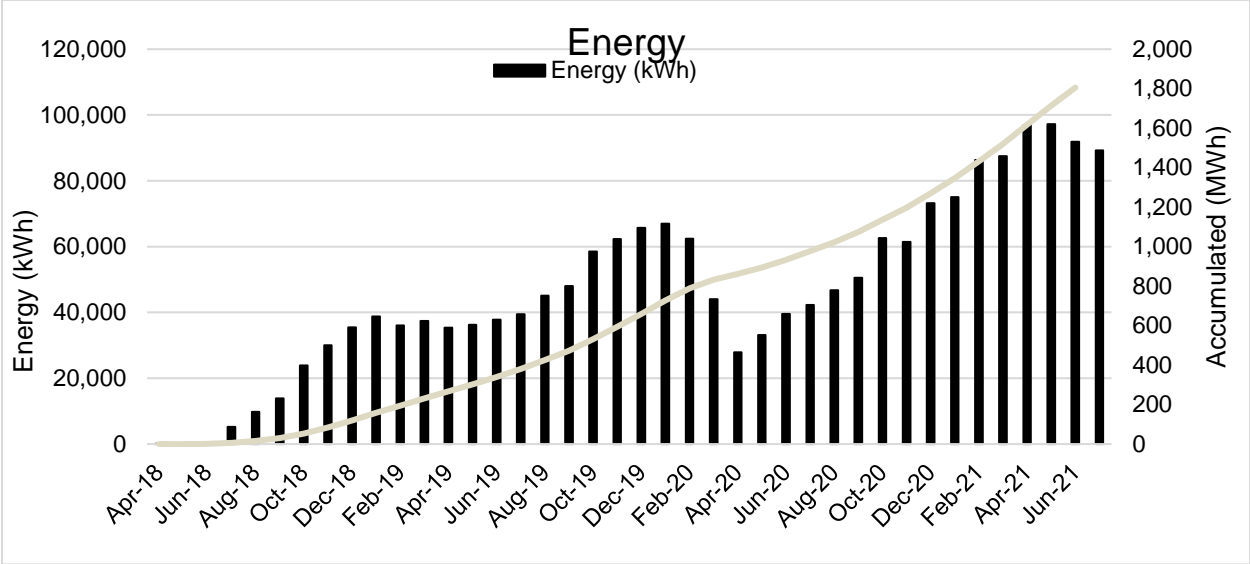


Figure 8a: Energy Usage per Month Since Apr 2018.

➤ NPPD Rebate Program

Table 6B shows the charging infrastructure usage summary for the data obtained since the inception of the rebate program for NPPD in Mar 2018. Cumulative Number of Installed Stations might vary from month to month because of the number of stations that lose connection to the network.

Table 6b: Summary of Installed NPPD Residential Charging Stations and Energy Usage per Month Since Mar` 2018.

	Number of Installed Stations Each Month	Cumulative Number of Installed Stations	Number of Charging Sessions	Energy Usage (kWh)
<u>2018 Total</u>	-	4	869	3875.868
<u>2019 Total</u>	-	6	1,664	8,906
<u>2020 Total</u>	-	20	2,406	31,561
Jan` 2021	2	32	441	6,851
Feb` 2021	1	34	413	6,144
Mar` 2021	1	35	613	10,697
Apr` 2021	2	37	640	11,325
May` 2021	4	44	748	11,899.9
Jun` 2021	0	48	793	13,219
Jul` 2021		48	855	14,950
<u>Total</u>		<u>48</u>	<u>9,636</u>	<u>121,200</u>

The data shown in Table 6b is presented in Figures 6b ,7b, and 8b. Figure 6b shows the number of charging infrastructure installed since the inception of the rebate program as well as the cumulative number of charging stations; Figure 7b and Figure 8b show the trends of charging sessions and energy usage respectively, over the same time period.

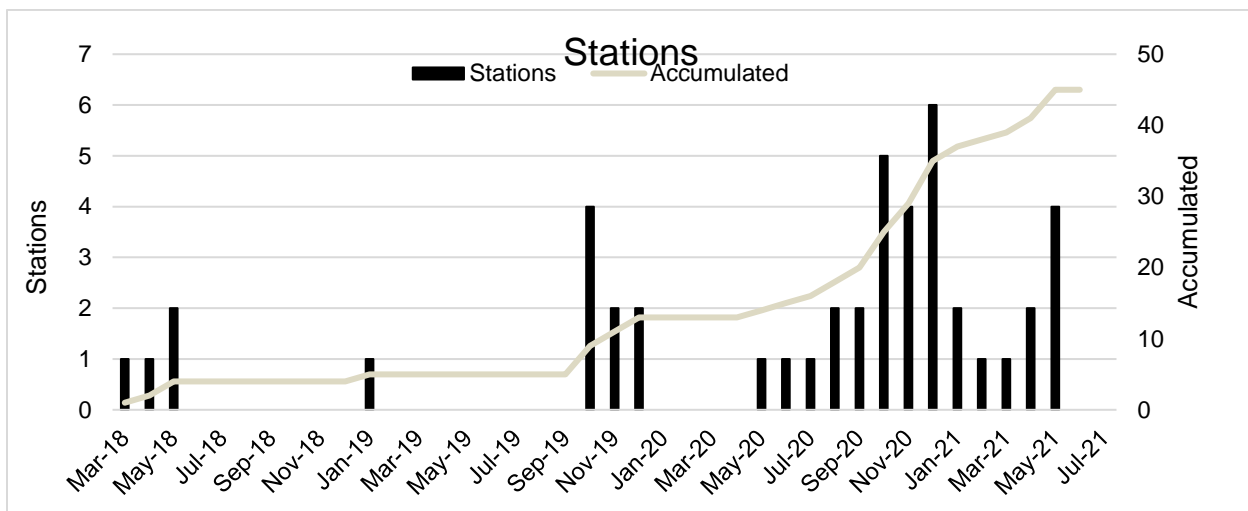


Figure 6b: Number of Charging Stations Installed per Month Since Mar 2018.

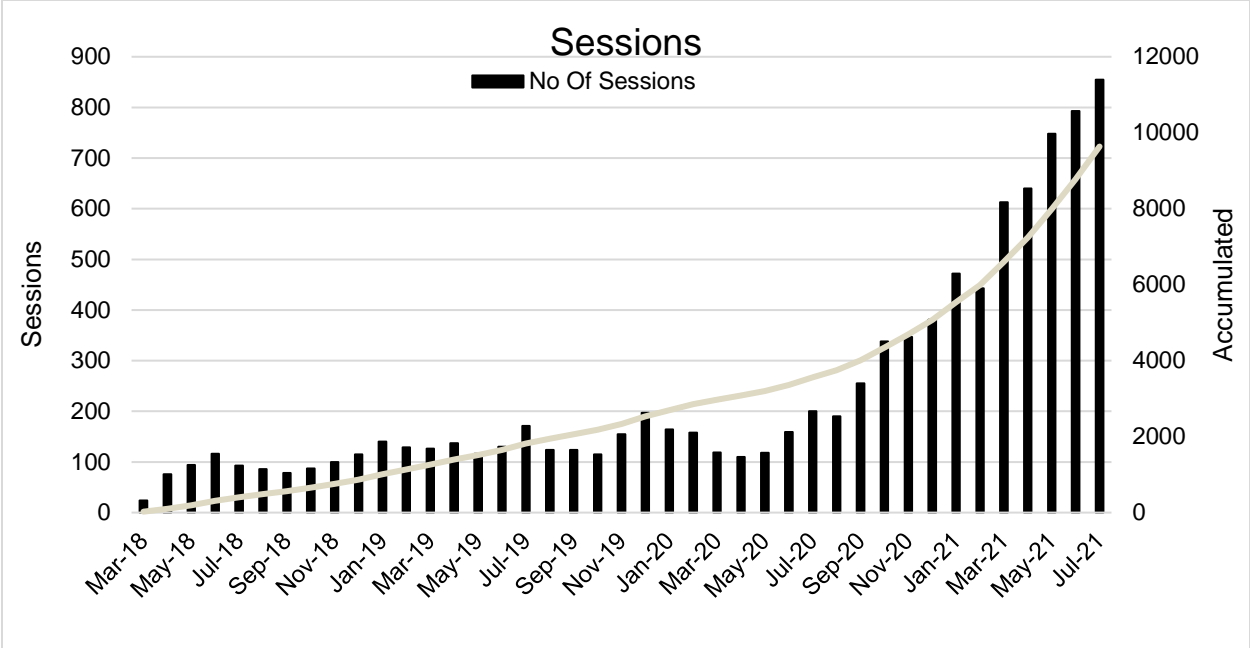


Figure 7b: Number of Charging Sessions per Month Since Mar 2018.

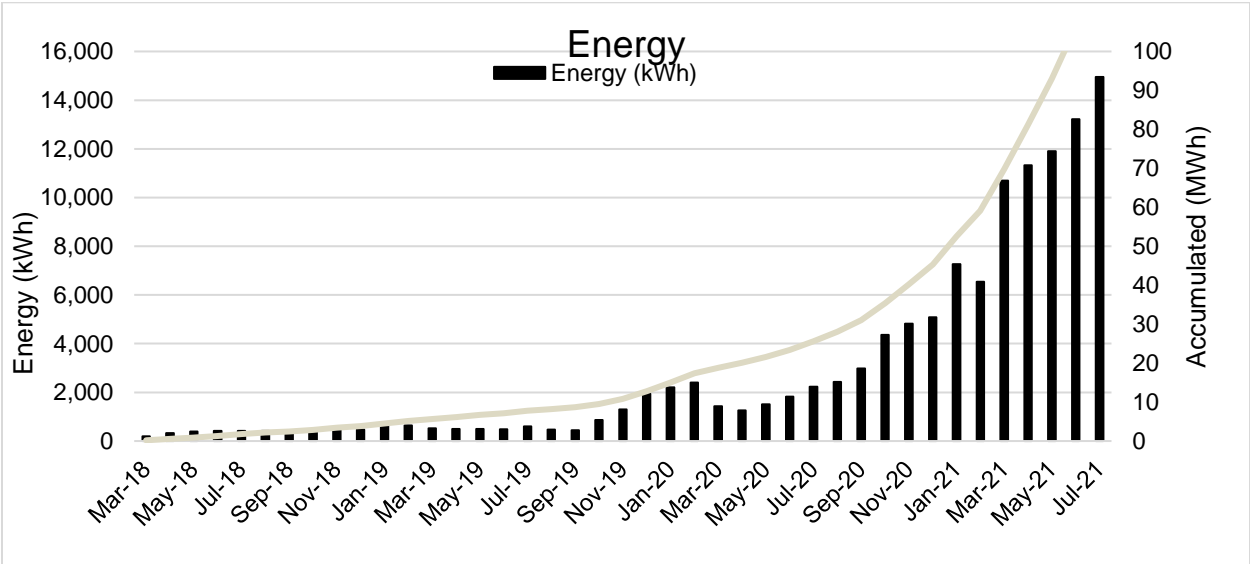


Figure 8b: Energy Usage per Month Since Mar 2018.

➤ Fremont Rebate Program

Table 6c shows the charging infrastructure usage summary for the data obtained since the inception of the rebate program for NPPD in Aug 2019. Cumulative Number of Installed Stations might vary from month to month because of the number of stations that lose connection to the network.

Table 6c: Summary of Installed Residential Charging Stations and Energy Usage per Month Since Aug` 2019.

	Number of Installed Stations Each Month	Cumulative Number of Installed Stations	Number of Charging Sessions	Energy Usage (kWh)
2019 Total	-	4	242	4,635
2020 Total	-	5	458	9,795
Jan` 2021	0	5	29	652
Feb` 2021	0	5	23	600
Mar` 2021	0	5	35	632
Apr` 2021	0	5	43	878
May` 2021	0	5	60	1,211
Jun` 201	0	5	57	1,252
Jul` 2021	0	5	49	1,070
Total		5	996	20,726

The data shown in Table 6c is presented in Figures 6c ,7c, and 8c. Figure 6c shows the number of charging infrastructure installed since the inception of the rebate program as well as the cumulative number of charging stations; Figure 7c and Figure 8c show the trends of charging sessions and energy usage respectively, over the same time period.

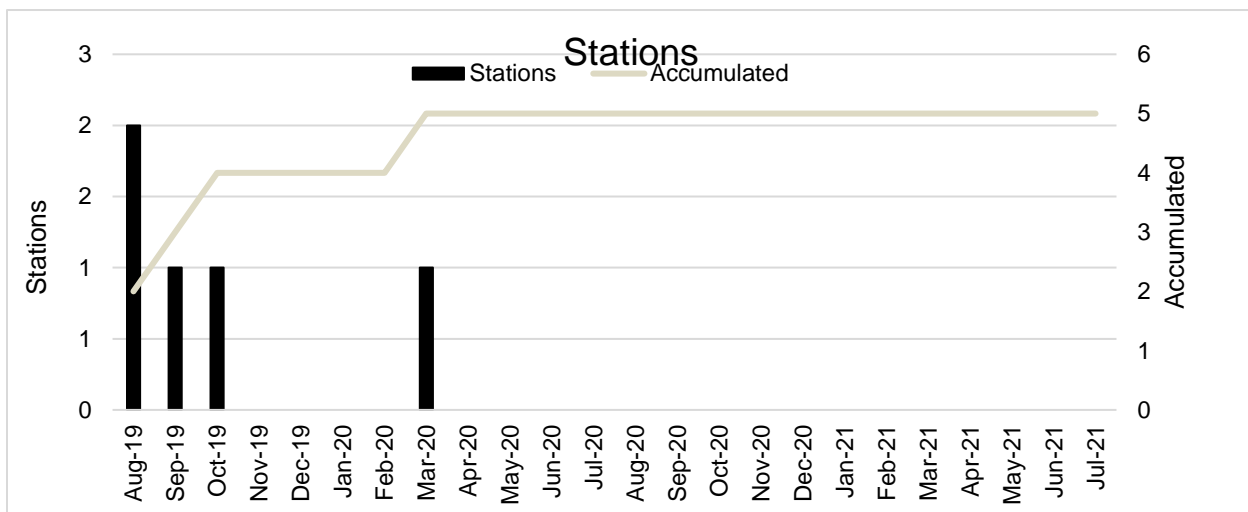


Figure 6c: Number of Charging Stations Installed per Month Since Aug 2019.

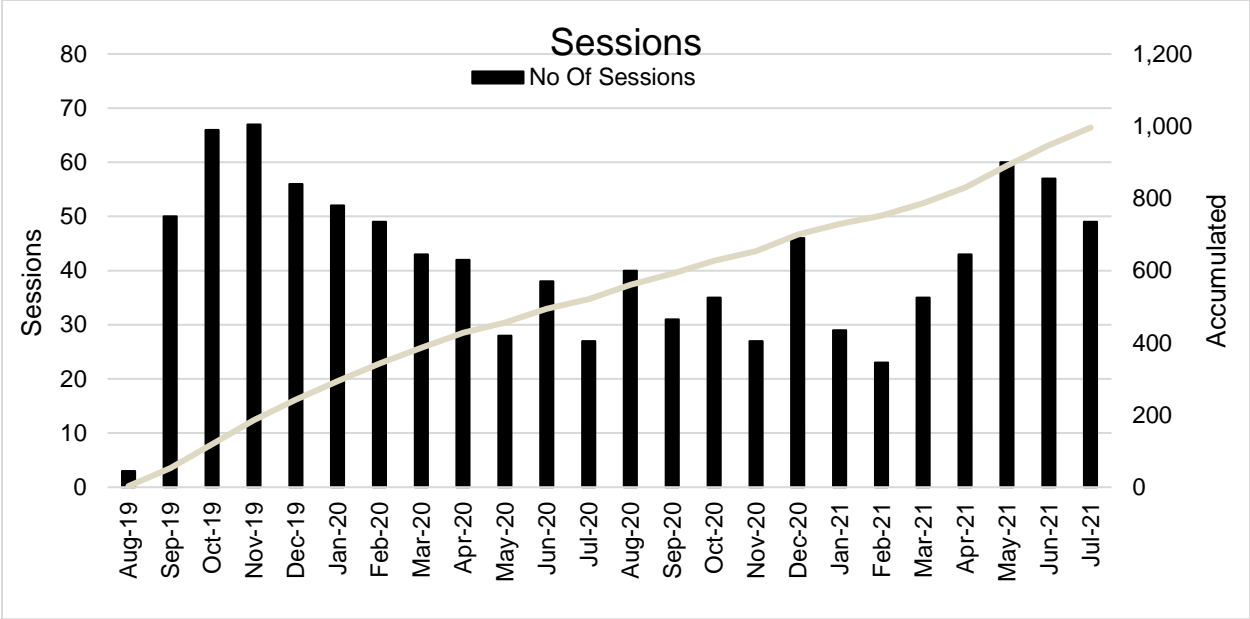


Figure 7c: Number of Charging Sessions per Month Since Aug 2019.

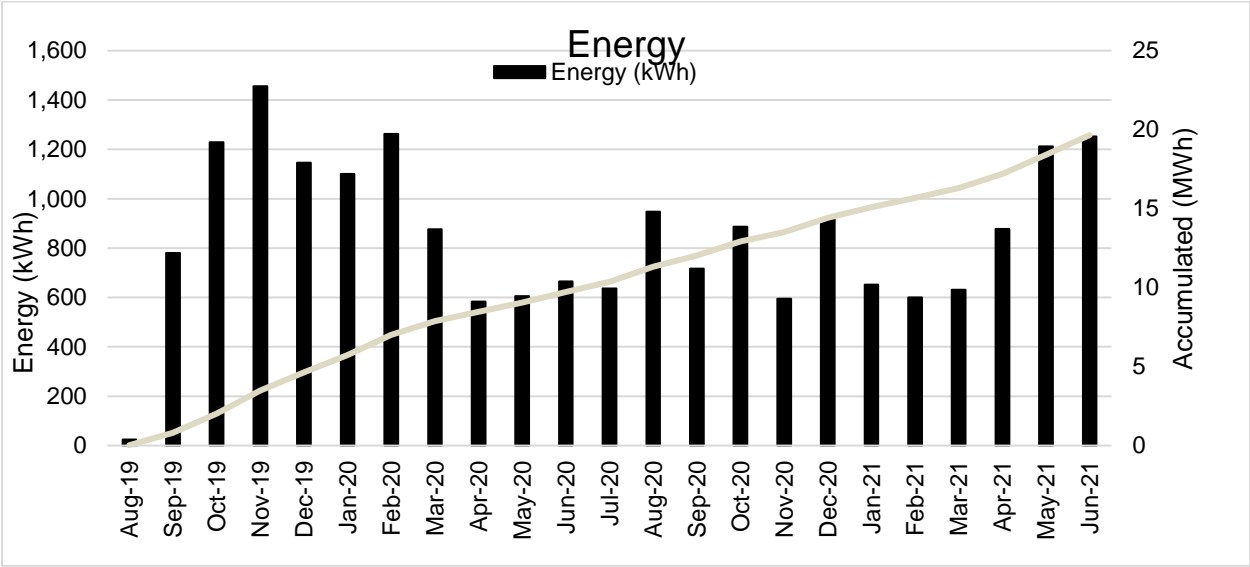


Figure 8c: Energy Usage per Month Since Aug 2019.

2.3. Summary of Economic and Environmental Analysis (Commercial and Utility/ Residential)

Commercial

A summary of the commercial economic and environmental benefits for the month of July 2021 is shown in Table 7. Table 8 provides the total savings for each participating station since the start of data collection in Jan 2013. The difference in the amount saved for each participating member and/or charging station location is due to the number of EVs, CNGs, charging stations and activation dates. Data with "()" savings indicate no savings. Only CO₂ data from CNG are used in the report. Furthermore, CNG data collection is stopped in 2018 due to the scarcity of the data usage.

Table 9, Table 10, Table 11, Table 12, and Table 13 show the grant cycle phase I, II, III, IV, and V benefits for the participating members respectively. Table 17 shows the benefits for the remaining existing charging stations.

Utility/Residential

A summary of the economic and environmental benefits for the users under the OPPD, NPPD, and Fremont Municipal Utility residential rebate programs for the month of July 2021 is provided in this section. Tables 14 and 15 shows the economic and environmental benefits calculations for the OPPD rebate program.

Overall Savings

Table 16 shows the combined commercial and residential savings for Phases I-V. Table 18 shows the benefits for both DC and the commercial level-2 charging stations.

Table 7: Economic and Environmental Benefits for all Participating Stations for the Month of July 2021.

Charging Station Location	Number of Charging Ports	Number of Charging Sessions	Energy Usage (kWh)	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
					CO ₂	CO	SO ₂	NO _x	CH ₄	VOC
Allen Schools	2	0	0	\$0	0	0.00	0.00	0.00	0.00	0.00
Auburn Board of Public Works	4	31	327.639	\$141	631	6.82	(0.41)	0.16	(0.02)	0.41
Aurora	3	12	175.99	\$79	204	3.61	(0.48)	(0.67)	(0.01)	0.22
Ashland	3	19	289	\$126	281	5.85	(0.76)	(0.41)	(0.03)	0.36
Bellevue	4	0	0	\$0	0	0.00	0.00	0.00	0.00	0.00
B & R Stores	6	73	1,123	\$506	528	22.59	(2.91)	(1.72)	(0.26)	1.40
Central City	2		0.00	\$0	0	0.00	0.00	0.00	0.00	0.00
Central Community College	8	45	297.48	\$133	345	6.10	(0.81)	(1.13)	(0.02)	0.37
Dakota County	2	12	170	\$74	197	3.48	(0.46)	(0.65)	(0.01)	0.21
Ferguson House, Lincoln office of NCEA	2	18	171	\$77	248	3.53	(0.15)	(0.06)	(0.01)	0.21
Fremont	4	78	1,185	\$503	1,421	23.91	(2.78)	(0.79)	(0.19)	1.48
Gothenburg	-		0.00	\$0	0	0.00	0.00	0.00	0.00	0.00
Gretna	5	116	1,202	\$526	1,169	24.34	(3.18)	(1.69)	(0.12)	1.49
Hastings	2	10	131	\$59	62	2.64	(0.34)	(0.20)	(0.03)	0.16
Holdrege	2	3	44.795	\$19	52	0.92	(0.12)	(0.17)	(0.00)	0.06
Kearney	8	104	1,512	\$663	1,753	31.01	(4.11)	(5.75)	(0.11)	1.88
LES	12	106	1,820	\$709	2,642	37.59	(1.56)	(0.61)	(0.06)	2.26
Lexington	4	12	202	\$91	234	4.13	(0.55)	(0.77)	(0.01)	0.25
Lincoln	22	163	2,924	\$1,325	4,245	60.41	(2.50)	(0.98)	(0.10)	3.64
Lincoln Public Schools	7	75	558	\$253	809	11.52	(0.48)	(0.19)	(0.02)	0.69
MCC	10	102	1,298	\$569	1,262	26.28	(3.43)	(1.82)	(0.13)	1.61
Nebraska City	5	64	1,201	\$498	2,313	24.98	(1.50)	0.60	(0.07)	1.51
Norfolk	2	7	130	\$36	223	2.78	(0.22)	(2.31)	0.00	0.16
Nebraska Safety Center at UNK	2	4	27.039	\$12	31	0.55	(0.07)	(0.10)	(0.00)	0.03
NP Dodge	3	7	16.35	\$7	16	0.33	(0.04)	(0.02)	(0.00)	0.02
NPPD	23	166	689.05	\$306	1,000	14.23	(0.59)	(0.23)	(0.02)	0.86
Minden	3	7	36.92	\$16	43	0.76	(0.10)	(0.14)	(0.00)	0.05
OPPD	4	26	8	\$4	8	0.16	(0.02)	(0.01)	(0.00)	0.01
City of Omaha	2	75	994	\$435	1,153	20.39	(2.70)	(3.78)	(0.07)	1.23
Omaha Zoological Society	4	74	532.652	\$233	518	10.78	(1.41)	(0.75)	(0.05)	0.66
Papio-Missouri NRD	2	92	944	\$413	918	19.12	(2.50)	(1.33)	(0.10)	1.17
Seward	9	10	262	\$111	304	5.37	(0.71)	(0.99)	(0.02)	0.32
South Sioux City	11	68	904	\$396	1,048	18.54	(2.46)	(3.44)	(0.06)	1.12
UNMC	4	34	369.194	\$161	359	7.47	(0.98)	(0.52)	(0.04)	0.46
UNO	8	49	395	\$173	383	7.99	(1.04)	(0.55)	(0.04)	0.49
Valley	2	4	0	\$14	31	0.64	(0.08)	(0.04)	(0.00)	0.04
Wayne	2	0	0	\$0	0	0.00	0.00	0.00	0.00	0.00
Total	219	1,666	19,970	\$8,666	24,428	408.83	(39.46)	(31.05)	(1.62)	24.85

Table 8: Cumulative Charging Infrastructure Usage and Benefits for all Participating Charging stations since Jan` 2013.

Charging Station Location	Number of Charging Ports	Number of Charging Sessions	Energy Usage (kWh)	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
					CO ₂	CO	SO ₂	NO _x	CH ₄	VOC
Allen Schools	2	1,097	11,418	\$4,035	22,470	462.19	(25.97)	(1.12)	1.37	15.54
Auburn Board od Public Works	4	585	3,068	\$1,177	5,818	63.37	(3.98)	1.45	(0.11)	3.84
Aurora	3	237	992	\$408	1,150	20.35	(2.70)	(3.77)	(0.07)	1.23
Ashland	3	1,150	11,939	\$4,217	15,389	264.55	(37.65)	(14.19)	(0.07)	14.74
Bellevue	4	1,295	12,080	\$3,959	25,594	571.21	(33.69)	18.47	1.87	16.91
B & R Stores	6	390	4,461	\$1,935	2,096	89.76	(11.58)	(6.85)	(1.02)	5.58
Central City	2	33	522	\$163	1,264	31.44	(1.18)	1.59	0.13	0.78
Central Community College	8	237	1,503	\$647	1,743	30.83	(4.08)	(5.71)	(0.11)	1.86
Dakota County	2	343	4,220	\$1,506	6,868	123.64	(10.69)	(7.92)	0.18	5.44
Ferguson House, Lincoln office of NCEA	2	584	4,871	\$1,770	7,995	177.15	(6.00)	(9.01)	0.59	6.46
Fremont	4	1,312	20,601	\$7,233	23,748	399.19	(50.65)	(21.37)	(3.28)	25.29
Gothenburg	-	0	0	\$720	6,020	155.11	(5.30)	8.68	0.64	3.56
Gretna	5	2,335	21,018	\$7,507	26,558	515.34	(61.32)	(19.85)	(0.56)	22.00
Hastings	2	146	1,329	\$515	1,147	31.65	(3.44)	(0.43)	(0.01)	1.67
Holdrege	2	114	1,005	\$367	1,645	31.43	(2.46)	(1.42)	0.06	1.31
Kearney	8	2,710	23,251	\$8,735	35,471	599.59	(57.10)	(51.15)	0.71	29.44
LES	12	1,892	29,782	\$11,070	36,904	814.58	(18.38)	(144.04)	2.83	37.40
Lexington	4	932	10,325	\$3,361	17,373	325.09	(25.08)	(14.35)	0.68	13.45
Lincoln	22	6,938	74,070	\$28,144	82,822	1,736.18	(51.40)	(366.31)	5.72	91.25
Lincoln Public Schools	7	365	2,903	\$1,213	4,214	59.97	(2.49)	(0.98)	(0.10)	3.61
MCC	10	2,004	21,896	\$8,058	27,298	433.39	(70.79)	(32.77)	(0.88)	26.68
Nebraska City	5	2,084	21,006	\$8,795	50,751	717.32	(37.00)	28.56	1.83	27.99
Norfolk	2	36	449	\$123	771	9.59	(0.74)	(7.98)	0.01	0.56
Nebraska Safety Center at UNK	2	48	231	\$87	301	4.70	(0.60)	(0.80)	(0.01)	0.28
NP Dodge	3	126	3,103	\$1,070	3,542	61.92	(9.33)	(4.55)	(0.21)	3.81
NPPD	23	1,207	14,094	\$5,367	20,461	291.15	(12.07)	(4.74)	(0.49)	17.53
Minden	3	30	165	\$62	191	3.38	(0.45)	(0.63)	(0.01)	0.20
OPPD	4	4,904	27,371	\$8,978	53,461	1,172.15	(81.18)	29.23	3.63	37.53
City of Omaha	2	596	7,875	\$2,953	9,830	160.63	(20.81)	(28.30)	(0.38)	9.73
Omaha Zoological Society	4	491	3,960	\$1,515	4,245	79.50	(11.32)	(5.71)	(0.32)	4.88
Papio-Missouri NRD	2	2,194	21,240	\$7,887	26,635	419.80	(68.92)	(32.08)	(0.93)	25.87
Seward	9	952	13,129	\$4,338	22,976	446.58	(31.52)	(12.32)	1.12	17.32
South Sioux City	11	3,609	45,106	\$15,415	79,398	1,528.74	(108.44)	(34.68)	3.83	59.42
UNMC	4	303	2,757	\$977	3,069	55.16	(8.12)	(4.02)	(0.20)	3.39
UNO	8	2,599	22,036	\$7,690	27,859	437.08	(72.43)	(32.07)	(0.67)	26.81
Valley	2	217	1,768	\$605	2,925	58.65	(5.53)	(0.07)	0.13	2.35
Wayne	2	164	2,262	\$1,889	8,787	64.17	(5.13)	(39.86)	0.25	2.85
Total	219	44,259	447,838	\$164,489	668,790	12,446.50	(959.52)	(821.09)	16.15	568.55

Table 9: Cumulative Economic and Environmental Benefits for Phase I Participants.

Participating Members	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
		CO2	CO	SO2	NOx	CH4	VOC
Bellevue	\$3,959	25,594	571.21	(33.69)	18.47	1.87	16.91
Central City	\$163	1,264	31.44	(1.18)	1.59	0.13	0.78
Ferguson House, Lincoln office of NCEA	\$1,770	7,995	177.15	(6.00)	(9.01)	0.59	6.46
Gothenburg	\$720	6,020	155.11	(5.30)	8.68	0.64	3.56
Holdrege	\$367	1,645	31.43	(2.46)	(1.42)	0.06	1.31
Lexington	\$3,361	17,373	325.09	(25.08)	(14.35)	0.68	13.45
Nebraska City	\$6,598	38,244	592.74	(32.71)	21.63	1.33	25.14
Seward	\$480	2,023	26.06	(3.11)	(3.76)	0.04	1.59
South Sioux City	\$1,038	4,099	59.52	(7.43)	(9.59)	(0.03)	3.62
Wayne*	\$1,149	5,100	-	-	-	-	-
Total	\$19,605	109,356	1,969.74	(116.96)	12.23	5.29	72.81

Table 10: Total Economic and Environmental Benefits for Phase II Participants.

Participating Members	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
		CO2	CO	SO2	Nox	CH4	VOC
Allen Consolidated Schools	\$4,035	22,470	462.19	(25.97)	(1.12)	1.37	15.54
Ashland	\$4,217	15,389	265	-38	-14	0	15
Dakota County	\$1,506	6,868	123.64	(10.69)	(7.92)	0.18	5.44
Gretna	\$3,283	14,443	285.99	(28.95)	(3.44)	0.40	7.92
Hastings	\$515	1,147	31.65	(3.44)	(0.43)	(0.01)	1.67
Kearney	\$7,204	31,109	522.40	(46.88)	(36.85)	0.98	24.77
Lincoln	\$28,142	82,815	1,736.08	(51.39)	(366.31)	5.72	91.24
Nebraska City*	\$1,678	7,565	-	-	-	-	-
OPPD	\$8,978	53,461	1,172.15	(81.18)	29.23	3.63	37.53
UNO	\$1,388	4,829	73.88	(12.44)	(5.71)	(0.14)	4.56
Valley	\$605	2,925	58.65	(5.53)	(0.07)	0.13	2.35
Total	\$61,551	243,021	4,731.17	(304.11)	(406.81)	12.18	205.75

*Data shown is for one CNG in Phase I, and two CNGs in Phase II.

Table 11: Total Economic and Environmental Benefits for Phase III Participants.

Participating Members	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
		CO2	CO	SO2	Nox	CH4	VOC
Fremont	\$7,233	23,748	399.19	(50.65)	(21.37)	(3.28)	25.29
MCC	\$1,236	3,558	63.31	(9.40)	(4.63)	(0.23)	3.89
Total	\$8,469	27,305	462.50	(60.05)	(26.00)	(3.50)	29.18

Table 12: Total Economic and Environmental Benefits for Phase IV Participants.

Participating Members	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
		CO2	CO	SO2	Nox	CH4	VOC
Auburn Board of Public Works	\$483	2,582.09	28.43	(1.88)	0.61	(0.02)	1.73
Aurora (DC)	\$345	967.37	17.11	(2.27)	(3.17)	(0.06)	1.04
City of Omaha	\$2,727	9,233.58	150.08	(19.41)	(26.34)	(0.34)	9.09
Nebraska Safety Center at UNK	\$87	301.20	4.70	(0.60)	(0.60)	(0.01)	0.28
NP Dodge	\$78	205.57	4.28	(0.56)	(0.30)	(0.02)	0.26
Omaha Zoological Society	\$1,515	4,244.66	79.50	(11.32)	(5.71)	(0.32)	4.88
University of Nebraska Medical Center	\$977	3,069.35	55.16	(8.12)	(4.02)	(0.20)	3.39
Gretna (DC)	\$4,224	12,115.55	229.35	(32.37)	(16.41)	(0.96)	14.08
Kearney	\$1,531	4,362.68	77.18	(10.22)	(14.30)	(0.27)	4.67
Total	\$11,967	37,082.06	645.79	(86.76)	(70.24)	(2.20)	39.42

Table 13: Total Economic and Environmental Benefits for Phase V Participants.

Participating Members	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
		CO2	CO	SO2	Nox	CH4	VOC
Auburn Board of Public Works	\$694	3,235.62	34.94	(2.10)	0.84	(0.09)	2.11
Aurora	\$63	182.96	3.24	(0.43)	(0.60)	(0.01)	0.20
Central Community College	\$647	1,742.63	30.83	(4.08)	(5.71)	(0.11)	1.86
Minden	\$62	191.10	3.38	(0.45)	(0.63)	(0.01)	0.20
NPPD	\$5,367	20,461.19	291.15	(12.07)	(4.74)	(0.49)	17.53
Norfolk	122.83	770.85	9.59	(0.74)	(7.98)	0.01	0.56
Lincoln	2.20	7.56	0.11	(0.00)	(0.00)	(0.00)	0.01
Total	\$6,957	26,592	373	(20)	(19)	(1)	22

Table 14: Total Economic Savings Data for OPPD Residential Rebate Program (Fuel & Maintenance Cost Savings).

		This Month (July)	All Time
Miles Driven		304,650.29	
Energy Consumed(kWh)		89,287.89	
Fuel cost saving	Usage Cost Using CV(Gas)	\$35,997	
	Usage Cost Using EV(Electricity)	\$7,589	
	Total Fuel Saving	<u>\$28,407</u>	
Other cost saving	CV Costs	\$18,584	
	EV Costs	\$7,921	
	Total, other cost savings	<u>\$10,663</u>	
Overall Economic Savings		<u>\$39,070</u>	<u>\$708,059.85</u>

Table 15: Total Environmental Savings Data for OPPD Residential Rebate Program (Reduction in Emissions).

		This Month (July)	All Time
Miles Driven			
Energy Consumed (kWh)			
Co2 Emissions (lbs.)	CV (Gas)	237,800	
	EV (Electricity)	151,017	
	Total Fuel Saving	<u>86,784</u>	<u>2,346,956.95</u>
Co Emissions (lbs.)	CV (Gas)	1,921.62	
	EV (Electricity)	113.87	
	Total Fuel Saving	<u>1,807.76</u>	<u>39,047.8784</u>
So2 Emissions (lbs.)	CV (Gas)	2.82	
	EV (Electricity)	239.08	
	Total Fuel Saving	<u>(236.26)</u>	<u>(6,127.6928)</u>
Nox Emissions (lbs.)	CV (Gas)	80.60	
	EV (Electricity)	205.94	
	Total Fuel Saving	<u>(125.34)</u>	<u>(2,924.0518)</u>
CH4 Emissions (lbs.)	CV (Gas)	4.50	
	EV (Electricity)	13.68	
	Total Fuel Saving	<u>(9.18)</u>	<u>(110.4349)</u>
VOC Emissions (lbs.)	CV (Gas)	113.10	
	EV (Electricity)	2.34	
	Total Fuel Saving	<u>110.76</u>	<u>2,403.3431</u>

Table 16: Total Economic and Environmental Benefits for Phase I to IV Participating Members.

	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
		CO2	CO	SO2	NOx	CH4	VOC
Savings Excluding Residential Rebate Program	\$108,550	443,356	8,182	(587.76)	(509.64)	(0.99)	369.63
OPPD_ Residential Rebate Program Savings	\$709,371	2,352,239	39,124	(6,141.17)	(2,710.20)	(107.71)	2,407.96
NPPD_ Residential Rebate Program Savings	\$47,347	156,134	2,448	(81.26)	(252.47)	(0.69)	146.36
Fremont_ Residential Rebate Program Savings	\$6,970	23,874	401	(50.80)	(21.25)	(3.29)	25.41
Total Saving	\$872,239	2,975,603	50,155	(6,860.99)	(3,493.56)	(112.68)	2,949

Table 17: Total Economic and Environmental Benefits for Remaining Existing Charging Stations.

Participating Members	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
		CO2	CO	SO2	NOx	CH4	VOC
B & R Stores	\$1,935	2,096	89.76	(11.58)	(6.85)	(1.02)	5.58
LES	\$225	597	10.55	(1.40)	(1.96)	(0.04)	0.64
Lincoln Public Schools	\$11,070	36,904	814.58	(18.38)	(144.04)	2.83	37.40
MCC	\$1,213	4,214	59.97	(2.49)	(0.98)	(0.10)	3.61
Nebraska City	\$6,821	23,741	370.08	(61.40)	(28.15)	(0.65)	22.79
NP Dodge	\$519	4,942	124.58	(4.28)	6.93	0.51	2.85
Papio-Missouri NRD	\$992	3,336	57.63	(8.77)	(4.26)	(0.19)	3.54
Seward	\$7,887	26,635	419.80	(68.92)	(32.08)	(0.93)	25.87
South Sioux City	\$3,858	20,954	420.52	(28.41)	(8.56)	1.08	15.73
UNO	\$14,378	75,300	1,469.23	(101.01)	(25.09)	3.86	55.81
Wayne	\$6,302	23,030	363.20	(60.00)	(26.36)	(0.53)	22.25
Total	\$740	3,687	64.17	(5.13)	(39.86)	0.25	2.85

Table 18: Analysis for DC Fast Chargers and all Level 2 Charging Stations.

Commercial Charging Station Type	Number of Charging Ports	Number of Charging Sessions	Energy Usage (kWh)	Economic Benefits	Environmental Benefits (Emission Reductions) (lbs.)					
					CO2	CO	SO2	NOx	CH4	VOC
Level 2 Charger	210	42,687	418,545	\$153,213	636,454	11,834.55	(878.06)	(773.70)	18.46	532.24
DC Fast Charger	9	1572	29,293	\$11,277	32,337	611.96	(81.45)	(47.39)	(2.3131)	36.3117
<u>Total</u>	<u>219</u>	<u>44,259</u>	<u>447,838</u>	<u>\$164,489</u>	<u>668,790</u>	<u>12,446.50</u>	<u>(959.52)</u>	<u>(821.09)</u>	<u>16.15</u>	<u>568.55</u>

3. Appendix A: Detailed Economic Analysis - Commercial

3.1. Introduction

The following five types of vehicles are investigated in this report:

- **CV** – Conventional vehicles running on gasoline fuel.
- **DV** – Conventional vehicles running on diesel fuel.
- **CNG** – Trucks running on compressed natural gas (CNG) fuel.
- **Ethanol (E85)** - Conventional vehicles running on Ethanol (E85) fuel.
- **EV** – Electric Vehicles (all electric) running on electricity.

