MASSACHUSETTS PHASE 1 EV CHARGING STATION PROGRAM EVALUATION

Program Year 4 Evaluation Report Final

National Grid

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1 EXECUTIVE SUMMARY

This report presents DNV's evaluation results and findings for Program Year 4 (PY4) for National Grid Massachusetts's Electric Vehicle (EV) Charging Station program (Charging Program or program), a program designed to facilitate the development of Level 2 charging stations and Direct Current Fast Charging (DCFC) stations throughout National Grid's service territory in Massachusetts.

The PY4 evaluation in this report covers program activity from January 1, 2022, through December 31, 2022. Our evaluation activities for PY4 included the following:

- Reviewed and analyzed all program data and materials, including general program information and program tracking spreadsheets that monitor charging station progress and costs.
- Analyzed charging station utilization data provided by seven EV supply equipment (EVSE) vendors covering 847 program-supported charging stations across 307 site host facilities (sites).

From these evaluation activities, we developed the following PY4 program findings, recommendations, and considerations, and grouped them into program achievements and process improvement opportunities.

1.1 Program achievements

Finding #1: The Charging Program has exceeded all program goals. The Charging Program has activated a cumulative total of 952 stations through December 31, 2022, far surpassing both the overall target goal of 680 activated stations and the exemplary goal of 850 activated stations. Broken out by station type, the Charging Program has activated 935 Level 2 stations and 17 DCFC stations to date. In PY4, the program focused on closing out active opportunities from PY1-3 and achieved 116 station activations.

Finding #2: Station utilization has grown over the four program years and accelerated in PY4 across most segments. This trend could indicate that the charging network is being used by a larger pool of EV drivers. An overall utilization increase is expected given the increase in activated stations. Utilization also increased significantly in PY4 compared to PY3 when normalized by station and time in operation. Compared to PY3, station utilization, average kWh charged per station, and the average number of charging sessions per week have all increased in PY4 for stations in most segments. Only MUD stations saw decreases in the average number of charging sessions per week and average kWh charged per station.

Finding #3: Continued success in activating stations in Environmental Justice (EJ) communities. Of the 952 activated stations through PY4, 56% are in EJ communities meeting at least one EJ criteria (defined in detail in section 4.1.2), and 18% are located in communities meeting two or more EJ criteria. DNV's verification process used to verify these stations in EJ communities is discussed in greater detail in section 4.1.2. Compared to PY3, the number of stations that meet at least one EJ criteria increased by 4%, and stations that meet at least two or more EJ criteria showed an 8% decrease in PY4.

Finding #4: Growth in DCFC station activation. The Charging Program experienced slow adoptions of DCFCs across PY1 and PY2 but has experienced growth in DCFC stations in PY3 and PY4. Fifteen of the 17 DCFC stations installed during the Charging Program's four years occurred in the latter half, indicating momentum in the adoption of DCFCs.

Finding #5: Opportunity for Multi-unit dwelling (MUD) segment growth. Between PY3 and PY4, MUD stations saw the least growth in the Charging Program compared to the other program segments, which is important to note because charging at MUD facilities is a necessity to allow for future EV adoption and charging accessibility. Of the

MUD stations that have been activated through PY4, 65% are in EJ communities. This momentum of MUD stations in EJ communities is important as National Grid starts the Phase III Electric Vehicle Program ("Phase III EV Program"), which focuses on the continued adoption of MUD stations in general and in EJ communities. Participating MUD station utilization decreased from PY3 to PY4 on a normalized basis (per-station and per-week in operation) for both charging sessions and kWh charged, signifying decreased usage for EV chargers at multi-unit dwellings.

- **Recommendation #1:** Continue to encourage MUD station development as the program enters Phase III, which offers Make-Ready and EVSE incentives for MUDs, particularly those located in EJ communities. DNV recognizes that National Grid has already incorporated MUD EV Ready Site Plans in Phase III in order to target MUD station development.[1] As discussed in section 4.2.3, while MUD utilization decreased year-over-year on a normalized basis (per-station and per-week-of-operation the significant aggregate increase in utilization in this segment (in terms of number of stations installed and total kWh charged indicates increasing demand that can be served by the additional funding and program focus planned for Phase III.

1.2 Process improvement opportunities

Finding #7: The EVSE data management and tracking process have greatly improved, but there is still an opportunity for growth. National Grid has implemented quality control measures including check-ins with each participating EVSE supplier to review recent charging data submissions for data format consistency and to cross-compare the IDs of actively-reporting stations to identify mismatches or tracking gaps resulting from changed station IDs or other factors. While the data has greatly improved, there are a few remaining issues, including the need for National Grid and the EVSE suppliers to coordinate on the types of charging station IDs being tracked to ensure both parties collect like IDs.

- **Recommendation #2**: Build upon the successfully ongoing engagement with EVSE suppliers to standardize the station ID tracking process by reviewing recent charging data submissions for data format consistency and ID cross-comparisons. To identify changes in EVSE supplier data, National Grid could incorporate regular reviews of charging data submissions and review prior data to ensure station utilization is consistent. This will help mitigate mapping issues and provide additional opportunities to incorporate any changes to supplier data tracking and mapping into the official program dataset of record.
- **Consideration #1:** As the Charging Program enters Phase III and continues to expand, National Grid will need a more comprehensive system to manage data and tracking. This could be achieved by increasing the capacity of the National Grid's team to support the data management and tracking process, engaging a third party for assistance in managing EVSE supplier data, or other solutions.

Finding #8: The Charging Program continues to increase the number of EVSE vendors supplying participating stations, but additional supplier diversity is needed. In PY4, the program increased the number of EVSE vendors compared to earlier program years, with data being provided by two new vendors. The program experienced a modest reduction in utilization concentration with the EVSE provider that has historically provided the overwhelming majority of Charging Program stations. In PY4, this vendor now accounts for 82% of activated stations and 86% of charging activity compared to 92% and 89%, respectively, in PY3. New vendors to the program in PY4

[1] National Grid's MUD EV Ready Site Plans offer eligible MUDs subsidies for electric vehicle infrastructure planning to provide EV charging for their tenants and visitors in line with the Commonwealth's EV goals; industry best practices for equipment selection, load management, and charger operation; and any site or customer-specific needs and constraints. MUDs with site plans will then be strongly encouraged to apply to the Company's Charging Station Program which will support the installation of chargers and associated infrastructure. As proposed to the DPU, the EV-Ready Site Plan offering will be available to MUD sites, both existing and new construction, with twenty or more housing units under common management (i.e., condos, apartments) with a goal to conduct site plans for 200 sites over four years (through December 2026)..

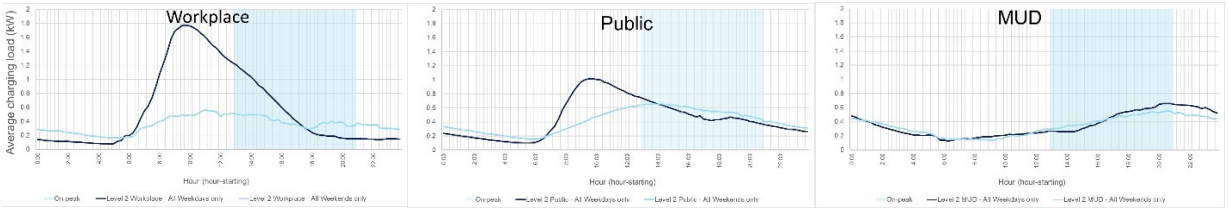
are increasing their station count share, though the newly activated stations have yet to catch up in terms of usage share. As the program enters Phase III, continued supplier diversity will be necessary for broader expansion.

- **Recommendation #3:** Continue to provide resources to participating and potential site hosts about eligible EVSE suppliers. National Grid and participating vendors are already actively providing site hosts with resources on EVs and EVSE; additional information on all available EVSE technologies for all customers, especially new EVSE technologies, can help promote further participation and encourage the use of other vendors. DNV acknowledges that National Grid has a waitlist of site hosts for Phase III includes additional EVSE suppliers that have not previously participated in the program and that this continued growth in active EVSE vendors will be necessary to support the projected growth in Phase III.[2]

Finding #9: Insights from the charging station utilization analysis, specifically the load shape analysis, can help National Grid better understand and predict the grid impacts of future EVSE expansion in Phase III. Understanding the utilization across the three segments – Workplace, Public, and MUD – National Grid can better identify market research and program design opportunities. Figure 1-1 provides a high-level view of the variability of the Level 2 segments' load shapes in terms of when they peak, their peak magnitude (kW per charger), how much on-peak, overnight, and weekend charging takes place, and how quickly charging load ramps up. High level findings are presented below and further detail is provided in Section 4.2.6 of this report.

- ***Workplace*** stations show heavy weekday working hours with a morning ramp up period, consistent drop off throughout the afternoon, and lower usage on weekends. Through PY4, approximately 30% of weekday and 37% of weekend charging occurred on-peak. The average on-peak load on weekdays was 0.5 kW per charger, compared to 0.4 kW per charger on weekends.
- ***Public*** stations have a similar load shape as the weekday workplace load shape at a smaller magnitude. Slightly less weekend charging occurs for public stations, with some periods of higher usage. Through PY4, approximately 37% of weekday and 46% of weekend charging in this segment occurred on-peak. The average on-peak load was slightly higher on weekends, approximately 0.6 kW per charger on weekends versus. 0.5 kW/ per charger on weekdays.
- ***MUD*** sites show largely similar weekday and weekend charging profiles, both ramping up consistently and slowly throughout the day, peaking at 9pm and tapering off throughout the night. Through PY4, approximately 42% of weekday and 43% of weekend charging in this segment occurred on-peak. The average on-peak load was 0.4 kW per charger for both weekdays and weekends.

Figure 1-1. 24-hour average charging load profile – Overview, All Level 2 – Workplace, Public, MUD



- **Consideration #2.** DNV has identified three key areas of possible research:

[2] National Grid's Qualified Electric Vehicle Supply Equipment (EVSE) List (nationalgridus.com)

a. Research on the feasibility of, customer receptiveness to, and potential load-shifting impact of load management initiatives in the workplace and MUD segments, both of which support long-duration charging sessions. Building on existing experience with off-peak charging rebate programs and pairing this experience with further customer research may unlock additional load flexibility opportunities and prepare National Grid to effectively handle the higher levels of MUD and workplace charging anticipated in Phase III.

    - In addition to the customer focused research on load management initiatives in the workplace and MUD segments National Grid should consider fielding additional market research directed at Site Hosts to better understand their receptiveness to further DER deployment (most likely solar and/or energy storage) and/or involvement in demand response or managed charging programs. Current Site Hosts can be viewed as “early adopters” who have shown a willingness to adopt a new technology in support of National Grid’s transportation electrification efforts. Additional research can assess the extent to which they may also be good candidates for additional efforts or measures designed to support National Grid’s broader load flexibility, peak load management, and resilience objectives.

b. Customer research to better understand the population of users accessing the public charging network as well as their preferences and motivations. This research could, for example, help to shed light on the consistent overnight charging observed in both the PY3 and PY4 workplace and public segments (discussed further in Sections 4.2.7 and 4.2.8) where it would not intuitively be expected. This research should be designed to better understand EV drivers and their characteristics to help National Grid improve program offerings and improve the customer experience.
c. Modeling the future grid impacts of the public charging network to identify potential reliability concerns or grid constraints and help further define necessary areas of research.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2 INTRODUCTION

This section describes National Grid's EV Charging Station Program (Charging Program or program) in Massachusetts and the evaluation approach and objectives for Program Year 4 (PY4), running from January 1, 2022, to December 31, 2022.

2.1 Electric Vehicle Charging Station Program overview

National Grid's Charging Program seeks to increase the deployment of Level 2 and Direct Current Fast Charging (DCFC) stations throughout Massachusetts. For approved projects, National Grid funds up to 100% of the cost of electric service upgrades and distribution equipment needed to power and install the charging stations. The program also provides rebates for the cost of the electric vehicle supply equipment (EVSE). Rebates for Level 2 station equipment costs vary depending on the targeted charging segment, covering up to 50% of the cost of Level 2 stations at workplace facilities, up to 75% of the cost at public/municipal facilities, and up to 100% at facilities located in environmental justice (EJ) communities meeting two or more criteria. Equipment costs for DCFC stations are not eligible for rebates from National Grid because, at the time the program was filed, National Grid believed public and private subsidies for DCFC stations from non-utility ratepayer sources, such as the Volkswagen settlement funding, would be available to site hosts.

The program requires network and station monitoring and maintenance for a minimum of five years after installation for all participants.

2.1.1 Roles and responsibilities

There are five primary market actors engaged in National Grid's Charging Program:

- **Clean transportation team[3]:** This group was responsible for developing the Charging Program strategy, focusing on program design and budgets. They also worked on regulatory filings in support of the program. Once the program was running, the implementation team took on responsibility for the program.
- **Implementation team:** This group's primary focus is on delivering the Charging Program. They are responsible for the day-to-day operations including evaluating and approving site host projects and determining the strategic direction of the program. They also develop and maintain relationships with manufacturers, vendors, and other program stakeholders.
- **Sales team:** The National Grid sales team works closely with the implementation team to deliver the Charging Program. The primary role of the sales team is to generate leads for the program from assigned customers. However, unlike the implementation team, the sales team is responsible for bringing all National Grid offerings to their customers, including energy efficiency and demand response (DR) programs.
- **Installation vendors**: The Charging Program encourages potential site hosts to work with installation vendors familiar with their facilities. In the event the site host does not have a vendor, National Grid will provide a list of experienced EVSE installers. At the program's onset, there was a limited number of installation vendors familiar with EVSE installation. National Grid has since provided EVSE information and workshops to vendors, including its energy efficiency vendors ("ProjectExpediters"), to encourage them to enter this new business. Most site hosts choose to work with these vendors to facilitate project installation given the relationships established from delivering energy efficiency projects. In addition to generating leads and projects, the installation vendors perform site assessments for potential site hosts to provide price quotes, station location recommendations, and additional information about the charging stations and program. The installation vendors typically manage

[3] Previously known as "Product growth team".

scheduling electricians, ordering EVSE equipment and managing delivery, completing the program application, and delivering invoices and proof of station activation.

  - As of Q1 2020, National Grid launched a team of qualified EVSE installation vendors and EV Charging Station Installers (CSIs), similar to ProjectExpediters who have worked with customers to identify energy efficiency projects. The EV CSIs sell the projects and then manage the installations and program paperwork.

- **EVSE vendors/suppliers:** EVSE suppliers provide the charging hardware for the projects. National Grid maintains a list of qualified EVSE models for Level 2 and DCFC stations. The EVSE vendors typically work closely with installation vendors in station siting, and some EVSE vendors assist in lead generation.

2.2 Evaluation objectives

The overall objectives of this evaluation were to measure the technical impacts of the Charging Program, including progress against charging station development goals, costs of installed stations, and station utilization. In past years, the following additional objectives were included: assessing consumer awareness, attitudes, and behaviors toward EVs and understanding the characteristics and experiences of site hosts participating in the program. These evaluation activities were conducted in earlier program years to help inform Phase III program planning efforts.

The PY4 evaluation objectives were to:

- Assess progress against charging station development goals.
- Measure technical impacts such as station utilization and development costs.
- Develop recommendations to enhance the Charging Program in preparation for Phase III Electric Vehicle Market Development Program (“Phase III EV program”).

3 EVALUATION APPROACH AND METHODOLOGY

To evaluate National Grid's EV Charging Station Program, DNV developed an evaluation approach in coordination with National Grid. This overall evaluation approach is organized into four discrete tasks described below. The schedule for each task is outlined in Table 3-1.

Task 1: Residential customer surveys. We conducted a general population survey during PY1 to collect perspectives on EVs and EV charging from a simple random sample of National Grid residential customers.

Task 2: EV owner, employee, and resident surveys. We designed these surveys to capture perspectives from EV owners as well as non-EV owners who are likely to have the opportunity to use the charging stations installed through the program. During PY1, the evaluators conducted a baseline survey of existing EV owners and three communities that recently installed EV charging stations through the program. During PY2, the evaluators conducted follow-up EV owner and community surveys, as well as additional surveys of employees at workplaces installing charging stations.

Task 3: Participant, prospective participant, and nonparticipant site host interviews. We completed in-depth interviews with site host decision-makers installing charging stations, considering participation, and comparable decision-makers at locations that are not participating in the Charging Program. We conducted five interviews with DCFC site hosts in PY1 and 24 site host interviews in PY2.

Task 4: Program data analysis. We analyzed program progress against its goals, reviewing and analyzing program data, tracking spreadsheets, and charging station utilization data. This activity will be repeated during each of the four program years.

Table 3-1. Evaluation task completion by program year (PY)

Task	Participant group	PY1	PY2	PY3	PY4
1	Residential customer surveys	X			
2	EV owner, employee, and resident surveys	X	X		
3	Participant, prospective participant, and nonparticipant site host interviews	X	X		
4	Program data analysis	X	X	X	X

3.1 Program Year 4 (PY4) evaluation activities

DNV completed the following activities during PY4 of this evaluation:

- **Program information review** – We reviewed program materials for the Charging Program to inform the analysis approach and our understanding of the program components and progress. Materials included program information, tracking spreadsheets, discussions with National Grid implementation and evaluation staff, and other materials.
- **Data analysis** – We conducted data analysis to understand progress against program goals, assess charging station utilization and greenhouse gas (GHG) emission reduction impacts, and develop charging station load profiles.

  - **Tracking data review/analysis**. We analyzed program tracking data provided by National Grid to assess progress against program goals and identify trends in station costs. This data included a Project Tracking spreadsheet that contained site host information for stations at each milestone from in-development to committed, installed, and activated. Data collection and analysis of program progress reflects activity from January 1, 2019, through December 31, 2022.

- **Station ID mapping.** We mapped the station IDs contained in the provided charging data to individual records in the program tracking spreadsheet, working closely with National Grid staff and EVSE provider representatives. National Grid had check-ins with each participating EVSE supplier to review recent charging data submissions where they checked for data format consistency and cross-compared the IDs of actively-reporting stations to identify mismatched or tracking gaps resulting from changes in station IDs or other factors. This mapping exercise was necessary to link the analyzed utilization data – which consists of charge session counts, charging kWh totals, load profiles, and other measures of charging activity – to program tracking records indicating each station's charger type, station use, segment, EJ status, location, and more. In this round of the evaluation, the DNV and National Grid teams successfully mapped 94% of the charging station data to be used in the analysis. The remaining 6% of charging station data could not be successfully mapped to records in the project tracking spreadsheet and were excluded from the utilization analysis.
- **Charging station data analysis.** We analyzed charging session data from 847 charging stations – 832 Level 2 and 15 DCFC – from seven different EVSE vendors in PY4. Data sets were provided to National Grid and included continuous program charging activity covering all program charging from January 1, 2019, through December 31, 2022.
  - We performed quality control (QC) checks to ensure that blank, invalid, and inaccurate data were flagged for removal from the analysis. Through QC, the evaluators flagged blank or negative charging data (kWh and max kW) and charging sessions that lasted less than one minute or that recorded 0 kWh. These short sessions were assumed to be "false starts" and would not have contributed meaningfully to station utilization because of their short duration and low energy consumption. In total, 93% of the charging station data received passed all QC checks, suggesting that overall data quality was sound.
  - Charging station utilization metrics included the number of unique charging sessions, total energy consumption (kWh), and total duration of charging (hours). We also assessed the GHG emissions reduction impacts, using a methodology that accounted for avoided tailpipe emissions from the enablement of electric driving and increased grid load from charging. This methodology is described in Appendix A.
  - We developed charging station load profiles for the initial assessment of potential future opportunities for demand response and load management through EV charging stations. In developing these profiles, we accounted for time periods during which the station was not in use (zero-charging intervals), which ensures that the load profiles accurately reflect average charging activity. Data points that failed QC checks were removed from the analysis prior to this step.

Table 3-2 below summarizes the charging data disposition for this analysis.

Table 3-2. Charging data disposition summary

Disposition	Station count
Activated stations through PY4	952
Stations with EVSE-provided data	908

Disposition	Station count
Failed QC - could not map to tracking data[4]	54
Failed QC - data does not pass QC checks	7
Stations with valid utilization data in PY4 analysis	**847**

The two main disposition groups include 44 stations that are activated but did not have data provided and 54 stations that could not be mapped to tracking data. Maximizing data coverage and quality remains a challenge for the industry due to the myriad of barriers associated with streamlined EV charging data collection and management. Additional details on the challenges as well as opportunities for National Grid to improve upon this process are included later in this report in Section 4.2.1.

[4] Additional context on challenges of data mapping provided in section 4.2.1.

4 RESULTS AND FINDINGS

This section presents the evaluation results of National Grid's Charging Program for PY4, including charging station and utilization results, along with cumulative program results from January 1, 2019, through December 31, 2022.

4.1 Charging station development results

In PY4, National Grid continued to make great progress in meeting and exceeding program goals. To date, the program has activated and paid a cumulative total of 952 stations (see Table 4-1) which represents 140% of the program's target goal of 680 stations and 112% of the program's exemplary goal of 850 stations (Table 4-2).[5] In PY4 National Grid did not pursue any new projects that were not in the project pipeline and instead focused on closing out active opportunities in the final year of the program. Through these efforts in PY4, there were 112 Level 2 stations and 4 DCFC stations activated through the Charging Program (see Table 4-1).

Table 4-1. Charging program paid stations by program year

Program year	Paid station count
PY1	74
PY2	321
PY3	441
PY4	116
Total	**952**

Table 4-2. Cumulative activated station count against program goals

Program activation station goal type	Program activation station goal	PY1 progress toward goals	PY1 - PY2 progress toward goals	PY1 - PY3 progress toward goals	PY1 - PY4 progress toward goals
Target goal	680	11%	58%	123%	140%
Exemplary goal	850	9%	46%	98%	112%

Consistent with previous program years, the Charging Program has made significant progress with Level 2 public and workplace stations and continues to experience lower than anticipated participation from DCFC stations. Like PY3, in PY4, MUD stations saw the most growth in station activations compared to the other program segments.[6] The program also continues to see DCFC development lower than anticipated, with four DCFC stations activated in PY4.

[5] In PY4 National Grid did not have a goal of total activated stations and focused on closing out any PY1-3 committed projects.

[6] While MUD stations saw the most growth in station activations compared to other program segments, utilization was lower than other segments. Customer research to better understand the population of users accessing MUD charging networks and market research directed at Site Hosts could help better understand the utilization of MUD stations.

