EVALUATION OF PORTLAND GENERAL ELECTRIC'S DRIVE CHANGE FUND

2024 ANNUAL REPORT

FEBRUARY 4, 2025

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I.I SUMMARY AND EVALUATION ACTIVITIES

Portland General Electric (PGE) launched the Drive Change Fund (DCF) in 2019. This grant-based program funds nonprofits, public agencies, and for-profit organizations to help underserved communities equitably benefit from new transportation electrification (TE) technologies. The DCF is funded by the Department of Environmental Quality's Oregon Clean Fuels Program, with revenue generated from selling clean fuel credits. The funds support TE programs benefiting residential customers, with a focus on underserved communities. Stakeholder engagement, including engagement with partner organizations, is crucial in determining how the funds are utilized. The DCF offers funding for organizations to acquire electric vehicles (EVs) and EV charging equipment, as well as to conduct marketing, education, and outreach (ME&O) campaigns to educate underserved communities about the benefits of EVs.

This evaluation focuses on the 2022 program year, during which the fund provided $2.27 million to 15 grantees in the PGE service area. In 2023, Opinion Dynamics evaluated the 2021 program year to assess the effectiveness of the program and identify areas of improvement. In 2024, our second year of evaluation, our activities included interviews with DCF program staff to gain a better understanding of program success and challenges. We also conducted interviews with 2022 grantees. The objectives of the interviews were to assess the effectiveness of outreach and the assistance provided to grantees during the application and procurement processes. We also sought to learn about grantees' successes and challenges while participating in the DCF program and implementing their projects.

In addition to interviews with program staff and 2022 grantees, we conducted a charging pattern analysis of charging equipment installed by 2019–2022 grantees. The results of this analysis will help PGE plan for system impacts from EV load growth and develop appropriate load management strategies. Specifically, our analysis provides information about:

- Average hourly electricity consumption;
- Total electricity consumption during the study period;
- Aggregated on-peak and non-coincident peak consumption;
- Variation in energy consumption by customer segment and cohort; and
- Charging port utilization rates.

I.2 KEY FINDINGS AND RECOMMENDATIONS

Continued Community Impact: The DCF has continued to successfully achieve its goal of assisting nonprofit organizations and public entities in expanding their operations and services to the diverse communities they serve by providing funds for TE. All 2022 grantees reported that they were able to better serve their communities because of the grants they have received through the DCF. Communities impacted by 2022 grantees included low-income populations, communities of color, seniors and people with disabilities, immigrants and refugees, the unhoused, veterans, and farm workers. Additionally, 2022 grantees reported that their use of EVs procured through the DCF has increased interest and awareness of EVs in the communities they serve.

Application Process: Most 2022 grantees found the application process straightforward and did not encounter any major challenges. Those grantees who did experience challenges with the application noted needing more clarity around the coverage of project administration costs and having difficulty filling out technical information related to the chargers that would be included in their projects. Additionally, while most grantees who worked with electrical

contractors had positive experiences, grantees without internal electrical staff and those who were unfamiliar with the technical aspects of TE projects needed help finding and selecting contractors.

- **Recommendation 1:** Consider providing more clarity about what can be covered by grant funding in the application materials to prevent confusion and help grantees accurately budget for their projects.

- **Recommendation 2:** Consider providing a list of vetted electrical contractors or guidelines for screening potential contractors. This will simplify the process of identifying contractors to assist grantees in filling out required application information and installing chargers, particularly for organizations new to TE.

Quarterly Reporting: While 2022 grantees generally found the online quarterly reporting portal easy to use, some raised concerns about its efficiency. Specifically, grantees reported that the reporting portal did not save information from previous submissions, requiring them to repeatedly re-enter the same static information each quarter. This repetition was perceived as inefficient and time-consuming, increasing the administrative burden for some grantees.

- **Recommendation:** Consider updating the online reporting portal to enable users to save information from previous submissions, especially for details that are unlikely to change from one quarter to the next. Additionally, the portal could provide grantees with easy access to previously submitted information, allowing them to update any details that may change over time.

Charger Energy Consumption and Utilization: The aggregated monthly energy consumption of chargers installed by 2019–2022 grantees showed a consistent upward trend from March 2021 to August 2024, peaking at 11 MWh in June 2024. The average daily consumption varied significantly depending on how the chargers were used. Since many ports are mixed-use, use-specific analysis is limited. We did observe, however, that public charging ports exhibited the highest overall consumption and were utilized more evenly throughout the day. In contrast, fleet and workplace charging ports typically peak during working hours. Both utilization and the load factor of charging across all grantees remained relatively low and stable over the study period. This indicates periods of high usage but an overall low utilization rate, implying that the charging infrastructure is often underutilized.

- **Recommendation 1:** PGE should continue to monitor charger energy consumption and utilization as grantees ramp up charger usage to better establish baseline charging metrics. Monitoring charging is especially important for end uses that demonstrate higher utilization. Given the differences in charging patterns by end use, PGE may benefit from conducting a combined analysis of the DCF and its Business Charging Rebates and Fleet Partner pilots. This analysis would focus on examining charging trends by end use rather than by individual pilot.

- **Recommendation 2:** Charger use (i.e., public, workplace, fleet, etc.) is based on the grantee's self-reported classification. Many grantees classify their chargers as having multiple uses, which makes use-specific analysis more challenging. Some chargers may be mixed-use, but others may have a primary use that accounts for most of the charging. PGE should request that future grantees indicate a primary charger use in addition to all uses.

2. INTRODUCTION

2.1 BACKGROUND

Portland General Electric (PGE) launched the Drive Change Fund (DCF) in 2019. This grant-based program funds nonprofits, public agencies, and for-profit organizations to help underserved communities equitably benefit from new transportation electrification (TE) technologies. The DCF is funded by the Department of Environmental Quality's Oregon Clean Fuels Program, with revenue generated from selling clean fuel credits. The funds support TE programs benefiting residential customers, with a focus on underserved communities. Stakeholder engagement, including engagement with partner organizations, is crucial in determining how the funds are utilized. The DCF offers funding for organizations to acquire electric vehicles (EVs) and EV charging equipment, as well as to conduct marketing, education, and outreach (ME&O) campaigns to educate underserved communities about the benefits of EVs.

The DCF continuously revises the application evaluation criteria to ensure projects are high-quality and equitably deployed in terms of technologies or types of projects funded, communities or customers served, and geographic locations (i.e., projects inside and outside the Portland metropolitan area). The DCF seeks to support not only EVs but also alternative forms of transportation, including e-bikes and other micromobility solutions; additionally, equitable deployment of electric transportation projects in underserved communities was a key consideration when developing applicant evaluation criteria.

In 2022, the DCF introduced some changes to improve the program and streamline program processes. These changes include the following:

- The addition of staff whose role is focused on communicating with grantees and providing guidance and support through the application and participation process, as well as managing relationships with grantees;

- Updated program materials such as the PDF application, DCF Frequently Asked Questions (FAQs) PDF, and webinar presentation to mention the $2,000 application assistance available to grantees with operation budgets less than $2 million;

- A requirement for program staff to have one-on-one meetings with grantees - with an option to meet in person - as part of relationship management;

- A shortening of the grant cycle evaluation period, resulting in grantee funding awards faster than prior years;

- Adding a contingency process that allows grantees to request additional funding if project costs escalate due to supply chain or other cost increases;

- Migrating quarterly and final reporting to the grants management platform Cyber Grants, which sends reminders to grantees when it is time to submit reports;

- Tracking of chargers and ports more closely by program staff; and

- Adding social media and communication tool kits for grantees to help create greater awareness of their projects and TE.

2.2 EVALUATION OBJECTIVES AND ACTIVITIES

This evaluation covers program year 2022 and is the second evaluation of the DCF, with the first occurring in 2023 for the 2021 program year. For the first evaluation, the team interviewed program staff, partner organizations, third-party

grant reviewers, and grantees from the 2021 award year. For this evaluation, we interviewed program staff and grantees from the 2022 award year. In addition to process research conducted with 2022 grantees, we also conducted an impact analysis that included a charging pattern analysis for 2019, 2020, 2021, and 2022 grantees who installed chargers through the DCF (Table 1).