3.2. Economic Benefits due to Fuel Type Price Differences

Data calculations are based on the following average prices and assumptions:

- Gas price of \$2.079 per gallon (Regular unleaded, based on 2020 monthly Nebraska state average [1]).
- Diesel price of \$2.364 per gallon (based on YTD Nebraska state average [2]).
- CNG price of \$2.00 per gallon based on the current average filling station CNG rate for Nebraska. [3]
- Ethanol (E85) price of \$0.88 per gallon based on 2020 monthly Nebraska state average [4].
- Electricity prices depend on the current rate charged by the electric utility provider serving the participating charging stations in this study. There are seven electric utility providers:
 - Fremont Utilities
 - Hastings Utilities
 - Lincoln Electric System (LES)
 - Nebraska City Utilities
 - Nebraska Public Power District (NPPD)
 - Omaha Public Power District (OPPD)
 - Western Area Power Administration (WAPA)

OPPD serves Ashland, Bellevue, Gretna, and Valley [5]. NPPD serves Allen, Dakota County, Gothenburg, Holdrege, Lexington, Seward, South Sioux City, Wayne, and Auburn as a wholesale power supply; and Kearney as a retail provider [6]. LES serves Lincoln [7]. Fremont, Hastings and Nebraska City are unique as they provide their own power for their cities [8][9][10]. The city of Wayne receives 56% of its power from oil resource, and 44% from the renewable resource, mainly from wind [11][12].

Table A1 provides the name of the electric utility provider and the (commercial or retail) rate per kilowatt-hour for the participating members. Allen, Gothenburg, Holdrege, Lexington, Seward, and Wayne have their own utility rates, while Central City, Dakota County, Kearney, South Sioux City, and Auburn follow the rate schedule as specified by NPPD. To distinguish between the different rates, additional letters ('a' to 'h') have been added to NPPD listing.

Table A1: Electricity Providers and Rate Structure for the Participating Charging Stations.

Charging Station Location	Provider	Price per kWh (\$)#
Allen Consolidated Schools [13]	NPPD - a	0.0817
Auburn Board of Public Works [14]	NPPD-h	0.0941
Ashland [15]	OPPD	0.085
Bellevue [15]	OPPD	0.085
Central City [16]	NPPD - b	0.0853
Dakota County [16]	NPPD - b	0.0853
Ferguson House (Lincoln) [17]	LES	0.0757
Fremont [18]	Provides own service	0.0985
Gothenburg [19]	NPPD - c	0.0801
Gretna [15]	OPPD	0.085
Hastings [20]	Provides own service	0.0783
Holdrege [21]	NPPD - d	0.0975
Kearney [16]	NPPD - b	0.0853
Lexington [22]	NPPD - e	0.14
Lincoln [17]	LES	0.0757
LES [17]	LES	0.0757
MCC [15]	OPPD	0.085
Nebraska City [23]	Provides own service	0.1084
Nebraska Safety Center at UNK [16]	NPPD - b	0.0853
OPPD [15]	OPPD	0.085
Omaha Zoological Society [15]	OPPD	0.085
Seward [24]	NPPD - f	0.085
South Sioux City [16]	NPPD - b	0.085
UNMC [15]	OPPD	0.098
UNO [15]	OPPD	0.0853
Valley [15]	OPPD	0.085
Wayne [25]	NPPD - g	0.085
Average		0.08904
#All rates are the average of the base summer and winter rates.		

Table A2 shows the fuel economy of the different vehicle types and the cost for driving one mile. The cost of fuel for the EV vehicle is based on the price per kWh, for each participating member, calculated by averaging the summer and winter rates.

The following fuel economy values are used:

- CV and DV vehicles: 25.10 mpg and 28.47 mpg respectively, Average fuel economy for the model year 2018 = 25.1 mpg [26][27]
- CNG vehicle: 25.10 mpg, based on the same fuel economy of a CV because it is roughly equal to that of a CV when converted to gasoline gallons equivalent (GGE) [28].
- EV vehicle: 3.412 miles per kWh, based on the combined fuel economy average (city and highway) of all the vehicle types (make and model) published in the Fuel Economy Guide for the year 2020 [29].
- Ethanol (E85): 18.33 mpg based on [30].
- The national driving average is 11,556 miles based on [31].

Table A2: Cost of Driving one Mile for the Five Vehicle Types (Arranged in Descending Order).

Vehicle Type		Cost of Fuel	Combined Fuel Economy	Cost per mile
Gasoline Vehicles (CV)		\$2.079	25.10 mpg	\$0.083
Diesel Vehicles (DV)		\$2.364	28.47 mpg	\$0.083
Compressed Natural Gas Vehicles (CNG)		\$2.000	25.10 mpg	\$0.080
Ethanol Vehicles (E-85)		\$0.882	18.33 mpg	\$0.048
EV	Lexington (NPPD – e)	\$0.140	3.412 miles per kWh	\$0.041
	Wayne (NPPD – g)	\$0.117		\$0.034
	Nebraska City	\$0.108		\$0.032
	Fremont	\$0.099		\$0.029
	Seward (NPPD – f)	\$0.098		\$0.029
	Holdrege (NPPD – d)	\$0.098		\$0.029
	Auburn Board of Public Works (NPPD – h)	\$0.094		\$0.028
	Ashland, Bellevue, Gretna, MCC, OPPD, UNO, Valley (OPPD)	\$0.085		\$0.025
	Central City, Dakota County, Kearney, South Sioux City (NPPD – b)	\$0.085		\$0.025
	Allen (NPPD – a)	\$0.082		\$0.024
	Gothenburg (NPPD – c)	\$0.080		\$0.023
	Hastings	\$0.078		\$0.023
	Ferguson House, LES, Lincoln (LES)	\$0.076		\$0.022

Table A3 and Table A4 show the cost savings when comparing between the five types of vehicles. The calculations shown are for driving one mile (Table A3) and then for driving an average of 11,556 miles [31] annually (Table A4). The red shading represents no savings (negative savings) and the green shading represents positive savings. Figure A1 provides a visual representation of Table A4.

Table A3: Cost Savings per Mile in Terms of Fuel Consumption (Arranged in Ascending Order).

Vehicle Type		Savings per mile			
		Compared to CV	Compared to DV	Compared to CNG	Compared to E85
Gasoline Vehicles (CV)		-	\$0.000	-\$0.003	-\$0.035
Diesel Vehicles (DV)		\$0.000	-	-\$0.003	-\$0.035
Compressed Natural Gas Vehicles (CNG)		\$0.003	\$0.003	-	-\$0.032
Ethanol Vehicles (E-85)		\$0.035	\$0.035	\$0.032	-
EV	Lexington (NPPD – e)	\$483.02	\$485.63	\$446.70	\$82.09
	Wayne (NPPD – g)	\$561.25	\$563.86	\$524.93	\$160.32
	Nebraska City	\$590.03	\$592.64	\$553.71	\$189.10
	Fremont	\$623.56	\$626.17	\$587.24	\$222.63
	Seward (NPPD – f)	\$625.25	\$627.86	\$588.93	\$224.32
	Holdrege (NPPD – d)	\$626.94	\$629.56	\$590.62	\$226.01
	Auburn Board of Public Works (NPPD – h)	\$638.46	\$641.07	\$602.14	\$237.53
	Central City, Dakota County, Kearney, South Sioux City (NPPD – b)	\$668.26	\$670.87	\$631.94	\$267.33
	Ashland, Bellevue, Gretna, MCC, OPPD, UNO, Valley (OPPD)	\$669.27	\$671.89	\$632.95	\$268.34
	Allen (NPPD – a)	\$680.45	\$683.06	\$644.13	\$279.52
	Gothenburg (NPPD – c)	\$685.87	\$688.48	\$649.55	\$284.94
	Hastings	\$691.96	\$694.57	\$655.64	\$291.03
	Ferguson House, LES, Lincoln (LES)	\$700.77	\$703.38	\$664.45	\$299.84

Table A4: Estimated Annual Cost Savings in Terms of Fuel Consumption (Arranged in Ascending Order).

Vehicle Type		Estimated Annual Savings			
		Compared to CV	Compared to DV	Compared to CNG	Compared to E85
Gasoline Vehicles (CV)		-	\$2.61	-\$36.32	-\$400.93
Diesel Vehicles (DV)		-\$2.61	-	-\$38.93	-\$403.54
Compressed Natural Gas Vehicles (CNG)		\$36.32	\$38.93	-	-\$364.61
Ethanol Vehicles (E-85)		\$400.93	\$403.54	\$364.61	-
EV	Lexington (NPPD – e)	\$483.02	\$485.63	\$446.70	\$82.09
	Wayne (NPPD – g)	\$561.25	\$563.86	\$524.93	\$160.32
	Nebraska City	\$590.03	\$592.64	\$553.71	\$189.10
	Fremont	\$623.56	\$626.17	\$587.24	\$222.63
	Seward (NPPD – f)	\$625.25	\$627.86	\$588.93	\$224.32
	Holdrege (NPPD – d)	\$626.94	\$629.56	\$590.62	\$226.01
	Auburn Board of Public Works (NPPD – h)	\$638.46	\$641.07	\$602.14	\$237.53
	Central City, Dakota County, Kearney, South Sioux City (NPPD – b)	\$668.26	\$670.87	\$631.94	\$267.33
	Ashland, Bellevue, Gretna, MCC, OPPD, UNO, Valley (OPPD)	\$669.27	\$671.89	\$632.95	\$268.34
	Allen (NPPD – a)	\$680.45	\$683.06	\$644.13	\$279.52
	Gothenburg (NPPD – c)	\$685.87	\$688.48	\$649.55	\$284.94
	Hastings	\$691.96	\$694.57	\$655.64	\$291.03
	Ferguson House, LES, Lincoln (LES)	\$700.77	\$703.38	\$664.45	\$299.84

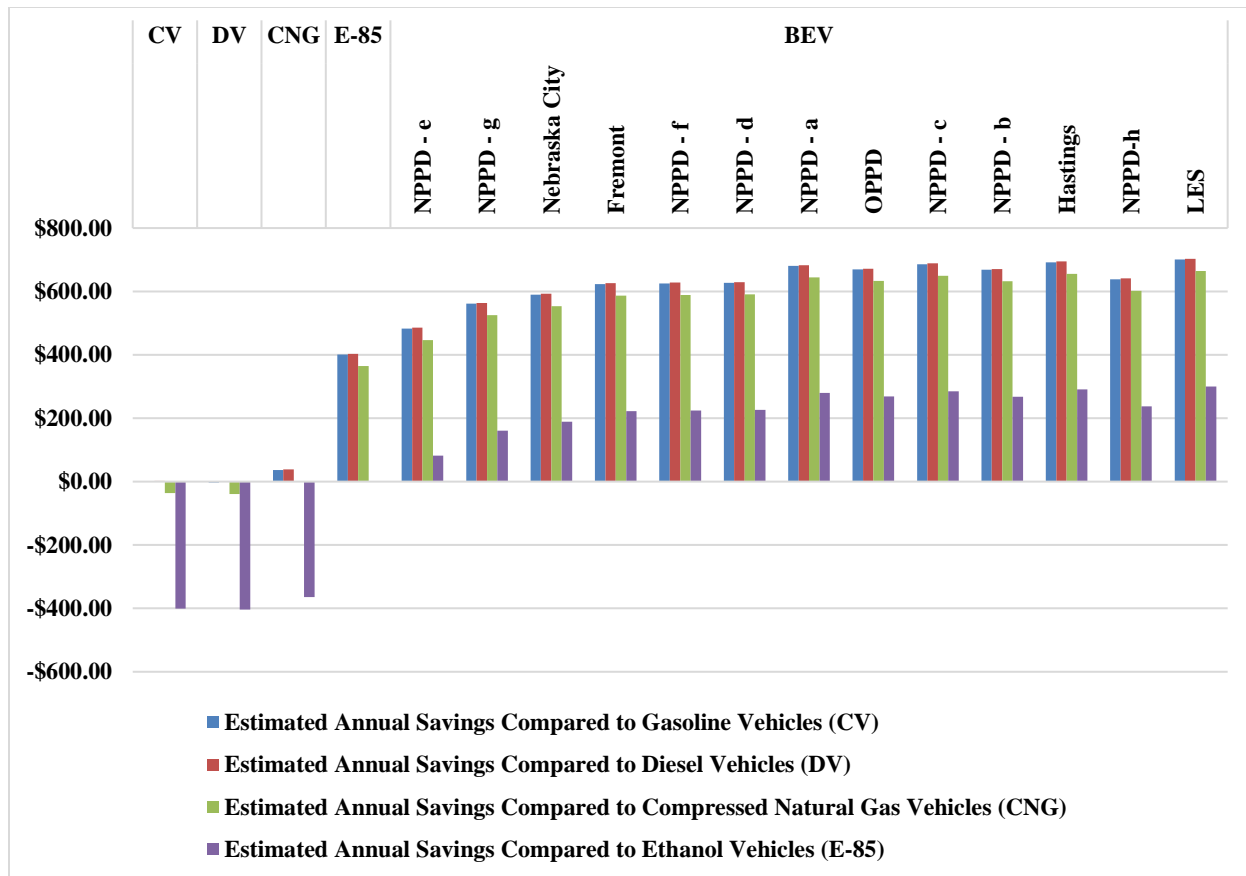


Figure A1. Estimated Annual Cost Savings in Terms of Fuel Consumption Arranged in Ascending Order.

Table A5 shows the cost savings in terms of varying fuel (gasoline, diesel, CNG, and Ethanol) prices. This analysis is performed on a price range of \$1.50 to \$3.50 in 50 cent increments. The cost per kWh considered is the average of the kWh prices shown in Table A1 (\$0.08904 per kWh). The results for CNG and Gasoline fuel will be the same as their fuel economy is equal in terms of GGE [29]. Figure A2 provides a visual representation of Table A5.

Table A5: Estimated Annual Cost Savings When Using an EV Against Varying Fuel Prices.

Cost of Fuel	Estimated Annual Savings in Fuel Cost when using a EV		
	Compared to CV & CNG	Compared to DV	Compared to E85
\$0.50	-\$71.32	-\$98.57	\$13.70
\$1.00	\$158.88	\$104.38	\$328.92
\$1.50	\$389.08	\$307.33	\$644.14
\$2.00	\$619.28	\$510.28	\$959.36
\$2.50	\$849.48	\$713.23	\$1,274.59
\$3.00	\$1,079.68	\$916.18	\$1,589.81
\$3.50	\$1,309.88	\$1,119.13	\$1,905.03

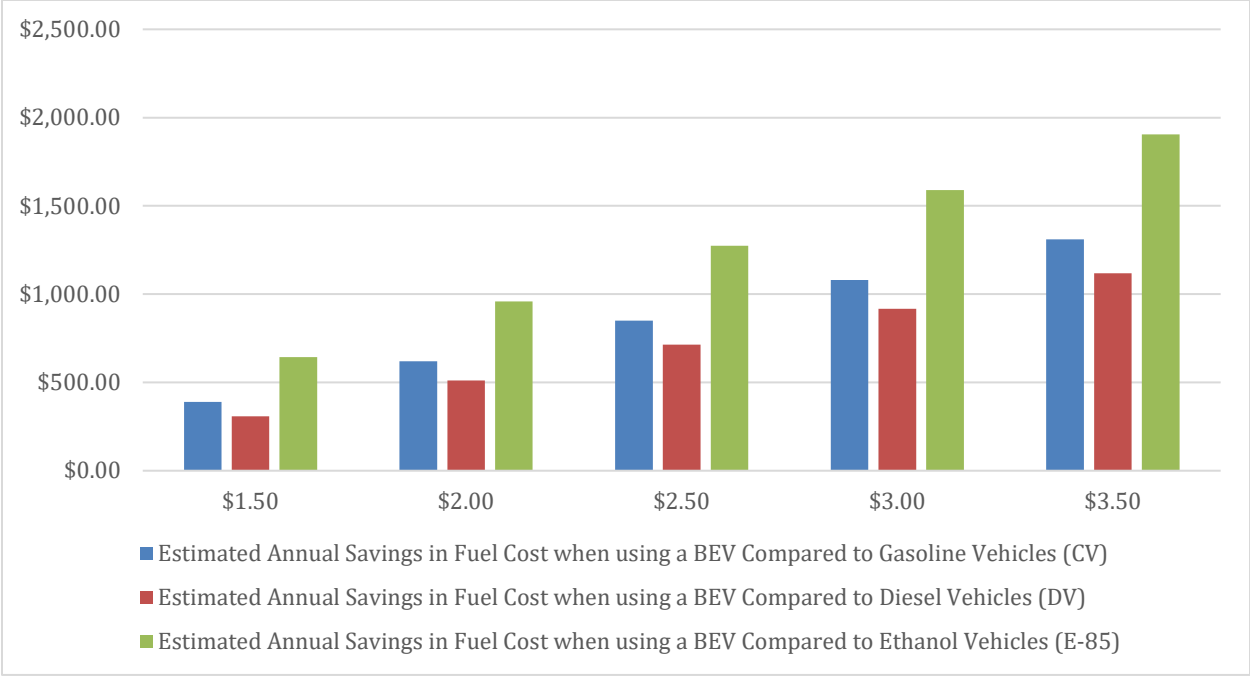


Figure A2: Estimated Annual Cost Savings When Using an EV Against Varying Fuel Prices.

3.3. Economic Benefits due to Other Factors Affecting Each Fuel Type

In addition to the fuel savings, additional cost savings for EVs are attributed to vehicle maintenance requirements. Table A6 shows the average maintenance cost for each type of vehicle and calculates the yearly savings for the DV and EV over the CV.

Table A6: Estimated Maintenance Costs and Savings for a Given Year.

	Gasoline Vehicles (CV)	Diesel Vehicles (DV)	Ethanol Vehicles (E-85)	Electric Vehicles (EV)
Maintenance Cost per mile	\$0.0610	\$0.0610	\$0.0610	\$0.0260
Estimated Annual Maintenance Cost	\$705.77	\$705.77	\$705.77	\$300.82
Savings over CV per year	-	\$0.00	\$0.00	\$404.95

3.4. Total Economic Benefits

Table A7 and Figure A3 show the total combined fuel and maintenance cost savings for the three types of vehicles (CV, DV, and EV) arranged in ascending order. The red shading represents no savings (negative savings) and the green shading represents positive savings. Conventional vehicle maintenance cost is \$0.061 per mile; maintenance cost for EV is \$0.026 per mile based on 2018 data found in [32].

Table A7: Estimated Total Annual Cost Savings Arranged in Ascending Order

	Total Cost Per Mile	Total Savings per Mile			Estimated Total Annual Cost Savings			
		Over CV	Over DV	E85	Over CV	Over DV	E85	
Gasoline Vehicles (CV)	\$0.1438	-	\$0.0002	-\$0.0031	-	\$2.61	-\$36.32	
Diesel Vehicles (DV)	\$0.1441	\$0.000	-	-\$0.0034	-\$2.61	-	-\$38.93	
Ethanol Vehicles (E-85)	\$0.1407	\$0.003	\$0.0034		\$36.32	\$38.93	-	
EV	Lexington (NPPD – e)	\$0.0670	\$0.077	\$0.0770	\$0.0737	\$887.48	\$890.09	\$851.16
	Wayne (NPPD – g)	\$0.0603	\$0.084	\$0.0838	\$0.0804	\$965.71	\$968.32	\$929.39
	Nebraska City	\$0.0578	\$0.086	\$0.0863	\$0.0829	\$994.49	\$997.10	\$958.17
	Fremont	\$0.0549	\$0.089	\$0.0892	\$0.0858	\$1,028.02	\$1,030.63	\$991.70
	Seward (NPPD – f)	\$0.0547	\$0.089	\$0.0893	\$0.0860	\$1,029.71	\$1,032.32	\$993.39
	Holdrege (NPPD – d)	\$0.0546	\$0.089	\$0.0895	\$0.0861	\$1,031.40	\$1,034.02	\$995.08
	Auburn Board of Public Works (NPPD – h)	\$0.0536	\$0.090	\$0.0905	\$0.0871	\$1,042.92	\$1,045.53	\$1,006.60
	Central City, Dakota County, Kearney, South Sioux City (NPPD – b)	\$0.0510	\$0.093	\$0.0931	\$0.0897	\$1,072.72	\$1,075.33	\$1,036.40
	Ashland, Bellevue, Gretna, MCC, OPPD, UNO, Valley (OPPD)	\$0.0509	\$0.093	\$0.0931	\$0.0898	\$1,073.73	\$1,076.35	\$1,037.41
	Allen (NPPD – a)	\$0.0499	\$0.094	\$0.0941	\$0.0907	\$1,084.91	\$1,087.52	\$1,048.59
	Gothenburg (NPPD – c)	\$0.0495	\$0.094	\$0.0946	\$0.0912	\$1,090.33	\$1,092.94	\$1,054.01
Hastings	\$0.0489	\$0.095	\$0.0951	\$0.0917	\$1,096.42	\$1,099.03	\$1,060.10	
Ferguson House, LES, Lincoln (LES)	\$0.0482	\$0.096	\$0.0959	\$0.0925	\$1,105.23	\$1,107.84	\$1,068.91	

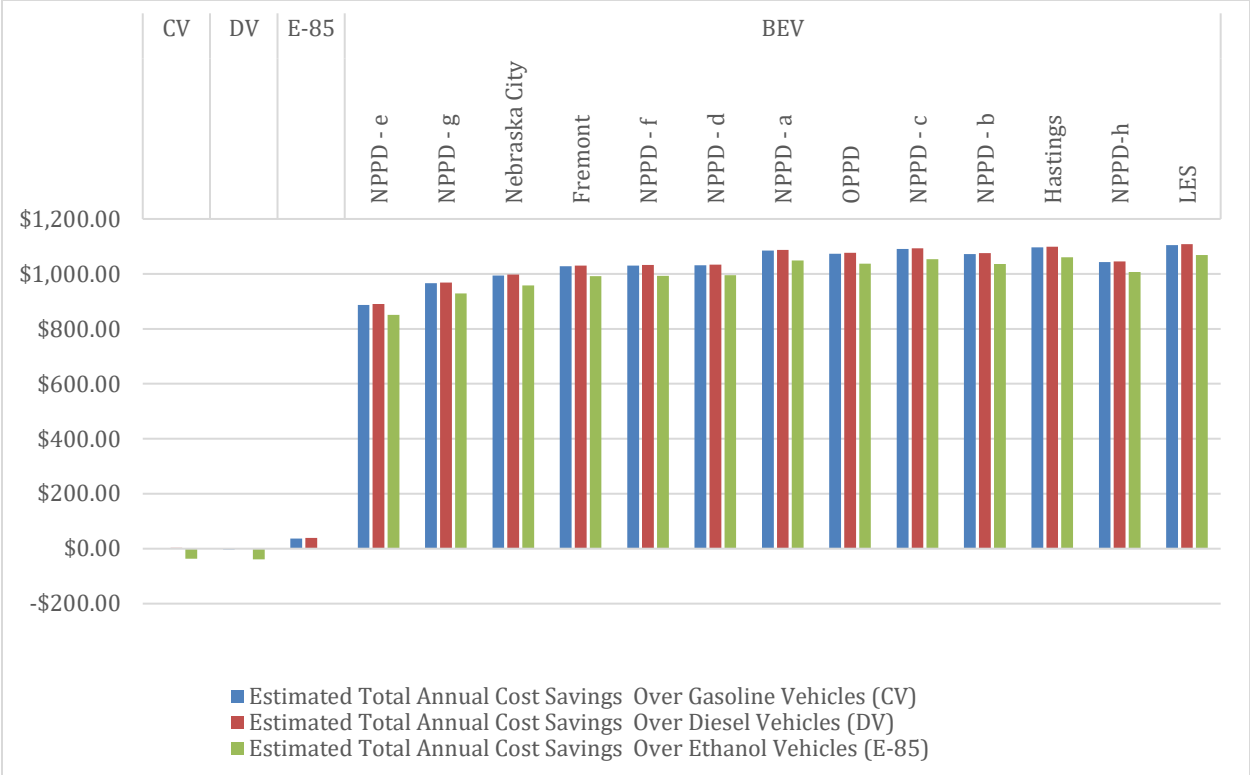


Figure A3: Estimated Total Annual Cost Savings When Using an EV Over a CV, DV, and E-85.

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4. Appendix B: Detailed Economic Analysis – Utility/Residential

4.1. Introduction

The following two types of vehicles are investigated in this report:

- CV – Conventional vehicles running on gasoline fuel.
- EV – Electric Vehicles (all electric) running on electricity.

4.2. Economic Benefits due to Fuel Type Price Differences

Data calculations are based on the following average prices and assumptions:

- Gas price of \$2.079 per gallon (Regular unleaded, based on 2020 monthly Nebraska state average [1]).
- Electricity prices depend on the current rate charged by the electric utility provider serving the participating members in this study. The electric utility provider is
 - Omaha Public Power District (OPPD)

Table B1 shows the fuel economy of the different vehicle types and the cost for driving one mile. The cost of fuel for the EV vehicle is based on the price per kWh calculated by averaging the summer and winter rates.

The following fuel economy values are used:

- CV vehicles: 25.10 mpg, Average fuel economy for the model year 2018 = 25.1 mpg [2].
- EV vehicle: 3.412 miles per kWh , based on the combined fuel economy average (city and highway) of all the vehicle types (make and model) published in the Fuel Economy Guide for the year 2020 [3].

Table B1: Cost of Driving One Mile for Both Vehicle Types.

Vehicle Type		Cost of Fuel	Combined Fuel Economy	Cost per mile
Gasoline Vehicles (CV)		\$2.079	25.10 mpg	\$0.083
Electric Vehicles (EV)	(OPPD)	\$0.085	3.412 miles per kWh	\$0.025

Table B2 shows the cost savings in terms of varying fuel prices. This analysis is performed on a price range of \$1.50 to \$3.50 in 50 cent increments. The cost per kWh considered is the average of the kWh prices for NCEA participating members (\$0.08904 per kWh).

Table B 2: Estimated Annual Cost Savings When Using an EV Against Varying Fuel Prices.

Cost of Fuel	Estimated Annual Savings in Fuel Cost when using a EV Compared to a CV
\$1.50	\$389.08
\$2.00	\$619.28
\$2.50	\$849.48
\$3.00	\$1,079.68
\$3.50	\$1,309.88

4.3. Economic Benefits Due to Other Factors Effecting Each Fuel Type

In addition to the fuel savings, additional cost savings for EVs are attributed to vehicle maintenance requirements. Table B3 shows the average maintenance cost for each type of vehicle and calculates the yearly savings for EV over the CV. Conventional vehicle maintenance cost is \$0.061 per mile; maintenance cost for EV is \$0.026 per mile based on 2018 data found in [4].

Table B3: Estimated Maintenance Costs and Savings for a Given Year.

	Gasoline Vehicles (CV)	Electric Vehicles (EV)
Maintenance Cost per mile	\$0.0610	\$0.0260
Estimated Annual Maintenance Cost	\$705.77	\$300.82
Savings over CV per year	-	\$404.95

4.4. Total Economic Benefits

Table B4 shows the total combined fuel and maintenance cost savings for the two types of vehicles.

Table B4: Estimated Total Annual Cost Savings.

	Total Cost Per Mile	Total Savings per mile		Estimated Total Annual Cost Savings
		Over CV	Over DV	Over CV
Gasoline Vehicles (CV)	\$0.1438	-	\$0.0002	-
Electric Vehicles (EV) (OPPD)	\$0.0509	\$0.093	\$0.0931	\$1,073.73

4.5. References

- [1] Nebraska Government, "Average Monthly Retail Motor Gasoline Prices in Nebraska," *Nebraska's Monthly Motor Gasoline Prices*. [Online]. Available: http://www.neo.ne.gov/statshtml/97.htm#regular_unleaded. [Accessed: 10-Oct-2020].
- [2] The 2019 EPA Automotive Trends Report: Greenhouse Gas Emissions, Fuel Economy, and Technology since 1975 (EPA-420-R-20-006, July 2020). p. 211.
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5. Appendix C: Detailed Environmental Emissions Data Analysis – Commercial and Utility/Residential

5.1. Introduction

The following five types of vehicles are investigated in this report:

- **CV** – Conventional vehicles running on gasoline fuel.
- **DV** – Conventional vehicles running on diesel fuel.
- **CNG** – Trucks running on compressed natural gas (CNG) fuel.
- **Ethanol (E85)**- Conventional vehicles running on Ethanol (E85) fuel.
- **EV** – Electric Vehicles (all electric) running on electricity.

With respect to Electric Vehicles (EVs), the calculations are based on how the electricity is generated (what primary energy sources are used in this production and their percentages). There are seven electric utility providers serving the participating members:

- Fremont Utilities
- Hastings Utilities
- Lincoln Electric System (LES)
- Nebraska City Utilities
- Nebraska Public Power District (NPPD)
- Omaha Public Power District (OPPD)
- Western Area Power Administration (WAPA)

With respect to the utility/residential report the following two types of vehicles are investigated:

- CV – Conventional vehicles running on gasoline fuel.
- EV – Electric Vehicles (all electric) running on electricity.

With respect to Electric Vehicles (EVs), the calculations are based on how the electricity is generated (what primary energy sources are used in this production and their percentages). The electric utility provider is:

- Omaha Public Power District (OPPD)

The report looks into current and future primary energy sources in use and/or proposed for the generation of electricity by each electric utility provider. This information is obtained from the emissions data and energy mix as per the eGRID 2016 tool published by the U.S. Environmental Protection Agency (EPA) [1]. eGRID provides a detailed information on the following:

- Emissions Profile: This covers nitrogen oxides (NO_x), sulfur dioxide (SO₂), carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and mercury (Hg). (Hg emissions are available prior to year 2007).
- Generation resource mix, in megawatt-hours and percent; and
- Identification and location information.

The current version of this tool, uploaded in Jan-2020, provides real-time emissions and generation data for 2018.

5.2. Greenhouse Gas Definitions

A greenhouse gas (GHG) is a gas that contributes to the greenhouse effect by infrared radiation produced by solar warming of the earth's surface. The following information provides a definition of each type of GHG emission and detailed analysis of how these GHG emissions are calculated along with supporting references.

5.2.1. Carbon Dioxide Equivalent (CO₂e)

The CO₂ equivalent gives a total emissions factor for the three most dominant greenhouse gasses, CO₂, CH₄, and N₂O. Each of the three gasses is multiplied by its global warming potential (GWP) shown below which accounts for the overall effect of each gas on global warming [2]. For example, CH₄ has a GWP of 25 which means that one gram of CH₄ has the same effect on global warming as 25 grams of CO₂ over a period of a hundred years. Certain gasses are more harmful in the short term or in the long term, so the 100-year value is usually used as a good average. The equation below shows the formula for calculating CO₂ equivalent emissions.

	100-year GWP value
Carbon Dioxide (CO ₂)	1
Methane (CH ₄)	25
Nitrous Oxide (N ₂ O)	298

$$\text{CO}_2\text{e} = 1 \cdot \text{CO}_2 \text{ emissions} + 25 \cdot \text{CH}_4 \text{ emissions} + 298 \cdot \text{N}_2\text{O emissions}$$

Carbon Dioxide (CO₂)

Carbon dioxide is the most common greenhouse gas and makes up 81% of all GHG emissions [3]. The majority of CO₂ emissions come directly from electricity generation, transportation, and industry while a smaller fraction comes indirectly from deforestation, increased agriculture, and other activities that reduce the amount of natural land.

Methane (CH₄)

Methane is the second most common greenhouse gas at 10% of all emissions [3], and is also the main component of natural gas. When released into the atmosphere it reacts to form CH₃ and water vapor which is the most potent of greenhouse gasses. Methane is far worse in the short term with a 20-year GWP of 84. The long term GWP of methane is 28.

Nitrous Oxide (N₂O)

Nitrous oxide is the third most common greenhouse gas at 6% of all GHG emissions [3]. N₂O reacts with the air to produce nitric oxide (NO) which then reacts with the ozone layer. N₂O is extremely potent and has a GWP factor 265 times that of CO₂.

5.2.2. Other Harmful Gases Emitted as a By-product of Electricity Generation

Carbon Monoxide (CO)

Carbon monoxide is a very weak direct greenhouse gas, but has important indirect effects on global warming. CO reacts with hydroxyl (OH) radicals in the atmosphere, reducing their abundance.

Sulfur Dioxide (SO₂)

Exposure to sulfur dioxide can have significant impacts to the human respiratory system. Short term exposure to SO₂ can make breathing difficult and the effect is worse for children, the elderly, and those with asthma. SO₂ also contributes to formation of acid rain.

Nitrogen Oxides (NO_x)

Nitrogen oxides can also cause breathing problems for healthy people and especially for those with asthma. The EPA measured that NO_x concentrations inside vehicles can be 2-3 times higher than at locations away from roadways. Nitrogen oxides also react in the air to produce smog and acid rain.

Volatile Organic Compounds (VOC)

Volatile organic compounds cause many problems as indoor and outdoor air pollutants. Outdoor VOC emissions can create photochemical smog. VOCs are any compound of carbon, not including carbon dioxide, carbon monoxide, carbonic acid, metallic carbides, and ammonium carbonate.

Greenhouse Gas Emissions Summary - Commercial and Utility/Residential

The following sections, starting on the next page, provide general information on each electric utility provider and a summary of the associated greenhouse gas emissions for each of the vehicle types.

a. Omaha Public Power District (OPPD) - Commercial

Omaha Public Power District is a publicly owned electric utility that serves a population of 855,000 people, and is the 12th largest public power utility in the U.S. While its headquarters is located in Omaha, Nebraska, OPPD has several other locations in its 13-county, 5,000-square-mile service area in southeast Nebraska. Current fuel sources for generation include low-sulfur coal, wind, landfill gas, natural gas and fuel oil, and hydroelectric [4]. The North Omaha Station and Nebraska City Station burn low-sulfur coal, and units for each station were retrofitted with emission control systems in 2016. Three peaking plants are fueled by natural gas and fuel oil, including Cass County Station, Jones Street Station, and Sarpy County Station. The Elk City Station uses methane and other gases from decomposing trash in the Douglas County Landfill. With the stations, OPPD also has purchase power agreements with eight wind facilities in Nebraska. OPPD retired the nuclear-powered Fort Calhoun Station, and ceased generation on Oct 24th, 2016 with completed defueling outage in Oct- 2016.

The energy mix is estimated from eGRID 2018 power plant data tool [1]. Table C1 and C2 provide a summary of GHG emissions for each vehicle type based on the primary energy source used for driving one mile and for driving 11,556 miles annually [5]. Detailed calculations are provided in Appendix D.

Table C1: Greenhouse Gas Emissions (Grams per Mile) for OPPD Utility Company.

	CV	E85	DV	CNG	EV
					OPPD 2018 (14% Renewable)
CO2 Equiv.	354.69	346.22	364.36	285.18	226.227
CO2	354.06	343.44	357.57	280.08	224.848
CO	2.8611	2.7	2.7362	2.7	0.1695
CH4 (Methane)	0.0067	0.01	0.0296	0.1025	0.0204
N2O	0.0016	0.0085	0.0203	0.0085	0.0029
NOx	0.12	0.12	0.2324	0.12	0.3066
SO2	0.0042	0.0006	0.002	0.0012	0.3560
VOC	0.1684	0.22	0.0722	0.17	0.0035

Table C2: Greenhouse Gas Emissions in lbs. for One Year

	CV	E85	DV	CNG	EV
					OPPD 2018 (14% Renewable)
CO2 Equiv.	9036.309	8820.522	9282.668	7265.428	5763.509
CO2	9020.259	8749.697	9109.682	7135.497	5728.377
CO	72.891	68.787	69.709	68.787	4.319
CH4 (Methane)	0.171	0.255	0.754	2.611	0.519
N2O	0.041	0.217	0.517	0.217	0.074
NOx	3.057	3.057	5.921	3.057	7.812
SO2	0.107	0.015	0.051	0.031	9.069
VOC	4.290	5.605	1.839	4.331	0.089

b. Omaha Public Power District (OPPD) – Utility/Residential

The energy mix is estimated from eGRID 2018 power plant data tool [1]. Table C3 and C4 provide a summary of GHG emissions for each vehicle type based on the primary energy source used for driving one mile and for driving 11,556 miles annually [5]. Detailed calculations are provided in Appendix D.

Table C3: Greenhouse Gas Emissions (Grams Per Mile) for OPPD Utility Company.

	CV	EV
		OPPD 2018 (14% Renewable)
CO2 Equiv.	354.69	226.227
CO2	354.06	224.848
CO	2.8611	0.1695
CH4 (Methane)	0.0067	0.0204
N2O	0.0016	0.0029
NOx	0.12	0.3066
SO2	0.0042	0.3560
VOC	0.1684	0.0035

Table C4: Greenhouse Gas Emissions in lbs. for One Year.

	CV	EV
		OPPD 2018 (14% Renewable)
CO2 Equiv.	9036.309	5763.509
CO2	9020.259	5728.377
CO	72.891	4.319
CH4 (Methane)	0.171	0.519
N2O	0.041	0.074
NOx	3.057	7.812
SO2	0.107	9.069
VOC	4.290	0.089

c. Nebraska Public Power District (NPPD)

NPPD’s revenue is mainly derived from wholesale power supply agreements with 46 municipalities and 24 rural public power districts and rural cooperatives who rely totally or partially on NPPD’s electrical system. NPPD also serves about 80 communities at the retail level. Approximately 5,352 miles of transmission lines make up the NPPD electrical grid system, which delivers power to about 600,000 Nebraskans [6]. NPPD owns or has operating control of 29 generating facilities, and their current fuel sources include coal, nuclear, natural gas and oil, hydropower, wind and solar. They have two low-sulfur coal stations including Gerald Gentleman Station and Sheldon Station. Their natural gas facilities include the Beatrice Power Station, Canaday Station, and three peaking units located in Hallam, Hebron, and McCook. Wind is supplied from eight facilities located in Nebraska. NPPD operates three hydroelectric generators located in North Platte, Kearney, and Spencer.

The energy mix is estimated from eGRID 2018 power plant data tool [1]. Tables C5 and C6 provide a summary of GHG emissions for each vehicle type based on the primary energy source used for driving one mile and for driving 11,556 miles annually. Detailed calculations are provided in Appendix D.

Table C5: Greenhouse Gas Emissions Factors (Grams Per Mile) for NPPD Utility Company.

	CV	E85	DV	CNG	EV
					NPPD 2018 (15% Renewable)
CO2 Equiv.	354.69	346.22	364.36	285.18	201.044
CO2	354.06	343.44	357.57	280.08	199.933
CO	2.8611	2.7	2.7362	2.7	0.1343
CH4 (Methane)	0.0067	0.01	0.0296	0.1025	0.0161
N2O	0.0016	0.0085	0.0203	0.0085	0.0024
NOx	0.12	0.12	0.2324	0.12	0.6252
SO2	0.0042	0.0006	0.002	0.0012	0.3654
VOC	0.1684	0.22	0.0722	0.17	0.0035

Table C6: Greenhouse Gas Emissions in lbs. for One Year.