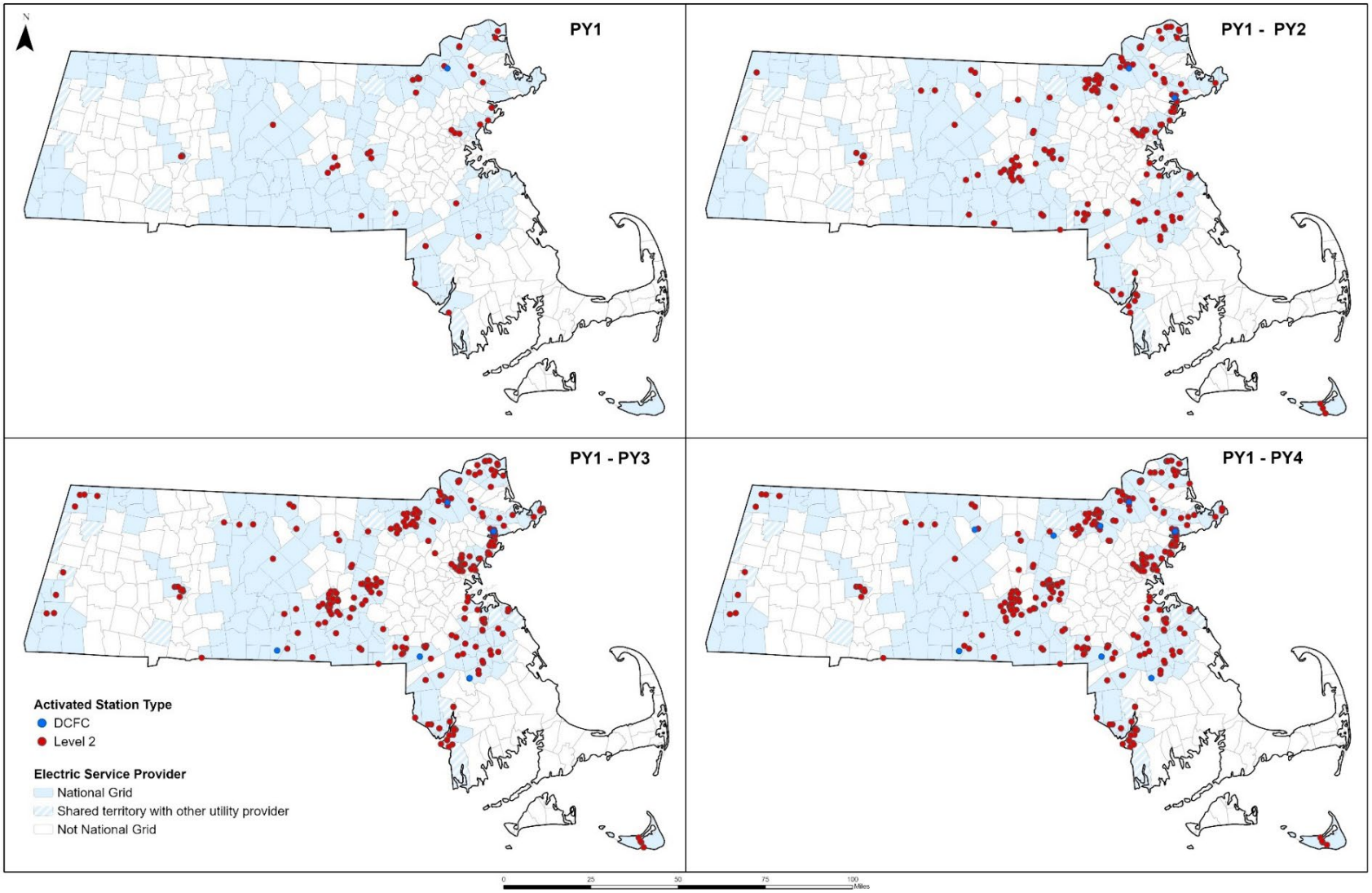
Table 4-3 shows the program progress through PY4 for both Level 2 and DCFC stations in each market segment. For each program year column, cumulative station counts that include prior program year station counts, are displayed. Note that MUD sites are not identified as locations intended for DCFC station deployment and are thus excluded. In PY4, National Grid continued to make great progress toward the installations of Level 2 stations, most notably in public areas accounting for 69% of total activated Level 2 stations through the Charging Program. Workplace Level 2 Stations accounted for 19% of activated Level 2 stations and MUD made up 12% of activated Level 2 stations.

Table 4-3. Charging Program progress - cumulative station counts through each program year

Station use	PY1 activated station count	PY2 activated station count	PY3 activated station count	PY4 activated station count
Level 2				
MUD	0	20	86	108
Public	53	286	589	647
Workplace	20	87	148	180
Total Level 2	**73**	**393**	**823**	**935**
DCFC				
Public	1	0	11	15
Workplace	0	1	2	2
Total DCFC	**1**	**1**	**13**	**17**
Total	**74**	**394**	**836**	**952**

Figure 4-1 shows activated sites by station type through each program year, highlighting the growth of EV stations over the 4 years of the Charging Program. The figures are overlaid with National Grid's electric service territory. In viewing Figure 4-1, it is apparent that the amount and spread of stations have increased throughout the program years. From PY1-PY2 in the upper right-hand quadrant to PY1-PY3 in the lower left-hand quadrant, there is a significant difference in the amount and spread of stations. This reflects the high rate of conversion of pipeline stations to activated stations in PY3 when National Grid aimed to have 510 stations activated in PY3 from the 321 activated in PY2. The bottom right-hand quadrant shows progress over the four program years. In PY4, the final year of this Phase of the program, National Grid's focus was on closing out active opportunities from prior years; new project leads were aggregated into a waitlist for future development.

Figure 4-1. Level 2 and DCFC sites in Massachusetts activated through each program year



4.1.1 Charging Program station development cost analysis

The Charging Program funds 100% of the costs of electric service upgrades needed for Level 2 and DCFC stations. These "infrastructure costs" include all utility infrastructure necessary for the station installation, but do not include costs for signs, painting, aesthetics, or other in-house work performed at the sites.

The program also provides rebates for the EVSE costs for Level 2 stations. These EVSE rebates range from 50% to 100%, based on the targeted charging segment for Level 2 stations. The program covers 50% of the EVSE costs of Level 2 stations at workplace facilities, and 75% of the EVSE costs at public/municipal and MUD facilities, and 100% of the EVSE costs at facilities located in communities meeting two or more EJ criteria. The equipment costs for DCFC stations are not eligible for rebates from National Grid.

We analyzed the infrastructure and EVSE costs for PY4 to summarize the "invoiced eligible costs," which include all eligible costs listed in project invoices, and the "paid costs," which reflect only the portion of the invoiced costs that are eligible for rebates through the program. Note that similar to PY3, we analyzed the actual program costs. Total paid and invoiced costs are presented in Table 4-4, Table 4-5, and Table 4-7 respectively, while

Table 4-6 and Table 4-8 present average per-station paid and invoiced costs. This analysis is based on the 952 activated stations included in National Grid's program tracking spreadsheet.

The 935 Level 2 stations reporting data span three segments: MUD, publicly accessible, and workplace stations. The average total per-station invoiced cost (including installation and EVSE costs) was $18,002, and the infrastructure costs represented 62% of overall project costs. Table 4-4 below compares the projected program costs in the original DPU 17-13 order to the actual costs to date through PY4.

The 17 DCFC stations reporting data span two segments: publicly accessible and workplace stations. The average project cost of installation was $46,171. EVSE costs for DCFC stations were not included in this analysis as they were eligible for rebates under the Charging Program.

Table 4-4. Program filing cost comparison to program costs spent to-date

	Total filing costs from DPU Filing-PY1 – PY3[7]	Program cost spent
Total program costs	**$12,731,482**	**$13,954,247**
Number of Stations	680	952
Total costs per station	**$18,723**	**$14,658**

[7] 17-13 Exhibit KAB/BJC-4, page 4, line 20-22. https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/9800474

Table 4-5. Charging Program paid costs (total) through PY4

Charging level	Segment	Number of stations	Total Rebate Costs Paid by National Grid			
			Company-owned infrastructure costs (total)	Electrical Infrastructure Rebates (total)	EVSE Rebates (total)	Charging Program Rebates (total)
Level 2	MUD	108	$35,347	$1,040,011	$394,472	$1,434,482
	Public	647	$612,841	$6,369,061	$3,152,162	$9,521,223
	Workplace	180	$13,719	$1,765,988	$580,835	$2,346,823
Total Level 2		**935**	**$661,907**	**$9,175,059**	**$4,127,469**	**$13,302,528**
DCFC	Public	15	$134,357	$548,869	n/a	$548,869
	Workplace	2	$93,940	$71,500	n/a	$71,500
Total DCFC		**17**	**$228,298**	**$620,369**	**n/a**	**$620,369**
All		**952**	**$890,205**	**$9,795,428**	**$4,127,469**	**$13,922,897**

Table 4-6. Charging Program paid costs (per station) through PY4

Charging level	Segment	Number of stations	Per station paid (rebate) costs		
			Electrical infrastructure rebates (per station)	EVSE rebates (per Station)	Charging program rebates (per station)
Level 2	MUD	108	$9,630	$3,653	$13,282
	Public	647	$9,844	$4,872	$14,716
	Workplace	180	$9,811	$3,227	$13,038
Total Level 2		**935**	**$9,813**	**$4,414**	**$14,227**
DCFC	Public	15	$36,591	n/a	$36,591
	Workplace	2	$35,750	n/a	$35,750
Total DCFC		**17**	**$36,492**	**n/a**	**$36,492**

Table 4-7. Charging Program invoiced eligible project costs (total) – through PY4

Charging level	Segment	Number of stations	Total eligible invoiced costs			
			Company-owned infrastructure costs (total)	Invoiced electrical infrastructure costs (total)	Invoiced EVSE cost (total)	Invoiced charging program costs (total)
Level 2	MUD	108	$35,347	$1,226,961	$678,172	$1,905,133
	Public	647	$612,841	$7,102,182	$4,495,401	$11,597,582
	Workplace	180	$13,719	$2,134,140	$1,195,138	$3,329,278
Total Level 2		**935**	**$661,907**	**$10,463,283**	**$6,368,711**	**$16,831,994**
DCFC	Public	15	$134,357	$654,755	n/a	$654,755
	Workplace	2	$93,940	$130,150	n/a	$130,150
Total DCFC		**17**	**$228,298**	**$784,905**	**n/a**	**$784,905**
All		**952**	**$890,205**	**$11,248,188**	**$6,368,711**	**$17,616,899**

Table 4-8. Charging Program invoiced eligible project costs (per station) - through PY4

Charging level	Segment	Number of stations	Per station invoiced eligible (project) costs		
			Reported electrical infrastructure cost (per station)	Reported EVSE cost (per station)	Reported charging program costs (per station)
Level 2	MUD	108	$11,361	$6,279	$17,640
	Public	647	$10,977	$6,948	$17,925
	Workplace	180	$11,856	$6,640	$18,496
Total Level 2		**935**	**$11,191**	**$6,815**	**$18,002**
DCFC	Public	15	$43,650	n/a	$43,650
	Workplace	2	$65,075	n/a	$65,075
Total DCFC		**17**	**$46,171**	**n/a**	**$46,171**

4.1.2 Environmental Justice Communities

In addition to paying for infrastructure and service upgrades, National Grid provides rebates for 100% of the EVSE costs for Level 2 charging stations located in Environmental Justice (EJ) communities. EJ communities are defined as locations that meet at least one of the criteria below. To be eligible for enhanced funding opportunities through the Charging Program, locations must meet two or more of the following criteria:

1. Annual median household income is less than or equal to 65% of the state-wide median
2. 25% or more of the residents identify as a race other than white
3. 25% or more of the households in the community have no one over the age of 14 who speaks fluent English

We verified the tracked EJ community status for the activated and in-flight charging stations using a combination of geolocation tools to convert the provided station addresses to the best possible latitude and longitude coordinates. These results were used to place the stations into a geographic analysis software suite (ArcGIS) to identify which stations are

located inside a geographic area identified as an EJ community. This EJC data is the same US Census Block Group files that are available on the Massachusetts online mapping platform. Our analysis separately verified the tracked EJ community statuses in the Project Tracking spreadsheet and identified slight differences from National Grid's tracking, shown below in Table 4-9.

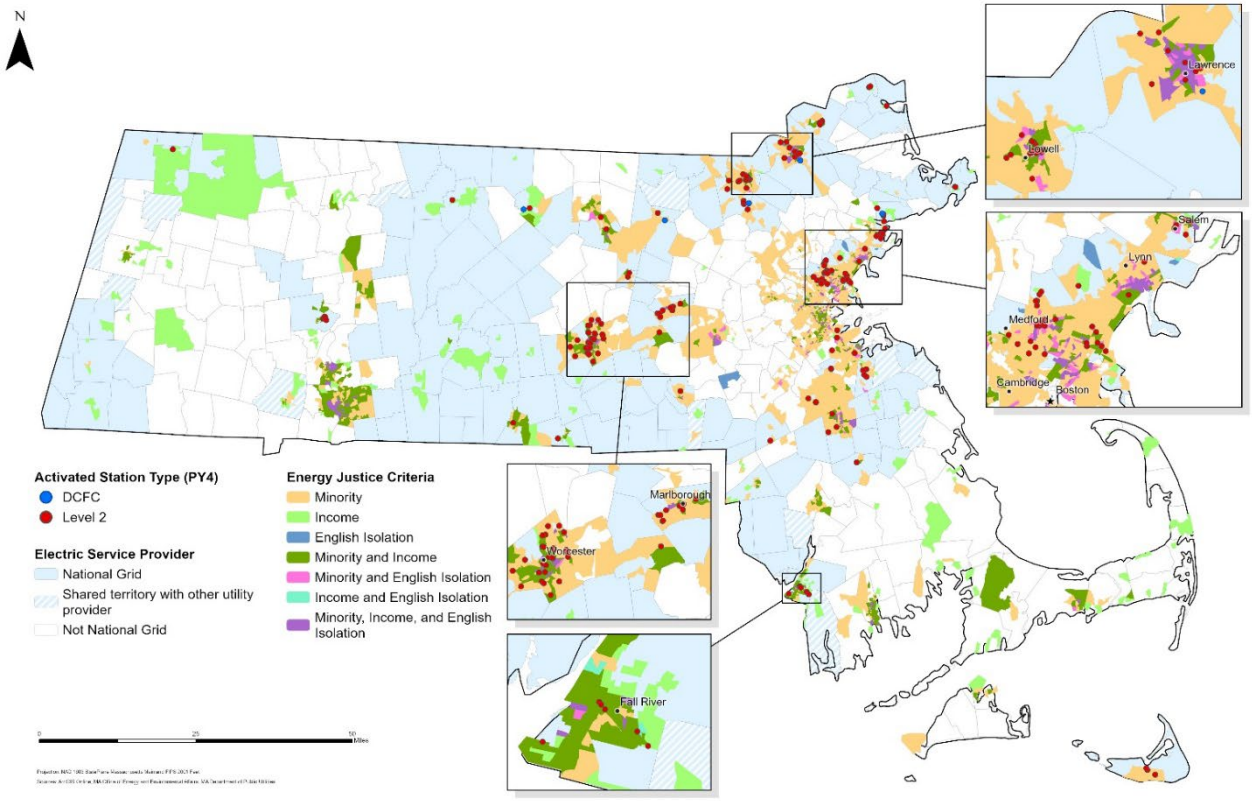
This analysis identified that 484 activated stations (154 sites) are located in an EJ community. In total, 45% of the program's activated sites (and 51% of stations) that have been verified by DNV are located in communities that meet at least one of the EJ criteria. As of December 31, 2022, 168 and 22% of the activated sites – and 28% of the stations – are eligible for enhanced funding since they meet at least two of the EJ criteria. This exceeds National Grid's program goal of developing 10% of Level 2 sites in EJ communities.

Table 4-9. Results of DNV Environmental Justice community status verification

EJ community status	Station count: tracking	Station count: verified	Station count: percent of total (verified)	Site count: tracking	Site count: verified	Site count: percent of total (verified)
No	567	468	49%	211	186	55%
One criterion	201	220	23%	73	80	24%
2+ criteria	184	264	28%	56	74	22%
Total	**952**	**952**	**100%**	**340**	**340**	**100%**

Figure 4-2 presents the geographic distribution of program charging stations in EJ communities. The stations mapped meet *at least one* of the criteria defined above Note that this figure shows EJ communities throughout the Commonwealth, which includes communities outside of National Grid's service territory (which is shaded in blue). DNV has not evaluated station development outside of National Grid's program, but presents the EJ community coverage within the Company's service territory. Most of the EJ community charging stations within National Grid territory are concentrated in a handful of localities, including Lawrence, Worcester, Lowell, and communities north of Boston.

Figure 4-2. Massachusetts Environmental Justice community EV charging stations



4.2 Charging station utilization analysis

The Charging Program requires a minimum of five years of networking and maintenance for each station installed through the program. Charging data is reported to National Grid by the EVSE suppliers. We analyzed charging data from 832 Level 2 stations and 15 DCFC stations (1,611 ports in total) in PY4 to help National Grid understand station utilization in Massachusetts. The actively-reporting stations were all activated between January 2019 and December 2022; charging data was available from January 2019 through December 2022.

It should be noted that, while charging station utilization is a valuable metric to track, it should not be seen as the only indicator of a successful installation. Charging stations deployed throughout National Grid's service territory (as illustrated in Figure 4-1) can help improve the awareness of EVs and the availability of charging infrastructure for drivers who currently drive gas-powered vehicles while providing reassurance for EV drivers with range anxiety. Tracking station utilization provides insight into how often, how long, and when charging stations are used; this information can then be useful to support charging infrastructure programs, support new rate designs, and develop marketing materials for prospective program participants.

4.2.1 Charging station data

Data from participating stations were provided to us by the EVSE suppliers via National Grid. For each charging session, the charging data includes, but is not limited to, the following fields:

- Charging session starting and ending timestamp
- Unique station identification code (Station ID)

- Unique charging session identification code (Session ID)[8]
- The total charged energy per plug-in event (kWh)

Seven vendors provided charging data for the PY4 evaluation. We observed that the quality and type of data provided varied across vendors; all but one of the vendors that delivered data provided all of the fields listed above (with the single outlier vendor not providing session IDs to distinguish between distinct charging sessions).

Data quality and mapping improvements. In PY4, the process of mapping station IDs was significantly streamlined as a result of an auditing process that National Grid engaged in with the EVSE suppliers in Q4 of 2022, which resulted in better data mapping coverage than in past years. However, mapping the station IDs contained in the provided charging data to individual records in the program tracking spreadsheet remains a critical yet difficult and manual process. This process is necessary to link the analyzed utilization data – which consists of charge session counts, charging kWh totals, load profiles, and measures of charging activity per week or month – to a program tracking record indicating the station's charger type, station use, segment, EJ status, location, and more. This mapping provides critical context to our analysis, allowing us to draw valuable conclusions beyond calculating the simple volume and timing of EV charging.

The process of collecting and managing large volumes of charging session and interval data and mapping the station IDs is recognized as an industry wide challenge for several reasons:

- There is no uniform industry standard for the structure or format of EV charging data
- Utilities and vendors often do not establish a shared understanding of the key data fields that enable successful station mapping, resulting in miscommunication and poor station mapping coverage
- Data transfer mechanisms and reporting processes vary across vendors
  - Many vendors in National Grid's program manually generate reports and send Excel or CSV files via email, which is error-prone and may result in some program-funded charging stations being left out of data submissions
  - Utilities elsewhere in the US are implementing requirements for more automated and standardized data-sharing methods, such as transferring data via FTP or a recurring SFTP data transfer
- Even with a clear understanding of the station IDs required for successful analysis, it is possible for station IDs to change from one year to the next, requiring vigilance and ongoing engagement with vendors to ensure that relevant changes to the charging data are captured to ensure high data coverage and quality

While the process of collecting, standardizing, and mapping charging data greatly improved in PY4 and saved time compared to past years, we did identify a small number of outstanding issues, including the need for National Grid and the EVSE suppliers to coordinate on the types of charging station IDs being tracked to ensure both parties are collecting like IDs. As National Grid launches its Phase III program, which has larger station installation goals and will likely include additional qualified EVSE vendors, it will be critical to develop an end-to-end strategy for data collection and management, and to define clear expectations, requirements, processes, and data collection protocols for the vendor community. These efforts will help improve data coverage and quality, reduce the cost and resource burden of data collection and analysis, and ensure that the program data is suitable for analysis to support National Grid's future needs. We anticipate that continued engagement and coordination between National Grid, the EVSE suppliers, and evaluators on charging data and station mapping will also drive sustained improvements in data quality and coverage that will help resolve these outstanding issues.

[8] One vendor's data submission did not feature session IDs, so it was not possible to quantify session-based metrics for this vendor. Subsequent footnotes downstream in this section of the report specify the data included in session-based metric calculations.

In this round of evaluation, station IDs from 54 stations could not be successfully mapped to a record in the project tracking spreadsheet; this represents 6% of the charging stations received through PY4. We also recognize that EVSE charging data is typically not available for several weeks following a station's activation.

4.2.2 Utilization results

Table 4-10 provides an overview of the charging data analyzed through PY4. Overall, 98% of charging sessions and 96% of the total charged energy (kWh) came from Level 2 stations. Note that this utilization analysis does not include all "activated" stations in the Project Tracking spreadsheet; charging data was only provided for 847 stations in PY4 (overall, a total of 952 stations have been activated), and the analysis is therefore limited to only those stations for which data sets were available. There is typically a time lag between a station's activation and when charging data becomes available. Further, all the analysis results in this section are based on charging data from chargers that could be matched to a project in the Project Tracker provided by National Grid and that passed quality control checks designed to flag invalid or inaccurate data.

Table 4-10. Overview of charging station utilization – through PY4

Metric	Level 2	DCFC	Total
Number of stations[9]	832	15	847
Number of ports	1,626	15	1,641
Number of charging sessions[10]	243,733	5,185	248,918
Charging energy consumed (kWh)[11]	3,460,777	140,704	3,601,481
GHG savings (kg)	2,111,749	85,857	2,197,606
Average charging energy per station (kWh)[6]	4,160	9,380	4,252
Average charging energy per session (kWh)[5]	14	22	14

Two notable comparisons can be drawn with PY3 from this table, as listed below.

- **Average energy charged per station (kWh).** The per-station utilization of Level 2 stations increased from 2,046 kWh to 4,160, an increase of 103%. The same metric for DCFC chargers increased from 6,406 to 9,380, an increase of 46%.
- **Average charging energy per session (kWh).** While the per-station utilization increased significantly year-over-year, the per-session figures remain unchanged from PY3, with 14 kWh per Level 2 session and 22 kWh per DCFC session.

