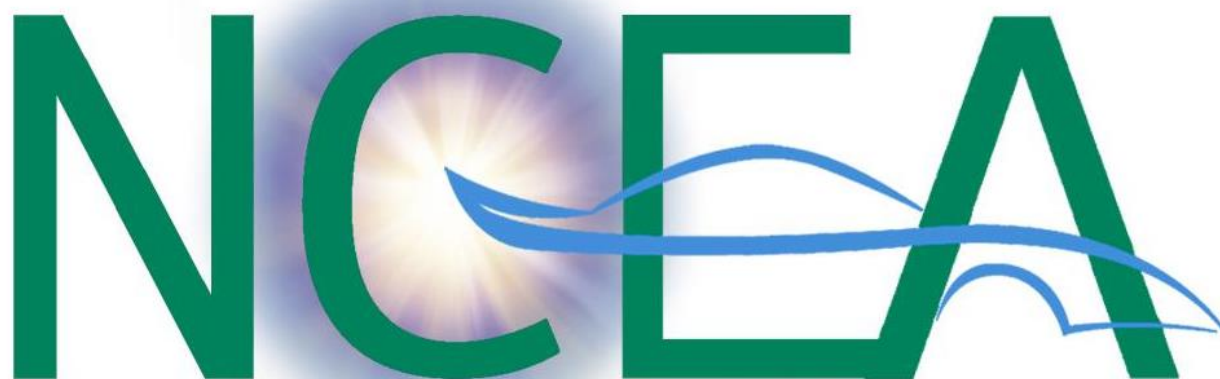


Nebraska Community Energy Alliance
Electric Vehicle Infrastructure Report
March 2021 Edition



Nebraska Community Energy Alliance

Anne McCollister, Director
NEBRASKA COMMUNITY ENERGY ALLIANCE

Moe Alahmad, PhD, PE
UNIVERSITY OF NEBRASKA-LINCOLN

ACKNOWLEDGMENT

This work has been supported by the Nebraska Environmental Trust (NET) and the Nebraska Community Energy Alliance (NCEA).



For additional information, contact:

Anne McCollister, Director
Nebraska Community Energy Alliance
700 South 16th Street, LL
Lincoln, NE 68508
[402-613-9566](tel:402-613-9566) | anne@etpnebraska.com | www.necommunity.energy

This report includes the following documents:

- Project Executive Summary
- Project Description and Summary savings
 - Introduction
 - Data Analysis
 - Unique User Data (Commercial and Utility/Residential)
 - Economic and Environmental Savings (Commercial and Utility/Residential)
- Appendices
 - Appendix A : Detailed Economic Analysis- Commercial.
 - Appendix B : Detailed Economic Analysis- Utility/Residential.
 - Appendix C : Detailed Environmental Emissions Data Analysis – Commercial and Utility/Residential.
 - Appendix D : Detailed Greenhouse Gas Calculations.
 - Appendix E : Detailed Analysis for Charging Stations- Monthly Detailed Data- March 2021.

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 all 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 | \$88,889 | 384,658 | 7,237 | (494.08) | (434.62) | 1.73 | 312.16 |
| OPPD_ Residential Rebate Program Savings | \$551,371 | 1,989,983 | 31,578 | (5,154.96) | (2,187.00) | (69.39) | 1,945.60 |
| NPPD_ Residential Rebate Program Savings | \$24,959 | 82,619 | 1,402 | (37.89) | (235.45) | 1.07 | 83.37 |
| Fremont_ Residential Rebate Program Savings | \$5,155 | 18,584 | 312 | (40.45) | (18.32) | (2.58) | 19.89 |
| Total Saving | \$670,374 | 2,475,844 | 40,528 | (5,727.38) | (2,875.38) | (69.18) | 2,361 |

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 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 | 1,072 | 11,197 | \$3,940 | 22,213 | 457.65 | (25.37) | (0.28) | 1.39 | 15.26 |
| Auburn Board of Public Works | 4 | 459 | 1,410 | \$482 | 2,623 | 28.88 | (1.91) | 0.62 | (0.02) | 1.76 |
| Aurora | 3 | 29 | 341 | \$124 | 395 | 6.99 | (0.93) | (1.30) | (0.02) | 0.42 |
| Ashland | 3 | 1,042 | 10,696 | \$3,689 | 14,180 | 239.36 | (34.36) | (12.45) | 0.06 | 13.20 |
| Bellevue | 4 | 1,295 | 12,080 | \$3,959 | 25,594 | 571.21 | (33.69) | 18.47 | 1.87 | 16.91 |
| B & R Stores | 6 | 108 | 816 | \$335 | 383 | 16.42 | (2.12) | (1.25) | (0.19) | 1.02 |
| Central City | 2 | 33 | 522 | \$163 | 1,264 | 31.44 | (1.18) | 1.59 | 0.13 | 0.78 |
| Central Community College | 4 | 51 | 218 | \$88 | 252 | 4.46 | (0.59) | (0.83) | (0.02) | 0.27 |
| Dakota County | 2 | 297 | 3,342 | \$1,136 | 5,850 | 105.63 | (8.30) | (4.59) | 0.24 | 4.35 |
| Ferguson House, Lincoln office of NCEA | 2 | 540 | 4,269 | \$1,506 | 7,121 | 164.72 | (5.49) | (8.81) | 0.61 | 5.71 |
| Fremont | 4 | 1,039 | 16,076 | \$5,376 | 18,323 | 307.90 | (40.03) | (18.37) | (2.55) | 19.63 |
| Gothenburg | - | 0 | 0 | \$720 | 6,020 | 155.11 | (5.30) | 8.68 | 0.64 | 3.56 |
| Gretna | 5 | 1,878 | 15,397 | \$5,117 | 21,095 | 401.53 | (46.44) | (11.95) | 0.02 | 15.02 |
| Hastings | 2 | 116 | 905 | \$327 | 948 | 23.10 | (2.34) | 0.22 | 0.09 | 1.14 |
| Holdrege | 2 | 95 | 708 | \$242 | 1,301 | 25.34 | (1.65) | (0.29) | 0.08 | 0.94 |
| Kearney | 4 | 2,431 | 19,260 | \$7,003 | 30,844 | 517.71 | (46.26) | (35.98) | 0.99 | 24.49 |
| LES | 4 | 1,674 | 26,308 | \$9,741 | 31,861 | 742.82 | (15.40) | (142.87) | 2.95 | 33.08 |
| Lexington | 4 | 868 | 8,999 | \$2,781 | 15,836 | 297.89 | (21.48) | (9.31) | 0.78 | 11.80 |
| Lincoln | 20 | 6,257 | 64,876 | \$24,069 | 69,475 | 1,546.27 | (43.52) | (363.22) | 6.04 | 79.81 |
| Lincoln Public Schools | 7 | 105 | 795 | \$281 | 1,155 | 16.43 | (0.68) | (0.27) | (0.03) | 0.99 |
| MCC | 10 | 1,720 | 18,304 | \$6,533 | 23,808 | 360.68 | (61.29) | (27.73) | (0.51) | 22.22 |
| Nebraska City | 5 | 1,844 | 17,360 | \$7,319 | 43,728 | 641.47 | (32.44) | 26.73 | 2.04 | 23.40 |
| Nebraska Safety Center at UNK | 2 | 39 | 168 | \$60 | 228 | 3.39 | (0.43) | (0.56) | (0.00) | 0.21 |
| NP Dodge | 3 | 94 | 2,995 | \$1,024 | 3,437 | 59.74 | (9.04) | (4.40) | (0.20) | 3.67 |
| NPPD | 12 | 974 | 12,650 | \$4,732 | 18,364 | 261.31 | (10.83) | (4.25) | (0.44) | 15.74 |
| Minden | 2 | 19 | 105 | \$37 | 122 | 2.16 | (0.29) | (0.40) | (0.01) | 0.13 |
| OPPD | 4 | 4,830 | 27,101 | \$8,863 | 53,198 | 1,166.67 | (80.46) | 29.61 | 3.66 | 37.19 |
| City of Omaha | 2 | 385 | 4,664 | \$1,587 | 6,107 | 94.76 | (12.09) | (16.09) | (0.15) | 5.75 |
| Omaha Zoological Society | 4 | 237 | 1,896 | \$638 | 2,239 | 37.72 | (5.86) | (2.81) | (0.11) | 2.32 |
| Papio-Missouri NRD | 2 | 1,831 | 17,973 | \$6,495 | 23,460 | 353.66 | (60.28) | (27.49) | (0.59) | 21.82 |
| Seward | 9 | 901 | 11,831 | \$3,808 | 21,472 | 419.96 | (27.99) | (7.39) | 1.21 | 15.71 |
| South Sioux City | 11 | 3,271 | 40,404 | \$13,430 | 73,946 | 1,432.29 | (95.66) | (16.81) | 4.16 | 53.59 |
| UNMC | 4 | 158 | 1,577 | \$478 | 1,922 | 31.26 | (5.00) | (2.36) | (0.08) | 1.93 |
| UNO | 8 | 2,467 | 21,001 | \$7,247 | 26,853 | 416.13 | (69.70) | (30.62) | (0.56) | 25.52 |
| Valley | 2 | 212 | 1,736 | \$578 | 2,863 | 57.36 | (5.36) | 0.02 | 0.13 | 2.27 |
| Wayne | 2 | 164 | 2,262 | \$1,889 | 8,787 | 64.17 | (5.13) | (39.86) | 0.25 | 2.85 |
| Total | 166 | 38,535 | 380,240 | \$135,798 | 587,267 | 11,063.58 | (818.88) | (706.62) | 21.85 | 484.45 |

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 | 160 | 37,388 | 364,853 | \$130,477 | 568,890 | 10,734.55 | (772.06) | (684.34) | 22.49 | 465.45 |
| DC Fast Charger | 6 | 1147 | 15,386 | \$5,321 | 18,376 | 329.03 | (46.82) | (22.28) | (0.6388) | 18.9963 |
| Total | 166 | 38,535 | 380,240 | \$135,798 | 587,267 | 11,063.58 | (818.88) | (706.62) | 21.85 | 484.45 |

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 | 583 | 6,963 | \$2,434 | 9,378 | 160.09 | (22.34) | (7.62) | 0.08 | 8.62 |
| Gretna (DC) | 1 | 395 | 6,659 | \$2,202 | 7,494 | 133.09 | (19.79) | (9.73) | (0.47) | 8.18 |
| Aurora (DC) | 1 | 19 | 284.693 | \$105 | 330 | 5.84 | (0.77) | (1.08) | (0.02) | 0.35 |
| South Sioux City (DC) | 1 | 66 | 695.59 | \$259 | 806 | 14.27 | (1.89) | (2.64) | (0.05) | 0.86 |
| B & R Stores (DC) | 2 | 84 | 782.92 | \$322 | 368 | 15.75 | (2.03) | (1.20) | (0.18) | 0.98 |
| Total | 6 | 1147 | 15,386 | \$5,321 | 18,376 | 329.03 | (46.82) | (22.28) | (0.64) | 19.00 |

Table E: Cumulative Charging Infrastructure Usage and Benefits for the OPPD Rebate Program from Apr`2018 to March 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 | 13 | 5,033 | 72,011 | \$24,165 | 69,934 | 1456.76 | (190.39) | (101) | (7.40) | 89.26 |
| Feb`2021 | 18 | 5,726 | 84,955 | \$31,407 | 82,573 | 1720.05 | (224.80) | (119.26) | (8.73) | 105.39 |
| Mar`2021 | 19 | 6,689 | 86,598 | \$35,332 | 84,169 | 1753.29 | (229.14) | (121.56) | (8.90) | 107.43 |
| <u>Total</u> | <u>418</u> | <u>121,623</u> | <u>1,518,488</u> | <u>\$551,371</u> | <u>1,989,982</u> | <u>31,577</u> | <u>(5,154)</u> | <u>(2,187)</u> | <u>(69.39)</u> | <u>1,945</u> |

Table F: Cumulative Charging Infrastructure Usage and Benefits for the NPPD Rebate Program from Mar`2018 to March 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>10</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>27</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 | 1 | 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 |
| <u>Total</u> | <u>34</u> | <u>6,600</u> | <u>69,806</u> | <u>\$24,959</u> | <u>82,618</u> | <u>1,401</u> | <u>(37.89)</u> | <u>(235.44)</u> | <u>1.07</u> | <u>83.36</u> |

Table G: Cumulative Charging Infrastructure Usage and Benefits for the Fremont Rebate Program from Aug`2019 to March 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 |
| <u>Total</u> | <u>5</u> | <u>787</u> | <u>16,314</u> | <u>\$5,155</u> | <u>18,584.45</u> | <u>312.31</u> | <u>(40,4456)</u> | <u>(18,3221)</u> | <u>(2,5846)</u> | <u>19,8866</u> |

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

| | Month of March, 2021 | | Cumulative | | Combined Savings | | |
|--|----------------------|-------------|------------|-------------|----------------------|------------|-----------|
| | Commercial | Residential | Commercial | Residential | Month of March, 2021 | Cumulative | |
| Number of Charging Sessions | 994 | 5,698 | 38,535 | 129,010 | 6,692 | 167,545 | |
| Energy Usage (in kWh) | 11,529 | 82,960 | 380,240 | 1,604,609 | 94,489 | 1,984,849 | |
| Environmental Benefits: Emissions Reductions (in lbs.) | CO ₂ | 13,731 | 80,661 | 587,267 | 2,091,186 | 94,392 | 2,678,452 |
| | CO | 235.64 | 1,611 | 11,064 | 33,292 | 1,847 | 44,355 |
| | VOC | 14.34 | 98.60 | 484.45 | 2,049 | 113 | 2,533 |
| Economic Savings | \$4,701 | \$26,776 | \$135,798 | \$581,485 | 31,478 | 717,284 | |

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

| Community | Station Name | Activation Date | Total Energy Usage | |
|------------------------------|-------------------------------|-----------------|---------------------------|-------------------------------------|
| | | | Current Month-March (kWh) | Cumulative Since Installation (kWh) |
| Allen Consolidated Schools | ALLEN SCHOOLS | Jun-16 | 44.912 | 11,350 |
| Auburn Board of Public Works | METRO CAFE / STATION 1 | Jun-19 | 36.834 | 1,011 |
| | METRO CAFE / BWP DC CHARGER | Jan-21 | 309.436 | 398 |
| | METRO CAFE / BRNVILLE DEPOT | Sep-21 | 0 | 0 |
| Aurora | DC FAST 1 | Jan-21 | 101.952 | 285 |
| | LEVEL 2 | Nov-20 | | 56 |
| Ashland | DOWNTOWN / ACRC QUICK CHAR | Feb-17 | 200.891 | 6,964 |
| | DOWNTOWN / ACRC PARKING | Feb-17 | 8.11 | 3,732 |
| 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 | 14.871 | 30 |
| | RUSS'S MARKET / RUSS MARKET 1 | Feb-21 | 363.703 | 418 |

| | | | | |
|---|---|---------------|----------|--------|
| | RUSS'S MARKET / SUPER SAVER L3 | Feb-21 | 185.807 | 365 |
| | RUSS'S MARKET / SUPER SAVER L2 | Feb-21 | 0 | 3 |
| Central City | City Hall | Feb-15 | 0 | 304 |
| Central Community College | Columbus RG1 | | 85.162 | 85 |
| | CENTRAL CC / CCC COLUMBUS | Sep-20 | 35.873 | 45 |
| | CENTRAL CC / KERNEY CNTR | Jan-21 | 30.113 | 39 |
| | CENTRAL CC / CCC - HASTINGS | Oct-20 | 24.377 | 48 |
| Dakota County | COUNTY COURT | May-16 | 113.108 | 3,342 |
| Ferguson House, Lincoln office of NCEA | FERGUSON HOUSE | Dec-15 | 129.297 | 4,269 |
| Fremont | FREMONT MALL 1 | Aug-18 | 779.464 | 13,843 |
| | DOWNTOWN 1 | Aug-18 | 20.41 | 792 |
| Gothenburg | | | | 0 |
| Gretna | OUTLET MALL | Jun-16 | 81.826 | 5,847 |
| | GRETNA DC FAST | Feb-20 | 1341.728 | 6,660 |
| | CITY HALL | Jun-16 | 29.408 | 2,891 |
| Hastings | EV CHARGER / HASTINGS MUSEUM | Sep-16 | 9.292 | 904 |
| Holdrege | 3RD AVE PARKING | Nov-15 | 5.14 | 715 |
| Kearney | COK / LEC | Sep-20 | 104.335 | 1,417 |
| | COK / CITY HALL | Jun-16 | 383.479 | 18,069 |
| LES | HAYMKT GREEN 2 / LES STATION A | Aug-14 | 242.106 | 14,726 |
| | HAYMKT GREEN 2 / LES STATION B | Aug-14 | 154.522 | 11,854 |
| Lexington | LEXCHARGE01 / LEXCHARGE02 | Feb-15 | 35.902 | 3,510 |
| | LEXCHARGE01 / LEX CHARGE 0304 | Jan-16 | 141.534 | 5,432 |
| Lincoln | CARRIAGE | Dec-16 | 0 | 852 |

| | | | | |
|------------------------|---|---------------|---------|--------|
| | CENTER | Dec-16 | 10.303 | 2,247 |
| | CORNHUSKER | Dec-16 | 234.112 | 11,439 |
| | COUNTY LOT | Dec-16 | 29.694 | 3,835 |
| | HAYMARKET | Dec-16 | 174.487 | 6,494 |
| | LARSON | Dec-16 | 5.097 | 10,258 |
| | LUMBER | Dec-16 | 51.974 | 10,215 |
| | MARKET PLACE | Feb-18 | 28.723 | 2,375 |
| | QUE | Dec-16 | 229.725 | 6,197 |
| | UNIVERSITY SQ | Dec-16 | 367.831 | 11,175 |
| Lincoln Public Schools | East HS RG1 | Aug-20 | 3.651 | 41 |
| | Lincoln HS RG1 | Aug-20 | 40.839 | 171 |
| | LPS Operations RG1 | Aug-20 | | 10 |
| | North Star HS RG1 | Aug-20 | 31.004 | 184 |
| | Northeast HS RG1 | Aug-20 | | 53 |
| | Southeast HS RG1 | Aug-20 | 37 | 154 |
| | Southwest HS RG1 | Aug-20 | | 183 |
| MCC | BLDG 14 | Jul-20 | 0 | 88 |
| | BLDG 20 | Jul-20 | 10.464 | 91 |
| | EVC | Jan-19 | 244.62 | 1,601 |
| | FOC NORTH | Sep-17 | 120.219 | 8,747 |
| | FOC SOUTH | Sep-17 | 259.292 | 8,288 |
| Nebraska City | DOWN TOWN LOT | Feb-15 | 537.556 | 10,621 |
| | CITY HALL | Jan-13 | 40.864 | 4,156 |
| | BEST WESTERN | Mar-15 | 53.054 | 2,950 |
| UNK | NSC RANGE / NSC RANGE 1 | Nov-19 | 8.882 | 168 |
| NP Dodge | NP DODGE / 8601 | Sep-20 | 27.463 | 139 |
| | NP DODGE / 87 DODGE | Oct-19 | 198.486 | 2,855 |
| NPPD | NPPD STATION 1 / SCOTTSBLUFF 1 | Dec-20 | 10.963 | 97 |
| | NPPD STATION 1 / OGALLALA 1 | Oct-19 | 72.885 | 222 |
| | NPPD STATION 1 / NOC 1 | Oct-19 | 180.782 | 1,558 |
| | NPPD STATION 1 / KOC STATION 1 | Dec-19 | 15.284 | 186 |
| | NPPD STATION 1 / CGO2 | Nov-20 | 28.798 | 327 |
| | NPPD STATION 1 / CGO SOUTH LOT | Apr-18 | 232.184 | 10,320 |
| Minden | CITY OF MINDEN / GTW1 | Nov-20 | 34.31 | 105 |
| OPPD | OPPD ELKHORN / OPPD ELK-2 | Jun-16 | 116.412 | 10,096 |

| | | | | |
|-------------------------------------|--------------------------------------|---------------|---------|--------|
| | OPPD ELKHORN / OPPD ELK-1 | May-16 | 62.868 | 13,843 |
| City of Omaha | 16TH AND HOWARD | Sep-20 | 575.963 | 4,664 |
| Omaha Zoological Society | OMAHA ZOO STA 2 | Nov-19 | 138.632 | 1,000 |
| | MAIN LOT STAT 1 | Nov-19 | 120.369 | 896 |
| Papio-Missouri NRD | NRD 1 / CHALCO HILLS 1 | Jan-17 | 511.565 | 17,973 |
| Seward | SEWARD / CONCORDIA UNIV. | Mar-13 | 294.654 | 7,199 |
| | SEWARD / DOWNTOWN | Mar-15 | 1.11 | 724 |
| | SEWARD / MUNICIPAL BLD | Feb-15 | 0 | 2,865 |
| | SEWARD / SENIOR HIGH | Mar-13 | 0 | 429 |
| | SEWARD / SEWARD LIBRARY | Mar-13 | 87.083 | 1,947 |
| South Sioux City | SO. SIOUX CITY / CITY HALL | Mar-19 | 179.322 | 4,477 |
| | FC STATION 1 | Nov-20 | 225.057 | 696 |
| | LAW ENFORCEMENT | Apr-15 | 443.629 | 27,200 |
| | LIBRARY | Mar-19 | 191.151 | 2,599 |
| | RIVERVIEW WTP | Dec-14 | 21.329 | 3,263 |
| | SO. SIOUX CITY / STATION 2 | Nov-20 | 129.723 | 647 |
| UNMC | MAINPLANT | Feb-20 | 1.977 | 647 |
| | PARK LEAVENWORT | Feb-20 | 19.922 | 930 |
| UNO | PSG1 / LOT M | Jul-18 | 94.308 | 6,398 |
| | PSG1 / SCOTT CAMPUS | Jul-17 | 0 | 9,365 |
| | PSG1 / SCOTT CAMPUS 2 | Apr-18 | 22.993 | 3,547 |
| | PSG1 / WEST GARAGE | Jul-18 | 0.693 | 1,794 |
| Valley | CITY HALL / VALLEY | May-16 | 16.211 | 1,726 |
| 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 |

Table of Contents

| | |
|---|-----------|
| 1. Project Description and Summary Savings | 16 |
| 1.1. Introduction | 16 |
| 1.2. Existing Stations Summary | 19 |
| 2. Data Analysis | 31 |
| 2.1. Summary of Unique User Data (Commercial) | 31 |
| 2.2. Summary of Unique User Data (Utility/Residential) | 35 |
| 2.3. Summary of Economic and Environmental Analysis (Commercial and Utility/ Residential) | 41 |
| 3. Appendix A: Detailed Economic Analysis - Commercial | 49 |
| 3.1. Introduction | 50 |
| 3.2. Economic Benefits due to Fuel Type Price Differences | 50 |
| 3.3. Economic Benefits due to Other Factors Affecting Each Fuel Type | 57 |
| 3.4. Total Economic Benefits | 57 |
| 3.5. References | 60 |
| 4. Appendix B: Detailed Economic Analysis – Utility/Residential | 62 |
| 4.1. Introduction | 63 |
| 4.2. Economic Benefits due to Fuel Type Price Differences | 63 |
| 4.3. Economic Benefits Due to Other Factors Effecting Each Fuel Type | 64 |
| 4.4. Total Economic Benefits | 64 |
| 4.5. References | 65 |
| 5. Appendix C: Detailed Environmental Emissions Data Analysis – Commercial and Utility/Residential | 66 |
| 5.1. Introduction | 67 |
| 5.2. Greenhouse Gas Definitions | 68 |
| Greenhouse Gas Emissions Summary - Commercial and Utility/Residential | 70 |
| 5.3. References | 79 |
| 6. Appendix D. Detailed Greenhouse Gas Calculations | 80 |
| 6.1. Conventional Vehicle (CV) | 80 |
| 6.2. Diesel Vehicle (DV) | 82 |
| 6.3. Compressed Natural Gas Vehicle (CNG) | 84 |
| 6.4. Flexible Fuel Vehicles (FFVs) – E85 | 86 |
| 6.5. Battery Electric Vehicle (EV) | 90 |
| 6.5.1. Vehicle Efficiency Calculation | 90 |
| | 13 |

| | |
|--|------------|
| 6.5.2. Electricity Generation Mix and Emissions Calculations | 90 |
| 6.6. References | 115 |
| 7. Appendix E. Detailed Analysis for Charging Stations - Monthly Detailed Data – March 2021 | 116 |

This page is blank on purpose.

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 37 participating members that span the entire state of Nebraska, as shown in Figure 1 and Table 1.

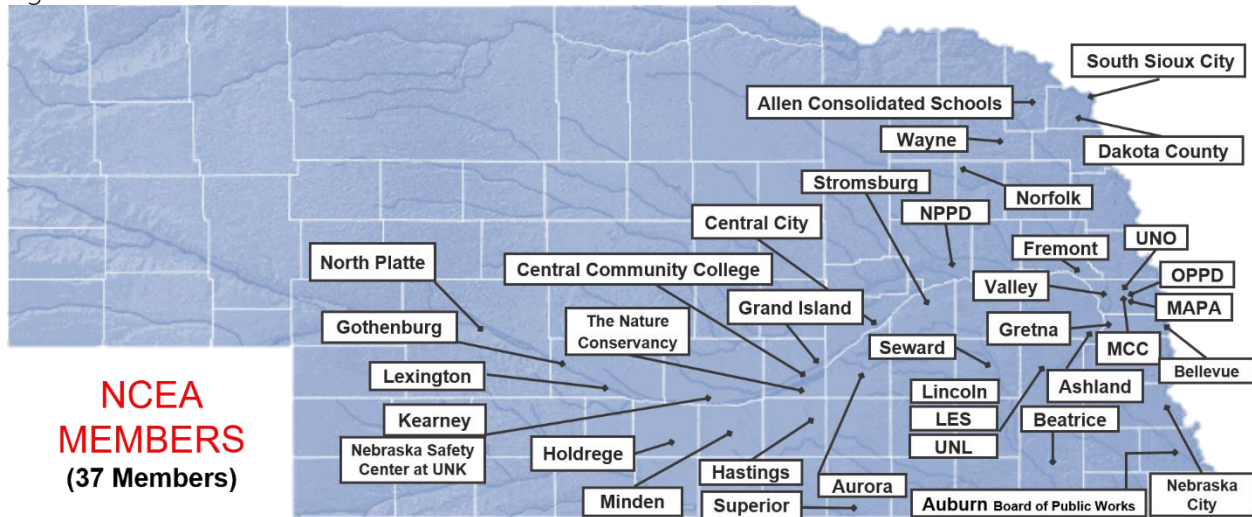


Figure 1: Nebraska Map Showing the 37 NCEA Participating Members.

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 (37) | |
|--|--------------------------------------|
| ➤ Allen Consolidated Schools | ➤ Metropolitan Community College |
| ➤ Ashland | ➤ Minden |
| ➤ Auburn BPW | ➤ The Nature Conservancy |
| ➤ Aurora | ➤ Nebraska City |
| ➤ Beatrice | ➤ Nebraska Safety Center at UNK |
| ➤ Bellevue | ➤ Nebraska Public Power District |
| ➤ Central City | ➤ Norfolk |
| ➤ Central Community College(CCC) | ➤ North Platte |
| ➤ Dakota County | ➤ Omaha Public Power District (OPPD) |
| ➤ Fremont | ➤ Seward |
| ➤ Gothenburg | ➤ South Sioux City |
| ➤ Grand Island | ➤ Stromsburg |
| ➤ Gretna | ➤ Superior |
| ➤ Hastings | ➤ University of Nebraska at Omaha |
| ➤ Holdrege | ➤ University of Nebraska-Lincoln |
| ➤ Kearney | ➤ Valley |
| ➤ Lexington | ➤ Wayne |
| ➤ Lincoln Electric System | |
| ➤ 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.

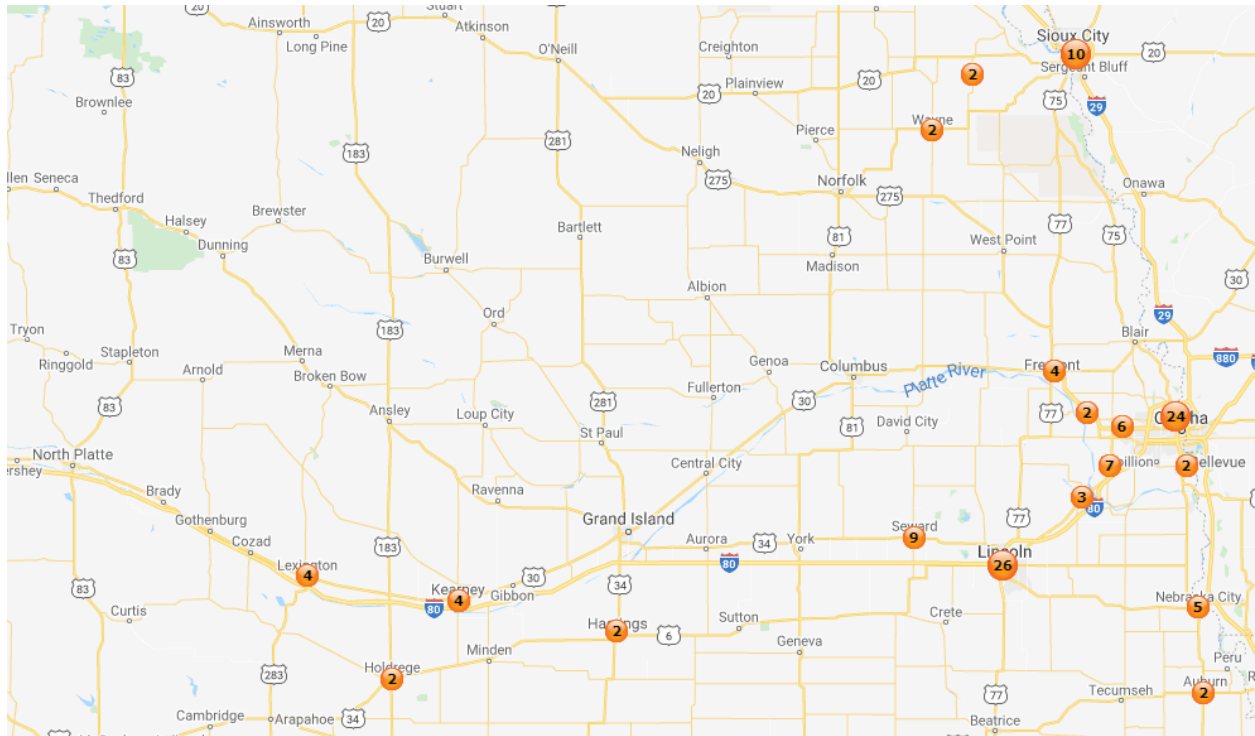


Figure 2: ChargePoint Charging Station Locations Across Nebraska, Numbers Shown Indicate Number of Charging Station ports.

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

| Charging Station Location | Address | Rate Structure | Net Revenue** for March 2021 (Since Jan 2013) | Number of Stations | Number of Ports | Grant Phase |
|-------------------------------------|---|---|---|--------------------|-----------------|-------------|
| Allen Consolidated Schools | 126 E 5th 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 | \$17.15 (\$0) | 1 | 2 | IV |
| Aurora | 1118 N St, Aurora, Nebraska 68818, United States | Level 2 stations Energy Fee : All Days \$1.00/hr Min :\$2.00 Max: \$4.00 | \$20 (\$69.6) | 2 | 3 | IV V |
| | 1118 N St, Aurora, Nebraska 68818, United States | DC stations Energy Fee : All Days \$0.07/min Min :\$4.00 Max: \$8.00 | | | | |
| Ashland | DC Fast Charger: S 13th St, Ashland, NE 68003 | Energy Fee: \$8.00/hr (Min: \$4.00, Max: \$8.00) | \$58.35 (\$2,503.38) | 2 | 3 | II |
| | Level 2 Station: S 13th 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 | \$236.11 (\$336.57) | 1 | 2 | |
| | 840 Fallbrook Blvd, Lincoln, Nebraska 68521, United States | \$0.20/min | | 1 | 1 | |
| | 4400 S 33rd Ct, Lincoln, Nebraska 68516, United States | \$0.05/min | | 1 | 2 | |

| | | | | | | |
|----------------------------------|--|-----------------------|--|---------------------------|------------------------|--------------------|
| | 4400 S 33rd Ct, Lincoln, Nebraska 68516, United States | \$0.20/min | | 1 | 2 | |
| Central City | 1515 17th 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 |
| Charging Station Location | Address | Rate Structure | Net Revenue** for March 2021 (Since Jan 2013) | Number of Stations | Number of Ports | Grant Phase |
| Central Community College | 550 S Technical Blvd, Hastings, Nebraska 68901, United States | Free For All | \$18.17 (\$0) | 2 | 4 | V |
| | 4500 63rd St, Columbus, Nebraska 68601, United States | | | | | |
| Dakota County | 1600-1698 Myrtle St, Dakota City, NE 68731. Located on North parking lot of the County Courthouse near the corner of 16th and Maple Street in Dakota City | Flat Fee: \$1.00 | \$7 (\$129) | 1 | 2 | II |

| Charging Station Location | Address | Rate Structure | Net Revenue** for March 2021 (Since Jan 2013) | Number of Stations | Number of Ports | Grant Phase |
|--|--|---|---|--------------------|-----------------|------------------|
| Ferguson House, Lincoln office of NCEA | 700 S 16th St, Lincoln, NE 68508. Located at parking lot of Ferguson House | First 4 hrs: \$0.25/hr Thereafter: \$1.00/hr Minimum \$1.00 | \$8.02 (\$602.44) | 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 | \$31.74 (\$358.75) | 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 | \$184.35 (\$607.04) | 3 | 5 | (2) II (1) IV |

| Charging Station Location | Address | Rate Structure | Net Revenue** for March 2021 (Since Jan 2013) | Number of Stations | Number of Ports | Grant Phase |
|---------------------------|--|---|---|--------------------|-----------------|-------------|
| 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 | \$4 (\$223.38) | 1 | 2 | II |
| Holdrege | 749-799 Railroad St, Holdrege, NE 68949. Located in the 3rd Ave and East Ave parking lot on the west side | Free For All | \$0 (\$0) | 1 | 2 | I |
| Kearney | Station 1 : 1-99 E 23rd St, Kearney, NE 68847. Located at Public parking lot north of City Hall | Free For All | \$0 (\$0) | 1 | 2 | II |
| | Station 2 : 2025 A Avenue, Kearney, Nebraska 68847, United States | | | 1 | 2 | V |
| 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 | \$72.19 (\$3,461.78) | 2 | 4 | |
| Lexington | Station 1: 652-698 N Jefferson St, Lexington, NE 68850. Located in the alley between 6th and 7th, 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 | \$12.6 (\$490.93) | 2 | 4 | I |

| Charging Station Location | Address | Rate Structure | Net Revenue** for March 2021 (Since Jan 2013) | Number of Stations | Number of Ports | Grant Phase |
|---------------------------|---|---|---|--------------------|-----------------|-------------|
| | Station 2: 2607 Plum Creek Pkwy, Lexington, NE 68850. Located on the east side of Holiday Inn Express | | | | | |
| 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 | \$195.13 (\$8,939.77) | 10 | 20 | II |
| | Station 2: 925 Q St, Lincoln, NE 68508. Located in Garage, near main entrance off 10th Street between "P" and "Q" Street. | | | | | |
| | Station 3: 111 Q street, Lincoln, Nebraska 68508, United States. Located in Garage, near main exit | | | | | |
| | Station 4: 1317 Q St, Lincoln, Nebraska 68508, United States. Located in Garage, near main entrance 2nd level. | | | | | |
| | Station 5: 101 N 14th St, Lincoln, Nebraska 68508, United States. Located in Garage, next to elevator | | | | | |
| | Station 6: 1120 N St, Lincoln, Nebraska 68508, United States. Located in Garage, near | | | | | |

| | | | | | | |
|-------------------------------|--|---|-----------------------------------|---|---|--|
| | West entrance from 11th St. | | | | | |
| | Station 7: 700 N St, Lincoln, Nebraska 68508, United States. Located in Garage, near South entrance | | | | | |
| | Station 8: 1220 L Street, Lincoln, Nebraska 68508, United States. Located in Garage, 2nd floor near elevator | | | | | |
| | Station 9: 1128 L St, Lincoln, Nebraska 68508, United States. Located in Garage, near South entrance | | | | | |
| | Station 10: 921 L St, Lincoln, Nebraska 68508, United States. Located in Garage, near South stairs | | | | | |
| Lincoln Public Schools | Station 1 :5801 N 33rd St, Lincoln, Nebraska 68504, United States | Station parking \$0.25/hr for first 4 hours, then \$1.00/hr | \$8.49 (\$66.22) | 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 24th St, Lincoln, Nebraska 68510, United States | | | | | |
| | Station 5: 1000 S 70th St, Lincoln, Nebraska 68510, United States | | | | | |