	CV	E85	DV	CNG	EV
					NPPD 2018 (15% Renewable)
CO2 Equiv.	9036.309	8820.522	9282.668	7265.428	5121.924
CO2	9020.259	8749.697	9109.682	7135.497	5093.616
CO	72.891	68.787	69.709	68.787	3.421
CH4 (Methane)	0.171	0.255	0.754	2.611	0.411
N2O	0.041	0.217	0.517	0.217	0.061
NOx	3.057	3.057	5.921	3.057	15.928
SO2	0.107	0.015	0.051	0.031	9.310
VOC	4.290	5.605	1.839	4.331	0.089

d. Lincoln Electric System (LES)

LES services approximately 200 square miles within Lancaster County in Nebraska, comprising the cities of Lincoln, Prairie Home, Waverly, Walton, Cheney, and Emerald. Approximately 136,000 retail customers. Their fuel sources include coal, natural gas, landfill gas, hydropower, wind, and solar. LES owns the coal-powered Laramie River Station, and is a part owner of the Walter Scott, Jr. Energy Center Unit 4. They are currently under a purchase agreement with NPPD for part of the output from their Sheldon and Gerald Gentleman Stations. LES has three natural gas stations including 8th & J, Rokeby, and Terry Bundy Stations. Their 5-MW landfill gas facility was completed in 2014 from the Bluff Road Landfill. They also purchase hydropower through Western Area Power Administration, and they are in a power purchase agreement to receive wind power from seven facilities located in Nebraska, Oklahoma, and Kansas. LES has their own wind generators capable of generating 1 MW. They also launched their SunShares program in Jul-2014 to allow customers to voluntarily support a local community solar project, and the 5-MW project was finished in Jun-2016 [7].

The energy mix is estimated from eGRID 2018 power plant data tool [1]. Tables C7 and C8 provide a summary of GHG emissions for each vehicle type based on the primary energy source used for driving one mile and for driving 11,556 miles annually. Detailed calculations are in Appendix D.

Table C7: Greenhouse Gas Emissions Factors (Grams Per Mile) for LES Utility Company.

	CV	E85	DV	CNG	EV
					LES 2018 (29% Renewable)
CO2 Equiv.	354.69	346.22	364.36	285.18	161.820
CO2	354.06	343.44	357.57	280.08	161.065
CO	2.8611	2.7	2.7362	2.7	0.1149
CH4 (Methane)	0.0067	0.01	0.0296	0.1025	0.0113
N2O	0.0016	0.0085	0.0203	0.0085	0.0016
NOx	0.12	0.12	0.2324	0.12	0.1647
SO2	0.0042	0.0006	0.002	0.0012	0.1181
VOC	0.1684	0.22	0.0722	0.17	0.0030

Table C8: Greenhouse Gas Emissions in lbs. for One Year.

	CV	E85	DV	CNG	EV
					LES 2018 (29% Renewable)
CO2 Equiv.	9036.309	8820.522	9282.668	7265.428	4122.638
CO2	9020.259	8749.697	9109.682	7135.497	4103.402
CO	72.891	68.787	69.709	68.787	2.927
CH4 (Methane)	0.171	0.255	0.754	2.611	0.289
N2O	0.041	0.217	0.517	0.217	0.040
NOx	3.057	3.057	5.921	3.057	4.196
SO2	0.107	0.015	0.051	0.031	3.008
VOC	4.290	5.605	1.839	4.331	0.077

e. Fremont Utilities

The Fremont Electric Service Area covers 60 square miles including the City of Fremont and the surrounding Area. The electric division provides power to 14,210 homes and businesses. The Lon D. Wright Power Plant at First and Luther Road is the utility's power production facility, and it is staffed by three shifts 24-hours a day to provide our customers economical, safe, and reliable electric service.

The coal fired plant located on the east side of Fremont has three units producing 16.5, 22, and 91.5 megawatts respectively. Each year the plant uses approximately 370,000 ton of coal to produce about 620,128 megawatt hours of electricity [8].

The energy mix is estimated from eGRID 2018 power plant data tool [1]. Tables C9 and C10 provide a summary of GHG emissions for each vehicle type based on the primary energy source used for driving one mile and for driving 11,556 miles annually. Detailed calculations are provided in Appendix D.

Table C9: Greenhouse Gas Emissions Factors (Grams Per Mile) for Fremont Utility Company.

	CV	E85	DV	CNG	EV
					Fremont 2018 (20% Renewable)
CO2 Equiv.	354.69	346.22	364.36	285.18	196.683
CO2	354.06	343.44	357.57	280.08	194.684
CO	2.8611	2.7	2.7362	2.7	0.1791
CH4 (Methane)	0.0067	0.01	0.0296	0.1025	0.0280
N2O	0.0016	0.0085	0.0203	0.0085	0.0044
NOx	0.12	0.12	0.2324	0.12	0.2082
SO2	0.0042	0.0006	0.002	0.0012	0.3163
VOC	0.1684	0.22	0.0722	0.17	0.0020

Table C10: Greenhouse Gas Emissions in lbs. for One Year.

	CV	E85	DV	CNG	EV
					Fremont 2018 (20% Renewable)
CO2 Equiv.	9036.309	8820.522	9282.668	7265.428	5010.812
CO2	9020.259	8749.697	9109.682	7135.497	4959.888
CO	72.891	68.787	69.709	68.787	4.562
CH4 (Methane)	0.171	0.255	0.754	2.611	0.713
N2O	0.041	0.217	0.517	0.217	0.111
NOx	3.057	3.057	5.921	3.057	5.305
SO2	0.107	0.015	0.051	0.031	8.058
VOC	4.290	5.605	1.839	4.331	0.052

f. Hastings Utilities

Hastings Utilities serves 56 square miles, including the city of Hastings and the village of Juniata. Most electricity is generated by the coal-fired Gerald T. Whelan Energy Center. The rest of the generation is provided by the Don Henry Power Center and the North Denver Station. The Don Henry Power Center operates primarily on natural gas, and at times fuel oil. The North Denver Station has two natural gas fired generators. The largest peak demand for Hastings Utilities was 100.7 MW in Jul-2005, but they are capable of producing approximately 135 MW. Any electricity generation that goes beyond local needs can be sold on the wholesale market, and the sales revenues help to keep local electric rates down. [9]

The energy mix is estimated from eGRID 2018 power plant data tool [1]. Tables C11 and C12 provide a summary of GHG emissions for each vehicle type based on the primary energy source used for driving one mile and for driving 11,556 miles annually. Detailed calculations are provided in Appendix D.

Table C11: Greenhouse Gas Emissions Factors (Grams Per Mile) for Hastings Utility Company.

	CV	E85	DV	CNG	EV
					Hastings 2018 (2% Renewable)
CO2 Equiv.	354.69	346.22	364.36	285.18	294.114
CO2	354.06	343.44	357.57	280.08	291.605
CO	2.8611	2.7	2.7362	2.7	0.1864
CH4 (Methane)	0.0067	0.01	0.0296	0.1025	0.0370
N2O	0.0016	0.0085	0.0203	0.0085	0.0053
NOx	0.12	0.12	0.2324	0.12	0.3241
SO2	0.0042	0.0006	0.002	0.0012	0.3493
VOC	0.1684	0.22	0.0722	0.17	0.0021

Table C12: Greenhouse Gas Emissions in lbs. for One Year.

	CV	E85	DV	CNG	EV
					Hastings 2018 (2% Renewable)
CO2 Equiv.	9036.309	8820.522	9282.668	7265.428	7493.043
CO2	9020.259	8749.697	9109.682	7135.497	7429.113
CO	72.891	68.787	69.709	68.787	4.748
CH4 (Methane)	0.171	0.255	0.754	2.611	0.942
N2O	0.041	0.217	0.517	0.217	0.136
NOx	3.057	3.057	5.921	3.057	8.257
SO2	0.107	0.015	0.051	0.031	8.899
VOC	4.290	5.605	1.839	4.331	0.054

g. Nebraska City Utilities

Nebraska City Utilities provides electric, natural gas, water and waste water service to Nebraska City and electric and natural gas service to several communities in the area. It maintains three natural gas fired power plants to serve its peaking needs as necessary and in time of grid outages. Nebraska City Utilities also has a 1.67% participation or approximately 10 MW in the OPPD Unit2 just directly south of Nebraska City. This coal fired unit is capable of producing 670 MW and went on-line in 2009. Nebraska City Utilities also has a 4.55% participation in the Public Power Generation Agency’s Hastings NE WEC-2 Unit scheduled to be commercial in Feb-2011. For Projects outside the jurisdiction of the Nebraska City Utilities, Omaha Public Power District is the electric provider. Nebraska City Utilities and Omaha Public Power District are collaborative partners for projects requiring large sources or redundant power. [10]

The energy mix is estimated from eGRID 2018 power plant data tool [1]. Tables C13 and C14 provide a summary of GHG emissions for each vehicle type based on the primary energy source used for driving one mile and for driving 11,556 miles annually. Detailed calculations are provided in Appendix D.

Table C13: Greenhouse Gas Emissions Factors (Grams Per Mile) for Nebraska City Utilities.

	CV	E85	DV	CNG	EV
					Nebraska City 2018 (0% Renewable)
CO2 Equiv.	354.69	346.22	364.36	285.18	98.914
CO2	354.06	343.44	357.57	280.08	97.951
CO	2.8611	2.7	2.7362	2.7	0.0954
CH4 (Methane)	0.0067	0.01	0.0296	0.1025	0.0141
N2O	0.0016	0.0085	0.0203	0.0085	0.0020
NOx	0.12	0.12	0.2324	0.12	0.0536
SO2	0.0042	0.0006	0.002	0.0012	0.1702
VOC	0.1684	0.22	0.0722	0.17	0.0011

Table C14: Greenhouse Gas Emissions in lbs. for One Year.

	CV	E85	DV	CNG	EV
					Nebraska City 2018 (0% Renewable)
CO2 Equiv.	9036.309	8820.522	9282.668	7265.428	2519.993
CO2	9020.259	8749.697	9109.682	7135.497	2495.465
CO	72.891	68.787	69.709	68.787	2.431
CH4 (Methane)	0.171	0.255	0.754	2.611	0.359
N2O	0.041	0.217	0.517	0.217	0.052
NOx	3.057	3.057	5.921	3.057	1.365
SO2	0.107	0.015	0.051	0.031	4.336
VOC	4.290	5.605	1.839	4.331	0.028

h. Wayne Energy Mix

The city of Wayne receives 56% of its power from oil resource, and 44% from the renewable resource, mainly from wind [11][12].

The energy mix is estimated from eGRID 2018 power plant data tool [1]. Tables C15 and C16 provide a summary of GHG emissions for each vehicle type based on the primary energy source used for driving one mile and for driving 11,556 miles annually. Detailed calculations are provided in Appendix D.

Table C15: Greenhouse Gas Emissions Factors (Grams per Mile) for Wayne Energy Mix.

	CV	E85	DV	CNG	EV
					Wayne 2018 (46% Renewable)
CO2 Equiv.	354.69	346.22	364.36	285.18	126.464
CO2	354.06	343.44	357.57	280.08	126.038
CO	2.8611	2.7	2.7362	2.7	0.0243
CH4 (Methane)	0.0067	0.01	0.0296	0.1025	0.0051
N2O	0.0016	0.0085	0.0203	0.0085	0.0010
NOx	0.12	0.12	0.2324	0.12	2.4802
SO2	0.0042	0.0006	0.002	0.0012	0.2237
VOC	0.1684	0.22	0.0722	0.17	0.0031

Table C16: Greenhouse Gas Emissions in lbs. for One Year.

	CV	E85	DV	CNG	EV
					Wayne 2018 (46% Renewable)
CO2 Equiv.	9036.309	8820.522	9282.668	7265.428	3221.878
CO2	9020.259	8749.697	9109.682	7135.497	3211.026
CO	72.891	68.787	69.709	68.787	0.619
CH4 (Methane)	0.171	0.255	0.754	2.611	0.131
N2O	0.041	0.217	0.517	0.217	0.025
NOx	3.057	3.057	5.921	3.057	63.187
SO2	0.107	0.015	0.051	0.031	5.699
VOC	4.290	5.605	1.839	4.331	0.079

5.3. References

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6. Appendix D. Detailed Greenhouse Gas Calculations

6.1. Conventional Vehicle (CV)

Carbon Dioxide (CO₂) Emissions

The EPA has stated that burning 1 gallon of gasoline emits 8,887 grams of CO₂ emissions. [1]

CO₂ emissions from burning 1 gallon of gasoline = 8,887 grams

Average fuel economy for the model year 2018 = 25.1 mpg [3]

CO₂ emissions per mile = 8,887 /25.1 = **354.06 grams CO₂ per mile**

Methane (CH₄) Emissions

Methane emissions are based on emission factors for GHG Inventories, last modified on Mar 26th, 2020. Mobile Combustion CH₄ emission factors for on-road gasoline vehicles for model year 2018 is **0.00665 g of CH₄ per mile** [4].

Nitrous Oxide (N₂O) Emissions

Nitrous Oxide emissions are based on emission factors for GHG Inventories, last modified on Mar 26th, 2020. Mobile Combustion N₂O emission factors for on-road gasoline vehicles for model year 2018 is **0.00155 g of N₂O per mile** [4].

Carbon Monoxide (CO) Emissions

A 2013 report by Argonne National Laboratory uses a lifetime mileage-weighted average air pollutant emission factors for gasoline passenger cars for model years 1990-2020 to estimate the CO emission factors for 2018 to be **2.8611 g of CO per mile** [5].

Sulfur Dioxide (SO₂) Emissions

Using the same 2013 report by Argonne National Laboratory, the SO₂ emission factor for model year 2018 is estimated to be **0.0042 g of SO₂ per mile** [5].

Nitrogen Oxides (NO_x) Emissions

Using the same 2013 report by Argonne National Laboratory, the NO_x emission factor for model year 2018 is estimated to be **0.12 g of NO_x per mile** [5].

Volatile Organic Compound (VOC) Emissions

The VOC emission factors were estimated in the 2013 report by Argonne National Laboratory, including the exhaust and evaporation separately.

Model Year	VOC, exhaust (g/mile)	VOC, evaporation	Total
2018	0.1078	0.0604	0.1684

The total emission factor is **0.1684 g of VOC per mile** [5].

Carbon Dioxide Equivalent Emissions

Using the individual emissions values calculated above, CVs have a CO₂ equivalent emissions rate of: CO₂ Equivalent = 1*CO₂ emissions + 28*CH₄ emissions + 265*N₂O emissions

$$\begin{aligned}
 &= (1*354.06 \text{ g}) + (25*0.00665\text{g}) + (298*0.00155) \\
 &= 354.6882 \text{ g}
 \end{aligned}$$

6.2. Diesel Vehicle (DV)

Carbon Dioxide (CO₂) Emissions

For CO₂ emissions from burning a gallon of diesel = 10,180 CO₂/gallon [1]

For the model year 2018, the average mileage for a diesel vehicle is 28.47 mpg. [2]

CO₂ emissions per mile = $10,180 / 28.47 = 357.57$ g of CO₂ per mile

Methane (CH₄) Emissions

Methane emissions are based on emission factors for GHG Inventories, last modified on Mar 26th, 2020. Mobile Combustion CH₄ emission factors for on-road diesel vehicles for model year 2007-2018 is **0.0296 g of CH₄ per mile** [4].

Nitrous Oxide (N₂O) Emissions

Nitrous Oxide emissions are based on emission factors for GHG Inventories, last modified on Mar 26th, 2020. Mobile Combustion N₂O emission factors for on-road diesel vehicles for model year 2007-2018 is **0.0203 g of N₂O per mile** [4].

Carbon Monoxide (CO) Emissions

A 2013 report by Argonne National Laboratory uses a lifetime mileage-weighted average air pollutant emission factors for diesel passenger cars for model years 2001-2020 to estimate the CO emission factors for 2016 to be **2.7362 g of CO per mile** [5].

Nitrogen Oxides (NO_x) Emissions

Using the same 2013 report by Argonne National Laboratory, the NO_x emission factor for 2016 is estimated to be **0.2324 g of NO_x per mile** [5].

Sulfur Dioxide (SO₂) Emissions

Using the same 2013 report by Argonne National Laboratory, the SO₂ emission factor for 2016 is estimated to be **0.0020 g of SO₂ per mile** [5].

Volatile Organic Compound (VOC) Emissions

The VOC emission factors were estimated in the 2013 report by Argonne National Laboratory, including the exhaust and evaporation separately.

Model Year	VOC, exhaust (g/mile)	VOC, evaporation	Total
2018	0.0722	-----	0.0722

The total emission factor for is **0.0722 g of VOC per mile** [5].

Carbon Dioxide Equivalent (CO₂) Emissions

Using the individual emission rates calculated above, the CO₂ equivalent rate is:

$$\begin{aligned}
 \text{CO}_2 \text{ Equivalent} &= 1 \cdot \text{CO}_2 \text{ emissions} + 28 \cdot \text{CH}_4 \text{ emissions} + 265 \cdot \text{N}_2\text{O emissions} \\
 &= 1 \cdot 357.57 + 25 \cdot 0.0296 + 298 \cdot 0.0203 \\
 &= \mathbf{364.3594 \text{ grams CO}_2 \text{ per mile.}}
 \end{aligned}$$

6.3. Compressed Natural Gas Vehicle (CNG)

Carbon Dioxide (CO₂) Emissions

Vehicles converted to CNG generally achieve a mpg equivalent similar to its mpg rating when running on gasoline; hence, the fuel economy used is similar to that of CV, 25.1 mpg. EPA's TRENDS for light-duty automotive technology, carbon dioxide emissions, and fuel economy trends: 1975 through 2016 reports the emission factor per gallon of gas equivalent as:

$$7030 \text{ g/gallon} / 25.1 = 280.08 \text{ g of CO}_2 \text{ per mile [6]}$$

Methane (CH₄) Emissions

Methane emissions are based on emission factors for GHG Inventories, last modified on Mar 26th, 2020. Mobile Combustion CH₄ emission factors for CNG light-duty vehicles for model year 1996-present is **0.1025 g of CH₄ per mile** [4].

Nitrous Oxide (N₂O) Emissions

Nitrous Oxide emissions are based on emission factors for GHG Inventories, last modified on Mar 26th, 2020. Mobile Combustion N₂O emission factors for CNG light-duty vehicles for model year 1996-present is **0.0085 g of N₂O per mile** [4].

Carbon Monoxide (CO) Emissions

According to a 2015 pump-to-wheel simulation, a regular CNG vehicle emits **2.700 grams of CO per mile** [7].

Nitrogen Oxides (NO_x) Emissions

The same simulation found that CNG passenger vehicles emit **0.12 grams NO_x per mile**. [7]

Sulfur Dioxide (SO₂) Emissions

The same simulation found that CNG passenger vehicles emit **0.0012 grams SO₂ per mile**. [7]

Volatile Organic Compound (VOC) Emissions

The same simulation found that CNG passenger vehicles emit **0.17 grams VOC per mile**. [7]

Carbon Dioxide Equivalent (CO₂e) Emissions

Using the individual emissions values calculated above, CNG passenger vehicles have a CO₂ equivalent emissions rate of:

$$\begin{aligned}\text{CO}_2 \text{ Equivalent} &= 1 \cdot \text{CO}_2 \text{ emissions} + 25 \cdot \text{CH}_4 \text{ emissions} + 298 \cdot \text{N}_2\text{O emissions} \\ &= 1 \cdot 280.08 + 25 \cdot 0.1025 + 298 \cdot 0.0085 \\ &= \mathbf{285.18 \text{ grams CO}_2\text{e per mile.}}\end{aligned}$$

6.4. Flexible Fuel Vehicles (FFVs) – E85

Carbon Dioxide (CO₂) Emissions

Flexible fuel vehicles (FFVs) can run on gasoline or gasoline-ethanol blends of up to 85% ethanol (E85). There are few engine and fuel system modifications, but mostly they are identical to gasoline-only models. The fuel economy used is 73% of the conventional vehicle (CV) fuel economy based on 25.1 mpg data. The fuel economy used in the calculations is 18.3 mpg. [9] EPA's TRENDS for light-duty automotive technology, carbon dioxide emissions, and fuel economy trends: 2019 reports the emission factor per gallon of gas equivalent as:

$$0.97 * 354.06 = 343.44 \text{ g of CO}_2 \text{ per mile [8]}$$

Alternate method to verify Carbon Dioxide (CO₂) Emissions

Office of Energy efficiency and Renewable energy, US DOE, publishes fuel economy and tail-pipe emissions for all cars in a model year [9]. To verify the calculations for miles per gallon and carbon emissions for a CV and E85 vehicle, the following table will help visualize the difference for the model year 2018.

Model Name	mpg of CV	mpg of E85	%mpg of E85 to CV	g/mi of E85	g/mi of CV	%emission of E85 less than CV
2018 Mercedes-Benz CLA250 4matic	27	20	74.07	328	328	0.000
2018 Mercedes-Benz GLA250 4matic	26	19	73.08	337	337	0.000
2018 Jeep Renegade 2WD	25	19	76.00	331	357	7.283
2018 Jeep Cherokee FWD	25	18	72.00	351	361	2.770
2018 Ford Escape FWD FFV	24	18	75.00	353	369	4.336
2018 Jeep Cherokee 4WD	23	17	73.91	372	378	1.587
2018 Ford Transit Connect Van FFV	23	17	73.91	375	392	4.337
2018 Chrysler 300	23	17	73.91	376	389	3.342
2018 Dodge Charger	23	17	73.91	376	389	3.342
2018 Ford F150 Pickup 2WD FFV	22	16	72.73	393	407	3.440
2018 Ford Transit Connect Wagon FFV	22	16	72.73	388	404	3.960

Model name	mpg of CV	mpg of E85	%mpg of E85 to CV	g/mi of E85	g/mi of CV	%emission of E85 less than CV
2018 Ford Transit Connect Wagon LWB FFV	22	16	72.73	388	404	3.960
2018 Chevrolet Impala	22	16	72.73	394	409	3.667
2018 Ford F150 2WD FFV BASE PAYLOAD LT TIR	21	16	76.19	393	423	7.092
2018 Chrysler 300 AWD	21	16	76.19	399	415	3.855
2018 Dodge Charger AWD	21	16	76.19	399	415	3.855
2018 Ford Taurus FWD FFV	21	16	76.19	401	423	5.201
2018 Chevrolet Silverado C15 2WD	20	14	70.00	457	448	-2.009
2018 GMC Sierra C15 2WD	20	14	70.00	457	448	-2.009
2018 Ford F150 Pickup 4WD FFV	20	15	75.00	421	437	3.661
2018 Dodge Grand Caravan	20	14	70.00	440	445	1.124
2018 Ram 1500 2WD	20	14	70.00	455	450	-1.111
2018 Ford Explorer 2WD FFV	20	15	75.00	433	455	4.835
2018 Mercedes-Benz GLE350 4matic	19	14	73.68	429	457	6.127
2018 Dodge Journey	19	14	73.68	440	456	3.509
2018 Ford Taurus AWD FFV	19	14	73.68	437	467	6.424
2018 Ford F150 Pickup 2WD FFV	19	14	73.68	455	457	0.438
2018 Chevrolet Silverado K15 4WD	19	13	68.42	476	473	-0.634
2018 Ford F150 4WD FFV BASE PAYLOAD LT TIRE	19	15	78.95	420	467	10.064
2018 GMC Sierra K15 4WD	19	13	68.42	477	474	-0.633
2018 Chevrolet Silverado C15 2WD	19	14	73.68	455	475	4.211
2018 Chevrolet Suburban C1500 2WD	19	14	73.68	443	468	5.342
2018 Chevrolet Tahoe C1500 2WD	19	14	73.68	443	468	5.342
2018 GMC Sierra C15 2WD	19	14	73.68	456	475	4.000
2018 GMC Yukon C1500 2WD	19	14	73.68	443	468	5.342
2018 GMC Yukon C1500 XL 2WD	19	14	73.68	443	468	5.342

Model name	mpg of CV	mpg of E85	%mpg of E85 to CV	g/mi of E85	g/mi of CV	%emission of E85 less than CV
2018 Ram 1500 4WD	19	13	68.42	482	475	-1.474
2018 Chevrolet Silverado K15 4WD	18	13	72.22	489	489	0.000
2018 Chevrolet Tahoe K1500 4WD	18	13	72.22	482	497	3.018
2018 Ford Explorer AWD FFV	18	14	77.78	464	483	3.934
2018 Ford F150 Pickup 4WD FFV	18	13	72.22	478	498	4.016
2018 GMC Sierra K15 4WD	18	13	72.22	489	489	0.000
2018 GMC Yukon K1500 4WD	18	13	72.22	482	497	3.018
2018 Nissan Frontier 2WD FFV	18	13	72.22	471	494	4.656
2018 Ford F150 2WD FFV BASE PAYLOAD	18	14	77.78	456	491	7.128
2018 Chevrolet Suburban K1500 4WD	18	12	66.67	515	504	-2.183
2018 GMC Yukon K1500 XL 4WD	18	12	66.67	515	504	-2.183
2018 Ford F150 4WD FFV BASE PAYLOAD	17	13	76.47	481	522	7.854
2018 Ford F150 5.0L 2WD FFV GVWR>7599 LBS	17	14	82.35	455	520	12.500
2018 Nissan Frontier 4WD FFV	17	12	70.59	503	520	3.269
2018 Ford F150 5.0L 4WD FFV GVWR>7599 LBS	17	13	76.47	498	523	4.780
2018 Ford Transit T150 Wagon FFV	16	11	68.75	548	570	3.860
2018 Toyota Tundra 4WD FFV	15	10	66.67	622	604	-2.980
2018 Toyota Sequoia 4WD FFV	14	10	71.43	594	614	3.257
Average			73.10	441.81	456.48	3.220

The average fuel economy of E85 vehicle is 73.10% to that of CV.

% emission of E85 vehicle is 3.22% less than % emission of CV.

Methane (CH₄) Emissions

Methane emissions are based on emission factors for GHG Inventories, last modified on Mar 26th, 2020. Mobile Combustion CH₄ emission factors for CNG light-duty vehicles for model year 1996-present is **0.01 g of CH₄ per mile** [4].

Nitrous Oxide (N₂O) Emissions

Nitrous Oxide emissions are based on emission factors for GHG Inventories, last modified on Mar 26th, 2020. Mobile Combustion N₂O emission factors for CNG light-duty vehicles for model year 1996-present is **0.0085 g of N₂O per mile** [4].

Carbon Monoxide (CO) Emissions

According to a 2015 pump-to-wheel simulation, a regular CNG vehicle emits **2.700 grams of CO per mile** [7].

Nitrogen Oxides (NO_x) Emissions

The same simulation found that CNG passenger vehicles emit **0.12 grams NO_x per mile**. [7]

Sulfur Dioxide (SO₂) Emissions

The same simulation found that CNG passenger vehicles emit **0.0006 grams SO₂ per mile**. [7]

Volatile Organic Compound (VOC) Emissions

The same simulation found that CNG passenger vehicles emit **0.22 grams VOC per mile**. [7]

Carbon Dioxide Equivalent (CO₂e) Emissions

Using the individual emissions values calculated above, CNG passenger vehicles have a CO₂ equivalent emissions rate of:

$$\begin{aligned} \text{CO}_2 \text{ Equivalent} &= 1 \cdot \text{CO}_2 \text{ emissions} + 25 \cdot \text{CH}_4 \text{ emissions} + 298 \cdot \text{N}_2\text{O emissions} \\ &= 1 \cdot 280.08 + 25 \cdot 0.1025 + 298 \cdot 0.0085 \\ &= \mathbf{346.22 \text{ grams CO}_2\text{e per mile.}} \end{aligned}$$

6.5. Battery Electric Vehicle (EV)

6.5.1. Vehicle Efficiency Calculation

EV vehicle: 115 MPGe , based on the combined fuel economy average (city and highway) of all the vehicle types (make and model) published in the Fuel Economy Guide for the year 2020 [15].

The process to convert from MPGe to miles per kWh is as follows:

1 gallon equivalent = 33.7 kWh (it takes 33.7 kWh to create the same amount of heat as burning 1 gallon of gasoline) [16].

$$115 \text{ MPGe} / 33.7 \text{ kWh/gallon} = 3.412 \text{ miles per kWh}$$

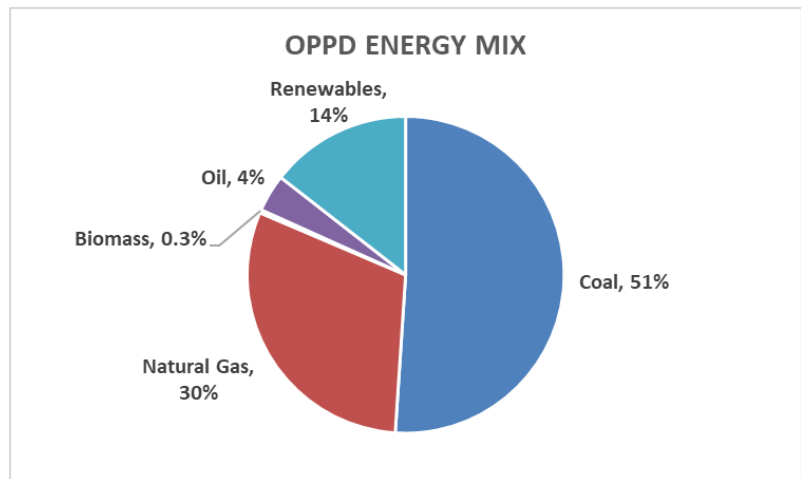
6.5.2. Electricity Generation Mix and Emissions Calculations

The electricity generation mix and associated emissions for all the electric utility providers serving the participating members is calculated using the eGRID 2018 power plant data tool published by EPA [10]. The CO and VOC emission data are not provided in the tool, and hence, baseline emission rates are used as per a report published by the California Environmental Protection Agency (CEPA) in 2009 [11].

a. Omaha Public Power District (OPPD) Data Analysis - Commercial

Electricity Generation Mix

The energy mix has been estimated as per the eGRID 2018 power plant data tool [10]. The tables below show the emission calculations.



Carbon Dioxide (CO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CO ₂ Emission per kWh [10]	Contribution to Total Grams of CO ₂ Emission per kWh
Coal	51.05%	x 990.4	= 505.6
Natural Gas	30.36%	x 861.79	= 261.7
Biomass	0.32%	x 32.0	= 0.1022
Oil	3.81%	x 0	= 0
Renewables	14.46%	x 0	= 0
Total			
			grams/kWh
			767.4
			grams/mile
			224.85

Carbon Monoxide (CO) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CO Emission per kWh [11]	Contribution to Total Grams of CO Emission per kWh
Coal	51.05%	x 1.0006	= 0.5108
Natural Gas	30.36%	x 0.1953	= 0.0593
Biomass	0.32%	x 0.8160	= 0.0026
Oil	3.81%	x 0.1546	= 0.0059
Renewables	14.46%	x 0	= 0
Total			
			grams/kWh
			0.579
			grams/mile
			0.170

Methane (CH₄) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CH ₄ Emission per kWh [10]	Contribution to Total Grams of CH ₄ Emission per kWh
Coal	51.05%	x 0.111	= 0.057
Natural Gas	30.36%	x 0.042	= 0.0127
Biomass	0.32%	x 0.003	= 0.0000
Oil	3.81%	x 0	= 0
Renewables	14.46%	x 0	= 0
Total			grams/kWh 0.0695
			grams/mile 0.020

Nitrous Oxide (N₂O) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of N ₂ O Emission per kWh [10]	Contribution to Total Grams of N ₂ O Emission per kWh
Coal	51.05%	x 0.0161	= 0.00820
Natural Gas	30.36%	x 0.0058	= 0.00176
Biomass	0.32%	x 0.0002	= 0.000001
Oil	3.81%	x 0	= 0
Renewables	14.46%	x 0	= 0
Total			grams/kWh 0.010
			grams/mile 0.0029

Sulfur Dioxide (SO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of SO ₂ Emission per kWh [10]	Contribution to Total Grams of SO ₂ Emission per kWh
Coal	51.05%	x 1.722	= 0.8793
Natural Gas	30.36%	x 1.104	= 0.3352
Biomass	0.32%	x 0.117	= 0.0004
Oil	3.81%	x 0	= 0
Renewables	14.46%	x 0	= 0
Total			grams/kWh 1.215
			grams/mile 0.356

Nitrogen Oxides (NO_x) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of NO _x Emission per kWh [10]		Contribution to Total Grams of NO _x Emission per kWh
Coal	51.05%	x	0.819	=	0.4180
Natural Gas	30.36%	x	2.026	=	0.6151
Biomass	0.32%	x	4.200	=	0.0134
Oil	3.81%	x	0	=	0
Renewables	14.46%	x	0	=	0
			Total	grams/kWh	1.046
				grams/mile	0.307

Volatile Organic Compound (VOC) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of VOC Emission per kWh [11]		Contribution to Total Grams of VOC Emission per kWh
Coal	51.05%	x	0.0114	=	0.0058
Natural Gas	30.36%	x	0.0169	=	0.0051
Biomass	0.32%	x	0.0570	=	0.0002
Oil	3.81%	x	0.0198	=	0.0008
Renewables	14.46%	x	0	=	0
			Total	grams/kWh	0.0119
				grams/mile	0.0035

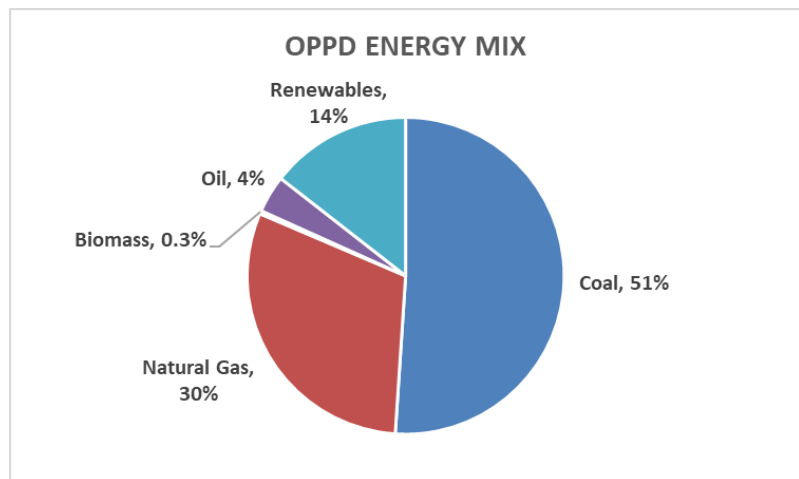
Carbon Dioxide Equivalent (CO₂e) Emissions

Contributing Gas	grams/mile		GWP		Contribution to Total CO ₂ e Emission
CO ₂	224.85	x	1	=	224.8482053
CH ₄	0.020	x	25	=	0.509135599
N ₂ O	0.0029	x	298	=	0.86988211
			Total	grams/mile	226.23

b. Omaha Public Power District (OPPD) Data Analysis – Utility/Residential

Electricity Generation Mix

The energy mix has been estimated as per the eGRID 2018 power plant data tool [10]. The tables below show the emission calculations.



Carbon Dioxide (CO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CO ₂ Emission per kWh [10]	Contribution to Total Grams of CO ₂ Emission per kWh
Coal	51.05%	x 990.4	= 505.6
Natural Gas	30.36%	x 861.79	= 261.7
Biomass	0.32%	x 32.0	= 0.1022
Oil	3.81%	x 0	= 0
Renewables	14.46%	x 0	= 0
Total			
			grams/kWh
			767.4
			grams/mile
			224.85

Carbon Monoxide (CO) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CO Emission per kWh [11]	Contribution to Total Grams of CO Emission per kWh
Coal	51.05%	x 1.0006	= 0.5108
Natural Gas	30.36%	x 0.1953	= 0.0593
Biomass	0.32%	x 0.8160	= 0.0026
Oil	3.81%	x 0.1546	= 0.0059
Renewables	14.46%	x 0	= 0
Total			
			grams/kWh
			0.579
			grams/mile
			0.170

Methane (CH₄) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CH ₄ Emission per kWh [10]	Contribution to Total Grams of CH ₄ Emission per kWh
Coal	51.05%	x 0.111	= 0.057
Natural Gas	30.36%	x 0.042	= 0.0127
Biomass	0.32%	x 0.003	= 0.0000
Oil	3.81%	x 0	= 0
Renewables	14.46%	x 0	= 0
Total			grams/kWh = 0.0695
Total			grams/mile = 0.020

Nitrous Oxide (N₂O) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of N ₂ O Emission per kWh [10]	Contribution to Total Grams of N ₂ O Emission per kWh
Coal	51.05%	x 0.0161	= 0.00820
Natural Gas	30.36%	x 0.0058	= 0.00176
Biomass	0.32%	x 0.0002	= 0.000001
Oil	3.81%	x 0	= 0
Renewables	14.46%	x 0	= 0
Total			grams/kWh = 0.010
Total			grams/mile = 0.0029

Sulfur Dioxide (SO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of SO ₂ Emission per kWh [10]	Contribution to Total Grams of SO ₂ Emission per kWh
Coal	51.05%	x 1.722	= 0.8793
Natural Gas	30.36%	x 1.104	= 0.3352
Biomass	0.32%	x 0.117	= 0.0004
Oil	3.81%	x 0	= 0
Renewables	14.46%	x 0	= 0
Total			grams/kWh = 1.215
Total			grams/mile = 0.356

Nitrogen Oxides (NO_x) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of NO _x Emission per kWh [10]		Contribution to Total Grams of NO _x Emission per kWh
Coal	51.05%	x	0.819	=	0.4180
Natural Gas	30.36%	x	2.026	=	0.6151
Biomass	0.32%	x	4.200	=	0.0134
Oil	3.81%	x	0	=	0
Renewables	14.46%	x	0	=	0
			Total	grams/kWh	1.046
				grams/mile	0.307

Volatile Organic Compound (VOC) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of VOC Emission per kWh [11]		Contribution to Total Grams of VOC Emission per kWh
Coal	51.05%	x	0.0114	=	0.0058
Natural Gas	30.36%	x	0.0169	=	0.0051
Biomass	0.32%	x	0.0570	=	0.0002
Oil	3.81%	x	0.0198	=	0.0008
Renewables	14.46%	x	0	=	0
			Total	grams/kWh	0.0119
				grams/mile	0.0035

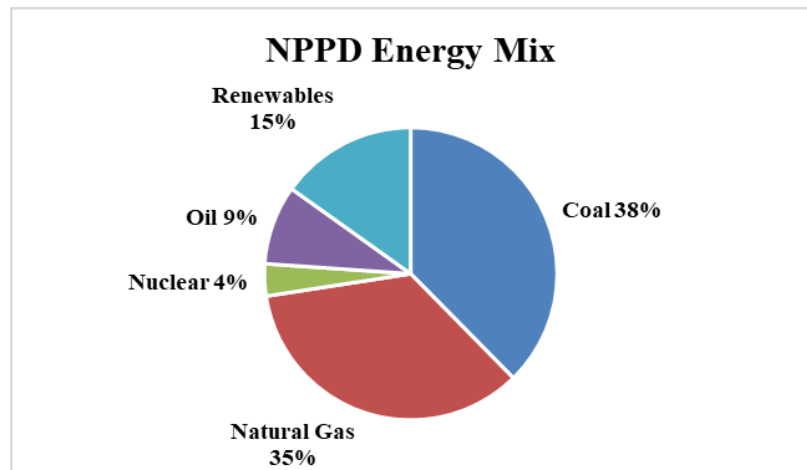
Carbon Dioxide Equivalent (CO₂e) Emissions

Contributing Gas	grams/mile		GWP		Contribution to Total CO ₂ e Emission
CO ₂	224.85	x	1	=	224.8482053
CH ₄	0.020	x	25	=	0.509135599
N ₂ O	0.0029	x	298	=	0.86988211
			Total	grams/mile	226.23

c. Nebraska Public Power District (NPPD) Data Analysis

Electricity Generation Mix

The energy mix has been estimated as per the eGRID 2018 power plant data tool [10]. The tables below show the emission calculations.