As National Grid focused on closing out active opportunities in the final year of the program, the amount of charging increased significantly – growing from 1,420,974 kWh (across 100,745 total sessions) in December 21 to 3,601,481 kWh (across 243,733 sessions) by the end of December 2022. This means that the charging conducted in PY4 alone was equivalent to over 150% of all charging conducted in previous program years. These findings point to continued strong usage of the charging network that National Grid supports. Additionally, because charging activity and session counts increased proportionally (charged kWh increased 153% while the session count increased 142%), the program aggregate

9 There are two additional DCFC stations that did not provide charging data in PY3 or PY4, hence the difference between the station and port count here and the counts presented in the tracking analysis.
10 Note that this total does not include charging sessions from one charging data provider; the structure of their charging data did not support individual identification of charging sessions.
11 Note that this total does include the kWh charged by the above-identified charging data provider.

per-session utilization remains unchanged from PY3, suggesting that, on average over time, EV drivers are not fundamentally changing how they charge at either Level 2 or DCFC charging stations.

The 847 charging stations that reported data through PY4 are located at a total of 307 facilities, with many facilities containing multiple stations. Consistent with prior analyses, because drivers tend to choose whichever port or station is available when they arrive at a charging location with multiple stations/ports, we have considered co-located stations as a single station location; this approach also streamlines the utilization analysis. A full summary of charging station utilization across all activated projects is included in APPENDIX B.

4.2.3 Station utilization by segment

Figure 4-3 presents the utilization data received through PY4 by segment. Consistent with past years (both PY2 and PY3), MUD (18) and workplace (16) charging stations saw the most kWh per session among Level 2 stations, though both were below DCFC (22) in terms of session intensity. This aligns with the expectation that these types of Level 2 stations are more likely to support consistent, long-duration charging, while public Level 2 stations are more likely used for shorter-duration convenience charging to address range anxiety. A trend similar to PY3 is also observed when looking at Level 2 kWh-per-station utilization, with the workplace having the most per-station usage and MUD having the least to date. This may be the result of both the relatively small number of MUD stations installed through the program compared to the other Level 2 segments and MUD stations being installed in preparation for EV adoption among residents.

Figure 4-3. Growth in station reporting and charging activity through PY4

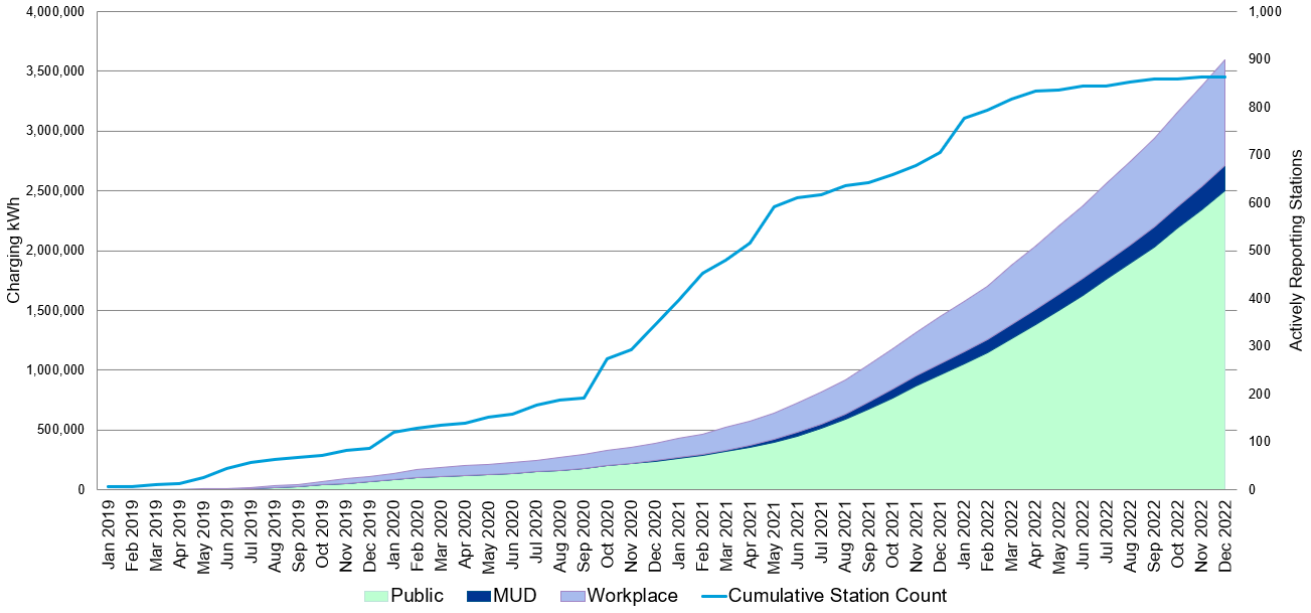


Table 4-11 shows on the DCFC side, both total and per-station utilization increased from year to year. In PY4, data was received from 8 additional Public DCFC stations, resulting in an approximately 250% increase in both kWh charged and sessions compared to PY3. On a per-station basis, charging and sessions increased 37% and 38%, respectively, between PY3 and PY4. Additionally, DNV received charging data in PY4 from two workplace DCFC chargers used to charge dedicated heavy-duty fleet vehicles. The per-station utilization of these workplace DCFC chargers was 13,263 kWh per station compared to 8,783 kWh per station across the 13 public DCFC chargers, a roughly 50% increase. It is not surprising that the two workplace chargers exhibit higher per-station utilization because they serve a dedicated fleet requiring consistent high-powered charging throughout the year. However, due to the small number of workplace DCFC chargers, at this time we cannot predict whether this trend of higher per-unit utilization will hold in the long term.

Table 4-11. Charging station utilization by segment through PY4

Charging Level	Segment	Station Count	Charge Session Count	Sessions per Station	Total kWh	kWh per Session	kWh per Station	Percent of Stations	Percent of Charging (kWh)
Level 2	Public	583	179,805	308	2,389,033	13	4,098	69%	66%
	MUD	85	11,234	132	206,442	18	2,429	10%	6%
	Workplace	164	52,694	321	865,303	16	5,276	19%	24%
Total Level 2		**832**	**243,733**	**293**	**3,460,777**	**14**	**4,160**	**98%**	**96%**
DCFC	Public	13	5,185	399	114,178	22	8,783	2%	3%
	Workplace[12]	2	n/a	n/a	26,526	n/a	13,263	0%	1%
Total DCFC		**15**	**5,185**	**399**	**140,704**	**22**	**9,380**	**2%**	**4%**
Total		**847**	**248,918**	**294**	**3,601,481**	**14**	**4,252**	**100%**	**100%**

Average time-normalized utilization[13] at program-installed stations also increased on both a per-session and per-kWh basis for all but the MUD segment, as shown in Table 4-12. Increases were observed across most segments, with the largest growth in workplace stations, where the average number of sessions per week increased by 66% and the kWh per station per week increased by 63%. While average time-normalized utilization increased for the workplace and public segments, it decreased for the MUD segment. The drop in normalized utilization for this segment is likely the result of growth in station counts outpacing the utilization of the new chargers, which is expected in a relatively small but growing segment; it could also be affected in part by the changing state of work-from-home post-pandemic.

Table 4-12. Charging growth from PY3 to PY4, normalized by time in operation[14]

Charging level	Segment	Number of sites		Number of stations		Average of sessions per station per week			Average of kWh per station per week		
		PY3	PY4	PY3	PY4	PY3	PY4	Percentage change	PY3	PY4	Percentage change
Level 2	MUD	22	21	68	85	2.2	2.0	-10%	42.0	35.0	-17%
	Public	176	191	485	583	2.6	4.1	57%	34.1	57.2	67%
	Workplace	49	51	138	164	2.5	4.1	66%	41.3	67.2	63%
Total Level 2		**247**	**263**	**691**	**832**	**2.6**	**3.9**	**53%**	**36.2**	**57.1**	**58%**
DCFC	Public	3	7	5	13	7.9	8.3	5%	183.9	182.7	-1%
Total DCFC		**3**	**7**	**5**	**13**	**7.9**	**8.3**	**5%**	**183.9**	**182.7**	**-1%**
Total		**250**	**270**	**696**	**845**	**2.6**	**4.0**	**54%**	**36.9**	**58.7**	**59%**

Figure 4-4 below shows the monthly per station utilization by segment from the first charging provided in January 2019 through December 2022. As noted in previous reports, there was a significant drop in charging at the start of the COVID-19 pandemic in March 2020, observable for the public and workplace segments (there were very few MUD stations online at this time). Since then, the figure shows sustained growth in per-station monthly utilization for the public and workplace

12 Note that this total does not include charging sessions from one charging data provider; the structure of that vendor's charging data did not support individual identification of charging sessions.

13 The average time-normalized utilization accounts for how long an EV charger has been actively reporting data, thus allowing utilization to be compared fairly across stations that came online at different times.

14 Note that the two workplace DCFC chargers did not provide charging data in PY3 and are thus excluded from this table.

segments (though workplace utilization is still below the pre-pandemic high, achieved early in PY1) and a more volatile trajectory for the MUD segment.

Figure 4-4. Normalized charging station utilization by month and use – kWh per activated station (PY1 – PY4)

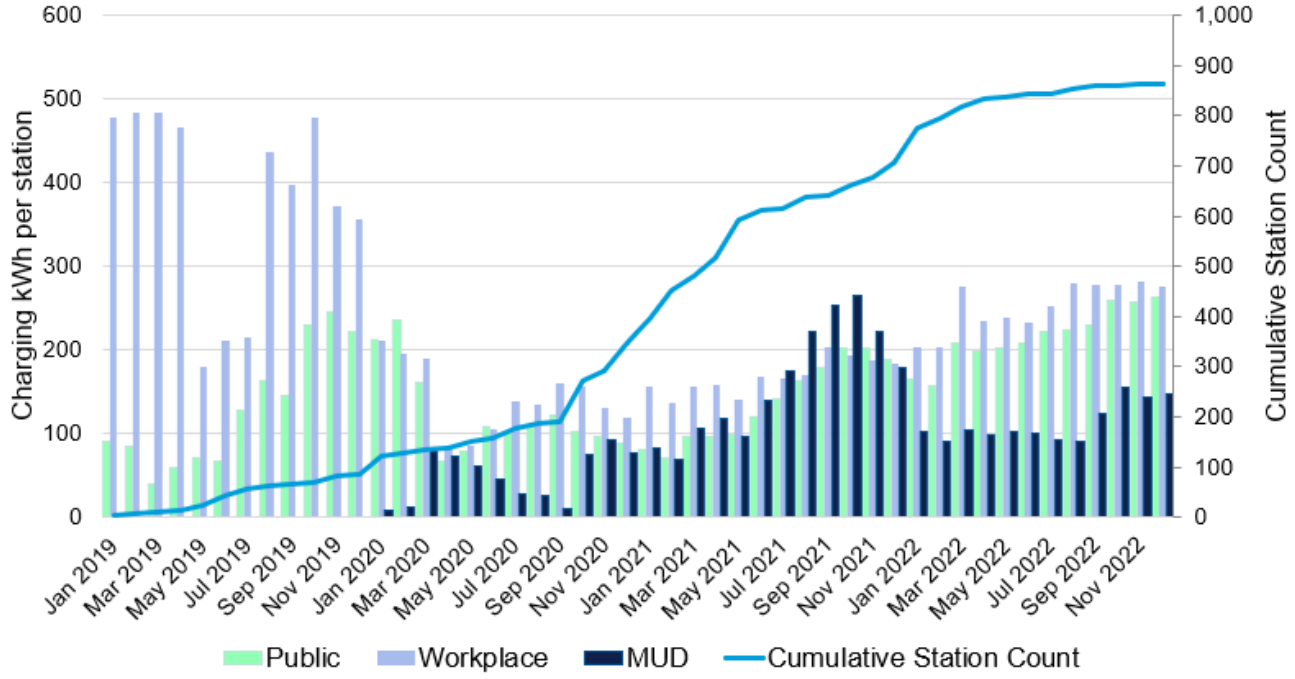
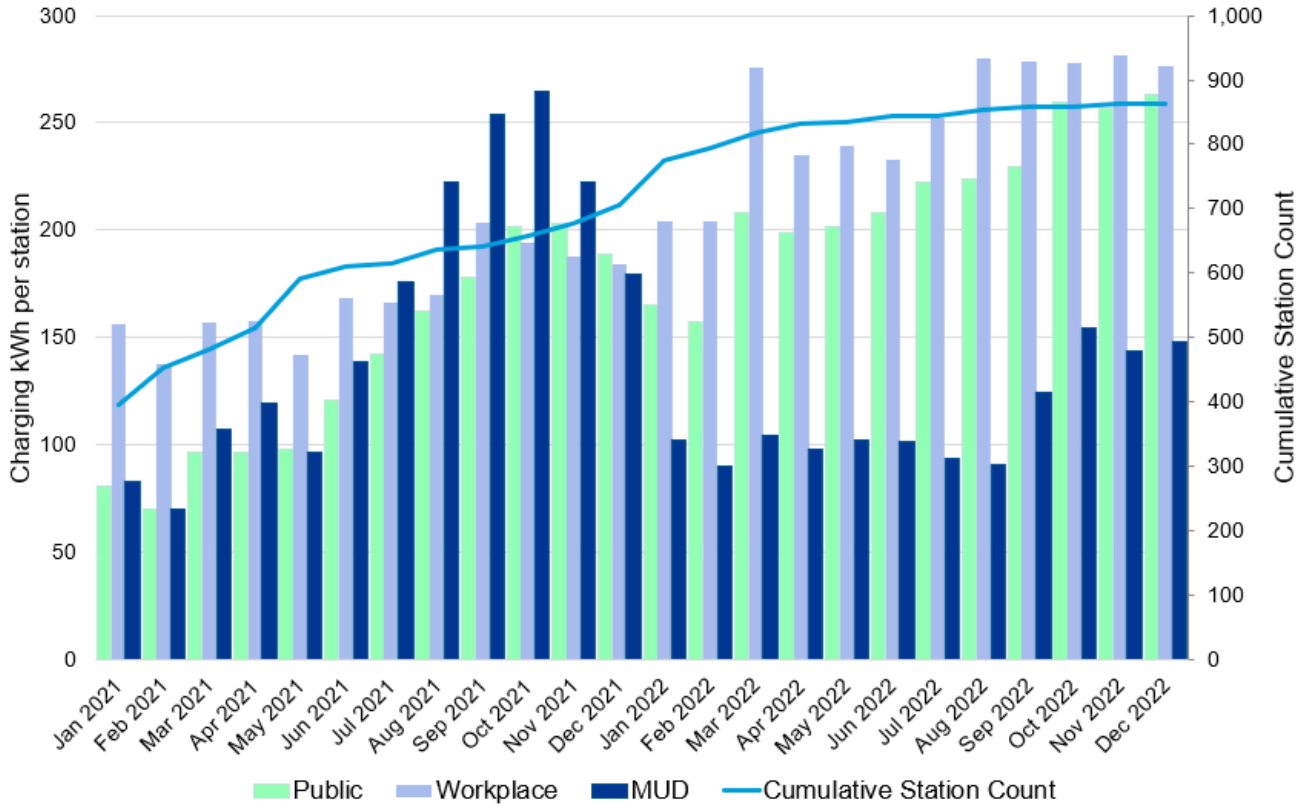


Figure 4-5 provides a zoomed-in view of these observations by highlighting data from only PY3 and PY4. It also highlights per-station monthly utilization in PY3 and PY4 only. It shows the following, by segment:

- Public utilization has climbed steadily apart from a dip in winter 2021-2022.
- Workplace utilization has largely climbed month-over-month (aside from a few temporary decreases) and leveled out at approximately 275 kWh per station per month for the last 5 months of PY4.
- MUD utilization increased rapidly from January through October 2021 (PY3) before falling back to early-2021 levels in early 2022 (around 100 kWh per station per month). This fall was driven primarily by an influx of 24 newly installed MUD stations that began reporting data in December 2021, which had the effect of artificially lowering the per-station utilization.[15] The normalized utilization then remained flat throughout the first 8 months of 2022 before increasing again in fall/winter 2022.

[15] These 24 new MUD stations represented a 53% increase in the size of the MUD segment in a single month. Prior to November 2021, the segment had only installed 45 stations.

Figure 4-5. Normalized charging station utilization by month and use – kWh per activated station (PY3 – PY4)



In PY4, DNV also observed that normalized monthly utilization for the public and workplace segments finally returned to and then exceeded its pre-COVID-19 pandemic levels (from February 2020), though not at the same time. As shown in Figure 4-6 below, workplace segment utilization surpassed pre-COVID-19 pandemic levels in January 2022, about 9 months before the public segment surpassed its pre-pandemic level (October 2022). It should be noted that workplace utilization as of PY4 was still only 60% of that segment's all-time-high utilization, achieved in 2019, while the public segment's PY4 utilization is approximately equal to the highest all-time utilization achieved in the past 4 years.

Figure 4-6. Comparison of workplace and public normalized utilization to pre-COVID-19 levels

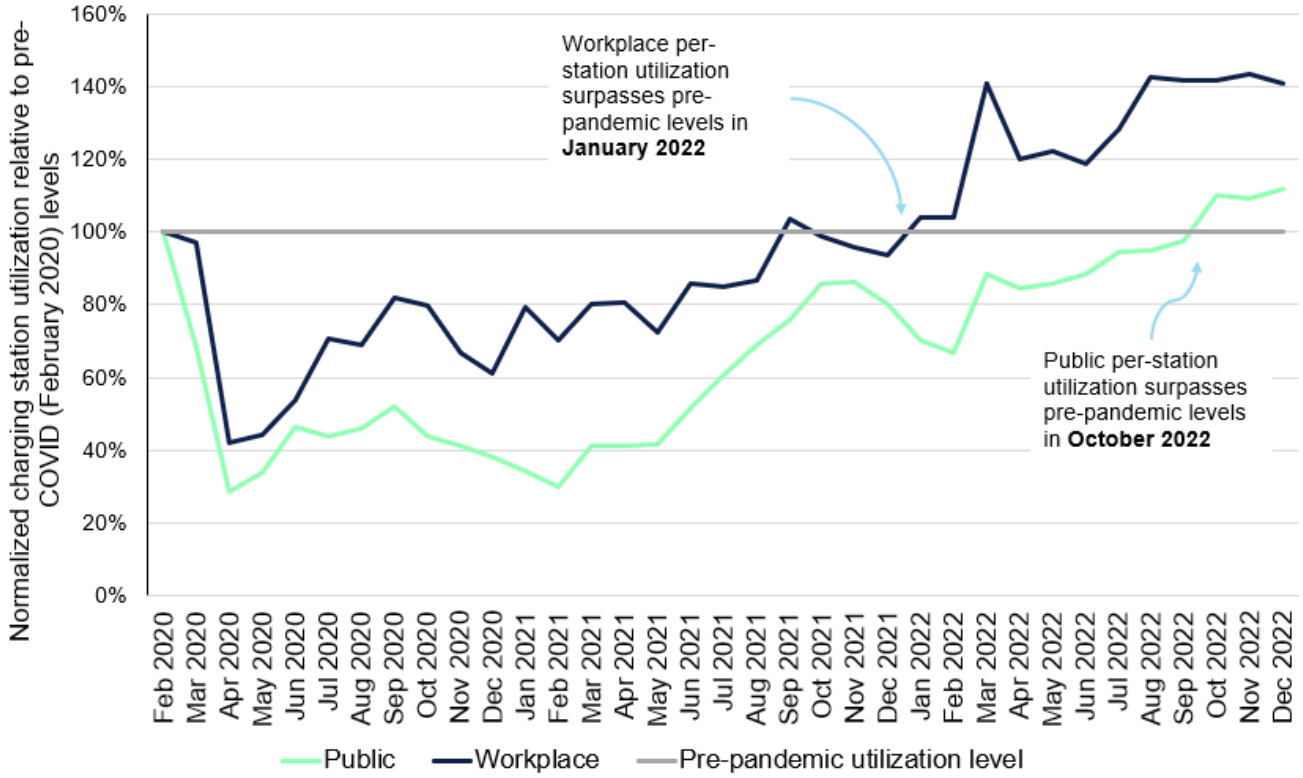
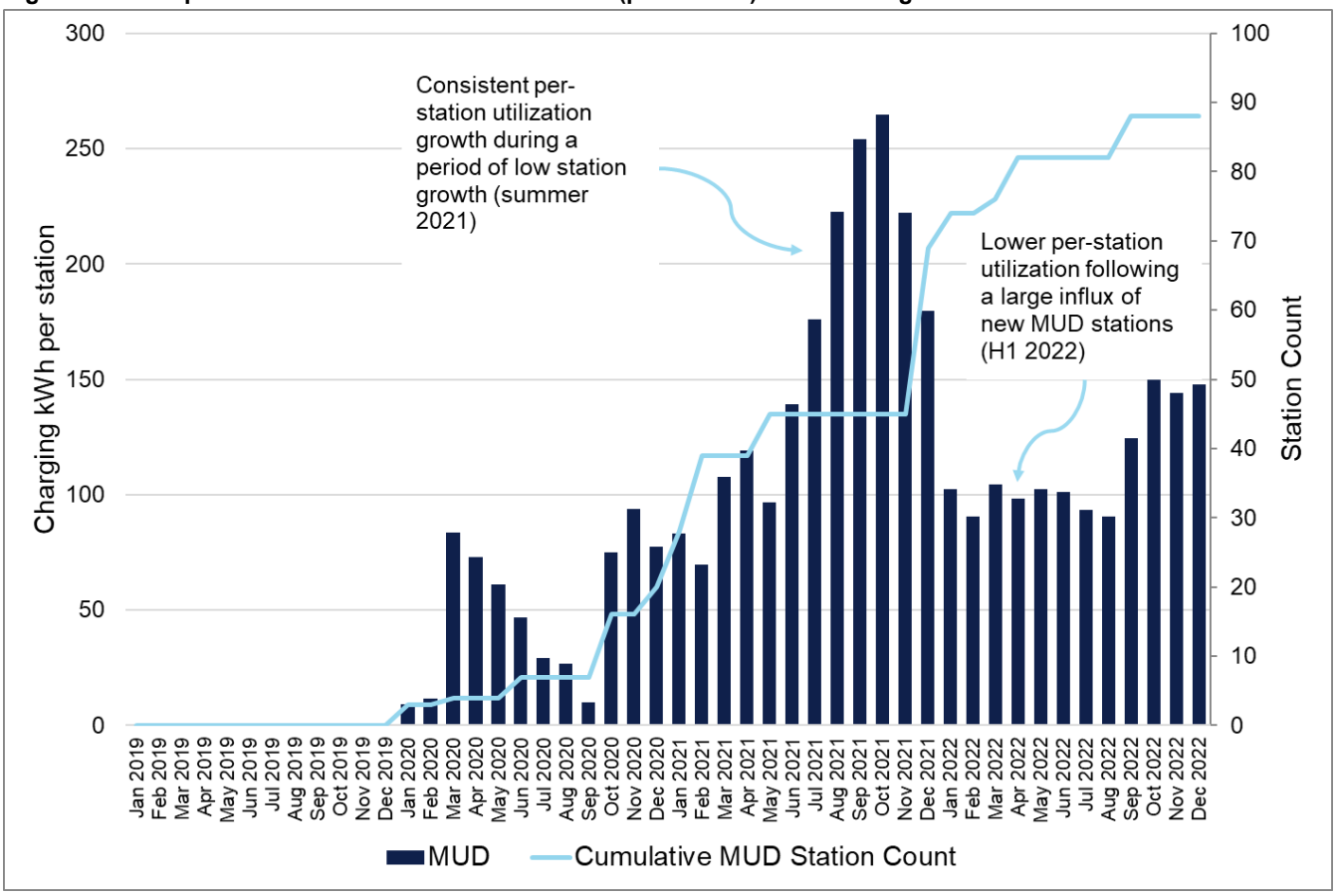


Figure 4-7 below shows MUD utilization. Since February 2020, utilization in the MUD segment has fluctuated significantly, rising during periods of low station growth and falling immediately after an influx of MUD installations. We anticipate that the MUD segment could see rapid growth in normalized utilization in the future given that these stations are likely to be used by a small but growing number of resident EV drivers who charge consistently. The same phenomenon we observed in the workplace with a "captive user base" could also be observed in the MUD segment.