| | Station 6: 2930 S 37th St, Lincoln, Nebraska 68506, United States | | | | | |
|--------------------------------------|---|-----------------------|--|---------------------------|------------------------|--------------------|
| | Station 7: 7001 S 14th St, Lincoln, Nebraska 68512, United States | | | | | |
| Charging Station Location | Address | Rate Structure | Net Revenue** for March 2021 (Since Jan 2013) | Number of Stations | Number of Ports | Grant Phase |
| MCC | Station 1&2: 3035 Saratoga St, Omaha, NE 68111 | Free For All | \$0 (\$0) | 2 | 4 | |
| | Station 3: Cumberland Road, Omaha, NE 68022 | | | 1 | 2 | III |
| | Station 4: 5370 N. 30th St., Omaha, NE 68111 | | | 1 | 2 | III |
| | Station 5: Bldg 14 Middle Rd, Omaha, NE 68111 | | | 1 | 2 | III |
| Nebraska City | Station 1: 1321 Central Ave, Nebraska City, NE 68410 | 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 7th and 8th Street | | | 2 | 3 | I |
| | Station 3: 2515 S 11th St, Nebraska City, NE 68410 Located on the east end of the Best Western parking lot | | | | | |
| Nebraska Safety Center at UNK | Station 1 and 2: 3035 Saratoga St, Omaha, NE 68111 | FREE FOR ALL | \$0 (\$0) | 2 | 4 | IV |

| | | | | | | |
|-----------------|--|--|-------------------------|---|---|----|
| | South parking lot of CASC building 23 on MCC Campus. | | | | | |
| NP Dodge | Station 1 : 8701 W Dodge Rd, Omaha, Nebraska 68114, United States | FREE FOR ALL | \$53.04 (\$0) | 1 | 1 | |
| | Station 2 : 8601 West Dodge Road, Omaha, Nebraska 68114, United States | | | 1 | 2 | IV |
| 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 | \$65.08 (\$1,405.69) | 1 | 2 | V |
| | Station 2 : 414 15th St, Columbus, Nebraska 68601, United States | | | 1 | 2 | |
| | Station 3: 1414 15th St, Columbus, Nebraska 68601, United States | | | 1 | 2 | |
| | Station 4 : 900 4th Ave, Kearney, Nebraska 68845, United States | | | 1 | 2 | |
| | Station 5 : 300 S Clarice Rd, Ogallala, Nebraska 69153, United States | | | 1 | 2 | |
| | Station 6 : 515 1st 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 | Free For All | \$0 (\$0) | 2 | 4 | II |

| | | | | | | |
|----------------------------------|--|---|--|---------------------------|------------------------|--------------------|
| | transportation garage. Station 2 Located on the east side of transportation department parking stalls located directly south of transportation department garage | | | | | |
| City of Omaha | 444 S 16th St, Omaha, Nebraska 68102, United States | Free For All | \$0 (\$0) | 2 | 4 | IV |
| Omaha Henry Doorly Zoo | Station 1 and 2: 3701 S 10th 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 | \$81.56 (\$861.89) | 2 | 4 | IV |
| Papio-Missouri NRD | Station 1: Chalco Hills Recreation Area 8901 S 154th St, Omaha, NE 68138 | Free For All | \$0 (\$0) | 1 | 2 | |
| Charging Station Location | Address | Rate Structure | Net Revenue** for March 2021 (Since Jan 2013) | Number of Stations | Number of Ports | Grant Phase |
| Seward | Station 1: 532 Northern Heights Drive, Seward, NE 68434. Located at Southeast Corner of High School East Parking Lot Station 2: 700 E Hillcrest Dr, Seward, NE 68434. Located at Northeast Corner of Walz Field House Parking Lot | Free For Connected Drivers. Others: \$2.00/session Flat Fee | \$24 (\$838) | 3 (1 Unavailable) | 6 (2 Unavailable) | |

| | | | | | | |
|---|---|---|-------------------------------|---|----|----|
| | <p>Station 3: 233 S. 5th St., Seward, NE 68434. Located in Southwest Corner of West Library Parking Lot</p> <p>Station 4: 546 Jackson Ave, Seward, NE 68434. 546 Jackson Ave, Seward, NE 68434</p> <p>Station 5: 142 N 7th St, Seward, NE 68434. Located on the North West Corner of the Municipal Building</p> | | | | | |
| | | | | 2 | 3 | 1 |
| South Sioux City | <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>\$67.65 (\$432.82)</p> | | | |
| | <p>Station 2: 1615 1st Ave, South Sioux City, NE 68776</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> | | | 5 | 11 | I |
| University of Nebraska Medical Center (UNMC) | <p>Station 1: 802 S 60th St, Omaha, NE 68106</p> <p>Station 2: 668 S 41th St, Omaha, NE 68105</p> | <p>\$0.50 per hour for first 4 hours, then \$3 per hour</p> | <p>\$3.84 (\$338.32)</p> | 1 | 2 | IV |
| | | | | 1 | 2 | IV |

| | | | | | | |
|--|--|---|-----------------------------|---|---|----|
| UNO | 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. | \$0.12/hr for 4 hrs. Thereafter, \$3.00/hr. Minimum: \$0.50 Maximum: \$50.00 | \$9.65 (\$2,111.39) | 4 | 8 | |
| | Station 3: 6505 University Dr S, Omaha, NE 68182. Located in Lot M | | | | | |
| | Station 4: University Dr S, Omaha, NE 68132. Located in West Garage | | | | | |
| Valley | 203 N Spruce St, Valley, NE 68064 | \$0.25/hr. Minimum: \$1.00 Maximum: \$1.00 for every 4 hrs | \$0 (\$105.76) | 1 | 2 | II |
| Wayne | W 3rd 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 | | | |
| | | | \$1,178.12 (\$23,979.48) | | | |

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 March 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> |

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

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

| Charging Station Location | Number of Unique Users in March 2021 | Number of Charging Sessions | Energy Usage (kWh) |
|--|--------------------------------------|-----------------------------|--------------------|
| Allen Consolidated Schools | 1 | 4 | 45 |
| Auburn Board of Public Works | 17 | 40 | 346.269 |
| Aurora | 4 | 5 | 101.95 |
| Ashland | 11 | 23 | 209 |
| Bellevue | 0 | 0 | 0 |
| B & R Stores | 24 | 67 | 564 |
| Central City* | 0 | 0 | 0.00 |
| Central Community College | 14 | 39 | 175.53 |
| Dakota County | 2 | 5 | 113 |
| Ferguson House, Lincoln office of NCEA | 2 | 5 | 129 |
| Fremont | 22 | 60 | 800 |
| Gothenburg | 0 | | 0.00 |
| Gretna | 34 | 81 | 1,453 |
| Hastings | 2 | 2 | 9 |
| Holdrege | 1 | 1 | 5.14 |
| Kearney | 11 | 35 | 488 |
| LES | 11 | 18 | 397 |
| Lexington | 7 | 11 | 177 |
| Lincoln | 43 | 111 | 1,132 |
| Lincoln Public Schools | 10 | 20 | 112 |
| MCC | 18 | 73 | 635 |
| Nebraska City | 11 | 51 | 631 |
| Nebraska Safety Center at UNK | 1 | 1 | 8.882 |
| NP Dodge | 8 | 13 | 225.95 |
| NPPD | 22 | 39 | 480.89 |
| Minden | 2 | 6 | 34.31 |
| OPPD | 4 | 15 | 179 |
| City of Omaha | 20 | 44 | 576 |
| Omaha Zoological Society | 19 | 24 | 259.003 |
| Papio-Missouri NRD | 31 | 59 | 512 |
| Seward | 6 | 15 | 383 |
| South Sioux City | 30 | 90 | 1,190 |
| UNMC | 8 | 15 | 21.899 |
| UNO | 11 | 19 | 118 |
| Valley | 2 | 3 | 16 |
| Wayne | 0 | 0 | 0 |
| Total | 330 | 994 | 11,529 |
| Total number of charging ports: 166, (152 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).

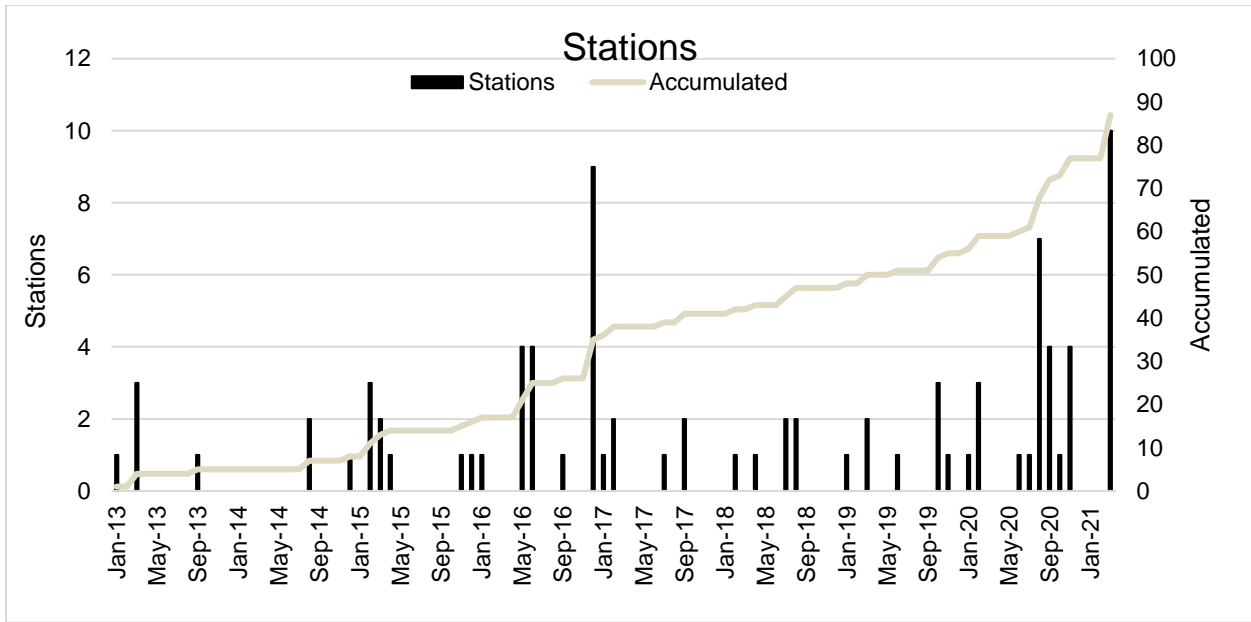


Figure 3: Number of Charging Stations Installed per Month Since Jan` 2013.

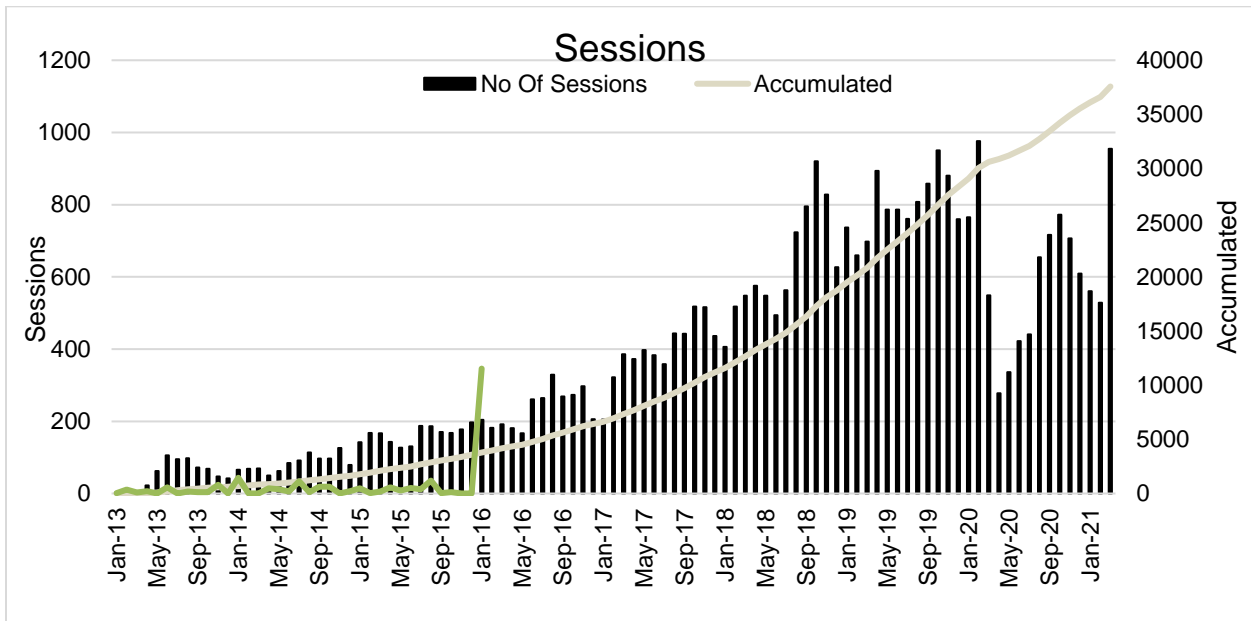


Figure 4: Number of Charging Sessions per Month Since Jan` 2013.

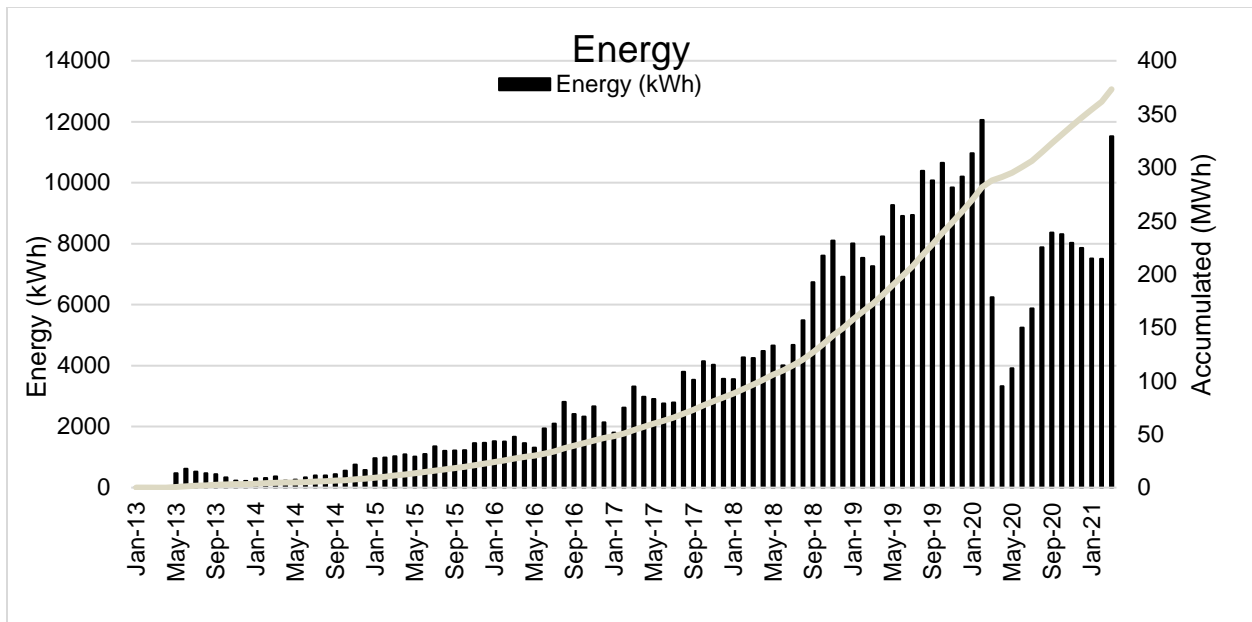


Figure 5: Energy Usage per Month Since Jan` 2013.

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>128</u> | <u>10,487</u> | <u>119,049</u> |
| <u>2019 Total</u> | - | <u>240</u> | <u>45,921</u> | <u>547,841</u> |
| <u>2020 Total</u> | | <u>370</u> | <u>48,022</u> | <u>611,576</u> |
| Jan` 2021 | | 381 | 5,033 | 72,011 |
| Feb` 2021 | | 394 | 5,726 | 84,955 |
| Mar` 2021 | | 418 | 6,689 | 86,598 |
| <u>Total</u> | | <u>418</u> | <u>121,623</u> | <u>1,518,488</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.

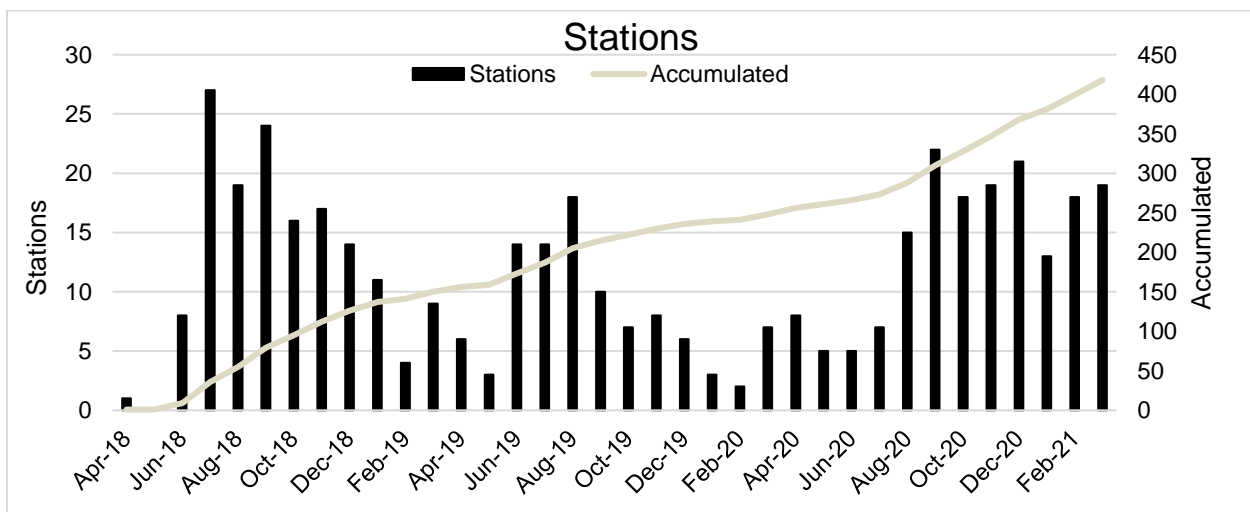


Figure 6a: Number of Charging Stations Installed per Month Since Apr 2018.

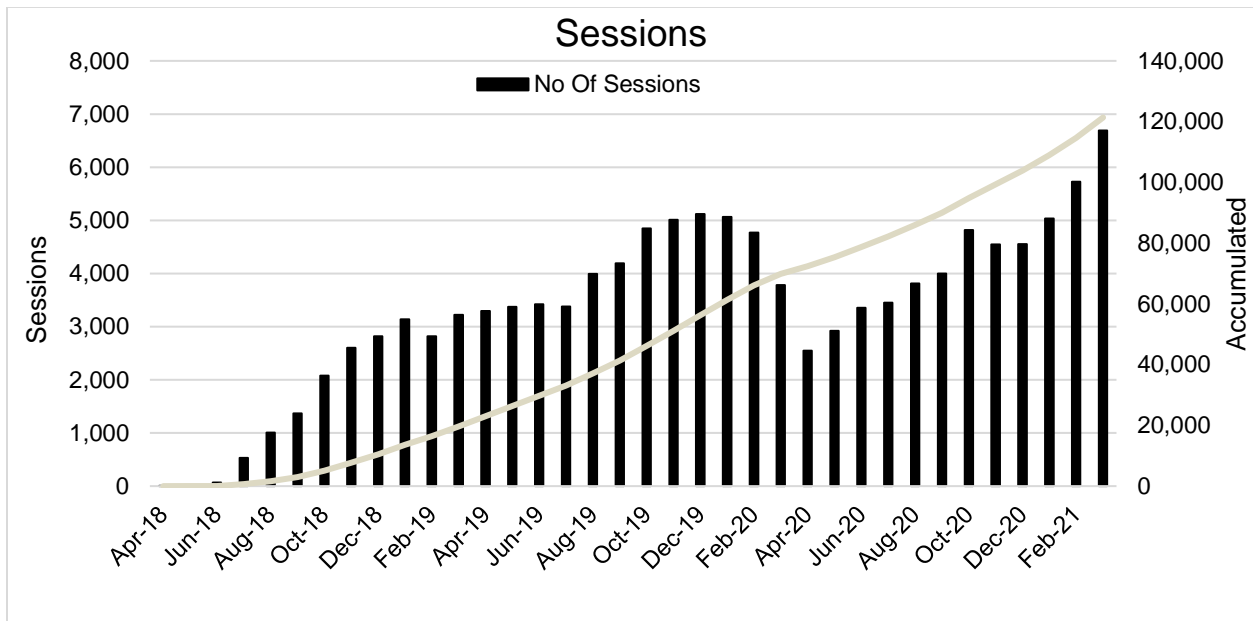


Figure 7a: Number of Charging Sessions per Month Since Apr 2018.

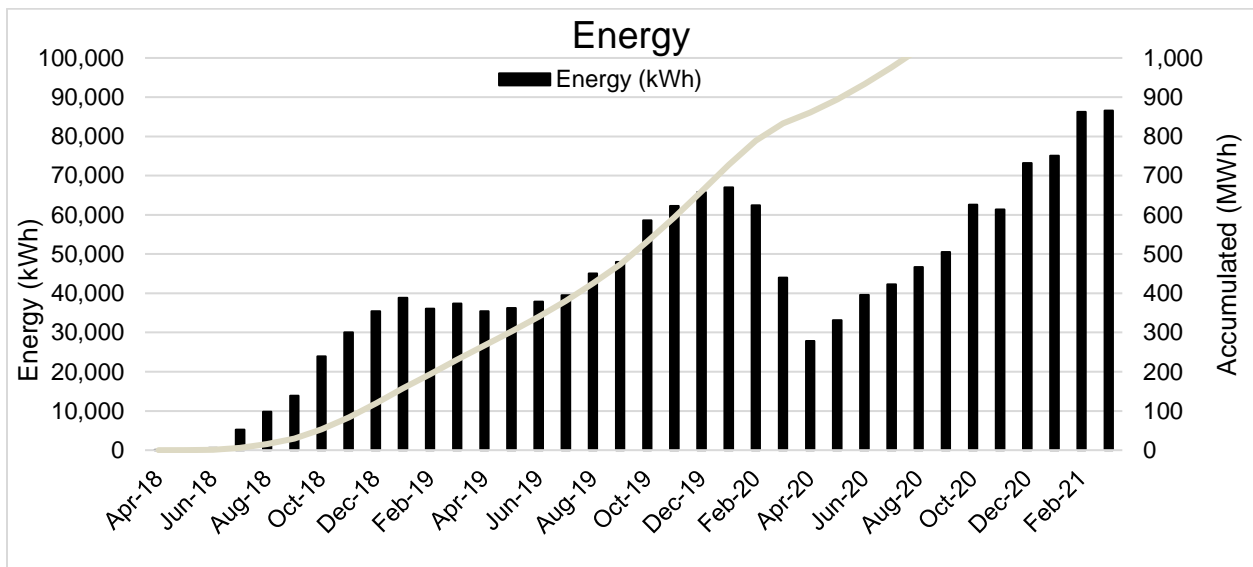


Figure 8a: Energy Usage per Month Since Apr 2018.

➤ 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> | - | 10 | 1,664 | 8,906 |
| <u>2020 Total</u> | - | 27 | 2,406 | 31,561 |
| Jan`2021 | | 29 | 441 | 6,851 |
| Feb`2021 | | 29 | 413 | 6,144 |
| Mar`2021 | | 34 | 613 | 10,697 |
| <u>Total</u> | | <u>34</u> | <u>6,600</u> | <u>69,806</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.

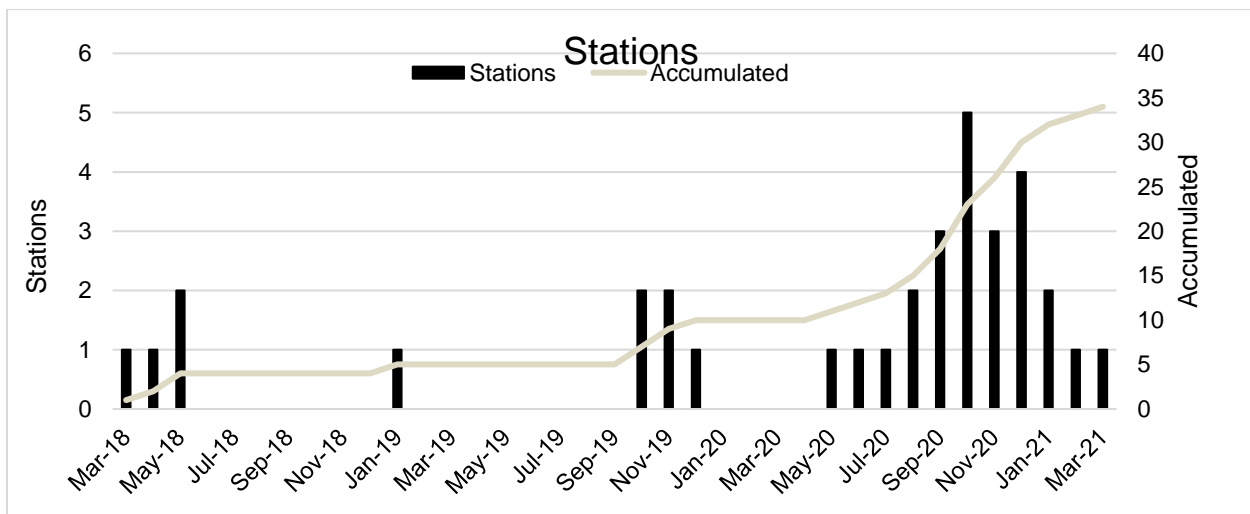


Figure 6b: Number of Charging Stations Installed per Month Since Mar 2018.

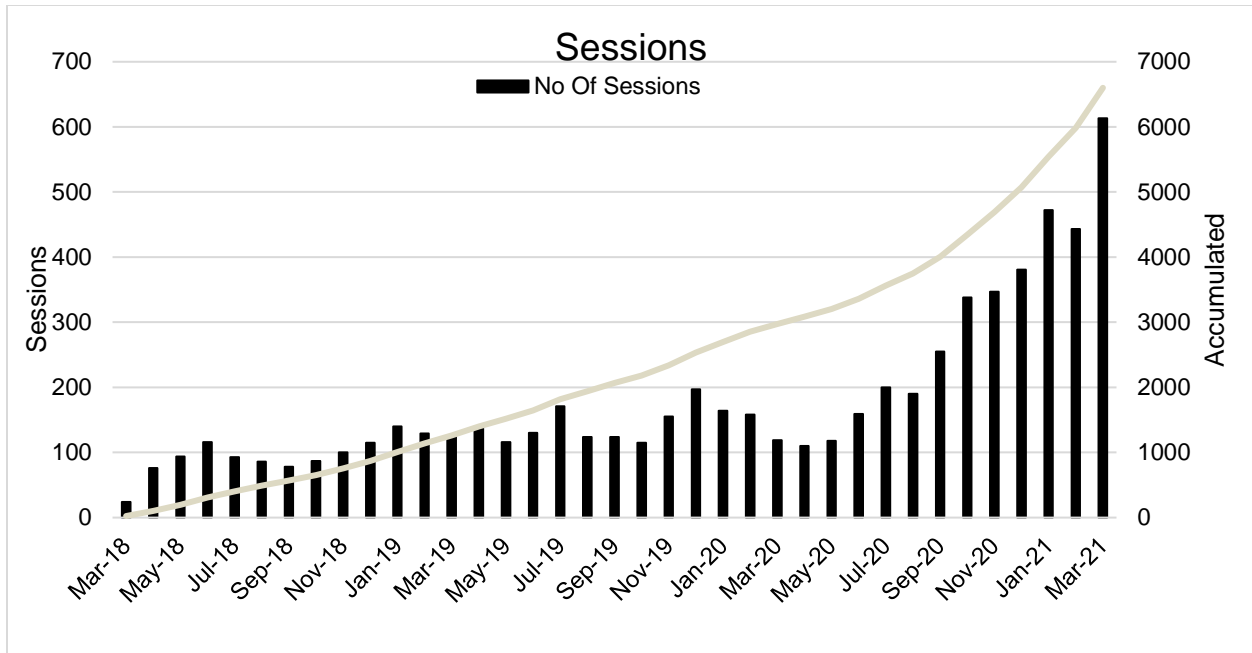


Figure 7b: Number of Charging Sessions per Month Since Mar 2018.

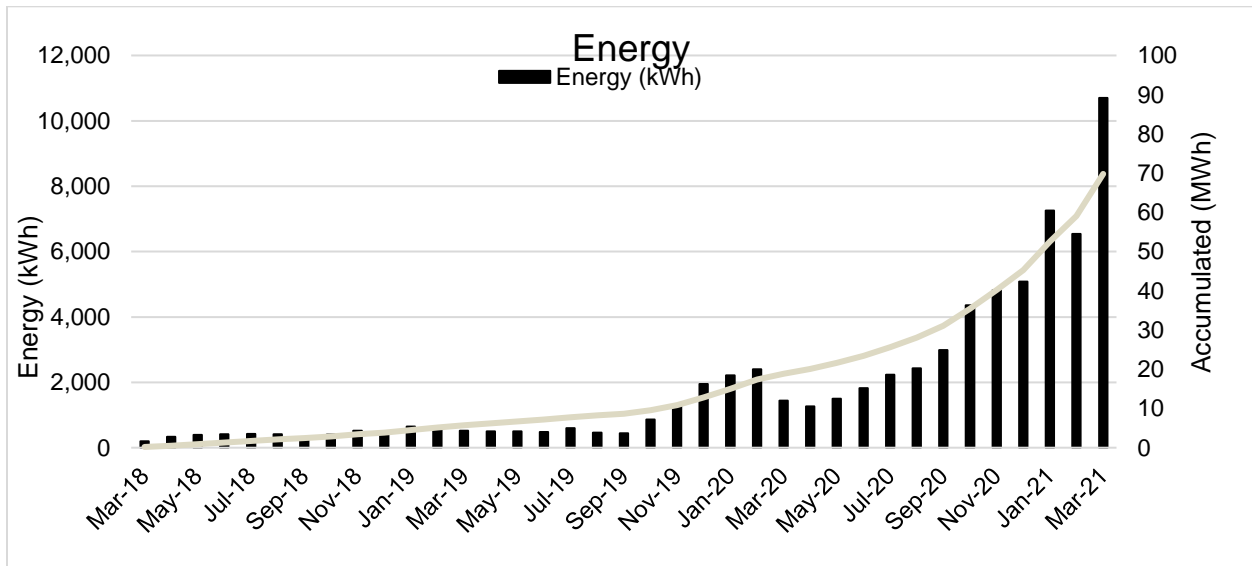


Figure 8b: Energy Usage per Month Since Mar 2018.

➤ 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 | - | 5 | 29 | 652 |
| Feb` 2021 | - | 5 | 23 | 600 |
| Mar` 2021 | - | 5 | 35 | 632 |
| <u>Total</u> | | <u>5</u> | <u>787</u> | <u>16,314</u> |

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.

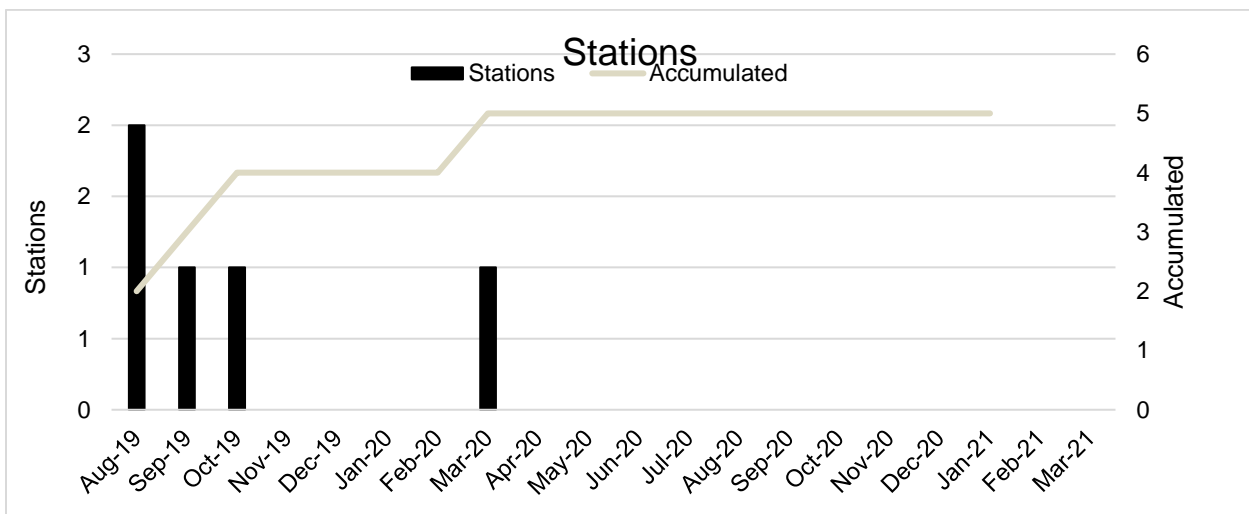


Figure 6c: Number of Charging Stations Installed per Month Since Aug 2019.

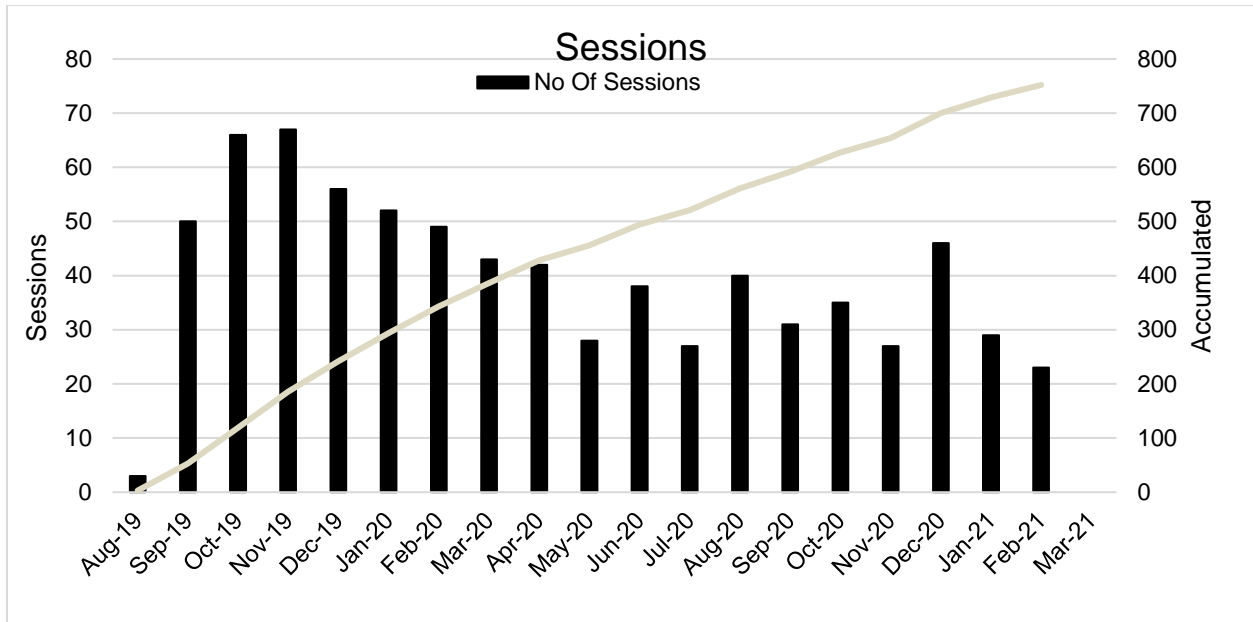


Figure 7c: Number of Charging Sessions per Month Since Aug 2019.