Carbon Dioxide (CO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CO ₂ Emission per kWh [10]	Contribution to Total Grams of CO ₂ Emission per kWh
Coal	37.63%	x 999.1	= 376.0
Natural Gas	34.92%	x 644.1	= 224.9
Nuclear	3.55%	x 0	= 0
Oil	8.77%	x 929.3	= 81.46
Renewables	15.13%	x 0	= 0
		Total	grams/kWh = 682.4
			grams/mile = 199.93

Carbon Monoxide (CO) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CO Emission per kWh [11]	Contribution to Total Grams of CO Emission per kWh
Coal	37.63%	x 1.0006	= 0.377
Natural Gas	34.92%	x 0.195	= 0.068
Nuclear	3.55%	x 0	= 0.000
Oil	8.77%	x 0.155	= 0.014
Renewables	15.13%	x 0	= 0.000
		Total	grams/kWh = 0.458
			grams/mile = 0.134

Methane (CH₄) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of CH ₄ Emission per kWh [10]		Contribution to Total Grams of CH ₄ Emission per kWh
Coal	37.63%	x	0.126	=	0.0474
Natural Gas	34.92%	x	0.013	=	0.0044
Nuclear	3.55%	x	0	=	0
Oil	8.77%	x	0.037	=	0.0032
Renewables	15.13%	x	0	=	0
			Total	grams/kWh	0.055
				grams/mile	0.0161

Nitrous Oxide (N₂O) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of N ₂ O Emission per kWh [10]		Contribution to Total Grams of N ₂ O Emission per kWh
Coal	37.63%	x	0.018	=	0.007
Natural Gas	34.92%	x	0.002	=	0.0006
Nuclear	3.55%	x	0	=	0
Oil	8.77%	x	0.007	=	0.0006
Renewables	15.13%	x	0	=	0
			Total	grams/kWh	0.008
				grams/mile	0.0024

Sulfur Dioxide (SO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of SO ₂ Emission per kWh [10]		Contribution to Total Grams of SO ₂ Emission per kWh
Coal	37.63%	x	2.616	=	0.985
Natural Gas	34.92%	x	0.152	=	0.0532
Nuclear	3.55%	x	0	=	0
Oil	8.77%	x	2.390	=	0.2095
Renewables	15.13%	x	0	=	0
			Total	grams/kWh	1.247
				grams/mile	0.3654

Nitrogen Oxides (NOx) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of NO _x Emission per kWh [10]		Contribution to Total Grams of NO _x Emission per kWh
Coal	37.63%	x	0.931	=	0.350
Natural Gas	34.92%	x	2.574	=	0.8989
Nuclear	3.55%	x	0	=	0
Oil	8.77%	x	10.093	=	0.8847
Renewables	15.13%	x	0	=	0
			Total	grams/kWh	2.134
				grams/mile	0.6252

Volatile Organic Compound (VOC) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of VOC Emission per kWh [11]		Contribution to Total Grams of VOC Emission per kWh
Coal	37.63%	x	0.011	=	0.004
Natural Gas	34.92%	x	0.017	=	0.0059
Nuclear	3.55%	x	0	=	0
Oil	8.77%	x	0.020	=	0.0017
Renewables	15.13%	x	0	=	0
			Total	grams/kWh	0.012
				grams/mile	0.0035

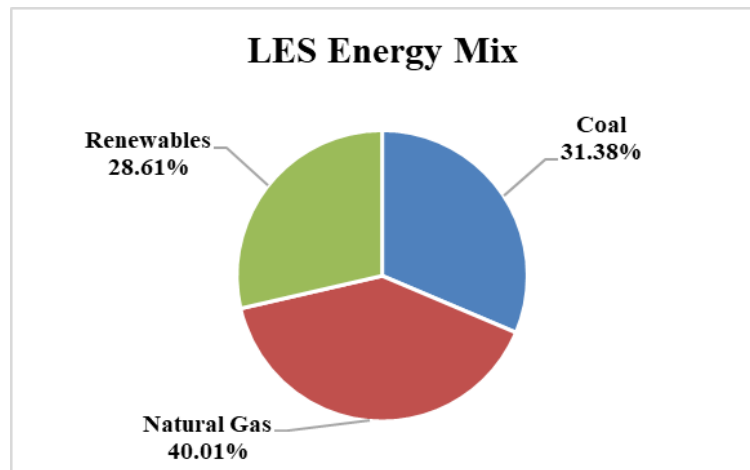
Carbon Dioxide Equivalent (CO₂e) Emissions

Contributing Gas	grams/mile		GWP		Contribution to Total CO ₂ e Emission
CO ₂	199.93	x	1	=	199.9327846
CH ₄	0.016	x	25	=	0.403446221
N ₂ O	0.0024	x	298	=	0.707721896
			Total	grams/mile	201.04

d. Lincoln Electric System (LES) Data Analysis

Electricity Generation Mix

The energy mix has been estimated as per the eGRID 2018 power plant data tool [10]. The tables below show the emission calculations.



Carbon Dioxide (CO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of CO ₂ Emission per kWh [10]	=	Contribution to Total Grams of CO ₂ Emission per kWh
Coal	31.38%	x	1009.1	=	316.6
Natural Gas	40.01%	x	582.5	=	233.1
Renewables	28.61%	x	0	=	0
			Total	grams/kWh	549.716
				grams/mile	161.065

Carbon Monoxide (CO) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of CO Emission per kWh [11]	=	Contribution to Total Grams of CO Emission per kWh
Coal	31.38%	x	1.0006	=	0.314
Natural Gas	40.01%	x	0.1953	=	0.078
Renewables	28.61%	x	0	=	0
			Total	grams/kWh	0.392
				grams/mile	0.1149

Methane (CH₄) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CH ₄ Emission per kWh [10]	Contribution to Total Grams of CH ₄ Emission per kWh	
Coal	31.38%	x 0.1	= 0.0342	
Natural Gas	40.01%	x 0.0	= 0.0045	
Renewables	28.61%	x 0	= 0	
		Total	grams/kWh	0.039
			grams/mile	0.0113

Nitrous Oxide (N₂O) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of N ₂ O Emission per kWh [10]	Contribution to Total Grams of N ₂ O Emission per kWh	
Coal	31.38%	x 0.0	= 0.0050	
Natural Gas	40.01%	x 0.0	= 0.0004	
Renewables	28.61%	x 0	= 0	
		Total	grams/kWh	0.005
			grams/mile	0.0016

Sulfur Dioxide (SO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of SO ₂ Emission per kWh [10]	Contribution to Total Grams of SO ₂ Emission per kWh	
Coal	31.38%	x 1.3	= 0.402	
Natural Gas	40.01%	x 0.0	= 0.0011	
Renewables	28.61%	x 0	= 0	
		Total	grams/kWh	0.403
			grams/mile	0.1181

Nitrogen Oxides (NO_x) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of NO _x Emission per kWh [10]	Contribution to Total Grams of NO _x Emission per kWh	
Coal	31.38%	x 0.7	= 0.235	
Natural Gas	40.01%	x 0.8	= 0.3271	
Renewables	28.61%	x 0	= 0	
		Total	grams/kWh	0.562
			grams/mile	0.1647

Volatile Organic Compound (VOC) Emissions

Coal	Percentage of Total Energy Production [10]	Grams of VOC Emission per kWh [11]	Contribution to Total Grams of VOC Emission per kWh
Coal	31.38%	x 0.011	= 0.004
Natural Gas	40.01%	x 0.017	= 0.0068
Renewables	28.61%	x 0	= 0
		Total	grams/kWh
			grams/mile
			0.010
			0.0030

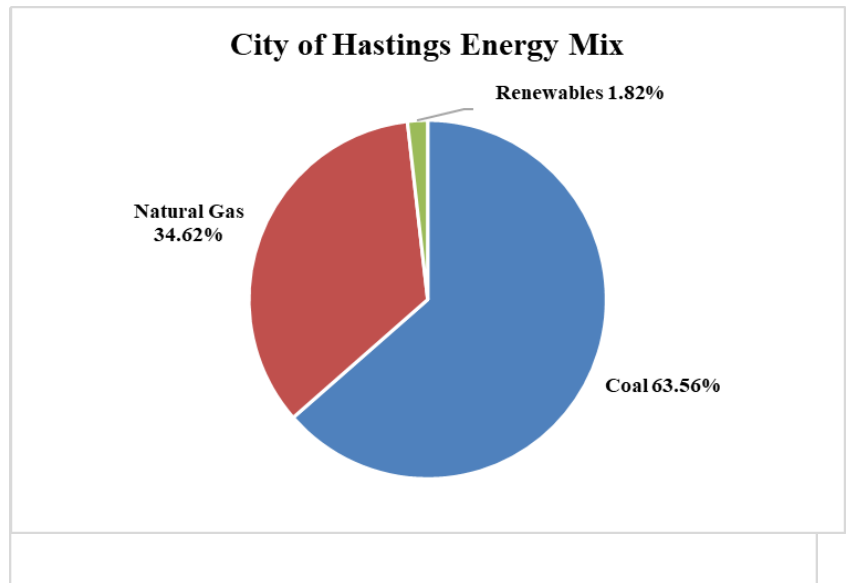
Carbon Dioxide Equivalent (CO₂e) Emissions

Contributing Gas	grams/mile		GWP		Contribution to Total CO ₂ e Emission
CO ₂	161.07	x	1	=	161.0652579
CH ₄	0.011	x	25	=	0.283117752
N ₂ O	0.0016	x	298	=	0.471934992
			Total	grams/mile	161.82

e. City of Hastings Utilities Data Analysis

Electricity Generation Mix

As per the city website, power is supplied to the city of Hastings by three plants: Gerald Whelan Energy Center, North Denver Station, and the Don Henry Power Station [12]. Amongst the renewable small amount of power is also generated by the wind energy farm at CCC Hastings Wind Turbine and solar at Hastings Community Solar Farm [10]. The energy mix has been estimated as per the eGRID 2018 power plant data tool [10].



Carbon Dioxide (CO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CO ₂ Emission per kWh [10]	Contribution to Total Grams of CO ₂ Emission per kWh
Coal	63.56%	x 1091.1	= 693.6
Natural Gas	34.62%	x 871	= 301.7
Renewables	1.82%	x 0	= 0
Total			grams/kWh: 995.248
			grams/mile: 291.605

Carbon Monoxide (CO) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CO Emission per kWh [11]	Contribution to Total Grams of CO Emission per kWh
Coal	64.67%	x 1.0006	= 0.647
Natural Gas	33.49%	x 0	= 0.000
Renewables	1.85%	x 0	= 0
Total			grams/kWh: 0.647
			grams/mile: 0.1896

Methane (CH₄) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CH ₄ Emission per kWh [10]	Contribution to Total Grams of CH ₄ Emission per kWh	
Coal	63.56%	x 0.2	= 0.1205	
Natural Gas	34.62%	x 0	= 0.0057	
Renewables	1.82%	x 0	= 0	
		Total	grams/kWh	0.126
			grams/mile	0.0370

Nitrous Oxide (N₂O) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of N ₂ O Emission per kWh [10]	Contribution to Total Grams of N ₂ O Emission per kWh	
Coal	63.56%	x 0.0	= 0.0176	
Natural Gas	34.62%	x 0	= 0.0006	
Renewables	1.82%	x 0	= 0	
		Total	grams/kWh	0.018
			grams/mile	0.0053

Sulfur Dioxide (SO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of SO ₂ Emission per kWh [10]	Contribution to Total Grams of SO ₂ Emission per kWh	
Coal	63.56%	x 1.9	= 1.184	
Natural Gas	34.62%	x 0	= 0.0083	
Renewables	1.82%	x 0	= 0	
		Total	grams/kWh	1.192
			grams/mile	0.3493

Nitrogen Oxides (NO_x) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of NO _x Emission per kWh [10]	Contribution to Total Grams of NO _x Emission per kWh	
Coal	63.56%	x 0.5	= 0.343	
Natural Gas	34.62%	x 2	= 0.7627	
Renewables	1.82%	x 0	= 0	
		Total	grams/kWh	1.106
			grams/mile	0.3241

Volatile Organic Compound (VOC) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of VOC Emission per kWh [11]		Contribution to Total Grams of VOC Emission per kWh
Coal	64.67%	x	0.011	=	0.007
Natural Gas	33.49%	x	0	=	0.0000
Renewables	1.85%	x	0	=	0
			Total	grams/kWh	0.007
				grams/mile	0.0022

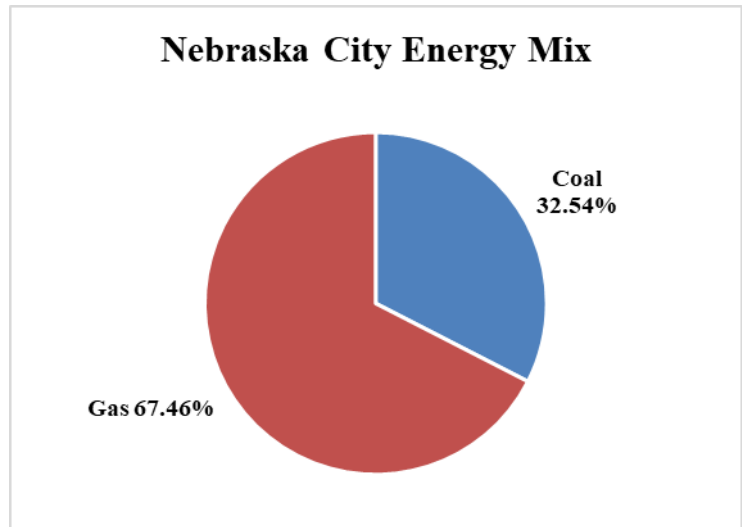
Carbon Dioxide Equivalent (CO₂e) Emissions

Contributing Gas	grams/mile		GWP		Contribution to Total CO ₂ e Emission
CO ₂	291.60	x	1	=	291.6049132
CH ₄	0.037	x	25	=	0.92427471
N ₂ O	0.0053	x	298	=	1.5850821
			Total	grams/mile	294.11

f. Nebraska City Utilities Data Analysis

Electricity Generation Mix

According to the Nebraska City Area Economic Development website, Nebraska City maintains its own natural gas-powered plants for peaking needs, and draws power partially from Nebraska City Station (1.67%) and Gerald Whelan Energy Center (4.55%) [13]. The energy mix has been estimated as per the eGRID 2018 power plant data tool [10].



Carbon Dioxide (CO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CO ₂ Emission per kWh [10]	Contribution to Total Grams of CO ₂ Emission per kWh
Coal	32.54%	x 1027.3	= 334.3
Natural Gas	67.46%	x 0	= 0.0
		Total	grams/kWh = 334.307
			grams/mile = 97.951

Carbon Monoxide (CO) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CO Emission per kWh [11]	Contribution to Total Grams of CO Emission per kWh
Coal	32.54%	x 1.0006	= 0.326
Natural Gas	67.46%	x 0	= 0.000
		Total	grams/kWh = 0.326
			grams/mile = 0.0954

Methane (CH₄) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of CH ₄ Emission per kWh [10]		Contribution to Total Grams of CH ₄ Emission per kWh
Coal	32.54%	x	0.1	=	0.0481
Natural Gas	67.46%	x	0	=	0.0000
			Total	grams/kWh	0.048
				grams/mile	0.0141

Nitrous Oxide (N₂O) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of N ₂ O Emission per kWh [10]		Contribution to Total Grams of N ₂ O Emission per kWh
Coal	32.54%	x	0.0	=	0.0070
Natural Gas	67.46%	x	0	=	0.0000
			Total	grams/kWh	0.007
				grams/mile	0.0020

Sulfur Dioxide (SO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of SO ₂ Emission per kWh [10]		Contribution to Total Grams of SO ₂ Emission per kWh
Coal	32.54%	x	1.8	=	0.581
Natural Gas	67.46%	x	0	=	0.0000
			Total	grams/kWh	0.581
				grams/mile	0.1702

Nitrogen Oxides (NO_x) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of NO _x Emission per kWh [10]		Contribution to Total Grams of NO _x Emission per kWh
Coal	32.54%	x	0.6	=	0.183
Natural Gas	67.46%	x	0	=	0.0000
			Total	grams/kWh	0.183
				grams/mile	0.0536

Volatile Organic Compound (VOC) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of VOC Emission per kWh [11]		Contribution to Total Grams of VOC Emission per kWh
Coal	32.54%	x	0.011	=	0.004
Natural Gas	67.46%	x	0	=	0.0000
			Total	grams/kWh	0.004
				grams/mile	0.0011

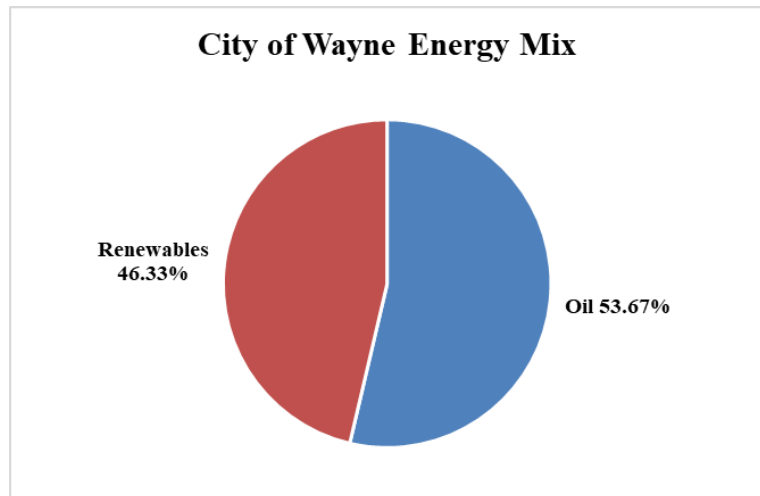
Carbon Dioxide Equivalent (CO₂e) Emissions

Contributing Gas	grams/mile		GWP		Contribution to Total CO ₂ e Emission
CO ₂	97.95	x	1	=	97.95109365
CH ₄	0.014	x	25	=	0.352214659
N ₂ O	0.0020	x	298	=	0.610552155
			Total	grams/mile	98.91

g. Wayne Energy Mix Data Analysis

Electricity Generation Mix

The energy mix has been estimated as per the eGRID 2018 power plant data tool [10]. The tables below show the emission calculations.



Carbon Dioxide (CO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of CO ₂ Emission per kWh [10]		Contribution to Total Grams of CO ₂ Emission per kWh
Oil	53.67%	x	801.5	=	430.168
Renewables	46.33%	x	0	=	0
			Total	grams/kWh	430.168
				grams/mile	126.038

Carbon Monoxide (CO) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of CO Emission per kWh [11]		Contribution to Total Grams of CO Emission per kWh
Oil	53.67%	x	0.1546	=	0.083
Renewables	46.33%	x	0	=	0
			Total	grams/kWh	0.083
				grams/mile	0.0243

Methane (CH₄) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CH ₄ Emission per kWh [10]	Contribution to Total Grams of CH ₄ Emission per kWh
Oil	53.67%	x 0.0	= 0.0175
Renewables	46.33%	x 0	= 0
		Total	grams/kWh 0.018
			grams/mile 0.0051

Nitrous Oxide (N₂O) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of N ₂ O Emission per kWh [10]	Contribution to Total Grams of N ₂ O Emission per kWh
Oil	53.67%	x 0.0	= 0.0034
Renewables	46.33%	x 0	= 0
		Total	grams/kWh 0.003
			grams/mile 0.0010

Sulfur Dioxide (SO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of SO ₂ Emission per kWh [10]	Contribution to Total Grams of SO ₂ Emission per kWh
Oil	53.67%	x 1.4	= 0.7634
Renewables	46.33%	x 0	= 0
		Total	grams/kWh 0.763
			grams/mile 0.2237

Nitrogen Oxides (NO_x) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of NO _x Emission per kWh [10]	Contribution to Total Grams of NO _x Emission per kWh
Oil	53.67%	x 15.8	= 8.4650
Renewables	46.33%	x 0	= 0
		Total	grams/kWh 8.465
			grams/mile 2.4802

Volatile Organic Compound (VOC) Emissions

Energy Source	Percentage of Total Energy Production [10]		Grams of NO _x Emission per kWh [11]		Contribution to Total Grams of NO _x Emission per kWh
Oil	53.67%	x	0.020	=	0.0106
Renewables	46.33%	x	0	=	0
			Total	grams/kWh	0.011
				grams/mile	0.0031

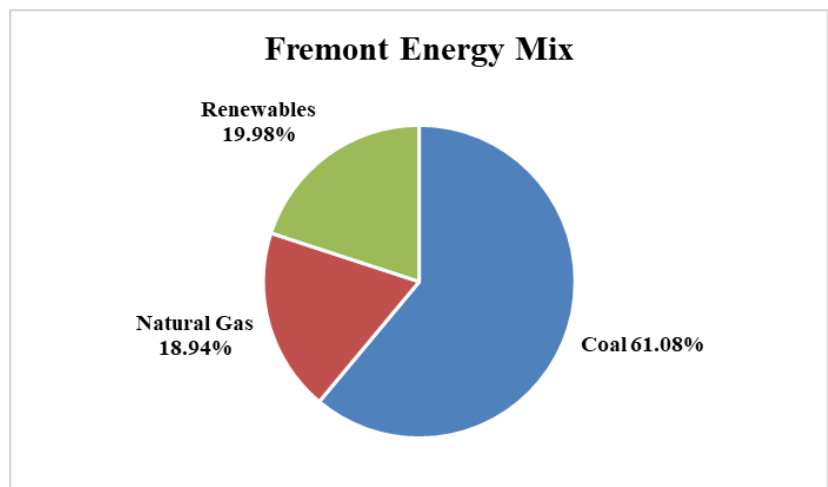
Carbon Dioxide Equivalent (CO₂e) Emissions

Contributing Gas	grams/mile		GWP		Contribution to Total CO ₂ e Emission
CO ₂	126.04	x	1	=	126.0380378
CH ₄	0.005	x	25	=	0.128386367
N ₂ O	0.0010	x	298	=	0.297571069
			Total	grams/mile	126.46

h. Fremont Utilities Data Analysis

Electricity Generation Mix

According to the official City of Fremont website, The Lon D. Wright Power Plant at First and Luther Road is the utility's power production facility. The coal fired plant located on the east side of Fremont has three units producing 16.5, 22, and 91.5 megawatts respectively. Each year the plant uses approximately 370,000 ton of coal to produce about 620,128 megawatt hours of electricity [14]. The energy mix has been estimated as per the eGRID 2018 power plant data tool [10].



Carbon Dioxide (CO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CO ₂ Emission per kWh [10]	Contribution to Total Grams of CO ₂ Emission per kWh
Coal	61.08%	x 830.3	= 507.2
Natural Gas	18.94%	x 830	= 157.3
Renewables	19.98%	x 0	= 0
		Total	
			grams/kWh: 664.456
			grams/mile: 194.684

Carbon Monoxide (CO) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CO Emission per kWh [11]	Contribution to Total Grams of CO Emission per kWh
Coal	61.08%	x 1.0006	= 0.611
Natural Gas	18.94%	x 0	= 0.000
Renewables	19.98%	x 0	= 0
		Total	
			grams/kWh: 0.611
			grams/mile: 0.1791

Methane (CH₄) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of CH ₄ Emission per kWh [10]	Contribution to Total Grams of CH ₄ Emission per kWh	
Coal	61.08%	x 0.1	= 0.0781	
Natural Gas	18.94%	x 0	= 0.0174	
Renewables	19.98%	x 0	= 0	
		Total	grams/kWh	0.095
			grams/mile	0.0280

Nitrous Oxide (N₂O) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of N ₂ O Emission per kWh [10]	Contribution to Total Grams of N ₂ O Emission per kWh	
Coal	61.08%	x 0.0	= 0.0114	
Natural Gas	18.94%	x 0	= 0.0035	
Renewables	19.98%	x 0	= 0	
		Total	grams/kWh	0.015
			grams/mile	0.0044

Sulfur Dioxide (SO₂) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of SO ₂ Emission per kWh [10]	Contribution to Total Grams of SO ₂ Emission per kWh	
Coal	61.08%	x 1.3	= 0.824	
Natural Gas	18.94%	x 1	= 0.2555	
Renewables	19.98%	x 0	= 0	
		Total	grams/kWh	1.079
			grams/mile	0.3163

Nitrogen Oxides (NO_x) Emissions

Energy Source	Percentage of Total Energy Production [10]	Grams of NO _x Emission per kWh [10]	Contribution to Total Grams of NO _x Emission per kWh	
Coal	61.08%	x 0.9	= 0.542	
Natural Gas	18.94%	x 1	= 0.1682	
Renewables	19.98%	x 0	= 0	
		Total	grams/kWh	0.711
			grams/mile	0.2082

Volatile Organic Compound (VOC) Emissions

Coal	Percentage of Total Energy Production [10]		Grams of VOC Emission per kWh [11]		Contribution to Total Grams of VOC Emission per kWh
Coal	61.08%	x	0.011	=	0.007
Natural Gas	18.94%	x	0	=	0.0000
Renewables	19.98%	x	0	=	0
			Total	grams/kWh	0.007
				grams/mile	0.0020

Carbon Dioxide Equivalent (CO₂e) Emissions

Contributing Gas	grams/mile		GWP		Contribution to Total CO ₂ e Emission
CO ₂	194.68	x	1	=	194.6837675
CH ₄	0.028	x	25	=	0.69943229
N ₂ O	0.0044	x	298	=	1.299399135
			Total	grams/mile	196.68

6.6. References

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- [9] Flex-Fuel Vehicles. <http://www.fueleconomy.gov/feg/flextech.shtml>. [Accessed: 10-Oct-2020].
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- [11] California Environmental Protection Agency, "Detailed California-Modified GREET Pathway for California Average and Marginal Electricity." CEPA, 27-Feb-2009.
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- [15] U.S. DoE, "2020 Fuel Economy Guide," U.S. Department of Energy, DOE/EE-1653. [Online]. Available: <https://www.fueleconomy.gov/feg/pdfs/guides/FEG2020.pdf>. [Accessed: 10-Oct-2020].
- [16] Alternative Fuels Data Center – Fuel Properties Comparison [Online]. Available: https://afdc.energy.gov/fuels/fuel_comparison_chart.pdf. [Accessed: 10-Oct-2020].

7. Appendix E. Detailed Analysis for Charging Stations - Monthly Detailed Data – July 2021

Introduction

In the tables and graphs that follow, the cost of miles driven using a comparable gasoline-powered vehicle (CV) is provided. Then, the cost of miles driven using the EVs are provided. The economic savings comparison is then provided. In addition to miles driven, maintenance costs and savings that include oil and filter changes for the CV and maintenance costs for the EVs are provided in the Other Cost Savings information for each station location. Similar calculations and analysis are provided for the GHG emissions and reductions.

Blue bars on graphs show daily energy usage while the green line shows cumulative usage. For this report, we are using the kWh data from ChargePoint™ to calculate the economic and environmental savings, accounting for the energy feedstock mix of each of the power generation districts in Nebraska.

Allen Consolidated Schools

Charging stations: One Level-2 station
 The price of electricity per kWh: \$0.0925



Total Economic Saving Data (Fuel & Maintenance Cost Savings)

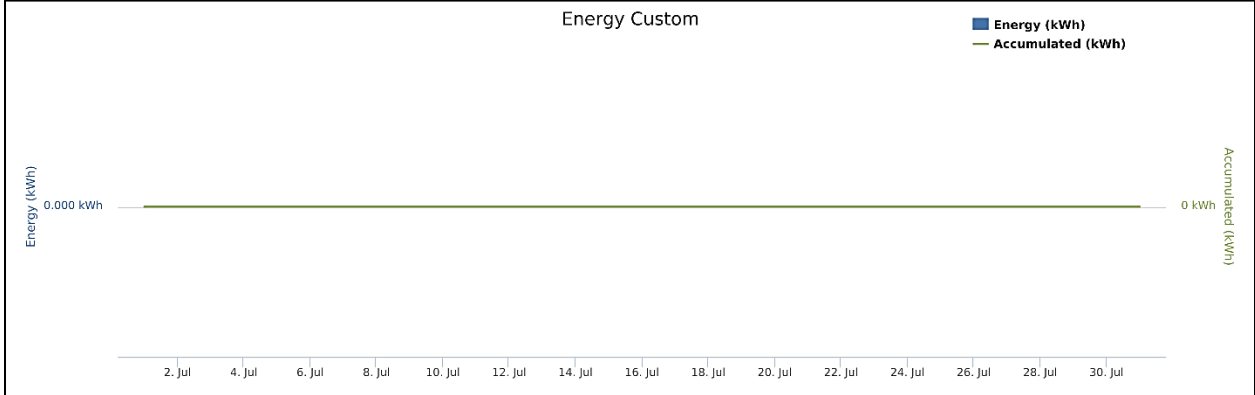
		This Month (July)	All Time
Miles Driven		0.00	38,570.61
Energy Consumed(kWh)		0.00	11,417.81
Fuel Cost Saving	Usage Cost Using CV(Gas)	0.00	3,996.97
	Usage Cost Using EV(Electricity)	0.00	902.00
	Total Fuel Saving	0.00	3,094.97
Other Cost Saving	CV Costs	0.00	1,941.08
	EV Costs	0.00	1,001.40
	Total Other Cost Saving	0.00	939.69
Overall Economic Savings		0.00	4,034.66

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		0.00	38,570.61
Energy Consumed (kWh)		0.00	11,417.81
Co2 Emissions (lbs.)	CV (Gas)	0.00	32,598.56
	EV (Electricity)	0.00	10,128.89
	Total Fuel Saving	0.00	22,469.67
Co Emissions (lbs.)	CV (Gas)	0.0000	470.6320
	EV (Electricity)	0.0000	8.4468
	Total Fuel Saving	0.0000	462.1852
So2 Emissions (lbs.)	CV (Gas)	0.0000	0.9902
	EV (Electricity)	0.0000	26.9581
	Total Fuel Saving	0.0000	(25.9679)
Nox Emissions (lbs.)	CV (Gas)	0.0000	30.1253
	EV (Electricity)	0.0000	31.2443
	Total Fuel Saving	0.0000	(1.1190)
CH4 Emissions (lbs.)	CV (Gas)	0.0000	2.0639
	EV (Electricity)	0.0000	0.6943
	Total Fuel Saving	0.0000	1.3696
VOC Emissions (lbs.)	CV (Gas)	0.0000	15.7495
	EV (Electricity)	0.0000	0.2129
	Total Fuel Saving	0.0000	15.5365

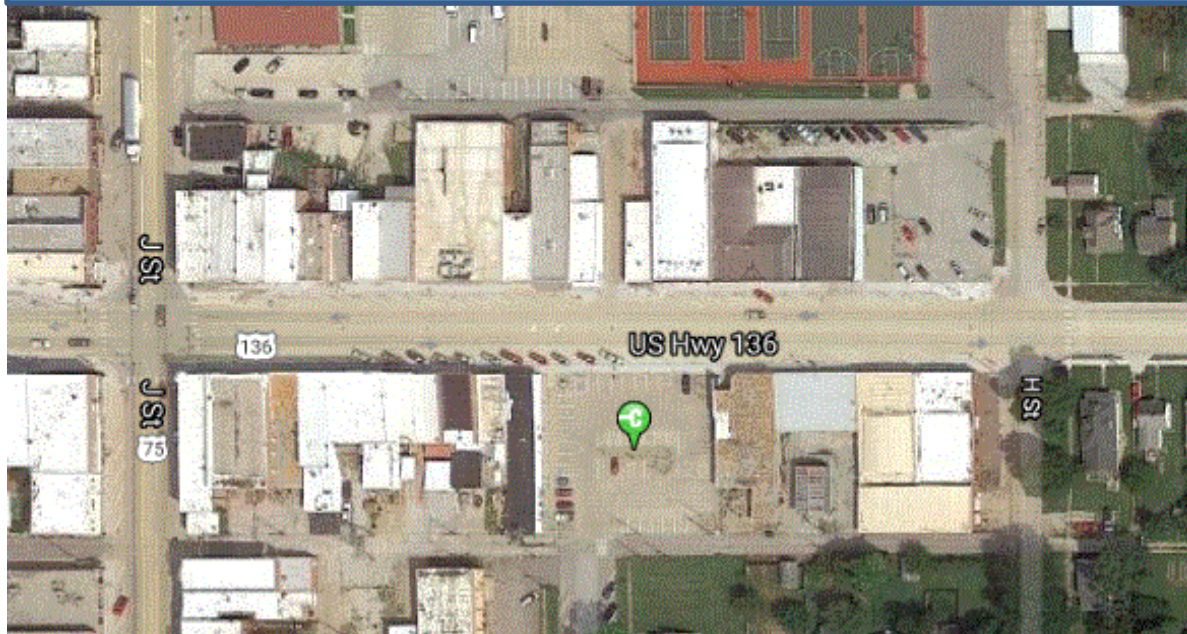
Energy Consumption Data

July 2021



Auburn Board of Public Works

Charging stations: One Level-2 station
 The price of electricity per kWh: \$0.0925



Total Economic Saving Data (Fuel & Maintenance Cost Savings):

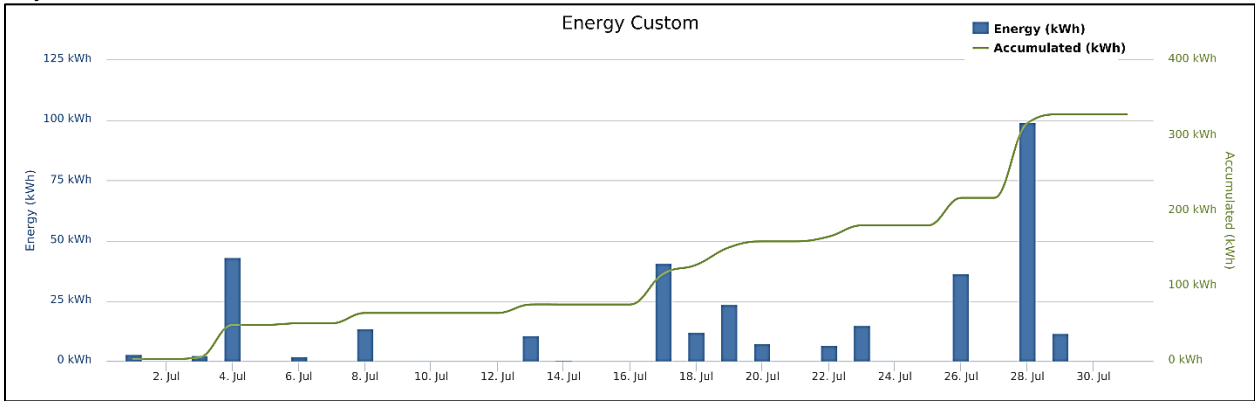
		This Month (July)	All Time
Miles Driven		1,117.90	10,424.02
Energy Consumed(kWh)		327.64	3,067.91
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$132.78	\$1,111.22
	Usage Cost Using EV(Electricity)	\$30.83	\$295.74
	Total Fuel Saving	\$101.95	\$815.48
Other Cost Saving	CV Costs	\$68.19	\$605.71
	EV Costs	\$29.07	\$244.14
	Total Other Cost Saving	\$39.13	\$361.56

Overall Economic Savings	\$141.08	\$1,177.04
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Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		1,117.90	10,424.02
Energy Consumed (kWh)		327.64	3,067.91
Co2 Emissions (lbs.)	CV (Gas)	872.60	8,240.83
	EV (Electricity)	241.41	2,423.12
	Total Fuel Saving	631.19	5,817.71
Co Emissions (lbs.)	CV (Gas)	7.0513	65.7510
	EV (Electricity)	0.2351	2.3803
	Total Fuel Saving	6.8162	63.3706
So2 Emissions (lbs.)	CV (Gas)	0.0104	0.0965
	EV (Electricity)	0.4195	4.0767
	Total Fuel Saving	(0.4091)	(3.9802)
Nox Emissions (lbs.)	CV (Gas)	0.2957	2.7577
	EV (Electricity)	0.1320	1.3118
	Total Fuel Saving	0.1637	1.4459
CH4 Emissions (lbs.)	CV (Gas)	0.0165	0.1923
	EV (Electricity)	0.0347	0.3061
	Total Fuel Saving	(0.0182)	(0.1138)
VOC Emissions (lbs.)	CV (Gas)	0.4150	3.8700
	EV (Electricity)	0.0027	0.0272
	Total Fuel Saving	0.4124	3.8428

Energy Consumption Data July 2021



Aurora

Charging stations: One Level-2 station & One Fast DC charging station
 The price of electricity per kWh: \$0.0853



SUMMARY OF ALL STATIONS

Total Economic Saving Data (Fuel & Maintenance Cost Savings):

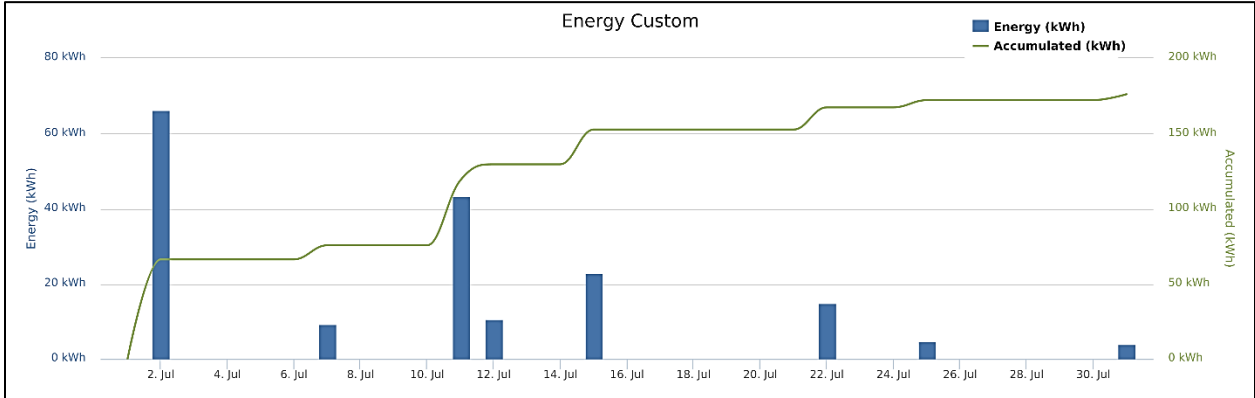
		This Month (July)	All Time
Miles Driven		600.46	3,385.41
Energy Consumed(kWh)		175.99	992.21
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$71.90	\$370.68
	Usage Cost Using EV(Electricity)	\$14.38	\$81.06
	Total Fuel Saving	\$57.52	\$289.62
Other Cost Saving	CV Costs	\$36.63	\$206.51
	EV Costs	\$15.61	\$88.02
	Total Other Cost Saving	\$21.02	\$118.49

Overall Economic Savings	\$78.54	\$408.11
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Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		600.46	3,385.41
Energy Consumed (kWh)		175.99	992.21
Co2 Emissions (lbs.)	CV (Gas)	468.70	2,642.54
	EV (Electricity)	264.67	1,492.21
	Total Fuel Saving	204.03	1,150.34
Co Emissions (lbs.)	CV (Gas)	3.7875	21.3540
	EV (Electricity)	0.1778	1.0022
	Total Fuel Saving	3.6098	20.3518
So2 Emissions (lbs.)	CV (Gas)	0.0056	0.0313
	EV (Electricity)	0.4838	2.7274
	Total Fuel Saving	(0.4782)	(2.6961)
Nox Emissions (lbs.)	CV (Gas)	0.1589	0.8956
	EV (Electricity)	0.8277	4.6663
	Total Fuel Saving	(0.6688)	(3.7707)
CH4 Emissions (lbs.)	CV (Gas)	0.0089	0.0500
	EV (Electricity)	0.0214	0.1204
	Total Fuel Saving	(0.0125)	(0.0704)
VOC Emissions (lbs.)	CV (Gas)	0.2229	1.2569
	EV (Electricity)	0.0046	0.0261
	Total Fuel Saving	0.2183	1.2308

Energy Consumption Data July 2021



Aurora (AURORANE / DC FAST 1):

Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		500.58	2,846.96
Energy Consumed(kWh)		146.71	834.40
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$59.91	\$313.38
	Usage Cost Using EV(Electricity)	\$11.99	\$68.17
	Total Fuel Saving	\$47.92	\$245.21
Other Cost Saving	CV Costs	\$30.54	\$173.66
	EV Costs	\$13.02	\$74.02
	Total Other Cost Saving	\$17.52	\$99.64
Overall Economic Savings		\$65.44	\$344.85