Figure 4-7. Comparison of MUD normalized utilization (per-station) and station growth



4.2.4 Station utilization by EVSE supplier

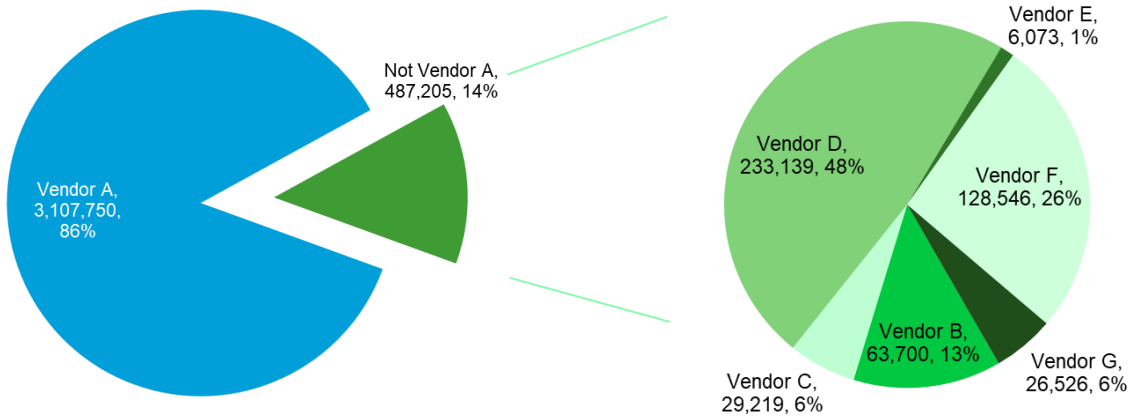
Table 4-13 and Figure 4-8 summarize the distribution of charging across the 7 EVSE vendors that provided data for analysis through PY4. Consistent with prior years, one EVSE vendor is responsible for the overwhelming majority of program activity, comprising 82% of activated stations (and 86% of charging activity). We note, however, that vendor diversity has increased each year of the program. For example, the same vendor accounted for 92% of activated stations (and 89% of charging activity) in PY3; diversity has increased even more significantly since PY1, when only three vendors had stations activated through the program (with 90%+ coming from the current dominant vendor). The growth of a diverse and competitive EVSE supplier ecosystem should result in greater customer choice and improved customer experiences as vendors compete for sites and EV drivers.

Table 4-13. Number of stations and kWh charged by vendor

Mapped vendor name	kWh	Percent of Total kWh	Stations	Percent of Stations
Vendor A	3,107,750	86%	691	82%
Vendor B	63,700	2%	33	4%
Vendor C	29,219	1%	2	0%
Vendor D	233,139	6%	27	3%

Mapped vendor name	kWh	Percent of Total kWh	Stations	Percent of Stations
Vendor E	6,073	0%	12	1%
Vendor F	128,546	4%	80	9%
Vendor G	26,526	1%	2	0%
Total	**3,594,954**	**100%**	**847**	**100%**

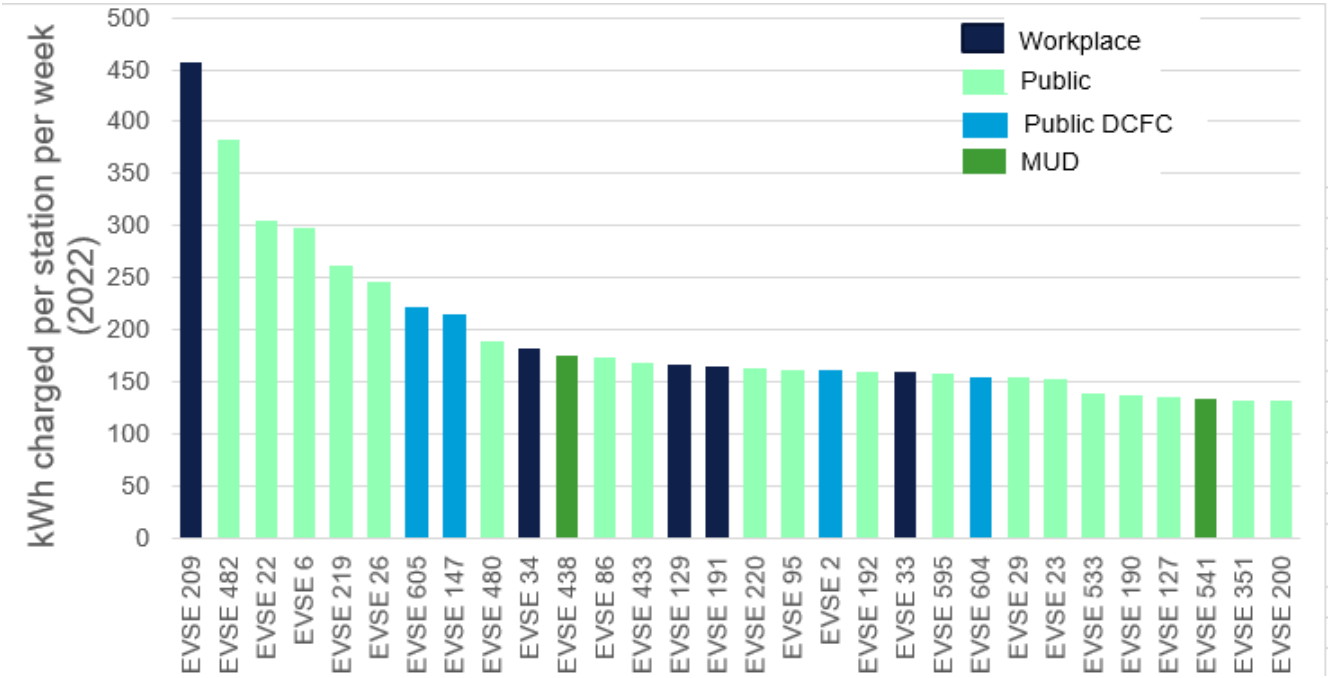
Figure 4-8. Charging kWh by EVSE vendor



4.2.5 Most utilized charging stations

DNV analyzed the most utilized charging stations through the end of PY4, examining overall utilization as well as utilization by segment. This analysis allowed us to identify commonalities between highly utilized stations and quantify the concentration of utilization by segment. Figure 4-9 provides a high-level look at the 30 most utilized stations across all segments in PY4, with utilization defined as the kWh charged per station per week of operation.

Figure 4-9. Top 30 most utilized sites (kWh charged per station week) through PY4



This analysis reveals the following takeaways about the program's 30 most utilized sites:

- The majority of sites (23, or 77%) are in the public segment, while 5 (16%) are classified as workplace and 2 (7%) are classified as MUD. Compared to PY3, one workplace site entered the top 30 while one public site dropped out of it.
- Four (13%) of the sites are DCFC and the remainder (87%) are Level 2. This is twice as many DCFC sites as in PY3 and represents 50% of the 8 DCFC sites reporting data in PY4 (as well as 54% of DCFC stations reporting data).
- The average utilization of the top 30 sites was 195 kWh/station-week, while the maximum utilization was 457 kWh/station-week.
- Three of the top 5 sites from PY3 remain in the top 5 in PY4; the 2 that fell out of the top 5 remain in the top 30 in PY4.

Figure 4-10 presents the geographic distribution of the top 30 most utilized stations. The vast majority of the top 30 utilized stations are located along interstate highways or other major roadways. We used a geographic analysis software suite (ArcGIS) to determine the distance of the most utilized stations from the nearest major roadway. Twenty-eight of the 30 stations (93%) were within a range of 0 to 2.94 miles from the closest major roadway. The remaining two stations were outliers, with distances of 6.45 and 29.70 miles, respectively, from the closest major roadway.[16] Figure 4-11 and Figure 4-12 show the utilization of Level 2 and DCFC stations.

[16] Both outliers are level 2 chargers in municipal town lots. The station 29.70 away from the nearest major roadway is on an island.

Figure 4-10. Top 30 most utilized sites

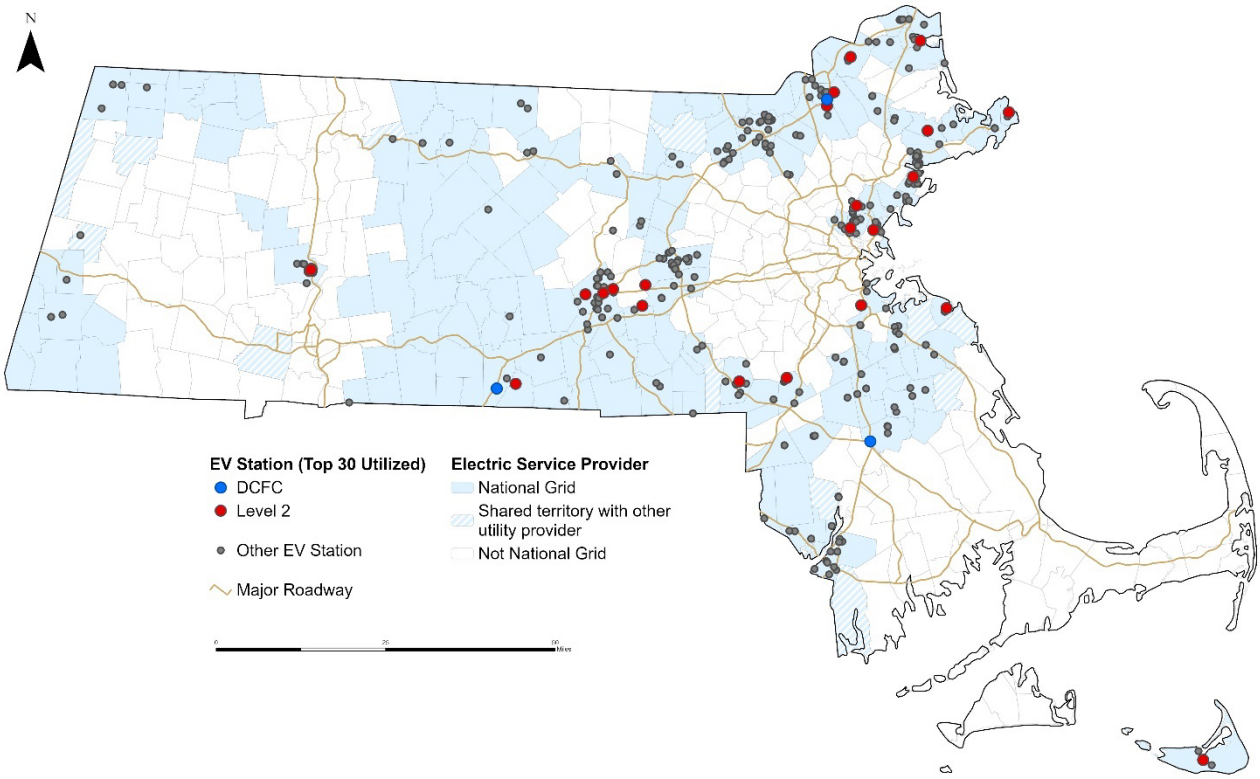


Figure 4-11. Top 30 most utilized Level 2 sites

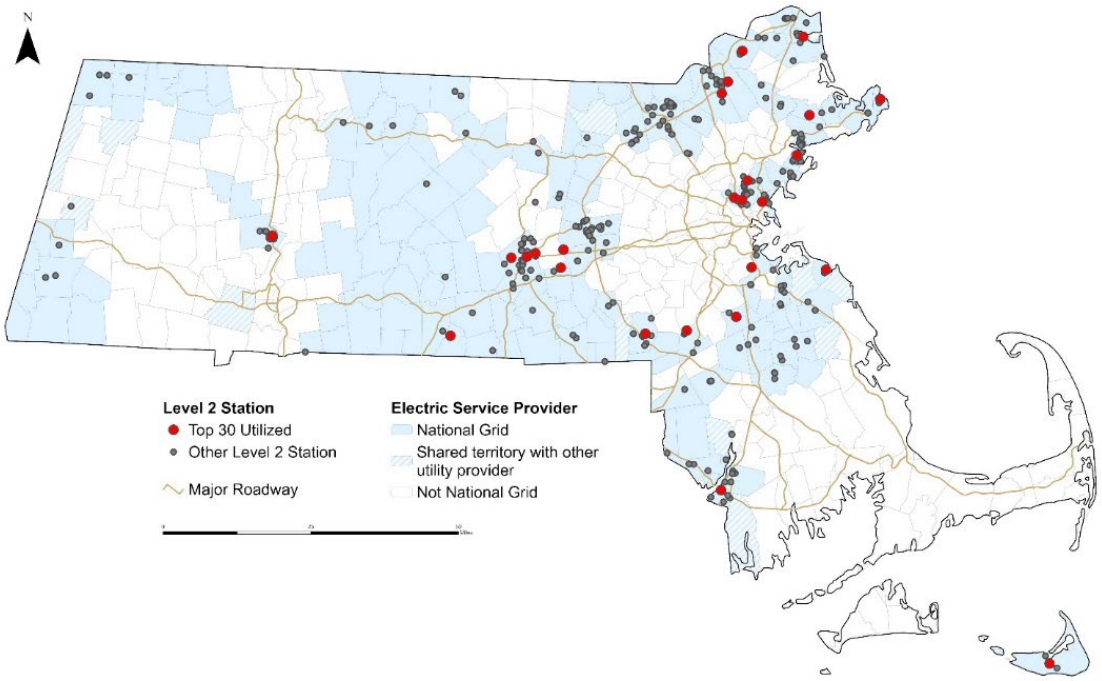
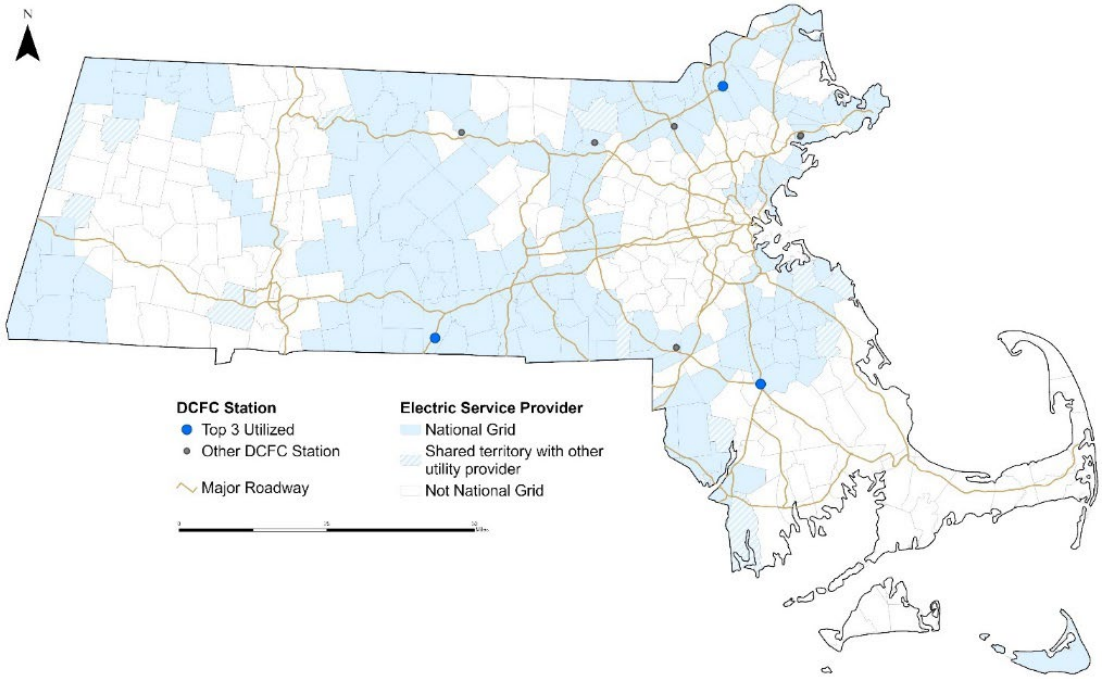


Figure 4-12. Most utilized DCFC sites



Ranking sites by utilization level and segment lets us assess the concentration of utilization to determine whether a small number of sites drive the utilization figures for a given segment or whether utilization is more evenly spread across a greater number of sites. To assess the concentration of utilization, DNV determined the proportion of sites in each segment that supported 70% of that segment's kWh; the results of this analysis are shown below.

- **Workplace.** Out of a total of 56 sites, the 14 sites (25%) with the greatest per-week utilization supplied 70% of the workplace segment's kWh. This is approximately the same level of concentration observed in PY3.
- **Public.** Out of a total of 222 sites, the 69 sites (31%) with the greatest per-week utilization supplied 70% of the public segment's kWh. The 31% of sites driving 70% of charging behavior in PY4 is higher than the 25% of sites from PY3, indicating a modest reduction in concentration in the public segment.
- **MUD.** Out of a total of 29 sites, the 10 sites (34%) with the greatest per-week utilization supplied 70% of the MUD segment's kWh. This is approximately the same level of concentration observed in PY3.

This analysis indicates that, as in PY3, a relatively small proportion of sites provided the majority of kWh in each segment, though this trend may continue to evolve as EV adoption increases in Massachusetts and the EVSE network continues to expand. It is also worth noting that a somewhat uneven distribution of utilization is perhaps to be expected, with the most-utilized stations potentially benefiting from high visibility, solid placement along key travel corridors, proximity to pockets of relatively high EV adoption, and/or consistent and/or large user bases, such as tenants, employees, or customers who frequently charge their EVs at the same location.

Figure 4-13, Figure 4-14, and Figure 4-15 show the extent of the concentration of utilization across individual segments. They report the site-level station utilization, ranked by kWh charged per week, and include only sites with at least 10 kWh charged per week. The top chargers that contributed to 70% of charging within a given segment are illustrated by a blue box.

Figure 4-13. Public segment utilization ranked by kWh charged per station per week (through PY4)

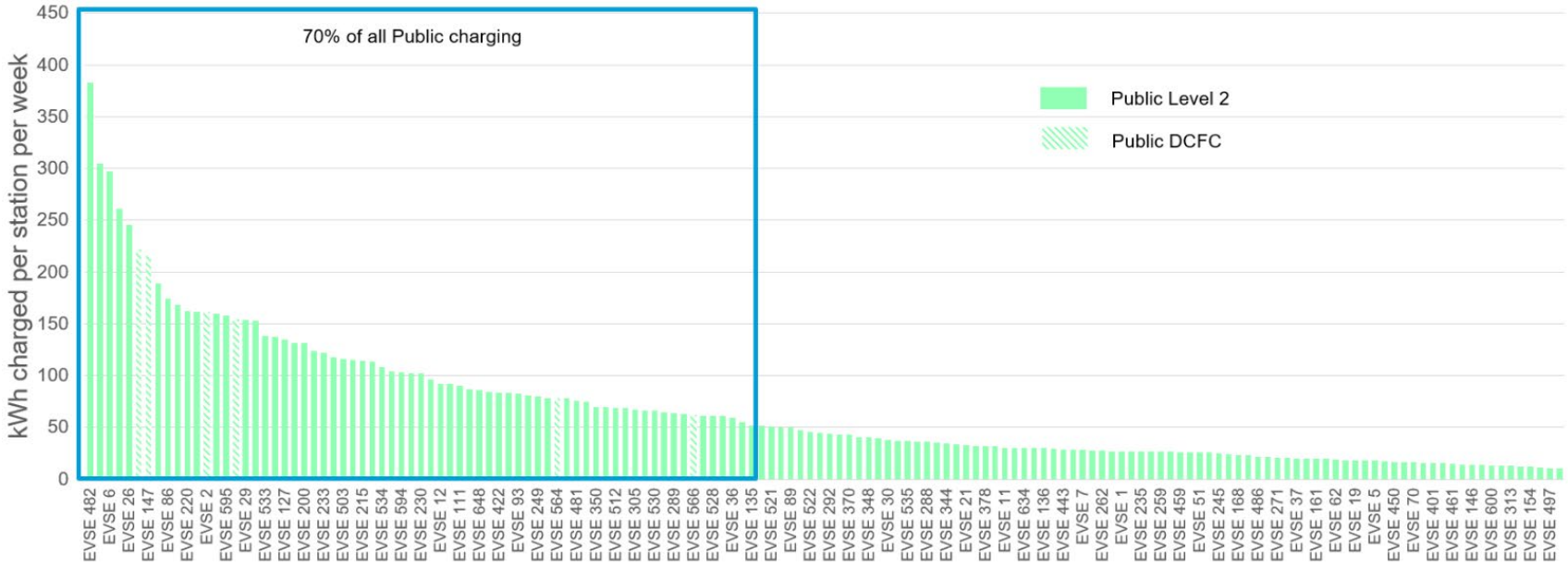


Figure 4-14. Workplace segment utilization ranked by kWh charged per station per week (through PY4)