Table 1. Summary of Evaluation Activities and Reporting

Evaluation Activities	2023 Annual Report	2024 Annual Report
PGE Staff Interviews and Program Enrollment Data Review	✓	✓
Partner Organization Interviews	✓	
2021 Grantee Interviews	✓	
2022 Grantee Interviews		✓
2019–2022 Grantee Charging Pattern Analysis		✓

2.2.1   PROCESS ANALYSIS

DCF STAFF INTERVIEWS

The team interviewed four DCF staff members involved with implementing grantee awards and managing the grantee experience. These interviews aimed to gather information on the promotion of the DCF and help us better understand the DCF application process, the technical and funding assistance offered to grantees, the types of projects selected in 2022, as well as the successes, challenges, and lessons learned. The key objectives of the program staff interviews were to understand the following:

- Activities conducted to promote the DCF;

- The application review and selection process;

- The types of technical support provided to applicants and grantees;

- The typical number of applicants and quality of the applications, the types of applicants and projects funded, lessons learned, and changes made to the process; and

- The successes and challenges with 2022 grantees and any changes made to the program due to lessons learned.

GRANTEE INTERVIEWS

The team interviewed 13 of the 15 program year 2022 grantees in July 2024 to understand their experiences with the application and participation processes and the impact of the DCF on the communities where they provide services. The key objectives of the grantee interviews were to understand the following:

- Grantee satisfaction with the support that applicants received to complete the DCF application;

- Any challenges applicants faced in filling out the application;

- The effectiveness of the assistance provided by the DCF, electric vehicle supply equipment vendors, and other involved contractor parties;

- Challenges grantees have faced procuring, installing, and maintaining their chargers or EVs; and

- The impact of organizations funded by the DCF on underserved communities.

2.2.2   IMPACT ANALYSIS

The overarching objective of the impact analysis of the DCF was to provide PGE with information about EV charging patterns so it can plan for system impacts from EV load growth and develop appropriate load management strategies. Specifically, our analysis provides information about the following:

- Average hourly electricity consumption;

- Total electricity consumption during the study period;

- Aggregated on-peak and non-coincident peak consumption;

- Variation in energy consumption by customer segment and cohort; and

- Charging port utilization rates.

The DCF impact analysis leveraged charging data from commercial customers and charging vendors compiled in PGE's non-residential charger database to develop key charging metrics and average aggregate load curves of participants.[1] The analyses required session and interval data, but only session data were available. Therefore, PGE created interval data from the session data, which the evaluation team verified. The DCF impact analysis includes 2019–2022 grantees and covers the period from the first recorded charger session in March 2021 through the end of the reporting period, August 31, 2024.

The available data had some limitations. PGE staff shared that one vendor could not provide charging start and end times for charging sessions but could provide plug start and end times, and charging duration. PGE staff reconciled this limitation by determining that missing charging start times should be filled in using plug start time. Further, the charging end time should be calculated by adding the charge duration to the new charge start time. This approach assumes that charging begins as soon as a vehicle is plugged in, which may not always be the case due to driver preferences programmed into the vehicle or charging issues. Given that it is non-residential charging, PGE staff felt comfortable assuming charging would begin as soon as the vehicle is plugged in. The charging start and end times were used by PGE staff to generate the time series data used in analyses.

Appendix B provides additional details about the data cleaning and preparation process, as well as detailed load impact and charging pattern analysis methodology.

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[1] PGE's charger database and online charger registration form were developed in early 2023. For chargers installed prior to 2023, the customer either registered the chargers in 2023 and listed an earlier installation date or charger information was collected using program information (i.e., Business Charging Rebate applications). Once chargers were added to the database, PGE worked with those charging vendors to collect charging session data. For some vendors, it took several months until they were able to start consistently sending session data, and any data prior to that point were not available. Other vendors were able to provide session data back to when the charger was first installed.

3.   DRIVE CHANGE FUND FINDINGS

3.1   PROCESS RESEARCH FINDINGS

This section presents detailed findings from our data tracking review and interviews with DCF staff and 2022 grantees.

3.1.1   GRANTEE CHARACTERISTICS

Grantees could receive funding for four types of projects:

- EV acquisition to support their operations;

- Installing charging infrastructure;

- Education and awareness campaigns to educate underserved communities about the benefits of TE technology; and/or

- Other innovative projects.

The DCF received 35 applications and funded 15 grantees in 2022 (Table 2). Most 2022 grantees received funding for EV procurement, followed by charging infrastructure projects and ME&O campaigns. The DCF funded the procurement of 23 EVs (including e-bikes, e-tractors, and ADA-accessible vehicles) and 36 Level 2 chargers consisting of 43 charging ports. Of the 13 interviewed grantees, one completed a project involving all three components (EV procurement, ME&O, and charging), five implemented a charging and EV procurement project, three implemented an EV procurement project, three implemented charger projects, and one procured an EV and conducted a TE educational campaign.

Table 2. Types of Projects Proposed and Awarded to 2022 Grantees

Type of Project	2022 Applicants (Proposed Projects)	2022 Grantees (Awarded Projects)	Interviewed 2022 Grantees (Awarded Projects)
EV Procurement	27	12	10
ME&O Campaigns	10	2	2
Charging Infrastructure	25	9	9
Total Projects	35[a]	15[a]	13[a]

[a] Applications and projects may include multiple elements/components (i.e., EV procurement, ME&O, charging infrastructure)

All 2022 grantees are nonprofit organizations or public entities serving one or more underserved communities, primarily in the urban Portland Metropolitan Area. The grantee organizations funded in 2022 had various missions that support low-income populations, economic empowerment of priority communities, seniors and people with disabilities, community-based organizing, tribal communities, unhoused and veteran populations, and farm workers, as shown in Table 3. The DCF offers financial assistance of up to $2,000 to grantees with operating budgets under $2 million to help with grant application costs. However, most (11 of 13) interviewees reported having an operating budget of more than $2 million. Two grantees reported having an operating budget of less than $2 million. Of the two, one grantee was aware of the DCF's financial assistance offering of up to $2,000, while one was unaware despite the mention of the $2,000 application assistance fund in program materials.

Table 3. 2022 DCF Grantee Organization Characteristics

Project Name	Grant Amount	Project Type	Populations Served	Project Status[a]
APANO Communities United Fund	$168,376.00	Chargers	Communities of color/multiracial communities, low-income populations	Complete
Central City Concern	$84,478.00	Chargers	Low-income, hard-to-reach populations	Complete
Chemeketa Community College	$183,458.00	Chargers, EV, ME&O	Community members in general, farmers, community youth	Complete
City of Tigard	$105,800.00	EV, ME&O	Affordable housing residents	Complete
Community Cycling Center	$65,000.00	EV	Community members, low-income/ underserved populations	Complete
Ecumenical Ministries of Oregon	$431,425.00	Chargers, EV	Immigrants and refugees, survivors of domestic violence/abuse, homeless youth, and low-income populations with HIV	Complete
Hacienda CDC	$66,000.00	EV	Low-income community members, the Latine community, youth, and families	Complete
Immigrant and Refugee Community Organization	$482,770.00	Chargers, EV	Immigrants and refugees, seniors	Complete
Linfield University	$57,845.56	Chargers	Students, low- to moderate-income community members	Ongoing
Northwest Pilot Project	$76,957.00	EV	Seniors and people with disabilities, low-income populations	Complete
Outgrowing Hunger	$60,377.00	EV	Immigrants and refugees	Complete
Raphael House	$88,910.00	Chargers, EV	Underserved/low-income populations, marginalized communities (e.g., LGBTQIA, BIPOC, etc.), survivors of addiction	Complete
Tualatin Hills Parks & Recreation	$126,378.00	Chargers, EV	Community members	Complete
Volunteers of America Oregon	$251,384.00	Chargers, EV	Persons with prior justice system involvement or persons who were previously incarcerated	Complete
Working Theory Farm	$40,125.00	EV	Community youth, youth with prior justice system involvement, or youth who were previously incarcerated	Complete

[a] Project status indicates the status of the grantees' projects in November 2024, when the interviews were conducted.