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		500.58	2,846.96
Energy Consumed (kWh)		146.71	834.40
Co2 Emissions (lbs.)	CV (Gas)	390.73	2,222.25
	EV (Electricity)	220.64	1,254.87
	Total Fuel Saving	170.09	967.37
Co Emissions (lbs.)	CV (Gas)	3.1575	17.9576
	EV (Electricity)	0.1482	0.8428
	Total Fuel Saving	3.0093	17.1148
So2 Emissions (lbs.)	CV (Gas)	0.0046	0.0264
	EV (Electricity)	0.4033	2.2936
	Total Fuel Saving	(0.3986)	(2.2672)
Nox Emissions (lbs.)	CV (Gas)	0.1324	0.7532
	EV (Electricity)	0.6900	3.9242
	Total Fuel Saving	(0.5575)	(3.1710)
CH4 Emissions (lbs.)	CV (Gas)	0.0074	0.0421
	EV (Electricity)	0.0178	0.1013
	Total Fuel Saving	(0.0104)	(0.0592)
VOC Emissions (lbs.)	CV (Gas)	0.1858	1.0570
	EV (Electricity)	0.0039	0.0219
	Total Fuel Saving	0.1820	1.0350

Aurora (One Level-2 station):

Economic Saving Data (Fuel & Maintenance Cost Savings):

<u>Level 2 GW1</u>		This Month (July)	All Time
Miles Driven		99.89	538.45
Energy Consumed(kWh)		29.28	157.81
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$11.99	\$57.30
	Usage Cost Using EV(Electricity)	\$2.39	\$12.89
	Total Fuel Saving	\$9.60	\$44.41
Other Cost Saving	CV Costs	\$6.09	\$32.85
	EV Costs	\$2.60	\$14.00
	Total Other Cost Saving	\$3.50	\$18.85
Overall Economic Savings		\$13.10	\$63.25

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		99.89	538.45
Energy Consumed (kWh)		29.28	157.81
Co2 Emissions (lbs.)	CV (Gas)	77.97	420.30
	EV (Electricity)	44.03	237.34
	Total Fuel Saving	33.94	182.96
Co Emissions (lbs.)	CV (Gas)	0.6300	3.3964
	EV (Electricity)	0.0296	0.1594
	Total Fuel Saving	0.6005	3.2370
So2 Emissions (lbs.)	CV (Gas)	0.0009	0.0050
	EV (Electricity)	0.0805	0.4338
	Total Fuel Saving	(0.0795)	(0.4288)
Nox Emissions (lbs.)	CV (Gas)	0.0264	0.1424
	EV (Electricity)	0.1377	0.7422
	Total Fuel Saving	(0.1113)	(0.5997)
CH4 Emissions (lbs.)	CV (Gas)	0.0015	0.0080
	EV (Electricity)	0.0036	0.0192
	Total Fuel Saving	(0.0021)	(0.0112)
VOC Emissions (lbs.)	CV (Gas)	0.0371	0.1999
	EV (Electricity)	0.0008	0.0041
	Total Fuel Saving	0.0363	0.1958

Ashland

Charging stations: One Level-2 station & One Fast DC charging station
 The price of electricity per kWh: \$0.0898



SUMMARY OF ALL STATIONS

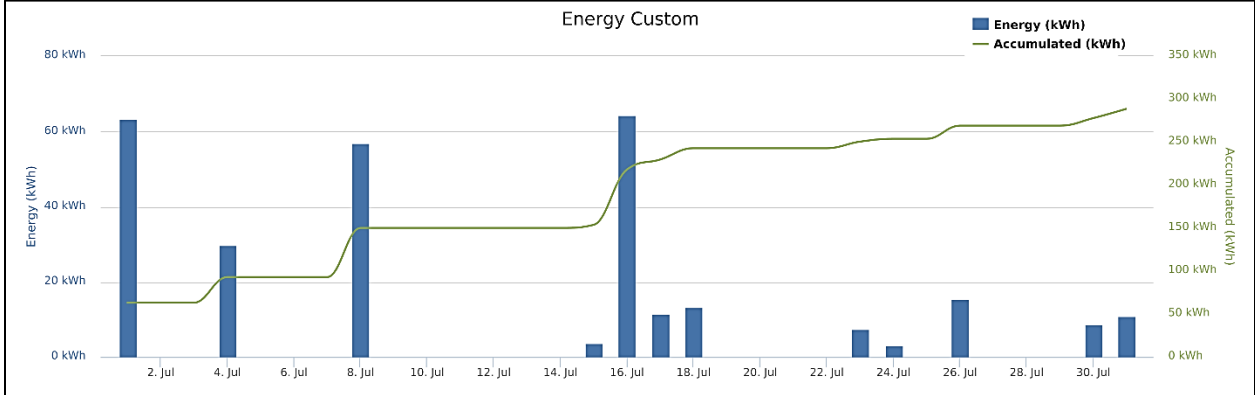
Total Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		985.32	40,067.51
Energy Consumed(kWh)		288.78	11,939.40
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$115.92	\$4,066.04
	Usage Cost Using EV(Electricity)	\$24.55	\$1,080.87
	Total Fuel Saving	\$91.37	\$2,985.17
Other Cost Saving	CV Costs	\$60.10	\$1,954.51
	EV Costs	\$25.62	\$722.78
	Total Other Cost Saving	\$34.49	\$1,231.73
Overall Economic Savings		\$125.86	\$4,216.90

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		985.32	40,067.51
Energy Consumed (kWh)		288.78	11,939.40
Co2 Emissions (lbs.)	CV (Gas)	769.11	32,424.36
	EV (Electricity)	488.43	17,035.23
	Total Fuel Saving	280.68	15,389.14
Co Emissions (lbs.)	CV (Gas)	6.2151	278.8739
	EV (Electricity)	0.3683	14.3271
	Total Fuel Saving	5.8468	264.5468
So2 Emissions (lbs.)	CV (Gas)	0.0091	0.4420
	EV (Electricity)	0.7733	38.0949
	Total Fuel Saving	(0.7641)	(37.6529)
Nox Emissions (lbs.)	CV (Gas)	0.2607	12.8895
	EV (Electricity)	0.6661	27.0809
	Total Fuel Saving	(0.4054)	(14.1913)
CH4 Emissions (lbs.)	CV (Gas)	0.0146	1.4158
	EV (Electricity)	0.0442	1.4880
	Total Fuel Saving	(0.0297)	(0.0722)
VOC Emissions (lbs.)	CV (Gas)	0.3658	15.0339
	EV (Electricity)	0.0076	0.2900
	Total Fuel Saving	0.3582	14.7439

Energy Consumption Data July 2021



Ashland (Fast DC charging):

Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		193.77	25,717.95
Energy Consumed(kWh)		56.79	7,665.44
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$22.54	\$2,645.63
	Usage Cost Using EV(Electricity)	\$4.83	\$696.11
	Total Fuel Saving	\$17.72	\$1,949.52
Other Cost Saving	CV Costs	\$11.82	\$1,246.84
	EV Costs	\$5.04	\$466.86
	Total Other Cost Saving	\$6.78	\$779.98
Overall Economic Savings		\$24.50	\$2,729.50

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		193.77	25,717.95
Energy Consumed(kWh)		56.79	7,665.44
Co2 Emissions (lbs.)	CV (Gas)	151.25	20,834.91
	EV (Electricity)	96.05	10,774.82
	Total Fuel Saving	55.20	10,060.08
Co Emissions (lbs.)	CV (Gas)	1.2223	183.3729
	EV (Electricity)	0.0724	9.0749
	Total Fuel Saving	1.1498	174.2980
So2 Emissions (lbs.)	CV (Gas)	0.0018	0.2957
	EV (Electricity)	0.1521	24.4885
	Total Fuel Saving	(0.1503)	(24.1929)
Nox Emissions (lbs.)	CV (Gas)	0.0513	8.6565
	EV (Electricity)	0.1310	17.2606
	Total Fuel Saving	(0.0797)	(8.6041)
CH4 Emissions (lbs.)	CV (Gas)	0.0029	0.9404
	EV (Electricity)	0.0087	0.9333
	Total Fuel Saving	(0.0058)	0.0071
VOC Emissions (lbs.)	CV (Gas)	0.0719	9.6770
	EV (Electricity)	0.0015	0.1849
	Total Fuel Saving	0.0705	9.4921

Ashland (One Level-2 station):

Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		791.55	14,263.85
Energy Consumed(kWh)		231.99	4,248.87
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$93.37	\$1,413.45
	Usage Cost Using EV(Electricity)	\$19.72	\$382.62
	Total Fuel Saving	\$73.65	\$1,030.83
Other Cost Saving	CV Costs	\$48.28	\$702.44
	EV Costs	\$20.58	\$253.70
	Total Other Cost Saving	\$27.70	\$448.74
Overall Economic Savings		\$101.36	\$1,479.57

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		791.55	14,263.85
Energy Consumed (kWh)		231.99	4,248.87
Co2 Emissions (lbs.)	CV (Gas)	617.86	11,522.56
	EV (Electricity)	392.38	6,217.86
	Total Fuel Saving	225.48	5,304.69
Co Emissions (lbs.)	CV (Gas)	4.9928	94.6067
	EV (Electricity)	0.2959	5.2208
	Total Fuel Saving	4.6970	89.3860
So2 Emissions (lbs.)	CV (Gas)	0.0073	0.1456
	EV (Electricity)	0.6212	13.5391
	Total Fuel Saving	(0.6139)	(13.3935)
Nox Emissions (lbs.)	CV (Gas)	0.2094	4.2105
	EV (Electricity)	0.5351	9.7564
	Total Fuel Saving	(0.3257)	(5.5459)
CH4 Emissions (lbs.)	CV (Gas)	0.0117	0.4725
	EV (Electricity)	0.0355	0.5507
	Total Fuel Saving	(0.0238)	(0.0782)
VOC Emissions (lbs.)	CV (Gas)	0.2939	5.3171
	EV (Electricity)	0.0061	0.1043
	Total Fuel Saving	0.2878	5.2128

Bellevue

Charging stations: one Level-2 station
 The price of electricity per kWh: \$0.0898



Economic Saving Data (Fuel & Maintenance Cost Savings):

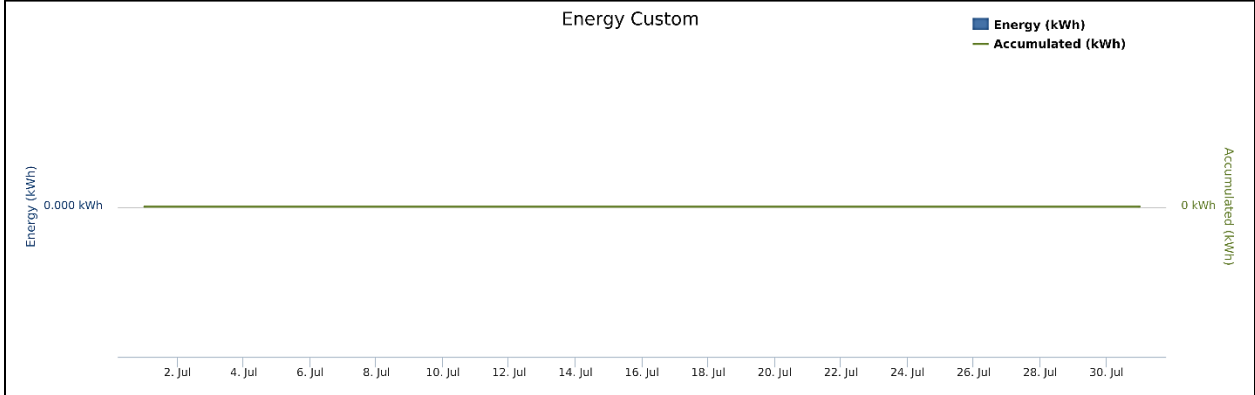
		This Month (July)	All Time
Miles Driven		0.00	40,714.44
Energy Consumed(kWh)		0.00	12,079.62
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$0.00	\$4,224.53
	Usage Cost Using EV(Electricity)	\$0.00	\$1,120.68
	Total Fuel Saving	\$0.00	\$3,103.85
Other Cost Saving	CV Costs	\$0.00	\$1,933.43
	EV Costs	\$0.00	\$1,078.36
	Total Other Cost Saving	\$0.00	\$855.07
Overall Economic Savings		\$0.00	\$3,958.93

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		0	40714.44179
Energy Consumed (kWh)		0	12079.624
Co2 Emissions (lbs.)	CV (Gas)	0.00	35,305.75
	EV (Electricity)	0.00	9,711.81
	Total Fuel Saving	0.00	25,593.94
Co Emissions (lbs.)	CV (Gas)	0.00	581.10
	EV (Electricity)	0.00	9.89
	Total Fuel Saving	0.00	571.21
So2 Emissions (lbs.)	CV (Gas)	0.00	1.26
	EV (Electricity)	0.00	34.95
	Total Fuel Saving	0.00	(33.69)
Nox Emissions (lbs.)	CV (Gas)	0.00	39.19
	EV (Electricity)	0.00	20.72
	Total Fuel Saving	0.00	18.47
CH4 Emissions (lbs.)	CV (Gas)	0.00	2.67
	EV (Electricity)	0.00	0.81
	Total Fuel Saving	0.00	1.87
VOC Emissions (lbs.)	CV (Gas)	0.00	17.16
	EV (Electricity)	0.00	0.25
	Total Fuel Saving	0.00	16.91

Energy Consumption Data

July 2021



B & R Stores

Charging stations: Four Level-2 stations
 The price of electricity per kWh: \$0.0853



Economic Saving Data (Fuel & Maintenance Cost Savings):

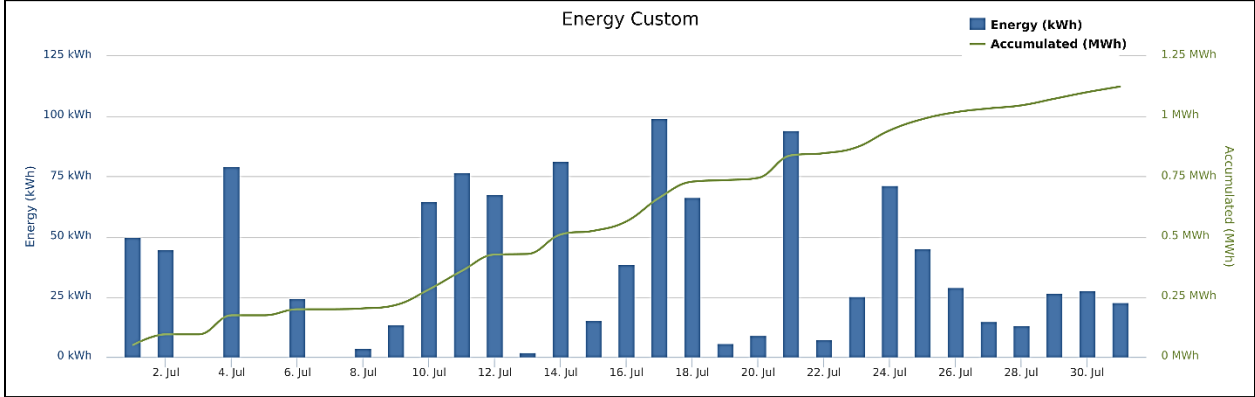
		This Month (July)	All Time
Miles Driven		3,831.31	15,221.90
Energy Consumed(kWh)		1,122.89	4,461.29
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$459.70	\$1,751.38
	Usage Cost Using EV(Electricity)	\$87.92	\$349.32
	Total Fuel Saving	\$371.78	\$1,402.06
Other Cost Saving	CV Costs	\$233.71	\$928.54
	EV Costs	\$99.61	\$395.77
	Total Other Cost Saving	\$134.10	\$532.77
Overall Economic Savings		\$505.87	\$1,934.83

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		3,831.31	15,221.90
Energy Consumed (kWh)		1,122.89	4,461.29
Co2 Emissions (lbs.)	CV (Gas)	2,990.60	11,881.73
	EV (Electricity)	2,463.07	9,785.83
	Total Fuel Saving	527.53	2,095.90
Co Emissions (lbs.)	CV (Gas)	24.1665	96.0143
	EV (Electricity)	1.5740	6.2537
	Total Fuel Saving	22.5925	89.7605
So2 Emissions (lbs.)	CV (Gas)	0.0355	0.1409
	EV (Electricity)	2.9504	11.7221
	Total Fuel Saving	(2.9150)	(11.5812)
Nox Emissions (lbs.)	CV (Gas)	1.0136	4.0270
	EV (Electricity)	2.7374	10.8757
	Total Fuel Saving	(1.7238)	(6.8487)
CH4 Emissions (lbs.)	CV (Gas)	0.0566	0.2248
	EV (Electricity)	0.3123	1.2407
	Total Fuel Saving	(0.2557)	(1.0158)
VOC Emissions (lbs.)	CV (Gas)	1.4224	5.6513
	EV (Electricity)	0.0179	0.0712

	Total Fuel Saving	1.4045	5.5800
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Energy Consumption Data
July 2021



B & R Stores (two DC stations)

Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		3,774.90	14,387.40
Energy Consumed(kWh)		1,106.36	4,216.71
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$452.93	\$1,655.60
	Usage Cost Using EV(Electricity)	\$86.63	\$330.17
	Total Fuel Saving	\$366.30	\$1,325.44
Other Cost Saving	CV Costs	\$230.27	\$877.63
	EV Costs	\$98.15	\$374.07
	Total Other Cost Saving	\$132.12	\$503.56
Overall Economic Savings		\$498.42	\$1,828.99

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		3,774.90	14,387.40
Energy Consumed (kWh)		1,106.36	4,216.71
Co2 Emissions (lbs.)	CV (Gas)	2,946.57	11,230.34
	EV (Electricity)	2,426.80	9,249.34
	Total Fuel Saving	519.77	1,981.00
Co Emissions (lbs.)	CV (Gas)	23.8107	90.7505
	EV (Electricity)	1.5509	5.9109
	Total Fuel Saving	22.2599	84.8396
So2 Emissions (lbs.)	CV (Gas)	0.0350	0.1332
	EV (Electricity)	2.9070	11.0795
	Total Fuel Saving	(2.8720)	(10.9463)
Nox Emissions (lbs.)	CV (Gas)	0.9987	3.8062
	EV (Electricity)	2.6971	10.2795
	Total Fuel Saving	(1.6984)	(6.4732)
CH4 Emissions (lbs.)	CV (Gas)	0.0558	0.2125
	EV (Electricity)	0.3077	1.1727
	Total Fuel Saving	(0.2519)	(0.9602)
VOC Emissions (lbs.)	CV (Gas)	1.4015	5.3414
	EV (Electricity)	0.0177	0.0673

	Total Fuel Saving	1.3838	5.2741
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B & R Stores (two level 2 stations)

Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		56.41	834.51
Energy Consumed(kWh)		16.53	244.58
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$6.77	\$95.78
	Usage Cost Using EV(Electricity)	\$1.29	\$19.15
	Total Fuel Saving	\$5.48	\$76.63
Other Cost Saving	CV Costs	\$3.44	\$50.90
	EV Costs	\$1.47	\$21.70
	Total Other Cost Saving	\$1.97	\$29.21
Overall Economic Savings		\$7.45	\$105.83

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		56.41	834.51
Energy Consumed (kWh)		16.53	244.58
Co2 Emissions (lbs.)	CV (Gas)	44.03	651.39
	EV (Electricity)	36.26	536.49
	Total Fuel Saving	7.77	114.90
Co Emissions (lbs.)	CV (Gas)	0.36	5.26
	EV (Electricity)	0.02	0.34
	Total Fuel Saving	0.3326	4.9209
So2 Emissions (lbs.)	CV (Gas)	0.00	0.01
	EV (Electricity)	0.04	0.64
	Total Fuel Saving	(0.0429)	(0.6349)
Nox Emissions (lbs.)	CV (Gas)	0.01	0.22
	EV (Electricity)	0.04	0.60
	Total Fuel Saving	(0.0254)	(0.3755)
CH4 Emissions (lbs.)	CV (Gas)	0.00	0.01
	EV (Electricity)	0.00	0.07
	Total Fuel Saving	(0.0038)	(0.0557)
	CV (Gas)	0.02	0.31

VOC Emissions (lbs.)	EV (Electricity)	0.00	0.00
	Total Fuel Saving	0.0207	0.3059

Central City

Charging stations: One Level-2 station
 The price of electricity per kWh: \$0.0853



Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		0.00	1,773.37
Energy Consumed(kWh)		0.00	522.08
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$0.00	\$188.58
	Usage Cost Using EV(Electricity)	\$0.00	\$51.92
	Total Fuel Saving	\$0.00	\$136.66
Other Cost Saving	CV Costs	\$0.00	\$89.44
	EV Costs	\$0.00	\$63.39
	Total Other Cost Saving	\$0.00	\$26.05

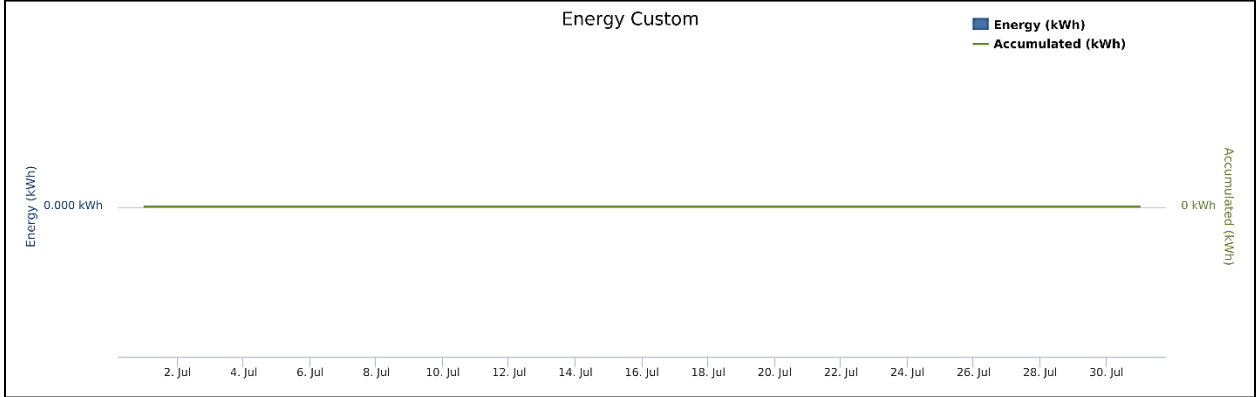
Overall Economic Savings	\$0.00	\$162.71
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*Data was provided from the electrical car mileage
Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		0.00	1,773.37
Energy Consumed (kWh)		0.00	522.08
Co2 Emissions (lbs.)	CV (Gas)	0.00	1,536.18
	EV (Electricity)	0.00	272.13
	Total Fuel Saving	0.00	1,264.05
Co Emissions (lbs.)	CV (Gas)	0.0000	31.6729
	EV (Electricity)	0.0000	0.2370
	Total Fuel Saving	0.0000	31.4360
So2 Emissions (lbs.)	CV (Gas)	0.0000	0.0032
	EV (Electricity)	0.0000	1.1869
	Total Fuel Saving	0.0000	(1.1836)
Nox Emissions (lbs.)	CV (Gas)	0.0000	2.2643
	EV (Electricity)	0.0000	0.6715
	Total Fuel Saving	0.0000	1.5928
CH4 Emissions (lbs.)	CV (Gas)	0.0000	0.1387
	EV (Electricity)	0.0000	0.0093
	Total Fuel Saving	0.0000	0.1294
VOC Emissions (lbs.)	CV (Gas)	0.0000	0.7871
	EV (Electricity)	0.0000	0.0087
	Total Fuel Saving	0.0000	0.7784

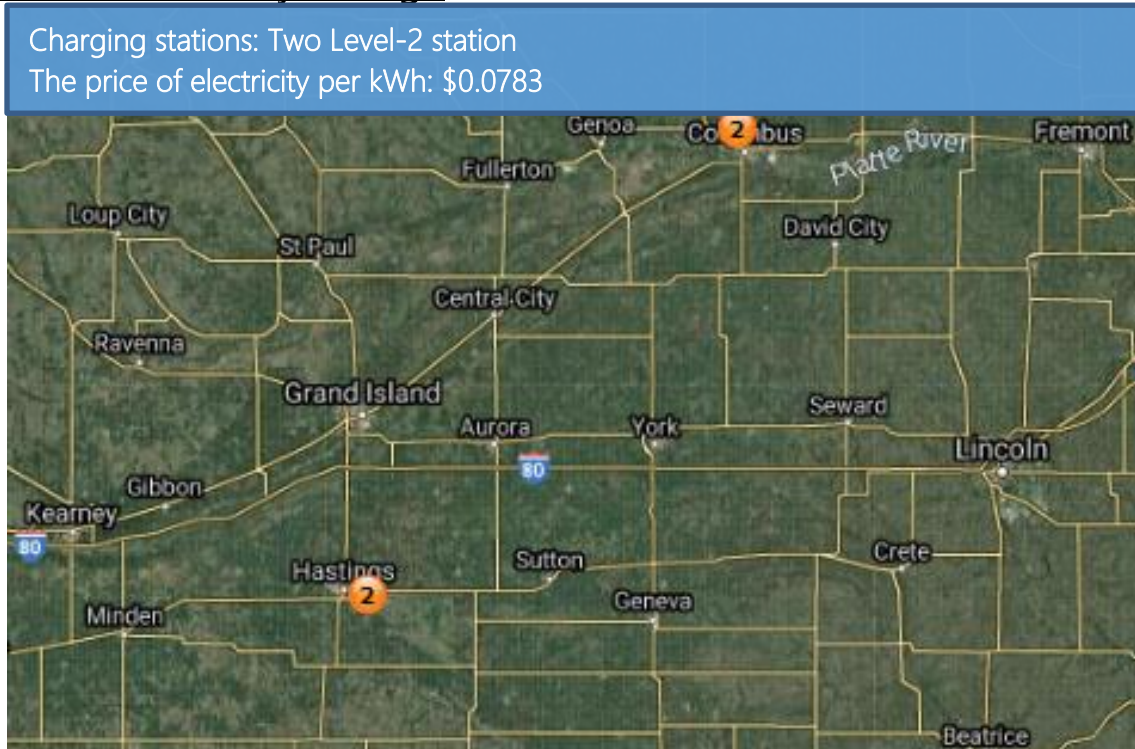
Energy Consumption Data

July 2021



(Data was provided from the electrical car mileage)

Central Community College



Economic Saving Data (Fuel & Maintenance Cost Savings):

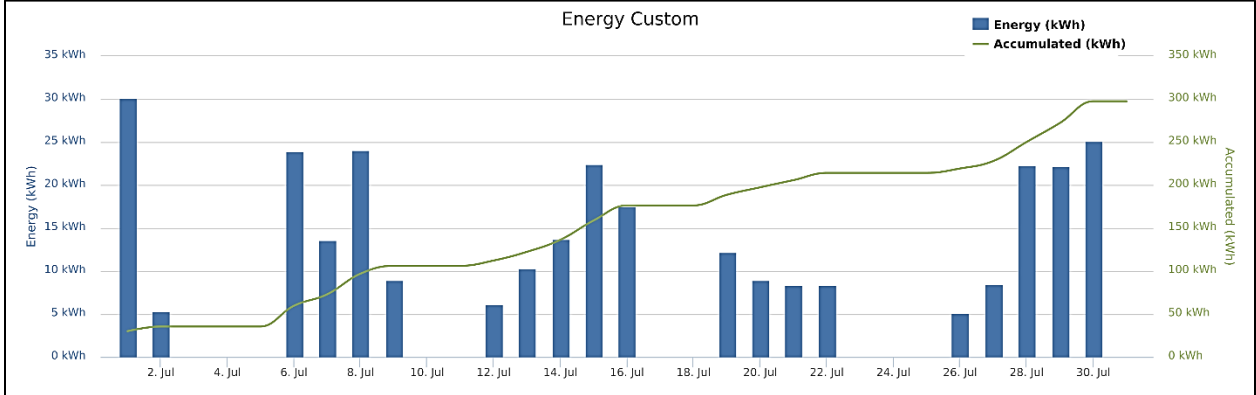
		This Month (July)	All Time
Miles Driven		1,015.01	5,128.52
Energy Consumed(kWh)		297.48	1,503.08
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$121.82	\$589.82
	Usage Cost Using EV(Electricity)	\$24.30	\$122.80
	Total Fuel Saving	\$97.51	\$467.02
Other Cost Saving	CV Costs	\$61.92	\$312.84
	EV Costs	\$26.39	\$133.34
	Total Other Cost Saving	\$35.53	\$179.50
Overall Economic Savings		\$133.04	\$646.51

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		1,015.01	5,128.52
Energy Consumed (kWh)		297.48	1,503.08
Co2 Emissions (lbs.)	CV (Gas)	792.28	4,003.16
	EV (Electricity)	447.39	2,260.53
	Total Fuel Saving	344.89	1,742.63
Co Emissions (lbs.)	CV (Gas)	6.4023	32.3488
	EV (Electricity)	0.3005	1.5182
	Total Fuel Saving	6.1018	30.8307
So2 Emissions (lbs.)	CV (Gas)	0.0094	0.0475
	EV (Electricity)	0.8177	4.1317
	Total Fuel Saving	(0.8083)	(4.0842)
Nox Emissions (lbs.)	CV (Gas)	0.2685	1.3568
	EV (Electricity)	1.3991	7.0690
	Total Fuel Saving	(1.1305)	(5.7122)
CH4 Emissions (lbs.)	CV (Gas)	0.0150	0.0758
	EV (Electricity)	0.0361	0.1825
	Total Fuel Saving	(0.0211)	(0.1067)
VOC Emissions (lbs.)	CV (Gas)	0.3768	1.9040
	EV (Electricity)	0.0078	0.0395
	Total Fuel Saving	0.3690	1.8645

Energy Consumption Data

July 2021



Dakota County

Charging stations: One Level-2 station
 The price of electricity per kWh: \$0.0853



Economic Saving Data (Fuel & Maintenance Cost Savings):

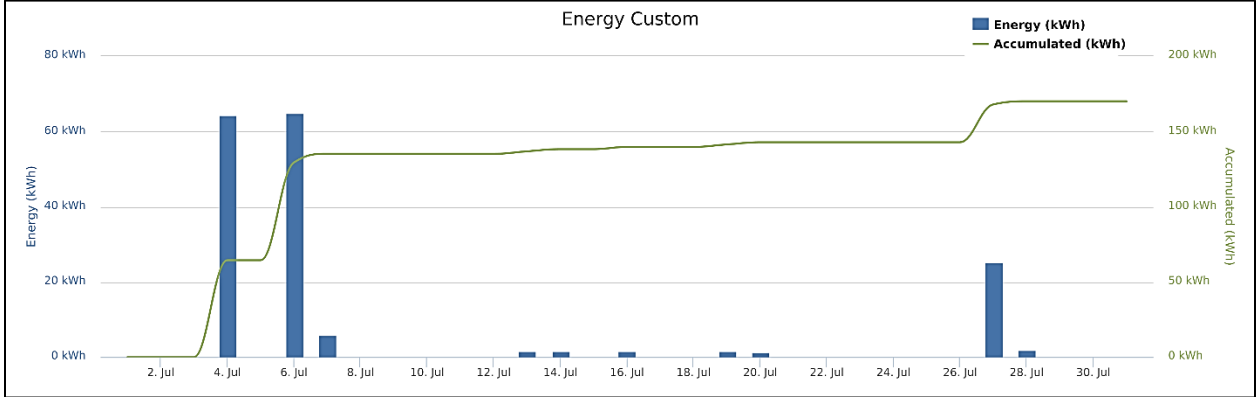
		This Month (July)	All Time
Miles Driven		579.64	14,242.47
Energy Consumed(kWh)		169.88	4,219.94
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$67.73	\$1,429.14
	Usage Cost Using EV(Electricity)	\$14.49	\$345.22
	Total Fuel Saving	\$53.24	\$1,083.92
Other Cost Saving	CV Costs	\$35.36	\$737.01
	EV Costs	\$15.07	\$314.49
	Total Other Cost Saving	\$20.29	\$422.52
Overall Economic Savings		\$73.53	\$1,506.44

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		579.64	14,242.47
Energy Consumed (kWh)		169.88	4,219.94
Co2 Emissions (lbs.)	CV (Gas)	452.45	11,737.42
	EV (Electricity)	255.49	4,869.73
	Total Fuel Saving	196.96	6,867.69
Co Emissions (lbs.)	CV (Gas)	3.6561	127.3626
	EV (Electricity)	0.1716	3.7274
	Total Fuel Saving	3.4846	123.6352
So2 Emissions (lbs.)	CV (Gas)	0.0054	0.2339
	EV (Electricity)	0.4670	10.9217
	Total Fuel Saving	(0.4616)	(10.6878)
Nox Emissions (lbs.)	CV (Gas)	0.1533	7.0562
	EV (Electricity)	0.7990	14.9782
	Total Fuel Saving	(0.6456)	(7.9220)
CH4 Emissions (lbs.)	CV (Gas)	0.0086	0.5395
	EV (Electricity)	0.0206	0.3597
	Total Fuel Saving	(0.0121)	0.1798
VOC Emissions (lbs.)	CV (Gas)	0.2152	5.5235
	EV (Electricity)	0.0045	0.0857
	Total Fuel Saving	0.2107	5.4378

Energy Consumption Data

July 2021



Ferguson House Station

Charging stations: One Level-2 station

The price of electricity per kWh: \$0.0757



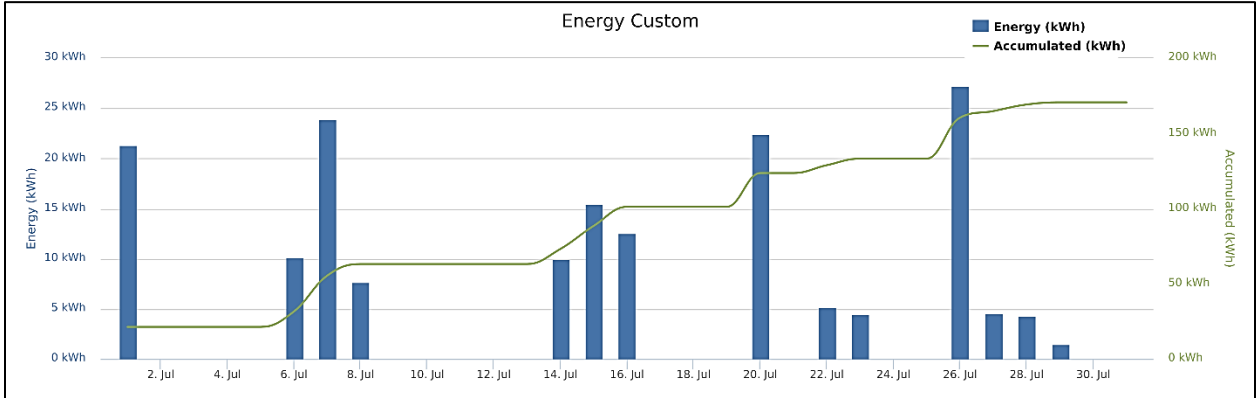
Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		582.27	16,440.36
Energy Consumed(kWh)		170.66	4,870.52
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$69.86	\$1,699.09
	Usage Cost Using EV(Electricity)	\$12.92	\$360.55
	Total Fuel Saving	\$56.94	\$1,338.54
Other Cost Saving	CV Costs	\$35.52	\$829.91
	EV Costs	\$15.14	\$398.32
	Total Other Cost Saving	\$20.38	\$431.60
Overall Economic Savings		\$77.32	\$1,770.13

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		582.27	16,440.36
Energy Consumed (kWh)		170.66	4,870.52
Co2 Emissions (lbs.)	CV (Gas)	454.50	13,766.04
	EV (Electricity)	206.76	5,771.48
	Total Fuel Saving	247.75	7,994.56
Co Emissions (lbs.)	CV (Gas)	3.6728	179.8715
	EV (Electricity)	0.1475	2.7230
	Total Fuel Saving	3.5253	177.1485
So2 Emissions (lbs.)	CV (Gas)	0.0054	0.3597
	EV (Electricity)	0.1516	6.3602
	Total Fuel Saving	(0.1462)	(6.0005)
Nox Emissions (lbs.)	CV (Gas)	0.1540	11.0240
	EV (Electricity)	0.2114	20.0386
	Total Fuel Saving	(0.0574)	(9.0146)
CH4 Emissions (lbs.)	CV (Gas)	0.0086	0.7910
	EV (Electricity)	0.0145	0.2038
	Total Fuel Saving	(0.0059)	0.5872
VOC Emissions (lbs.)	CV (Gas)	0.2162	6.5827
	EV (Electricity)	0.0039	0.1273
	Total Fuel Saving	0.2123	6.4553

Energy Consumption Data July 2021



Fremont

Charging stations: Two Level-2 station

The price of electricity per kWh: \$0.10825



Economic Saving Data (Fuel & Maintenance Cost Savings):

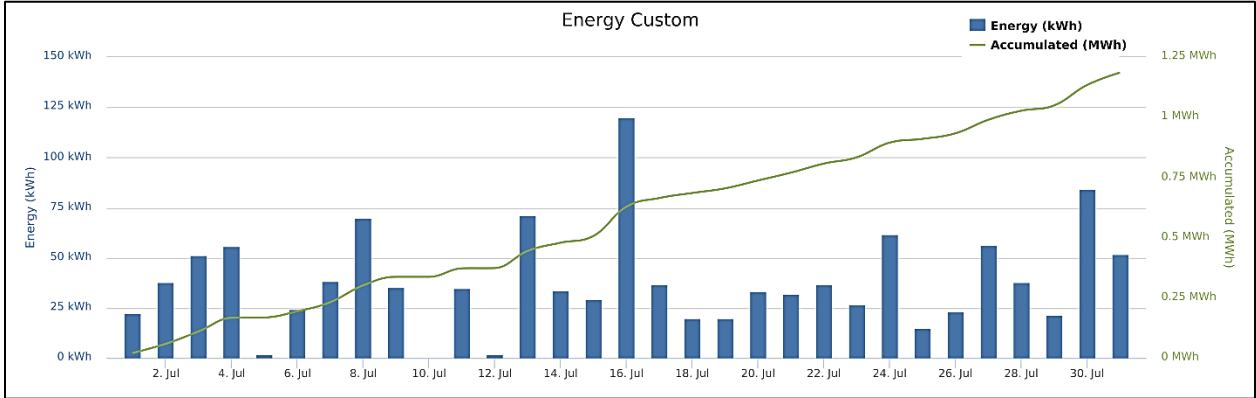
		This Month (July)	All Time
Miles Driven		4,043.08	69,263.85
Energy Consumed(kWh)		1,184.96	20,600.78
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$478.02	\$7,027.74
	Usage Cost Using EV(Electricity)	\$116.72	\$2,142.14
	Total Fuel Saving	\$361.30	\$4,885.61
Other Cost Saving	CV Costs	\$246.63	\$3,516.62
	EV Costs	\$105.12	\$1,169.39
	Total Other Cost Saving	\$141.51	\$2,347.23

Overall Economic Savings	\$502.81	\$7,232.83
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Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		4,043.08	69,263.85
Energy Consumed (kWh)		1,184.96	20,600.78
Co2 Emissions (lbs.)	CV (Gas)	3,155.9006	56,512.4272
	EV (Electricity)	1,735.3065	32,764.7387
	Total Fuel Saving	1,420.5941	23,747.6885
Co Emissions (lbs.)	CV (Gas)	25.5023	436.8913
	EV (Electricity)	1.5962	37.7034
	Total Fuel Saving	23.9061	399.1880
So2 Emissions (lbs.)	CV (Gas)	0.0374	0.6413
	EV (Electricity)	2.8192	51.2949
	Total Fuel Saving	(2.7818)	(50.6536)
Nox Emissions (lbs.)	CV (Gas)	1.0696	18.3241
	EV (Electricity)	1.8561	39.6977
	Total Fuel Saving	(0.7865)	(21.3736)
CH4 Emissions (lbs.)	CV (Gas)	0.0597	1.9229
	EV (Electricity)	0.2494	5.1993
	Total Fuel Saving	(0.1897)	(3.2764)
VOC Emissions (lbs.)	CV (Gas)	1.5010	25.7148
	EV (Electricity)	0.0182	0.4270
	Total Fuel Saving	1.4828	25.2878

Energy Consumption Data July 2021



Gothenburg

AFV: One Nissan Leaf Car

Charging stations: 0

The price of electricity per kWh: \$0.082

NOTE:

Data is calculated based on Mileage provided (7,882 Miles as of July 3, 2018.)