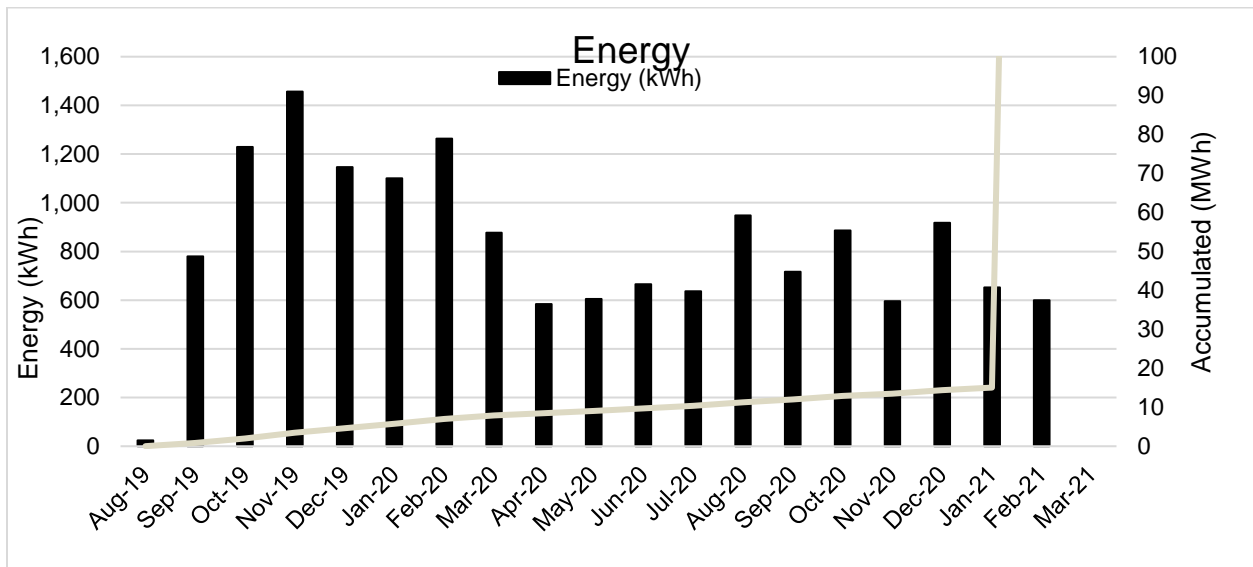


Figure 8c: Energy Usage per Month Since Aug 2019.

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 March 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 March 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 March 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 | 4 | 45 | \$18 | 52 | 0.92 | (0.12) | (0.17) | (0.00) | 0.06 |
| Auburn Board of Public Works | 4 | 40 | 346.269 | \$141 | 667 | 7.20 | (0.43) | 0.17 | (0.02) | 0.44 |
| Aurora | 3 | 5 | 101.95 | \$43 | 118 | 2.09 | (0.28) | (0.39) | (0.01) | 0.13 |
| Ashland | 3 | 23 | 209 | \$85 | 203 | 4.23 | (0.55) | (0.29) | (0.02) | 0.26 |
| Bellevue | 4 | 0 | 0 | \$0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| B & R Stores | 6 | 67 | 564 | \$238 | 265 | 11.36 | (1.47) | (0.87) | (0.13) | 0.71 |
| Central City | 2 | 0 | 0.00 | \$0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Central Community College | 4 | 39 | 175.53 | \$74 | 203 | 3.60 | (0.48) | (0.67) | (0.01) | 0.22 |
| Dakota County | 2 | 5 | 113 | \$46 | 131 | 2.32 | (0.31) | (0.43) | (0.01) | 0.14 |
| Ferguson House, Lincoln office of NCEA | 2 | 5 | 129 | \$55 | 188 | 2.67 | (0.11) | (0.04) | (0.00) | 0.16 |
| Fremont | 4 | 60 | 800 | \$316 | 959 | 16.14 | (1.88) | (0.53) | (0.13) | 1.00 |
| Gothenburg | - | | 0.00 | \$0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Gretna | 5 | 81 | 1,453 | \$594 | 1,412 | 29.42 | (3.84) | (2.04) | (0.15) | 1.80 |
| Hastings | 2 | 2 | 9 | \$4 | 4 | 0.19 | (0.02) | (0.01) | (0.00) | 0.01 |
| Holdrege | 2 | 1 | 5.14 | \$2 | 6 | 0.11 | (0.01) | (0.02) | (0.00) | 0.01 |
| Kearney | 4 | 35 | 488 | \$205 | 566 | 10.01 | (1.33) | (1.85) | (0.03) | 0.61 |
| LES | 4 | 18 | 397 | \$143 | 576 | 8.19 | (0.34) | (0.13) | (0.01) | 0.49 |
| Lexington | 4 | 11 | 177 | \$73 | 206 | 3.64 | (0.48) | (0.67) | (0.01) | 0.22 |
| Lincoln | 20 | 111 | 1,132 | \$480 | 1,643 | 23.38 | (0.97) | (0.38) | (0.04) | 1.41 |
| Lincoln Public Schools | 7 | 20 | 112 | \$48 | 163 | 2.32 | (0.10) | (0.04) | (0.00) | 0.14 |
| MCC | 10 | 73 | 635 | \$260 | 617 | 12.85 | (1.68) | (0.89) | (0.07) | 0.79 |
| Nebraska City | 5 | 51 | 631 | \$245 | 1,217 | 13.14 | (0.79) | 0.32 | (0.04) | 0.79 |
| Nebraska Safety Center at UNK | 2 | 1 | 8.882 | \$4 | 10 | 0.18 | (0.02) | (0.03) | (0.00) | 0.01 |
| NP Dodge | 3 | 13 | 225.95 | \$91 | 220 | 4.57 | (0.60) | (0.32) | (0.02) | 0.28 |
| NPPD | 12 | 39 | 480.89 | \$204 | 698 | 9.93 | (0.41) | (0.16) | (0.02) | 0.60 |
| Minden | 2 | 6 | 34.31 | \$14 | 40 | 0.70 | (0.09) | (0.13) | (0.00) | 0.04 |
| OPPD | 4 | 15 | 179 | \$74 | 174 | 3.63 | (0.47) | (0.25) | (0.02) | 0.22 |
| City of Omaha | 2 | 44 | 576 | \$234 | 668 | 11.81 | (1.57) | (2.19) | (0.04) | 0.71 |
| Omaha Zoological Society | 4 | 24 | 259.003 | \$105 | 252 | 5.24 | (0.69) | (0.36) | (0.03) | 0.32 |
| Papio-Missouri NRD | 2 | 59 | 512 | \$208 | 497 | 10.36 | (1.35) | (0.72) | (0.05) | 0.63 |
| Seward | 9 | 15 | 383 | \$152 | 444 | 7.85 | (1.04) | (1.45) | (0.03) | 0.47 |
| South Sioux City | 11 | 90 | 1,190 | \$484 | 1,380 | 24.41 | (3.23) | (4.52) | (0.08) | 1.48 |
| UNMC | 4 | 15 | 21.899 | \$9 | 21 | 0.44 | (0.06) | (0.03) | (0.00) | 0.03 |
| UNO | 8 | 19 | 118 | \$48 | 115 | 2.39 | (0.31) | (0.17) | (0.01) | 0.15 |
| Valley | 2 | 3 | 16 | \$7 | 16 | 0.33 | (0.04) | (0.02) | (0.00) | 0.02 |
| Wayne | 2 | 0 | 0 | \$0 | 0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total | 166 | 994 | 11,529 | \$4,701 | 13,731 | 235.64 | (25.08) | (19.31) | (1.00) | 14.34 |

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 | 1,072 | 11,197 | \$3,940 | 22,213 | 457.65 | (25.37) | (0.28) | 1.39 | 15.26 |
| Auburn Board od Public Works | 4 | 459 | 1,410 | \$482 | 2,623 | 28.88 | (1.91) | 0.62 | (0.02) | 1.76 |
| Aurora | 3 | 29 | 341 | \$124 | 395 | 6.99 | (0.93) | (1.30) | (0.02) | 0.42 |
| Ashland | 3 | 1,042 | 10,696 | \$3,689 | 14,180 | 239.36 | (34.36) | (12.45) | 0.06 | 13.20 |
| Bellevue | 4 | 1,295 | 12,080 | \$3,959 | 25,594 | 571.21 | (33.69) | 18.47 | 1.87 | 16.91 |
| B & R Stores | 6 | 108 | 816 | \$335 | 383 | 16.42 | (2.12) | (1.25) | (0.19) | 1.02 |
| Central City | 2 | 33 | 522 | \$163 | 1,264 | 31.44 | (1.18) | 1.59 | 0.13 | 0.78 |
| Central Community College | 4 | 51 | 218 | \$88 | 252 | 4.46 | (0.59) | (0.83) | (0.02) | 0.27 |
| Dakota County | 2 | 297 | 3,342 | \$1,136 | 5,850 | 105.63 | (8.30) | (4.59) | 0.24 | 4.35 |
| Ferguson House, Lincoln office of NCEA | 2 | 540 | 4,269 | \$1,506 | 7,121 | 164.72 | (5.49) | (8.81) | 0.61 | 5.71 |
| Fremont | 4 | 1,039 | 16,076 | \$5,376 | 18,323 | 307.90 | (40.03) | (18.37) | (2.55) | 19.63 |
| Gothenburg | - | 0 | 0 | \$720 | 6,020 | 155.11 | (5.30) | 8.68 | 0.64 | 3.56 |
| Gretna | 5 | 1,878 | 15,397 | \$5,117 | 21,095 | 401.53 | (46.44) | (11.95) | 0.02 | 15.02 |
| Hastings | 2 | 116 | 905 | \$327 | 948 | 23.10 | (2.34) | 0.22 | 0.09 | 1.14 |
| Holdrege | 2 | 95 | 708 | \$242 | 1,301 | 25.34 | (1.65) | (0.29) | 0.08 | 0.94 |
| Kearney | 4 | 2,431 | 19,260 | \$7,003 | 30,844 | 517.71 | (46.26) | (35.98) | 0.99 | 24.49 |
| LES | 4 | 1,674 | 26,308 | \$9,741 | 31,861 | 742.82 | (15.40) | (142.87) | 2.95 | 33.08 |
| Lexington | 4 | 868 | 8,999 | \$2,781 | 15,836 | 297.89 | (21.48) | (9.31) | 0.78 | 11.80 |
| Lincoln | 20 | 6,257 | 64,876 | \$24,069 | 69,475 | 1,546.27 | (43.52) | (363.22) | 6.04 | 79.81 |
| Lincoln Public Schools | 7 | 105 | 795 | \$281 | 1,155 | 16.43 | (0.68) | (0.27) | (0.03) | 0.99 |
| MCC | 10 | 1,720 | 18,304 | \$6,533 | 23,808 | 360.68 | (61.29) | (27.73) | (0.51) | 22.22 |
| Nebraska City | 5 | 1,844 | 17,360 | \$7,319 | 43,728 | 641.47 | (32.44) | 26.73 | 2.04 | 23.40 |
| Nebraska Safety Center at UNK | 2 | 39 | 168 | \$60 | 228 | 3.39 | (0.43) | (0.56) | (0.00) | 0.21 |
| NP Dodge | 3 | 94 | 2,995 | \$1,024 | 3,437 | 59.74 | (9.04) | (4.40) | (0.20) | 3.67 |
| NPPD | 12 | 974 | 12,650 | \$4,732 | 18,364 | 261.31 | (10.83) | (4.25) | (0.44) | 15.74 |
| Minden | 2 | 19 | 105 | \$37 | 122 | 2.16 | (0.29) | (0.40) | (0.01) | 0.13 |
| OPPD | 4 | 4,830 | 27,101 | \$8,863 | 53,198 | 1,166.67 | (80.46) | 29.61 | 3.66 | 37.19 |
| City of Omaha | 2 | 385 | 4,664 | \$1,587 | 6,107 | 94.76 | (12.09) | (16.09) | (0.15) | 5.75 |
| Omaha Zoological Society | 4 | 237 | 1,896 | \$638 | 2,239 | 37.72 | (5.86) | (2.81) | (0.11) | 2.32 |
| Papio-Missouri NRD | 2 | 1,831 | 17,973 | \$6,495 | 23,460 | 353.66 | (60.28) | (27.49) | (0.59) | 21.82 |
| Seward | 9 | 901 | 11,831 | \$3,808 | 21,472 | 419.96 | (27.99) | (7.39) | 1.21 | 15.71 |
| South Sioux City | 11 | 3,271 | 40,404 | \$13,430 | 73,946 | 1,432.29 | (95.66) | (16.81) | 4.16 | 53.59 |
| UNMC | 4 | 158 | 1,577 | \$478 | 1,922 | 31.26 | (5.00) | (2.36) | (0.08) | 1.93 |
| UNO | 8 | 2,467 | 21,001 | \$7,247 | 26,853 | 416.13 | (69.70) | (30.62) | (0.56) | 25.52 |
| Valley | 2 | 212 | 1,736 | \$578 | 2,863 | 57.36 | (5.36) | 0.02 | 0.13 | 2.27 |
| Wayne | 2 | 164 | 2,262 | \$1,889 | 8,787 | 64.17 | (5.13) | (39.86) | 0.25 | 2.85 |
| Total | 166 | 38,535 | 380,240 | \$135,798 | 587,267 | 11,063.58 | (818.88) | (706.62) | 21.85 | 484.45 |

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 | \$1,506 | 7,121 | 164.72 | (5.49) | (8.81) | 0.61 | 5.71 |
| Gothenburg | \$720 | 6,020 | 155.11 | (5.30) | 8.68 | 0.64 | 3.56 |
| Holdrege | \$242 | 1,301 | 25.34 | (1.65) | (0.29) | 0.08 | 0.94 |
| Lexington | \$2,781 | 15,836 | 297.89 | (21.48) | (9.31) | 0.78 | 11.80 |
| Nebraska City | \$5,122 | 31,220 | 516.89 | (28.16) | 19.80 | 1.53 | 20.56 |
| Seward | \$481 | 2,024 | 26.09 | (3.11) | (3.76) | 0.04 | 1.59 |
| South Sioux City | \$893 | 3,698 | 52.44 | (6.49) | (8.28) | (0.01) | 3.19 |
| Wayne* | \$1,149 | 5,100 | - | - | - | - | - |
| Total | \$17,016 | 99,179 | 1,841.12 | (106.55) | 18.08 | 5.66 | 65.03 |

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 | \$3,940 | 22,213 | 457.65 | (25.37) | (0.28) | 1.39 | 15.26 |
| Ashland | \$3,689 | 14,180 | 239 | (34) | (12) | 0 | 13 |
| Dakota County | \$1,136 | 5,850 | 105.63 | (8.30) | (4.59) | 0.24 | 4.35 |
| Gretna | \$2,915 | 13,600 | 268.44 | (26.65) | (2.22) | 0.49 | 6.84 |
| Hastings | \$327 | 948 | 23.10 | (2.34) | 0.22 | 0.09 | 1.14 |
| Kearney | \$6,491 | 29,201 | 488.65 | (42.41) | (30.59) | 1.09 | 22.73 |
| Lincoln | \$24,069 | 69,475 | 1,546.27 | (43.52) | (363.22) | 6.04 | 79.81 |
| Nebraska City* | \$1,678 | 7,565 | - | - | - | - | - |
| OPPD | \$8,863 | 53,198 | 1,166.67 | (80.46) | 29.61 | 3.66 | 37.19 |
| UNO | \$1,245 | 4,502 | 67.07 | (11.55) | (5.24) | (0.10) | 4.14 |
| Valley | \$578 | 2,863 | 57.36 | (5.36) | 0.02 | 0.13 | 2.27 |
| Total | \$54,932 | 223,596 | 4,420.20 | (280.32) | (388.73) | 13.08 | 186.93 |

*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 | \$5,376 | 18,323 | 307.90 | (40.03) | (18.37) | (2.55) | 19.63 |
| MCC | \$577 | 2,035 | 31.59 | (5.25) | (2.43) | (0.06) | 1.95 |
| Total | \$5,953 | 20,358 | 339.49 | (45.28) | (20.80) | (2.62) | 21.57 |

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 | \$482 | 2,623.44 | 28.88 | (1.91) | 0.62 | (0.02) | 1.76 |
| Aurora (DC) | \$105 | 330.06 | 5.84 | (0.77) | (1.08) | (0.02) | 0.35 |
| City of Omaha | \$1,587 | 6,107.15 | 94.76 | (12.09) | (16.09) | (0.15) | 5.75 |
| Nebraska Safety Center at UNK | \$60 | 227.68 | 3.39 | (0.43) | (0.43) | (0.00) | 0.21 |
| NP Dodge | \$48 | 135.21 | 2.82 | (0.37) | (0.20) | (0.01) | 0.17 |
| Omaha Zoological Society | \$638 | 2,238.91 | 37.72 | (5.86) | (2.81) | (0.11) | 2.32 |
| University of Nebraska Medical Center | \$478 | 1,922.27 | 31.26 | (5.00) | (2.36) | (0.08) | 1.93 |
| Gretna (DC) | \$2,202 | 7,494.31 | 133.09 | (19.79) | (9.73) | (0.47) | 8.18 |
| Total | \$5,599 | 21,079.05 | 337.76 | (46.21) | (32.09) | (0.87) | 20.66 |

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 | \$0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Aurora | \$19 | 65.10 | 1.15 | (0.15) | (0.21) | (0.00) | 0.07 |
| Central Community College | \$88 | 252.20 | 4.46 | (0.59) | (0.83) | (0.02) | 0.27 |
| Kearney | \$512 | 1,642.99 | 29.07 | (3.85) | (5.39) | (0.10) | 1.76 |
| Minden | \$37 | 122.06 | 2.16 | (0.29) | (0.40) | (0.01) | 0.13 |
| NPPD | \$4,732 | 18,364.24 | 261.31 | (10.83) | (4.25) | (0.44) | 15.74 |
| Total | \$5,388 | 20,447 | 298 | (16) | (11) | (1) | 18 |

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

| | | This Month (March) | All Time |
|--------------------------|----------------------------------|--------------------|------------------|
| Miles Driven | | 295,472 | |
| Energy Consumed(kWh) | | 86,598 | |
| Fuel cost saving | Usage Cost Using CV(Gas) | \$32,351 | |
| | Usage Cost Using EV(Electricity) | \$7,361 | |
| | Total Fuel Saving | <u>\$24,991</u> | |
| Other cost saving | CV Costs | \$18,024 | |
| | EV Costs | \$7,682 | |
| | Total, other cost savings | <u>\$10,342</u> | |
| Overall Economic Savings | | <u>\$35,332</u> | <u>\$551,371</u> |

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

| | | This Month (March) | All Time |
|-----------------------|-------------------|--------------------|------------------|
| Miles Driven | | | |
| Energy Consumed (kWh) | | | |
| Co2 Emissions (lbs.) | CV (Gas) | 230,636 | |
| | EV (Electricity) | 146,467 | |
| | Total Fuel Saving | <u>84,169</u> | <u>1,989,982</u> |
| Co Emissions (lbs.) | CV (Gas) | 1,863.73 | |
| | EV (Electricity) | 110.44 | |
| | Total Fuel Saving | <u>1,753.29</u> | <u>31,577</u> |
| So2 Emissions (lbs.) | CV (Gas) | 2.74 | |
| | EV (Electricity) | 231.88 | |
| | Total Fuel Saving | <u>(229.14)</u> | <u>(5,154)</u> |
| Nox Emissions (lbs.) | CV (Gas) | 78.17 | |
| | EV (Electricity) | 199.73 | |
| | Total Fuel Saving | <u>(121.56)</u> | <u>(2,187)</u> |
| CH4 Emissions (lbs.) | CV (Gas) | 4.36 | |

| | | | |
|----------------------|-------------------|---------------|----------------|
| | EV (Electricity) | 13.27 | |
| | Total Fuel Saving | <u>(8.90)</u> | <u>(69.39)</u> |
| VOC Emissions (lbs.) | CV (Gas) | 109.70 | |
| | EV (Electricity) | 2.27 | |
| | Total Fuel Saving | <u>107.43</u> | <u>1,945</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 | \$88,889 | 384,658 | 7,237 | (494.08) | (434.62) | 1.73 | 312.16 |
| OPPD_ Residential Rebate Program Savings | \$551,371 | 1,989,983 | 31,578 | (5,154.96) | (2,187.00) | (69.39) | 1,945.60 |
| NPPD_ Residential Rebate Program Savings | \$24,959 | 82,619 | 1,402 | (37.89) | (235.45) | 1.07 | 83.37 |
| Fremont_ Residential Rebate Program Savings | \$5,155 | 18,584 | 312 | (40.45) | (18.32) | (2.58) | 19.89 |
| Total Saving | <u>\$670,374</u> | <u>2,475,844</u> | <u>40,528</u> | <u>(5,727.38)</u> | <u>(2,875.38)</u> | <u>(69.18)</u> | <u>2,361</u> |

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 | \$335 | 383 | 16.42 | (2.12) | (1.25) | (0.19) | 1.02 |
| LES | \$9,741 | 31,861 | 742.82 | (15.40) | (142.87) | 2.95 | 33.08 |
| Lincoln Public Schools | \$281 | 1,155 | 16.43 | (0.68) | (0.27) | (0.03) | 0.99 |
| MCC | \$5,956 | 21,773 | 329.09 | (56.04) | (25.30) | (0.44) | 20.28 |
| Nebraska City | \$519 | 4,942 | 124.58 | (4.28) | 6.93 | 0.51 | 2.85 |
| NP Dodge | \$976 | 3,302 | 56.92 | (8.67) | (4.21) | (0.18) | 3.50 |
| Papio-Missouri NRD | \$6,495 | 23,460 | 353.66 | (60.28) | (27.49) | (0.59) | 21.82 |
| Seward | \$3,327 | 19,448 | 393.87 | (24.88) | (3.63) | 1.18 | 14.12 |
| South Sioux City | \$12,536 | 70,248 | 1,379.85 | (89.17) | (8.53) | 4.17 | 50.40 |
| UNO | \$6,002 | 22,351 | 349.06 | (58.15) | (25.38) | (0.46) | 21.38 |
| Wayne | \$740 | 3,687 | 64.17 | (5.13) | (39.86) | 0.25 | 2.85 |
| Total | <u>\$46,909</u> | <u>202,609</u> | <u>3826.86</u> | <u>(324.81)</u> | <u>(271.87)</u> | <u>7.17</u> | <u>172.29</u> |

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 | 160 | 37,388 | 364,853 | \$130,477 | 568,890 | 10,734.55 | (772.06) | (684.34) | 22.49 | 465.45 |
| DC Fast Charger | 6 | 1147 | 15,386 | \$5,321 | 18,376 | 329.03 | (46.82) | (22.28) | (0.6388) | 18.9963 |
| <u>Total</u> | <u>166</u> | <u>38,535</u> | <u>380,240</u> | <u>\$135,798</u> | <u>587,267</u> | <u>11,063.58</u> | <u>(818.88)</u> | <u>(706.62)</u> | <u>21.85</u> | <u>484.45</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 |

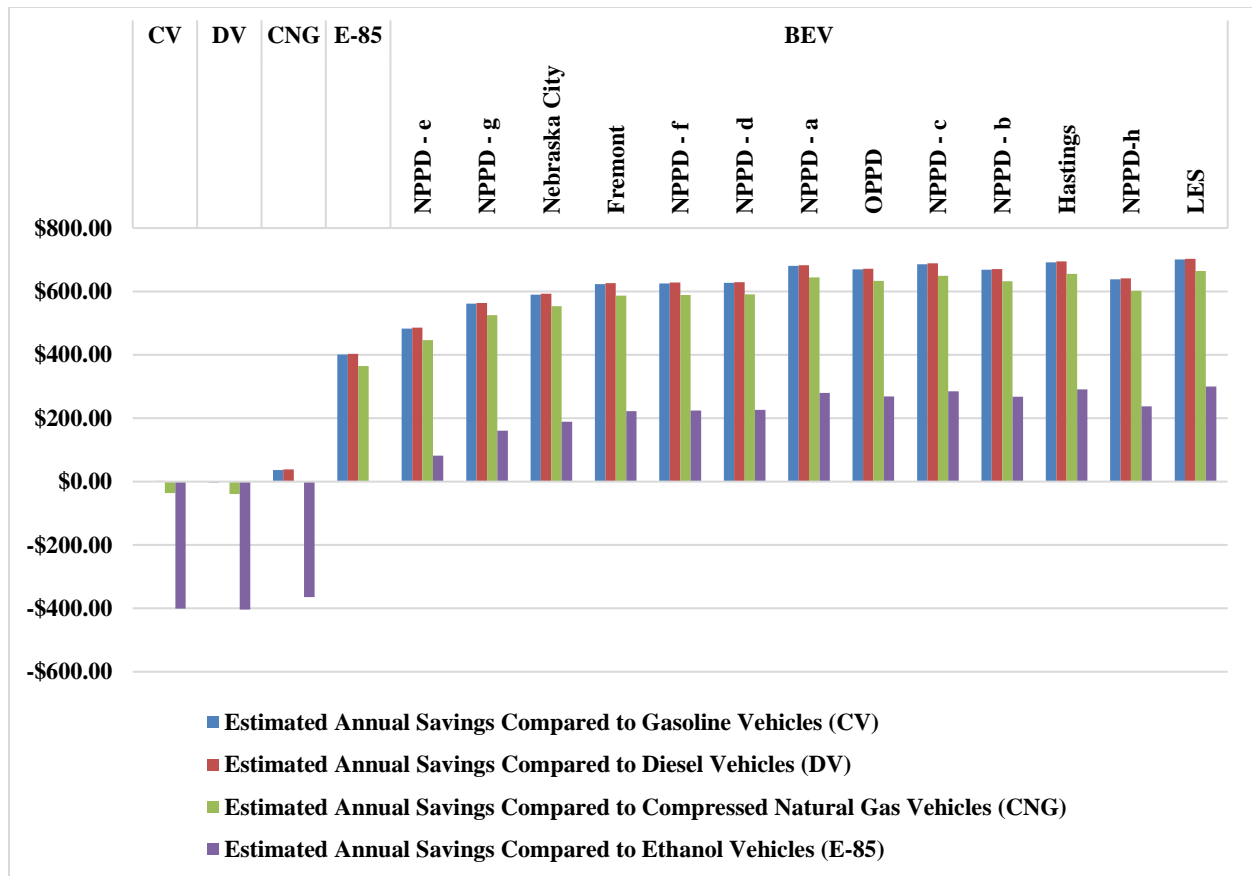


Figure A1. Estimated Annual Cost Savings in Terms of Fuel Consumption Arranged in Ascending Order.

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 |

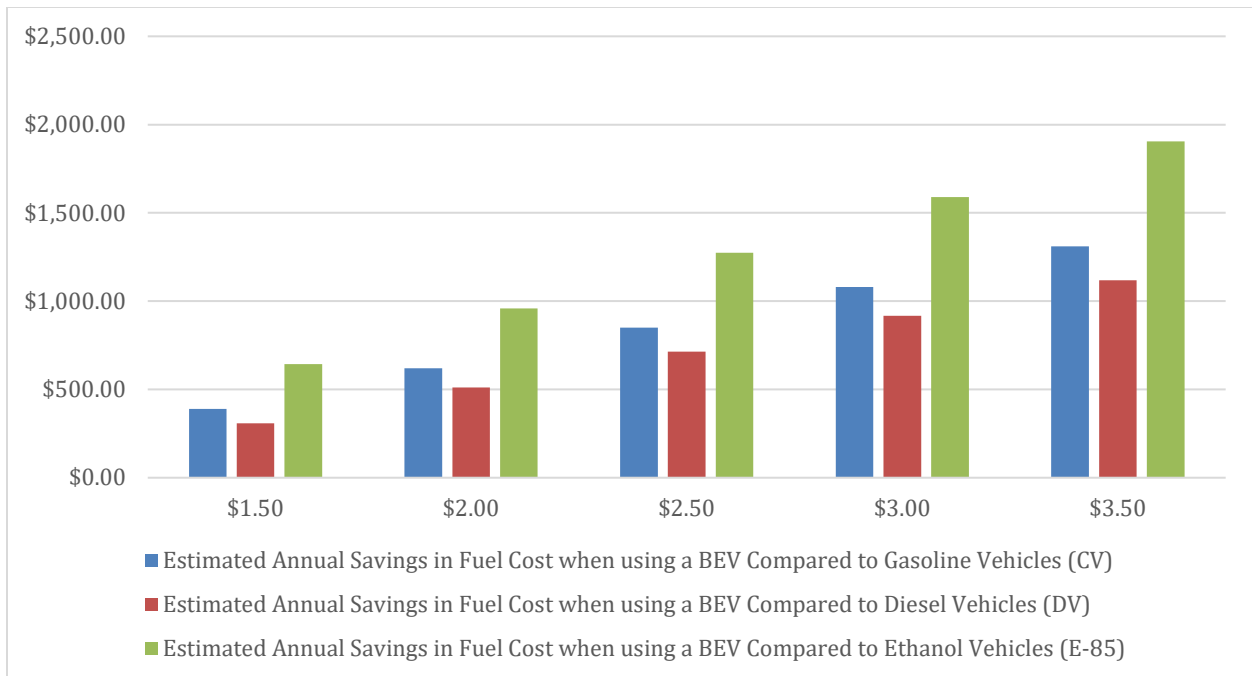


Figure A2: Estimated Annual Cost Savings When Using an EV Against Varying Fuel Prices.

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 | |

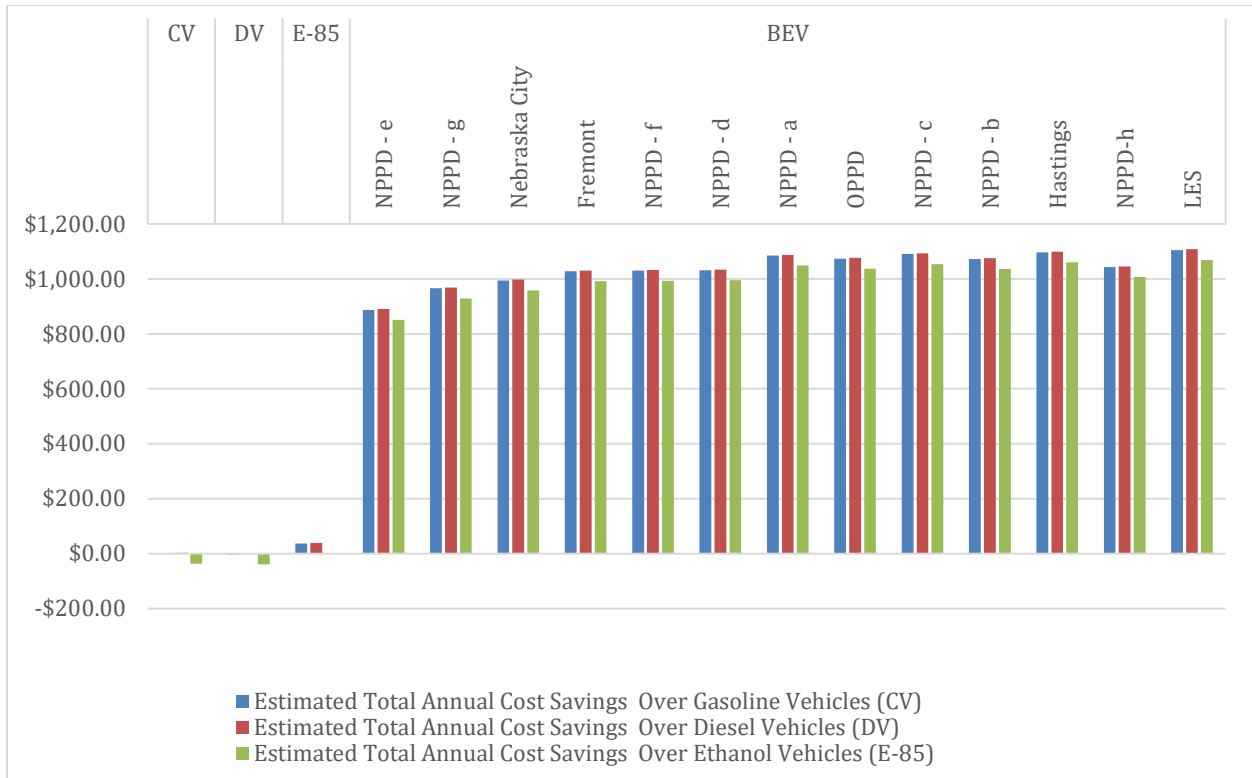


Figure A3: Estimated Total Annual Cost Savings When Using an EV Over a CV, DV, and E-85.

3.5. 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] Nebraska Government, "Average Monthly Retail On-Highway Diesel Fuel Prices in Nebraska," *Nebraska's Monthly On-Highway Diesel Fuel Prices*. [Online]. Available: <http://www.neo.ne.gov/statshtml/96.htm>. [Accessed: 10-Oct-2020].
- [3] CNGnow, "Average Prices," *CNGnow.com*. [Online]. Available: <http://www.cngnow.com/average-cng-prices/pages/default.aspx>. [Accessed: 10-Oct-2020].
- [4] Nebraska Government, "Average Monthly Retail Ethanol Prices in Nebraska," *Nebraska's Monthly Motor Gasoline Prices*. [Online]. Available: <https://neo.ne.gov/programs/stats/inf/66.html>. [Accessed: 10-Oct-2020].
- [5] Omaha Public Power District, "OPPD Service Area." OPPD.
- [6] Nebraska Public Power District, "Who We Serve," *Nebraska Public Power District*. [Online]. Available: <http://www.nppd.com/about-us/who-we-serve/>. [Accessed: 10-Oct-2020].
- [7] Lincoln Electric System, "Lincoln Electric System Service Area Boundary." LES.
- [8] City of Fremont, "Electric Generation," *Fremont Nebraska Pathfinders*, 2018. [Online]. Available: <https://www.fremontne.gov/423/Electric-Generation>. [Accessed: 10-Oct-2020].
- [9] City of Hastings, "Hastings Utilities." [Online]. Available: <https://www.cityofhastings.org/departments/utilities/>. [Accessed: 10-Oct-2020].
- [10] Nebraska City Utilities, "About Us," *Nebraska City Utilities*.
- [11] Wayne Ic - Wayne, NE (Address). <https://www.countyoffice.org/wayne-ic-wayne-ne-b26/>. [Accessed: 10-Oct-2020].
- [12] Nebraska's Wind Energy Generation. <https://neo.ne.gov/programs/stats/inf/89.htm>. [Accessed: 10-Oct-2020].
- [13] Allen Consolidated Schools, Electric Rates [Online]. Available: http://www.northeastpow.com/billing/rates/rates/General_Service_and_Small_Demand/GeneralServiceSinglePhase_TownOnlyMarch2020.pdf. [Accessed: 10-Oct-2020].
- [14] Auburn Board of Public Works, (NPPD – h) Electric Rates [Online]. Available: <https://auburnbpw.com/wp-content/uploads/Approved-2019-Rate-Packet.pdf>. [Accessed: 10-Oct-2020].
- [15]. Ashland, Bellevue, Gretna, MCC, OPPD, UNO, Valley (OPPD) Electric Rates [Online]. Available: <https://www.oppd.com/business/business-rates/>. [Accessed: 10-Oct-2020].
- [16] Central City, Dakota County, Kearney, South Sioux City (NPPD – b) Electric Rates [Online]. Available: <https://assets.website->

- files.com/5a26c42ac0c9b0000147937c/5bbba509854c2a4d7a6188e4_GeneralServiceCommercial.pdf. [Accessed: 10-Oct-2020].
- [17] Ferguson House, LES, Lincoln (LES) Electric Rates [Online]. Available: <http://www.les.com/pdf/rates/rates-summary.pdf>. [Accessed: 10-Oct-2020].
- [18] Fremont Electric Rates [Online]. Available: <https://www.fremontne.gov/DocumentCenter/View/2443/Electric-Rate-Ordinance-Nov-2015?bidId=>. [Accessed: 10-Oct-2020].
- [19] Gothenburg (NPPD – c) Electric Rates [Online]. Available https://www.ci.gothenburg.ne.us/Ordinances/2010_Current/Rate%20Ordinance.pdf. [Accessed: 10-Oct-2020].
- [20] Hastings Electric Rates [Online]. Available <https://www.cityofhastings.org/departments/utilities/rates/#electric>. [Accessed: 10-Oct-2020].
- [21] Holdrege (NPPD – d) Electric Rates [Online]. Available <http://cityofholdrege.org/utilities-2/electric-rates/>. [Accessed: 10-Oct-2020].
- [22] Lexington (NPPD – e) Electric Rates [Online]. Available http://info.cityoflex.com/lexus/2018_lex_util_rates.pdf. [Accessed: 10-Oct-2020].
- [23] Nebraska City Electric Rates [Online]. Available <https://www.electricitylocal.com/states/nebraska/nebraska-city/>. [Accessed: 10-Oct-2020].
- [24] Seward (NPPD – f) Electric Rates [Online]. Available http://wp.connectseward.org/cityofseward/files/2019/11/Electric-Rates_2019.pdf. [Accessed: 10-Oct-2020].
- [25] City of Wayne, “Wayne, NE - Official Website - Electric Distribution.” [Online]. Available: <http://ne-wayne.civicplus.com/index.aspx?nid=372>. [Accessed: 10-Oct-2020].
- [26] The 2019 EPA Automotive Trends Report: Greenhouse Gas Emissions, Fuel Economy, and Technology since 1975 (EPA-420-R-20-006, March 2020). p. 211.
- [27] U.S. DoE, “Alternative Fuels Data Center: Natural Gas Fuel Basics.” [Online]. Available: https://www.afdc.energy.gov/fuels/natural_gas_basics.html. [Accessed: 10-Oct-2020].
- [28] *Flex-Fuel Vehicles*. <http://www.fueleconomy.gov/feg/flextech.shtml>. [Accessed: 10-Oct-2020].
- [29] 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].
- [30] US EPA, OAR. ‘Emissions & Generation Resource Integrated Database (EGRID)’. *US EPA*, 27 July 2020, <https://www.epa.gov/egrid>.
- [31] Table VM-1 - Highway Statistics 2018 - Policy | Federal Highway Administration. <https://www.fhwa.dot.gov/policyinformation/statistics/2018/vm1.cfm>. Accessed 6 Oct. 2020.
- [32] UBS Evidence Lab Electric Car Teardown – Disruption Ahead? .” [Online]. Available: <https://neo.ubs.com/shared/d1wkuDIEbYPjF/>

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, March 2020). p. 211.
- [3] 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].
- [4] [28] UBS Evidence Lab Electric Car Teardown – Disruption Ahead? ." [Online]. Available: <https://neo.ubs.com/shared/d1wkuDIEbYPjF/>

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

- [1] US EPA, OAR. 'Emissions & Generation Resource Integrated Database (EGRID)'. *US EPA*, 27 July 2020, <https://www.epa.gov/egrid>.
- [2] *Emission Factors for Greenhouse Gas Inventories*. 2018, p. 6.
- [3] US EPA, OAR. 'Overview of Greenhouse Gases'. US EPA, 23 Dec. 2015, <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>.
- [4] Omaha Public Power District, "Quick Facts," Dec. 2019.
- [5] *Table VM-1 - Highway Statistics 2018 - Policy* | Federal Highway Administration. <https://www.fhwa.dot.gov/policyinformation/statistics/2018/vm1.cfm>. Accessed 6 Oct. 2020.
- [6] *About Us*. <https://www.nppd.com/about-us>. Accessed 6 Oct. 2020.
- [7] Lincoln Electric System, "2017 Lincoln Cooperative Integrated Resource Plan." Sep-2017.
- [8] *Electric Generation | Fremont, NE - Official Website*. <https://www.fremontne.gov/423/Electric-Generation>. Accessed 6 Oct. 2020.
- [9] *Electric - City of Hastings, NE*. <https://www.cityofhastings.org/departments/utilities/electric/>. Accessed 6 Oct. 2020.
- [10] 'Utilities'. *Nebraska City Area Economic Development*, <https://www.nebraskacityareaedc.com/site-selectors/utilities/>. Accessed 6 Oct. 2020.
- [11] *Wayne Ic - Wayne, NE (Address)*. <https://www.countyoffice.org/wayne-ic-wayne-ne-b26/>. Accessed 6 Oct. 2020.
- [12] *Nebraska's Wind Energy Generation*. <https://neo.ne.gov/programs/stats/inf/89.htm>. Accessed 6 Oct. 2020.