3.1.2   MARKETING AND AWARENESS

The DCF aims to reach a diverse range of applicants, including smaller organizations and culturally specific entities. To accomplish this, program staff proactively market the DCF to potential applicants through social media channels, email outreach, word-of-mouth, and storytelling through news articles and press releases. Program staff also actively engage with organizations throughout the year and make themselves available for one-on-one conversations with potential applicants to encourage qualified candidates to apply. Technical assistance from PGE engineers is also available to educate potential applicants about the DCF's specific TE requirements. Finally, DCF staff host applicant webinars. These webinars are open to all potential applicant organizations and cover application requirements, the application process, and awardee experience.

PGE outreach through in-person events, email through listservs, and promotions through other PGE programs remained the primary ways grantees learned about the DCF. Similar to the 2021 grantees interviewed for the previous evaluation, all interviewees reported learning about the DCF directly from PGE. All grantees reported learning about DCF through in-person events such as conferences, networking events, or other in-person outreach. Some grantees mentioned that they also learned about DCF through listservs (7 of 13), word-of-mouth (3 of 13), phone (2 of 13), and the application packet for the DCF itself, which contains details regarding the program as well as application information (2 of 13).

The need for new or additional fleet vehicles, climate resiliency, sustainability goals, and the desire to learn about TE primarily motivated grantees to apply for the DCF. More than half of grantees (7 of 13) indicated that their organization's main reason for applying for the DCF was their need for additional or new vehicles to administer their programs and perform their community work. Five of thirteen grantees also mentioned having long-term climate action plans that aim for sustainability, climate resiliency, and reducing greenhouse gas emissions. Their climate action plans include fleet electrification to achieve their goals. Some (5 of 13) grantees cited a lack of TE knowledge as motivating their organization to learn about and promote TE adoption within their communities. One grantee noted:

"I wanted to get some lessons learned on our belt. So, this was a way for us to start small, dip our toe in the water, and get a feel for the technologies that are available out there. So, that was the reason we decided, "let's at least get some infrastructure in and then we'll figure out the vehicle piece of it afterwards."

3.1.3   APPLICATION PROCESS

Similar to 2021, in 2022, the DCF grant application process involved applicants accessing and downloading a PDF form from the website, filling it out, and submitting it with necessary attachments to PGE via email.[2] The PGE DCF grants manager reviewed applications for eligibility, completeness, and program fit. Subsequently, they were forwarded to the third-party application reviewer for evaluation based on a rubric covering project design and benefits, feasibility of timeline, and costs and financing. Interviews were then conducted by the third-party reviewer with organizations that met the initial qualifications of the DCF. The third-party reviewer synthesized these data into one-page summaries for each applicant, which were sent to PGE for review by a selection committee comprising various PGE team representatives and stakeholders. The third-party reviewer then presented the project summaries to the committee, and projects were voted on for funding based on scores and qualitative considerations. Funding decisions were then executed through award agreements, including budget adjustments for project(s) eligibility or feasibility. Geographic diversity and broader benefits were also considered during the selection process.

The DCF allows organizations to reapply after receiving an initial award or a declined application. Past grantees do not have an inherent advantage or disadvantage in scoring. Past grantees are considered based on their potential to contribute added value or innovative aspects beyond their initial award. Some applicants may initially seek modest funding and subsequently apply for increased support as their projects mature, provided the first project is completed before reapplying. The attainment of milestones and the submission of final reports are required before past grantees can be considered for repeat funding. Declined applicants receive a feedback letter that includes specific strengths and opportunities to improve their project, serving as a valuable resource for future applications.

The majority of interviewed grantees found the application process straightforward, while some needed assistance with certain application components, such as filling out budget or technical information. Eleven of thirteen grantees could

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[2] While the application process in 2022 was the same as 2021, beginning in 2023, the DCF has transitioned its application to an online portal.

not recall experiencing challenges with the application process. They noted that the process was straightforward and that the information and details on application requirements in the application packet, and guidance during the application process from DCF staff, was helpful. A couple of other grantees reported experiencing confusion while filling out the application. One grantee was confused about the 10% coverage of administrative costs, as it was unclear to them whether the administrative costs should be based on the total cost of the project or the portion of the project that was eligible for DCF funding. Another grantee had some difficulty filling out technical information related to the installation of chargers due to their organization's limited knowledge of TE. Six of nine grantees who installed charging infrastructure with an electrical contractor noted that the contractor they worked with was knowledgeable and helped them with the application and permitting in addition to installing charging equipment.

3.1.4   PARTICIPATION PROCESS

Grantees did not report any difficulties filling out the quarterly reports required by the DCF but noted some inefficiencies in the process. After receipt of funding, the DCF team requires grantees to submit quarterly progress reports throughout their project's lifecycle to ensure the DCF-funded projects adhere to the anticipated timeline. Grantees reported that the reporting portal was straightforward and easy to use and helped them keep track of their projects. However, nine of thirteen grantees reported that the reporting portal does not save any information from prior submissions, and they had to re-enter information that had already been reported, such as completed milestones and associated details, each time they had to fill out the report, making it inefficient and time-consuming to use.

> *"…things don't carry over from one quarter to the other… it was like a blank report every time, which was a little bit frustrating because we've already filled this out, and it would've been awesome if it had just carried over. Outside of that piece though, the quarterly reports are so straightforward, and they were really easy to fill out. I always just opened them up, and I was like, "Yes, I can answer all these questions and do all these things." So, I actually really appreciated the quarterly reports other than that piece…"*

Most grantees who purchased EVs did not experience procurement issues, but some grantees experienced supply chain or other issues. Grantees who purchased EVs did not experience any major issues with procuring EVs. However, three grantees did note that the vehicles they planned to purchase were unavailable, and they either had to wait for their more specialized vehicles (2 of 10), or they had to purchase another type of vehicle, which ended up being more expensive than the vehicle they initially planned on purchasing. PGE provided additional funding to the grantee for the qualified expenses due to vehicle availability, which helped cover the additional vehicle cost. A couple of grantees also mentioned that coming out of the COVID-19 pandemic, 2022 was a seller's market, and that some dealers may have capitalized on supply shortages and high demand for EVs at the time.

> *"I think the challenges with securing the vehicles is all related to just the general climate, the automotive industry at the time, and how volatile it was. It was definitely a seller's market in that regard. So, I think a lot of the dealerships were taking advantage of consumers. That's just what the situation was. So, even as a nonprofit, who's basically saying, "Hey, this is for a good cause. We're going to be paying cash for these vehicles", a lot of them just didn't really care because they could essentially demand extra cash on top of the MSRP. We were playing hardball, and it was frustrating. So, I was able to navigate that."*

All interviewed grantees with a charging project component had positive experiences with procurement and installation due to the assistance and support of their electrical contractors or staff. Grantees who procured charging equipment through the DCF reported that the procurement and installation processes were smooth and that their electrical contractors managed and resolved any issues. Program staff noted that electrical contractors had become confident and more comfortable over time and were able to provide the technical support that grantees needed, which lessened the need for PGE staff to provide technical support. Grantees without their own internal electrical staff, however, needed support finding and selecting contractors. Two grantees mentioned challenges in finding electrical contractors and suggested that PGE provide guidance on selecting electrical contractors specializing in TE. In addition, one grantee mentioned that similar to EV procurement, there were delays in the delivery of the charging equipment they purchased due to supply chain issues, but all grantees reported having had positive experiences. Grantees also noted that the installation of charging infrastructure was fast.

3.1.5   COMMUNITY IMPACT

All grantees have equity-focused operations that directly support their target priority communities, and all reported that DCF funding has helped them expand these operations. Grantees who procured EVs through the DCF use the EVs to transport community members they serve, such as seniors, youth in low-income or multiracial communities, immigrants and refugees, people with disabilities, survivors of domestic violence, students, and community members in general. Some grantees also allow community members to test the EVs they procured to increase awareness and understanding of EVs and allow their community members to experience driving or riding in EVs. Those who procured chargers use them to charge their organizations' vehicles and allow community members, tenants, or the general public to use them. Although grantees did not have specific metrics that they tracked to measure the impact of their projects on priority communities, grantees were able to better and more reliably serve their communities through the EVs and/or charging equipment they procured through the DCF.

- One grantee who runs a car share program for seniors in their community noted that the EV they procured through the DCF allowed them to increase their ability to provide transportation to community members who depend on them for transportation to and from doctor's appointments or exercise programs and to run regular errands such as going to the grocery store.