Total CO₂ emission reductions is 6,020.03 lbs.

Total CO reduction is 155.11 lbs.

Total SO₂ reduction is (5.30 lbs.)

Total NO_x reduction is 8.68 lbs.

Total CH₄ reduction is 0.6359 lbs.

Total VOC reduction is 3.556 lbs.

Total Cost benefits savings \$719.928

Gretna

Charging stations: Two Level-2 station
 The price of electricity per kWh: \$0.0898



Economic Saving Data (Fuel & Maintenance Cost Savings):

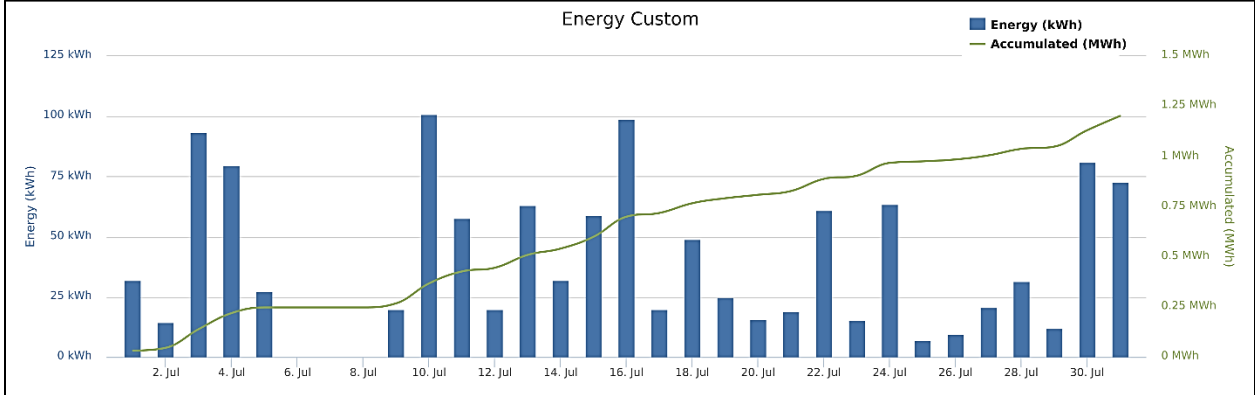
		This Month (July)	All Time
Miles Driven		4,102.21	71,019.60
Energy Consumed(kWh)		1202.29	21,018.33
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$484.59	\$7,132.16
	Usage Cost Using EV(Electricity)	\$102.19	\$1,858.38
	Total Fuel Saving	\$382.39	\$5,273.78
Other Cost Saving	CV Costs	\$250.24	\$3,787.49
	EV Costs	\$106.66	\$1,553.96
	Total Other Cost Saving	\$143.58	\$2,233.53
Overall Economic Savings		\$525.97	\$7,507.31

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		4,102.21	71,019.60
Energy Consumed (kWh)		1,202.29	21,018.33
Co2 Emissions (lbs.)	CV (Gas)	3,202.06	57,362.77
	EV (Electricity)	2,033.49	30,804.28
	Total Fuel Saving	1,168.57	26,558.49
Co Emissions (lbs.)	CV (Gas)	25.8753	540.5034
	EV (Electricity)	1.5333	25.1608
	Total Fuel Saving	24.3420	515.3426
So2 Emissions (lbs.)	CV (Gas)	0.0380	0.9093
	EV (Electricity)	3.2193	62.2257
	Total Fuel Saving	(3.1813)	(61.3163)
Nox Emissions (lbs.)	CV (Gas)	1.0853	26.8965
	EV (Electricity)	2.7730	46.7426
	Total Fuel Saving	(1.6877)	(19.8461)
CH4 Emissions (lbs.)	CV (Gas)	0.0606	2.1891
	EV (Electricity)	0.1842	2.7500
	Total Fuel Saving	(0.1236)	(0.5608)
VOC Emissions (lbs.)	CV (Gas)	1.5230	22.5159
	EV (Electricity)	0.0315	0.5178
	Total Fuel Saving	1.4915	21.9981

Energy Consumption Data

July 2021



Gretna (Fast DC charging):

Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		3,338.78	38,716.08
Energy Consumed(kWh)		978.54	11,414.05
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$394.36	\$3,868.60
	Usage Cost Using EV(Electricity)	\$83.18	\$982.59
	Total Fuel Saving	\$311.19	\$2,886.02
Other Cost Saving	CV Costs	\$203.67	\$2,203.79
	EV Costs	\$86.81	\$865.89
	Total Other Cost Saving	\$116.86	\$1,337.90
Overall Economic Savings		\$428.04	\$4,223.92

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		3,338.78	38,716.08
Energy Consumed (kWh)		978.54	11,414.05
Co2 Emissions (lbs.)	CV (Gas)	2,606.15	30,765.91
	EV (Electricity)	1,655.05	18,650.36
	Total Fuel Saving	951.10	12,115.55
Co Emissions (lbs.)	CV (Gas)	21.0598	244.2070
	EV (Electricity)	1.2479	14.8578
	Total Fuel Saving	19.8119	229.3492
So2 Emissions (lbs.)	CV (Gas)	0.0309	0.3585
	EV (Electricity)	2.6202	32.7296
	Total Fuel Saving	(2.5893)	(32.3711)
Nox Emissions (lbs.)	CV (Gas)	0.8833	10.2425
	EV (Electricity)	2.2569	26.6513
	Total Fuel Saving	(1.3737)	(16.4088)
CH4 Emissions (lbs.)	CV (Gas)	0.0493	0.7724
	EV (Electricity)	0.1499	1.7314
	Total Fuel Saving	(0.1006)	(0.9590)
VOC Emissions (lbs.)	CV (Gas)	1.2395	14.3737
	EV (Electricity)	0.0256	0.2957

	Total Fuel Saving	1.2139	14.0779
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Gretna (Two Level-2 stations):

Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		763.43	32,303.52
Energy Consumed(kWh)		223.75	9,604.28
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$90.23	\$3,263.55
	Usage Cost Using EV(Electricity)	\$19.02	\$875.79
	Total Fuel Saving	\$71.21	\$2,387.77
Other Cost Saving	CV Costs	\$46.57	\$1,583.70
	EV Costs	\$19.85	\$688.07
	Total Other Cost Saving	\$26.72	\$895.63
Overall Economic Savings		\$97.93	\$3,283.39

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		763.43	32,303.52
Energy Consumed (kWh)		223.75	9,604.28
Co2 Emissions (lbs.)	CV (Gas)	595.91	26,596.86
	EV (Electricity)	378.44	12,153.91
	Total Fuel Saving	217.47	14,442.95
Co Emissions (lbs.)	CV (Gas)	4.8155	296.2964
	EV (Electricity)	0.2853	10.3031
	Total Fuel Saving	4.5301	285.9933
So2 Emissions (lbs.)	CV (Gas)	0.0071	0.5509
	EV (Electricity)	0.5991	29.4961
	Total Fuel Saving	(0.5920)	(28.9452)
Nox Emissions (lbs.)	CV (Gas)	0.2020	16.6540
	EV (Electricity)	0.5161	20.0913
	Total Fuel Saving	(0.3141)	(3.4372)
CH4 Emissions (lbs.)	CV (Gas)	0.0113	1.4167
	EV (Electricity)	0.0343	1.0186
	Total Fuel Saving	(0.0230)	0.3981
VOC Emissions (lbs.)	CV (Gas)	0.2834	8.1423
	EV (Electricity)	0.0059	0.2221
	Total Fuel Saving	0.2776	7.9202

Hastings

AFV: One Nissan Leaf Car
 Charging stations: One Level-2 station The price of electricity per kWh: \$0.0769



Economic Saving Data (Fuel & Maintenance Cost Savings):

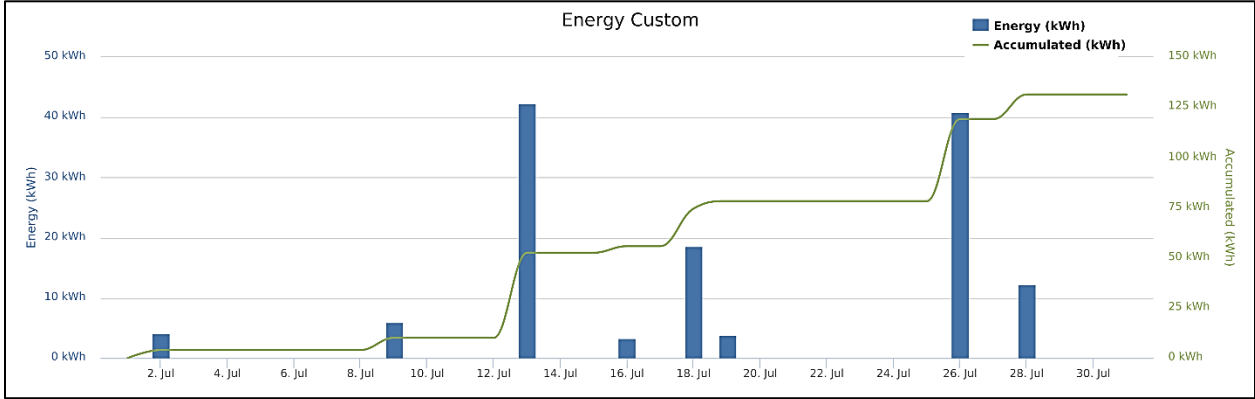
		This Month (July)	All Time
Miles Driven		448.12	4478.39
Energy Consumed(kWh)		131.34	1329.29
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$53.77	\$478.44
	Usage Cost Using EV(Electricity)	\$10.28	\$102.83
	Total Fuel Saving	\$43.49	\$375.62
Other Cost Saving	CV Costs	\$27.34	\$229.72
	EV Costs	\$11.65	\$90.59

	Total Other Cost Saving	\$15.68	\$139.14
Overall Economic Savings		\$59.17	\$514.75

Environmental Saving Data (Reduction in Emissions):

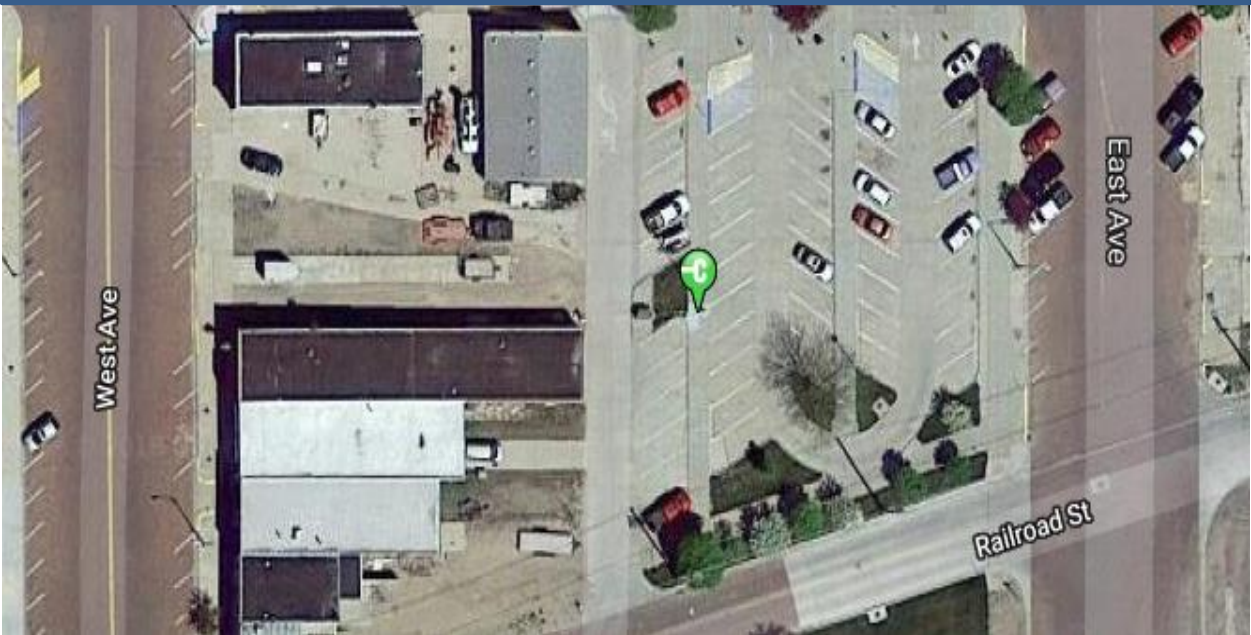
		This Month (July)	All Time
Miles Driven		448.12	4,478.39
Energy Consumed (kWh)		131.34	1,329.29
Co2 Emissions (lbs.)	CV (Gas)	349.78	3,632.92
	EV (Electricity)	288.08	2,485.54
	Total Fuel Saving	61.70	1,147.39
Co Emissions (lbs.)	CV (Gas)	2.8265	33.5848
	EV (Electricity)	0.1841	1.9363
	Total Fuel Saving	2.6424	31.6485
So2 Emissions (lbs.)	CV (Gas)	0.0041	0.0559
	EV (Electricity)	0.3451	3.4942
	Total Fuel Saving	(0.3409)	(3.4383)
Nox Emissions (lbs.)	CV (Gas)	0.1186	1.6523
	EV (Electricity)	0.3202	2.0828
	Total Fuel Saving	(0.2016)	(0.4305)
CH4 Emissions (lbs.)	CV (Gas)	0.0066	0.1493
	EV (Electricity)	0.0365	0.1607
	Total Fuel Saving	(0.0299)	(0.0114)
VOC Emissions (lbs.)	CV (Gas)	0.1664	1.6958
	EV (Electricity)	0.0021	0.0261
	Total Fuel Saving	0.1643	1.6697

Energy Consumption Data July 2021



City of Holdrege

Charging stations: One Level-2 station
 The price of electricity per kWh: \$0.09282



Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		152.84	3,399.77
Energy Consumed(kWh)		44.80	1,005.35
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$18.31	\$366.32
	Usage Cost Using EV(Electricity)	\$4.37	\$94.10

	Total Fuel Saving	\$13.94	\$272.22
Other Cost Saving	CV Costs	\$9.32	\$178.92
	EV Costs	\$3.97	\$83.96
	Total Other Cost Saving	\$5.35	\$94.96
Overall Economic Savings		\$19.29	\$367.18

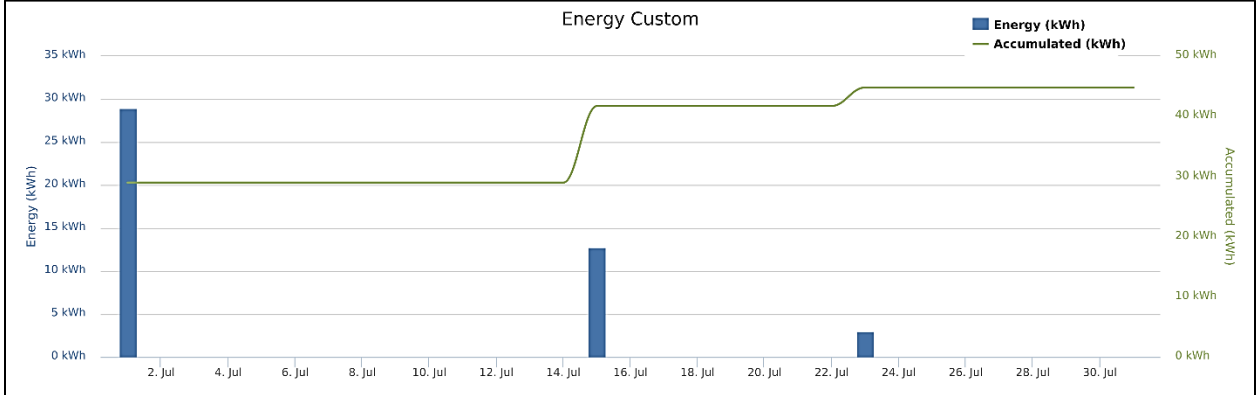
Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		152.84	3,399.77
Energy Consumed (kWh)		44.80	1,005.35
Co2 Emissions (lbs.)	CV (Gas)	119.30	2,771.50
	EV (Electricity)	67.37	1,126.22
	Total Fuel Saving	51.93	1,645.28
Co Emissions (lbs.)	CV (Gas)	0.9641	32.2525
	EV (Electricity)	0.0452	0.8183
	Total Fuel Saving	0.9188	31.4342
So2 Emissions (lbs.)	CV (Gas)	0.0014	0.0609
	EV (Electricity)	0.1231	2.5160
	Total Fuel Saving	(0.1217)	(2.4551)
Nox Emissions (lbs.)	CV (Gas)	0.0404	1.8465
	EV (Electricity)	0.2107	3.2712
	Total Fuel Saving	(0.1702)	(1.4247)
CH4 Emissions (lbs.)	CV (Gas)	0.0023	0.1368
	EV (Electricity)	0.0054	0.0769
	Total Fuel Saving	(0.0032)	0.0599
	CV (Gas)	0.0567	1.3299
	EV (Electricity)	0.0012	0.0201

VOC Emissions (lbs.)	Total Fuel Saving	0.0556	1.3098
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Energy Consumption Data

July 2021



Kearney

Charging stations: Three Level-2 station and Two DC stations
 The price of electricity per kWh: \$0.0853



Economic Saving Data (Fuel & Maintenance Cost Savings):

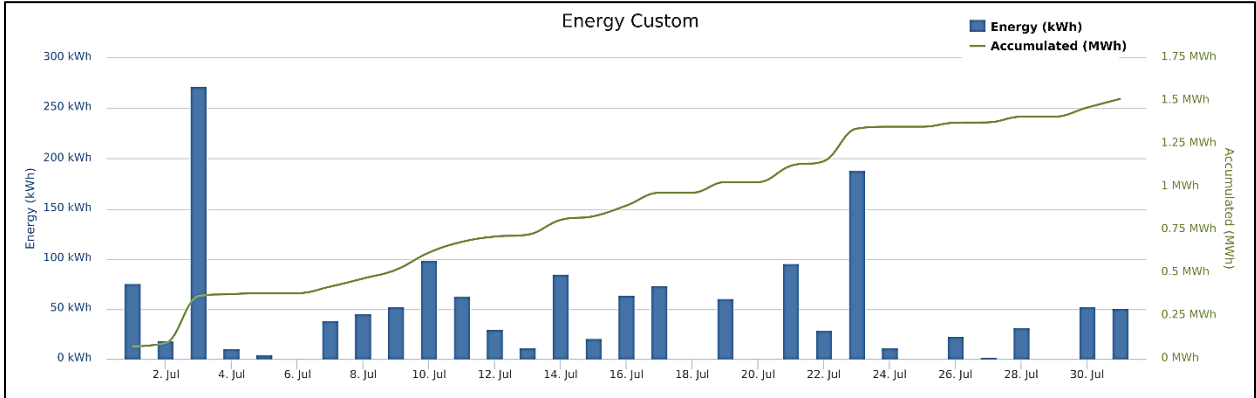
		This Month (July)	All Time
Miles Driven		5,158.77	78,441.88
Energy Consumed(kWh)		1,511.95	23,251.26
Fuel Cost Caving	Usage Cost Using CV(Gas)	\$611.67	\$8,360.71
	Usage Cost Using EV(Electricity)	\$128.97	\$2,003.29
	Total Fuel Saving	\$482.70	\$6,357.42
Other Cost Saving	CV Costs	\$314.68	\$4,077.42
	EV Costs	\$134.13	\$1,699.53
	Total Other Cost Saving	\$180.56	\$2,377.88

Overall Economic Savings	\$663.26	\$8,735.31
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Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		5,158.77	78,441.88
Energy Consumed (kWh)		1,511.95	23,251.26
Co2 Emissions (lbs.)	CV (Gas)	4,026.77	63,475.02
	EV (Electricity)	2,273.86	28,003.65
	Total Fuel Saving	1,752.91	35,471.37
Co Emissions (lbs.)	CV (Gas)	32.5397	620.0749
	EV (Electricity)	1.5271	20.4897
	Total Fuel Saving	31.0125	599.5852
So2 Emissions (lbs.)	CV (Gas)	0.0478	1.0671
	EV (Electricity)	4.1561	58.1691
	Total Fuel Saving	(4.1083)	(57.1020)
Nox Emissions (lbs.)	CV (Gas)	1.3648	31.7295
	EV (Electricity)	7.1107	82.8762
	Total Fuel Saving	(5.7459)	(51.1467)
CH4 Emissions (lbs.)	CV (Gas)	0.0762	2.6994
	EV (Electricity)	0.1835	1.9907
	Total Fuel Saving	(0.1073)	0.7087
VOC Emissions (lbs.)	CV (Gas)	1.9152	29.9031
	EV (Electricity)	0.0397	0.4659
	Total Fuel Saving	1.8755	29.4372

Energy Consumption Data July 2021



Kearney (Fast DC charging):

Economic Saving Data (Fuel & Maintenance Cost Savings):

<u>YOUNES NORTH& NORTH2</u>		This Month (October)	All Time
Miles Driven		2,432.48	4,603.49
Energy Consumed(kWh)		712.92	1,349.21
Fuel Cost Caving	Usage Cost Using CV(Gas)	288.44	541.44
	Usage Cost Using EV(Electricity)	60.81	115.09
	Total Fuel Saving	227.63	426.35
Other Cost Saving	CV Costs	148.38	280.81
	EV Costs	63.24	119.69
	Total Other Cost Saving	85.14	161.12
Overall Economic Savings		312.77	587.47

Environmental Saving Data (Reduction in Emissions):

<u>YOUNES NORTH& NORTH2</u>		This Month (October)	All Time
Miles Driven		2,432.48	4,603.49
Energy Consumed (kWh)		712.92	1,349.21
Co2 Emissions (lbs.)	CV (Gas)	1,898.715	3,593.337
	EV (Electricity)	1,072.178	2,029.107
	Total Fuel Saving	826.537	1,564.229
Co Emissions (lbs.)	CV (Gas)	15.343	29.037
	EV (Electricity)	0.720	1.363
	Total Fuel Saving	14.623	27.674
So2 Emissions (lbs.)	CV (Gas)	0.023	0.043
	EV (Electricity)	1.960	3.709
	Total Fuel Saving	-1.937	-3.666
Nox Emissions (lbs.)	CV (Gas)	0.644	1.218
	EV (Electricity)	3.353	6.345
	Total Fuel Saving	-2.709	-5.127
CH4 Emissions (lbs.)	CV (Gas)	0.036	0.068
	EV (Electricity)	0.087	0.164
	Total Fuel Saving	-0.051	-0.096
VOC Emissions (lbs.)	CV (Gas)	0.903	1.709
	EV (Electricity)	0.019	0.035
	Total Fuel Saving	0.884	1.674

Kearney (Level-2 stations):

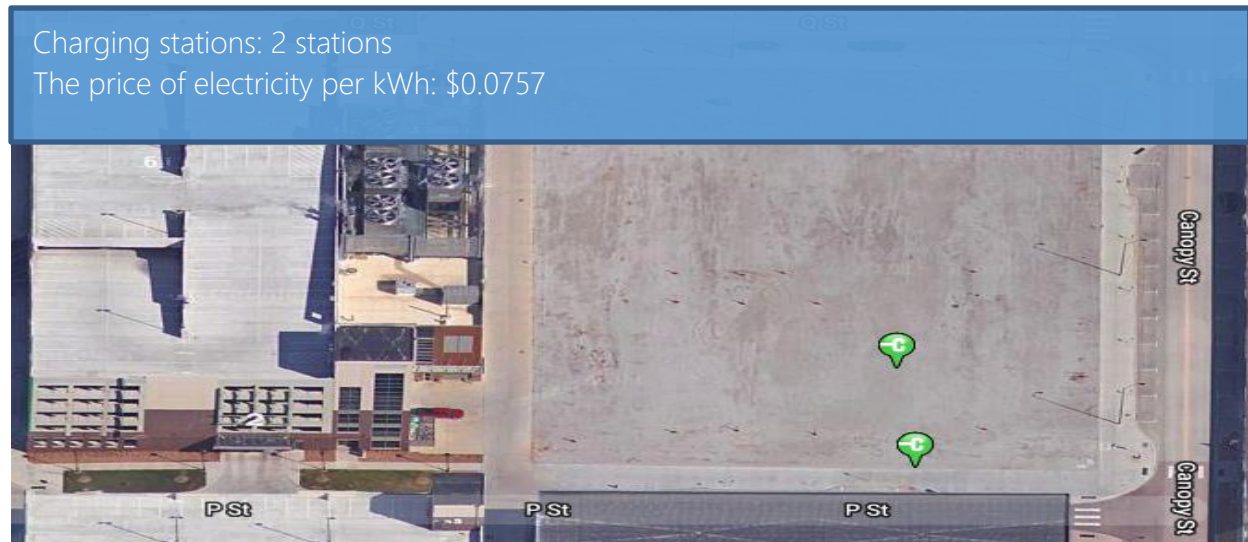
Economic Saving Data (Fuel & Maintenance Cost Savings):

-		This Month (October)	All Time
Miles Driven		2,726.29	73,838.39
Energy Consumed(kWh)		799.03	21,902.05
Fuel Cost Caving	Usage Cost Using CV(Gas)	323.23	7,819.27
	Usage Cost Using EV(Electricity)	68.16	1,888.20
	Total Fuel Saving	255.07	5,931.07
Other Cost Saving	CV Costs	166.30	3,796.60
	EV Costs	70.88	1,579.84
	Total Other Cost Saving	95.42	2,216.76
Overall Economic Savings		350.49	8,147.83

Environmental Saving Data (Reduction in Emissions):

		This Month (October)	All Time
-			
Miles Driven		2,726.29	73,838.39
Energy Consumed (kWh)		799.03	21,902.05
Co2 Emissions (lbs.)	CV (Gas)	2,128.05	59,881.68
	EV (Electricity)	1,201.68	25,974.54
	Total Fuel Saving	926.37	33,907.14
Co Emissions (lbs.)	CV (Gas)	17.20	591.04
	EV (Electricity)	0.81	19.13
	Total Fuel Saving	16.39	571.91
So2 Emissions (lbs.)	CV (Gas)	0.03	1.02
	EV (Electricity)	2.20	54.46
	Total Fuel Saving	(2.17)	(53.44)
Nox Emissions (lbs.)	CV (Gas)	0.72	30.51
	EV (Electricity)	3.76	76.53
	Total Fuel Saving	(3.04)	(46.02)
CH4 Emissions (lbs.)	CV (Gas)	0.04	2.63
	EV (Electricity)	0.10	1.83
	Total Fuel Saving	(0.06)	0.80
VOC Emissions (lbs.)	CV (Gas)	1.01	28.19
	EV (Electricity)	0.02	0.43
	Total Fuel Saving	0.99	27.76

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Economic Saving Data (Fuel & Maintenance Cost Savings):

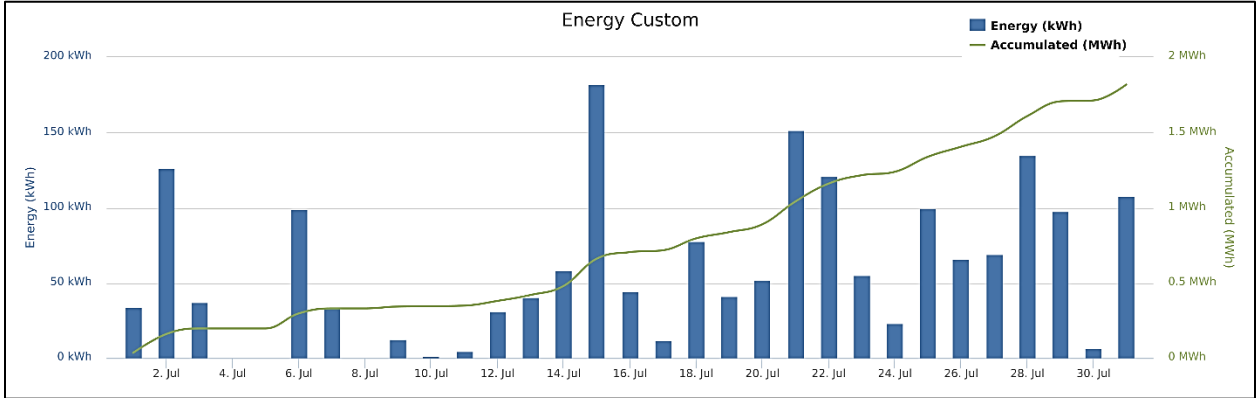
		This Month (July)	All Time
Miles Driven		6,208.46	99,851.78
Energy Consumed(kWh)		1819.595	29,782.04
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$745.98	\$10,646.53
	Usage Cost Using EV(Electricity)	\$254.74	\$2,564.58
	Total Fuel Saving	\$491.24	\$8,081.96
Other Cost Saving	CV Costs	\$378.72	\$4,740.02
	EV Costs	\$161.42	\$1,751.89
	Total Other Cost Saving	\$217.30	\$2,988.13

Overall Economic Savings	\$708.53	\$11,070.09
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Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		6,208.46	99,851.78
Energy Consumed (kWh)		1,819.60	29,782.04
Co2 Emissions (lbs.)	CV (Gas)	4,846.12	83,218.17
	EV (Electricity)	2,204.55	46,314.09
	Total Fuel Saving	2,641.58	36,904.08
Co Emissions (lbs.)	CV (Gas)	39.1607	830.2302
	EV (Electricity)	1.5725	15.6547
	Total Fuel Saving	37.5882	814.5755
So2 Emissions (lbs.)	CV (Gas)	0.0575	1.4699
	EV (Electricity)	1.6159	19.8472
	Total Fuel Saving	(1.5584)	(18.3773)
Nox Emissions (lbs.)	CV (Gas)	1.6425	43.9749
	EV (Electricity)	2.2543	188.0124
	Total Fuel Saving	(0.6118)	(144.0374)
CH4 Emissions (lbs.)	CV (Gas)	0.0917	4.0919
	EV (Electricity)	0.1550	1.2657
	Total Fuel Saving	(0.0633)	2.8263
VOC Emissions (lbs.)	CV (Gas)	2.3049	38.3281
	EV (Electricity)	0.0415	0.9233
	Total Fuel Saving	2.2635	37.4048

Energy Consumption Data July 2021



Lexington

Charging stations: Two Level-2 station
 The price of electricity per kWh: \$0.1405



Economic Saving Data (Fuel & Maintenance Cost Savings):

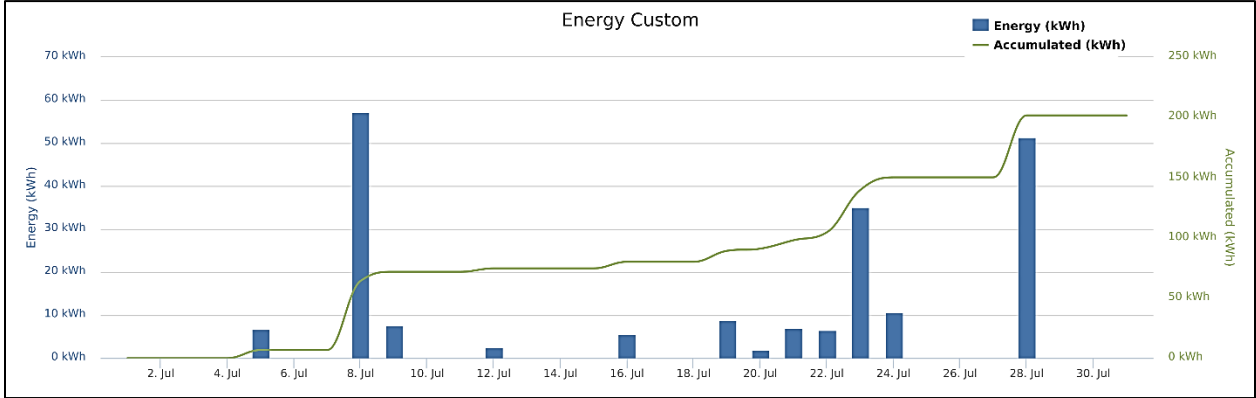
		This Month (July)	All Time
Miles Driven		687.55	34,830.93
Energy Consumed(kWh)		201.508	10,324.95
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$82.52	\$3,494.59
	Usage Cost Using EV(Electricity)	\$15.25	\$1,111.26
	Total Fuel Saving	\$67.27	\$2,383.32
Other Cost Saving	CV Costs	\$41.94	\$1,774.83
	EV Costs	\$17.88	\$796.86
	Total Other Cost Saving	\$24.06	\$977.96

Overall Economic Savings	\$91.33	\$3,361.29
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Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		687.55	34,830.93
Energy Consumed (kWh)		201.51	10,324.95
Co2 Emissions (lbs.)	CV (Gas)	536.68	28,757.76
	EV (Electricity)	303.05	11,384.37
	Total Fuel Saving	233.62	17,373.39
Co Emissions (lbs.)	CV (Gas)	4.3368	333.6765
	EV (Electricity)	0.2035	8.5895
	Total Fuel Saving	4.1333	325.0870
So2 Emissions (lbs.)	CV (Gas)	0.0064	0.6327
	EV (Electricity)	0.5539	25.7124
	Total Fuel Saving	(0.5475)	(25.0797)
Nox Emissions (lbs.)	CV (Gas)	0.1819	19.2014
	EV (Electricity)	0.9477	33.5509
	Total Fuel Saving	(0.7658)	(14.3494)
CH4 Emissions (lbs.)	CV (Gas)	0.0102	1.4696
	EV (Electricity)	0.0245	0.7859
	Total Fuel Saving	(0.0143)	0.6837
VOC Emissions (lbs.)	CV (Gas)	0.2553	13.6466
	EV (Electricity)	0.0053	0.2000
	Total Fuel Saving	0.2500	13.4466

Energy Consumption Data July 2021



Lincoln

Charging stations: Eleven Level-2 stations
 The price of electricity per kWh: \$0.0757



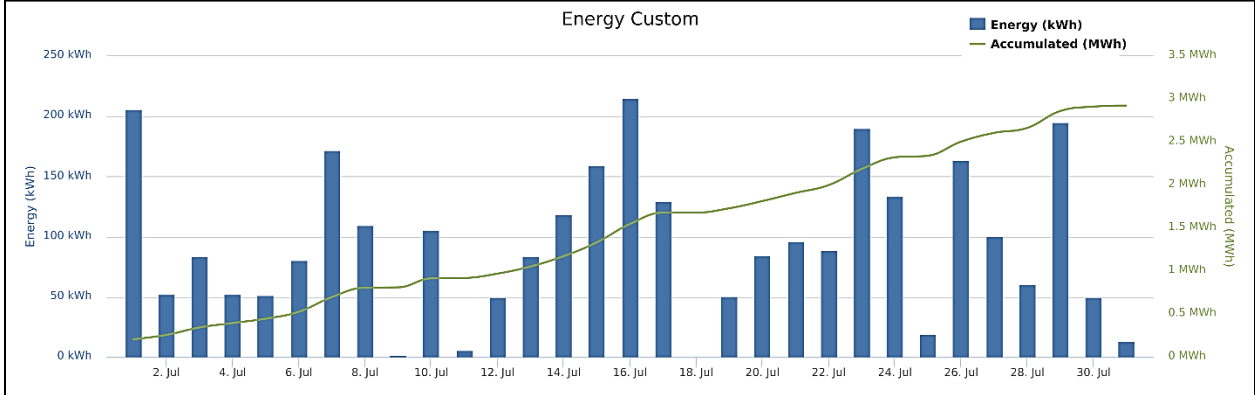
Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		9,977.60	248,542.85
Energy Consumed(kWh)		2,924.27	74,069.62
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$1,197.65	\$26,115.55
	Usage Cost Using EV(Electricity)	\$221.37	\$5,576.60
	Total Fuel Saving	\$976.28	\$20,538.96
Other Cost Saving	CV Costs	\$608.63	\$12,081.11
	EV Costs	\$259.42	\$4,475.95
	Total Other Cost Saving	\$349.22	\$7,605.15
Overall Economic Savings		\$1,325.50	\$28,144.11

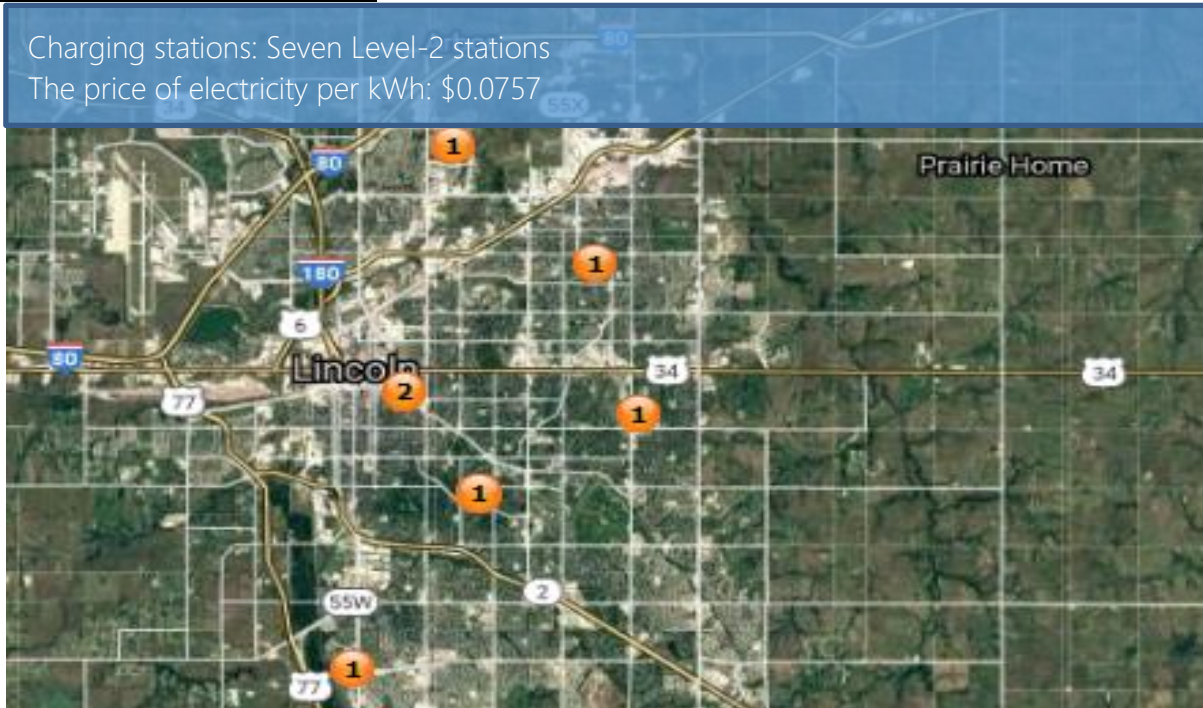
Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		9,977.60	248,542.85
Energy Consumed (kWh)		2,924.27	74,069.62
Co2 Emissions (lbs.)	CV (Gas)	7,788.19	201,881.47
	EV (Electricity)	3,542.92	119,059.39
	Total Fuel Saving	4,245.27	82,822.08
Co Emissions (lbs.)	CV (Gas)	62.9351	1,776.0773
	EV (Electricity)	2.5272	39.8926
	Total Fuel Saving	60.4079	1,736.1847
So2 Emissions (lbs.)	CV (Gas)	0.0924	2.8679
	EV (Electricity)	2.5969	54.2656
	Total Fuel Saving	(2.5045)	(51.3977)
Nox Emissions (lbs.)	CV (Gas)	2.6396	84.0028
	EV (Electricity)	3.6228	450.3150
	Total Fuel Saving	(0.9832)	(366.3123)
CH4 Emissions (lbs.)	CV (Gas)	0.1474	8.9811
	EV (Electricity)	0.2491	3.2609
	Total Fuel Saving	(0.1017)	5.7202
VOC Emissions (lbs.)	CV (Gas)	3.7043	93.5504
	EV (Electricity)	0.0666	2.3039
	Total Fuel Saving	3.6376	91.2466