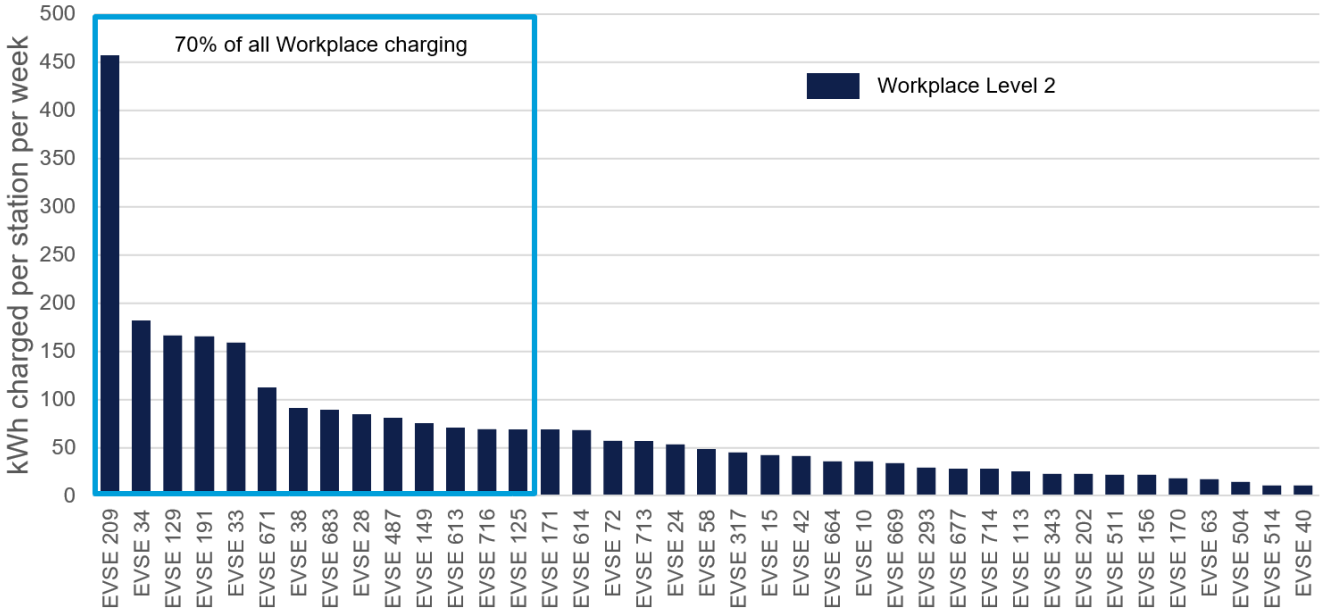
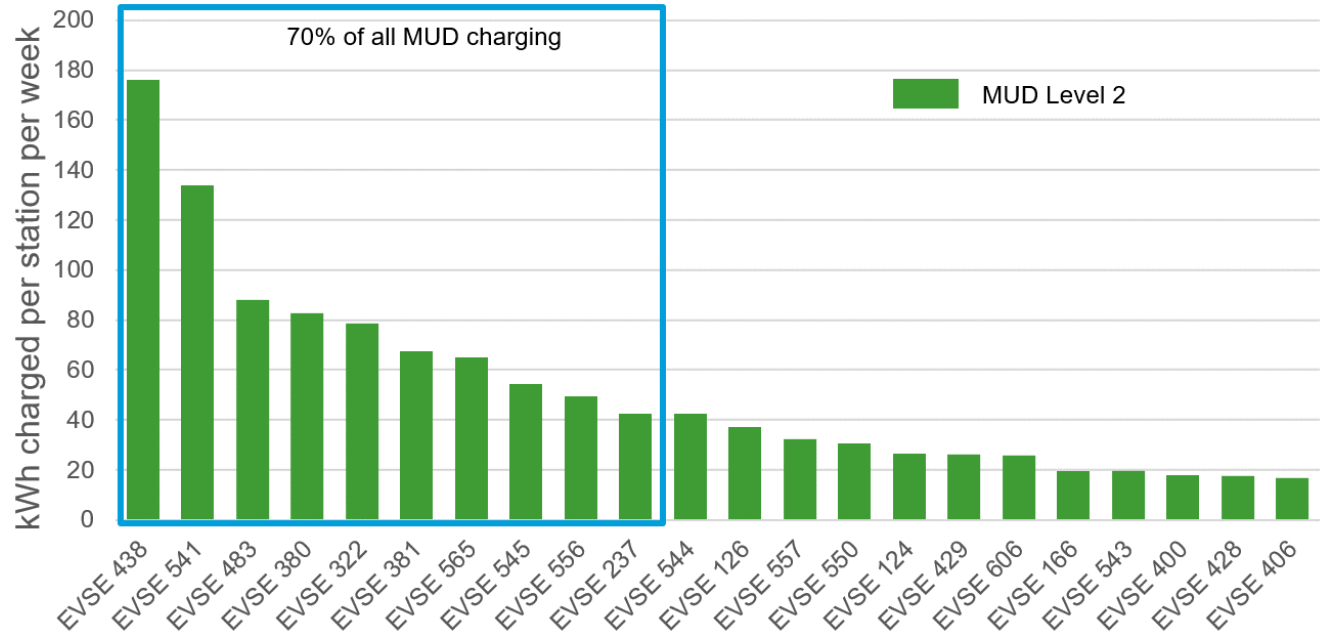


Figure 4-15. MUD segment utilization ranked by kWh charged per station per week (through PY4)



While these figures clearly depict some concentration of utilization, it is difficult to draw clear and consistent conclusions about why this concentration exists and what impact it may have on the utilization of the network as a whole. The level of concentration is also not uniform across all segments. For example, the second most utilized workplace station is used less than half as much as the most utilized. A similar trend can be observed for the MUD segment where the third most utilized

station is used about half as much as the most utilized. The public segment shows a gradual decline in utilization rather than a steep drop-off.

4.2.6 Load profile analysis

In PY4, DNV developed 24-hour average charging load profiles (kW) for each of the actively reporting charging stations, capturing all days in operation since the station's first recorded charge session (through December 31, 2022). Only data that passed QC were included in the analysis.

The team analyzed these load profiles to develop segment-level average charging load shapes that captured weekday and weekend charging behavior separately. We also assessed the coincidence of on-peak charging by segment (public, workplace, and MUD), charger type (Level 2 or DCFC), and day type (weekday or weekend), using a 1 p.m. to 9 p.m. window on all days as the "peak period" definition.[17] This analysis allowed us to consistently compare the different segments and facilitate a discussion regarding how segment-specific characteristics may impact a charging station's utilization and load shape.

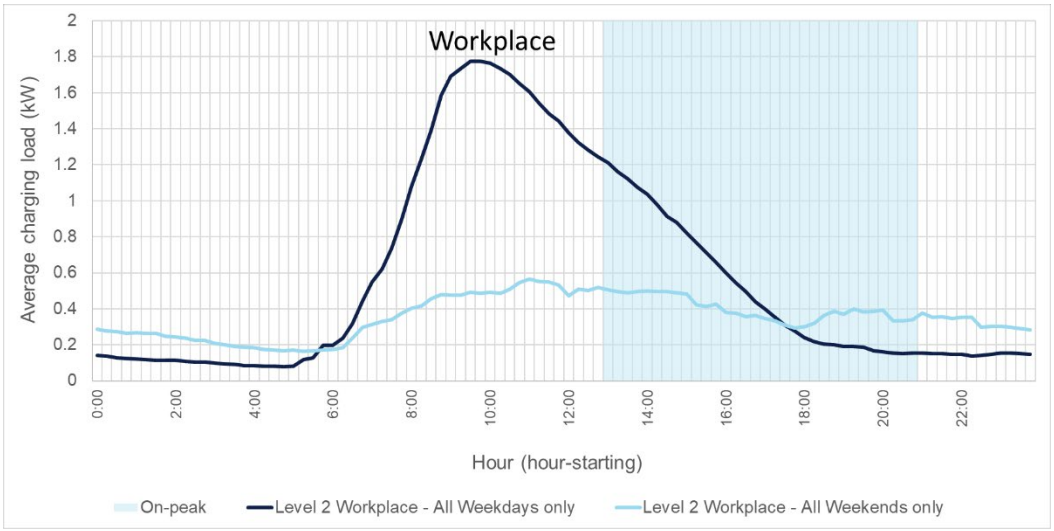
The profiles included in this discussion include all data that passed QC for each station's data reporting period (from the first recorded charge session through the end of PY4). Only stations that exceeded a segment-specific rate of utilization (in kWh charged per day) were included in that segment's analysis, which minimized the likelihood of diluting the load shape by including stations that had not yet achieved a sustained level of utilization; for most segments, this threshold utilization rate was selected to capture approximately 90% of the segment's total kWh charged.

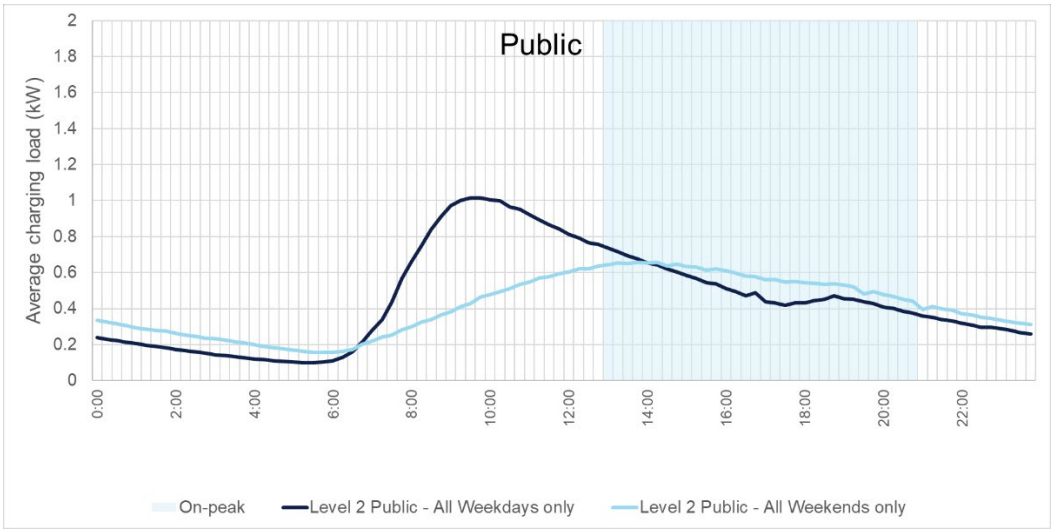
In each of the figures below, the light blue and dark blue lines represent the weekday and weekend average charging load, respectively, and the blue box indicates the on-peak hours of 1 p.m. to 9 p.m. For charging locations with multiple stations/ports, the average load profile (kW) includes charging data from all stations/ports that provided data and exceeded the segment-specific threshold utilization rate.

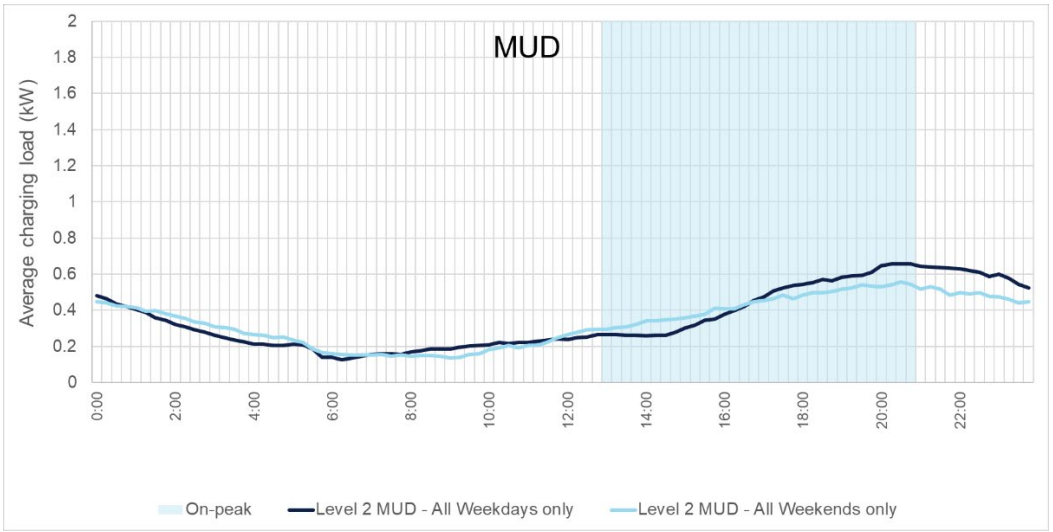
Figure 4-16 displays each segment's (public, workplace, and MUD) 24-hour averaging charging load profile consecutively for ease of comparison. Further analysis of load profiles for each segment is included later in this section.

[17] Note that the 1-9 p.m. window is not a defined peak period under any National Grid electric rate; it was selected to align with the peak period definition for National Grid's Electric Vehicle Charge Smart (CSMA) Program. This program is an EV managed charging program designed to shift EV charging off-peak. All references to the "peak period" (including the use of the phrases "on-peak" and "off-peak") in this section refer to this 1-9 p.m. window.

Figure 4-16. 24-hour average charging load profile – Overview, All Level 2 Segments







4.2.7 Workplace Level 2 load profile observations

The load profile presented in Figure 4-17, below, represents the average workplace Level 2 station charging load shape over all months of the program (spanning PY1 through PY4). It includes data from 101 individual stations located at 31 sites where the per-day charger utilization exceeded 2.5 kWh/day; this represents 63% of the stations and 92% of the kWh charged in the workplace segment.

Figure 4-17. 24-hour average charging load profile – Workplace Segment, All Level 2

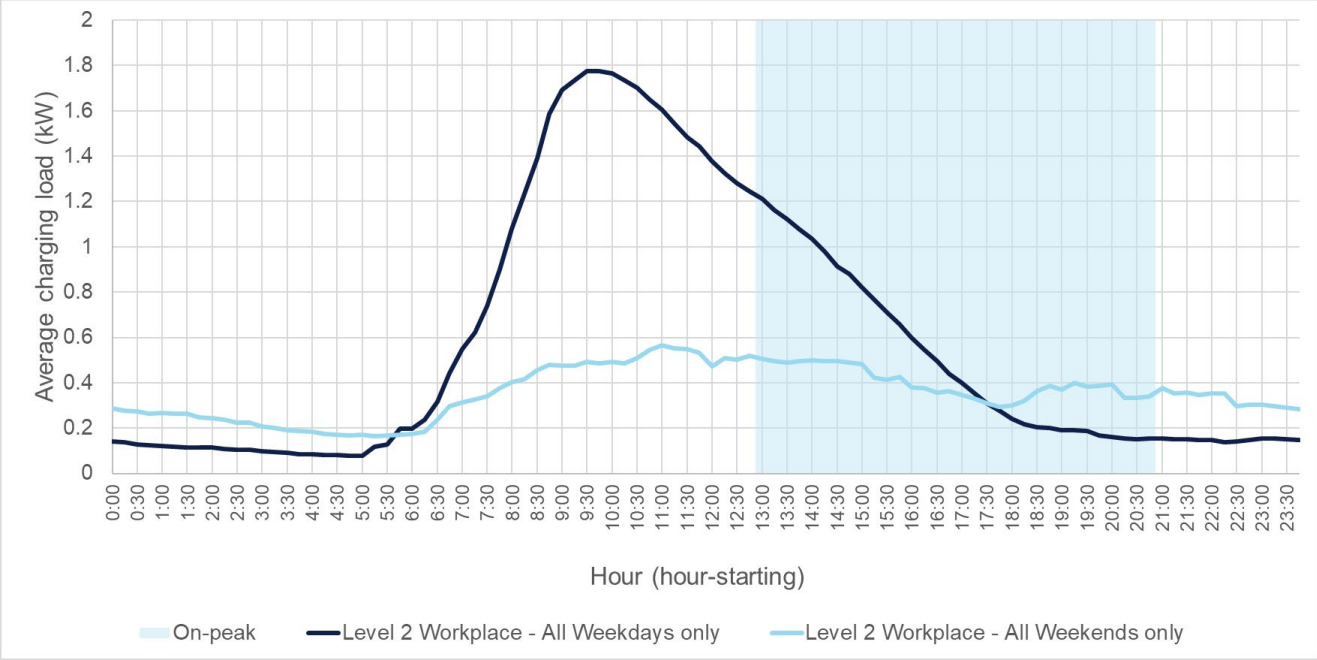


Figure 4-17 shows that on weekdays, the charging load begins to climb at 5 a.m., peaks at approximately 1.8 kW per charger between 9 and 10 a.m., and then falls consistently throughout the afternoon and evening to approximately 0.2 kW, where it remains until midnight before tapering off slightly over the early morning hours. The weekday charging load shape is strongly linked to typical working and commuting hours. On weekends, the load shape begins to climb at 6 a.m. and has a late morning peak at approximately 0.6 kW at around the same time as the weekday peak. The weekend load shape tapers off slowly until 6 p.m. until it is interrupted by a slight rebound from 6:30 p.m. to 10:30 p.m., after which it also tapers off overnight and into the early morning.

There is about 64% more weekday charging (14 kWh per day) than weekend charging (8.5 kWh per day). Notably, evening and overnight charging is more prevalent in this segment on weekends, though the analysis shows that overnight charging also occurs consistently on weekdays.[18] This overnight charging is driven by two hospital sites with a total of 10 charging stations and may stem from overnight employees charging their vehicles. However, several non-hospital facilities also showed higher than expected levels of overnight charging. This suggests that some EV drivers are utilizing workplace chargers – likely those near their homes – to charge overnight, with a preference for weekend charging that may be due to schedule differences or convenience. It is also possible that these stations are available to the public outside of business

[18] Overnight charging in this analysis is defined as occurring between the hours of 9 p.m. and 5 a.m. the following day.

hours, or that the drivers charging overnight at workplace chargers have access to publicly-available charging elsewhere during the week and utilize workplace chargers near their homes on the weekend.

Through PY4, approximately 30% of weekday and 37% of weekend charging in this segment occurred on-peak; the average on-peak load on weekdays was 0.5 kW per charger, compared to 0.4 kW per charger on weekends.

4.2.8 Public Level 2 load profile observations

The load profile presented in Figure 4-18, below, represents the average public Level 2 station charging load shape over all months of the program (spanning PY1 through PY4). It includes data from 307 individual stations located at 108 sites where the per-day charger utilization exceeded 2.5 kWh/day; this represents 54% of the stations and 91% of the kWh charged in the public segment.

Figure 4-18. 24-hour average charging load profile – Public Segment, All Level 2

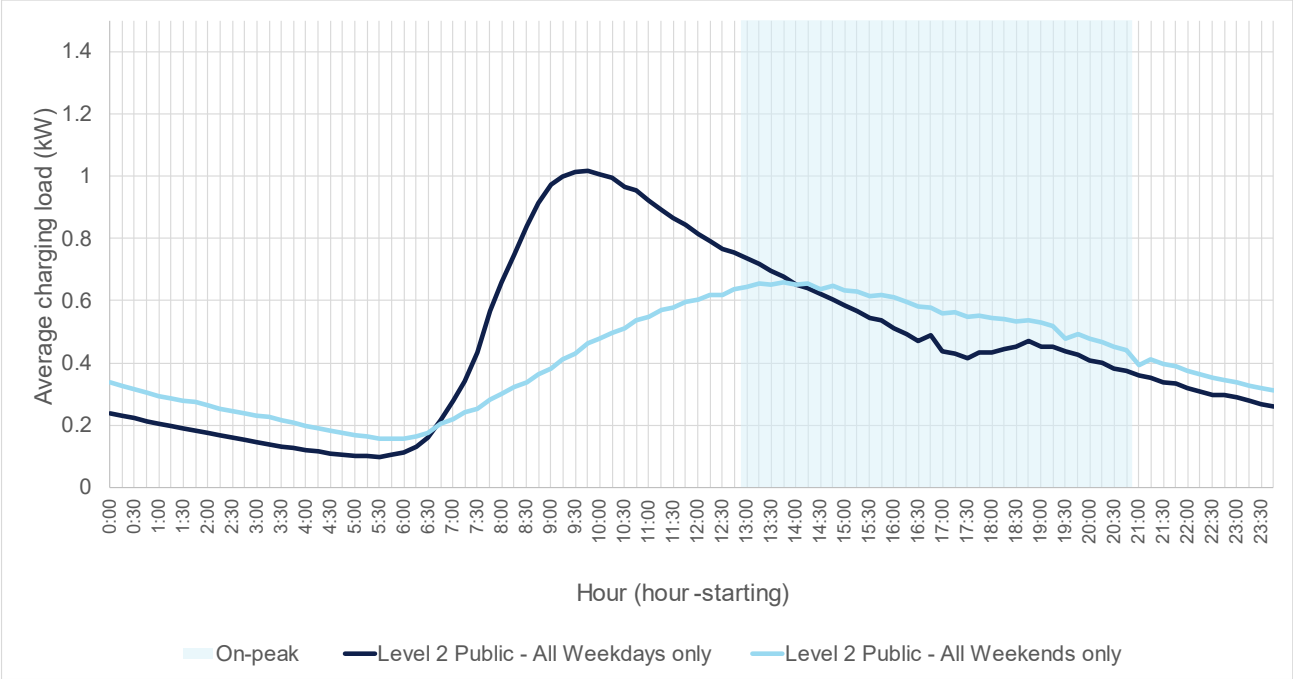


Figure 4-18 shows that the weekday charging load begins to climb from 0.1 kW per charger between 5 and 6 a.m., peaks at approximately 1 kW per charger between 9 and 10 a.m., and falls consistently throughout the rest of the day. The weekday public charging load shape resembles the weekday workplace load shape in terms of when the load ramps up, when it peaks, and how it behaves post-peak; however, the peak load is 45% lower than the workplace segment's peak load. On weekends, the load shape ramps slowly from 6 a.m. (about 0.2 kW per charger) until 2 p.m. (0.65 kW per charger) before falling again. The load drops off consistently and smoothly throughout the late afternoon, evening, and late-night hours, with the weekend charging load during these hours remaining consistently but only slightly higher than the weekday charging load.