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:

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

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].

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

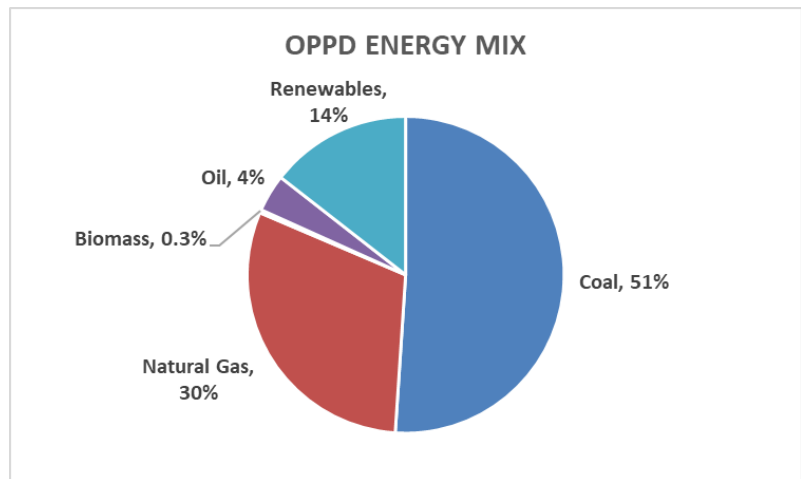
6.5.2. Electricity Generation Mix and Emissions Calculations

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 |
| 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 |

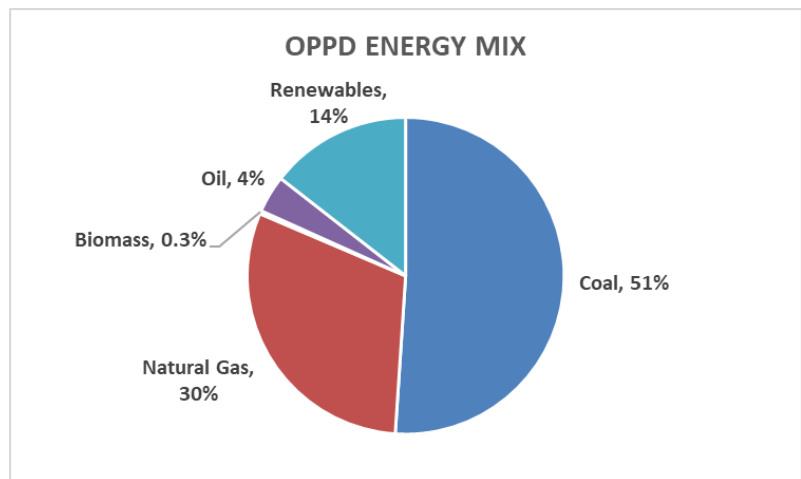
Carbon Dioxide Equivalent (CO_{2e}) Emissions

| Contributing Gas | grams/mile | | GWP | | Contribution to Total CO _{2e} 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 |
| | | | 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 |

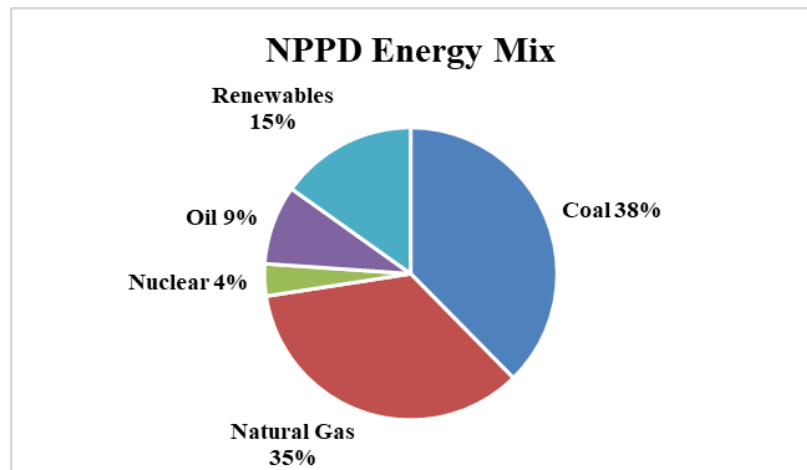
Carbon Dioxide Equivalent (CO₂e) Emissions

| 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 |

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 (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 | 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 |

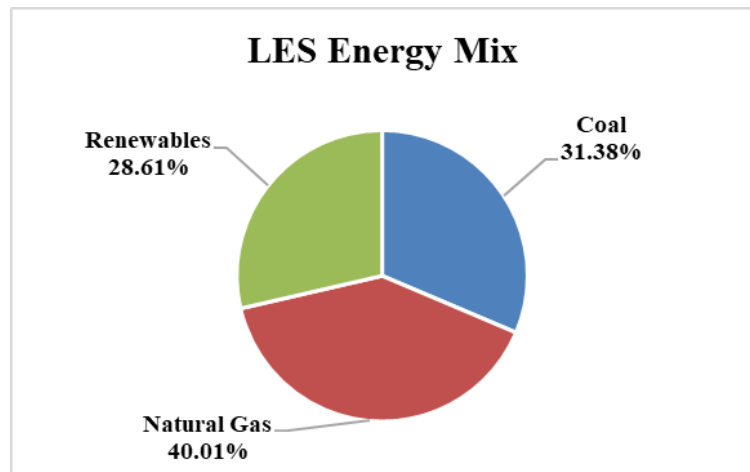
Carbon Dioxide Equivalent (CO_{2e}) Emissions

| Contributing Gas | grams/mile | | GWP | | Contribution to Total CO _{2e} 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 | 0.010 |
| | | | | grams/mile | 0.0030 |

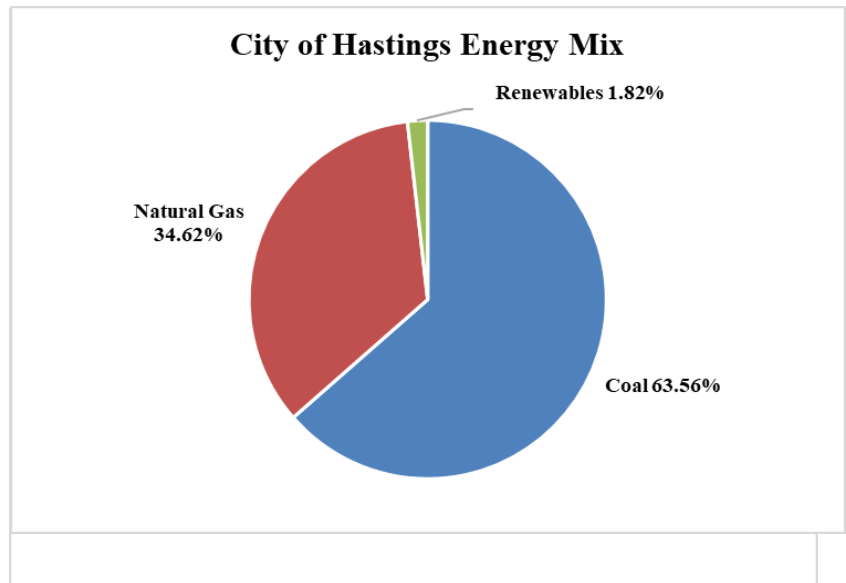
Carbon Dioxide Equivalent (CO₂e) Emissions

| 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 |

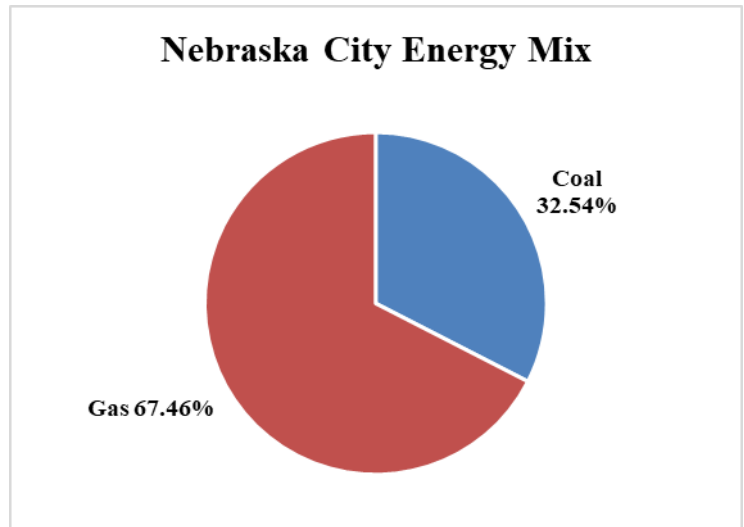
Carbon Dioxide Equivalent (CO₂e) Emissions

| 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 |

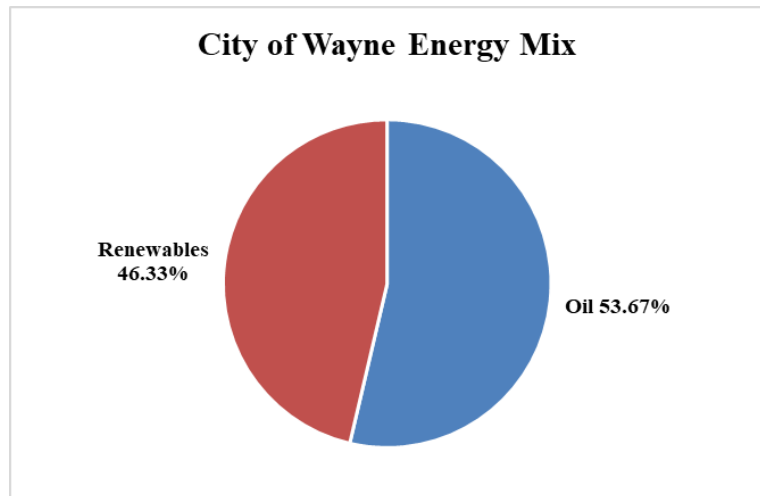
Carbon Dioxide Equivalent (CO₂e) Emissions

| 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 |

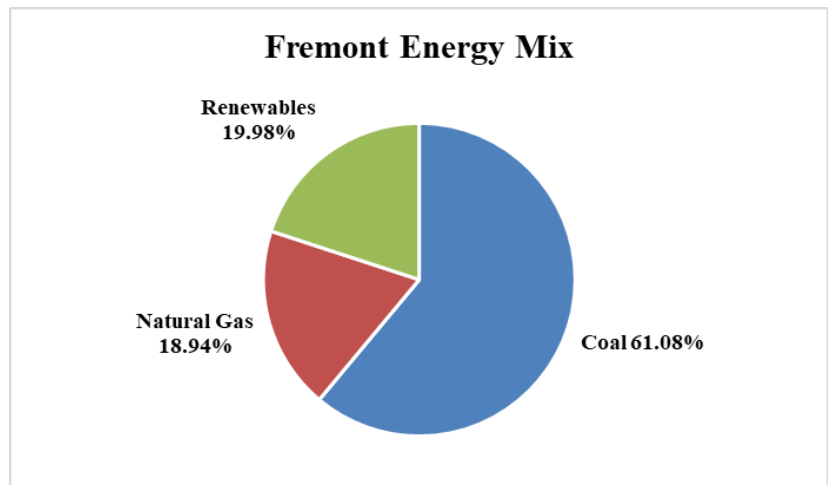
Carbon Dioxide Equivalent (CO₂e) Emissions

| 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

- [1] US EPA, OAR. 'Greenhouse Gas Emissions from a Typical Passenger Vehicle'. US EPA, 12 Jan. 2016, <https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle>.
- [2] U.S. DoE, "2018 Fuel Economy Guide," U.S. Department of Energy, DOE/EE-1653, Jun. 2018.
- [3] The 2019 EPA Automotive Trends Report: Greenhouse Gas Emissions, Fuel Economy, and Technology since 1975 (EPA-420-R-20-006, March 2020). p. 211.
- [4] Emission Factors for Greenhouse Gas Inventories. 2018, p. 6.
- [5] Cai, Hao, Andrew Burnham, and Michael Wang. "Updated emission factors of air pollutants from vehicle operations in GREETM using MOVES." Argonne National Laboratory (2013).
- [6] US EPA, "Light-Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 Through 2017," U.S. Environmental Protection Agency, Trends EPA-420-R-18-001, Jan. 2018.
- [7] Argonne GREET Model. <https://greet.es.anl.gov/>. Accessed 7 Oct. 2020.
- [8] The 2019 EPA Automotive Trends Report: Greenhouse Gas Emissions, Fuel Economy, and Technology since 1975 (EPA-420-R-20-006, March 2020). p. 211.
- [9] *Flex-Fuel Vehicles*. <http://www.fueleconomy.gov/feg/flextech.shtml>. [Accessed: 10-Oct-2020].
- [10] US EPA, OAR. 'Emissions & Generation Resource Integrated Database (EGRID)'. *US EPA*, 27 July 2020, <https://www.epa.gov/egrid>.
- [11] California Environmental Protection Agency, "Detailed California-Modified GREET Pathway for California Average and Marginal Electricity." CEPA, 27-Feb-2009.
- [12] *Electric - City of Hastings, NE*. <https://www.cityofhastings.org/departments/utilities/electric/>. [Accessed: 10-Oct-2020].
- [13] 'Utilities'. *Nebraska City Area Economic Development*, <https://www.nebraskacityareaedc.com/site-selectors/utilities/>. [Accessed: 10-Oct-2020].
- [14] *Electric Generation | Fremont, NE - Official Website*. <https://www.fremontne.gov/423/Electric-Generation>. [Accessed: 10-Oct-2020].
- [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 – March 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



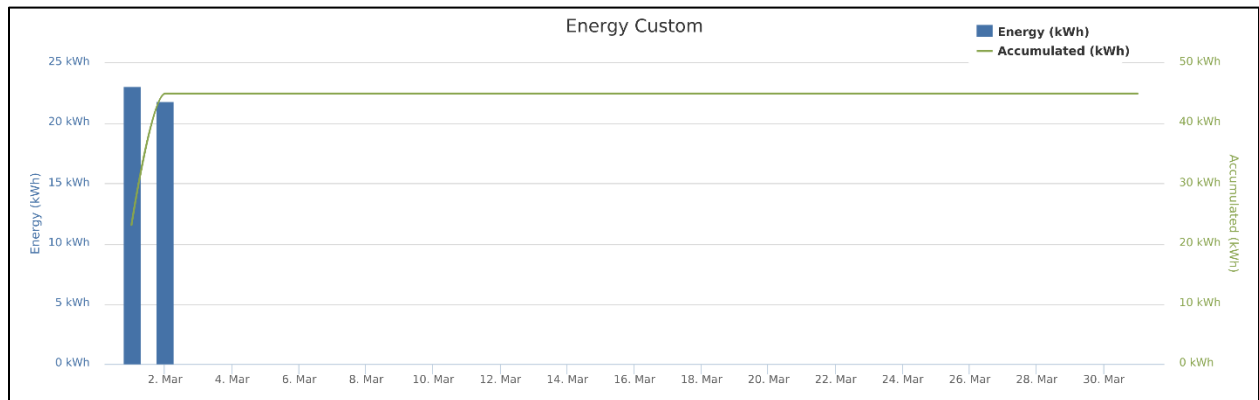
Total Economic Saving Data (Fuel & Maintenance Cost Savings)

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|------------------|
| Miles Driven | | 153.24 | 37,816.16 |
| Energy Consumed(kWh) | | 44.91 | 11,196.69 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | 16.30 | 3,910.56 |
| | Usage Cost Using EV(Electricity) | 3.67 | 883.94 |
| | Total Fuel Saving | 12.63 | 3,026.62 |
| Other Cost Saving | CV Costs | 9.35 | 1,895.06 |
| | EV Costs | 3.98 | 981.78 |
| | Total Other Cost Saving | 5.36 | 913.28 |
| Overall Economic Savings | | 17.99 | 3,939.90 |

Environmental Saving Data (Reduction in Emissions):

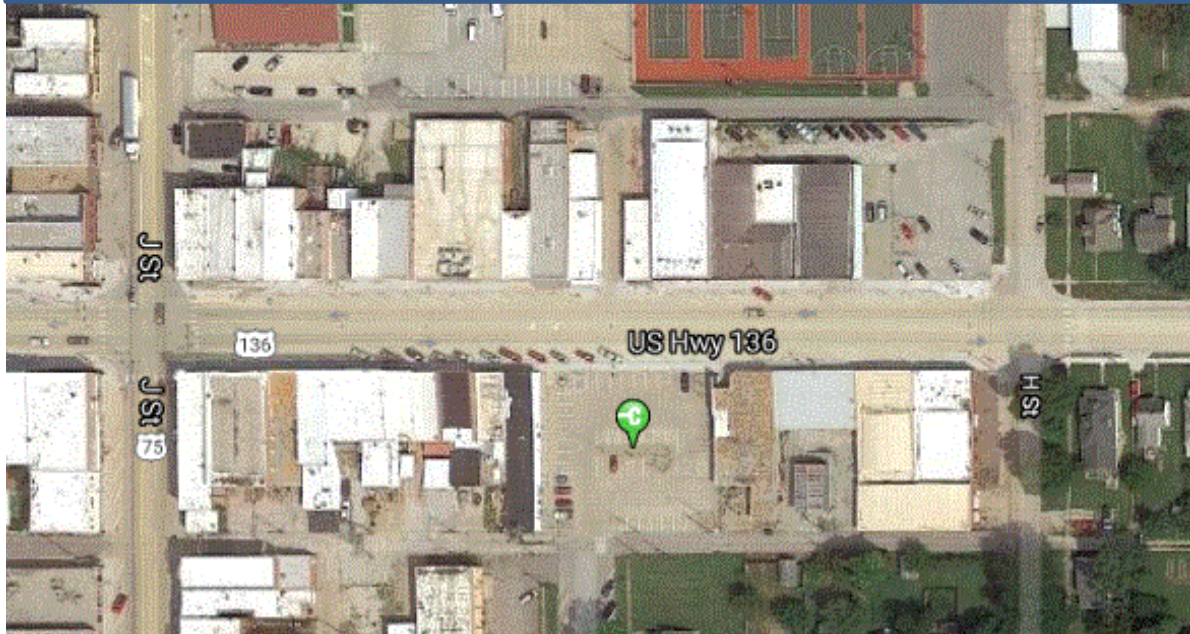
| | | This Month (March) | All Time |
|---------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 153.24 | 37,816.16 |
| Energy Consumed (kWh) | | 44.91 | 11,196.69 |
| Co2 Emissions (lbs.) | CV (Gas) | 119.61 | 32,009.66 |
| | EV (Electricity) | 67.54 | 9,796.35 |
| | Total Fuel Saving | 52.07 | 22,213.32 |
| Co Emissions (lbs.) | CV (Gas) | 0.9666 | 465.8732 |
| | EV (Electricity) | 0.0454 | 8.2234 |
| | Total Fuel Saving | 0.9212 | 457.6498 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0014 | 0.9832 |
| | EV (Electricity) | 0.1235 | 26.3503 |
| | Total Fuel Saving | (0.1220) | (25.3671) |
| Nox Emissions (lbs.) | CV (Gas) | 0.0405 | 29.9257 |
| | EV (Electricity) | 0.2112 | 30.2043 |
| | Total Fuel Saving | (0.1707) | (0.2787) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0023 | 2.0527 |
| | EV (Electricity) | 0.0055 | 0.6674 |
| | Total Fuel Saving | (0.0032) | 1.3853 |
| VOC Emissions (lbs.) | CV (Gas) | 0.0569 | 15.4694 |
| | EV (Electricity) | 0.0012 | 0.2071 |
| | Total Fuel Saving | 0.0557 | 15.2623 |

Energy Consumption Data March 2021



Auburn Board of Public Works

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



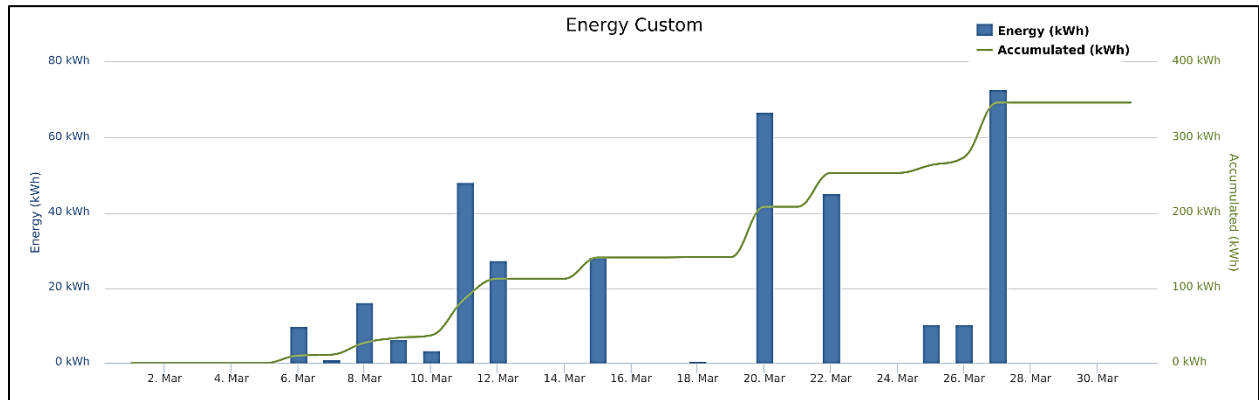
Total Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|-----------------|
| Miles Driven | | 1,181.47 | 4,766.67 |
| Energy Consumed(kWh) | | 346.27 | 1,409.83 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$131.80 | \$458.52 |
| | Usage Cost Using EV(Electricity) | \$32.58 | \$139.72 |
| | Total Fuel Saving | \$99.22 | \$318.80 |
| Other Cost Saving | CV Costs | \$72.07 | \$260.61 |
| | EV Costs | \$30.72 | \$97.05 |
| | Total Other Cost Saving | \$41.35 | \$163.56 |
| Overall Economic Savings | | \$140.57 | \$482.36 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|---------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 1,181.47 | 4,766.67 |
| Energy Consumed (kWh) | | 346.27 | 1,409.83 |
| Co2 Emissions (lbs.) | CV (Gas) | 922.22 | 3,824.89 |
| | EV (Electricity) | 255.13 | 1,201.45 |
| | Total Fuel Saving | 667.08 | 2,623.44 |
| Co Emissions (lbs.) | CV (Gas) | 7.4523 | 30.0664 |
| | EV (Electricity) | 0.2485 | 1.1904 |
| | Total Fuel Saving | 7.2038 | 28.8760 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0109 | 0.0441 |
| | EV (Electricity) | 0.4433 | 1.9538 |
| | Total Fuel Saving | (0.4324) | (1.9096) |
| Nox Emissions (lbs.) | CV (Gas) | 0.3126 | 1.2610 |
| | EV (Electricity) | 0.1395 | 0.6436 |
| | Total Fuel Saving | 0.1730 | 0.6174 |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0175 | 0.1087 |
| | EV (Electricity) | 0.0367 | 0.1304 |
| | Total Fuel Saving | (0.0192) | (0.0217) |
| VOC Emissions (lbs.) | CV (Gas) | 0.4386 | 1.7697 |
| | EV (Electricity) | 0.0028 | 0.0136 |
| | Total Fuel Saving | 0.4358 | 1.7560 |

Energy Consumption Data March 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 (March) | All Time |
|----------------------|----------------------------------|--------------------|----------------|
| Miles Driven | | 347.86 | 1,162.95 |
| Energy Consumed(kWh) | | 101.95 | 340.84 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$38.69 | \$111.04 |
| | Usage Cost Using EV(Electricity) | \$8.33 | \$27.85 |
| | Total Fuel Saving | \$30.36 | \$83.19 |
| Other Cost Saving | CV Costs | \$21.22 | \$70.94 |
| | EV Costs | \$9.04 | \$30.24 |
| | Total Other Cost Saving | \$12.18 | \$40.70 |

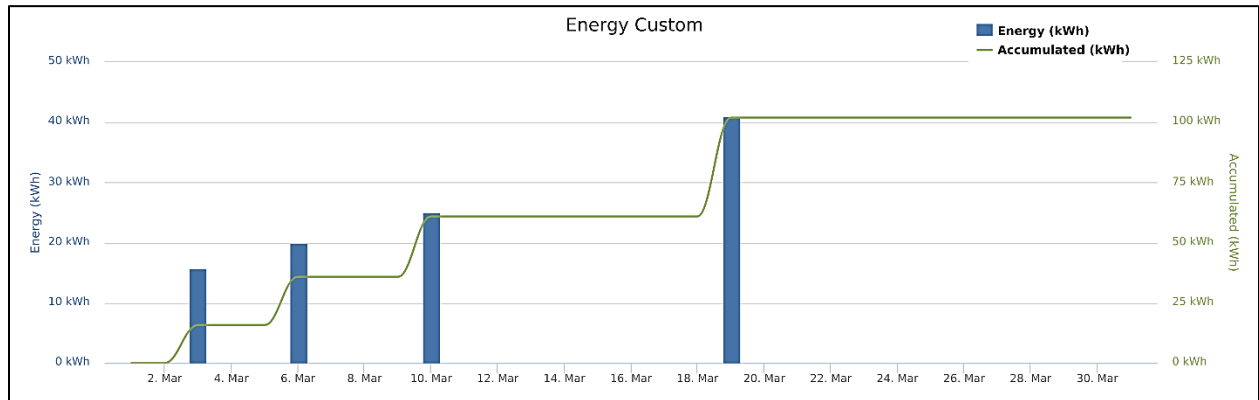
| | | |
|---------------------------------|----------------|-----------------|
| Overall Economic Savings | \$42.53 | \$123.89 |
|---------------------------------|----------------|-----------------|

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|---------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 347.86 | 1,162.95 |
| Energy Consumed (kWh) | | 101.95 | 340.84 |
| Co2 Emissions (lbs.) | CV (Gas) | 271.53 | 907.76 |
| | EV (Electricity) | 153.33 | 512.60 |
| | Total Fuel Saving | 118.20 | 395.16 |
| Co Emissions (lbs.) | CV (Gas) | 2.1942 | 7.3355 |
| | EV (Electricity) | 0.1030 | 0.3443 |
| | Total Fuel Saving | 2.0912 | 6.9912 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0032 | 0.0108 |
| | EV (Electricity) | 0.2802 | 0.9369 |
| | Total Fuel Saving | (0.2770) | (0.9261) |
| Nox Emissions (lbs.) | CV (Gas) | 0.0920 | 0.3077 |
| | EV (Electricity) | 0.4795 | 1.6030 |
| | Total Fuel Saving | (0.3875) | (1.2953) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0051 | 0.0172 |
| | EV (Electricity) | 0.0124 | 0.0414 |
| | Total Fuel Saving | (0.0072) | (0.0242) |
| VOC Emissions (lbs.) | CV (Gas) | 0.1291 | 0.4318 |
| | EV (Electricity) | 0.0027 | 0.0090 |
| | Total Fuel Saving | 0.1265 | 0.4228 |

Energy Consumption Data

March 2021



Aurora (AURORANE / DC FAST 1):

Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-------------------------------|-----------------|
| Miles Driven | | 347.86 | 971.37 |
| Energy Consumed(kWh) | | 101.95 | 284.69 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$38.69 | \$94.64 |
| | Usage Cost Using EV(Electricity) | \$8.33 | \$23.26 |
| | Total Fuel Saving | \$30.36 | \$71.38 |
| Other Cost Saving | CV Costs | \$21.22 | \$59.25 |
| | EV Costs | \$9.04 | \$25.26 |
| | Total Other Cost Saving | \$12.18 | \$34.00 |
| Overall Economic Savings | | \$42.53 | \$105.38 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|---------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 347.86 | 971.37 |
| Energy Consumed (kWh) | | 101.95 | 284.69 |
| Co2 Emissions (lbs.) | CV (Gas) | 271.53 | 758.22 |
| | EV (Electricity) | 153.33 | 428.16 |
| | Total Fuel Saving | 118.20 | 330.06 |
| Co Emissions (lbs.) | CV (Gas) | 2.1942 | 6.1271 |
| | EV (Electricity) | 0.1030 | 0.2876 |
| | Total Fuel Saving | 2.0912 | 5.8395 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0032 | 0.0090 |
| | EV (Electricity) | 0.2802 | 0.7826 |
| | Total Fuel Saving | (0.2770) | (0.7736) |
| Nox Emissions (lbs.) | CV (Gas) | 0.0920 | 0.2570 |
| | EV (Electricity) | 0.4795 | 1.3389 |
| | Total Fuel Saving | (0.3875) | (1.0819) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0051 | 0.0143 |
| | EV (Electricity) | 0.0124 | 0.0346 |
| | Total Fuel Saving | (0.0072) | (0.0202) |
| VOC Emissions (lbs.) | CV (Gas) | 0.1291 | 0.3606 |
| | EV (Electricity) | 0.0027 | 0.0075 |
| | Total Fuel Saving | 0.1265 | 0.3531 |

Aurora (One Level-2 station):

Economic Saving Data (Fuel & Maintenance Cost Savings):

| <u>Level 2 GW1</u> | | This Month (March) | All Time |
|---------------------------------|---|-------------------------------|-----------------|
| Miles Driven | | 0.00 | 191.58 |
| Energy Consumed(kWh) | | 0.00 | 56.15 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$0.00 | \$16.39 |
| | Usage Cost Using EV(Electricity) | \$0.00 | \$4.59 |
| | Total Fuel Saving | \$0.00 | \$11.81 |
| Other Cost Saving | CV Costs | \$0.00 | \$11.69 |
| | EV Costs | \$0.00 | \$4.98 |
| | Total Other Cost Saving | \$0.00 | \$6.71 |
| Overall Economic Savings | | \$0.00 | \$18.51 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|---------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 0.00 | 191.58 |
| Energy Consumed (kWh) | | 0.00 | 56.15 |
| Co2 Emissions (lbs.) | CV (Gas) | 0.00 | 149.54 |
| | EV (Electricity) | 0.00 | 84.44 |
| | Total Fuel Saving | 0.00 | 65.10 |
| Co Emissions (lbs.) | CV (Gas) | 0.0000 | 1.2084 |
| | EV (Electricity) | 0.0000 | 0.0567 |
| | Total Fuel Saving | 0.0000 | 1.1517 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0000 | 0.0018 |
| | EV (Electricity) | 0.0000 | 0.1543 |
| | Total Fuel Saving | 0.0000 | (0.1526) |
| Nox Emissions (lbs.) | CV (Gas) | 0.0000 | 0.0507 |
| | EV (Electricity) | 0.0000 | 0.2641 |
| | Total Fuel Saving | 0.0000 | (0.2134) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0000 | 0.0028 |
| | EV (Electricity) | 0.0000 | 0.0068 |
| | Total Fuel Saving | 0.0000 | (0.0040) |
| VOC Emissions (lbs.) | CV (Gas) | 0.0000 | 0.0711 |
| | EV (Electricity) | 0.0000 | 0.0015 |
| | Total Fuel Saving | 0.0000 | 0.0696 |

Ashland

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



SUMMARY OF ALL STATIONS

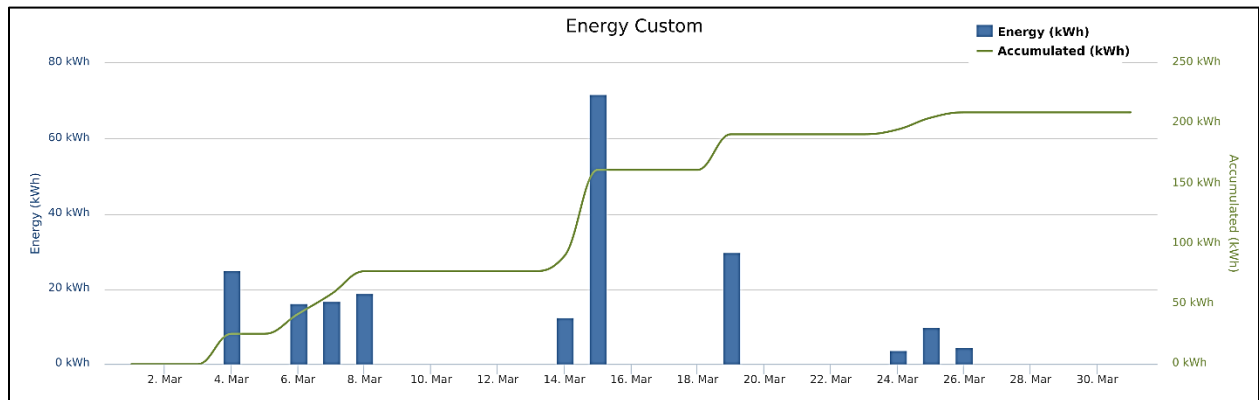
Total Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|-------------------|
| Miles Driven | | 713.11 | 35,823.68 |
| Energy Consumed(kWh) | | 209.00 | 10,695.60 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$78.06 | \$3,581.04 |
| | Usage Cost Using EV(Electricity) | \$17.77 | \$975.14 |
| | Total Fuel Saving | \$60.30 | \$2,605.90 |
| Other Cost Saving | CV Costs | \$43.50 | \$1,695.64 |
| | EV Costs | \$18.54 | \$612.44 |
| | Total Other Cost Saving | \$24.96 | \$1,083.19 |
| Overall Economic Savings | | \$85.26 | \$3,689.09 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 713.11 | 35,823.68 |
| Energy Consumed (kWh) | | 209.00 | 10,695.60 |
| Co2 Emissions (lbs.) | CV (Gas) | 556.63 | 29,111.76 |
| | EV (Electricity) | 353.49 | 14,931.54 |
| | Total Fuel Saving | 203.14 | 14,180.22 |
| Co Emissions (lbs.) | CV (Gas) | 4.4980 | 252.1053 |
| | EV (Electricity) | 0.2665 | 12.7409 |
| | Total Fuel Saving | 4.2315 | 239.3644 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0066 | 0.4027 |
| | EV (Electricity) | 0.5596 | 34.7645 |
| | Total Fuel Saving | (0.5530) | (34.3617) |
| Nox Emissions (lbs.) | CV (Gas) | 0.1887 | 11.7668 |
| | EV (Electricity) | 0.4820 | 24.2122 |
| | Total Fuel Saving | (0.2934) | (12.4453) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0105 | 1.3531 |
| | EV (Electricity) | 0.0320 | 1.2974 |
| | Total Fuel Saving | (0.0215) | 0.0556 |
| VOC Emissions (lbs.) | CV (Gas) | 0.2647 | 13.4583 |
| | EV (Electricity) | 0.0055 | 0.2574 |
| | Total Fuel Saving | 0.2593 | 13.2010 |

Energy Consumption Data March 2021



Ashland (Fast DC charging):

Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-------------------------------|-------------------|
| Miles Driven | | 685.44 | 23,322.85 |
| Energy Consumed(kWh) | | 200.89 | 6,963.48 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$75.04 | \$2,374.55 |
| | Usage Cost Using EV(Electricity) | \$17.08 | \$636.45 |
| | Total Fuel Saving | \$57.96 | \$1,738.10 |
| Other Cost Saving | CV Costs | \$41.81 | \$1,100.74 |
| | EV Costs | \$17.82 | \$404.59 |
| | Total Other Cost Saving | \$23.99 | \$696.16 |
| Overall Economic Savings | | \$81.95 | \$2,434.26 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|---------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 685.44 | 23,322.85 |
| Energy Consumed(kWh) | | 200.89 | 6,963.48 |
| Co2 Emissions (lbs.) | CV (Gas) | 535.03 | 18,965.38 |
| | EV (Electricity) | 339.78 | 9,587.57 |
| | Total Fuel Saving | 195.26 | 9,377.81 |
| Co Emissions (lbs.) | CV (Gas) | 4.3235 | 168.2655 |
| | EV (Electricity) | 0.2562 | 8.1797 |
| | Total Fuel Saving | 4.0673 | 160.0858 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0063 | 0.2735 |
| | EV (Electricity) | 0.5379 | 22.6090 |
| | Total Fuel Saving | (0.5316) | (22.3355) |
| Nox Emissions (lbs.) | CV (Gas) | 0.1813 | 8.0228 |
| | EV (Electricity) | 0.4633 | 15.6416 |
| | Total Fuel Saving | (0.2820) | (7.6187) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0101 | 0.9051 |
| | EV (Electricity) | 0.0308 | 0.8258 |
| | Total Fuel Saving | (0.0207) | 0.0793 |
| VOC Emissions (lbs.) | CV (Gas) | 0.2545 | 8.7878 |
| | EV (Electricity) | 0.0053 | 0.1665 |
| | Total Fuel Saving | 0.2492 | 8.6213 |

Ashland (One Level-2 station):

Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-------------------------------|-------------------|
| Miles Driven | | 27.67 | 12,415.10 |
| Energy Consumed(kWh) | | 8.11 | 3,707.03 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$3.02 | \$1,199.54 |
| | Usage Cost Using EV(Electricity) | \$0.69 | \$336.56 |
| | Total Fuel Saving | \$2.33 | \$862.97 |
| Other Cost Saving | CV Costs | \$1.69 | \$589.67 |
| | EV Costs | \$0.72 | \$205.63 |
| | Total Other Cost Saving | \$0.97 | \$384.03 |
| Overall Economic Savings | | \$3.30 | \$1,247.00 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 27.67 | 12,415.10 |
| Energy Consumed (kWh) | | 8.11 | 3,707.03 |
| Co2 Emissions (lbs.) | CV (Gas) | 21.60 | 10,079.48 |
| | EV (Electricity) | 13.72 | 5,301.43 |
| | Total Fuel Saving | 7.88 | 4,778.05 |
| Co Emissions (lbs.) | CV (Gas) | 0.1745 | 82.9455 |
| | EV (Electricity) | 0.0103 | 4.5298 |
| | Total Fuel Saving | 0.1642 | 78.4157 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0003 | 0.1285 |
| | EV (Electricity) | 0.0217 | 12.0882 |
| | Total Fuel Saving | (0.0215) | (11.9598) |
| Nox Emissions (lbs.) | CV (Gas) | 0.0073 | 3.7214 |
| | EV (Electricity) | 0.0187 | 8.5066 |
| | Total Fuel Saving | (0.0114) | (4.7853) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0004 | 0.4451 |
| | EV (Electricity) | 0.0012 | 0.4677 |
| | Total Fuel Saving | (0.0008) | (0.0225) |
| VOC Emissions (lbs.) | CV (Gas) | 0.0103 | 4.6307 |
| | EV (Electricity) | 0.0002 | 0.0901 |
| | Total Fuel Saving | 0.0101 | 4.5406 |

Bellevue

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



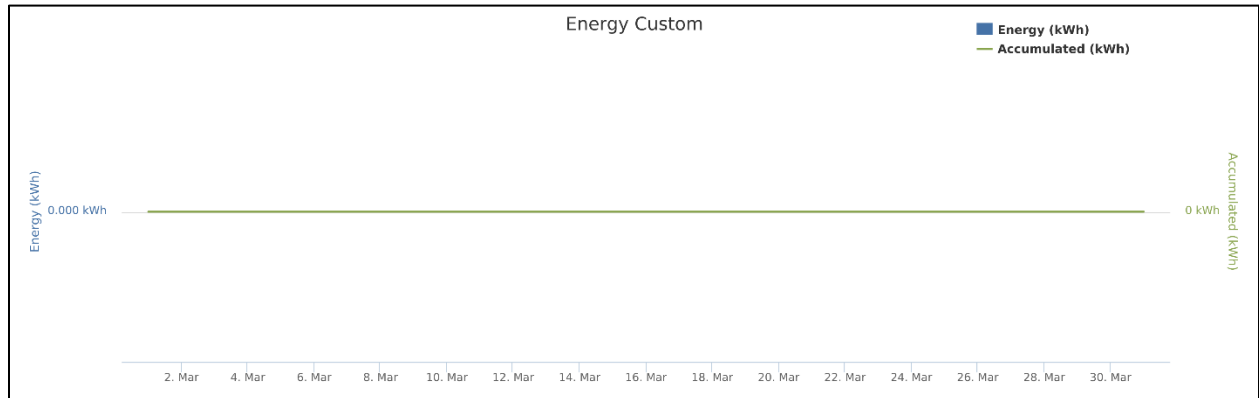
Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | 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 (March) | 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 March 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 (March) | All Time |
|---------------------------------|---|-----------------------|-----------------|
| Miles Driven | | 1,925.66 | 2,784.05 |
| Energy Consumed(kWh) | | 564.38 | 815.96 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$214.90 | \$301.14 |
| | Usage Cost Using EV(Electricity) | \$44.19 | \$63.89 |
| | Total Fuel Saving | \$170.71 | \$237.25 |
| Other Cost Saving | CV Costs | \$117.47 | \$169.83 |
| | EV Costs | \$50.07 | \$72.39 |
| | Total Other Cost Saving | \$67.40 | \$97.44 |
| Overall Economic Savings | | \$238.11 | \$334.69 |

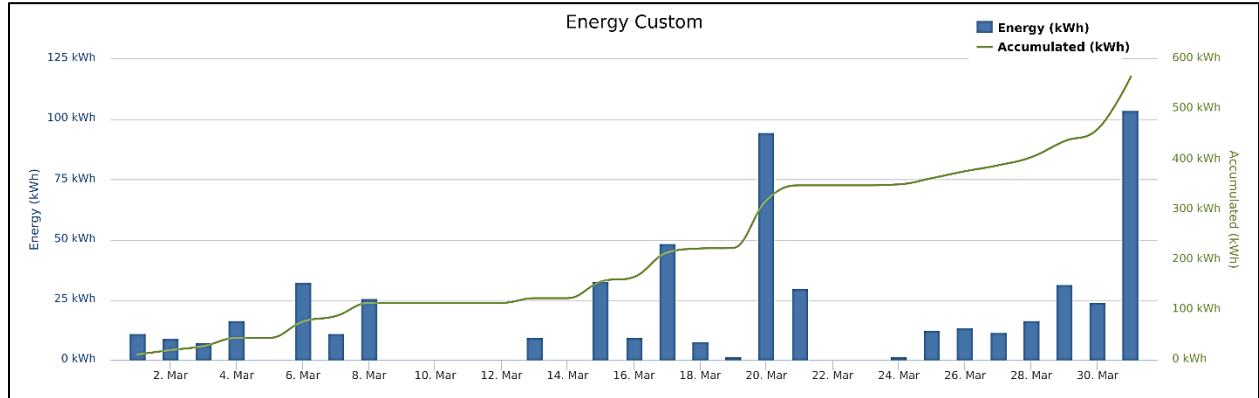
Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|---------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 1,925.66 | 2,784.05 |
| Energy Consumed (kWh) | | 564.38 | 815.96 |
| Co2 Emissions (lbs.) | CV (Gas) | 1,503.11 | 2,173.14 |
| | EV (Electricity) | 1,237.97 | 1,789.80 |
| | Total Fuel Saving | 265.14 | 383.33 |
| Co Emissions (lbs.) | CV (Gas) | 12.1464 | 17.5608 |
| | EV (Electricity) | 0.7911 | 1.1438 |
| | Total Fuel Saving | 11.3553 | 16.4170 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0178 | 0.0258 |
| | EV (Electricity) | 1.4829 | 2.1439 |
| | Total Fuel Saving | (1.4651) | (2.1182) |
| Nox Emissions (lbs.) | CV (Gas) | 0.5094 | 0.7365 |
| | EV (Electricity) | 1.3758 | 1.9891 |
| | Total Fuel Saving | (0.8664) | (1.2526) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0284 | 0.0411 |
| | EV (Electricity) | 0.1570 | 0.2269 |
| | Total Fuel Saving | (0.1285) | (0.1858) |
| VOC Emissions (lbs.) | CV (Gas) | 0.7149 | 1.0336 |
| | EV (Electricity) | 0.0090 | 0.0130 |

| | | | |
|--|--------------------------|---------------|---------------|
| | Total Fuel Saving | 0.7059 | 1.0206 |
|--|--------------------------|---------------|---------------|

Energy Consumption Data

March 2021



B & R Stores (two DC stations)

Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-------------------------------|-----------------|
| Miles Driven | | 1,874.93 | 2,671.34 |
| Energy Consumed(kWh) | | 549.51 | 782.92 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$209.25 | \$289.35 |
| | Usage Cost Using EV(Electricity) | \$43.03 | \$61.30 |
| | Total Fuel Saving | \$166.23 | \$228.05 |
| Other Cost Saving | CV Costs | \$114.37 | \$162.95 |
| | EV Costs | \$48.75 | \$69.45 |
| | Total Other Cost Saving | \$65.62 | \$93.50 |
| Overall Economic Savings | | \$231.85 | \$321.55 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|---------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 1,874.93 | 2,671.34 |
| Energy Consumed (kWh) | | 549.51 | 782.92 |
| Co2 Emissions (lbs.) | CV (Gas) | 1,463.51 | 2,085.16 |
| | EV (Electricity) | 1,205.35 | 1,717.34 |
| | Total Fuel Saving | 258.16 | 367.82 |
| Co Emissions (lbs.) | CV (Gas) | 11.8264 | 16.8498 |
| | EV (Electricity) | 0.7703 | 1.0975 |
| | Total Fuel Saving | 11.0561 | 15.7523 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0174 | 0.0247 |
| | EV (Electricity) | 1.4438 | 2.0572 |
| | Total Fuel Saving | (1.4265) | (2.0324) |
| Nox Emissions (lbs.) | CV (Gas) | 0.4960 | 0.7067 |
| | EV (Electricity) | 1.3396 | 1.9086 |
| | Total Fuel Saving | (0.8436) | (1.2019) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0277 | 0.0395 |
| | EV (Electricity) | 0.1528 | 0.2177 |
| | Total Fuel Saving | (0.1251) | (0.1783) |
| VOC Emissions (lbs.) | CV (Gas) | 0.6961 | 0.9918 |
| | EV (Electricity) | 0.0088 | 0.0125 |

| | | | |
|--|--------------------------|---------------|---------------|
| | Total Fuel Saving | 0.6873 | 0.9793 |
|--|--------------------------|---------------|---------------|

B & R Stores (two level 2 stations)

Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-------------------------------|-----------------|
| Miles Driven | | 50.74 | 112.71 |
| Energy Consumed(kWh) | | 14.87 | 33.03 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$5.65 | \$11.79 |
| | Usage Cost Using EV(Electricity) | \$1.16 | \$2.59 |
| | Total Fuel Saving | \$4.48 | \$9.20 |
| Other Cost Saving | CV Costs | \$3.09 | \$6.88 |
| | EV Costs | \$1.32 | \$2.93 |
| | Total Other Cost Saving | \$1.78 | \$3.94 |
| Overall Economic Savings | | \$6.26 | \$13.15 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|---------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 50.74 | 112.71 |
| Energy Consumed (kWh) | | 14.87 | 33.03 |
| Co2 Emissions (lbs.) | CV (Gas) | 39.60 | 87.98 |
| | EV (Electricity) | 32.62 | 72.46 |
| | Total Fuel Saving | 6.99 | 15.52 |
| Co Emissions (lbs.) | CV (Gas) | 0.32 | 0.71 |
| | EV (Electricity) | 0.02 | 0.05 |
| | Total Fuel Saving | 0.2992 | 0.6646 |
| So2 Emissions (lbs.) | CV (Gas) | 0.00 | 0.00 |
| | EV (Electricity) | 0.04 | 0.09 |
| | Total Fuel Saving | (0.0386) | (0.0858) |
| Nox Emissions (lbs.) | CV (Gas) | 0.01 | 0.03 |
| | EV (Electricity) | 0.04 | 0.08 |
| | Total Fuel Saving | (0.0228) | (0.0507) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.00 | 0.00 |
| | EV (Electricity) | 0.00 | 0.01 |
| | Total Fuel Saving | (0.0034) | (0.0075) |

| | | | |
|---------------------------------|--------------------------|---------------|---------------|
| VOC Emissions (lbs.) | CV (Gas) | 0.02 | 0.04 |
| | EV (Electricity) | 0.00 | 0.00 |
| | Total Fuel Saving | 0.0186 | 0.0413 |

Central City

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



Economic Saving Data (Fuel & Maintenance Cost Savings):

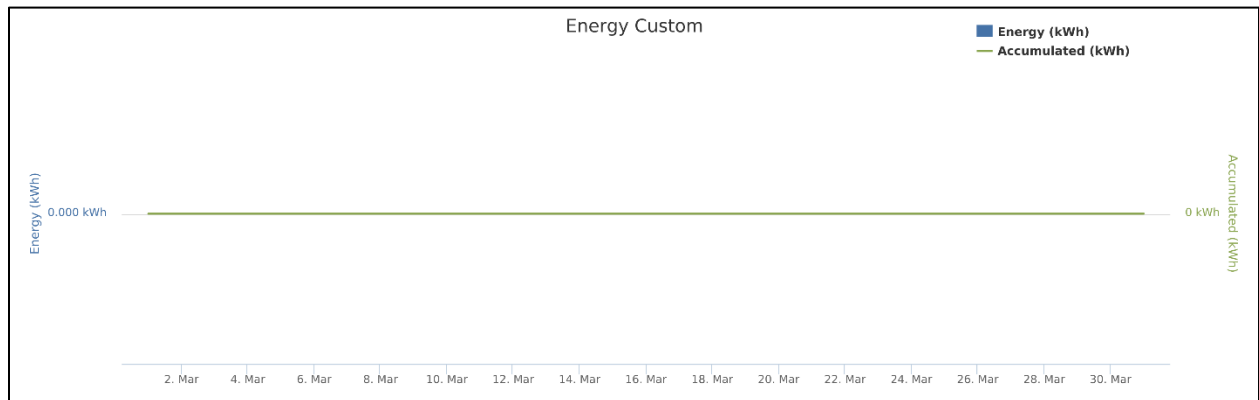
| | | This Month (March) | All Time |
|-----------------------------|---|-----------------------|-----------------|
| Miles Driven | | 0.00 | 1,773.37 |
| Energy Consumed(kWh) | | 0.00 | 522.08 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$0.00 | \$188.58 |
| | Usage Cost Using EV(Electricity) | \$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 |
|---------------------------------|---------------|-----------------|

*Data was provided from the electrical car mileage
 Environmental Saving Data (Reduction in Emissions):

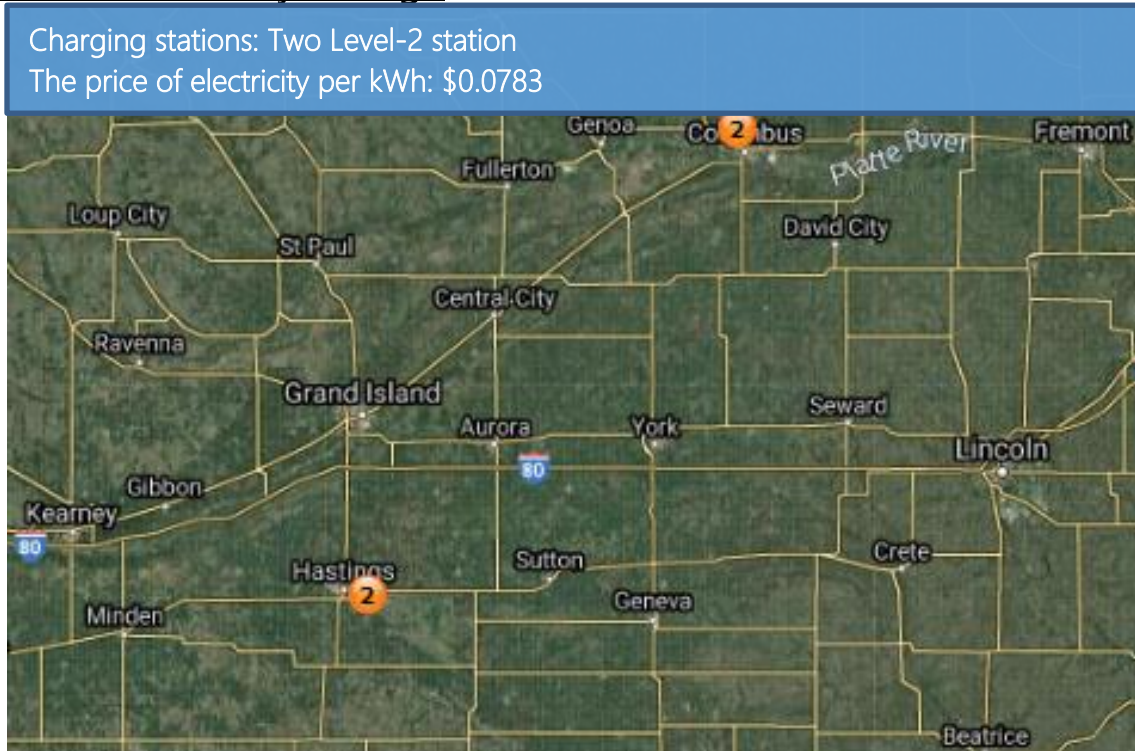
| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 0.00 | 1,773.37 |
| Energy Consumed (kWh) | | 0.00 | 522.08 |
| Co2 Emissions (lbs.) | CV (Gas) | 0.00 | 1,536.18 |
| | EV (Electricity) | 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 March 2021



(Data was provided from the electrical car mileage)

Central Community College



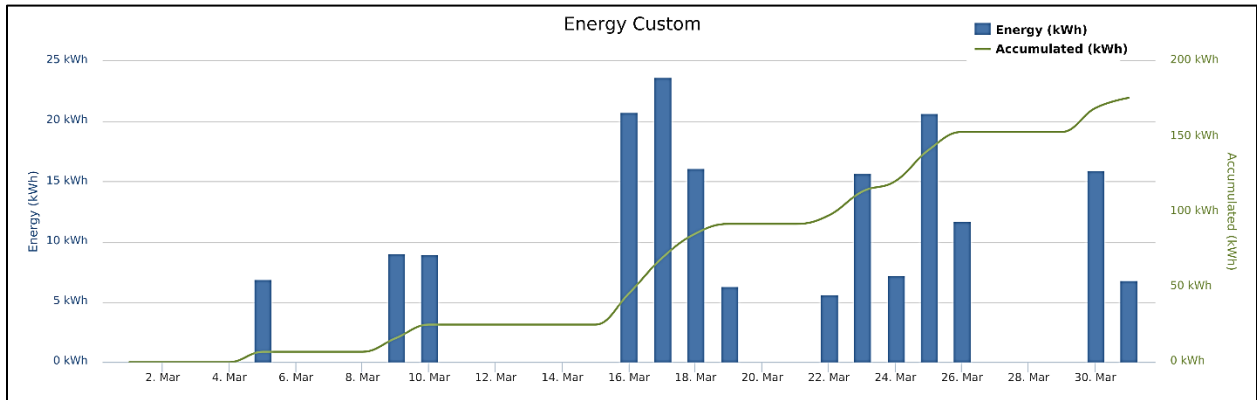
Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|----------------|
| Miles Driven | | 598.89 | 742.22 |
| Energy Consumed(kWh) | | 175.53 | 217.53 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$66.93 | \$79.87 |
| | Usage Cost Using EV(Electricity) | \$14.34 | \$17.77 |
| | Total Fuel Saving | \$52.59 | \$62.10 |
| Other Cost Saving | CV Costs | \$36.53 | \$45.28 |
| | EV Costs | \$15.57 | \$19.30 |
| | Total Other Cost Saving | \$20.96 | \$25.98 |
| Overall Economic Savings | | \$73.55 | \$88.07 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|---------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 598.89 | 742.22 |
| Energy Consumed (kWh) | | 175.53 | 217.53 |
| Co2 Emissions (lbs.) | CV (Gas) | 467.48 | 579.35 |
| | EV (Electricity) | 263.98 | 327.15 |
| | Total Fuel Saving | 203.50 | 252.20 |
| Co Emissions (lbs.) | CV (Gas) | 3.7776 | 4.6816 |
| | EV (Electricity) | 0.1773 | 0.2197 |
| | Total Fuel Saving | 3.6003 | 4.4619 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0055 | 0.0069 |
| | EV (Electricity) | 0.4825 | 0.5980 |
| | Total Fuel Saving | (0.4769) | (0.5911) |
| Nox Emissions (lbs.) | CV (Gas) | 0.1584 | 0.1964 |
| | EV (Electricity) | 0.8255 | 1.0230 |
| | Total Fuel Saving | (0.6671) | (0.8267) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0088 | 0.0110 |
| | EV (Electricity) | 0.0213 | 0.0264 |
| | Total Fuel Saving | (0.0125) | (0.0154) |
| VOC Emissions (lbs.) | CV (Gas) | 0.2223 | 0.2756 |
| | EV (Electricity) | 0.0046 | 0.0057 |
| | Total Fuel Saving | 0.2177 | 0.2698 |

Energy Consumption Data March 2021



Dakota County

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



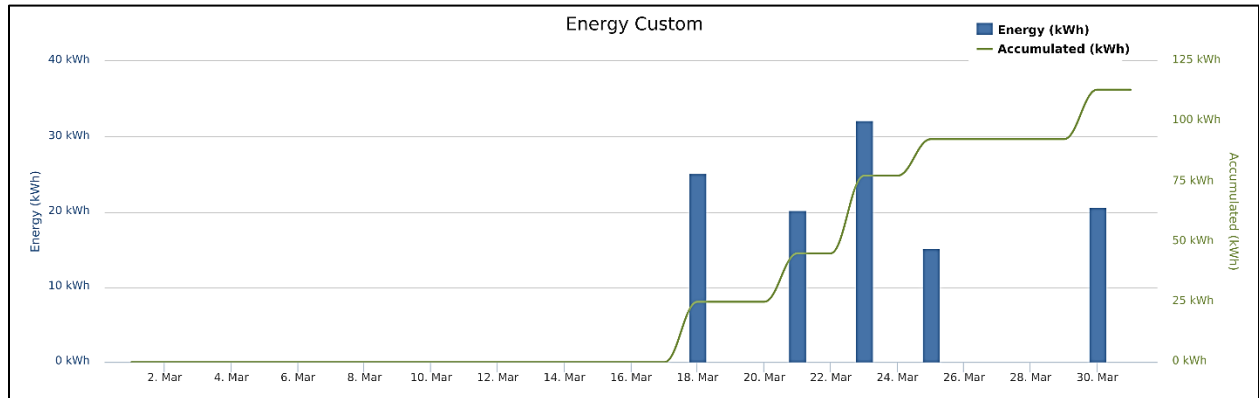
Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|-------------------|
| Miles Driven | | 385.92 | 11,247.97 |
| Energy Consumed(kWh) | | 113.11 | 3,342.31 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$42.56 | \$1,089.08 |
| | Usage Cost Using EV(Electricity) | \$9.65 | \$270.35 |
| | Total Fuel Saving | \$32.91 | \$818.73 |
| Other Cost Saving | CV Costs | \$23.54 | \$554.34 |
| | EV Costs | \$10.03 | \$236.63 |
| | Total Other Cost Saving | \$13.51 | \$317.71 |
| Overall Economic Savings | | \$46.42 | \$1,136.44 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 385.92 | 11,247.97 |
| Energy Consumed (kWh) | | 113.11 | 3,342.31 |
| Co2 Emissions (lbs.) | CV (Gas) | 301.24 | 9,400.01 |
| | EV (Electricity) | 170.11 | 3,549.83 |
| | Total Fuel Saving | 131.13 | 5,850.18 |
| Co Emissions (lbs.) | CV (Gas) | 2.4343 | 108.4744 |
| | EV (Electricity) | 0.1142 | 2.8410 |
| | Total Fuel Saving | 2.3200 | 105.6334 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0036 | 0.2062 |
| | EV (Electricity) | 0.3109 | 8.5093 |
| | Total Fuel Saving | (0.3073) | (8.3031) |
| Nox Emissions (lbs.) | CV (Gas) | 0.1021 | 6.2640 |
| | EV (Electricity) | 0.5319 | 10.8507 |
| | Total Fuel Saving | (0.4298) | (4.5867) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0057 | 0.4952 |
| | EV (Electricity) | 0.0137 | 0.2531 |
| | Total Fuel Saving | (0.0080) | 0.2421 |
| VOC Emissions (lbs.) | CV (Gas) | 0.1433 | 4.4118 |
| | EV (Electricity) | 0.0030 | 0.0626 |
| | Total Fuel Saving | 0.1403 | 4.3492 |

Energy Consumption Data March 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):

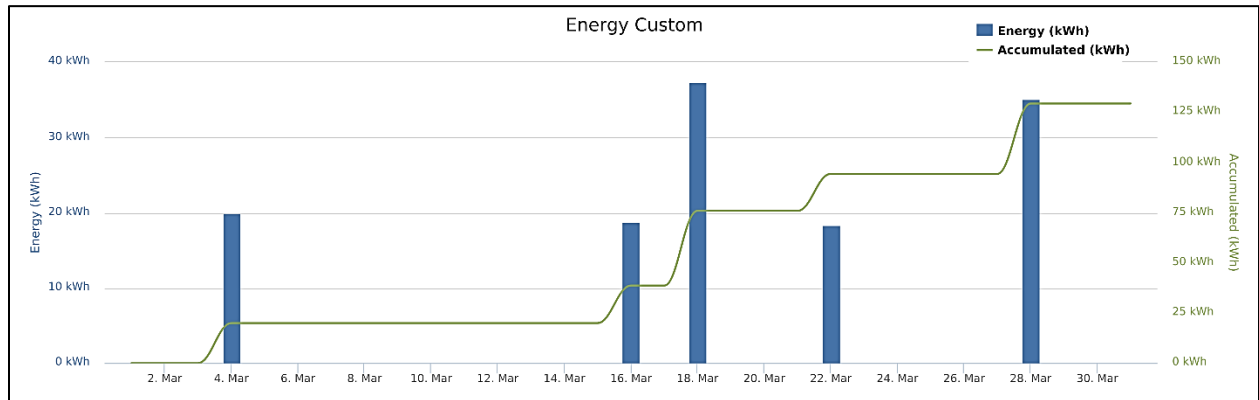
| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|-------------------|
| Miles Driven | | 441.16 | 14,388.13 |
| Energy Consumed(kWh) | | 129.30 | 4,269.05 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$49.26 | \$1,461.56 |
| | Usage Cost Using EV(Electricity) | \$9.79 | \$315.02 |
| | Total Fuel Saving | \$39.47 | \$1,146.54 |
| Other Cost Saving | CV Costs | \$26.91 | \$704.73 |
| | EV Costs | \$11.47 | \$344.96 |
| | Total Other Cost Saving | \$15.44 | \$359.77 |
| Overall Economic Savings | | \$54.91 | \$1,506.30 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 441.16 | 14,388.13 |
| Energy Consumed (kWh) | | 129.30 | 4,269.05 |
| Co2 Emissions (lbs.) | CV (Gas) | 344.35 | 12,164.14 |
| | EV (Electricity) | 156.65 | 5,042.76 |
| | Total Fuel Saving | 187.70 | 7,121.38 |
| Co Emissions (lbs.) | CV (Gas) | 2.7827 | 166.9267 |
| | EV (Electricity) | 0.1117 | 2.2032 |
| | Total Fuel Saving | 2.6709 | 164.7235 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0041 | 0.3407 |
| | EV (Electricity) | 0.1148 | 5.8260 |
| | Total Fuel Saving | (0.1107) | (5.4853) |
| Nox Emissions (lbs.) | CV (Gas) | 0.1167 | 10.4811 |
| | EV (Electricity) | 0.1602 | 19.2934 |
| | Total Fuel Saving | (0.0435) | (8.8124) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0065 | 0.7607 |
| | EV (Electricity) | 0.0110 | 0.1526 |
| | Total Fuel Saving | (0.0045) | 0.6081 |
| VOC Emissions (lbs.) | CV (Gas) | 0.1638 | 5.8208 |
| | EV (Electricity) | 0.0029 | 0.1136 |
| | Total Fuel Saving | 0.1608 | 5.7071 |

Energy Consumption Data

March 2021



Fremont

Charging stations: Two Level-2 station

The price of electricity per kWh: \$0.10825



Economic Saving Data (Fuel & Maintenance Cost Savings):

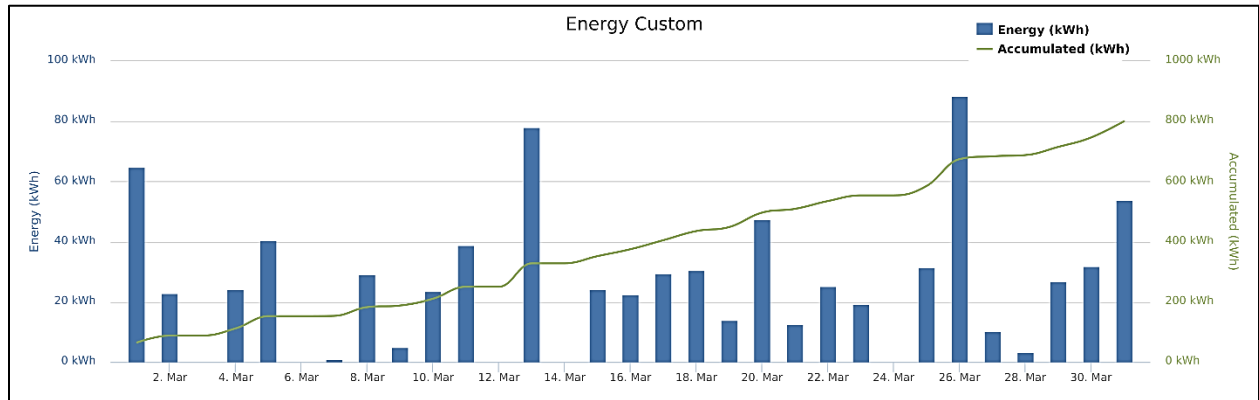
| | | This Month (March) | All Time |
|-----------------------------|---|-----------------------|-------------------|
| Miles Driven | | 2,729.17 | 53,824.19 |
| Energy Consumed(kWh) | | 799.87 | 16,075.67 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$299.19 | \$5,265.88 |
| | Usage Cost Using EV(Electricity) | \$78.79 | \$1,696.41 |
| | Total Fuel Saving | \$220.40 | \$3,569.47 |
| Other Cost Saving | CV Costs | \$166.48 | \$2,574.80 |
| | EV Costs | \$70.96 | \$767.96 |
| | Total Other Cost Saving | \$95.52 | \$1,806.84 |

| | | |
|---------------------------------|-----------------|-------------------|
| Overall Economic Savings | \$315.93 | \$5,376.31 |
|---------------------------------|-----------------|-------------------|

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-----------------------|--------------------|
| Miles Driven | | 2,729.17 | 53,824.19 |
| Energy Consumed (kWh) | | 799.87 | 16,075.67 |
| Co2 Emissions (lbs.) | CV (Gas) | 2,130.2995 | 44,460.7278 |
| | EV (Electricity) | 1,171.3685 | 26,137.9798 |
| | Total Fuel Saving | 958.9310 | 18,322.7480 |
| Co Emissions (lbs.) | CV (Gas) | 17.2146 | 339.5035 |
| | EV (Electricity) | 1.0775 | 31.6078 |
| | Total Fuel Saving | 16.1371 | 307.8957 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0253 | 0.4984 |
| | EV (Electricity) | 1.9030 | 40.5289 |
| | Total Fuel Saving | (1.8778) | (40.0305) |
| Nox Emissions (lbs.) | CV (Gas) | 0.7220 | 14.2394 |
| | EV (Electricity) | 1.2529 | 32.6096 |
| | Total Fuel Saving | (0.5309) | (18.3702) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0403 | 1.6948 |
| | EV (Electricity) | 0.1683 | 4.2470 |
| | Total Fuel Saving | (0.1280) | (2.5522) |
| VOC Emissions (lbs.) | CV (Gas) | 1.0132 | 19.9827 |
| | EV (Electricity) | 0.0123 | 0.3575 |
| | Total Fuel Saving | 1.0009 | 19.6251 |

Energy Consumption Data March 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 March 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



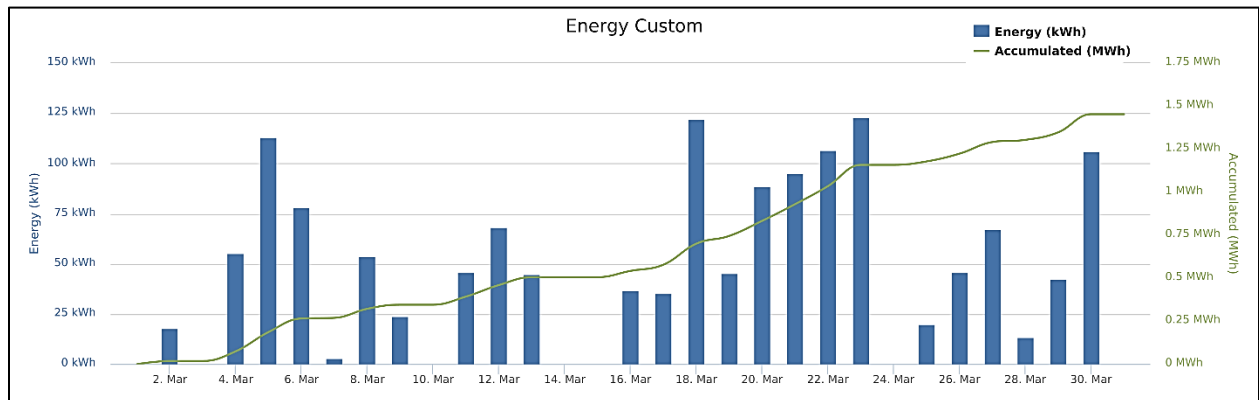
Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-------------------------------|-------------------|
| Miles Driven | | 4,957.52 | 51,839.34 |
| Energy Consumed(kWh) | | 1452.965 | 15,396.92 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$543.64 | \$4,935.16 |
| | Usage Cost Using EV(Electricity) | \$123.50 | \$1,380.56 |
| | Total Fuel Saving | \$420.14 | \$3,554.60 |
| Other Cost Saving | CV Costs | \$302.41 | \$2,617.49 |
| | EV Costs | \$128.90 | \$1,055.27 |
| | Total Other Cost Saving | \$173.51 | \$1,562.22 |
| Overall Economic Savings | | \$593.65 | \$5,116.83 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 4,957.52 | 51,839.34 |
| Energy Consumed (Kwh) | | 1,452.97 | 15,396.92 |
| Co2 Emissions (lbs.) | CV (Gas) | 3,869.68 | 42,391.28 |
| | EV (Electricity) | 2,457.47 | 21,296.53 |
| | Total Fuel Saving | 1,412.21 | 21,094.75 |
| Co Emissions (lbs.) | CV (Gas) | 31.2702 | 419.5212 |
| | EV (Electricity) | 1.8529 | 17.9919 |
| | Total Fuel Saving | 29.4173 | 401.5293 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0459 | 0.7318 |
| | EV (Electricity) | 3.8905 | 47.1736 |
| | Total Fuel Saving | (3.8446) | (46.4419) |
| Nox Emissions (lbs.) | CV (Gas) | 1.3115 | 21.8223 |
| | EV (Electricity) | 3.3512 | 33.7772 |
| | Total Fuel Saving | (2.0396) | (11.9549) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0732 | 1.9058 |
| | EV (Electricity) | 0.2226 | 1.8888 |
| | Total Fuel Saving | (0.1494) | 0.0170 |
| VOC Emissions (lbs.) | CV (Gas) | 1.8405 | 15.3951 |
| | EV (Electricity) | 0.0381 | 0.3705 |
| | Total Fuel Saving | 1.8025 | 15.0246 |

Energy Consumption Data March 2021



Gretna (Fast DC charging):

Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-------------------------------|-------------------|
| Miles Driven | | 4,577.98 | 22,493.42 |
| Energy Consumed(kWh) | | 1,341.73 | 6,659.46 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$502.27 | \$2,009.89 |
| | Usage Cost Using EV(Electricity) | \$114.05 | \$578.45 |
| | Total Fuel Saving | \$388.22 | \$1,431.45 |
| Other Cost Saving | CV Costs | \$279.26 | \$1,214.21 |
| | EV Costs | \$119.03 | \$444.10 |
| | Total Other Cost Saving | \$160.23 | \$770.11 |
| Overall Economic Savings | | \$548.45 | \$2,201.55 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|---------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 4,577.98 | 22,493.42 |
| Energy Consumed (kWh) | | 1,341.73 | 6,659.46 |
| Co2 Emissions (lbs.) | CV (Gas) | 3,573.42 | 18,103.02 |
| | EV (Electricity) | 2,269.32 | 10,608.71 |
| | Total Fuel Saving | 1,304.10 | 7,494.31 |
| Co Emissions (lbs.) | CV (Gas) | 28.8762 | 141.8803 |
| | EV (Electricity) | 1.7111 | 8.7943 |
| | Total Fuel Saving | 27.1651 | 133.0860 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0424 | 0.2083 |
| | EV (Electricity) | 3.5927 | 19.9985 |
| | Total Fuel Saving | (3.5503) | (19.7903) |
| Nox Emissions (lbs.) | CV (Gas) | 1.2111 | 5.9507 |
| | EV (Electricity) | 3.0946 | 15.6852 |
| | Total Fuel Saving | (1.8835) | (9.7345) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0676 | 0.5328 |
| | EV (Electricity) | 0.2055 | 1.0030 |
| | Total Fuel Saving | (0.1379) | (0.4702) |
| VOC Emissions (lbs.) | CV (Gas) | 1.6996 | 8.3509 |
| | EV (Electricity) | 0.0352 | 0.1711 |

| | | | |
|--|--------------------------|---------------|---------------|
| | Total Fuel Saving | 1.6645 | 8.1797 |
|--|--------------------------|---------------|---------------|

Gretna (Two Level-2 stations):

Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-------------------------------|-------------------|
| Miles Driven | | 379.54 | 29,345.92 |
| Energy Consumed(kWh) | | 111.24 | 8,737.46 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$41.37 | \$2,925.27 |
| | Usage Cost Using EV(Electricity) | \$9.46 | \$802.11 |
| | Total Fuel Saving | \$31.92 | \$2,123.16 |
| Other Cost Saving | CV Costs | \$23.15 | \$1,403.28 |
| | EV Costs | \$9.87 | \$611.17 |
| | Total Other Cost Saving | \$13.28 | \$792.11 |
| Overall Economic Savings | | \$45.20 | \$2,915.27 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 379.54 | 29,345.92 |
| Energy Consumed (kWh) | | 111.24 | 8,737.46 |
| Co2 Emissions (lbs.) | CV (Gas) | 296.26 | 24,288.25 |
| | EV (Electricity) | 188.14 | 10,687.81 |
| | Total Fuel Saving | 108.12 | 13,600.44 |
| Co Emissions (lbs.) | CV (Gas) | 2.3940 | 277.6409 |
| | EV (Electricity) | 0.1419 | 9.1976 |
| | Total Fuel Saving | 2.2521 | 268.4433 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0035 | 0.5235 |
| | EV (Electricity) | 0.2979 | 27.1751 |
| | Total Fuel Saving | (0.2943) | (26.6516) |
| Nox Emissions (lbs.) | CV (Gas) | 0.1004 | 15.8716 |
| | EV (Electricity) | 0.2566 | 18.0920 |
| | Total Fuel Saving | (0.1562) | (2.2204) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0056 | 1.3730 |
| | EV (Electricity) | 0.0170 | 0.8858 |
| | Total Fuel Saving | (0.0114) | 0.4872 |
| VOC Emissions (lbs.) | CV (Gas) | 0.1409 | 7.0442 |
| | EV (Electricity) | 0.0029 | 0.1994 |
| | Total Fuel Saving | 0.1380 | 6.8449 |

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):

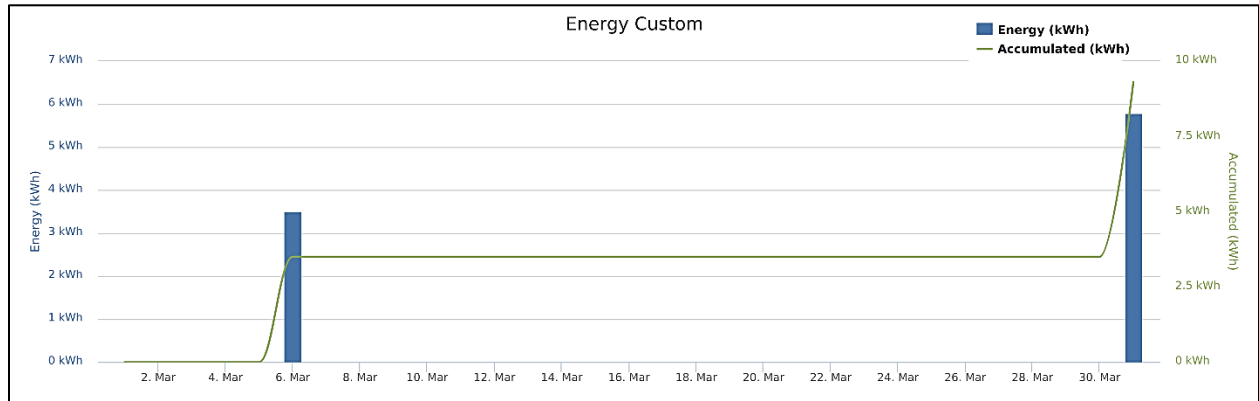
| | | This Month (March) | All Time |
|-----------------------------|---|-----------------------|-----------------|
| Miles Driven | | 31.70 | 3029.20 |
| Energy Consumed(kWh) | | 9.29 | 904.56 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$3.52 | \$307.97 |
| | Usage Cost Using EV(Electricity) | \$0.73 | \$69.57 |
| | Total Fuel Saving | \$2.79 | \$238.40 |
| Other Cost Saving | CV Costs | \$1.93 | \$141.32 |
| | EV Costs | \$0.82 | \$52.91 |

| | | | |
|---------------------------------|--------------------------------|---------------|-----------------|
| | Total Other Cost Saving | \$1.11 | \$88.42 |
| Overall Economic Savings | | \$3.90 | \$326.81 |

Environmental Saving Data (Reduction in Emissions):

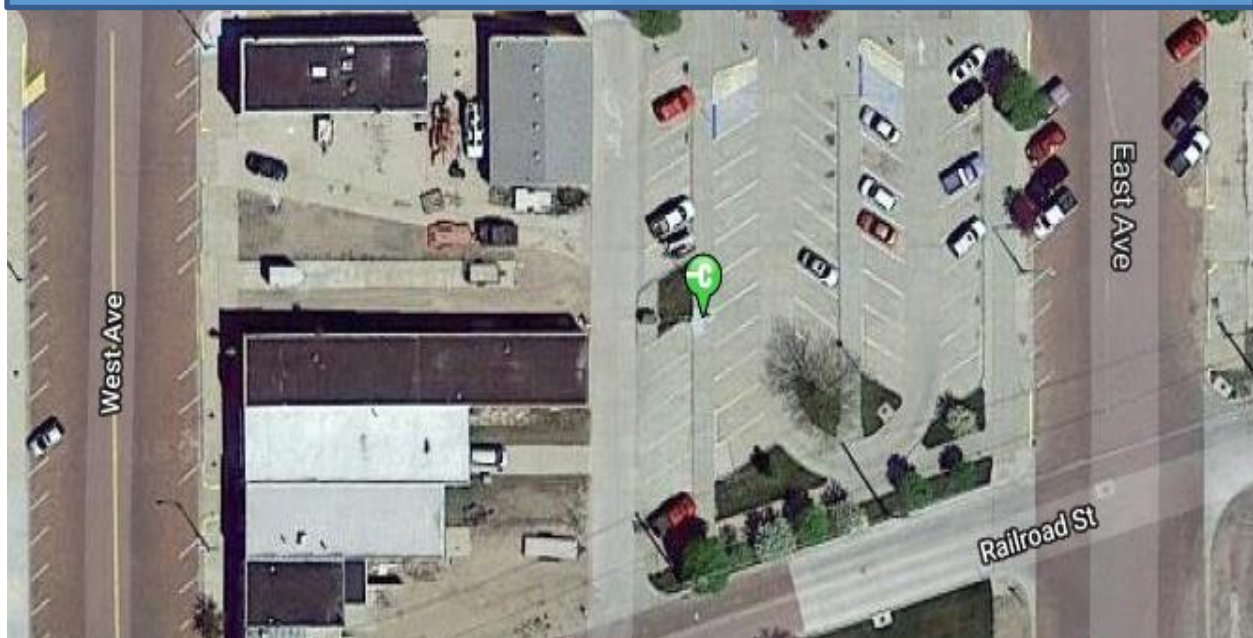
| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 31.70 | 3,029.20 |
| Energy Consumed (kWh) | | 9.29 | 904.56 |
| Co2 Emissions (lbs.) | CV (Gas) | 24.75 | 2,501.73 |
| | EV (Electricity) | 20.38 | 1,553.89 |
| | Total Fuel Saving | 4.37 | 947.85 |
| Co Emissions (lbs.) | CV (Gas) | 0.2000 | 24.4439 |
| | EV (Electricity) | 0.0130 | 1.3409 |
| | Total Fuel Saving | 0.1870 | 23.1029 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0003 | 0.0425 |
| | EV (Electricity) | 0.0244 | 2.3782 |
| | Total Fuel Saving | (0.0241) | (2.3357) |
| Nox Emissions (lbs.) | CV (Gas) | 0.0084 | 1.2689 |
| | EV (Electricity) | 0.0227 | 1.0474 |
| | Total Fuel Saving | (0.0143) | 0.2215 |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0005 | 0.1279 |
| | EV (Electricity) | 0.0026 | 0.0426 |
| | Total Fuel Saving | (0.0021) | 0.0853 |
| VOC Emissions (lbs.) | CV (Gas) | 0.0118 | 1.1578 |
| | EV (Electricity) | 0.0001 | 0.0193 |
| | Total Fuel Saving | 0.0116 | 1.1384 |

Energy Consumption Data March 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):

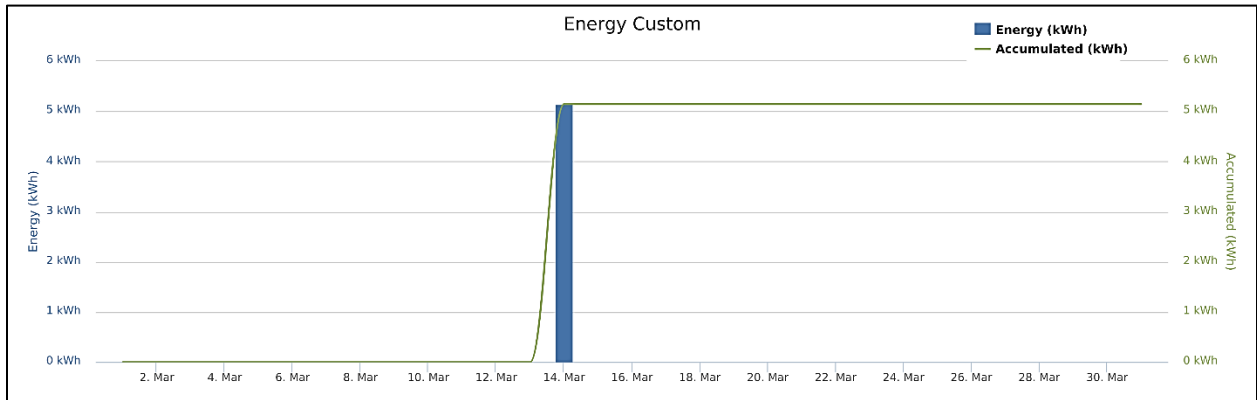
| | | This Month (March) | All Time |
|-----------------------------|---|-----------------------|-----------------|
| Miles Driven | | 17.54 | 2,385.42 |
| Energy Consumed(kWh) | | 5.14 | 708.06 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$1.95 | \$247.40 |
| | Usage Cost Using EV(Electricity) | \$0.50 | \$65.12 |
| | Total Fuel Saving | \$1.45 | \$182.29 |

| | | | |
|---------------------------------|--------------------------------|---------------|-----------------|
| Other Cost Saving | CV Costs | \$1.07 | \$117.04 |
| | EV Costs | \$0.46 | \$57.59 |
| | Total Other Cost Saving | \$0.61 | \$59.45 |
| Overall Economic Savings | | \$2.06 | \$241.74 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|------------------------------|--------------------------|---------------------------|-----------------|
| Miles Driven | | 17.54 | 2,385.42 |
| Energy Consumed (kWh) | | 5.14 | 708.06 |
| Co2 Emissions (lbs.) | CV (Gas) | 13.69 | 1,979.73 |
| | EV (Electricity) | 7.73 | 679.12 |
| | Total Fuel Saving | 5.96 | 1,300.61 |
| Co Emissions (lbs.) | CV (Gas) | 0.1106 | 25.8544 |
| | EV (Electricity) | 0.0052 | 0.5180 |
| | Total Fuel Saving | 0.1054 | 25.3363 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0002 | 0.0515 |
| | EV (Electricity) | 0.0141 | 1.6988 |
| | Total Fuel Saving | (0.0140) | (1.6473) |
| Nox Emissions (lbs.) | CV (Gas) | 0.0046 | 1.5781 |
| | EV (Electricity) | 0.0242 | 1.8730 |
| | Total Fuel Saving | (0.0195) | (0.2949) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0003 | 0.1218 |
| | EV (Electricity) | 0.0006 | 0.0408 |
| | Total Fuel Saving | (0.0004) | 0.0810 |
| VOC Emissions (lbs.) | CV (Gas) | 0.0065 | 0.9533 |
| | EV (Electricity) | 0.0001 | 0.0123 |
| | Total Fuel Saving | 0.0064 | 0.9410 |

Energy Consumption Data March 2021



Kearney

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



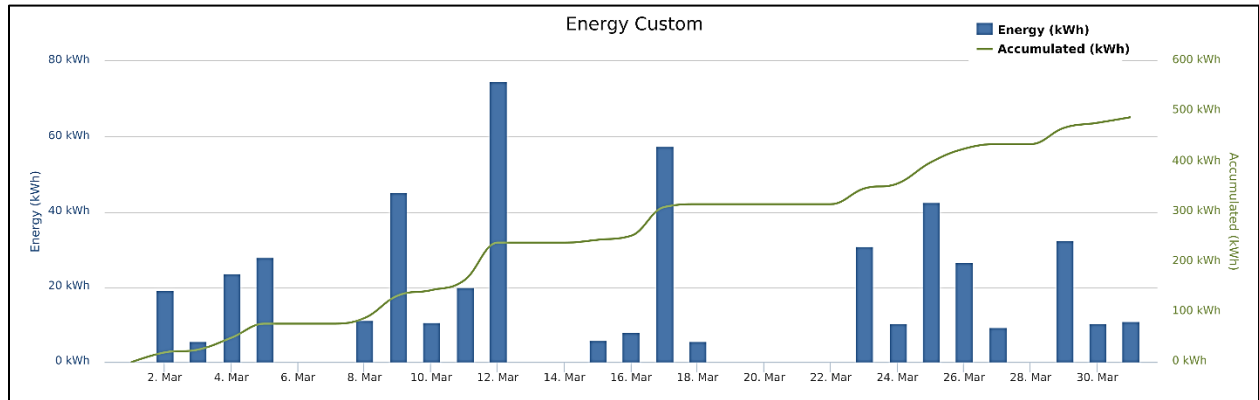
Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|-------------------|
| Miles Driven | | 1,664.42 | 64,823.05 |
| Energy Consumed(kWh) | | 487.81 | 19,259.81 |
| Fuel Cost Caving | Usage Cost Using CV(Gas) | \$187.89 | \$6,764.93 |
| | Usage Cost Using EV(Electricity) | \$41.61 | \$1,662.82 |
| | Total Fuel Saving | \$146.28 | \$5,102.11 |
| Other Cost Saving | CV Costs | \$101.53 | \$3,246.67 |
| | EV Costs | \$43.27 | \$1,345.44 |
| | Total Other Cost Saving | \$58.25 | \$1,901.22 |
| Overall Economic Savings | | \$204.54 | \$7,003.34 |

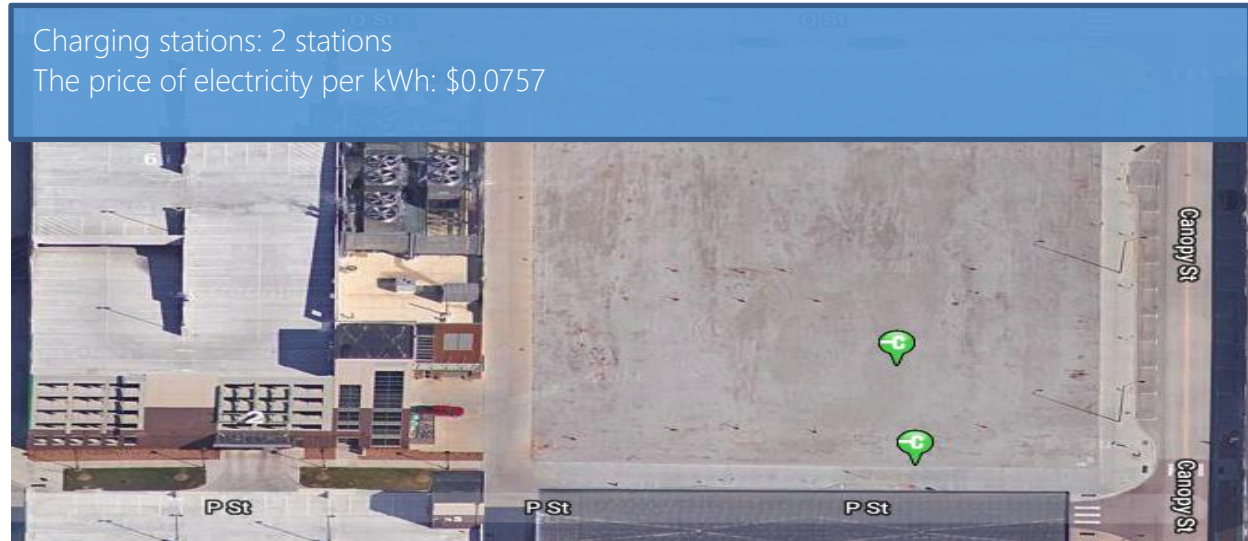
Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 1,664.42 | 64,823.05 |
| Energy Consumed (kWh) | | 487.81 | 19,259.81 |
| Co2 Emissions (lbs.) | CV (Gas) | 1,299.19 | 52,844.60 |
| | EV (Electricity) | 733.64 | 22,000.80 |
| | Total Fuel Saving | 565.56 | 30,843.80 |
| Co Emissions (lbs.) | CV (Gas) | 10.4986 | 534.1722 |
| | EV (Electricity) | 0.4927 | 16.4581 |
| | Total Fuel Saving | 10.0059 | 517.7141 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0154 | 0.9410 |
| | EV (Electricity) | 1.3409 | 47.1973 |
| | Total Fuel Saving | (1.3255) | (46.2563) |
| Nox Emissions (lbs.) | CV (Gas) | 0.4403 | 28.1266 |
| | EV (Electricity) | 2.2942 | 64.1045 |
| | Total Fuel Saving | (1.8539) | (35.9779) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0246 | 2.4982 |
| | EV (Electricity) | 0.0592 | 1.5062 |
| | Total Fuel Saving | (0.0346) | 0.9920 |
| VOC Emissions (lbs.) | CV (Gas) | 0.6179 | 24.8470 |
| | EV (Electricity) | 0.0128 | 0.3610 |
| | Total Fuel Saving | 0.6051 | 24.4860 |

Energy Consumption Data March 2021



LES



Economic Saving Data (Fuel & Maintenance Cost Savings):

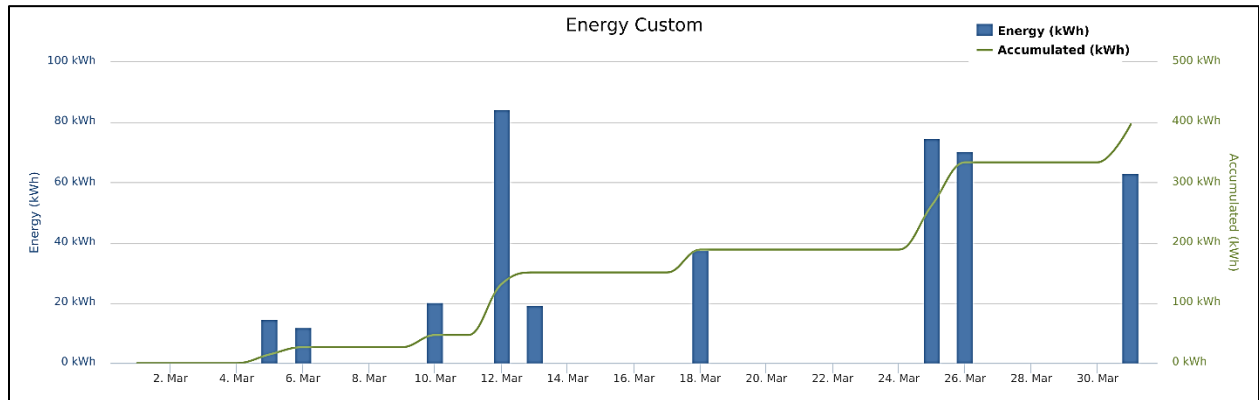
| | | This Month (March) | All Time |
|---------------------------------|---|-------------------------------|-------------------|
| Miles Driven | | 1,353.30 | 87,999.29 |
| Energy Consumed(kWh) | | 396.629 | 26,308.27 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$150.75 | \$9,246.17 |
| | Usage Cost Using EV(Electricity) | \$55.53 | \$2,078.25 |
| | Total Fuel Saving | \$95.23 | \$7,167.92 |
| Other Cost Saving | CV Costs | \$82.55 | \$4,017.02 |
| | EV Costs | \$35.19 | \$1,443.72 |
| | Total Other Cost Saving | \$47.37 | \$2,573.30 |
| Overall Economic Savings | | \$142.59 | \$9,741.21 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|-------------------|
| Miles Driven | | 1,353.30 | 87,999.29 |
| Energy Consumed (kWh) | | 396.63 | 26,308.27 |
| Co2 Emissions (lbs.) | CV (Gas) | 1,056.34 | 73,966.49 |
| | EV (Electricity) | 480.54 | 42,105.42 |
| | Total Fuel Saving | 575.80 | 31,861.07 |
| Co Emissions (lbs.) | CV (Gas) | 8.5361 | 755.4689 |
| | EV (Electricity) | 0.3428 | 12.6526 |
| | Total Fuel Saving | 8.1933 | 742.8163 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0125 | 1.3602 |
| | EV (Electricity) | 0.3522 | 16.7623 |
| | Total Fuel Saving | (0.3397) | (15.4021) |
| Nox Emissions (lbs.) | CV (Gas) | 0.3580 | 40.8393 |
| | EV (Electricity) | 0.4914 | 183.7088 |
| | Total Fuel Saving | (0.1334) | (142.8695) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0200 | 3.9169 |
| | EV (Electricity) | 0.0338 | 0.9698 |
| | Total Fuel Saving | (0.0138) | 2.9471 |
| VOC Emissions (lbs.) | CV (Gas) | 0.5024 | 33.9278 |
| | EV (Electricity) | 0.0090 | 0.8441 |
| | Total Fuel Saving | 0.4934 | 33.0836 |

Energy Consumption Data

March 2021



Lexington

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



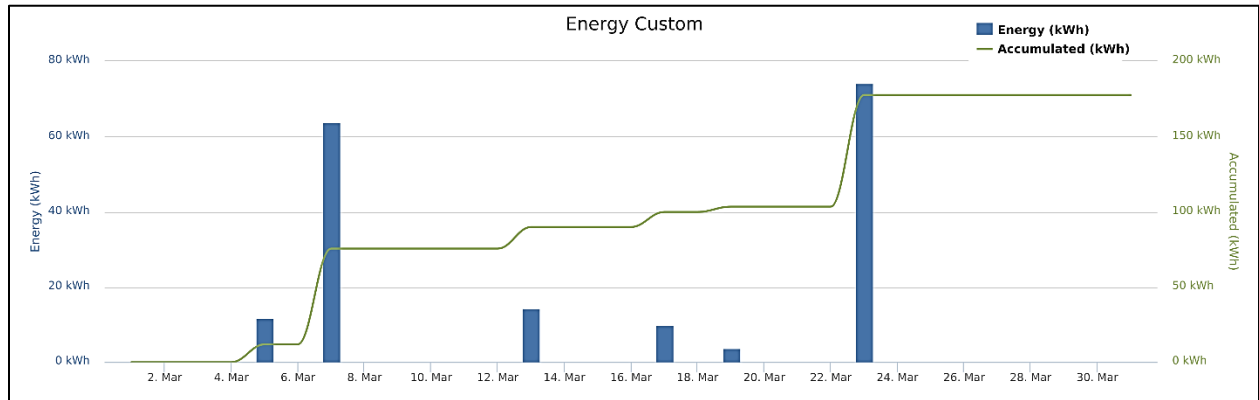
Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|-------------------|
| Miles Driven | | 605.42 | 30,307.02 |
| Energy Consumed(kWh) | | 177.437 | 8,999.07 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$65.72 | \$2,972.57 |
| | Usage Cost Using EV(Electricity) | \$13.43 | \$1,010.89 |
| | Total Fuel Saving | \$52.29 | \$1,961.68 |
| Other Cost Saving | CV Costs | \$36.93 | \$1,498.87 |
| | EV Costs | \$15.74 | \$679.24 |
| | Total Other Cost Saving | \$21.19 | \$819.63 |
| Overall Economic Savings | | \$73.48 | \$2,781.31 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 605.42 | 30,307.02 |
| Energy Consumed (kWh) | | 177.44 | 8,999.07 |
| Co2 Emissions (lbs.) | CV (Gas) | 472.57 | 25,226.54 |
| | EV (Electricity) | 266.85 | 9,390.34 |
| | Total Fuel Saving | 205.72 | 15,836.20 |
| Co Emissions (lbs.) | CV (Gas) | 3.8187 | 305.1413 |
| | EV (Electricity) | 0.1792 | 7.2503 |
| | Total Fuel Saving | 3.6395 | 297.8910 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0056 | 0.5908 |
| | EV (Electricity) | 0.4877 | 22.0678 |
| | Total Fuel Saving | (0.4821) | (21.4770) |
| Nox Emissions (lbs.) | CV (Gas) | 0.1602 | 18.0046 |
| | EV (Electricity) | 0.8345 | 27.3153 |
| | Total Fuel Saving | (0.6743) | (9.3106) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0089 | 1.4028 |
| | EV (Electricity) | 0.0215 | 0.6250 |
| | Total Fuel Saving | (0.0126) | 0.7778 |
| VOC Emissions (lbs.) | CV (Gas) | 0.2248 | 11.9671 |
| | EV (Electricity) | 0.0047 | 0.1652 |
| | Total Fuel Saving | 0.2201 | 11.8019 |

Energy Consumption Data March 2021



Lincoln

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



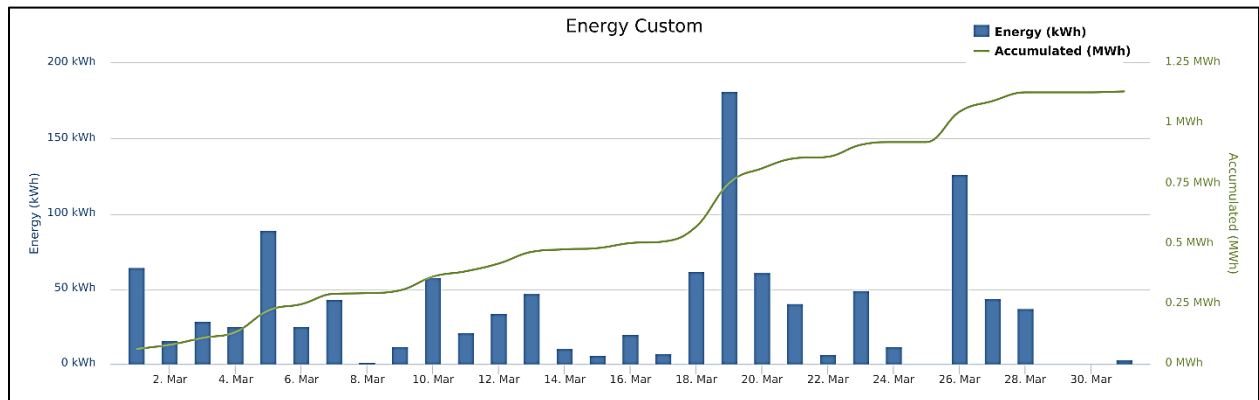
Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|--------------------|
| Miles Driven | | 3,862.20 | 217,173.81 |
| Energy Consumed(kWh) | | 1,131.95 | 64,875.88 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$430.03 | \$22,442.33 |
| | Usage Cost Using EV(Electricity) | \$85.69 | \$4,880.63 |
| | Total Fuel Saving | \$344.34 | \$17,561.70 |
| Other Cost Saving | CV Costs | \$235.59 | \$10,167.60 |
| | EV Costs | \$100.42 | \$3,660.36 |
| | Total Other Cost Saving | \$135.18 | \$6,507.24 |
| Overall Economic Savings | | \$479.52 | \$24,068.93 |

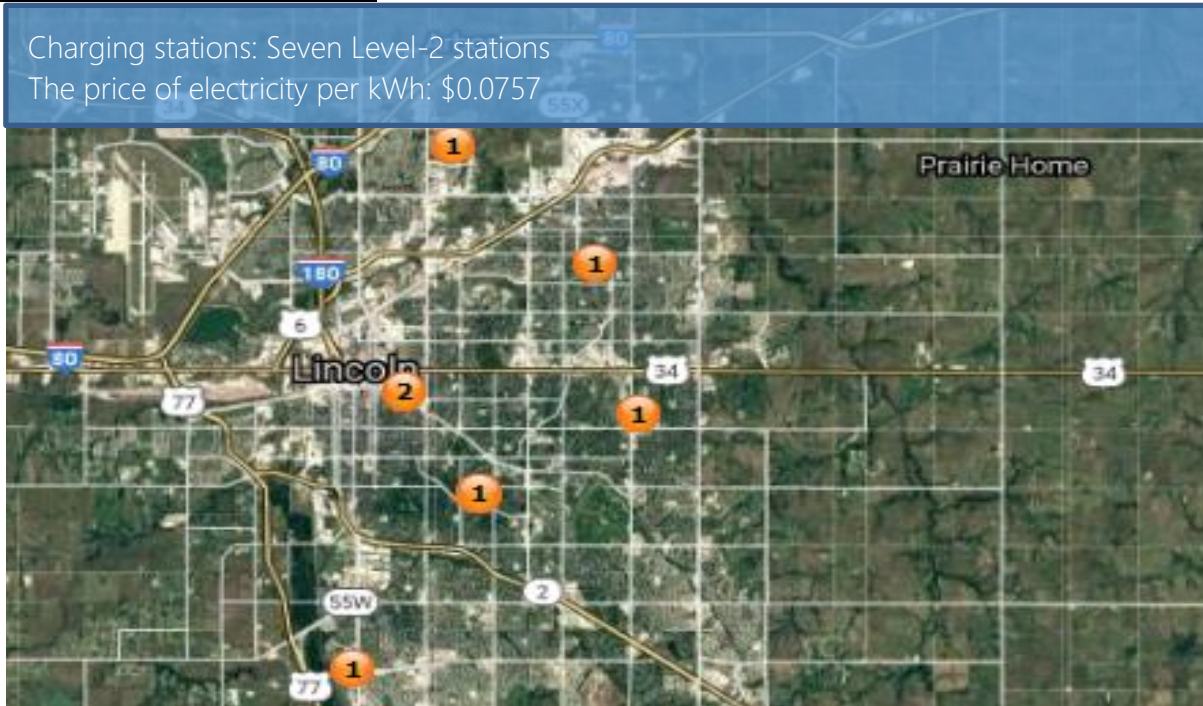
Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|-------------------|
| Miles Driven | | 3,862.20 | 217,173.81 |
| Energy Consumed (kWh) | | 1,131.95 | 64,875.88 |
| Co2 Emissions (lbs.) | CV (Gas) | 3,014.71 | 177,395.81 |
| | EV (Electricity) | 1,371.42 | 107,920.63 |
| | Total Fuel Saving | 1,643.29 | 69,475.18 |
| Co Emissions (lbs.) | CV (Gas) | 24.3614 | 1,578.2127 |
| | EV (Electricity) | 0.9782 | 31.9473 |
| | Total Fuel Saving | 23.3831 | 1,546.2654 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0358 | 2.5774 |
| | EV (Electricity) | 1.0052 | 46.1010 |
| | Total Fuel Saving | (0.9695) | (43.5236) |
| Nox Emissions (lbs.) | CV (Gas) | 1.0218 | 75.7039 |
| | EV (Electricity) | 1.4023 | 438.9251 |
| | Total Fuel Saving | (0.3806) | (363.2212) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0570 | 8.5178 |
| | EV (Electricity) | 0.0964 | 2.4778 |
| | Total Fuel Saving | (0.0394) | 6.0400 |
| VOC Emissions (lbs.) | CV (Gas) | 1.4339 | 81.9044 |
| | EV (Electricity) | 0.0258 | 2.0944 |
| | Total Fuel Saving | 1.4081 | 79.8101 |

Energy Consumption Data March 2021



Lincoln Public Schools



Economic Saving Data (Fuel & Maintenance Cost Savings):

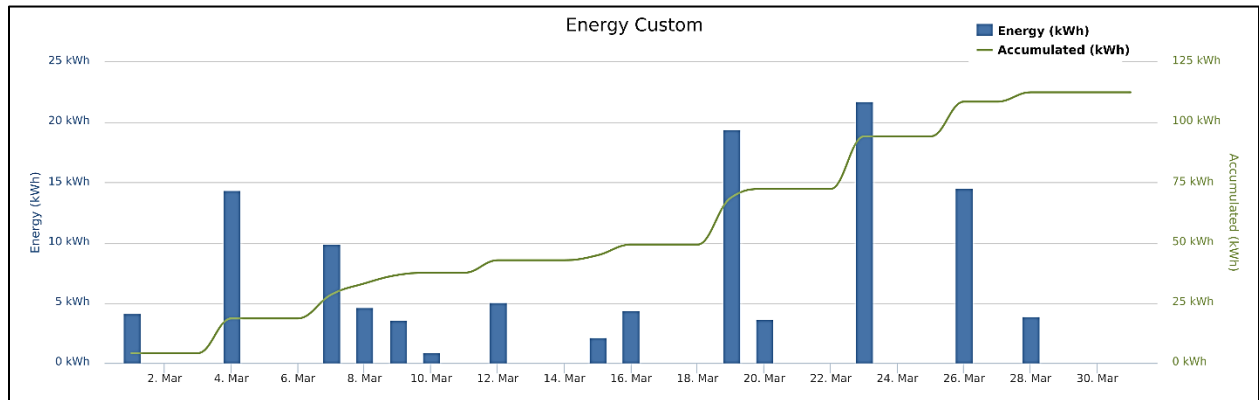
| | | This Month (March) | All Time |
|-----------------------------|---|-----------------------|-----------------|
| Miles Driven | | 383.83 | 2,713.55 |
| Energy Consumed(kWh) | | 112.50 | 795.30 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$42.72 | \$246.37 |
| | Usage Cost Using EV(Electricity) | \$8.52 | \$60.20 |
| | Total Fuel Saving | \$34.21 | \$186.17 |
| Other Cost Saving | CV Costs | \$23.41 | \$165.53 |
| | EV Costs | \$9.98 | \$70.55 |

| | | | |
|---------------------------------|--------------------------------|----------------|-----------------|
| | Total Other Cost Saving | \$13.43 | \$94.97 |
| Overall Economic Savings | | \$47.64 | \$281.14 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|------------------------------|--------------------------|---------------------------|-----------------|
| Miles Driven | | 383.83 | 2,713.55 |
| Energy Consumed (kWh) | | 112.50 | 795.30 |
| Co2 Emissions (lbs.) | CV (Gas) | 299.61 | 2,118.11 |
| | EV (Electricity) | 136.29 | 963.55 |
| | Total Fuel Saving | 163.31 | 1,154.56 |
| Co Emissions (lbs.) | CV (Gas) | 2.4211 | 17.1161 |
| | EV (Electricity) | 0.0972 | 0.6873 |
| | Total Fuel Saving | 2.3239 | 16.4288 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0036 | 0.0251 |
| | EV (Electricity) | 0.0999 | 0.7063 |
| | Total Fuel Saving | (0.0963) | (0.6811) |
| Nox Emissions (lbs.) | CV (Gas) | 0.1015 | 0.7179 |
| | EV (Electricity) | 0.1394 | 0.9853 |
| | Total Fuel Saving | (0.0378) | (0.2674) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0057 | 0.0401 |
| | EV (Electricity) | 0.0096 | 0.0677 |
| | Total Fuel Saving | (0.0039) | (0.0277) |
| VOC Emissions (lbs.) | CV (Gas) | 0.1425 | 1.0074 |
| | EV (Electricity) | 0.0026 | 0.0181 |
| | Total Fuel Saving | 0.1399 | 0.9893 |