- Another grantee reported that the EVs they procured through the DCF have enabled them to enhance the services they provide to the children in their community. Advocates they work with have been using the EVs to drive children to school on behalf of their parents. The grantee noted that they had not done this before procuring the EVs. Community advocates they work with have found that compared to gas-fueled shuttle buses, EVs are more convenient and easier to use.

- Another grantee mentioned that by educating their low-income community members on the potential of EVs to reduce their fuel and maintenance costs, the DCF helped eliminate misconceptions that only wealthy community members can afford EVs.

- One grantee that provides mobile recreation programs to community members who cannot participate in community-sponsored recreational activities due to lack of mobility or transportation noted that the DCF compliments the work that their organization does within their community.

"Our goal for our neighborhood is to create the most transit-rich, stable, and affordable community. And this project directly ties into that, transit-friendly and affordable."

The DCF enabled grantees to create awareness of EVs within their communities. Most grantees (7 of 13) reported that the DCF has helped them create awareness of TE within their communities by simply using the EVs as part of their community work. One grantee also rents out their EVs to farmers within their community, which has created an interest and increased understanding of EVs among those who have tried them. The grantee noted that one of the farmers they work with expressed interest in using the tractors to see if they could replace their diesel tractor due to environmental concerns. The grantee mentioned that the DCF enables grantees to dispel misconceptions about EVs, particularly for agricultural use, as farmers tend to think EV tractors are not as good as fossil fuel-powered tractors.

> *"At one of the events that we did, one of our county commissioners… was like, 'That's not a tractor!' and at the end of the event, I got him to get on it, and I gave him the quick rundown, and within about three minutes he's driving the thing around the parking lot. And, he's just got this big old grin on his face, and he's like, 'You know, it's actually kind of cool.' So, it allowed us to break down some barriers and get rid of some misconceptions around electrifying the farm."*

A majority of grantees indicated they would not have pursued their respective projects without DCF grants. Eleven of thirteen interviewed grantees noted that they would not have pushed through with their TE projects without the DCF due to their organizations' lack of funding for TE investments. Two grantees, however, noted that they still would have pursued TE, but it would have taken them longer to do so.

> *"I think it would've been further delayed, and I think getting it done at that point in time where it was an opportunity for us to dip our toe in the water and get a feel, and it was a ripple effect of a drop in the water. It's been monumental in terms of the impact and opportunities that it's opened for us, including being able to start the EV car share program and education opportunities around electrification for folks and just knowledge-base that has allowed us to pursue bigger funding opportunities."*

Some interviewed grantees expressed a willingness to participate in a knowledge-sharing network after participating in the DCF. Five of the thirteen grantees indicated being willing to network with other grantees. Grantees who were unwilling to do so generally lacked interest in networking or had other priorities.

3.2 DCF CHARGING PATTERN ANALYSIS

The charging pattern analysis for DCF is limited to chargers installed by 2019–2022 grantees with available charging data. We were provided data for 16 out of 19 grantees, and out of the 71 charging ports in the analysis, 54 had sufficient interval data (76%), and 57 had session data (80%).[3] Table 4 summarizes available session data for the grantees. More information on the available data is included in Appendix B. It should be noted that there were only Level 2 chargers across all grantees.

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[3] Charging ports with no session data are excluded from the analysis. Days missing 24 hours of interval data were removed from the analysis. This led to the removal of a few ports that had a small number of sessions recorded and therefore no days with 24 hours of interval data. These ports were determined to have insufficient interval data and were excluded.

<p style="text-align:center">Table 4. DCF Charging Data Overview</p>

Grantee Cohort	Customer ID	Charger Use	Customer Type	Number of Sites	Number of Charging Ports	Number of Charging Ports with Session Data
2019	200004	Fleet; Workplace; Public	Non-Profit Organization	3	4	4
	200010	Multifamily; Workplace	Non-Profit Organization	3	5	2
	200042	Fleet; Public	Non-Profit Organization	2	4	2
	200043	Workplace; Public	Non-Profit Organization	1	2	2
	200044	Fleet; Public	Non-Profit Organization	1	4	0
	200045	Public	Non-Profit Organization	1	4	4
2020	200003	Fleet; Multifamily; Workplace; Public	Non-Profit Organization	2	4	4
	200041	Fleet; Public	Public/Government Entity	1	4	4
	200069	Fleet	Non-Profit Organization	2	4	4
2021	201644	Workplace; Public	Non-Profit Organization	1	2	2
	202931	Fleet; Multifamily; Workplace; Public	Non-Profit Organization	1	3	3
	203245	Fleet; Workplace	Non-Profit Organization	3	3	3
	203246	Fleet; Public	Non-Profit Organization	1	3	3
	203585	Fleet; Workplace; Public	Public/Government Entity	1	8	8
	206136	Fleet; Workplace; Public	Non-Profit Organization	1	2	0
2022	202407	Public	Non-Profit Organization	1	4	4
	203844	Fleet; Workplace	Non-Profit Organization	2	5	5
	204483	Fleet	Non-Profit Organization	1	3	3
	205957	Fleet	Non-Profit Organization	1	3	0

Note: Grantees self-report charger use, which was not verified by PGE or through this evaluation. Some customers have multiple chargers with different uses, which are combined at the customer level.

Across the 57 charging ports at the 24 sites with available data, 9,887 charging sessions were completed from March 2021 through the end of August 2024. Across all charging ports and charger uses, the average charging duration was four and a half hours, and the average plug duration per session was eight hours (Table 5). The average electricity dispensed per session was 14.04 kWh. The ten ports used for fleet charging had the highest average charge duration (12 hours) and the second highest electricity dispensed per charge (26.75 kWh). We also looked at how session duration and electricity dispensed varied by charger use, which is based on self-reported information from grantees. Only the charging port used for fleet, workplace, and public charging had a higher average electricity dispensed per session (26.95 kWh). The only charging port used for multifamily and workplace charging had the highest average plug duration (over 200 hours) despite a relatively low average charge duration (2.27 hrs.). This port was associated with an affordable housing site with electric car sharing, which likely has EVs using the port that are not driven frequently but are plugged in most of the time. Variation in sessions across sites was observed (shown in Appendix B). Given the limitations in the number of charging ports and sessions recorded, individual sessions may be driving these results, and additional data are needed to establish more conclusive trends.

Table 5. DCF Session Summaries by Charger Use

Charger Use	Number of Sites	Number of Ports	Number of Sessions	First Charge	Last Charge	Average Charge Duration (hrs.)	Average Plug Duration (hrs.)	Average Electricity Dispensed (kWh)
Fleet	5	10	528	4/2/2023	8/30/2024	12.00	22.48	26.75
Fleet; Multifamily; Workplace; Public	3	7	747	11/29/2021	8/31/2024	3.80	10.58	21.39
Fleet; Public	3	9	2,736	4/1/2023	9/1/2024	2.83	4.59	13.62
Fleet; Workplace	6	10	402	3/29/2021	8/30/2024	2.31	23.06	10.36
Fleet; Workplace; Public	1	1	146	4/3/2023	8/31/2024	4.64	5.90	26.95
Multifamily; Workplace	1	1	27	10/18/2022	11/28/2023	2.27	224.24	5.47
Public	2	8	4,939	4/1/2023	9/1/2024	5.08	5.62	11.91
Workplace	1	1	25	7/6/2023	2/27/2024	2.46	67.03	10.47
Workplace; Public	3	10	337	4/3/2023	8/29/2024	2.11	3.42	12.07
All	**24**	**57**	**9,887**	**3/29/2021**	**9/1/2024**	**4.50**	**8.00**	**14.04**

Note: Sites can have chargers with different uses. The table only shows ports that had session data.

3.2.1   CONSUMPTION AND CHARGING PATTERNS

Aggregated monthly energy consumption among grantees increased from March 2021 to August 2024, peaking at 11 MWh in June 2024, as the number of charging ports increased. Figure 1 shows the total consumption per month across all sites and cohorts with sufficient interval data, as well as the number of active charging ports with sufficient interval data. As anticipated, the general trend shows monthly energy consumption increased as ports were added. From March 2022 to March 2023, the number of active ports and consumption stayed relatively constant, but both experienced a large increase in April 2023 that generally continued through June 2024. Due to missing data, there is a slight dip in the number of active ports and total consumption in July and August 2024. Note that PGE did not start fully collecting charging data until April 2023, resulting in low energy consumption prior to this date. To see monthly energy consumption by cohort, please see Appendix B.