There is slightly more (10%) weekday charging (11 kWh per day) than weekend charging (10 kWh per day) in the public segment. This more equitable distribution between weekday and weekend charging load makes sense for the public segment, which contains a diverse array of charging stations located at multiple facility types, including parking garages, government facilities, and retail locations; some of these locations may support long-duration charging sessions during the workday, while others may be accessed more often on the weekends, such as shopping areas or other destinations. This

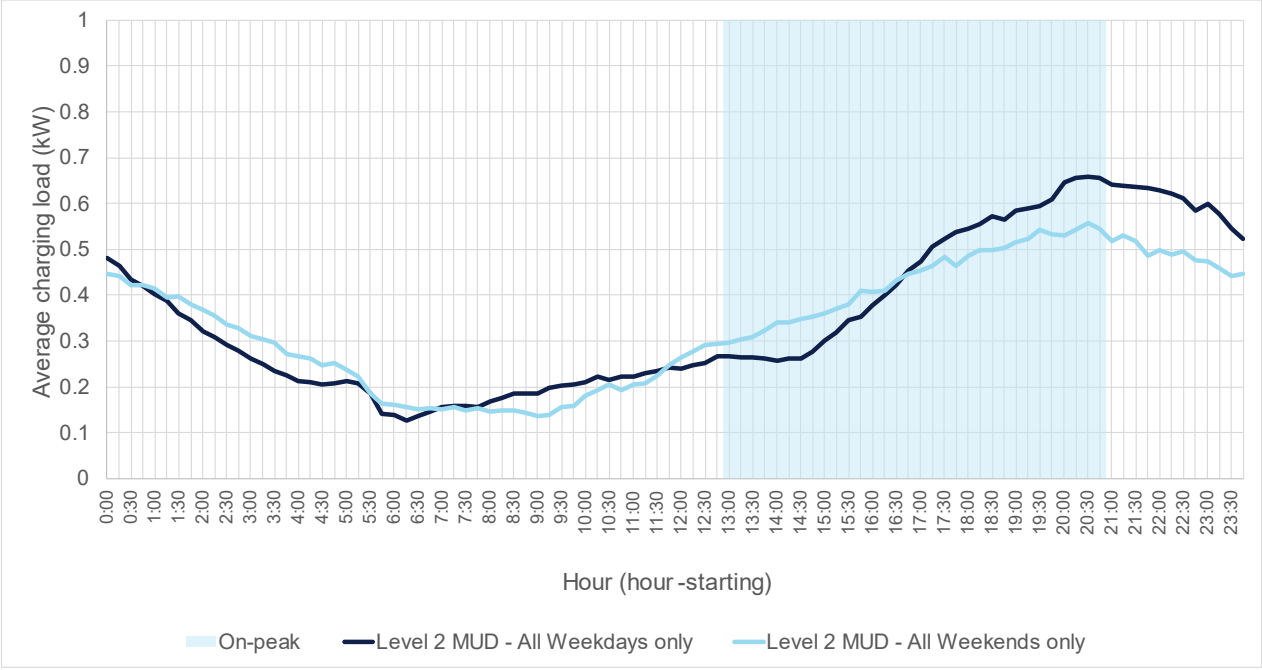
diverse set of facilities can support multiple EV charging needs, including both long- and short-duration charging and "convenience" charging, where drivers plug in to top up their batteries over the course of running errands or completing other daily activities. It is worth noting that evening and overnight charging is relatively prevalent in this segment throughout the week, with no major difference between weekdays and weekends. Several hotel facilities exhibit high rates of overnight charging, which is to be expected as more hotels offer EV charging as an amenity. However, there are also other facility types – including offices, parking, and municipal sites – that support high levels of overnight charging. As with the workplace segment, this indicates that some EV drivers may be utilizing public chargers (likely near their homes) to charge overnight, potentially because they are free or more convenient than other charging options.

Through PY4, approximately 37% of weekday and 46% of weekend charging in this segment occurred on-peak, while the average on-peak load was slightly higher on weekends (approximately 0.6 kW/charger vs. 0.5 kW/charger).

4.2.9 MUD Level 2 Load profile observations

The load profile presented in Figure 4-19, below, represents the average MUD Level 2 station charging load shape over all months of the program (spanning PY1 through PY4). It includes data from 39 individual stations located at 12 sites where the per-week charger utilization exceeded 2.5 kWh/day; this represents 44% of the stations and 85% of the kWh charged in the MUD segment.

Figure 4-19. 24-hour average charging load profile – MUD Segment, All Level 2



The MUD weekday and weekend charging profiles are the most similar of all segments. The two profiles closely mirror each other throughout the day until approximately 5 p.m.; for both day types, the charging load begins to climb from about 0.15 kW per charger at around 6 a.m., ramps up slowly throughout the day, and peaks at approximately 9 p.m. before tapering off overnight. The weekday peak is approximately 0.65 kW per charger and the weekend peak is approximately 0.55 kW per charger. The weekday load begins to deviate from the weekend load at around 5 p.m., as it continues to increase relative to weekend charging. The two load shapes come together again at around 1 a.m. as vehicles that were plugged in reach a full charge.

The daily average kWh on weekdays is 8.5 kWh/day, compared to 8.2 kWh/day on weekends. The afternoon-into-evening ramp, which is greater during the week, is consistent with drivers returning from work. It is also worth noting that the MUD segment shows the highest levels of charging in the early morning hours, from midnight until approximately 4 a.m., of any segment, which is consistent with the frequent overnight home charging one would expect to see in a residential segment.

Through PY4, approximately 42% of weekday and 43% of weekend charging in this segment occurred on-peak. The average on-peak load was 0.4 kW per charger for both weekdays and weekends. The end-of-peak (9 p.m.) load is higher than at the start-of-peak (1 p.m.) on both weekdays and weekends; this behavior is not observed in any other segment.

4.2.10 Public DCFC load profile observations

The load profile presented in Figure 4-20, below, represents the average public DCFC station charging load shape over all months of the program (spanning PY1 through PY4). It includes data from nine individual stations located at five sites where the per-week charger utilization exceeded 10 kWh/day; this represents 75% of the DCFC stations and 100% of the kWh charged in the public segment with DCFC stations. There are an additional three DCFC stations that have provided negligible charging to-date; these stations were excluded from this analysis.

Due to the intermittent nature of DCFC charging and the small population of actively utilized DCFC stations in the program, DNV also developed individual station-level weekday vs. weekend load shapes for each DCFC station. Figure 4-21 through Figure 4-27 depict these individual profiles.