Energy Consumption Data July 2021



Lincoln Public Schools



Economic Saving Data (Fuel & Maintenance Cost Savings):

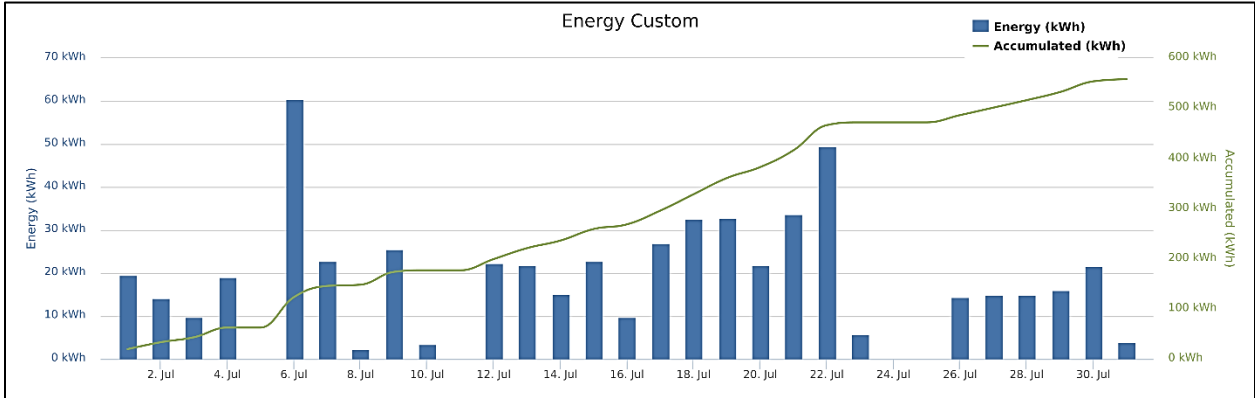
		This Month (July)	All Time
Miles Driven		1,902.50	9,904.53
Energy Consumed(kWh)		557.59	2,902.85
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$228.32	\$1,085.66
	Usage Cost Using EV(Electricity)	\$42.21	\$219.75
	Total Fuel Saving	\$186.11	\$865.91
Other Cost Saving	CV Costs	\$116.05	\$604.18
	EV Costs	\$49.47	\$257.52

	Total Other Cost Saving	\$66.59	\$346.66
Overall Economic Savings		\$252.70	\$1,212.57

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		1,902.50	9,904.53
Energy Consumed (kWh)		557.59	2,902.85
Co2 Emissions (lbs.)	CV (Gas)	1,485.03	7,731.16
	EV (Electricity)	675.55	3,516.98
	Total Fuel Saving	809.48	4,214.18
Co Emissions (lbs.)	CV (Gas)	12.0003	62.4742
	EV (Electricity)	0.4819	2.5087
	Total Fuel Saving	11.5184	59.9655
So2 Emissions (lbs.)	CV (Gas)	0.0176	0.0917
	EV (Electricity)	0.4952	2.5779
	Total Fuel Saving	(0.4776)	(2.4862)
Nox Emissions (lbs.)	CV (Gas)	0.5033	2.6203
	EV (Electricity)	0.6908	3.5963
	Total Fuel Saving	(0.1875)	(0.9760)
CH4 Emissions (lbs.)	CV (Gas)	0.0281	0.1463
	EV (Electricity)	0.0475	0.2473
	Total Fuel Saving	(0.0194)	(0.1010)
VOC Emissions (lbs.)	CV (Gas)	0.7063	3.6771
	EV (Electricity)	0.0127	0.0661
	Total Fuel Saving	0.6936	3.6110

Energy Consumption Data July 2021



Metropolitan Community College

Charging stations: Two Level-2 station (same location)
 The price of electricity per kWh: \$0.0898



Economic Saving Data (Fuel & Maintenance Cost Savings):

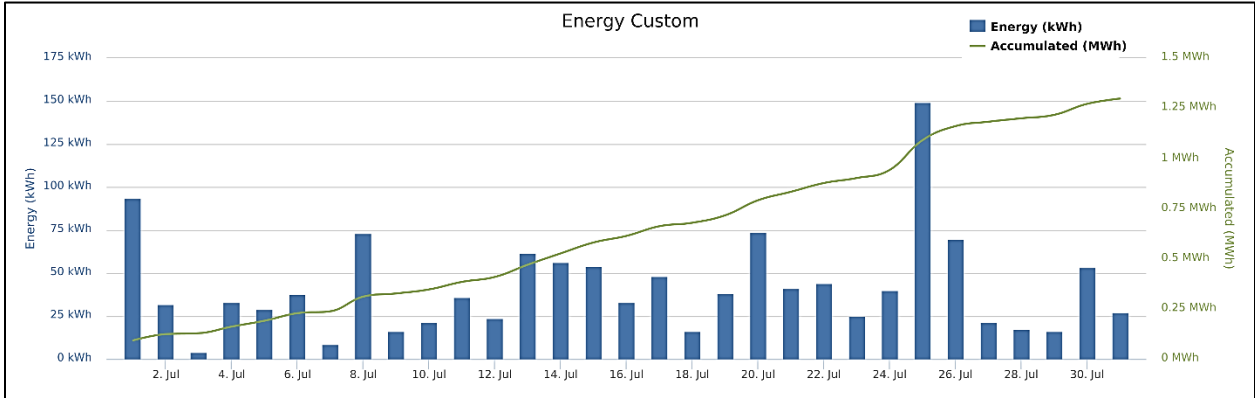
		This Month (July)	All Time
Miles Driven		4,429.11	73,351.34
Energy Consumed(kWh)		1,298.10	21,895.76
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$524.23	\$7,559.94
	Usage Cost Using EV(Electricity)	\$110.34	\$1,942.61
	Total Fuel Saving	\$413.89	\$5,617.33
Other Cost Saving	CV Costs	\$270.18	\$3,533.93
	EV Costs	\$115.16	\$1,093.70
	Total Other Cost Saving	\$155.02	\$2,440.23

Overall Economic Savings	\$568.91	\$8,057.56
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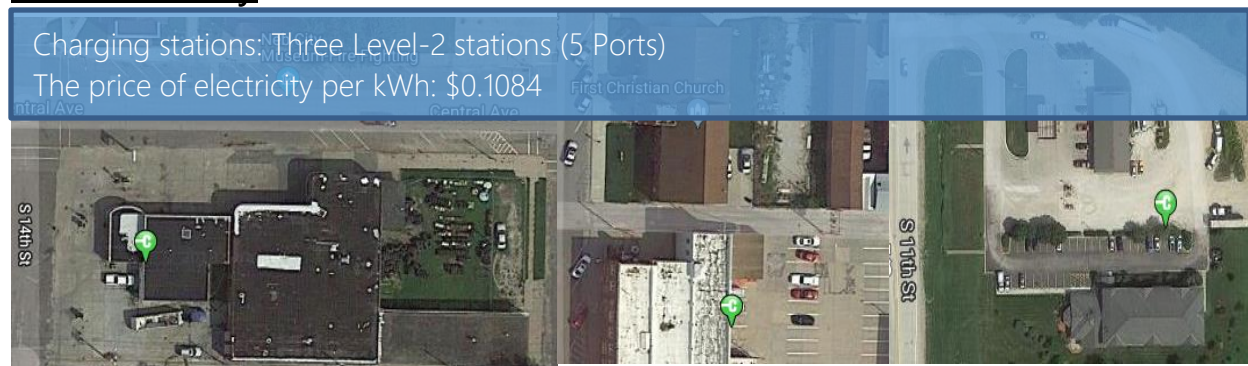
Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		4,429.11	73,351.34
Energy Consumed (kWh)		1,298.10	21,895.76
Co2 Emissions (lbs.)	CV (Gas)	3,457.223	60,285.550
	EV (Electricity)	2,195.533	32,987.153
	Total Fuel Saving	1,261.690	27,298.397
Co Emissions (lbs.)	CV (Gas)	27.9372	462.6872
	EV (Electricity)	1.6554	29.2953
	Total Fuel Saving	26.2818	433.3918
So2 Emissions (lbs.)	CV (Gas)	0.0410	0.6792
	EV (Electricity)	3.4758	71.4728
	Total Fuel Saving	(3.4348)	(70.7936)
Nox Emissions (lbs.)	CV (Gas)	1.1717	19.4061
	EV (Electricity)	2.9940	52.1804
	Total Fuel Saving	(1.8222)	(32.7743)
CH4 Emissions (lbs.)	CV (Gas)	0.0654	2.3078
	EV (Electricity)	0.1989	3.1841
	Total Fuel Saving	(0.1334)	(0.8763)
VOC Emissions (lbs.)	CV (Gas)	1.6443	27.2304
	EV (Electricity)	0.0340	0.5513
	Total Fuel Saving	1.6103	26.6791

Energy Consumption Data July 2021



Nebraska City



Data from Two existing charging station with three ports

		This Month (July)	All Time
Miles Driven		4,097.11	65,033.05
Energy Consumed(kWh)		1200.793	19,282.46
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$484.86	\$6,778.91
	Usage Cost Using EV(Electricity)	\$130.17	\$2,063.00
	Total Fuel Saving	\$354.69	\$4,715.91
Other Cost Saving	CV Costs	\$249.92	\$3,316.59
	EV Costs	\$106.52	\$1,434.71
	Total Other Cost Saving	\$143.40	\$1,881.88
Overall Economic Savings		\$498.09	\$6,597.78

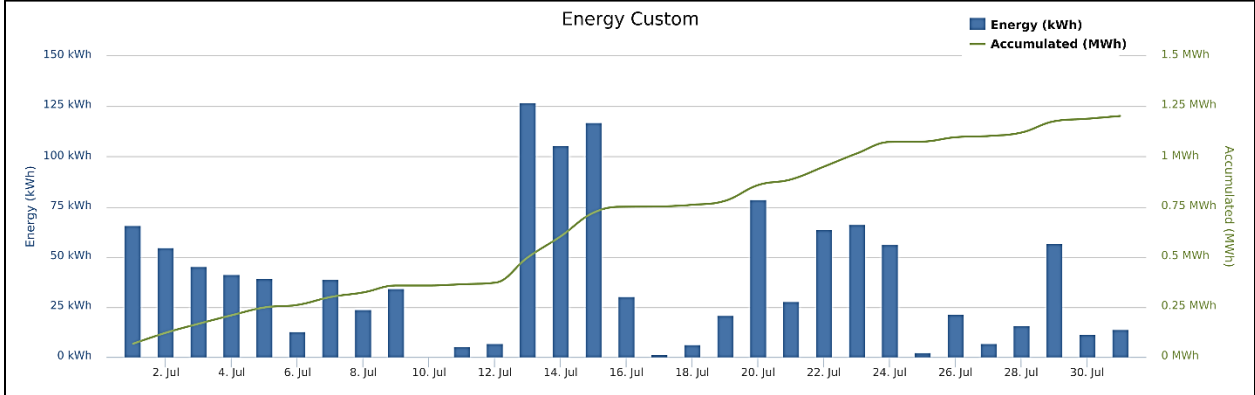
Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		4,097.11	65,033.05
Energy Consumed (kWh)		1,200.79	19,282.46
Co2 Emissions (lbs.)	CV (Gas)	3,198.07	53,894.01
	EV (Electricity)	884.75	15,650.07
	Total Fuel Saving	2,313.32	38,243.94
Co Emissions (lbs.)	CV (Gas)	25.8431	608.1712
	EV (Electricity)	0.8617	15.4298
	Total Fuel Saving	24.9813	592.7414
So2 Emissions (lbs.)	CV (Gas)	0.0379	1.1411
	EV (Electricity)	1.5374	33.8553
	Total Fuel Saving	(1.4995)	(32.7143)
Nox Emissions (lbs.)	CV (Gas)	1.0839	34.5513
	EV (Electricity)	0.4839	12.9260
	Total Fuel Saving	0.6000	21.6253
CH4 Emissions (lbs.)	CV (Gas)	0.0605	2.6388
	EV (Electricity)	0.1273	1.3135
	Total Fuel Saving	(0.0667)	1.3253
VOC Emissions (lbs.)	CV (Gas)	1.5211	25.3886
	EV (Electricity)	0.0098	0.2437
	Total Fuel Saving	1.5113	25.1450

CNG Data – No new data for July 2021, this is from previous calculations.

		Total
Miles driven		36,520.0
Fuel cost Savings:	Usage Cost Using CV (Gas)	\$4,512.16
	Usage Cost Using CNG (Natural gas)	\$2,834.56
	Total Fuel Savings	\$1,677.60
CO2 Emissions (lbs.)	CV (Gas)	37,613.59
	CNG (Natural Gas)	30,048.11
	Overall Emission Reductions	7,565.48
CO Emissions (lbs.)	CV (Gas)	799.68
	CNG (Natural Gas)	1,439.27
	Overall Emission Reductions	(639.59)
SO2 Emissions (lbs.)	CV (Gas)	1.029
	CNG (Natural Gas)	0.1527
	Overall Emission Reductions	0.8763
NOx Emissions (lbs.)	CV (Gas)	22.09
	CNG (Natural Gas)	27.69
	Overall Emission Reductions	(5.6)
CH4 Emissions (lbs.)	CV (Gas)	1.31
	CNG (Natural Gas)	49.68
	Overall Emission Reductions	(48.37)
VOC Emissions (lbs.)	CV (Gas)	19.39
	CNG (Natural Gas)	22.52
	Overall Emission Reductions	(3.13)

Energy Consumption Data July 2021



Nebraska City

- Data from one existing charging station with two ports

Economic Saving Data (Fuel & Maintenance Cost Savings):

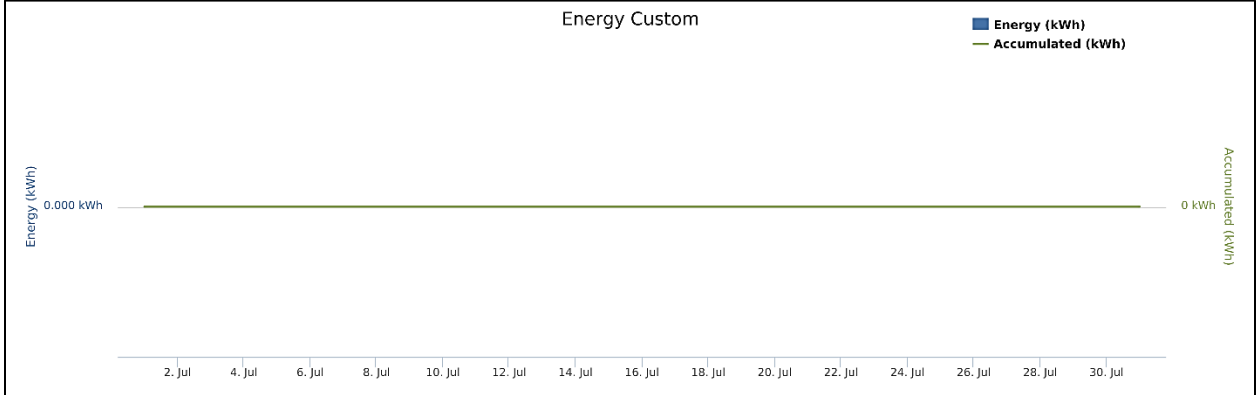
		This Month (July)	All Time
Miles driven		0	5,861.28
Energy consumed (kWh)		0	1,723.9
Fuel cost Savings:	Usage Cost Using CV (Gas)	\$0	\$618.62
	Usage Cost Using EV (Electricity)	\$0	\$176.3
	Total Fuel Savings	\$0	\$442.32
Other Cost Savings:	CV Costs	\$0	\$293.75
	EV Costs	\$0	\$216.76
	Total Other Cost Savings	\$0	\$76.99
Overall Economic Savings		\$0	\$519.31

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles driven		0	5,861.28
Energy consumed (kWh)		0	1,723.9
CO2 Emissions (lbs.)	CV (Gas)	0	5,623.17
	EV (Electricity)	0	681.15
	Overall Emission Reductions	0	4,942.02
CO Emissions (lbs.)	CV (Gas)	0	125.4104
	EV (Electricity)	0	0.8314
	Overall Emission Reductions	0	124.579
SO2 Emissions (lbs.)	CV (Gas)	0	0.2916
	EV (Electricity)	0	4.5738
	Overall Emission Reductions	(0)	(4.2822)
NOx Emissions (lbs.)	CV (Gas)	0	9.1734
	EV (Electricity)	0	2.2423
	Overall Emission Reductions	(0)	6.9311
CH4 Emissions (lbs.)	CV (Gas)	0	0.5377
	EV (Electricity)	0	0.0286
	Overall Emission Reductions	0	0.5091
VOC Emissions (lbs.)	CV (Gas)	0	2.8789
	EV (Electricity)	0	0.0335
	Overall Emission Reductions	0	2.8454

Energy Consumption Data

July 2021



Nebraska City Savings Summary

Overall Economic Savings		\$8,794.69
Overall Emission Reductions (lbs.)	CO2	50,751.4447
	CO	717.3204
	SO2	(36.9965)
	NOX	28.5564
	CH4	1.8344
	VOC	27.9904

Norfolk

Charging stations: One Level-2 station
 The price of electricity per kWh: \$0.0898



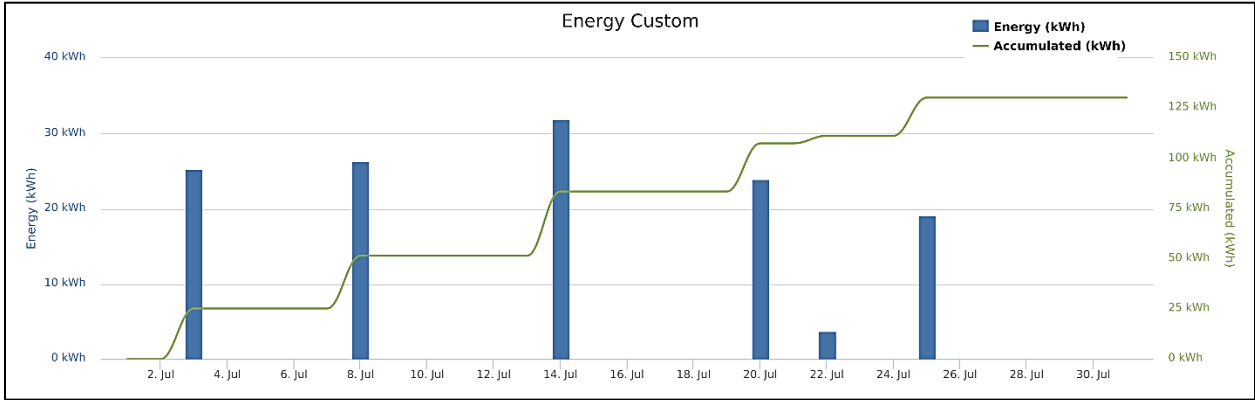
Total Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		444.542656	1,533.42
Energy Consumed(kWh)		130.288	449.42
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$35.0	\$121.70
	Usage Cost Using EV(Electricity)	\$15.23	\$52.54
	Total Fuel Saving	\$20.07	\$69.16
Other Cost Saving	CV Costs	\$27.12	\$93.54
	EV Costs	\$11.56	\$39.87
	Total other cost Saving	\$15.56	\$53.67
Overall Economic Savings		\$35.63	\$122.83

Environmental Saving Data (Reduction in Emissions):

		This Month (December)	All Time
Miles Driven		444.5427	1,533.42
Energy Consumed (kWh)		130.2880	449.42
Co2 Emissions (lbs.)	CV (Gas)	346.996	1196.939
	EV (Electricity)	123.523	426.086
	Total Fuel Saving	223.472	770.853
Co Emissions (lbs.)	CV (Gas)	2.804	9.672
	EV (Electricity)	0.024	0.082
	Total Fuel Saving	2.780	9.590
So2 Emissions (lbs.)	CV (Gas)	0.004	0.014
	EV (Electricity)	0.219	0.756
	Total Fuel Saving	(0.2151)	(0.7420)
Nox Emissions (lbs.)	CV (Gas)	0.118	0.406
	EV (Electricity)	2.431	8.385
	Total Fuel Saving	(2.3131)	(7.9790)
CH4 Emissions (lbs.)	CV (Gas)	0.007	0.023
	EV (Electricity)	0.005	0.017
	Total Fuel Saving	0.0015	0.0053
VOC Emissions (lbs.)	CV (Gas)	0.165	0.569
	EV (Electricity)	0.003	0.011
	Total Fuel Saving	0.1620	0.5588

Energy Consumption Data July 2021



Nebraska Safety Center at UNK

Charging stations: One Level-2 station
 The price of electricity per kWh: \$0.0898



Total Economic Saving Data (Fuel & Maintenance Cost Savings):

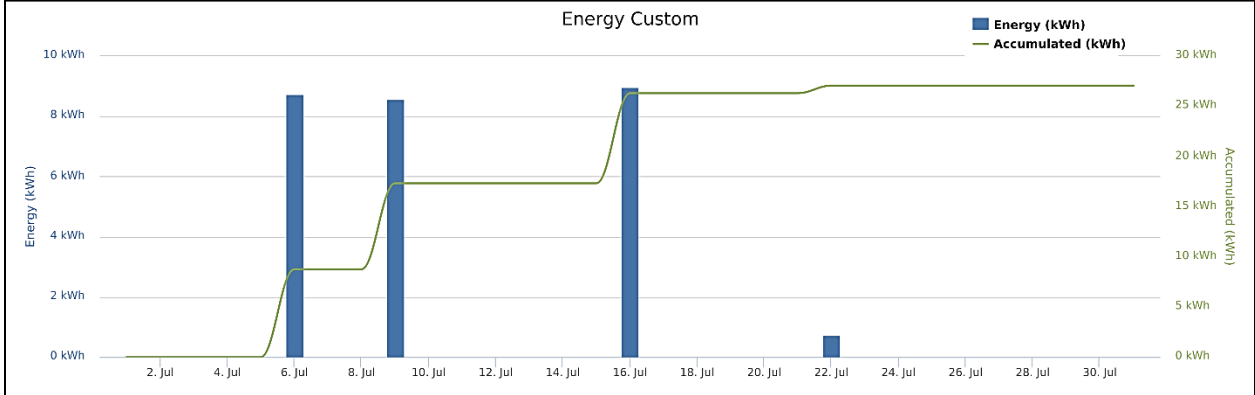
		This Month (July)	All Time
Miles Driven		92.26	781.34
Energy Consumed(kWh)		27.04	231.01
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$10.93	\$80.04
	Usage Cost Using EV(Electricity)	\$2.31	\$19.70
	Total Fuel Saving	\$8.62	\$60.33
Other Cost Saving	CV Costs	\$5.63	\$42.94
	EV Costs	\$2.40	\$16.10
	Total Other Cost Saving	\$3.23	\$26.83
Overall Economic Savings		\$11.85	\$87.16

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		92.26	781.34
Energy Consumed (kWh)		27.04	231.01
Co2 Emissions (lbs.)	CV (Gas)	72.01	626.22
	EV (Electricity)	40.66	325.01
	Total Fuel Saving	31.35	301.20
Co Emissions (lbs.)	CV (Gas)	0.5819	4.9284
	EV (Electricity)	0.0273	0.2328
	Total Fuel Saving	0.5546	4.6957
So2 Emissions (lbs.)	CV (Gas)	0.0009	0.0072
	EV (Electricity)	0.0743	0.6070
	Total Fuel Saving	(0.0735)	(0.5997)
Nox Emissions (lbs.)	CV (Gas)	0.0244	0.2067
	EV (Electricity)	0.1272	1.0069
	Total Fuel Saving	(0.1028)	(0.8002)
CH4 Emissions (lbs.)	CV (Gas)	0.0014	0.0175
	EV (Electricity)	0.0033	0.0254
	Total Fuel Saving	(0.0019)	(0.0079)
VOC Emissions (lbs.)	CV (Gas)	0.0343	0.2901
	EV (Electricity)	0.0007	0.0053
	Total Fuel Saving	0.0335	0.2848

Energy Consumption Data

July 2021



NP Dodge

Charging stations: Two Level-2 stations
 The price of electricity per kWh: \$ 0.085



Total Economic Saving Data (Fuel & Maintenance Cost Savings):

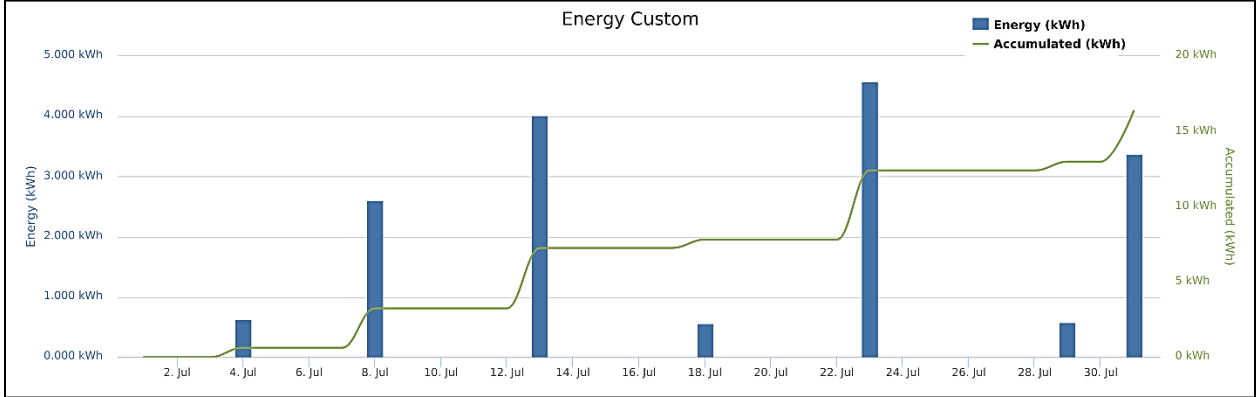
		This Month (July)	All Time
Miles Driven		55.78	10,468.13
Energy Consumed(KWh)		16.35	3,102.55
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$6.61	\$982.51
	Usage Cost Using EV(Electricity)	\$1.39	\$270.10
	Total Fuel Saving	\$5.23	\$712.41
Other Cost Saving	CV Costs	\$3.40	\$557.24
	EV Costs	\$1.45	\$199.69
	Total Other Cost Saving	\$1.95	\$357.55
Overall Economic Savings		\$7.18	\$1,069.95

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		55.78	10,468.13
Energy Consumed (kWh)		16.35	3,102.55
Co2 Emissions (lbs.)	CV (Gas)	43.54	8,451.97
	EV (Electricity)	27.65	4,910.27
	Total Fuel Saving	15.89	3,541.70
Co Emissions (lbs.)	CV (Gas)	0.3518	66.0292
	EV (Electricity)	0.0208	4.1120
	Total Fuel Saving	0.3310	61.9172
So2 Emissions (lbs.)	CV (Gas)	0.0005	0.0969
	EV (Electricity)	0.0438	9.4235
	Total Fuel Saving	(0.0433)	(9.3266)
Nox Emissions (lbs.)	CV (Gas)	0.0148	2.7694
	EV (Electricity)	0.0377	7.3235
	Total Fuel Saving	(0.0229)	(4.5541)
CH4 Emissions (lbs.)	CV (Gas)	0.0008	0.2579
	EV (Electricity)	0.0025	0.4664
	Total Fuel Saving	(0.0017)	(0.2085)
VOC Emissions (lbs.)	CV (Gas)	0.0207	3.8864
	EV (Electricity)	0.0004	0.0796
	Total Fuel Saving	0.0203	3.8068

Energy Consumption Data

July 2021



NPPD

Charging stations: Six Level-2 stations
The price of electricity per kWh: \$0.0975



Total Economic Saving Data (Fuel & Maintenance Cost Savings):

Environmental Saving Data (Reduction in Emissions):

Energy Consumption Data
July 2021

Minden

Charging stations: One Level-2 stations
 The price of electricity per kWh: \$0.0975



Total Economic Saving Data (Fuel & Maintenance Cost Savings):

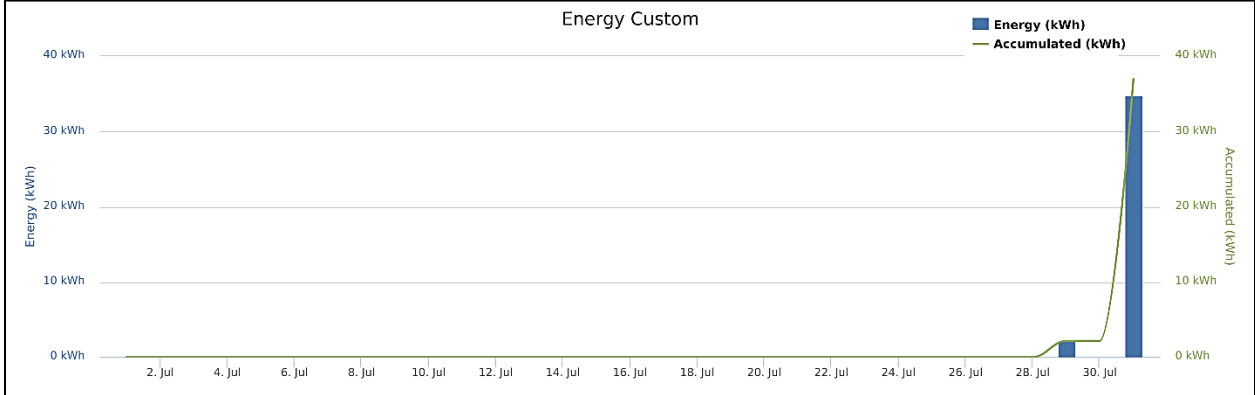
		This Month (July)	All Time
Miles Driven		125.97	562.41
Energy Consumed(kWh)		36.92	164.83
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$15.21	\$58.44
	Usage Cost Using EV(Electricity)	\$3.60	\$16.07
	Total Fuel Saving	\$11.61	\$42.37
Other Cost Saving	CV Costs	\$7.68	\$34.31
	EV Costs	\$3.28	\$14.62
	Total Other Cost Saving	\$4.41	\$19.68
Overall Economic Savings		\$16.02	\$62.05

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		125.97	562.41
Energy Consumed (kWh)		36.92	164.83
Co2 Emissions (lbs.)	CV (Gas)	98.33	439.00
	EV (Electricity)	55.53	247.90
	Total Fuel Saving	42.81	191.10
Co Emissions (lbs.)	CV (Gas)	0.7946	3.5475
	EV (Electricity)	0.0373	0.1665
	Total Fuel Saving	0.7573	3.3810
So2 Emissions (lbs.)	CV (Gas)	0.0012	0.0052
	EV (Electricity)	0.1015	0.4531
	Total Fuel Saving	(0.1003)	(0.4479)
Nox Emissions (lbs.)	CV (Gas)	0.0333	0.1488
	EV (Electricity)	0.1736	0.7752
	Total Fuel Saving	(0.1403)	(0.6264)
CH4 Emissions (lbs.)	CV (Gas)	0.0019	0.0083
	EV (Electricity)	0.0045	0.0200
	Total Fuel Saving	(0.0026)	(0.0117)
VOC Emissions (lbs.)	CV (Gas)	0.0468	0.2088
	EV (Electricity)	0.0010	0.0043
	Total Fuel Saving	0.0458	0.2045

Energy Consumption Data

July 2021



OPPD

Charging stations: Two Level-2 stations
 The price of electricity per kWh: \$0.0898



Data from two existing charging stations Purchased via NET/NCEA Grant.

Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		27.33	77,008.46
Energy Consumed(kWh)		8.01	22,885.85
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$3.24	\$7,770.44
	Usage Cost Using EV(Electricity)	\$0.68	\$2,042.57
	Total Fuel Saving	\$2.56	\$5,727.87
Other Cost Saving	CV Costs	\$1.67	\$3,687.23
	EV Costs	\$0.71	\$1,839.74
	Total Other Cost Saving	\$0.96	\$1,847.49
Overall Economic Savings		\$3.52	\$7,575.36

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		27.327	77,008.457
Energy Consumed (kWh)		8.009	22,885.851
Co2 Emissions (lbs.)	CV (Gas)	21.33	64,521.50
	EV (Electricity)	13.55	23,582.34
	Total Fuel Saving	7.78	40,939.16
Co Emissions (lbs.)	CV (Gas)	0.1724	879.2358
	EV (Electricity)	0.0102	21.1141
	Total Fuel Saving	0.1622	858.1217
So2 Emissions (lbs.)	CV (Gas)	0.0003	1.7840
	EV (Electricity)	0.0214	71.2620
	Total Fuel Saving	(0.0212)	(69.4780)
Nox Emissions (lbs.)	CV (Gas)	0.0072	54.8516
	EV (Electricity)	0.0185	43.5796
	Total Fuel Saving	(0.0112)	11.2720
CH4 Emissions (lbs.)	CV (Gas)	0.0004	4.2279
	EV (Electricity)	0.0012	1.8754
	Total Fuel Saving	(0.0008)	2.3526
VOC Emissions (lbs.)	CV (Gas)	0.0101	31.0565
	EV (Electricity)	0.0002	0.4960
	Total Fuel Saving	0.0099	30.5604

Energy Consumption Data
July 2021

OPPD

- Data from one existing charging stations with two ports.

Economic Saving Data (Fuel & Maintenance Cost Savings):

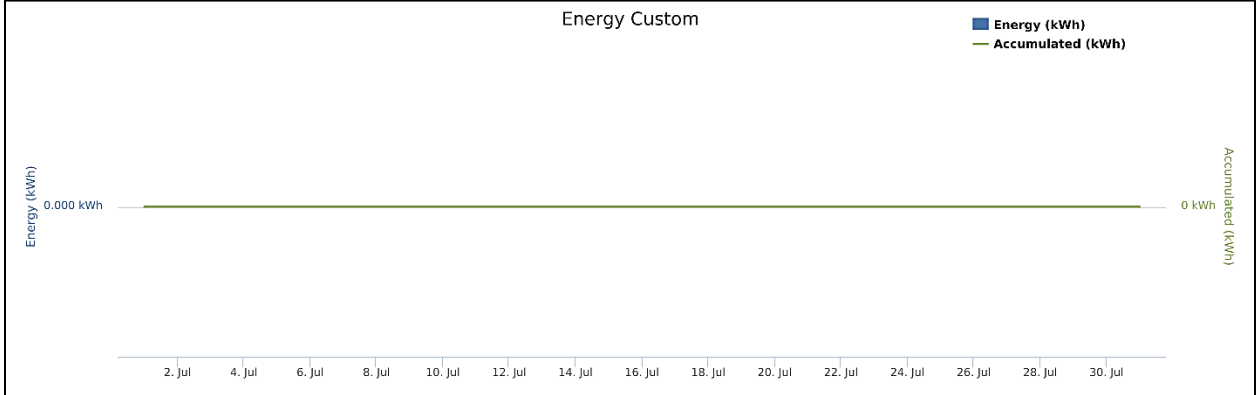
		This Month (July)	All Time
Miles driven		0	15,250.60
Energy consumed (kWh)		0	4,485.47
Fuel cost Savings:	Usage Cost Using CV (Gas)	\$0	\$1,587.95
	Usage Cost Using EV (Electricity)	\$0	\$376.78
	Total Fuel Savings	\$0	\$1,211.17
Other Cost Savings:	CV Costs	\$0	\$755.95
	EV Costs	\$0	\$564.27
	Total Other Cost Savings	\$0	\$191.68
Overall Economic Savings		\$0	\$1,402.85

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles driven		0	15,250.60
Energy consumed (kWh)		0	4,485.47
CO2 Emissions (lbs.)	CV (Gas)	0	13,817.04
	EV (Electricity)	0	1,295.40
	Overall Emission Reductions	0	12,521.64
CO Emissions (lbs.)	CV (Gas)	0	316.0458
	EV (Electricity)	0	2.0173
	Overall Emission Reductions	0	314.0285
SO2 Emissions (lbs.)	CV (Gas)	0	0.7397
	EV (Electricity)	0	12.4400
	Overall Emission Reductions	0	(11.7003)
NOx Emissions (lbs.)	CV (Gas)	0	23.2999
	EV (Electricity)	0	5.3459
	Overall Emission Reductions	0	17.954
CH4 Emissions (lbs.)	CV (Gas)	0	1.3449
	EV (Electricity)	0	0.0672
	Overall Emission Reductions	0	1.2777
VOC Emissions (lbs.)	CV (Gas)	0	7.0471
	EV (Electricity)	0	0.0773
	Overall Emission Reductions	0	6.9698

Energy Consumption Data

July 2021



OPPD summary savings

Overall Economic Savings		\$8,978.21
Overall Emission Reductions (lbs.)	CO2	53,460.80
	CO	1,172.15
	SO2	(81.1783)
	NOX	29.2260
	CH4	3.6303
	VOC	37.5302

City of Omaha

Charging stations: One Level-2 station
 The price of electricity per kWh: \$0.0898



Economic Saving Data (Fuel & Maintenance Cost Savings):

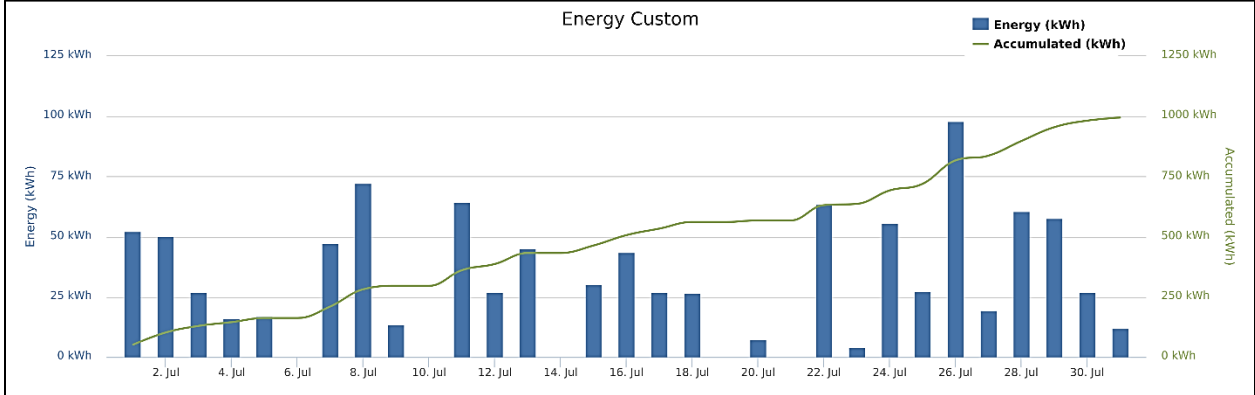
		This Month (July)	All Time
Miles Driven		3,392.38	26,725.12
Energy Consumed(kWh)		994.25	7,874.77
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$400.53	\$2,697.79
	Usage Cost Using EV(Electricity)	\$84.51	\$669.84
	Total Fuel Saving	\$316.01	\$2,027.95
Other Cost Saving	CV Costs	\$206.94	\$1,531.09
	EV Costs	\$88.20	\$606.48
	Total Other Cost Saving	\$118.73	\$924.60
Overall Economic Savings		\$434.75	\$2,952.55

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		3392.3776	26725.1211
Energy Consumed (kWh)		994.2490	7874.7660
Co2 Emissions (lbs.)	CV (Gas)	2,647.98	21,203.25
	EV (Electricity)	1,495.28	11,373.13
	Total Fuel Saving	1,152.70	9,830.12
Co Emissions (lbs.)	CV (Gas)	21.3979	168.5724
	EV (Electricity)	1.0042	7.9426
	Total Fuel Saving	20.3936	160.6298
So2 Emissions (lbs.)	CV (Gas)	0.0314	0.2475
	EV (Electricity)	2.7330	21.0587
	Total Fuel Saving	(2.7016)	(20.8113)
Nox Emissions (lbs.)	CV (Gas)	0.8975	7.0702
	EV (Electricity)	4.6759	35.3661
	Total Fuel Saving	(3.7785)	(28.2959)
CH4 Emissions (lbs.)	CV (Gas)	0.0501	0.5207
	EV (Electricity)	0.1207	0.9005
	Total Fuel Saving	(0.0706)	(0.3798)
VOC Emissions (lbs.)	CV (Gas)	1.2594	9.9219
	EV (Electricity)	0.0261	0.1905
	Total Fuel Saving	1.2333	9.7314