Figure 1. DCF Monthly Energy Consumption

Note: A port is considered active between its first and last recorded charging session.

The average charging load for all the DCF sites combined is plotted in Figure 2. The average load profile is relatively stable during the day, with a slight ramp-up around 7:00 a.m. We grouped and analyzed DCF grantees by charger use and investigated the usage pattern differences between these groups.
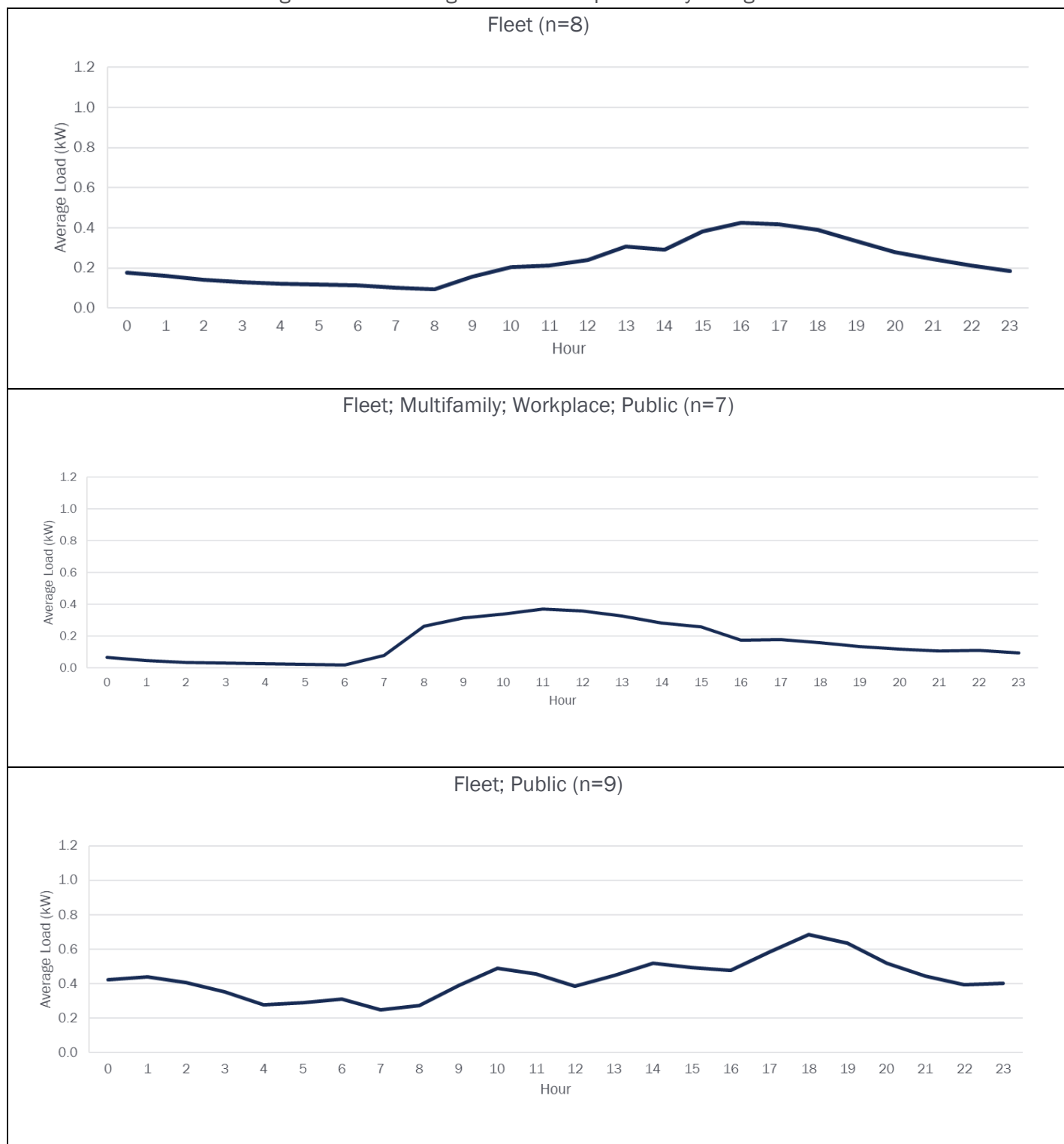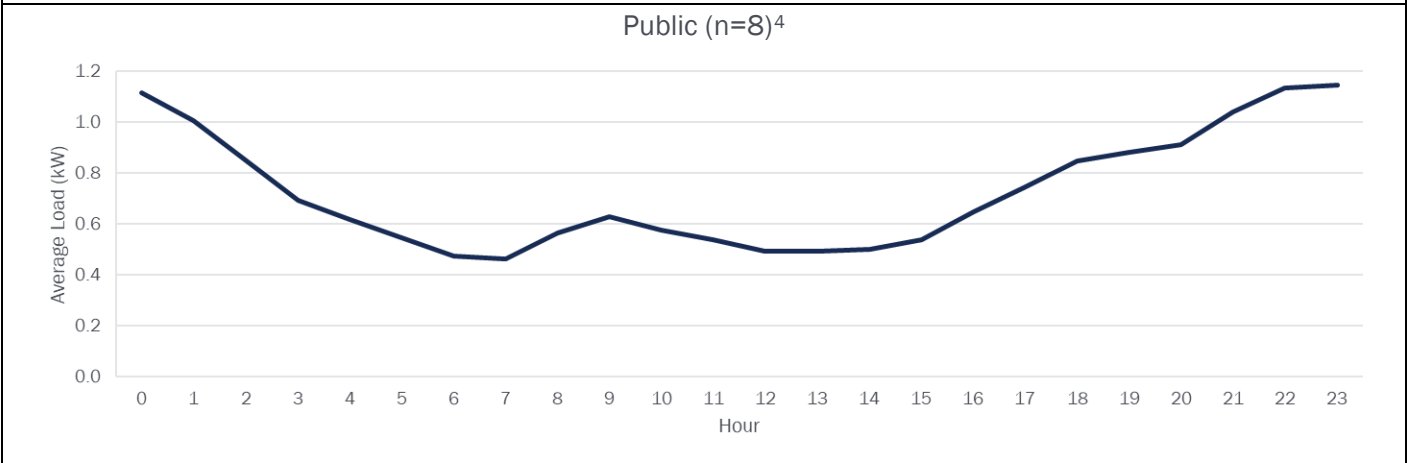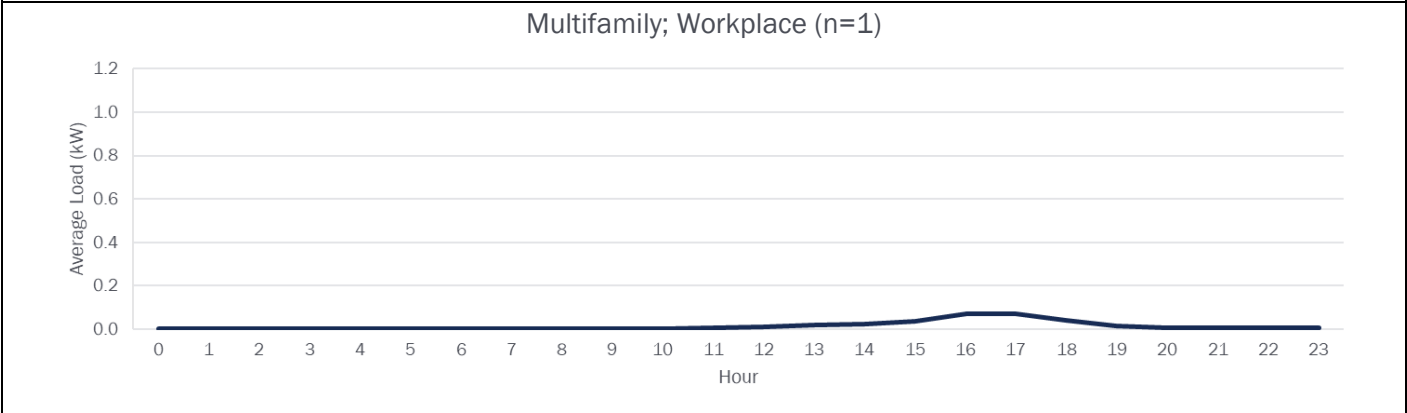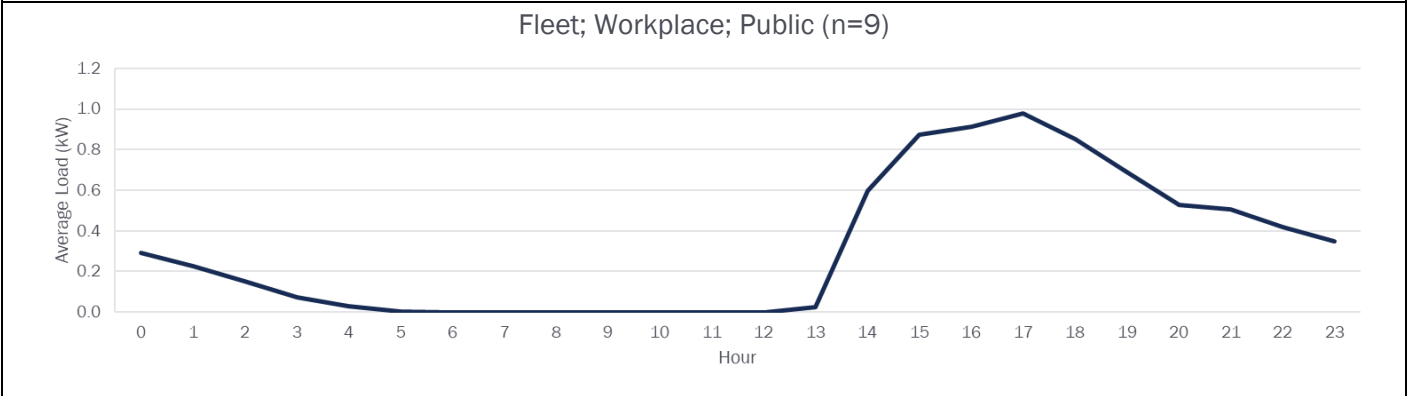
Figure 2. DCF Average Load Curve (n=54)
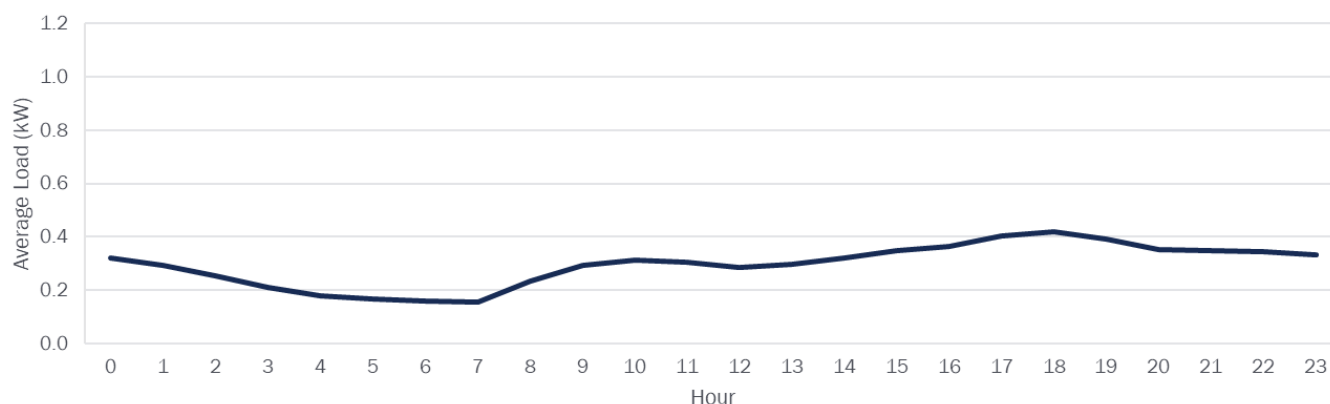
Note: The number of ports is represented by n in the above figure. The figure only shows ports that had sufficient interval data.