Figure 4-20. 24-hour average charging load profile – Public Segment, DCFC

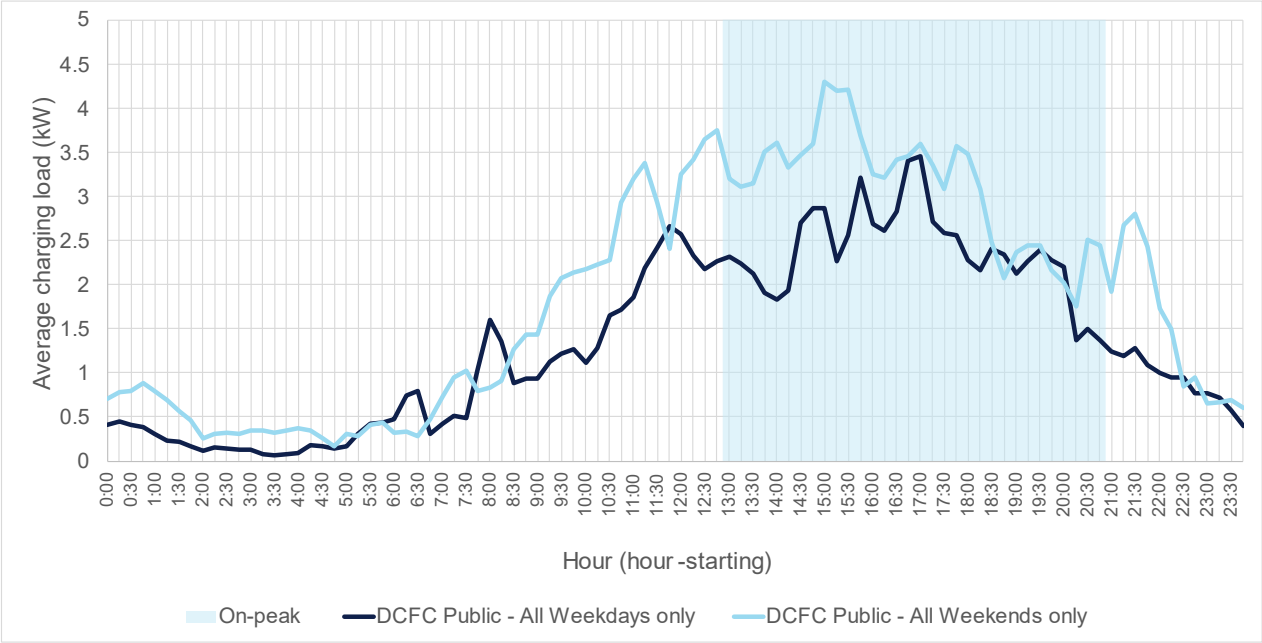


Figure 4-21. 24-hr average load profile for DCFC charging station EVSE 2

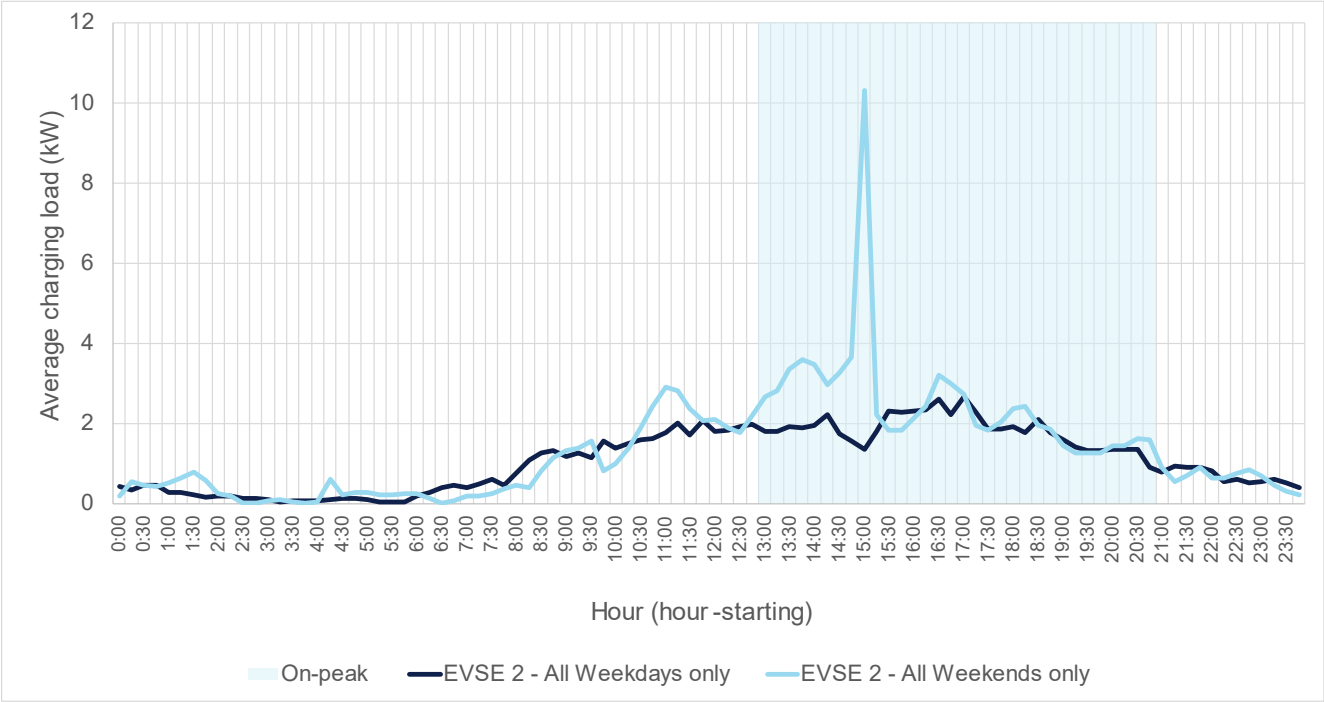


Figure 4-22. 24-hr average load profile for DCFC charging station EVSE 147 #1

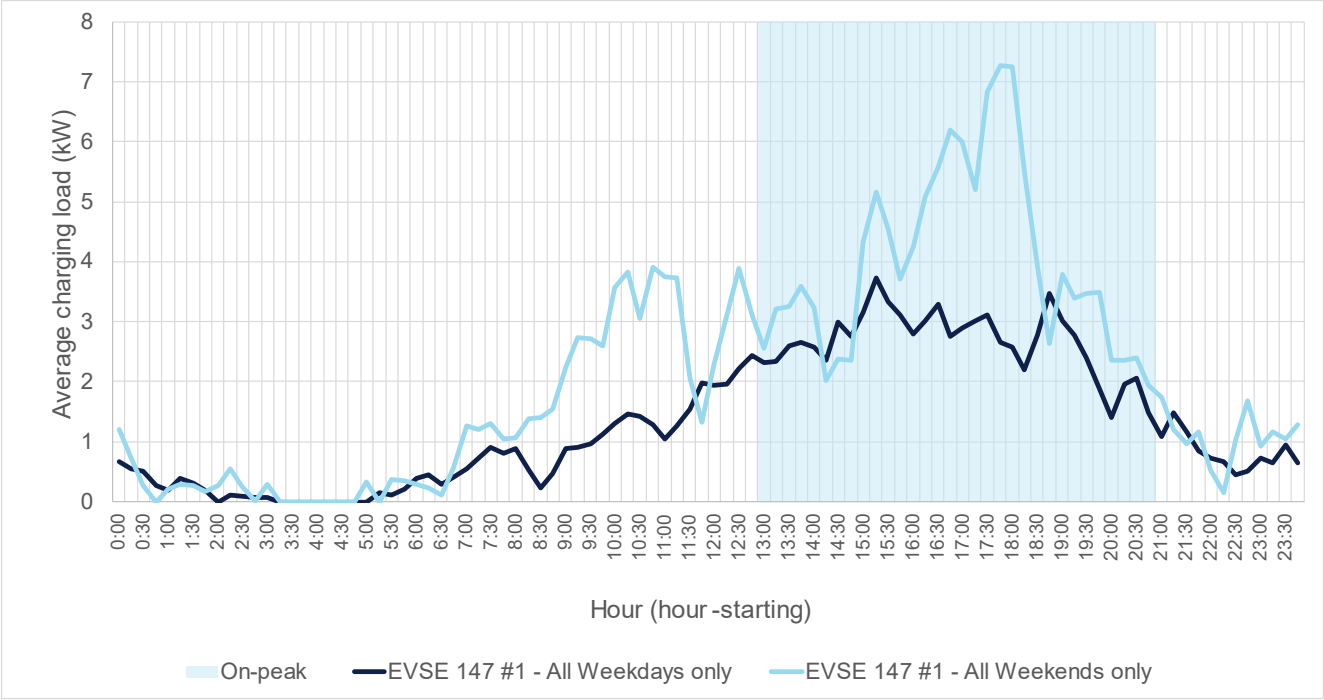


Figure 4-23. 24-hr average load profile for DCFC charging station EVSE 147 #2

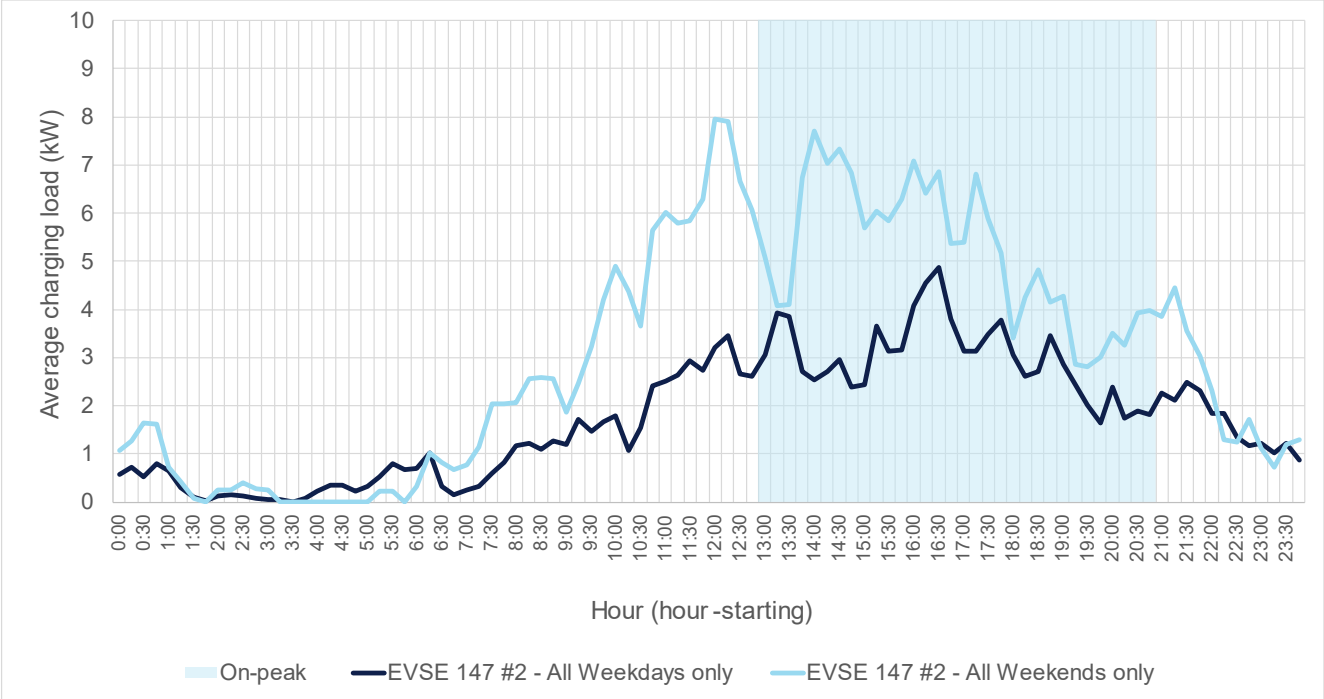


Figure 4-24. 24-hr average load profile for DCFC charging station EVSE 605 #1

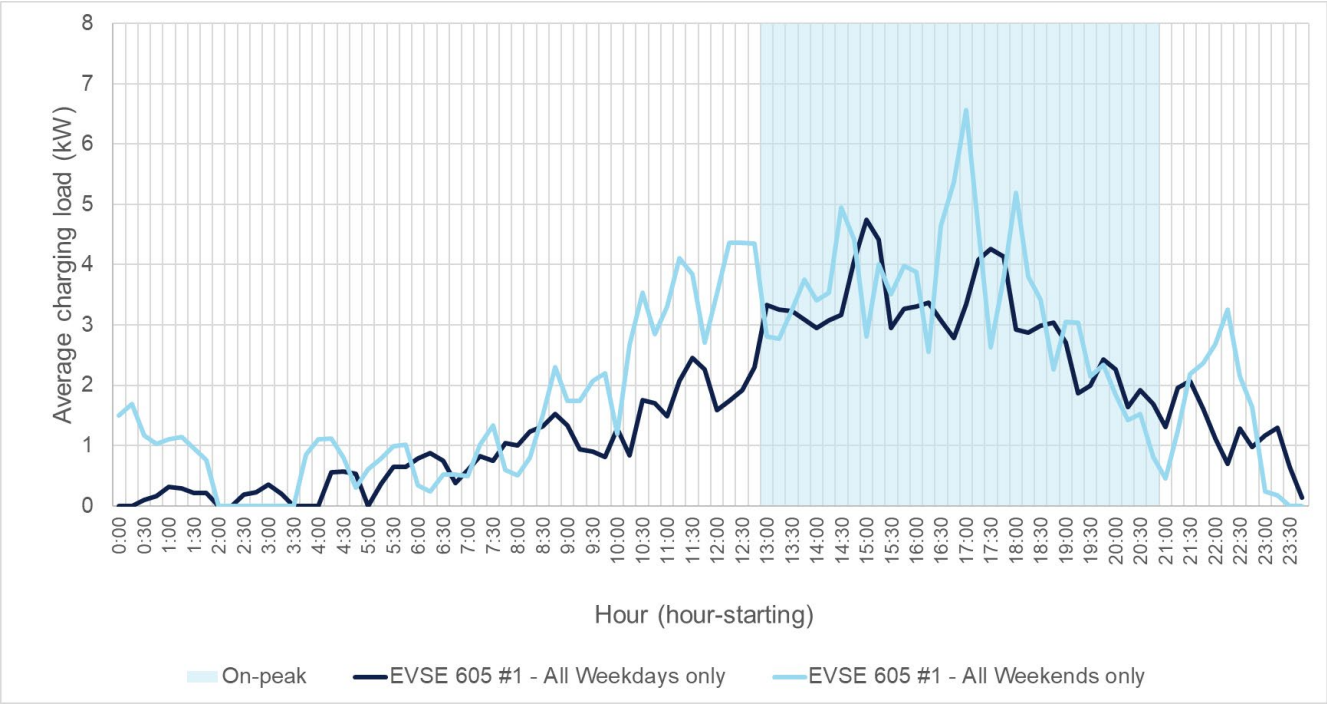


Figure 4-25. 24-hr average load profile for DCFC charging station EVSE 605 #2

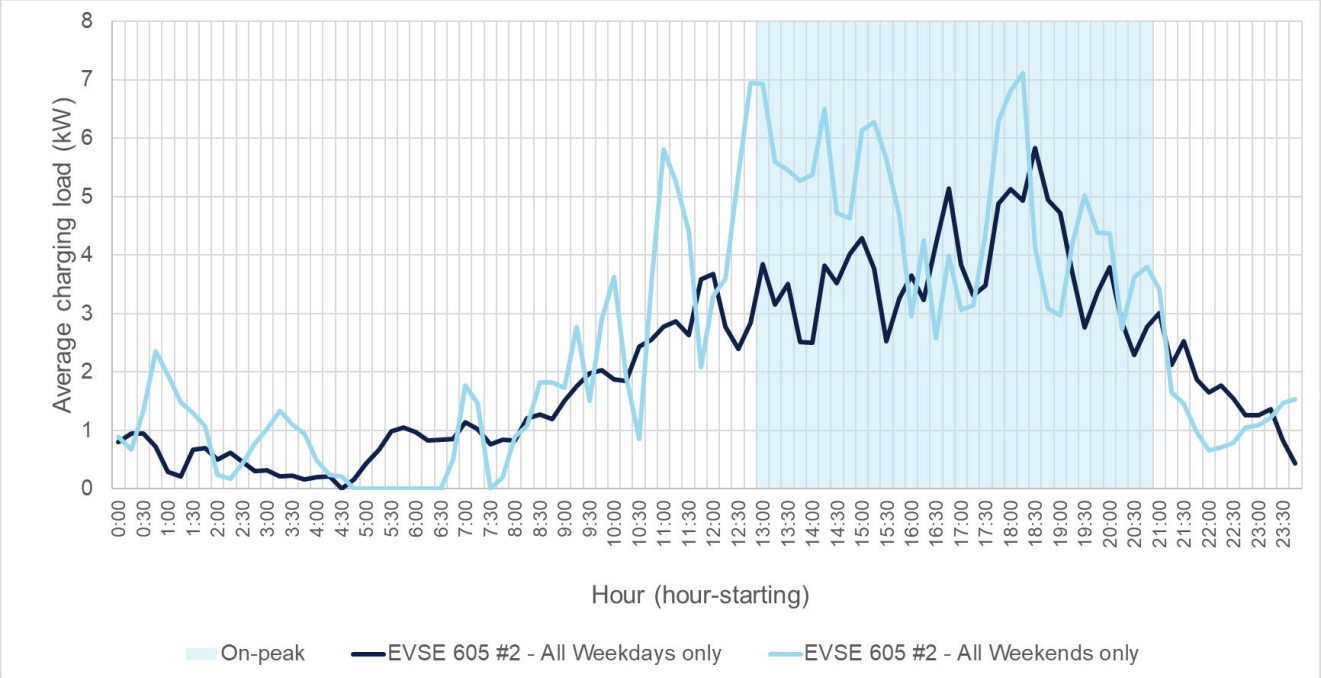


Figure 4-26. 24-hr average load profile for DCFC charging station EVSE 604 #1

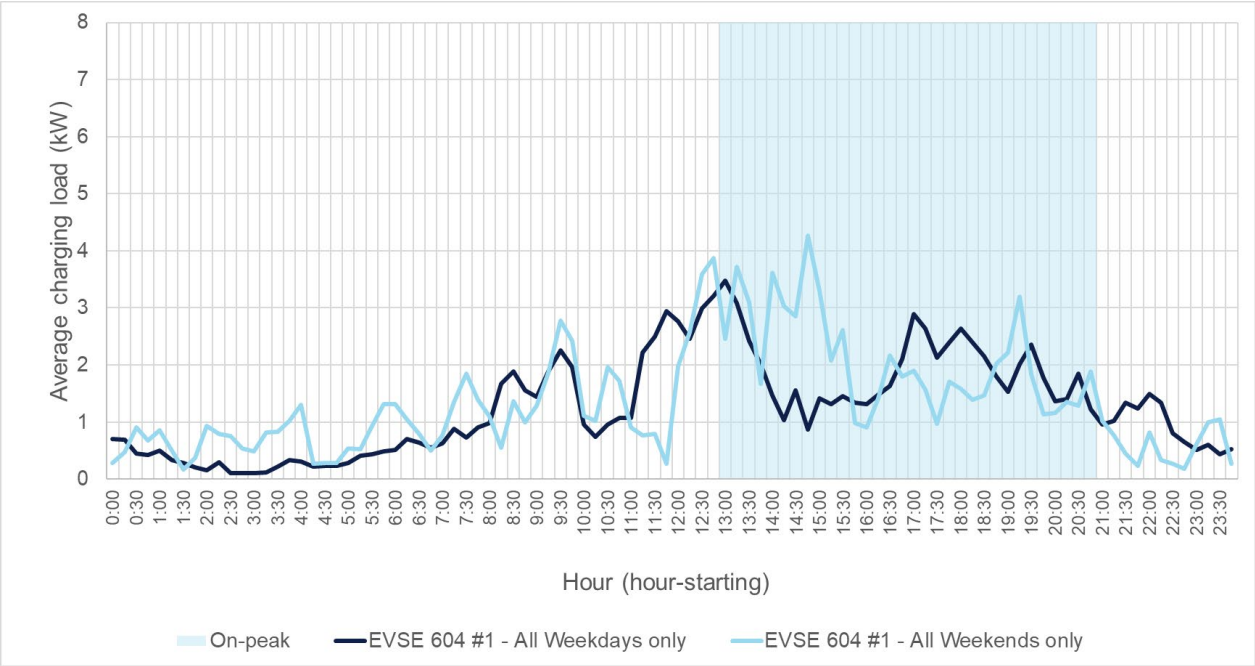
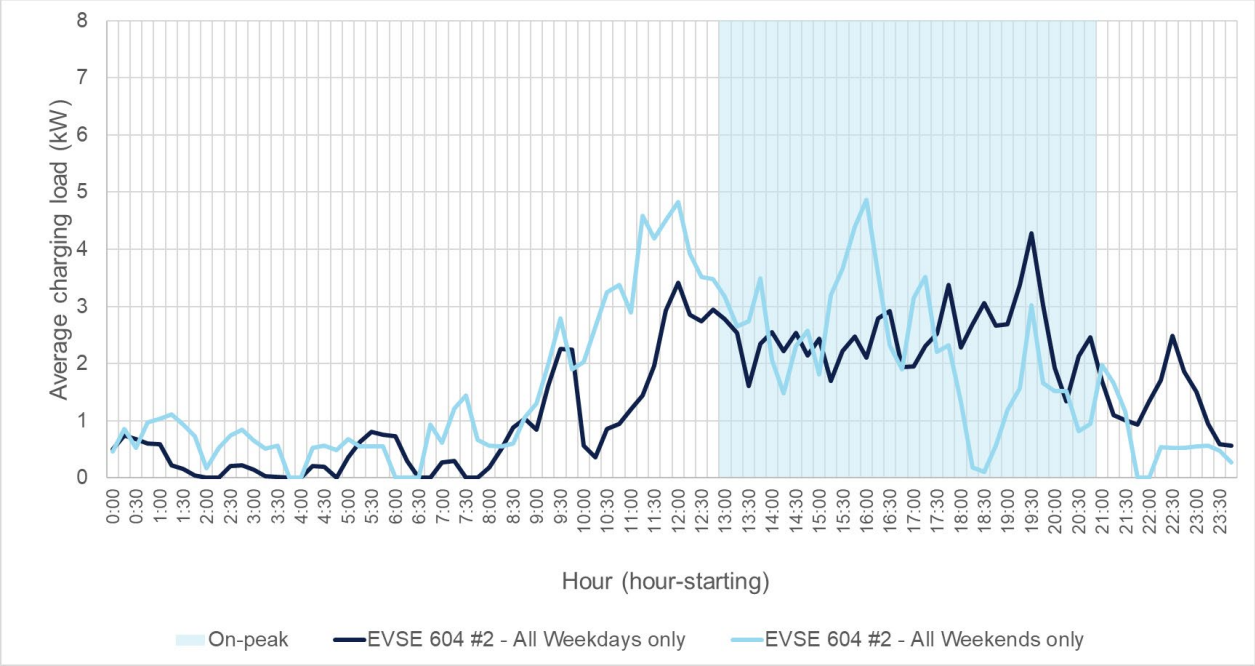


Figure 4-27. 24-hr average load profile for DCFC charging station EVSE 604 #2



Several trends are observable across these DCFC load shapes:

- The daily peak load in all seven individual profiles is higher on the weekend than on weekdays, indicating that DCFC chargers are in high demand on weekends. Peak demands range from 7-10 kW across certain chargers, which is significantly higher than the average peak loads achieved across the workplace, MUD, and public segments

- The peak charging load generally occurs on-peak
- There load shapes are choppy and intermittent, which is indicative of the short-duration, high-power charging activity that DCFC stations are designed to support

4.2.11 Load profile summary statistics by segment and charger type

Table 4-14, below, summarizes several high-level metrics stemming from the segment-wise load profile analysis, including the weekday and weekend on-peak coincidence and the ratio of the daily energy charged on the average weekday versus the average weekend day.

Table 4-14. Load profile summary statistics by segment and charger type

Segment	Percent of kWh charged on-peak		Ratio of weekday to weekend charging (kWh)	Daily average kWh		Average on-peak kW	
	Weekday	Weekend		Weekday	Weekend	Weekday	Weekend
Level 2 Public	37%	46%	110%	11	10	0.5	0.6
Level 2 MUD	42%	43%	104%	8.5	8.2	0.4	0.4
Level 2 Workplace	30%	37%	164%	14	8.5	0.5	0.4
DCFC Public	58%	55%	73%	32.7	45.1	2.4	3.1

APPENDIX A. METHODOLOGY FOR CALCULATING CO_2 SAVINGS

This appendix presents the methodology for calculating CO_2 savings for the charging session data reported by the EVSE suppliers. The figure below shows the formula used to calculate CO_2 savings, and the table shows formula assumptions and their sources.

Figure A-1. Formula for Calculating GHG Impact (CO2) for Charging Program

$$Gasoline\ miles = electric\ miles = EV\ efficiency\ x\ Charging\ kWh$$

$$CO_2\ savings = \left(\frac{Gas\ miles}{Average\ mpg}\ x\ Gas\ carbon\ intensity\right) - (Charging\ kWh\ x\ Grid\ carbon\ intensity)$$

Table A-1. GHG impact assumptions and sources

Metric	Value	Units	Source
Gas miles	N/A	Miles	Calculated
Electric miles	N/A	Miles	Calculated
EV efficiency	3.5	Miles per kWh	National Grid
CO2 savings	N/A	kg of CO2	Calculated
Gas carbon intensity	8.67	kg CO2 per gallon of gasoline	National Grid
Grid carbon intensity	0.31	kg CO2 per kWh	ISO-NE Electric Generator Air Emissions Report, 2017
Average mpg	33	Miles per gallon	National Grid
Charging kWh	N/A	kWh	Charging station vendor data

APPENDIX B. STATION UTILIZATION BY PROJECT

Table B-1 summarizes the utilization of the co-located chargers for PY4 across multiple metrics; the anonymized stations are ranked by the total amount of charging (kWh) they have provided through PY4.

Table B-1. Charging Station Utilization by Station

Station Identifier	Station Use	Charging Level	Number of Stations (Tracking)	Charging Session Count	Energy Charged (kWh)	kWh per Session	Charging Sessions per Week	kWh per Week	GHG Savings (kg)	First Charge Date
EVSE 422	Public	Level 2	18	7,571	130,488.9	7,249.4	86.9	1,497.4	79,624	05/01/21
EVSE 683	Workplace	Level 2	16	7,264	123,006.4	7,235.7	84.3	1,427.9	75,058	05/08/21
EVSE 33	Workplace	Level 2	4	6,440	120,131.5	30,032.9	34.1	636.6	73,304	05/21/19
EVSE 131	Public	Level 2	10	10,555	108,469.5	3,013.0	101.1	1,038.7	66,188	12/31/20
EVSE 12	Public	Level 2	4	5,055	76,933.1	15,386.6	24.2	368.9	46,944	01/02/19
EVSE 34	Workplace	Level 2	2	5,096	75,872.2	25,290.7	24.4	363.5	46,297	01/01/19
EVSE 209	Workplace	Level 2	1	3,002	70,077.2	70,077.2	19.6	457.2	42,761	01/24/20
EVSE 433	Public	Level 2	6	3,755	70,031.9	14,006.4	45.1	840.9	42,733	05/28/21
EVSE 6	Public	Level 2	1	2,675	58,349.3	58,349.3	13.6	297.3	35,604	03/29/19
EVSE 29	Public	Level 2	2	4,236	56,109.9	28,055.0	23.2	307.8	34,238	07/05/19
EVSE 22	Public	Level 2	1	3,941	53,836.1	53,836.1	22.3	304.7	32,850	08/13/19
EVSE 38	Workplace	Level 2	4	3,627	50,693.2	12,673.3	26.0	363.6	30,933	07/29/19
EVSE 26	Public	Level 2	1	3,529	47,633.3	47,633.3	18.2	246.1	29,066	04/17/19
EVSE 72	Workplace	Level 2	5	3,008	44,391.2	8,878.2	19.2	283.8	27,087	01/02/20
EVSE 236	Public	Level 2	6	2,837	42,930.2	7,155.0	27.2	411.7	26,196	01/01/21
EVSE 190	Public	Level 2	2	3,087	42,469.9	21,234.9	20.0	275.5	25,915	01/18/20
EVSE 487	Workplace	Level 2	5	1,820	42,371.4	8,474.3	17.4	404.1	25,855	12/28/20
EVSE 147	Public	DCFC	2	1,802	41,096.7	20,548.4	18.9	431.9	25,077	03/06/21
EVSE 127	Public	Level 2	2	2,215	40,958.1	20,479.0	14.6	270.2	24,992	02/05/20
EVSE 480	Public	Level 2	4	2,057	39,517.4	9,879.3	39.3	755.8	24,113	12/31/21
EVSE 322	MUD	Level 2	5	1,420	39,047.0	7,809.4	14.3	393.8	23,826	02/06/21
EVSE 95	Public	Level 2	2	2,469	36,485.8	18,242.9	21.9	323.7	22,263	11/03/20
EVSE 191	Workplace	Level 2	2	2,146	36,444.3	18,222.2	19.5	331.3	22,238	11/21/19
EVSE 51	Public	Level 2	10	2,649	35,018.3	3,501.8	19.4	256.1	21,368	05/19/20
EVSE 129	Workplace	Level 2	2	2,880	34,764.8	8,691.2	27.6	333.4	21,213	01/01/21
EVSE 348	Public	Level 2	10	2,538	34,057.1	3,405.7	30.3	406.1	20,781	05/24/21
EVSE 565	MUD	Level 2	6	2,089	33,493.5	5,582.3	24.4	390.8	20,438	05/11/21
EVSE 512	Public	Level 2	4	1,532	32,398.7	8,099.7	13.1	276.6	19,770	10/03/20
EVSE 503	Public	Level 2	2	1,188	32,052.5	16,026.2	8.6	231.3	19,558	05/06/20
EVSE 35	Public	Level 2	2	1,707	30,966.1	15,483.1	9.2	166.1	18,895	06/06/19
EVSE 219	Public	Level 2	1	4,079	30,633.1	30,633.1	34.8	261.5	18,692	10/03/20
EVSE 90	Public	Level 2	8	1,305	29,928.1	3,741.0	11.2	256.1	18,262	10/05/20

Station Identifier	Station Use	Charging Level	Number of Stations (Tracking)	Charging Session Count	Energy Charged (kWh)	kWh per Session	Charging Sessions per Week	kWh per Week	GHG Savings (kg)	First Charge Date
EVSE 528	Public	Level 2	5	2,396	29,725.0	5,945.0	24.6	305.5	18,138	02/19/21
EVSE 533	Public	Level 2	2	1,143	29,471.4	14,735.7	10.8	277.3	17,983	12/18/20
EVSE 192	Public	Level 2	2	10,051	29,219.3	14,609.7	109.9	319.6	17,830	04/01/21
EVSE 15	Workplace	Level 2	4	1,587	29,013.3	7,253.3	9.2	168.0	17,704	09/10/19
EVSE 2	Public	DCFC	1	1,241	28,981.1	28,981.1	6.9	161.3	17,684	07/23/19
EVSE 440	Public	Level 2	3	1,514	27,838.3	9,279.4	15.7	287.8	16,987	02/23/21
EVSE 23	Public	Level 2	1	3,781	27,145.0	27,145.0	21.3	153.0	16,564	08/08/19
EVSE 215	Public	Level 2	2	1,978	26,557.9	13,278.9	17.0	228.1	16,205	10/08/20
EVSE 233	Public	Level 2	2	1,056	26,265.0	13,132.5	9.8	243.8	16,027	12/08/20
EVSE 1	Public	Level 2	5	2,198	24,339.6	4,867.9	12.2	134.9	14,852	07/18/19
EVSE 86	Public	Level 2	1	1,103	23,298.3	23,298.3	8.3	174.4	14,216	06/10/20
EVSE 20	Public	Level 2	1	1,846	23,170.8	23,170.8	9.8	123.6	14,139	05/30/19
EVSE 605	Public	DCFC	2	979	23,140.3	11,570.1	18.8	443.8	14,120	01/01/22
EVSE 89	Public	Level 2	4	1,133	23,134.8	5,783.7	9.7	198.2	14,117	10/06/20
EVSE 230	Public	Level 2	2	2,006	23,058.4	11,529.2	17.8	205.1	14,070	11/05/20
EVSE 11	Public	Level 2	4	1,651	22,868.9	5,717.2	8.8	122.3	13,954	06/02/19
EVSE 36	Public	Level 2	2	2,298	22,327.2	11,163.6	12.3	119.1	13,624	05/30/19
EVSE 13	Public	Level 2	4	1,902	22,244.8	5,561.2	10.1	118.7	13,574	05/30/19
EVSE 171	Workplace	Level 2	2	1,135	22,140.9	11,070.4	7.0	137.0	13,510	11/27/19
EVSE 595	Public	Level 2	2	1,379	22,085.9	11,042.9	19.8	316.8	13,477	08/31/21
EVSE 200	Public	Level 2	2	1,894	21,971.5	10,985.7	22.7	262.9	13,407	05/26/21
EVSE 232	Public	Level 2	4	1,518	21,026.3	5,256.6	33.9	470.2	12,830	02/22/22
EVSE 17	Public	Level 2	1	1,893	20,828.3	20,828.3	10.3	113.5	12,709	06/26/19
EVSE 530	Public	Level 2	3	1,917	20,605.0	6,868.3	18.4	197.6	12,573	01/01/21
EVSE 482	Public	Level 2	1	1,240	20,015.8	20,015.8	23.7	382.8	12,214	12/31/21
EVSE 713	Workplace	Level 2	8	625	19,283.1	2,410.4	14.7	453.0	11,766	03/09/22
EVSE 424	Public	Level 2	4	971	19,241.4	4,810.3	10.0	199.0	11,741	02/23/21
EVSE 8	Public	Level 2	1	1,380	19,233.9	19,233.9	7.4	102.6	11,736	05/30/19
EVSE 545	MUD	Level 2	3	1,273	19,044.4	6,348.1	10.9	162.6	11,621	10/03/20
EVSE 220	Public	Level 2	1	2,429	19,042.5	19,042.5	20.7	162.6	11,620	10/03/20
EVSE 288	Public	Level 2	5	1,871	18,764.5	3,752.9	17.9	179.9	11,450	01/01/21
EVSE 93	Public	Level 2	2	1,049	18,644.5	9,322.2	9.2	164.4	11,377	10/29/20
EVSE 434	Public	Level 2	5	1,431	18,440.6	3,688.1	15.8	204.2	11,252	04/09/21
EVSE 435	Public	Level 2	5	1,276	18,284.5	3,656.9	13.8	198.4	11,157	03/27/21
EVSE 237	MUD	Level 2	4	589	17,775.3	4,443.8	5.6	170.0	10,846	12/30/20
EVSE 483	MUD	Level 2	2	1,125	17,160.3	8,580.1	11.5	175.9	10,471	02/17/21
EVSE 94	Public	Level 2	2	1,063	16,954.7	8,477.3	9.4	149.9	10,346	10/31/20

Station Identifier	Station Use	Charging Level	Number of Stations (Tracking)	Charging Session Count	Energy Charged (kWh)	kWh per Session	Charging Sessions per Week	kWh per Week	GHG Savings (kg)	First Charge Date
EVSE 7	Public	Level 2	3	1,125	16,545.0	5,515.0	5.7	84.3	10,096	03/29/19
EVSE 604	Public	DCFC	2	834	16,132.9	8,066.4	16.0	309.4	9,844	01/01/22
EVSE 125	Workplace	Level 2	2	1,355	16,052.3	8,026.2	11.6	137.4	9,795	10/05/20
EVSE 344	Public	Level 2	4	966	15,411.6	3,852.9	8.6	137.3	9,404	11/06/20
EVSE 37	Public	Level 2	4	2,400	14,737.9	1,842.2	13.0	79.5	8,993	06/14/19
EVSE 202	Workplace	Level 2	4	960	14,604.7	3,651.2	6.0	91.5	8,912	12/11/19
EVSE 96	Public	Level 2	2	978	14,199.7	7,099.9	8.7	125.8	8,665	11/02/20
EVSE 260	Public	Level 2	2	672	14,141.0	7,070.5	5.8	122.7	8,629	10/16/20
EVSE 423	Public	Level 2	4	725	13,864.2	3,466.1	7.5	142.5	8,460	02/19/21
EVSE 30	Public	Level 2	2	1,589	13,849.9	6,924.9	8.7	75.4	8,451	06/26/19
EVSE 598	Public	Level 2	10	1,225	13,716.3	1,371.6	23.6	264.5	8,370	01/03/22
EVSE 111	Public	Level 2	1	780	12,787.9	12,787.9	5.5	90.7	7,803	04/19/20
EVSE 305	Public	Level 2	5	310	12,350.0	4,116.7	5.1	202.0	7,536	10/30/21
EVSE 343	Workplace	Level 2	5	772	12,310.6	2,462.1	7.2	114.6	7,512	12/10/20
EVSE 442	Public	Level 2	2	852	12,263.9	6,132.0	7.6	109.5	7,483	11/08/20
EVSE 599	Public	Level 2	5	725	12,240.2	2,448.0	13.9	234.7	7,469	01/01/22
EVSE 135	Public	Level 2	2	701	12,059.6	6,029.8	6.0	103.2	7,359	10/05/20
EVSE 575	Public	Level 2	2	495	11,814.3	5,907.1	6.8	162.5	7,209	08/10/21
EVSE 521	Public	Level 2	2	705	11,733.5	5,866.8	6.1	100.8	7,160	10/08/20
EVSE 481	Public	Level 2	3	612	11,729.3	3,909.8	11.8	226.8	7,157	01/04/22
EVSE 261	Public	Level 2	3	979	11,616.4	3,872.1	8.5	100.8	7,088	10/16/20
EVSE 436	Public	Level 2	5	737	11,573.3	2,314.7	7.7	120.2	7,062	02/26/21
EVSE 31	Public	Level 2	1	836	11,561.1	11,561.1	4.7	64.7	7,055	06/27/19
EVSE 58	Workplace	Level 2	2	601	11,270.3	5,635.2	5.1	96.4	6,877	10/05/20
EVSE 370	Public	Level 2	5	748	11,091.3	2,218.3	14.5	214.5	6,768	01/04/22
EVSE 613	Workplace	Level 2	3	645	11,004.4	3,668.1	12.4	212.2	6,715	01/03/22
EVSE 397	Public	Level 2	4	642	11,000.3	2,750.1	7.1	121.8	6,712	04/09/21
EVSE 534	Public	Level 2	1	1,219	10,822.4	10,822.4	12.2	108.5	6,604	02/02/21
EVSE 347	Public	Level 2	5	454	10,417.7	2,083.5	4.2	97.5	6,357	12/14/20
EVSE 63	Workplace	Level 2	4	608	10,281.8	2,570.4	4.1	69.3	6,274	02/27/20
EVSE 167	Public	Level 2	1	574	10,075.0	10,075.0	5.2	91.6	6,148	11/20/19
EVSE 289	Public	Level 2	3	516	9,939.2	3,313.1	10.0	191.7	6,065	01/03/22
EVSE 544	MUD	Level 2	2	314	9,853.0	4,926.5	2.7	84.6	6,012	10/08/20
EVSE 262	Public	Level 2	3	1,027	9,529.9	3,176.6	8.9	83.0	5,815	10/19/20
EVSE 515	Public	Level 2	6	900	9,454.4	1,575.7	7.1	74.6	5,769	07/28/20
EVSE 404	Public	Level 2	2	925	9,294.9	4,647.4	13.3	133.3	5,672	08/31/21
EVSE 671	Workplace	Level 2	1	432	9,290.2	9,290.2	5.3	112.9	5,669	06/04/21