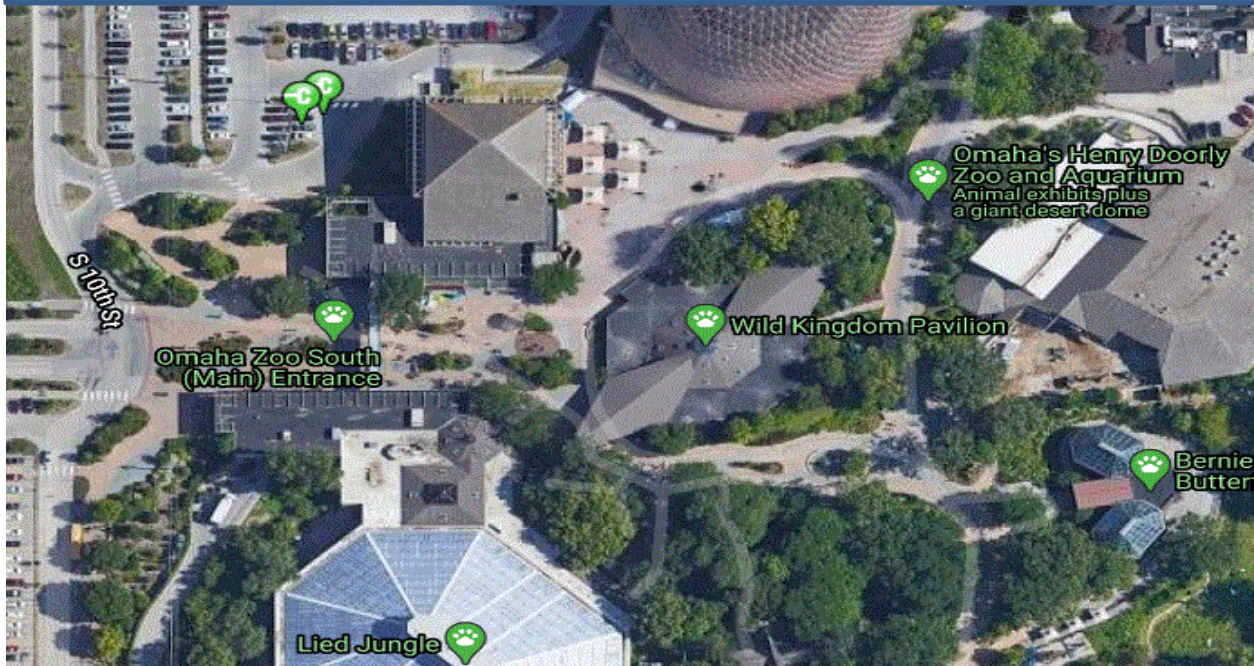
Energy Consumption Data

July 2021



Omaha Zoological Society

Charging stations: Two Level-2 stations
 The price of electricity per kWh: \$0.0898



Total Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		1817.41	13423.00
Energy Consumed(kWh)		532.65	3960.01
Fuel Cost Saving	Usage Cost Using Cv(Gas)	\$214.80	\$1,393.15
	Usage Cost Using EV(Electricity)	\$45.28	\$341.40
	Total Fuel Saving	\$169.52	\$1,051.74
Other Cost Saving	Cv Costs	\$110.86	\$757.65
	EV Costs	\$47.25	\$294.49
	Total Other Cost Saving	\$63.61	\$463.16

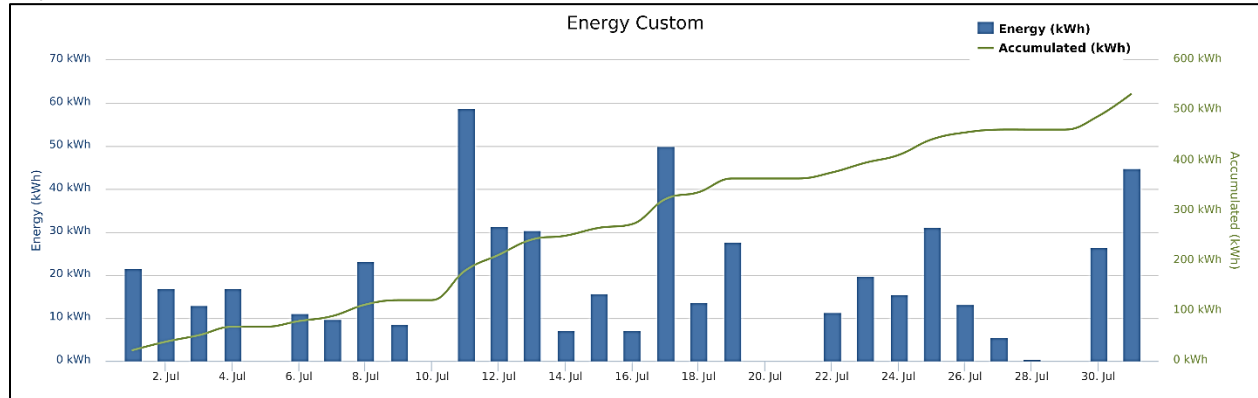
Overall Economic Savings	\$233.13	\$1,514.90
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Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		1,817.41	13,423.00
Energy Consumed (kWh)		532.65	3,960.01
Co2 Emissions (lbs.)	CV (Gas)	1,418.61	10,688.81
	EV (Electricity)	900.90	6,444.15
	Total Fuel Saving	517.71	4,244.66
Co Emissions (lbs.)	CV (Gas)	11.4636	84.6674
	EV (Electricity)	0.6793	5.1670
	Total Fuel Saving	10.7843	79.5005
So2 Emissions (lbs.)	CV (Gas)	0.0168	0.1243
	EV (Electricity)	1.4262	11.4428
	Total Fuel Saving	(1.4094)	(11.3185)
Nox Emissions (lbs.)	CV (Gas)	0.4808	3.5511
	EV (Electricity)	1.2285	9.2596
	Total Fuel Saving	(0.7477)	(5.7085)
CH4 Emissions (lbs.)	CV (Gas)	0.0268	0.2759
	EV (Electricity)	0.0816	0.6000
	Total Fuel Saving	(0.0548)	(0.3240)
VOC Emissions (lbs.)	CV (Gas)	0.6747	4.9834
	EV (Electricity)	0.0140	0.1025

	Total Fuel Saving	0.6608	4.8809
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Energy Consumption Data
July 2021



Papio-Missouri NRD

Charging stations: One Level-2 stations
 The price of electricity per kWh: \$0.0898



Economic Saving Data (Fuel & Maintenance Cost Savings):

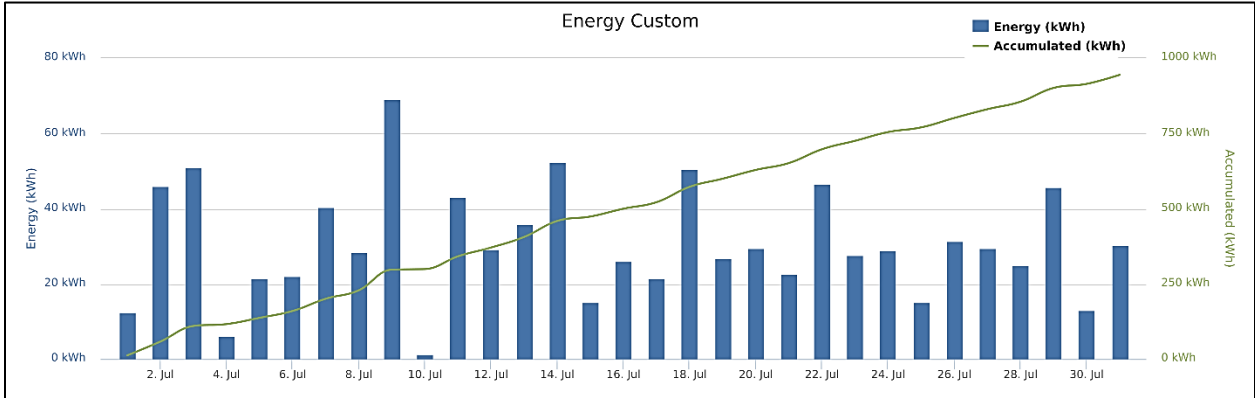
		This Month (July)	All Time
Miles Driven		3,221.96	71,128.72
Energy Consumed(kWh)		944.301	21,239.59
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$380.59	\$7,375.71
	Usage Cost Using EV(Electricity)	\$80.27	\$1,878.04
	Total Fuel Saving	\$300.33	\$5,497.67
Other Cost Saving	CV Costs	\$196.54	\$3,413.02
	EV Costs	\$83.77	\$1,024.15
	Total Other Cost Saving	\$112.77	\$2,388.87

Overall Economic Savings	\$413.09	\$7,886.54
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Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		3,221.96	71,128.72
Energy Consumed (kWh)		944.30	21,239.59
Co2 Emissions (lbs.)	CV (Gas)	2,514.95	58,718.87
	EV (Electricity)	1,597.14	32,084.26
	Total Fuel Saving	917.82	26,634.62
Co Emissions (lbs.)	CV (Gas)	20.3229	448.6542
	EV (Electricity)	1.2042	28.8553
	Total Fuel Saving	19.1187	419.7989
So2 Emissions (lbs.)	CV (Gas)	0.0298	0.6586
	EV (Electricity)	2.5285	69.5786
	Total Fuel Saving	(2.4987)	(68.9200)
Nox Emissions (lbs.)	CV (Gas)	0.8524	18.8174
	EV (Electricity)	2.1780	50.8969
	Total Fuel Saving	(1.3256)	(32.0795)
CH4 Emissions (lbs.)	CV (Gas)	0.0476	2.2265
	EV (Electricity)	0.1447	3.1530
	Total Fuel Saving	(0.0971)	(0.9265)
VOC Emissions (lbs.)	CV (Gas)	1.1962	26.4071
	EV (Electricity)	0.0247	0.5370
	Total Fuel Saving	1.1714	25.8701

Energy Consumption Data July 2021



Seward

Charging stations: Five Level-2 stations (9 Ports)
 The price of electricity per kWh: \$0.0995



Economic Saving Data (Fuel & Maintenance Cost Savings):

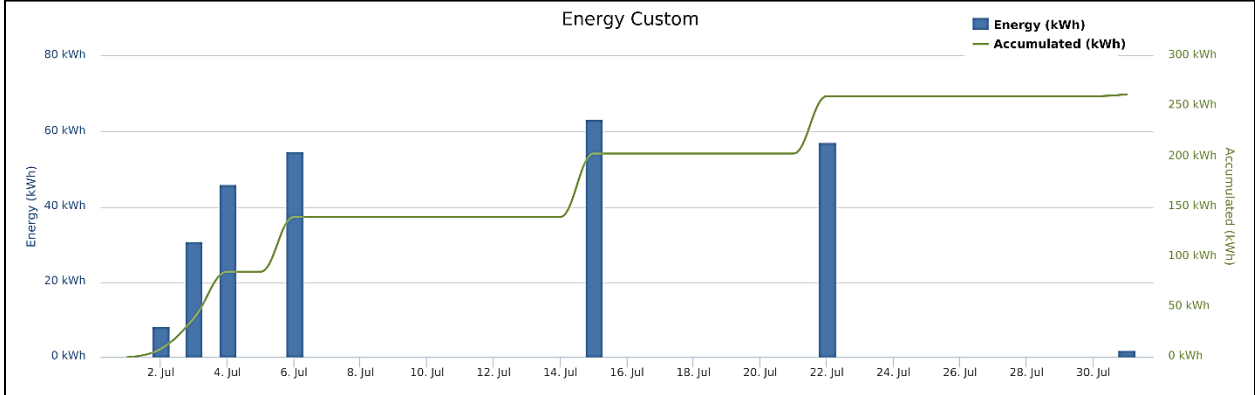
		This Month (July)	All Time
Miles Driven		893.20	44,313.86
Energy Consumed(kWh)		261.78	13,129.33
Fuel Cost Saving	Usage Cost Using Cv(Gas)	\$105.15	\$4,440.81
	Usage Cost Using EV(Electricity)	\$25.65	\$1,282.82
	Total Fuel Saving	\$79.49	\$3,157.99
Other Cost Saving	Cv Costs	\$54.49	\$2,251.56
	EV Costs	\$23.22	\$1,071.17
	Total Other Cost Saving	\$31.26	\$1,180.39
Overall Economic Savings		\$110.76	\$4,338.38

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		893.20	44,313.86
Energy Consumed (kWh)		261.78	13,129.33
Co2 Emissions (lbs.)	CV (Gas)	697.20	36,664.11
	EV (Electricity)	393.70	13,687.84
	Total Fuel Saving	303.50	22,976.28
Co Emissions (lbs.)	CV (Gas)	5.6340	456.9156
	EV (Electricity)	0.2644	10.3338
	Total Fuel Saving	5.3696	446.5818
So2 Emissions (lbs.)	CV (Gas)	0.0083	0.8932
	EV (Electricity)	0.7196	32.4149
	Total Fuel Saving	(0.7113)	(31.5217)
Nox Emissions (lbs.)	CV (Gas)	0.2363	27.2669
	EV (Electricity)	1.2312	39.5886
	Total Fuel Saving	(0.9949)	(12.3217)
CH4 Emissions (lbs.)	CV (Gas)	0.0132	2.0295
	EV (Electricity)	0.0318	0.9072
	Total Fuel Saving	(0.0186)	1.1223
VOC Emissions (lbs.)	CV (Gas)	0.3316	17.5647
	EV (Electricity)	0.0069	0.2484
	Total Fuel Saving	0.3247	17.3163

Energy Consumption Data

July 2021



South Sioux City

Charging stations: Three Level-2 stations
 The price of electricity per kWh: \$0.0853



Economic Saving Data (Fuel & Maintenance Cost Savings):

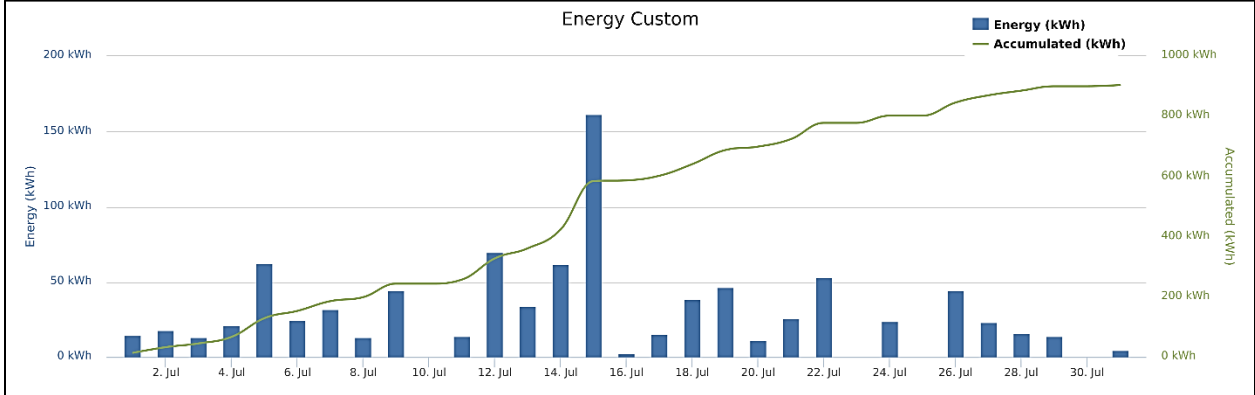
		This Month (July)	All Time
Miles Driven		3,084.24	152,108.76
Energy Consumed(KWh)		903.939	45,105.96
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$365.03	\$15,188.62
	Usage Cost Using EV(Electricity)	\$77.11	\$3,866.33
	Total Fuel Saving	\$287.92	\$11,322.29
Other Cost Saving	CV Costs	\$188.14	\$7,644.60
	EV Costs	\$80.19	\$3,551.52
	Total Other Cost Saving	\$107.95	\$4,093.09
Overall Economic Savings		\$395.87	\$15,415.38

Environmental Saving Data (Reduction in Emissions):

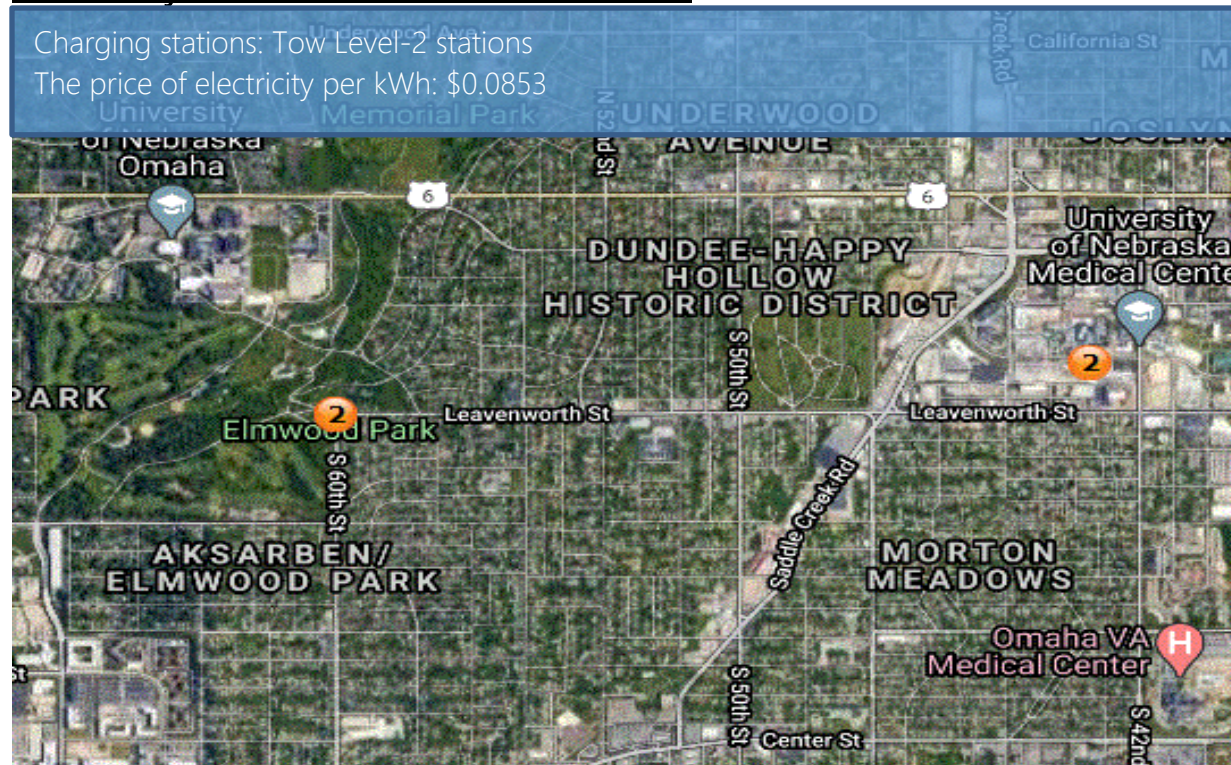
		This Month (July)	All Time
Miles Driven		3084.2399	152108.7591
Energy Consumed (Kwh)		903.9390	45,105.96
Co2 Emissions (lbs.)	CV (Gas)	2,407.46	126,526.34
	EV (Electricity)	1,359.46	47,128.24
	Total Fuel Saving	1,048.00	79,398.10
Co Emissions (lbs.)	CV (Gas)	19.4543	1,564.9253
	EV (Electricity)	0.9130	36.1808
	Total Fuel Saving	18.5412	1,528.7445
So2 Emissions (lbs.)	CV (Gas)	0.0286	3.0564
	EV (Electricity)	2.4848	111.4946
	Total Fuel Saving	(2.4562)	(108.4382)
Nox Emissions (lbs.)	CV (Gas)	0.8159	93.2951
	EV (Electricity)	4.2512	127.9790
	Total Fuel Saving	(3.4353)	(34.6839)
CH4 Emissions (lbs.)	CV (Gas)	0.0456	7.0028
	EV (Electricity)	0.1097	3.1720
	Total Fuel Saving	(0.0642)	3.8308
VOC Emissions (lbs.)	CV (Gas)	1.1450	60.2728
	EV (Electricity)	0.0238	0.8488
	Total Fuel Saving	1.1213	59.4240

Energy Consumption Data

July 2021



University of Nebraska Medical Center



Total Economic Saving Data (Fuel & Maintenance Cost Savings):

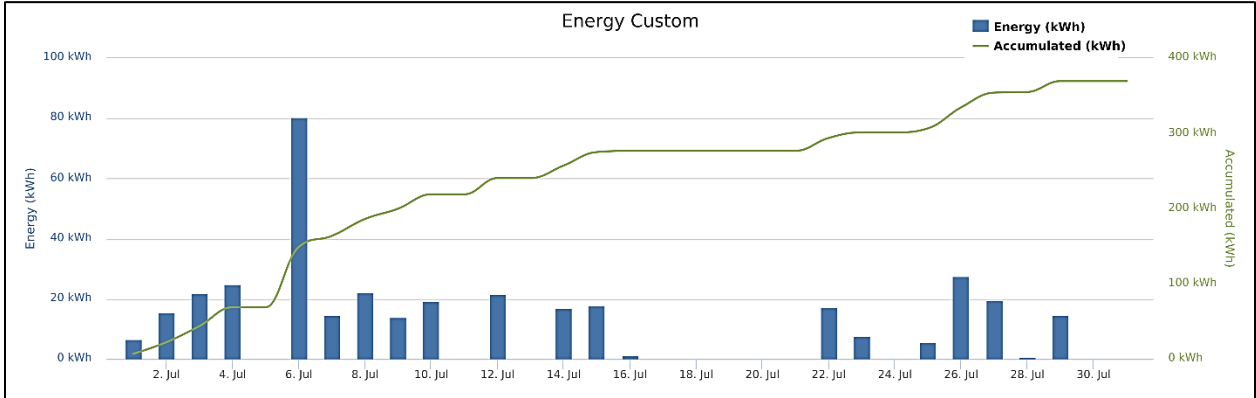
		This Month (July)	All Time
Miles Driven		1,259.69	9,320.02
Energy Consumed(kWh)		369.194	2,757.10
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$147.93	\$896.26
	Usage Cost Using EV(Electricity)	\$31.38	\$239.08
Total Fuel Saving		\$116.55	\$657.18
Other Cost Saving	CV Costs	\$76.84	\$508.31
	EV Costs	\$32.75	\$188.66
Total Other Cost Saving		\$44.09	\$319.66

Overall Economic Savings	\$160.64	\$976.84
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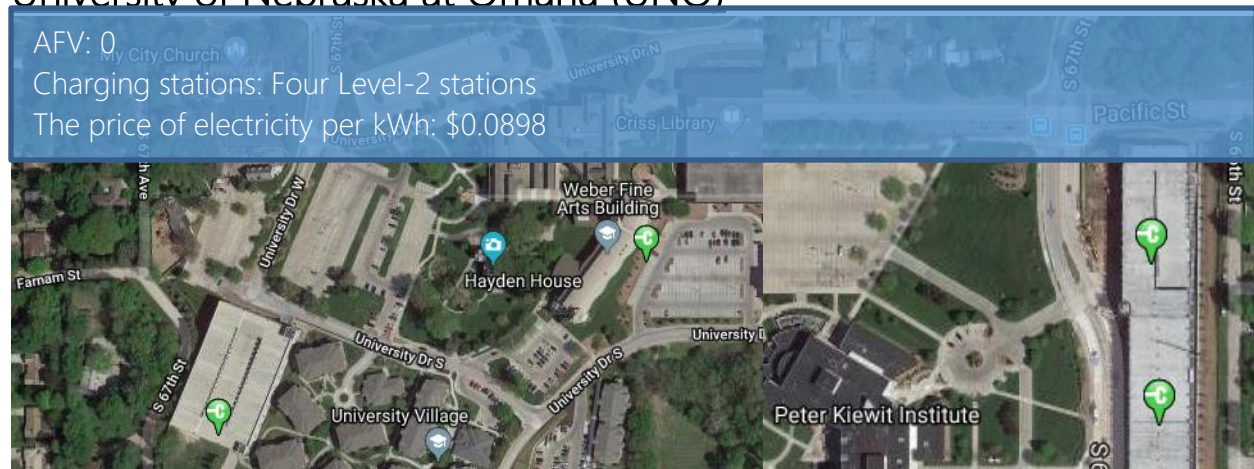
Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		1,259.69	9,320.02
Energy Consumed (kWh)		369.194	2,757.10
Co2 Emissions (lbs.)	CV (Gas)	983.27	7482.88
	EV (Electricity)	624.43	4413.53
	Total Fuel Saving	358.84	3069.35
Co Emissions (lbs.)	CV (Gas)	7.9457	58.7873
	EV (Electricity)	0.4708	3.6311
	Total Fuel Saving	7.4748	55.1562
So2 Emissions (lbs.)	CV (Gas)	0.0117	0.0863
	EV (Electricity)	0.9886	8.2088
	Total Fuel Saving	(0.9769)	(8.1225)
Nox Emissions (lbs.)	CV (Gas)	0.3333	2.4657
	EV (Electricity)	0.8515	6.4832
	Total Fuel Saving	(0.5183)	(4.0176)
CH4 Emissions (lbs.)	CV (Gas)	0.0186	0.2141
	EV (Electricity)	0.0566	0.4158
	Total Fuel Saving	(0.0380)	(0.2017)
VOC Emissions (lbs.)	CV (Gas)	0.4677	3.4601
	EV (Electricity)	0.0097	0.0710
	Total Fuel Saving	0.4580	3.3892

Energy Consumption Data July 2021



University of Nebraska at Omaha (UNO)



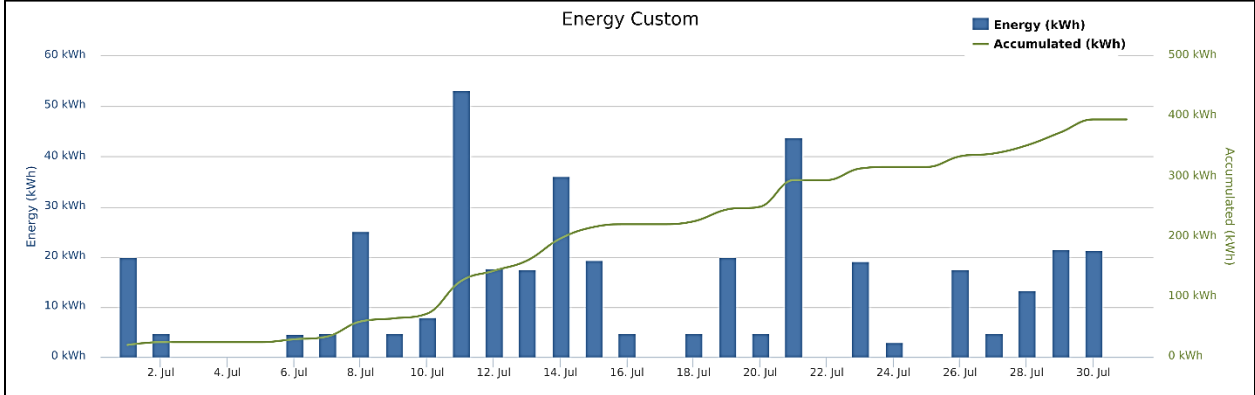
Economic Saving Data (Fuel & Maintenance Cost Savings)

		This Month (July)	All Time
Miles Driven		1,346.09	73,687.80
Energy Consumed(kWh)		394.516	22,035.82
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$159.17	\$7,358.74
	Usage Cost Using EV(Electricity)	\$33.53	\$1,997.62
	Total Fuel Saving	\$125.64	\$5,361.12
Other Cost Saving	CV Costs	\$82.11	\$3,441.15
	EV Costs	\$35.00	\$1,112.58
	Total Other Cost Saving	\$47.11	\$2,328.57
Overall Economic Savings		\$172.75	\$7,689.69

Environmental Saving Data (Reduction in Emissions):

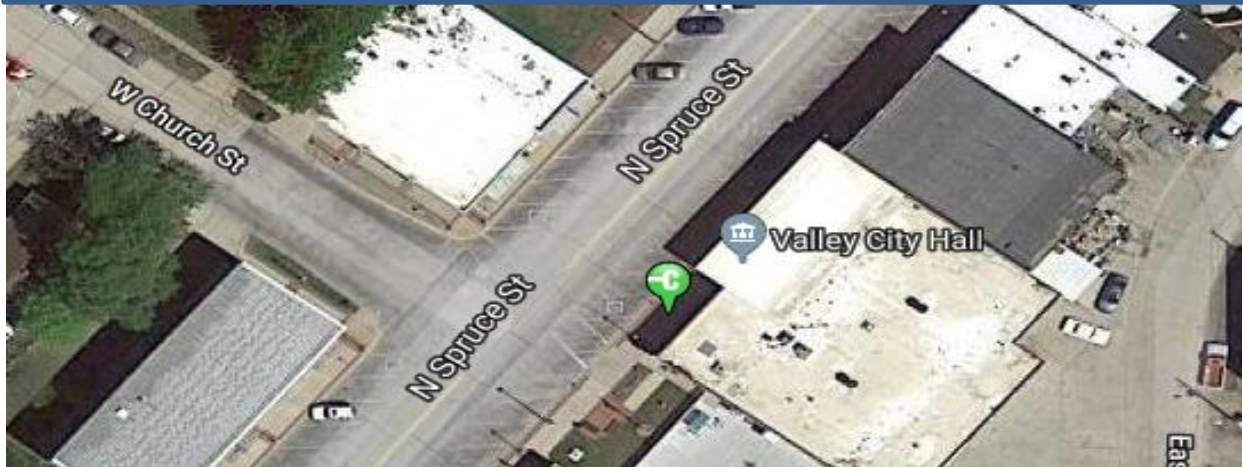
		This Month (July)	All Time
Miles Driven		1,346.09	73,687.80
Energy Consumed (kWh)		394.52	22,035.82
Co2 Emissions (lbs.)	CV (Gas)	1,050.71	59,959.98
	EV (Electricity)	667.26	32,100.84
	Total Fuel Saving	383.45	27,859.14
Co Emissions (lbs.)	CV (Gas)	8.4906	464.8699
	EV (Electricity)	0.5031	27.7892
	Total Fuel Saving	7.9875	437.0807
So2 Emissions (lbs.)	CV (Gas)	0.0125	0.6823
	EV (Electricity)	1.0564	73.1157
	Total Fuel Saving	(1.0439)	(72.4333)
Nox Emissions (lbs.)	CV (Gas)	0.3561	19.4983
	EV (Electricity)	0.9099	51.5730
	Total Fuel Saving	(0.5538)	(32.0746)
CH4 Emissions (lbs.)	CV (Gas)	0.0199	2.5895
	EV (Electricity)	0.0604	3.2552
	Total Fuel Saving	(0.0406)	(0.6657)
VOC Emissions (lbs.)	CV (Gas)	0.4997	27.3470
	EV (Electricity)	0.0103	0.5410
	Total Fuel Saving	0.4894	26.8060

Energy Consumption Data July 2021



Valley

Charging stations: One Level-2 station
 The price of electricity per kWh: \$0.0898



Economic Saving Data (Fuel & Maintenance Cost Savings):

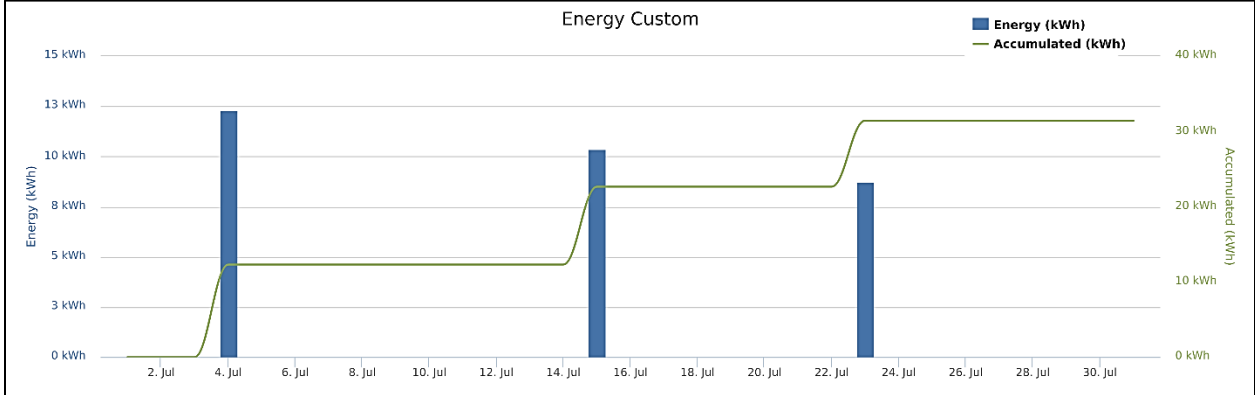
		This Month (July)	All Time
Miles Driven		107.12	6,050.15
Energy Consumed(kWh)		31.40	1,799.40
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$12.66	\$614.32
	Usage Cost Using EV(Electricity)	\$2.67	\$165.99
	Total Fuel Saving	\$9.99	\$448.32
Other Cost Saving	CV Costs	\$6.53	\$291.71
	EV Costs	\$2.79	\$134.76
	Total Other Cost Saving	\$3.75	\$156.96
Overall Economic Savings		\$13.74	\$605.28

Environmental Saving Data (Reduction in Emissions):

		This Month (July)	All Time
Miles Driven		107.12	6,050.15
Energy Consumed (kWh)		31.40	1,799.40
Co2 Emissions (lbs.)	CV (Gas)	83.62	5,001.44
	EV (Electricity)	53.10	2,076.24
	Total Fuel Saving	30.52	2,925.20
Co Emissions (lbs.)	CV (Gas)	0.6757	60.4517
	EV (Electricity)	0.0400	1.7975
	Total Fuel Saving	0.6357	58.6542
So2 Emissions (lbs.)	CV (Gas)	0.0010	0.1167
	EV (Electricity)	0.0841	5.6478
	Total Fuel Saving	(0.0831)	(5.5311)
Nox Emissions (lbs.)	CV (Gas)	0.0283	3.5536
	EV (Electricity)	0.0724	3.6225
	Total Fuel Saving	(0.0441)	(0.0689)
CH4 Emissions (lbs.)	CV (Gas)	0.0016	0.2955
	EV (Electricity)	0.0048	0.1686
	Total Fuel Saving	(0.0032)	0.1269
VOC Emissions (lbs.)	CV (Gas)	0.0398	2.3855
	EV (Electricity)	0.0008	0.0403
	Total Fuel Saving	0.0389	2.3452

Energy Consumption Data

July 2021



Wayne

Charging stations: 1

The price of electricity per kWh: \$0.1167



Economic Saving Data (Fuel & Maintenance Cost Savings):

		This Month (July)	All Time
Miles Driven		0	7,571.38
Energy Consumed(kWh)		0	2,262.30
Fuel Cost Saving	Usage Cost Using CV(Gas)	\$0.00	\$773.14
	Usage Cost Using EV(Electricity)	\$0.00	\$243.58
	Total Fuel Saving	\$0.00	\$529.57
Other Cost Saving	CV Costs	\$0.00	\$347.07
	EV Costs	\$0.00	\$136.56
	Total other cost Saving	\$0.00	\$210.51
Overall Economic Savings		\$0.00	\$740.08

Environmental Saving Data (Reduction in Emissions):

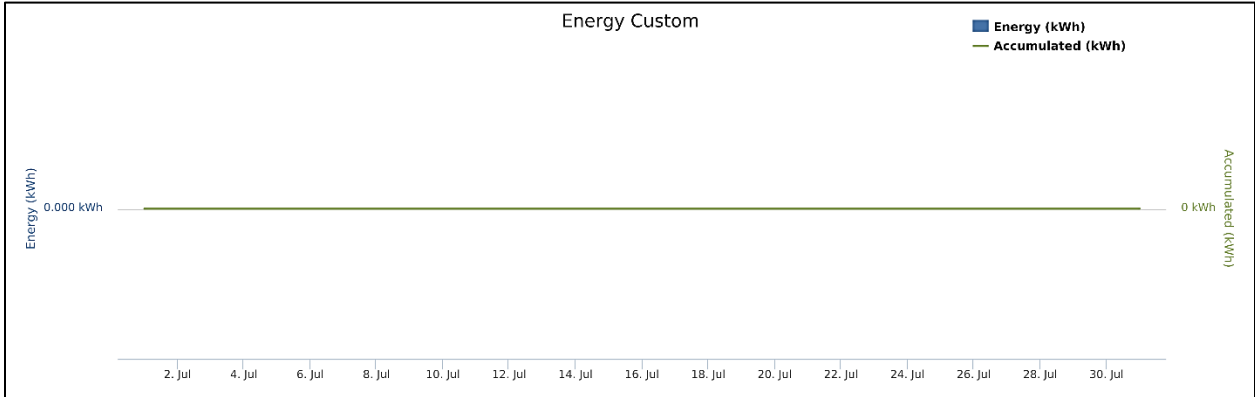
		This Month (July)	All Time
Miles Driven		0.0000	7,571.38
Energy Consumed (kWh)		0.0000	2,262.30
Co2 Emissions (lbs.)	CV (Gas)	0.000	6258.399
	EV (Electricity)	0.000	2571.657
	Total Fuel Saving	0.000	3686.741
Co Emissions (lbs.)	CV (Gas)	0.000	64.837
	EV (Electricity)	0.000	0.671
	Total Fuel Saving	0.000	64.166
So2 Emissions (lbs.)	CV (Gas)	0.000	0.117
	EV (Electricity)	0.000	5.248
	Total Fuel Saving	0.000	-5.131
Nox Emissions (lbs.)	CV (Gas)	0.000	3.499
	EV (Electricity)	0.000	43.364
	Total Fuel Saving	0.000	-39.865
CH4 Emissions (lbs.)	CV (Gas)	0.000	0.348
	EV (Electricity)	0.000	0.096
	Total Fuel Saving	0.000	0.252
VOC Emissions (lbs.)	CV (Gas)	0.000	2.917
	EV (Electricity)	0.000	0.065
	Total Fuel Saving	0.000	2.852

CNG data – No new data for July 2021, this is from previous calculations.

		Total
Miles driven		24,879.83
Fuel cost Savings:	Usage Cost Using CV (Gas)	\$2,687.75
	Usage Cost Using CNG (Natural gas)	\$1,538.65
	Total Fuel Savings	\$1,149.10
CO2 Emissions (lbs.)	CV (Gas)	22,227.51
	CNG (Natural Gas)	17,127.65
	Overall Emission Reductions	5,099.86
CO Emissions (lbs.)	CV (Gas)	496
	CNG (Natural Gas)	924.54
	Overall Emission Reductions	(428.54)
SO2 Emissions (lbs.)	CV (Gas)	0.631
	CNG (Natural Gas)	0.084
	Overall Emission Reductions	0.547
NOx Emissions (lbs.)	CV (Gas)	13.44
	CNG (Natural Gas)	15.91
	Overall Emission Reductions	(2.47)
CH4 Emissions (lbs.)	CV (Gas)	0.73
	CNG (Natural Gas)	27.07
	Overall Emission Reductions	(26.34)
VOC Emissions (lbs.)	CV (Gas)	11.38
	CNG (Natural Gas)	12.98
	Overall Emission Reductions	(1.6)

Energy Consumption Data

July 2021



Wayne summary savings

Overall Economic Savings		\$1,889.18
Overall Emission Reductions (lbs.)	CO2	8,786.60
	CO	64.17
	SO2	(5.1314)
	NOX	(39.8648)
	CH4	0.2522
	VOC	2.8521