Energy Consumption Data March 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):

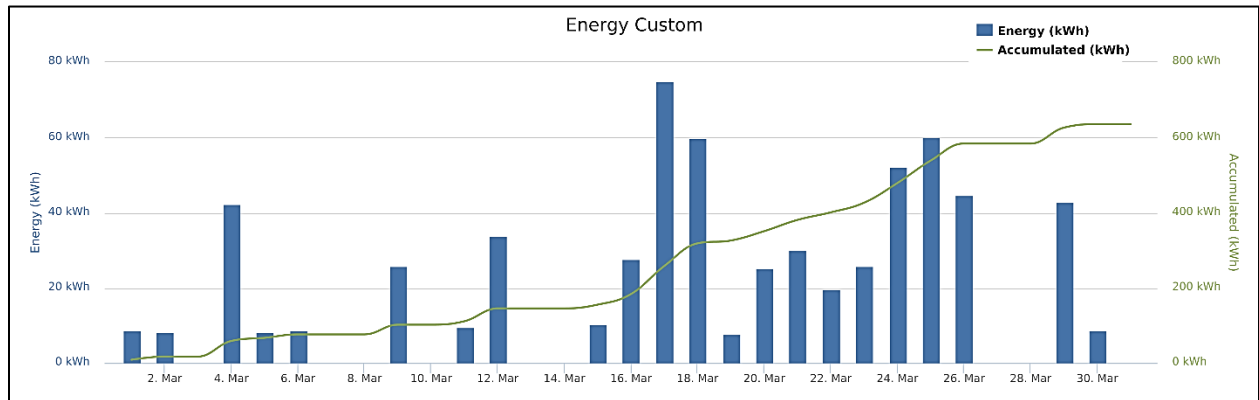
| | | This Month (March) | All Time |
|-----------------------------|---|-------------------------------|-------------------|
| Miles Driven | | 2,165.24 | 61,097.62 |
| Energy Consumed(kWh) | | 634.60 | 18,304.40 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$237.99 | \$6,159.38 |
| | Usage Cost Using EV(Electricity) | \$53.94 | \$1,637.34 |
| | Total Fuel Saving | \$184.05 | \$4,522.04 |
| Other Cost Saving | CV Costs | \$132.08 | \$2,786.45 |
| | EV Costs | \$56.30 | \$775.10 |
| | Total Other Cost Saving | \$75.78 | \$2,011.35 |

| | | |
|---------------------------------|-----------------|-------------------|
| Overall Economic Savings | \$259.83 | \$6,533.39 |
|---------------------------------|-----------------|-------------------|

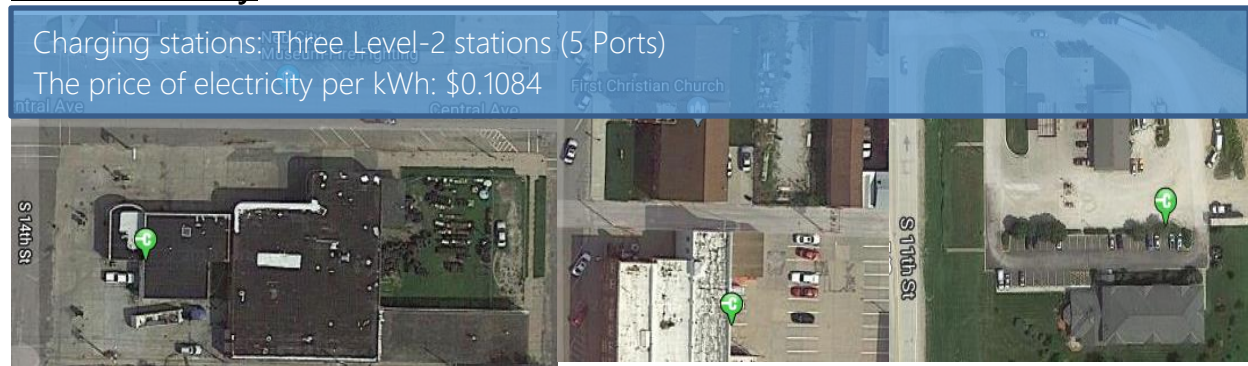
Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-----------------------|-------------------|
| Miles Driven | | 2,165.24 | 61,097.62 |
| Energy Consumed (kWh) | | 634.60 | 18,304.40 |
| Co2 Emissions (lbs.) | CV (Gas) | 1,690.118 | 50,720.691 |
| | EV (Electricity) | 1,073.321 | 26,912.924 |
| | Total Fuel Saving | 616.797 | 23,807.767 |
| Co Emissions (lbs.) | CV (Gas) | 13.6576 | 385.3951 |
| | EV (Electricity) | 0.8093 | 24.7153 |
| | Total Fuel Saving | 12.8483 | 360.6798 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0200 | 0.5657 |
| | EV (Electricity) | 1.6992 | 61.8565 |
| | Total Fuel Saving | (1.6792) | (61.2908) |
| Nox Emissions (lbs.) | CV (Gas) | 0.5728 | 16.1643 |
| | EV (Electricity) | 1.4637 | 43.8972 |
| | Total Fuel Saving | (0.8908) | (27.7328) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0320 | 2.1268 |
| | EV (Electricity) | 0.0972 | 2.6339 |
| | Total Fuel Saving | (0.0652) | (0.5071) |
| VOC Emissions (lbs.) | CV (Gas) | 0.8039 | 22.6811 |
| | EV (Electricity) | 0.0166 | 0.4572 |
| | Total Fuel Saving | 0.7872 | 22.2239 |

Energy Consumption Data March 2021



Nebraska City



Data from Two existing charging station with three ports

| | | This Month (March) | All Time |
|---------------------------------|---|-------------------------------|-------------------|
| Miles Driven | | 2,154.59 | 52,593.14 |
| Energy Consumed(kWh) | | 631.473 | 15,636.54 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$238.22 | \$5,343.25 |
| | Usage Cost Using EV(Electricity) | \$68.45 | \$1,667.78 |
| | Total Fuel Saving | \$169.77 | \$3,675.47 |
| Other Cost Saving | CV Costs | \$131.43 | \$2,557.76 |
| | EV Costs | \$56.02 | \$1,111.28 |
| | Total Other Cost Saving | \$75.41 | \$1,446.48 |
| Overall Economic Savings | | \$245.18 | \$5,121.95 |

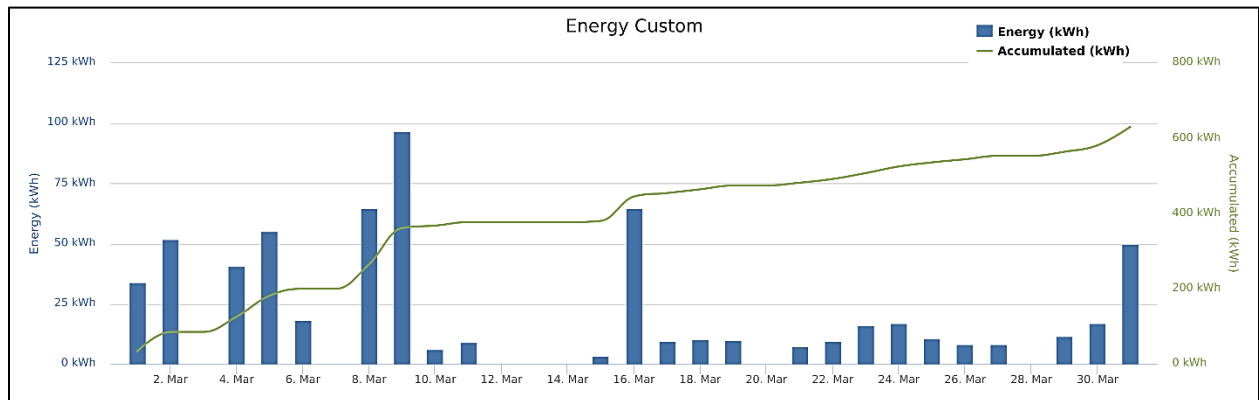
Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 2,154.59 | 52,593.14 |
| Energy Consumed (kWh) | | 631.47 | 15,636.54 |
| Co2 Emissions (lbs.) | CV (Gas) | 1,681.80 | 44,183.82 |
| | EV (Electricity) | 465.27 | 12,963.73 |
| | Total Fuel Saving | 1,216.53 | 31,220.09 |
| Co Emissions (lbs.) | CV (Gas) | 13.5903 | 529.7048 |
| | EV (Electricity) | 0.4532 | 12.8134 |
| | Total Fuel Saving | 13.1372 | 516.8914 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0200 | 1.0259 |
| | EV (Electricity) | 0.8085 | 29.1873 |
| | Total Fuel Saving | (0.7885) | (28.1614) |
| Nox Emissions (lbs.) | CV (Gas) | 0.5700 | 31.2603 |
| | EV (Electricity) | 0.2545 | 11.4568 |
| | Total Fuel Saving | 0.3155 | 19.8035 |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0318 | 2.4551 |
| | EV (Electricity) | 0.0669 | 0.9271 |
| | Total Fuel Saving | (0.0351) | 1.5280 |
| VOC Emissions (lbs.) | CV (Gas) | 0.7999 | 20.7702 |
| | EV (Electricity) | 0.0052 | 0.2139 |
| | Total Fuel Saving | 0.7947 | 20.5564 |

CNG Data – No new data for March 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 March 2021



Nebraska City

- Data from one existing charging station with two ports

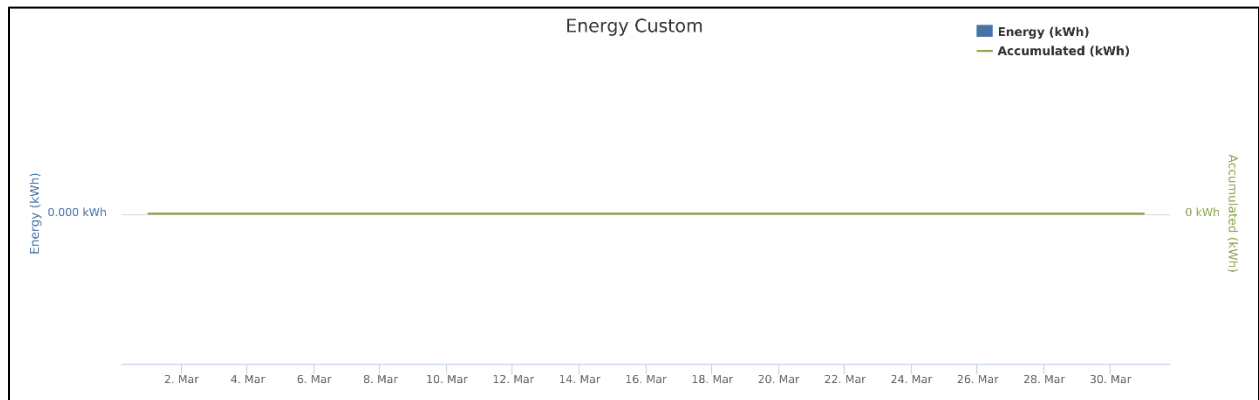
Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | 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 (March) | 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 March 2021



Nebraska City Savings Summary

| | | |
|------------------------------------|-----|------------|
| Overall Economic Savings | | \$7,318.86 |
| Overall Emission Reductions (lbs.) | CO2 | 43,727 |
| | CO | 641.4704 |
| | SO2 | (32.4436) |
| | NOX | 26.7346 |
| | CH4 | 2.0371 |
| | VOC | 23.4018 |

Nebraska Safety Center at UNK

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



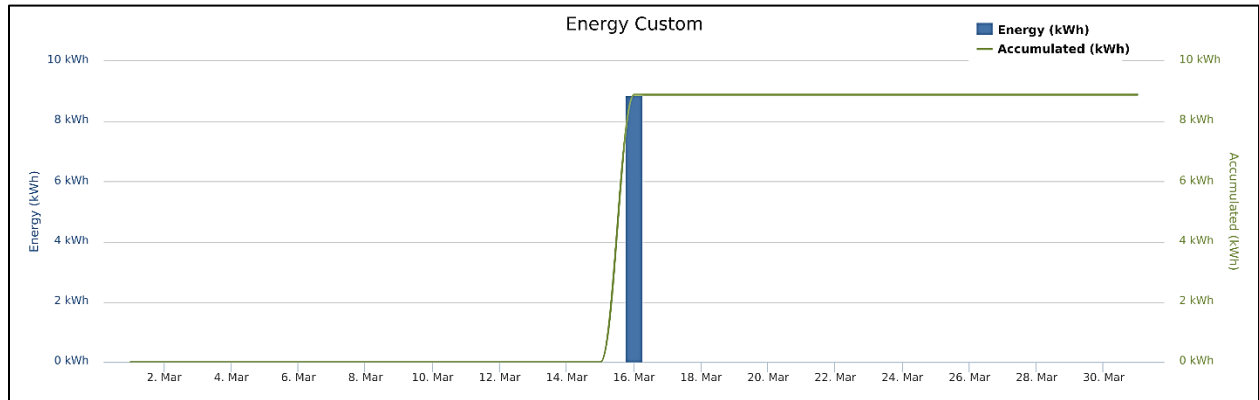
Total Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|----------------|
| Miles Driven | | 30.31 | 564.98 |
| Energy Consumed(kWh) | | 8.88 | 167.59 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$3.42 | \$54.65 |
| | Usage Cost Using EV(Electricity) | \$0.76 | \$14.30 |
| | Total Fuel Saving | \$2.66 | \$40.36 |
| Other Cost Saving | CV Costs | \$1.85 | \$29.74 |
| | EV Costs | \$0.79 | \$10.48 |
| | Total Other Cost Saving | \$1.06 | \$19.26 |
| Overall Economic Savings | | \$3.72 | \$59.62 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 30.31 | 564.98 |
| Energy Consumed (kWh) | | 8.88 | 167.59 |
| Co2 Emissions (lbs.) | CV (Gas) | 23.66 | 457.33 |
| | EV (Electricity) | 13.36 | 229.64 |
| | Total Fuel Saving | 10.30 | 227.68 |
| Co Emissions (lbs.) | CV (Gas) | 0.1912 | 3.5637 |
| | EV (Electricity) | 0.0090 | 0.1687 |
| | Total Fuel Saving | 0.1822 | 3.3949 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0003 | 0.0052 |
| | EV (Electricity) | 0.0244 | 0.4327 |
| | Total Fuel Saving | (0.0241) | (0.4274) |
| Nox Emissions (lbs.) | CV (Gas) | 0.0080 | 0.1495 |
| | EV (Electricity) | 0.0418 | 0.7086 |
| | Total Fuel Saving | (0.0338) | (0.5592) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0004 | 0.0143 |
| | EV (Electricity) | 0.0011 | 0.0177 |
| | Total Fuel Saving | (0.0006) | (0.0034) |
| VOC Emissions (lbs.) | CV (Gas) | 0.0113 | 0.2098 |
| | EV (Electricity) | 0.0002 | 0.0036 |
| | Total Fuel Saving | 0.0110 | 0.2061 |

Energy Consumption Data March 2021



NP Dodge

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



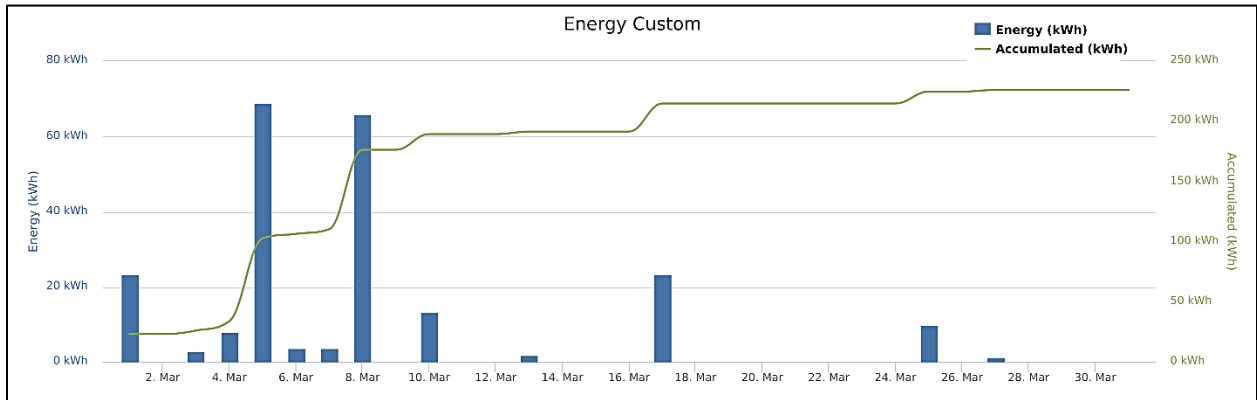
Total Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|-------------------|
| Miles Driven | | 770.94 | 10,100.42 |
| Energy Consumed(KWh) | | 225.95 | 2,994.78 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$83.71 | \$940.34 |
| | Usage Cost Using EV(Electricity) | \$19.21 | \$260.94 |
| | Total Fuel Saving | \$64.50 | \$679.40 |
| Other Cost Saving | CV Costs | \$47.03 | \$534.81 |
| | EV Costs | \$20.04 | \$190.13 |
| | Total Other Cost Saving | \$26.98 | \$344.68 |
| Overall Economic Savings | | \$91.48 | \$1,024.08 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|---------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 770.94 | 10,100.42 |
| Energy Consumed (kWh) | | 225.95 | 2,994.78 |
| Co2 Emissions (lbs.) | CV (Gas) | 601.77 | 8,164.95 |
| | EV (Electricity) | 382.16 | 4,728.00 |
| | Total Fuel Saving | 219.61 | 3,436.95 |
| Co Emissions (lbs.) | CV (Gas) | 4.8628 | 63.7098 |
| | EV (Electricity) | 0.2881 | 3.9745 |
| | Total Fuel Saving | 4.5747 | 59.7352 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0071 | 0.0935 |
| | EV (Electricity) | 0.6050 | 9.1350 |
| | Total Fuel Saving | (0.5979) | (9.0414) |
| Nox Emissions (lbs.) | CV (Gas) | 0.2040 | 2.6721 |
| | EV (Electricity) | 0.5211 | 7.0749 |
| | Total Fuel Saving | (0.3172) | (4.4028) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0114 | 0.2525 |
| | EV (Electricity) | 0.0346 | 0.4499 |
| | Total Fuel Saving | (0.0232) | (0.1975) |
| VOC Emissions (lbs.) | CV (Gas) | 0.2862 | 3.7499 |
| | EV (Electricity) | 0.0059 | 0.0767 |
| | Total Fuel Saving | 0.2803 | 3.6731 |

Energy Consumption Data March 2021



NPPD

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



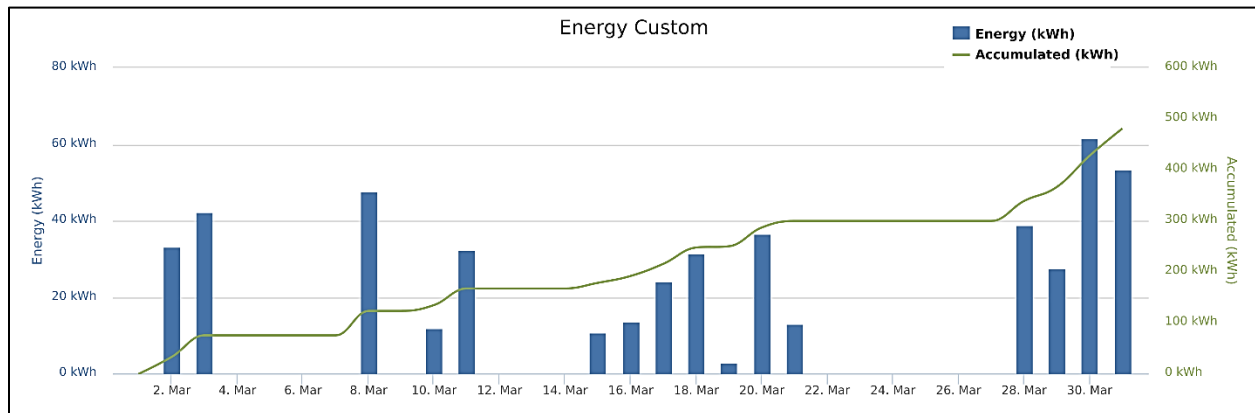
Total Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|-------------------|
| Miles Driven | | 1,640.81 | 43,161.23 |
| Energy Consumed(kWh) | | 480.89 | 12,649.83 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$182.87 | \$4,179.32 |
| | Usage Cost Using EV(Electricity) | \$36.40 | \$957.59 |
| | Total Fuel Saving | \$146.46 | \$3,221.73 |
| Other Cost Saving | CV Costs | \$100.09 | \$2,632.84 |
| | EV Costs | \$42.66 | \$1,122.19 |
| | Total Other Cost Saving | \$57.43 | \$1,510.64 |
| Overall Economic Savings | | \$203.89 | \$4,732.37 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 1,640.81 | 43,161.23 |
| Energy Consumed (kWh) | | 480.89 | 12,649.83 |
| Co2 Emissions (lbs.) | CV (Gas) | 1,280.76 | 33,690.26 |
| | EV (Electricity) | 582.63 | 15,326.02 |
| | Total Fuel Saving | 698.13 | 18,364.24 |
| Co Emissions (lbs.) | CV (Gas) | 10.3496 | 272.2454 |
| | EV (Electricity) | 0.4156 | 10.9321 |
| | Total Fuel Saving | 9.9340 | 261.3133 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0152 | 0.3996 |
| | EV (Electricity) | 0.4271 | 11.2338 |
| | Total Fuel Saving | (0.4119) | (10.8342) |
| Nox Emissions (lbs.) | CV (Gas) | 0.4341 | 11.4185 |
| | EV (Electricity) | 0.5958 | 15.6716 |
| | Total Fuel Saving | (0.1617) | (4.2531) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0242 | 0.6375 |
| | EV (Electricity) | 0.0410 | 1.0776 |
| | Total Fuel Saving | (0.0167) | (0.4401) |
| VOC Emissions (lbs.) | CV (Gas) | 0.6092 | 16.0240 |
| | EV (Electricity) | 0.0110 | 0.2883 |
| | Total Fuel Saving | 0.5982 | 15.7357 |

Energy Consumption Data March 2021



Minden

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



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

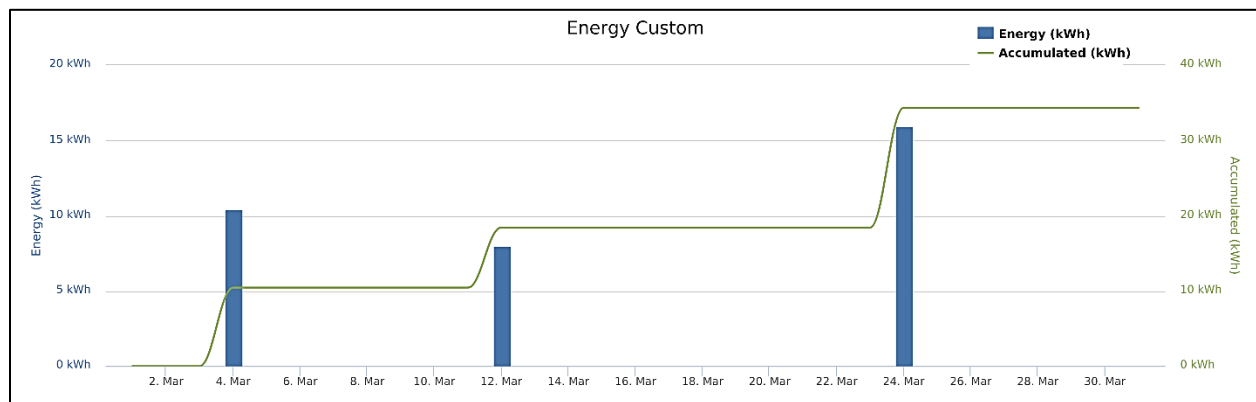
| | | This Month (March) | All Time |
|---------------------------------|---|-------------------------------|-----------------|
| Miles Driven | | 117.06 | 359.23 |
| Energy Consumed(kWh) | | 34.31 | 105.28 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$12.99 | \$34.58 |
| | Usage Cost Using EV(Electricity) | \$3.35 | \$10.27 |
| | Total Fuel Saving | \$9.65 | \$24.31 |
| Other Cost Saving | CV Costs | \$7.14 | \$21.91 |
| | EV Costs | \$3.04 | \$9.34 |
| | Total Other Cost Saving | \$4.10 | \$12.57 |
| Overall Economic Savings | | \$13.74 | \$36.89 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 117.06 | 359.23 |
| Energy Consumed (kWh) | | 34.31 | 105.28 |
| Co2 Emissions (lbs.) | CV (Gas) | 91.38 | 280.40 |
| | EV (Electricity) | 51.60 | 158.34 |
| | Total Fuel Saving | 39.78 | 122.06 |
| Co Emissions (lbs.) | CV (Gas) | 0.7384 | 2.2659 |
| | EV (Electricity) | 0.0347 | 0.1063 |
| | Total Fuel Saving | 0.7037 | 2.1595 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0011 | 0.0033 |
| | EV (Electricity) | 0.0943 | 0.2894 |
| | Total Fuel Saving | (0.0932) | (0.2861) |
| Nox Emissions (lbs.) | CV (Gas) | 0.0310 | 0.0950 |

| | | | |
|-----------------------------|--------------------------|-----------------|-----------------|
| | EV (Electricity) | 0.1614 | 0.4951 |
| | Total Fuel Saving | (0.1304) | (0.4001) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0017 | 0.0053 |
| | EV (Electricity) | 0.0042 | 0.0128 |
| | Total Fuel Saving | (0.0024) | (0.0075) |
| VOC Emissions (lbs.) | CV (Gas) | 0.0435 | 0.1334 |
| | EV (Electricity) | 0.0009 | 0.0028 |
| | Total Fuel Saving | 0.0426 | 0.1306 |

Energy Consumption Data
March 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):

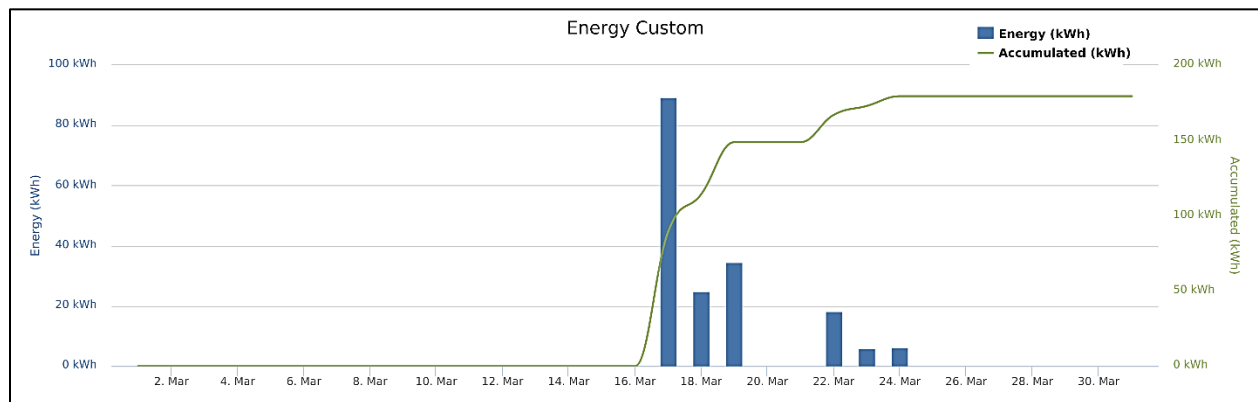
| | | This Month (March) | All Time |
|---------------------------------|---|-------------------------------|-------------------|
| Miles Driven | | 611.70 | 76,084.47 |
| Energy Consumed(kWh) | | 179.28 | 22,615.05 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$67.67 | \$7,664.92 |
| | Usage Cost Using EV(Electricity) | \$15.24 | \$2,019.55 |
| | Total Fuel Saving | \$52.43 | \$5,645.37 |
| Other Cost Saving | CV Costs | \$37.31 | \$3,630.86 |
| | EV Costs | \$15.90 | \$1,815.72 |
| | Total Other Cost Saving | \$21.41 | \$1,815.15 |
| Overall Economic Savings | | \$73.84 | \$7,460.52 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|------------------------------|--------------------------|-------------------------------|-------------------|
| Miles Driven | | 611.703 | 76,084.470 |
| Energy Consumed (kWh) | | 179.280 | 22,615.046 |
| Co2 Emissions (lbs.) | CV (Gas) | 477.48 | 63,800.27 |
| | EV (Electricity) | 303.22 | 23,124.31 |
| | Total Fuel Saving | 174.25 | 40,675.95 |
| Co Emissions (lbs.) | CV (Gas) | 3.8584 | 873.4076 |
| | EV (Electricity) | 0.2286 | 20.7687 |
| | Total Fuel Saving | 3.6298 | 852.6389 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0057 | 1.7754 |
| | EV (Electricity) | 0.4800 | 70.5369 |
| | Total Fuel Saving | (0.4744) | (68.7615) |

| | | | |
|-----------------------------|--------------------------|-----------------|----------------|
| Nox Emissions (lbs.) | CV (Gas) | 0.1618 | 54.6072 |
| | EV (Electricity) | 0.4135 | 42.9550 |
| | Total Fuel Saving | (0.2517) | 11.6522 |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0090 | 4.2143 |
| | EV (Electricity) | 0.0275 | 1.8339 |
| | Total Fuel Saving | (0.0184) | 2.3804 |
| VOC Emissions (lbs.) | CV (Gas) | 0.2271 | 30.7134 |
| | EV (Electricity) | 0.0047 | 0.4889 |
| | Total Fuel Saving | 0.2224 | 30.2245 |

Energy Consumption Data
March 2021



OPPD

- Data from one existing charging stations with two ports.

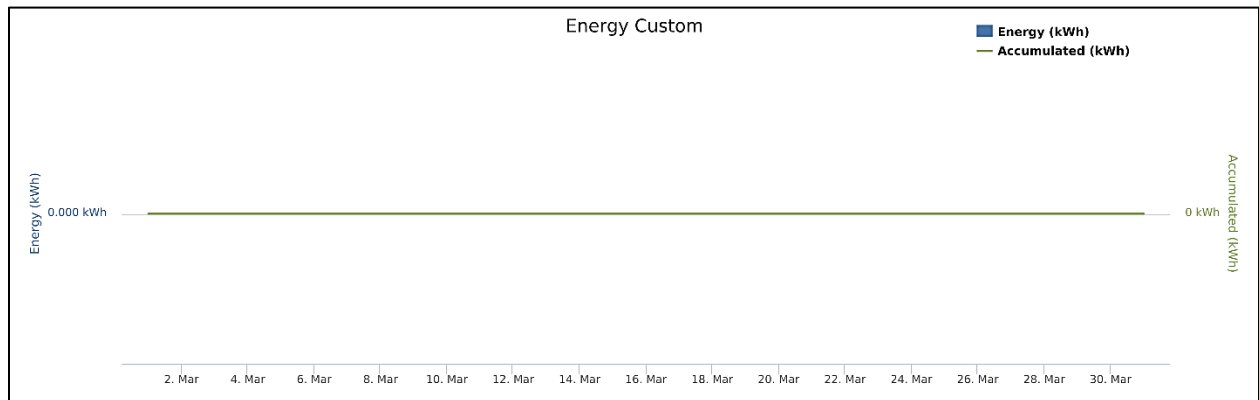
Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | 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 (March) | 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 March 2021



OPPD summary savings

| | | |
|------------------------------------|-----|------------|
| Overall Economic Savings | | \$8,863.37 |
| Overall Emission Reductions (lbs.) | CO2 | 53,197.59 |
| | CO | 1,166.67 |
| | SO2 | (80.4618) |
| | NOX | 29.6062 |
| | CH4 | 3.6581 |
| | VOC | 37.1943 |

City of Omaha

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



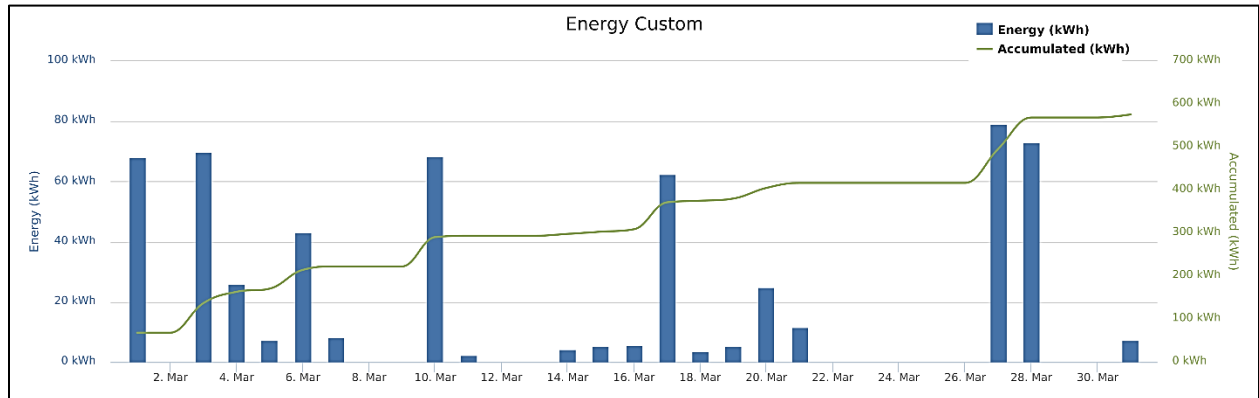
Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|-------------------|
| Miles Driven | | 1,965.19 | 15,768.51 |
| Energy Consumed(kWh) | | 575.96 | 4,663.57 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$213.90 | \$1,442.47 |
| | Usage Cost Using EV(Electricity) | \$48.96 | \$396.89 |
| | Total Fuel Saving | \$164.94 | \$1,045.58 |
| Other Cost Saving | CV Costs | \$119.88 | \$862.73 |
| | EV Costs | \$51.09 | \$321.61 |
| | Total Other Cost Saving | \$68.78 | \$541.12 |
| Overall Economic Savings | | \$233.72 | \$1,586.70 |

Environmental Saving Data (Reduction in Emissions):

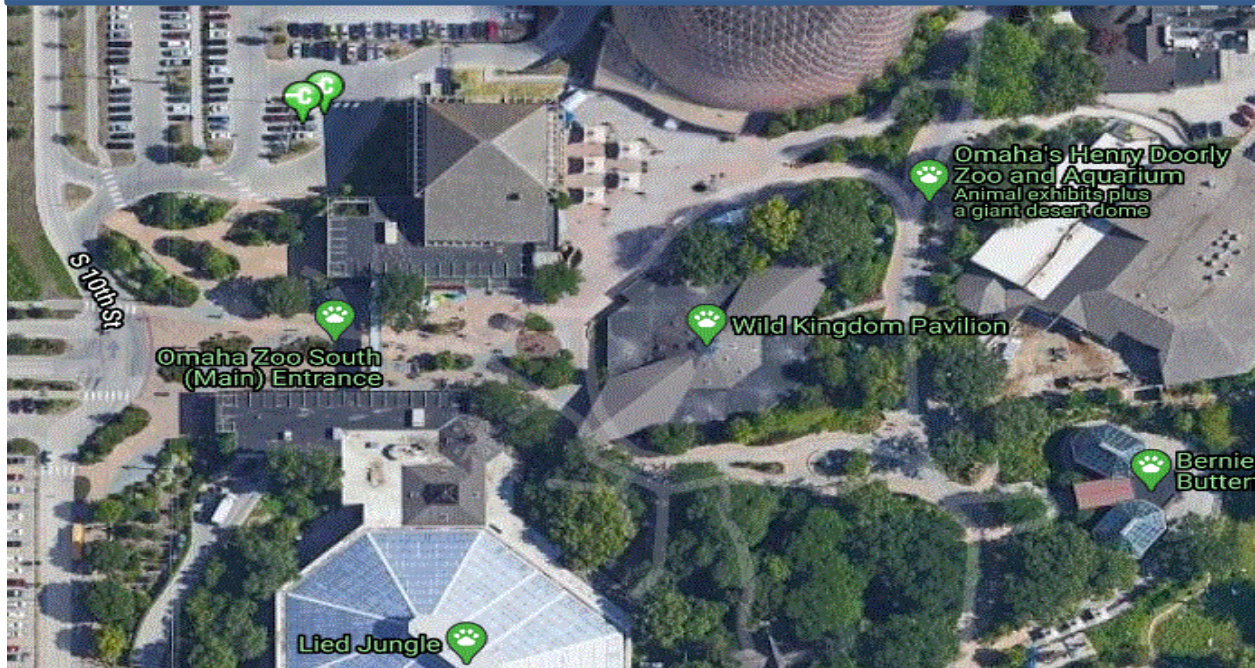
| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|-------------------|
| Miles Driven | | 1965.1892 | 15768.5067 |
| Energy Consumed (kWh) | | 575.9640 | 4663.5660 |
| Co2 Emissions (lbs.) | CV (Gas) | 1,533.96 | 12,650.87 |
| | EV (Electricity) | 866.21 | 6,543.72 |
| | Total Fuel Saving | 667.76 | 6,107.15 |
| Co Emissions (lbs.) | CV (Gas) | 12.3957 | 99.4620 |
| | EV (Electricity) | 0.5818 | 4.6991 |
| | Total Fuel Saving | 11.8140 | 94.7629 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0182 | 0.1460 |
| | EV (Electricity) | 1.5832 | 12.2317 |
| | Total Fuel Saving | (1.5650) | (12.0857) |
| Nox Emissions (lbs.) | CV (Gas) | 0.5199 | 4.1716 |
| | EV (Electricity) | 2.7087 | 20.2639 |
| | Total Fuel Saving | (2.1888) | (16.0923) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0290 | 0.3588 |
| | EV (Electricity) | 0.0699 | 0.5107 |
| | Total Fuel Saving | (0.0409) | (0.1518) |
| VOC Emissions (lbs.) | CV (Gas) | 0.7296 | 5.8542 |
| | EV (Electricity) | 0.0151 | 0.1061 |
| | Total Fuel Saving | 0.7145 | 5.7481 |