Station Identifier	Station Use	Charging Level	Number of Stations (Tracking)	Charging Session Count	Energy Charged (kWh)	kWh per Session	Charging Sessions per Week	kWh per Week	GHG Savings (kg)	First Charge Date
EVSE 486	Public	Level 2	4	460	9,112.0	2,278.0	4.4	87.5	5,560	01/02/21
EVSE 349	Public	Level 2	5	490	9,007.2	1,801.4	5.7	103.9	5,496	05/04/21
EVSE 428	MUD	Level 2	5	723	8,994.9	1,799.0	7.1	87.9	5,489	01/15/21
EVSE 293	Workplace	Level 2	5	885	8,992.7	1,798.5	14.6	148.8	5,487	11/04/21
EVSE 438	MUD	Level 2	1	248	8,964.6	8,964.6	4.9	176.3	5,470	01/05/21
EVSE 425	Public	Level 2	1	540	8,588.6	8,588.6	5.3	84.3	5,241	01/18/21
EVSE 597	Public	Level 2	1	513	8,377.8	8,377.8	7.0	115.0	5,112	08/09/21
EVSE 378	Public	Level 2	3	453	8,302.9	2,767.6	5.2	95.6	5,066	05/03/21
EVSE 541	MUD	Level 2	1	469	8,173.7	8,173.7	7.7	134.0	4,988	10/28/20
EVSE 124	MUD	Level 2	2	433	8,173.0	4,086.5	2.8	53.3	4,987	01/24/20
EVSE 439	Public	Level 2	3	435	8,073.8	2,691.3	6.0	110.6	4,927	08/08/21
EVSE 159	Public	Level 2	2	398	7,990.2	3,995.1	2.8	56.6	4,876	04/18/20
EVSE 443	Public	Level 2	3	414	7,711.2	2,570.4	4.6	85.0	4,705	04/06/21
EVSE 594	Public	Level 2	1	672	7,460.1	7,460.1	9.3	103.2	4,552	08/13/21
EVSE 68	Public	Level 2	2	1,091	7,400.7	3,700.3	9.4	63.5	4,516	10/07/20
EVSE 28	Workplace	Level 2	1	261	7,261.3	7,261.3	3.1	85.1	4,431	10/07/19
EVSE 446	Public	Level 2	3	438	7,175.7	2,391.9	4.9	80.2	4,379	04/15/21
EVSE 104	Public	Level 2	2	555	7,094.3	3,547.2	4.7	60.7	4,329	10/05/20
EVSE 614	Workplace	Level 2	2	426	7,091.4	3,545.7	8.2	136.4	4,327	01/02/22
EVSE 498	Public	Level 2	4	251	6,976.1	1,744.0	10.0	279.0	4,257	07/09/20
EVSE 149	Workplace	Level 2	1	344	6,969.4	6,969.4	3.7	75.3	4,253	03/24/21
EVSE 453	Public	Level 2	3	366	6,875.3	2,291.8	4.1	76.5	4,195	04/12/21
EVSE 315	Public	Level 2	4	428	6,873.1	1,718.3	6.7	107.6	4,194	10/11/21
EVSE 251	Public	Level 2	5	288	6,795.1	1,359.0	10.9	257.1	4,146	06/29/21
EVSE 18	Public	Level 2	2	889	6,761.7	3,380.9	4.9	37.0	4,126	07/02/19
EVSE 418	Public	Level 2	5	497	6,715.2	1,343.0	6.1	82.5	4,098	06/10/21
EVSE 10	Workplace	Level 2	1	374	6,635.8	6,635.8	2.0	35.6	4,049	06/07/19
EVSE 235	Public	Level 2	2	309	6,579.8	3,289.9	2.5	53.7	4,015	08/27/20
EVSE 161	Public	Level 2	2	372	6,456.5	3,228.3	2.3	39.5	3,940	11/13/19
EVSE 312	Public	Level 2	4	388	6,418.8	1,604.7	6.3	104.7	3,917	10/29/21
EVSE 552	Public	Level 2	1	253	6,377.1	6,377.1	3.1	78.6	3,891	06/04/20
EVSE 596	Public	Level 2	1	348	6,272.6	6,272.6	4.8	86.8	3,828	08/13/21
EVSE 249	Public	Level 2	3	377	6,167.2	2,055.7	14.7	241.2	3,763	07/05/21
EVSE 21	Public	Level 2	1	767	6,102.2	6,102.2	4.1	32.4	3,724	05/22/19
EVSE 557	MUD	Level 2	6	207	6,032.1	1,206.4	5.6	161.8	3,681	04/15/22
EVSE 401	Public	Level 2	4	752	5,755.1	1,438.8	8.0	61.0	3,512	03/12/21
EVSE 677	Workplace	Level 2	5	428	5,626.2	1,125.2	10.8	142.2	3,433	03/30/22

Station Identifier	Station Use	Charging Level	Number of Stations (Tracking)	Charging Session Count	Energy Charged (kWh)	kWh per Session	Charging Sessions per Week	kWh per Week	GHG Savings (kg)	First Charge Date
EVSE 170	Workplace	Level 2	2	260	5,606.5	2,803.3	1.7	36.7	3,421	01/27/20
EVSE 166	MUD	Level 2	2	249	5,171.0	2,585.5	1.9	39.2	3,155	06/22/20
EVSE 716	Workplace	Level 2	4	441	5,089.4	1,272.3	24.1	278.3	3,106	08/26/22
EVSE 126	MUD	Level 2	3	147	5,040.2	1,680.1	3.2	110.9	3,075	02/16/21
EVSE 648	Public	Level 2	1	617	5,015.6	5,015.6	10.5	85.6	3,061	11/17/21
EVSE 511	Workplace	Level 2	2	268	4,933.3	2,466.7	2.4	44.5	3,010	11/16/20
EVSE 168	Public	Level 2	2	474	4,891.1	2,445.5	4.6	47.0	2,985	01/03/21
EVSE 42	Workplace	Level 2	1	342	4,851.3	4,851.3	2.9	41.4	2,960	10/03/20
EVSE 259	Public	Level 2	2	379	4,849.8	2,424.9	4.1	53.0	2,959	03/31/21
EVSE 382	Public	Level 2	5	265	4,700.5	940.1	2.6	46.1	2,868	01/18/21
EVSE 292	Public	Level 2	2	398	4,611.8	2,305.9	7.6	88.4	2,814	01/01/22
EVSE 550	MUD	Level 2	1	473	4,520.1	4,520.1	3.2	30.6	2,758	03/03/20
EVSE 634	Public	Level 2	3	232	4,470.1	1,490.0	4.7	91.2	2,728	01/23/22
EVSE 164	Public	Level 2	2	616	4,446.8	2,223.4	5.5	39.6	2,713	11/06/20
EVSE 437	Workplace	Level 2	5	442	4,351.6	870.3	3.9	38.4	2,655	10/29/20
EVSE 664	Workplace	Level 2	2	381	4,275.6	2,137.8	6.4	71.6	2,609	11/09/21
EVSE 455	Public	Level 2	5	195	4,249.2	849.8	1.8	39.1	2,593	12/02/20
EVSE 77	Public	Level 2	1	179	4,205.6	4,205.6	1.5	36.2	2,566	10/10/20
EVSE 255	Public	Level 2	2	186	4,135.6	2,067.8	7.0	156.5	2,524	06/29/21
EVSE 556	MUD	Level 2	6	98	4,012.9	802.6	6.0	246.4	2,449	09/09/22
EVSE 444	Public	Level 2	1	188	3,999.2	3,999.2	2.0	42.9	2,440	03/20/21
EVSE 113	Workplace	Level 2	1	166	3,909.1	1,954.6	1.1	25.0	2,385	01/04/20
EVSE 535	Public	Level 2	1	544	3,870.1	3,870.1	5.2	36.7	2,362	12/23/20
EVSE 317	Workplace	Level 2	1	159	3,833.8	3,833.8	1.9	45.0	2,339	05/14/21
EVSE 49	Public	Level 2	2	527	3,561.8	1,780.9	4.5	30.4	2,173	10/03/20
EVSE 522	Public	Level 2	2	189	3,541.1	1,770.5	4.9	92.1	2,161	04/06/21
EVSE 156	Workplace	Level 2	1	279	3,433.1	3,433.1	1.8	22.0	2,095	01/03/20
EVSE 504	Workplace	Level 2	2	176	3,413.2	1,706.6	1.5	28.9	2,083	09/26/20
EVSE 19	Public	Level 2	1	393	3,405.7	3,405.7	2.1	18.5	2,078	06/20/19
EVSE 427	Workplace	Level 2	5	227	3,384.3	676.9	2.2	32.9	2,065	12/11/20
EVSE 148	Public	Level 2	1	265	3,376.3	3,376.3	1.8	23.1	2,060	03/12/20
EVSE 450	Public	Level 2	2	166	3,289.5	1,644.8	1.7	33.2	2,007	02/07/21
EVSE 40	Workplace	Level 2	2	685	3,245.4	1,622.7	4.4	20.7	1,980	01/02/20
EVSE 24	Workplace	Level 2	1	255	3,227.2	3,227.2	4.2	53.5	1,969	08/31/21
EVSE 5	Public	Level 2	1	311	3,216.1	3,216.1	1.7	18.1	1,962	08/05/19
EVSE 669	Workplace	Level 2	2	676	3,177.6	1,588.8	14.5	68.2	1,939	02/09/22
EVSE 351	Public	Level 2	2	198	3,136.5	3,136.5	8.3	131.5	1,914	07/17/21

Station Identifier	Station Use	Charging Level	Number of Stations (Tracking)	Charging Session Count	Energy Charged (kWh)	kWh per Session	Charging Sessions per Week	kWh per Week	GHG Savings (kg)	First Charge Date
EVSE 566	Public	DCFC	1	207	3,117.2	3,117.2	4.1	62.0	1,902	01/14/22
EVSE 313	Public	Level 2	4	183	3,113.0	778.2	3.0	51.3	1,900	11/02/21
EVSE 32	Public	Level 2	1	234	3,091.7	3,091.7	1.3	17.4	1,887	08/06/19
EVSE 16	Public	Level 2	1	266	3,083.7	3,083.7	1.3	15.4	1,882	03/02/19
EVSE 687	Public	Level 2	1	201	2,966.4	1,483.2	4.1	60.9	1,810	01/25/22
EVSE 510	Public	Level 2	8	146	2,825.3	403.6	3.0	58.5	1,724	01/26/21
EVSE 154	Public	Level 2	2	260	2,803.0	1,401.5	2.3	24.3	1,710	10/16/20
EVSE 479	Public	Level 2	3	341	2,802.8	934.3	3.8	31.3	1,710	04/14/21
EVSE 245	Public	Level 2	5	185	2,660.8	665.2	7.0	100.1	1,624	06/28/21
EVSE 244	Public	Level 2	5	212	2,548.3	509.7	11.6	139.4	1,555	08/25/21
EVSE 9	Public	Level 2	2	223	2,480.0	1,240.0	1.2	13.3	1,513	06/05/19
EVSE 271	Public	Level 2	1	323	2,460.6	2,460.6	2.8	21.1	1,501	10/05/20
EVSE 459	Public	Level 2	1	249	2,381.3	2,381.3	2.7	26.2	1,453	04/05/21
EVSE 62	Public	Level 2	2	278	2,359.3	2,359.3	2.3	19.2	1,440	08/25/20
EVSE 543	MUD	Level 2	1	283	2,283.4	2,283.4	2.4	19.5	1,393	10/04/20
EVSE 369	Workplace	Level 2	10	198	2,146.3	214.6	4.5	48.8	1,310	02/11/21
EVSE 84	Public	Level 2	1	180	2,138.2	2,138.2	1.2	13.8	1,305	01/14/20
EVSE 283	Public	Level 2	2	198	2,137.7	1,068.9	3.9	42.5	1,304	01/14/22
EVSE 14	Public	Level 2	2	299	2,130.0	1,065.0	2.1	15.2	1,300	10/03/19
EVSE 91	Public	Level 2	5	128	2,120.7	424.1	1.1	18.4	1,294	10/18/20
EVSE 136	Public	Level 2	2	87	2,087.5	1,043.8	2.5	60.1	1,274	01/29/20
EVSE 690	MUD	Level 2	14	81	2,054.4	146.7	1.5	38.3	1,254	12/22/21
EVSE 419	Public	Level 2	3	119	2,008.3	669.4	1.1	18.8	1,225	12/15/20
EVSE 430	Public	Level 2	5	184	2,003.6	400.7	2.8	30.0	1,223	09/21/21
EVSE 4	Public	Level 2	1	214	1,965.9	1,965.9	1.2	11.2	1,200	08/25/19
EVSE 452	Public	Level 2	3	230	1,937.4	645.8	2.2	18.4	1,182	12/25/20
EVSE 70	Public	Level 2	1	267	1,896.9	1,896.9	2.3	16.3	1,158	10/06/20
EVSE 152	Public	Level 2	2	165	1,878.8	939.4	1.7	19.3	1,146	02/17/20
EVSE 146	Public	Level 2	1	160	1,847.2	1,847.2	1.2	14.0	1,127	06/24/20
EVSE 27	Public	Level 2	1	229	1,818.7	1,818.7	1.1	8.9	1,110	02/05/19
EVSE 445	Public	Level 2	3	356	1,703.2	567.7	3.9	18.8	1,039	04/07/21
EVSE 350	Public	Level 2	1	165	1,666.1	1,666.1	6.9	69.8	1,017	07/17/21
EVSE 406	MUD	Level 2	2	60	1,651.6	825.8	1.2	33.0	1,008	01/16/22
EVSE 138	Workplace	Level 2	4	112	1,632.3	408.1	0.7	10.2	996	11/07/19
EVSE 516	Public	Level 2	1	95	1,609.4	1,609.4	0.8	14.1	982	10/22/20
EVSE 600	Public	Level 2	2	86	1,557.5	778.8	1.5	26.5	950	11/16/21
EVSE 714	Workplace	Level 2	3	93	1,527.6	509.2	5.1	83.5	932	08/26/22

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EVSE 485	Public	Level 2	4	100	1,494.0	373.5	2.2	32.8	912	02/12/21
EVSE 529	Public	Level 2	5	117	1,480.1	296.0	1.2	15.2	903	02/20/21
EVSE 657	Public	Level 2	5	164	1,421.7	284.3	3.8	32.8	867	03/04/22
EVSE 309	Public	Level 2	1	138	1,368.0	1,368.0	2.7	27.1	835	01/13/22
EVSE 471	Public	DCFC	1	107	1,344.2	1,344.2	3.5	44.4	820	06/03/22
EVSE 508	Public	Level 2	2	121	1,337.4	668.7	1.1	11.6	816	10/19/20
EVSE 41	Workplace	Level 2	2	234	1,294.6	647.3	1.5	8.3	790	01/06/20
EVSE 97	Public	Level 2	2	59	1,289.7	644.9	0.6	14.0	787	08/18/20
EVSE 527	Public	Level 2	2	150	1,239.1	619.6	1.5	12.6	756	02/14/21
EVSE 514	Workplace	Level 2	1	149	1,235.5	1,235.5	1.3	10.6	754	10/05/20
EVSE 380	MUD	Level 2	1	29	1,215.2	1,215.2	2.0	82.6	741	12/16/21
EVSE 352	Workplace	Level 2	2	117	1,066.7	533.3	1.6	14.8	651	08/14/21
EVSE 494	Public	Level 2	3	62	988.6	329.5	0.6	9.2	603	10/09/20
EVSE 69	Public	Level 2	1	133	959.6	959.6	1.1	8.2	586	10/03/20
EVSE 460	Public	Level 2	3	112	948.4	316.1	1.3	11.2	579	05/20/21
EVSE 392	Public	Level 2	1	50	938.9	938.9	1.0	18.2	573	01/05/22
EVSE 324	Public	Level 2	3	177	913.4	304.5	2.1	10.9	557	05/26/21
EVSE 400	MUD	Level 2	1	162	848.9	848.9	3.4	18.0	518	02/03/21
EVSE 554	Workplace	Level 2	4	76	824.4	206.1	1.2	12.8	503	10/06/21
EVSE 560	Public	Level 2	4	64	813.7	203.4	1.3	16.7	497	01/24/22
EVSE 257	Public	Level 2	1	55	808.0	808.0	0.4	5.8	493	05/07/20
EVSE 466	Public	Level 2	2	218	788.7	394.3	2.4	8.8	481	04/13/21
EVSE 25	Workplace	Level 2	1	37	765.8	765.8	0.4	8.1	467	03/09/21
EVSE 210	Public	Level 2	2	73	737.5	368.7	0.6	6.0	450	08/25/20
EVSE 532	Workplace	Level 2	1	73	725.7	725.7	0.8	8.2	443	11/05/20
EVSE 497	Public	Level 2	3	84	716.4	238.8	3.8	32.1	437	07/28/20
EVSE 429	MUD	Level 2	2	31	709.8	709.8	1.1	26.1	433	01/22/21
EVSE 141	Workplace	Level 2	1	43	693.5	693.5	0.4	7.1	423	01/11/20
EVSE 618	MUD	Level 2	2	618	673.4	336.7	12.0	13.1	411	01/06/22
EVSE 638	Public	Level 2	4	95	664.3	166.1	3.2	22.4	405	06/07/22
EVSE 561	Public	Level 2	4	36	663.3	165.8	1.0	18.6	405	04/26/22
EVSE 64	Workplace	Level 2	4	40	637.6	159.4	0.3	4.3	389	03/02/20
EVSE 563	Public	Level 2	1	41	627.2	627.2	0.9	13.2	383	02/02/22
EVSE 562	Public	Level 2	4	115	594.5	148.6	2.8	14.7	363	03/23/22
EVSE 462	Public	Level 2	2	101	592.2	296.1	2.3	13.2	361	02/22/22
EVSE 280	Public	Level 2	2	68	589.8	294.9	0.6	5.3	360	11/18/20
EVSE 381	MUD	Level 2	4	10	578.4	144.6	4.7	269.9	353	12/09/21

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EVSE 526	Public	Level 2	1	70	528.1	528.1	0.6	4.4	322	09/09/20
EVSE 474	Public	Level 2	1	32	522.0	522.0	0.5	8.7	318	10/20/20
EVSE 461	Public	Level 2	2	59	508.9	254.5	3.3	28.7	311	08/30/22
EVSE 367	Public	Level 2	5	50	508.7	101.7	1.0	10.7	310	02/01/22
EVSE 256	Public	Level 2	1	81	507.7	507.7	0.6	3.6	310	04/14/20
EVSE 457	Public	Level 2	1	81	489.1	489.1	0.9	5.1	298	03/06/21
EVSE 465	Public	Level 2	2	70	477.9	239.0	0.7	5.0	292	03/03/21
EVSE 39	Public	Level 2	2	120	456.0	228.0	0.8	2.9	278	01/09/20
EVSE 83	Public	Level 2	6	29	449.9	75.0	0.3	4.4	275	01/03/20
EVSE 229	Public	Level 2	2	54	449.4	224.7	1.8	15.2	274	04/09/21
EVSE 368	Public	Level 2	5	28	439.1	87.8	0.6	8.9	268	01/21/22
EVSE 546	MUD	Level 2	2	35	411.8	205.9	0.6	6.5	251	10/04/20
EVSE 705	Public	Level 2	2	28	394.7	197.4	0.9	13.2	241	06/06/22
EVSE 61	Public	Level 2	2	30	371.1	185.6	0.3	3.5	226	09/17/20
EVSE 234	Public	Level 2	2	66	363.7	181.8	0.7	3.9	222	12/15/20
EVSE 564	Public	DCFC	2	13	357.9	178.9	5.7	156.6	218	12/16/22
EVSE 463	Public	Level 2	4	30	341.4	113.8	0.3	3.9	208	03/30/21
EVSE 499	Public	Level 2	2	101	332.1	166.1	4.1	13.4	203	07/09/20
EVSE 162	Public	Level 2	2	48	322.1	322.1	0.3	2.1	197	01/08/20
EVSE 458	Public	Level 2	2	54	300.8	150.4	0.9	5.1	184	11/12/21
EVSE 502	Public	Level 2	5	43	290.4	58.1	0.3	2.2	177	07/07/20
EVSE 606	MUD	Level 2	1	11	260.0	260.0	1.1	25.6	159	01/17/22
EVSE 500	Public	Level 2	1	22	228.1	228.1	0.2	2.0	139	10/10/20
EVSE 3	Public	Level 2	1	21	218.2	218.2	0.1	1.2	133	08/14/19
EVSE 635	Public	Level 2	1	20	205.7	205.7	0.5	5.3	126	02/28/22
EVSE 520	MUD	Level 2	1	38	190.8	190.8	0.3	1.4	116	06/05/20
EVSE 405	Workplace	Level 2	5	10	186.4	62.1	0.1	2.3	114	03/17/21
EVSE 493	Public	Level 2	2	29	172.6	86.3	0.8	4.8	105	04/23/21
EVSE 258	Public	Level 2	2	48	171.4	85.7	0.5	1.7	105	01/09/21
EVSE 456	Public	Level 2	2	27	143.5	71.7	0.3	1.7	88	05/21/21
EVSE 169	Workplace	Level 2	2	10	123.1	123.1	0.1	0.8	75	01/15/20
EVSE 525	Public	Level 2	1	11	95.1	95.1	0.1	1.2	58	03/08/21
EVSE 71	Workplace	Level 2	1	14	85.9	85.9	0.2	1.2	52	09/05/21
EVSE 189	Public	Level 2	2	37	82.6	41.3	0.8	1.8	50	02/17/22
EVSE 531	Public	Level 2	1	4	64.0	64.0	0.0	0.6	39	08/14/20
EVSE 186	Public	Level 2	2	34	61.8	30.9	0.7	1.2	38	01/19/22
EVSE 413	MUD	Level 2	5	13	60.1	12.0	0.3	1.3	37	12/16/21

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EVSE 305	Public	Level 2	5	6	52.5	10.5	0.2	1.4	32	04/17/22
EVSE 43	Workplace	Level 2	1	3	34.5	34.5	0.1	0.7	21	05/25/21
EVSE 184	Public	Level 2	1	4	33.9	33.9	0.1	1.1	21	04/03/22
EVSE 572	Public	Level 2	2	21	32.9	16.5	3.1	4.8	20	05/11/22
EVSE 379	MUD	Level 2	2	2	30.4	15.2	14.0	212.9	19	03/28/22
EVSE 243	Public	Level 2	2	7	25.3	12.7	1.7	6.1	15	11/19/21
EVSE 182	Public	Level 2	2	5	22.9	11.5	0.1	0.5	14	01/16/22
EVSE 65	MUD	Level 2	1	4	18.1	18.1	28.0	126.5	11	01/15/20
EVSE 188	Public	Level 2	1	2	11.0	11.0	1.2	6.4	7	11/09/22
EVSE 185	Public	Level 2	2	4	10.8	5.4	0.2	0.6	7	06/22/22
EVSE 470	Public	DCFC	2	2	7.4	3.7	0.0	0.0	5	01/11/21
EVSE 420	Workplace	Level 2	1	3	6.9	6.9	0.1	0.1	4	12/15/20
EVSE 403	Workplace	Level 2	2	4	3.6	1.8	0.0	0.0	2	01/04/21
EVSE 109	Public	Level 2	1	1	3.0	3.0	0.0	0.0	2	12/31/20
EVSE 304	Public	Level 2	4	1	2.0	0.5	0.0	0.0	1	01/01/22
EVSE 181	Public	Level 2	2	1	0.9	0.4	0.0	0.0	1	11/21/22

About DNV

DNV is a global quality assurance and risk management company. Driven by our purpose of safeguarding life, property and the environment, we enable our customers to advance the safety and sustainability of their business. We provide classification, technical assurance, software and independent expert advisory services to the maritime, oil & gas, power and renewables industries. We also provide certification, supply chain and data management services to customers across a wide range of industries. Operating in more than 100 countries, our experts are dedicated to helping customers make the world safer, smarter and greener.