The average daily consumption varies considerably by charger use; however, due to the relatively small number of chargers, this may be due to the charging of specific grantees rather than charger use (Figure 3). Ports used for public charging had the highest overall consumption. Ports used for fleet or workplace charging generally peak during working hours, while public charging ports appear to be more evenly distributed throughout the day with more overnight charging. Many ports are mixed-use, so use-specific analysis is limited. Additional breakdowns are included in Appendix B.

Figure 3. DCF Average Load Curves per Port by Charger Use

Fleet (n=8)

Fleet; Multifamily; Workplace; Public (n=7)

Fleet; Public (n=9)

Fleet; Workplace (n=8)

Fleet; Workplace; Public (n=9)

Multifamily; Workplace (n=1)

Public (n=8)[4]
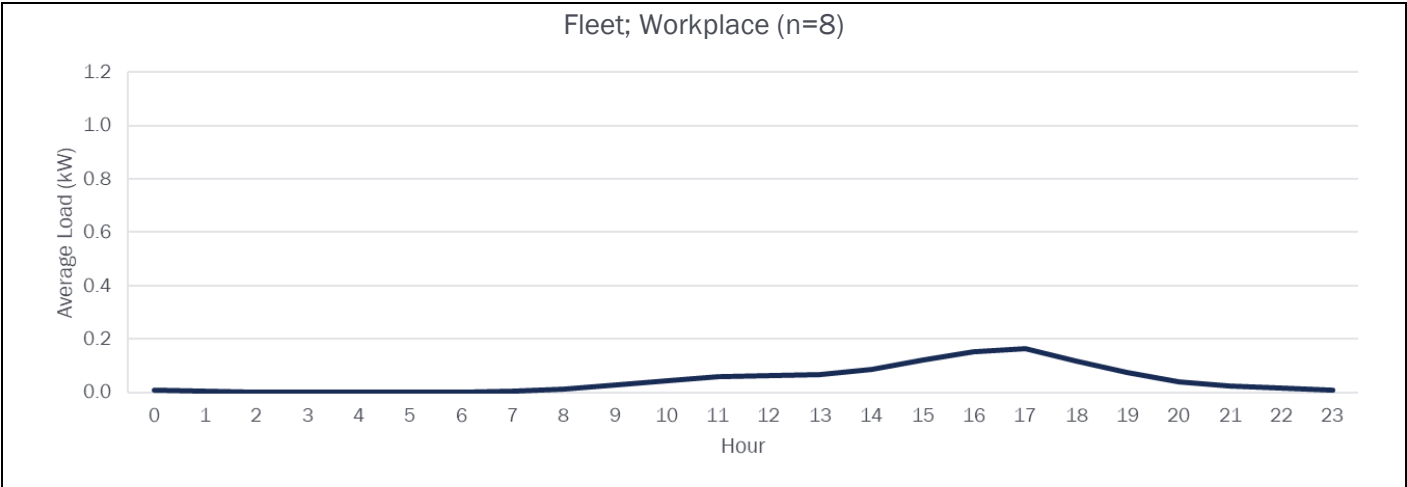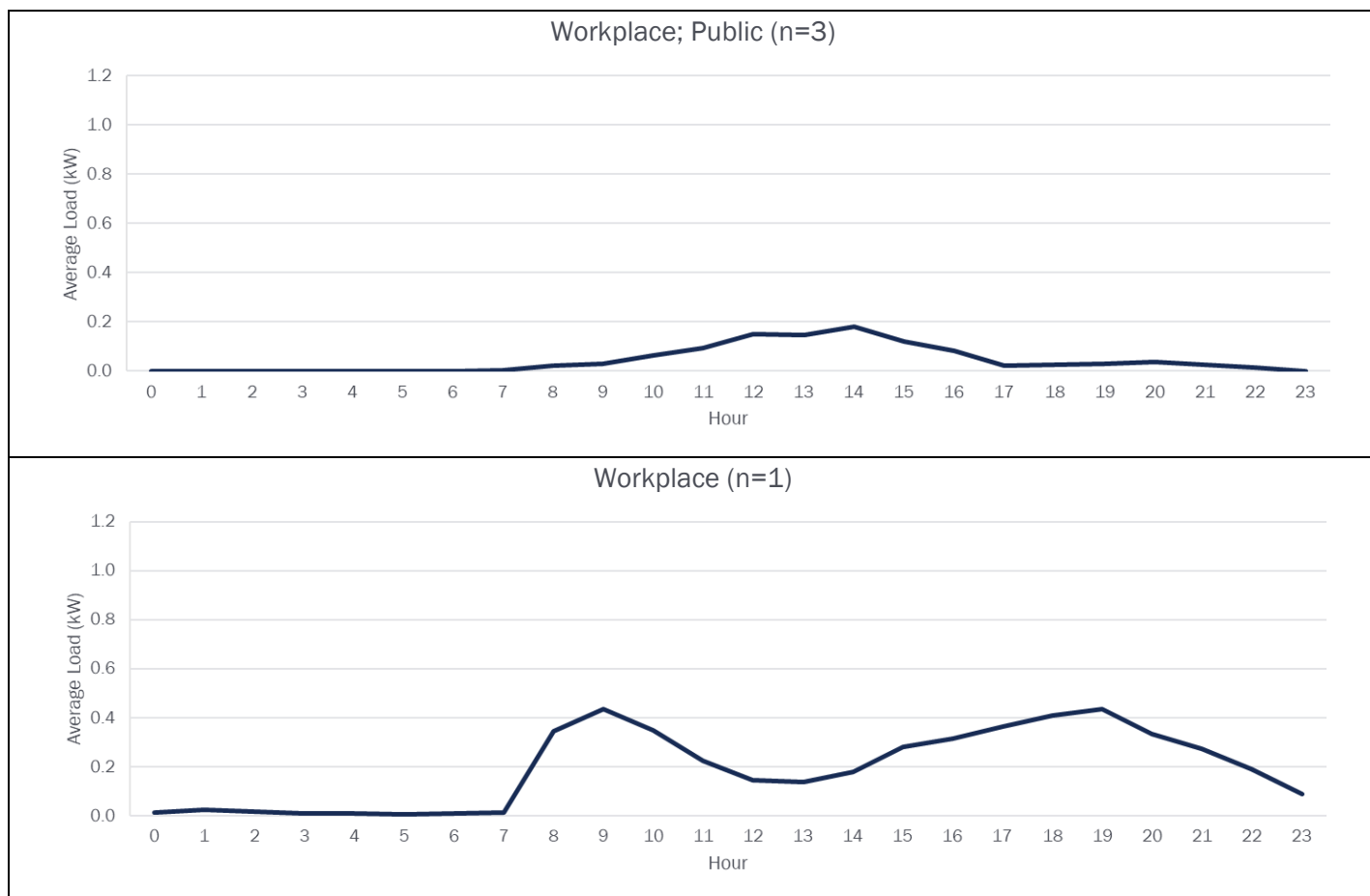
Note: The number of ports is represented by n in the above figures. The figures only show ports that had sufficient interval data.