Energy Consumption Data March 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):

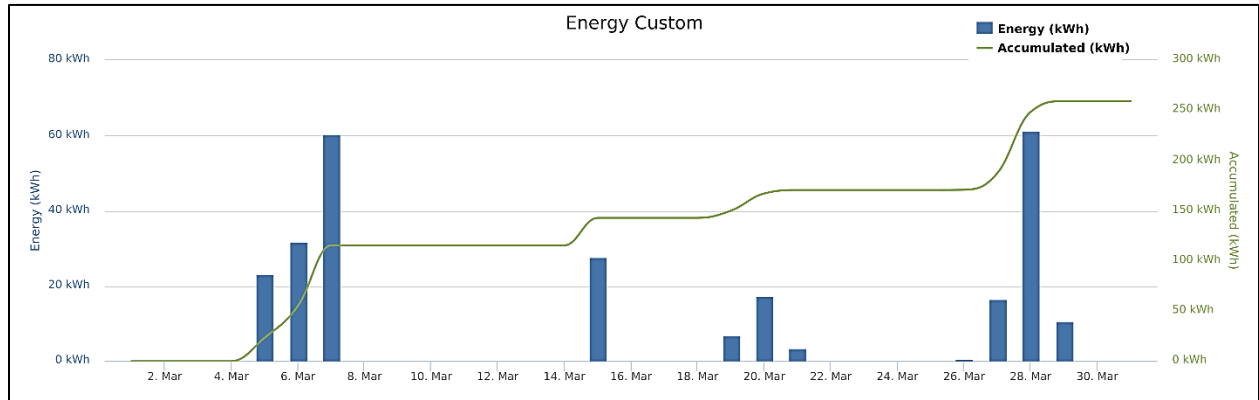
| | | This Month (March) | All Time |
|-----------------------------|---|-----------------------|-----------------|
| Miles Driven | | 883.72 | 6381.91 |
| Energy Consumed(kWh) | | 259.00 | 1896.39 |
| Fuel Cost Saving | Usage Cost Using Cv(Gas) | \$95.91 | \$587.62 |
| | Usage Cost Using EV(Electricity) | \$22.02 | \$165.99 |
| | Total Fuel Saving | \$73.90 | \$421.63 |
| Other Cost Saving | Cv Costs | \$53.91 | \$328.14 |
| | EV Costs | \$22.98 | \$111.42 |
| | Total Other Cost Saving | \$30.93 | \$216.72 |

| | | |
|---------------------------------|-----------------|-----------------|
| Overall Economic Savings | \$104.83 | \$638.35 |
|---------------------------------|-----------------|-----------------|

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|---------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 883.72 | 6,381.91 |
| Energy Consumed (kWh) | | 259.00 | 1,896.39 |
| Co2 Emissions (lbs.) | CV (Gas) | 689.80 | 5,192.76 |
| | EV (Electricity) | 438.06 | 2,953.85 |
| | Total Fuel Saving | 251.74 | 2,238.91 |
| Co Emissions (lbs.) | CV (Gas) | 5.5742 | 40.2548 |
| | EV (Electricity) | 0.3303 | 2.5353 |
| | Total Fuel Saving | 5.2439 | 37.7195 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0082 | 0.0591 |
| | EV (Electricity) | 0.6935 | 5.9172 |
| | Total Fuel Saving | (0.6853) | (5.8581) |
| Nox Emissions (lbs.) | CV (Gas) | 0.2338 | 1.6884 |
| | EV (Electricity) | 0.5974 | 4.5000 |
| | Total Fuel Saving | (0.3636) | (2.8116) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0131 | 0.1719 |
| | EV (Electricity) | 0.0397 | 0.2839 |
| | Total Fuel Saving | (0.0266) | (0.1119) |
| VOC Emissions (lbs.) | CV (Gas) | 0.3281 | 2.3693 |
| | EV (Electricity) | 0.0068 | 0.0484 |
| | Total Fuel Saving | 0.3213 | 2.3209 |

Energy Consumption Data March 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):

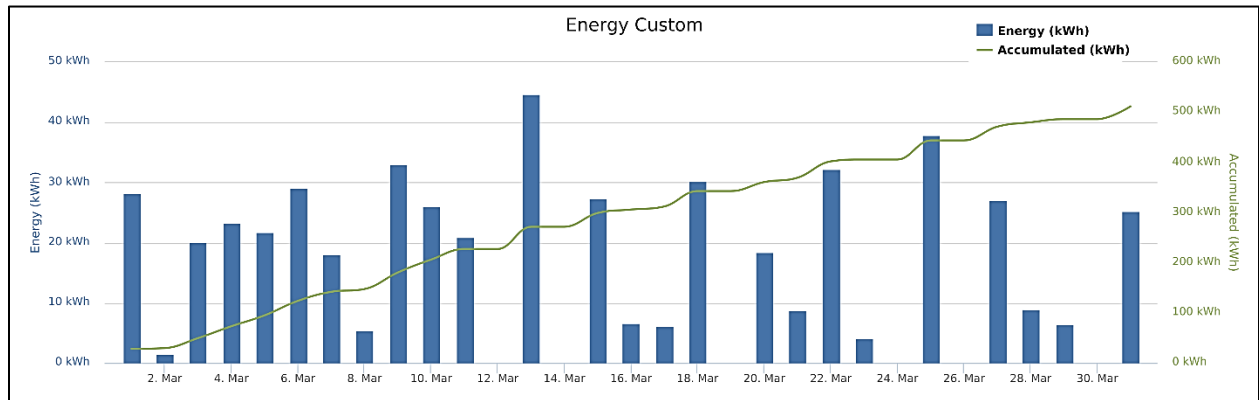
| | | This Month (March) | All Time |
|-----------------------------|---|-------------------------------|-------------------|
| Miles Driven | | 1,745.46 | 59,983.09 |
| Energy Consumed(kWh) | | 511.564 | 17,972.99 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$190.81 | \$6,096.80 |
| | Usage Cost Using EV(Electricity) | \$43.48 | \$1,600.38 |
| | Total Fuel Saving | \$147.33 | \$4,496.43 |
| Other Cost Saving | CV Costs | \$106.47 | \$2,733.14 |
| | EV Costs | \$45.38 | \$734.37 |
| | Total Other Cost Saving | \$61.09 | \$1,998.77 |

| | | |
|---------------------------------|-----------------|-------------------|
| Overall Economic Savings | \$208.42 | \$6,495.20 |
|---------------------------------|-----------------|-------------------|

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-----------------------|------------------|
| Miles Driven | | 1,745.46 | 59,983.09 |
| Energy Consumed (kWh) | | 511.56 | 17,972.99 |
| Co2 Emissions (lbs.) | CV (Gas) | 1,362.45 | 50,018.95 |
| | EV (Electricity) | 865.23 | 26,559.31 |
| | Total Fuel Saving | 497.22 | 23,459.64 |
| Co Emissions (lbs.) | CV (Gas) | 11.0097 | 378.3516 |
| | EV (Electricity) | 0.6524 | 24.6895 |
| | Total Fuel Saving | 10.3573 | 353.6621 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0162 | 0.5554 |
| | EV (Electricity) | 1.3698 | 60.8319 |
| | Total Fuel Saving | (1.3536) | (60.2765) |
| Nox Emissions (lbs.) | CV (Gas) | 0.4618 | 15.8688 |
| | EV (Electricity) | 1.1799 | 43.3628 |
| | Total Fuel Saving | (0.7181) | (27.4940) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0258 | 2.0619 |
| | EV (Electricity) | 0.0784 | 2.6526 |
| | Total Fuel Saving | (0.0526) | (0.5907) |
| VOC Emissions (lbs.) | CV (Gas) | 0.6480 | 22.2692 |
| | EV (Electricity) | 0.0134 | 0.4514 |
| | Total Fuel Saving | 0.6346 | 21.8178 |

Energy Consumption Data March 2021



Seward

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



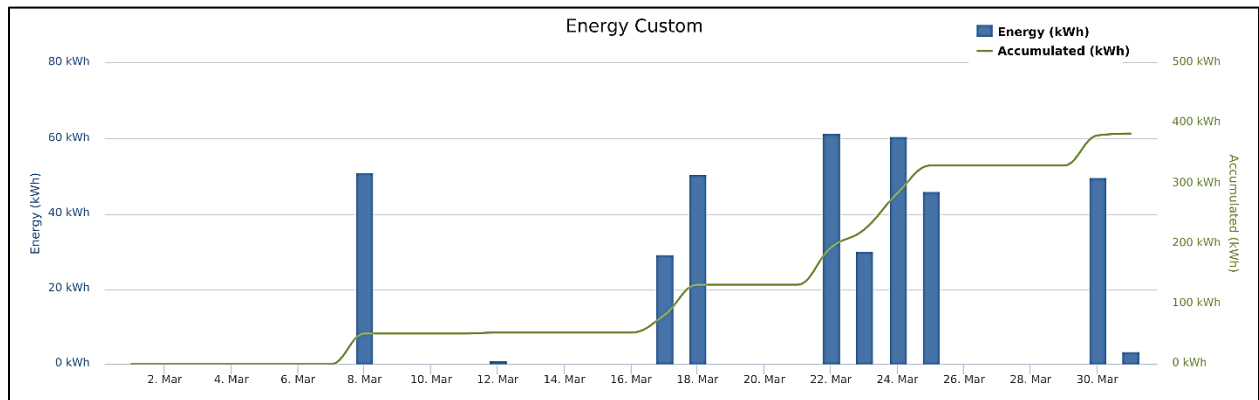
Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|-------------------|
| Miles Driven | | 1,306.27 | 39,885.39 |
| Energy Consumed(kWh) | | 382.85 | 11,831.42 |
| Fuel Cost Saving | Usage Cost Using Cv(Gas) | \$144.00 | \$3,938.20 |
| | Usage Cost Using EV(Electricity) | \$37.52 | \$1,155.63 |
| | Total Fuel Saving | \$106.48 | \$2,782.57 |
| Other Cost Saving | Cv Costs | \$79.68 | \$1,981.42 |
| | EV Costs | \$33.96 | \$956.03 |
| | Total Other Cost Saving | \$45.72 | \$1,025.39 |
| Overall Economic Savings | | \$152.20 | \$3,807.97 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 1,306.27 | 39,885.39 |
| Energy Consumed (kWh) | | 382.85 | 11,831.42 |
| Co2 Emissions (lbs.) | CV (Gas) | 1,019.63 | 33,207.40 |
| | EV (Electricity) | 575.77 | 11,735.88 |
| | Total Fuel Saving | 443.86 | 21,471.52 |
| Co Emissions (lbs.) | CV (Gas) | 8.2395 | 428.9825 |
| | EV (Electricity) | 0.3867 | 9.0229 |
| | Total Fuel Saving | 7.8528 | 419.9596 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0121 | 0.8522 |
| | EV (Electricity) | 1.0524 | 28.8472 |
| | Total Fuel Saving | (1.0403) | (27.9950) |
| Nox Emissions (lbs.) | CV (Gas) | 0.3456 | 26.0953 |
| | EV (Electricity) | 1.8005 | 33.4845 |
| | Total Fuel Saving | (1.4549) | (7.3892) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0193 | 1.9641 |
| | EV (Electricity) | 0.0465 | 0.7496 |
| | Total Fuel Saving | (0.0272) | 1.2145 |
| VOC Emissions (lbs.) | CV (Gas) | 0.4850 | 15.9206 |
| | EV (Electricity) | 0.0101 | 0.2143 |
| | Total Fuel Saving | 0.4749 | 15.7063 |

Energy Consumption Data March 2021



South Sioux City

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



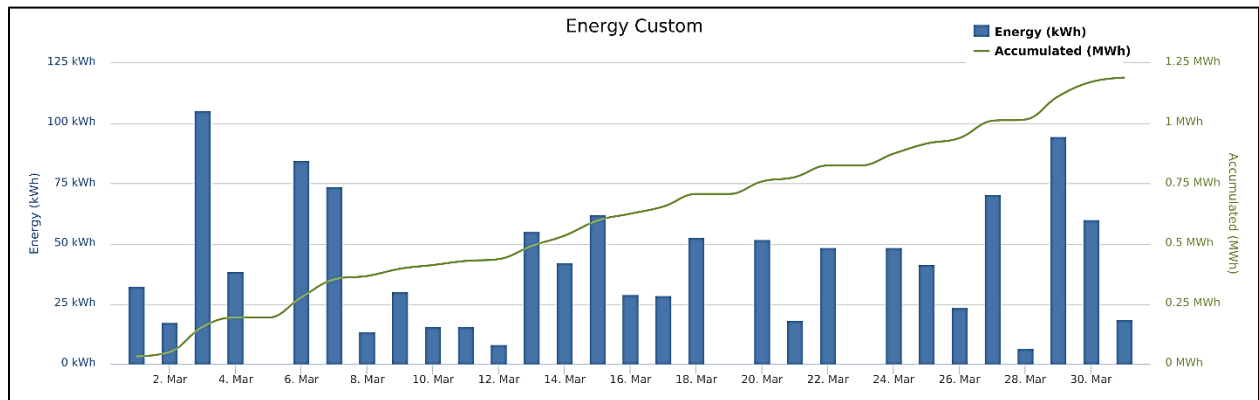
Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|--------------------|
| Miles Driven | | 4,061.01 | 136,064.21 |
| Energy Consumed(KWh) | | 1190.215 | 40,403.57 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$443.40 | \$13,363.28 |
| | Usage Cost Using EV(Electricity) | \$101.53 | \$3,465.21 |
| | Total Fuel Saving | \$341.87 | \$9,898.06 |
| Other Cost Saving | CV Costs | \$247.72 | \$6,665.89 |
| | EV Costs | \$105.59 | \$3,134.36 |
| | Total Other Cost Saving | \$142.14 | \$3,531.53 |
| Overall Economic Savings | | \$484.01 | \$13,429.59 |

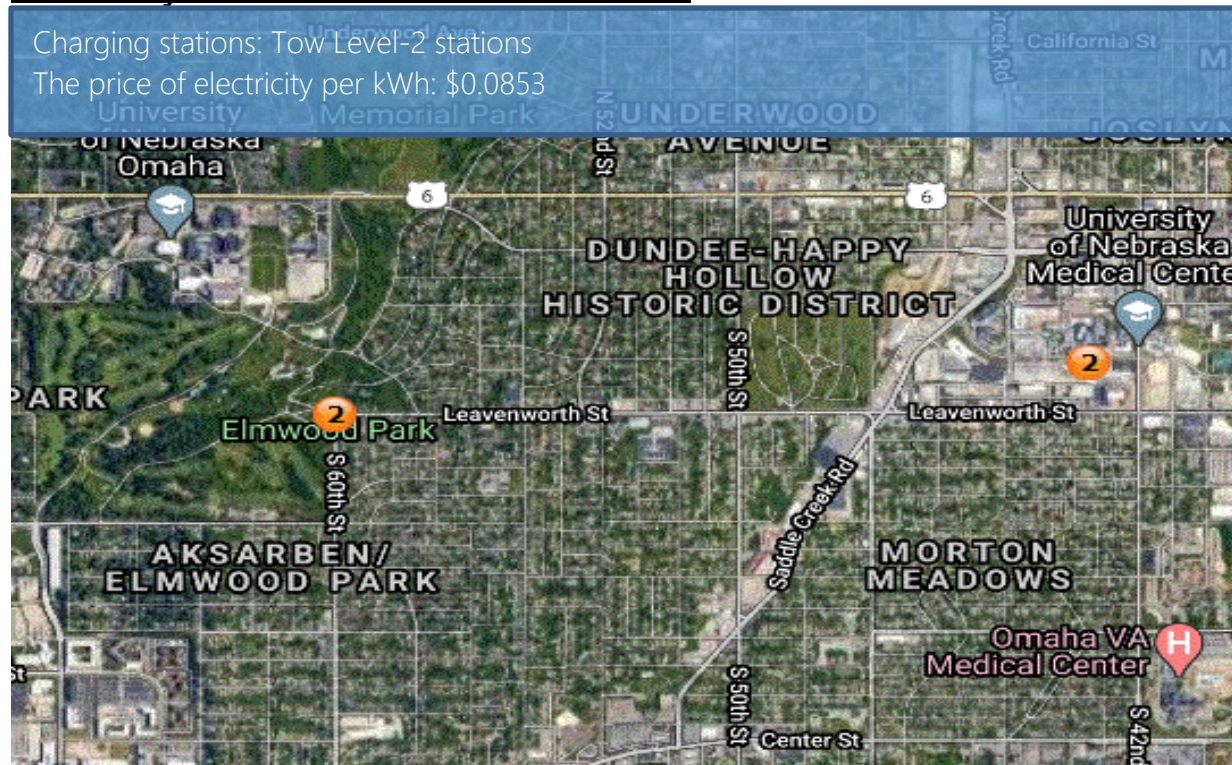
Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|--------------------|
| Miles Driven | | 4061.0136 | 136064.2112 |
| Energy Consumed (Kwh) | | 1190.2150 | 40,403.57 |
| Co2 Emissions (lbs.) | CV (Gas) | 3,169.90 | 114,002.48 |
| | EV (Electricity) | 1,790.00 | 40,056.19 |
| | Total Fuel Saving | 1,379.90 | 73,946.30 |
| Co Emissions (lbs.) | CV (Gas) | 25.6154 | 1,463.7221 |
| | EV (Electricity) | 1.2022 | 31.4311 |
| | Total Fuel Saving | 24.4132 | 1,432.2910 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0376 | 2.9078 |
| | EV (Electricity) | 3.2717 | 98.5685 |
| | Total Fuel Saving | (3.2341) | (95.6607) |
| Nox Emissions (lbs.) | CV (Gas) | 1.0744 | 89.0505 |
| | EV (Electricity) | 5.5976 | 105.8638 |
| | Total Fuel Saving | (4.5232) | (16.8133) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0600 | 6.7659 |
| | EV (Electricity) | 0.1445 | 2.6012 |
| | Total Fuel Saving | (0.0845) | 4.1647 |
| VOC Emissions (lbs.) | CV (Gas) | 1.5077 | 54.3162 |
| | EV (Electricity) | 0.0313 | 0.7252 |
| | Total Fuel Saving | 1.4764 | 53.5910 |

Energy Consumption Data March 2021



University of Nebraska Medical Center



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

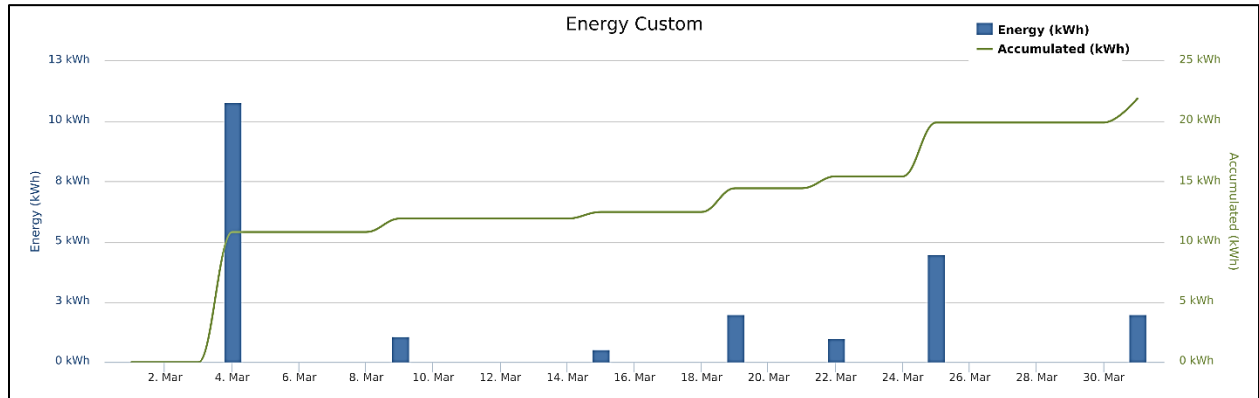
| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|-----------------|
| Miles Driven | | 74.72 | 5,293.25 |
| Energy Consumed(kWh) | | 21.899 | 1,576.92 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$8.09 | \$437.81 |
| | Usage Cost Using EV(Electricity) | \$1.86 | \$138.76 |
| Total Fuel Saving | | \$6.23 | \$299.05 |
| Other Cost Saving | CV Costs | \$4.56 | \$262.68 |
| | EV Costs | \$1.94 | \$83.96 |
| Total Other Cost Saving | | \$2.62 | \$178.72 |
| Overall Economic Savings | | \$8.85 | \$477.77 |

Environmental Saving Data (Reduction in Emissions):

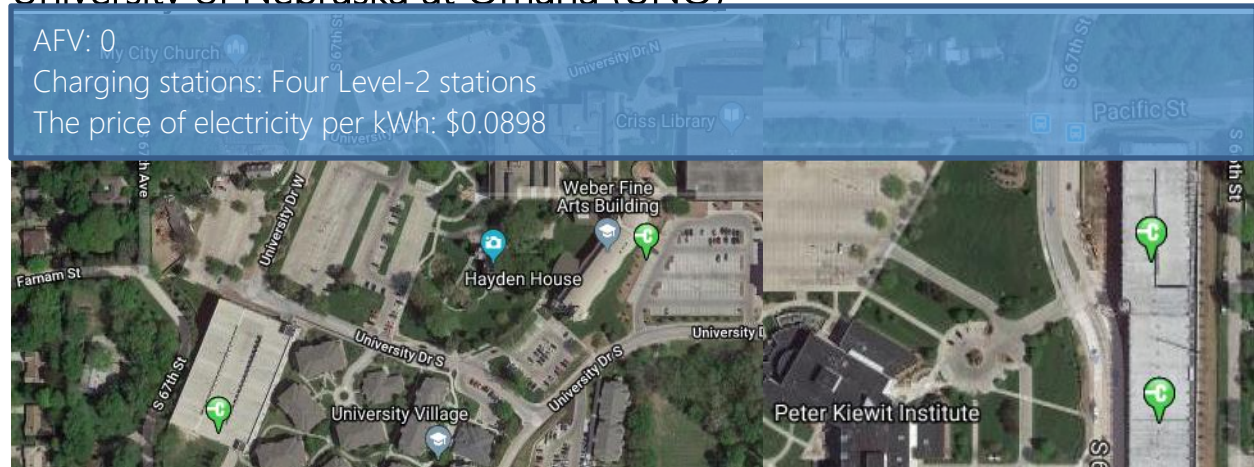
| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 74.72 | 5,293.25 |
| Energy Consumed (kWh) | | 21.899 | 1,576.92 |
| Co2 Emissions (lbs.) | CV (Gas) | 58.32 | 4339.71 |
| | EV (Electricity) | 37.04 | 2417.44 |
| | Total Fuel Saving | 21.28 | 1922.27 |
| Co Emissions (lbs.) | CV (Gas) | 0.4713 | 33.3879 |
| | EV (Electricity) | 0.0279 | 2.1260 |
| | Total Fuel Saving | 0.4434 | 31.2618 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0007 | 0.0490 |
| | EV (Electricity) | 0.0586 | 5.0487 |
| | Total Fuel Saving | (0.0579) | (4.9997) |
| Nox Emissions (lbs.) | CV (Gas) | 0.0198 | 1.4004 |
| | EV (Electricity) | 0.0505 | 3.7612 |
| | Total Fuel Saving | (0.0307) | (2.3609) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0011 | 0.1547 |
| | EV (Electricity) | 0.0034 | 0.2350 |
| | Total Fuel Saving | (0.0023) | (0.0804) |
| VOC Emissions (lbs.) | CV (Gas) | 0.0277 | 1.9652 |
| | EV (Electricity) | 0.0006 | 0.0400 |

| | | | |
|--|--------------------------|---------------|---------------|
| | Total Fuel Saving | 0.0272 | 1.9251 |
|--|--------------------------|---------------|---------------|

Energy Consumption Data March 2021



University of Nebraska at Omaha (UNO)



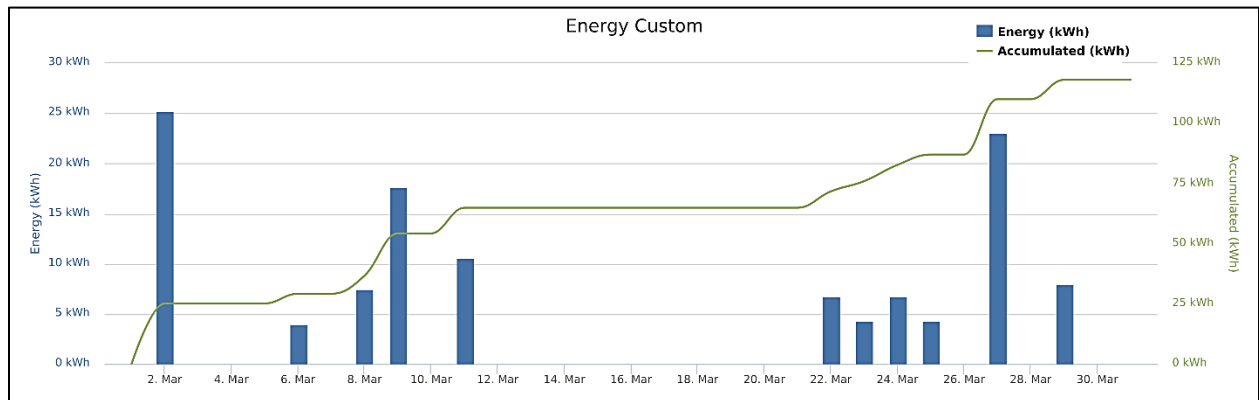
Economic Saving Data (Fuel & Maintenance Cost Savings)

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|-------------------|
| Miles Driven | | 402.59 | 70,156.88 |
| Energy Consumed(kWh) | | 117.993 | 21,000.96 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$44.01 | \$6,951.63 |
| | Usage Cost Using EV(Electricity) | \$10.03 | \$1,909.66 |
| | Total Fuel Saving | \$33.98 | \$5,041.97 |
| Other Cost Saving | CV Costs | \$24.56 | \$3,225.77 |
| | EV Costs | \$10.47 | \$1,020.78 |
| | Total Other Cost Saving | \$14.09 | \$2,204.99 |
| Overall Economic Savings | | \$48.07 | \$7,246.96 |

Environmental Saving Data (Reduction in Emissions):

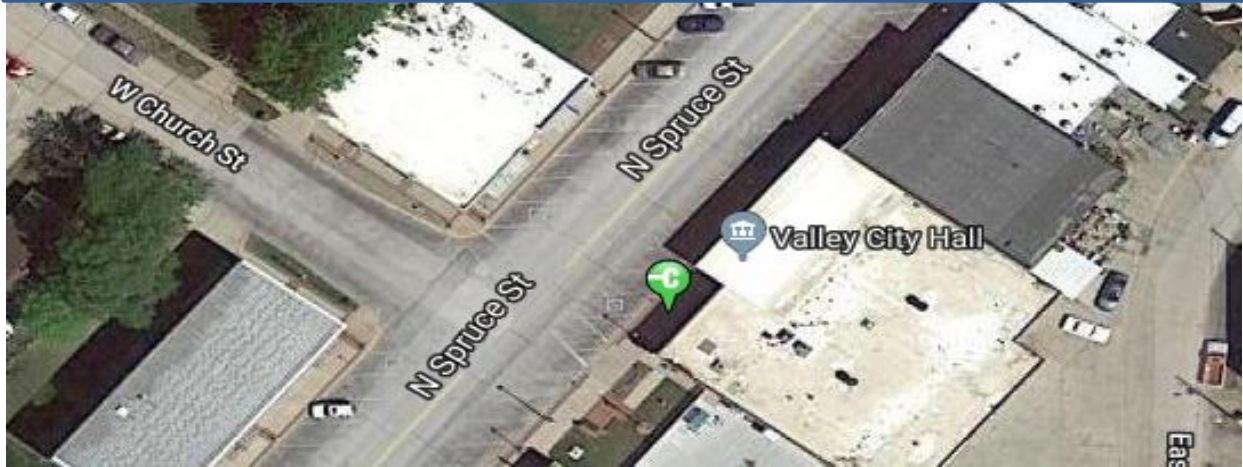
| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|------------------|
| Miles Driven | | 402.59 | 70,156.88 |
| Energy Consumed (kWh) | | 117.99 | 21,000.96 |
| Co2 Emissions (lbs.) | CV (Gas) | 314.25 | 57,203.86 |
| | EV (Electricity) | 199.57 | 30,350.55 |
| | Total Fuel Saving | 114.68 | 26,853.31 |
| Co Emissions (lbs.) | CV (Gas) | 2.5394 | 442.5982 |
| | EV (Electricity) | 0.1505 | 26.4695 |
| | Total Fuel Saving | 2.3889 | 416.1287 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0037 | 0.6496 |
| | EV (Electricity) | 0.3159 | 70.3447 |
| | Total Fuel Saving | (0.3122) | (69.6951) |
| Nox Emissions (lbs.) | CV (Gas) | 0.1065 | 18.5642 |
| | EV (Electricity) | 0.2721 | 49.1861 |
| | Total Fuel Saving | (0.1656) | (30.6219) |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0059 | 2.5373 |
| | EV (Electricity) | 0.0181 | 3.0966 |
| | Total Fuel Saving | (0.0121) | (0.5593) |
| VOC Emissions (lbs.) | CV (Gas) | 0.1495 | 26.0361 |
| | EV (Electricity) | 0.0031 | 0.5139 |
| | Total Fuel Saving | 0.1464 | 25.5222 |

Energy Consumption Data March 2021



Valley

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



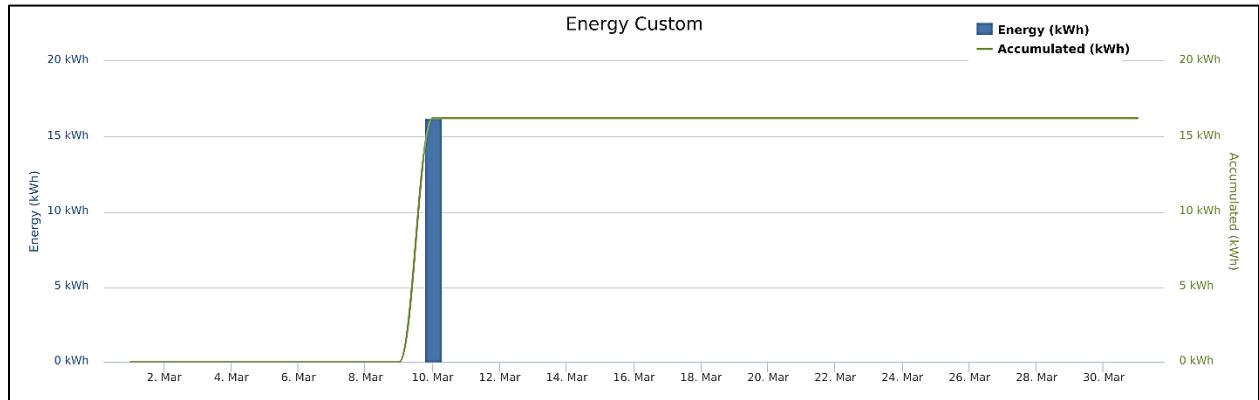
Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | All Time |
|---------------------------------|---|-----------------------|-----------------|
| Miles Driven | | 55.31 | 5,832.39 |
| Energy Consumed(kWh) | | 16.21 | 1,735.57 |
| Fuel Cost Saving | Usage Cost Using CV(Gas) | \$6.13 | \$589.25 |
| | Usage Cost Using EV(Electricity) | \$1.38 | \$160.57 |
| | Total Fuel Saving | \$4.75 | \$428.68 |
| Other Cost Saving | CV Costs | \$3.37 | \$278.43 |
| | EV Costs | \$1.44 | \$129.10 |
| | Total Other Cost Saving | \$1.94 | \$149.34 |
| Overall Economic Savings | | \$6.68 | \$578.02 |

Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | All Time |
|-------------------------------------|--------------------------|-------------------------------|-----------------|
| Miles Driven | | 55.31 | 5,832.39 |
| Energy Consumed (kWh) | | 16.21 | 1,735.57 |
| Co2 Emissions (lbs.) | CV (Gas) | 43.17 | 4,831.45 |
| | EV (Electricity) | 27.42 | 1,968.29 |
| | Total Fuel Saving | 15.76 | 2,863.17 |
| Co Emissions (lbs.) | CV (Gas) | 0.3489 | 59.0781 |
| | EV (Electricity) | 0.0207 | 1.7161 |
| | Total Fuel Saving | 0.3282 | 57.3620 |
| So2 Emissions (lbs.) | CV (Gas) | 0.0005 | 0.1147 |
| | EV (Electricity) | 0.0434 | 5.4769 |
| | Total Fuel Saving | (0.0429) | (5.3622) |
| Nox Emissions (lbs.) | CV (Gas) | 0.0146 | 3.4960 |
| | EV (Electricity) | 0.0374 | 3.4753 |
| | Total Fuel Saving | (0.0228) | 0.0207 |
| CH4 Emissions (lbs.) | CV (Gas) | 0.0008 | 0.2923 |
| | EV (Electricity) | 0.0025 | 0.1588 |
| | Total Fuel Saving | (0.0017) | 0.1335 |
| VOC Emissions (lbs.) | CV (Gas) | 0.0205 | 2.3046 |
| | EV (Electricity) | 0.0004 | 0.0387 |
| | Total Fuel Saving | 0.0201 | 2.2660 |

Energy Consumption Data March 2021



Wayne

Charging stations: 1
 The price of electricity per kWh: \$0.1167



Economic Saving Data (Fuel & Maintenance Cost Savings):

| | | This Month (March) | 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 |

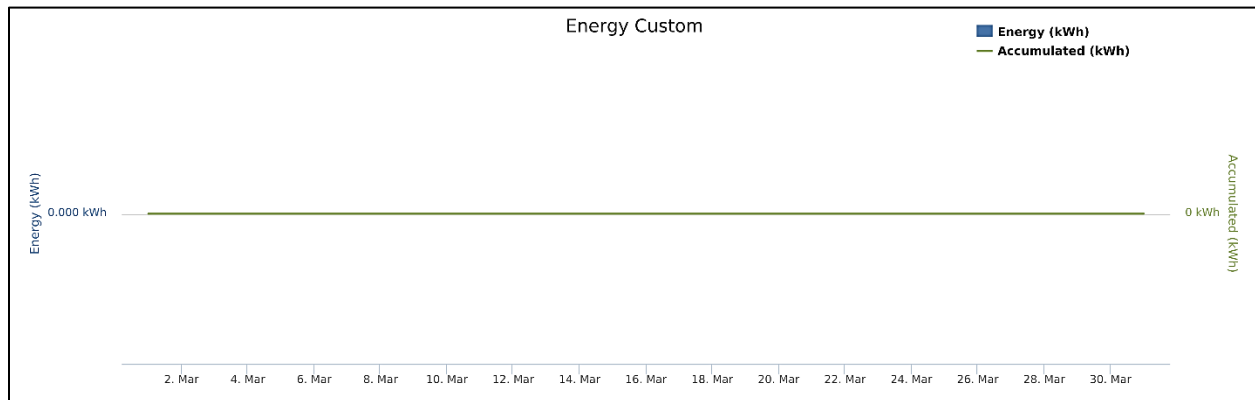
Environmental Saving Data (Reduction in Emissions):

| | | This Month (March) | 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 March 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
March 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 |