3.2.2   PEAK IMPACT

Of the DCF sites with data, 12 were enrolled on PGE's Schedule 32 (Table 6). The remaining seven sites were enrolled on a TOU rate, either PGE's Schedule 83 (6) or Schedule 489 (1).[5]

Table 6. DCF Sites and Rates

Rate	Number of Sites	Number of Ports
Schedule 32	12	26
Schedule 489	1	1
Schedule 83	6	18

Note: Rate designation is defined by current rate. It is possible that sites were on a different rate at other points in time during the reporting period. The table only shows ports that had sufficient interval data. Some sites are missing a rate schedule (9 ports, 3 sites).

Charging ports on Schedule 83 consumed more than half of their total consumption during on-peak hours. For the port on Schedule 489, less than one-quarter of the total consumption occurred during on-peak hours. (Figure 4). Again, due to the relatively small number of sites, specifically on Schedule 489, this finding may be due to site-specific charging needs rather than patterns associated with participants enrolled in each rate. Additional site-level breakdowns are included in Appendix B.

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[4] PGE believes that the public use case includes some customer fleet charging and will further review their data prior to future evaluation.
[5] Schedule 489 is the direct access version of Schedule 89.

Figure 4. DCF On-Peak Energy Consumption by Rate
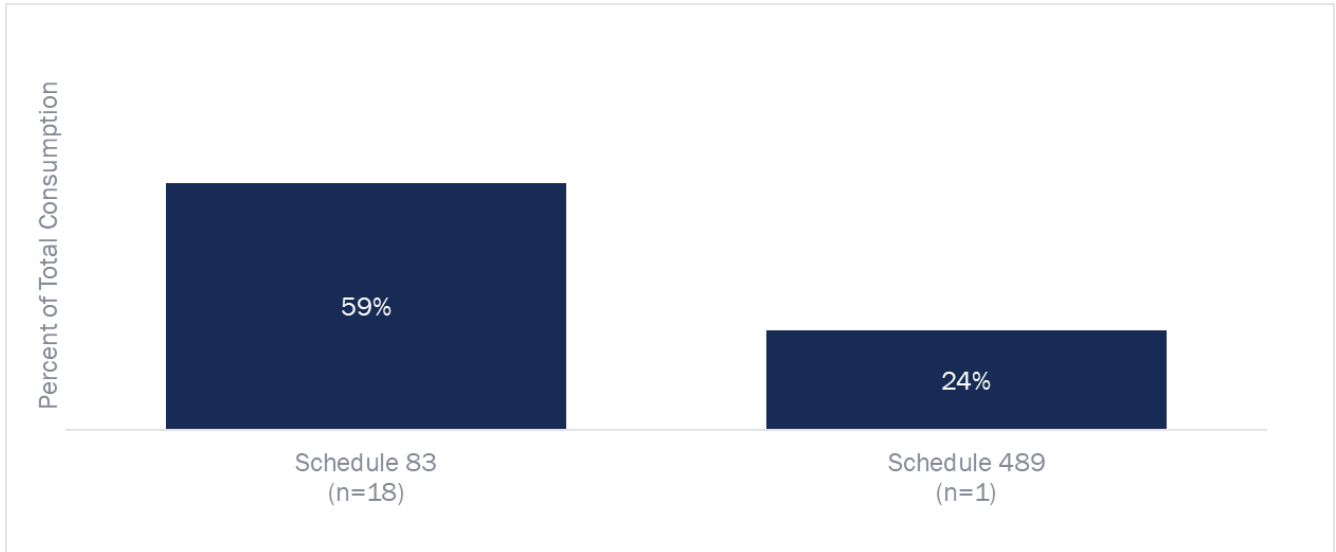
Note: Rate designation is defined by current rate. It is possible that sites were on a different rate at other points in time during the reporting period. In this figure, n is the number of charging ports. The figure only shows ports that had sufficient interval data.

Throughout the study period, the non-coincident peak (NCP) load of the DCF sites increased. The NCP increased from <1 kW (1 active charging port) to a peak of 55 kW (45 active charging ports) as additional sites and ports were activated (Figure 5). Although there was a general increasing trend in the NCP, some months (i.e., May 2023, August 2023, and May 2024) have higher-than-average NCPs. In addition to the NCP, the evaluation team investigated the system coincident (CP), which represents the charging load peak during PGE's system peak hours. Our analysis shows that the peak charging load does not frequently coincide with the PGE system peak load, and in 2021 through 2023, there were often months when no charging load occurred during PGE's system peak hours. Additional CP and NCP plots by cohort can be found in Appendix B.

Figure 5. DCF Coincident and Non-Coincident Peak Load
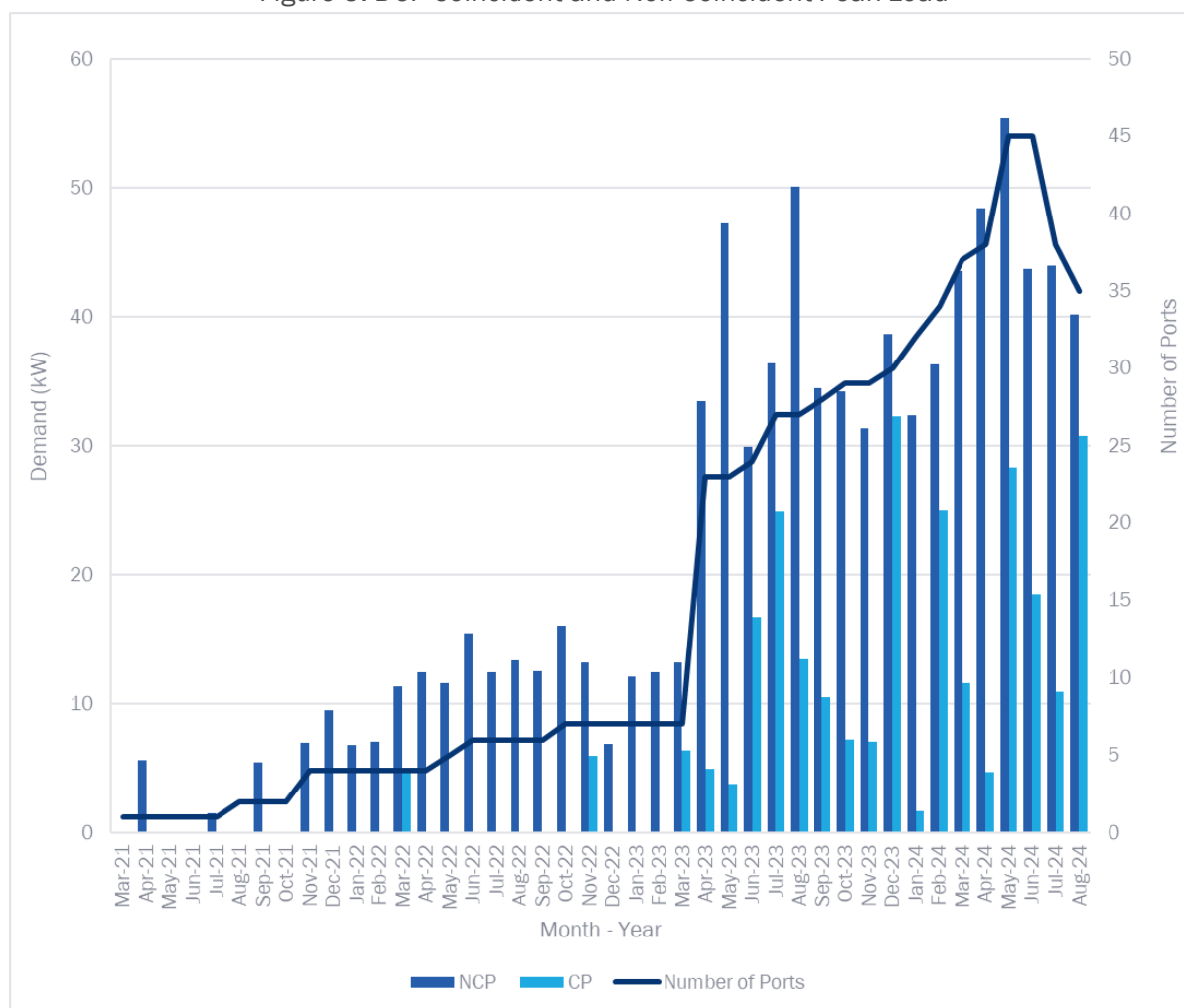
Note: The figure only shows data for ports that had sufficient interval data.

The load factor of all charging generally increased over time but stayed relatively stable from January 2022 until August 2024, with exceptions in February 2023 and November 2023.[6] During the study period, load factors ranged from <1% in May 2021 to 9% in November 2023, with an average load factor of 3% (Figure 6). Low load factors indicate that the average consumption is a very small percentage of the maximum consumption per site, meaning that there are periods of very high usage but a relatively low rate of utilization. The stabilization in load factors over time is likely due to new ports and sites coming online that had similar utilization rates relative to their maximum consumption. Average load factors were slightly higher for grantees in the 2019 and 2020 cohorts and lower for grantees in the 2021 and 2022 cohorts. The notable exception is March 2024 for the 2022 cohort, which recorded a very high load factor but was driven by an anomaly at one site. Load factors by cohort are included in Appendix B.

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[6] The load factor is the ratio of average charging load to the maximum charging load over a given period of time. Here the load factor is calculated as the average charging load divided by the maximum load averaged across sites for each month of the study period.

Figure 6. DCF Load Factor per Month
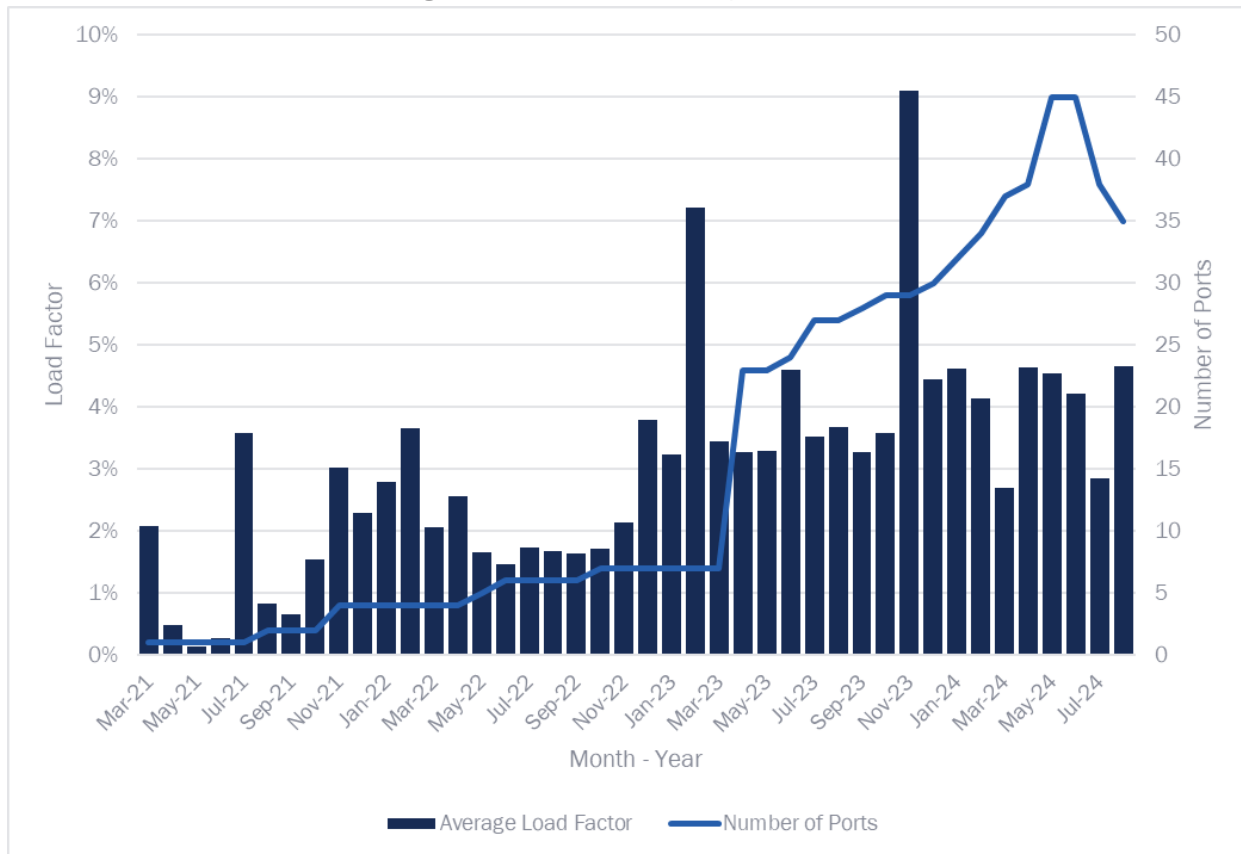
Note: The figure only shows data for ports that had sufficient interval data.

3.2.3 PORT UTILIZATION

Port utilization rates varied greatly by charger use, with most site types showing low utilization. Port utilization is reported in two ways. The first is charge utilization, which identifies the percentage of time that the port is actively in use relative to the time it is available. The second is plug utilization, which identifies the percentage of time a vehicle is plugged into a port, regardless of whether or not it is actively charging, relative to the time it is available. The average port had a charge utilization of 9% and a plug utilization of 18%. Higher plug utilization is expected, given that EVs are often plugged in longer than they are charging. Nonetheless, large differences in these two rates indicate that there are times when the charger is idle (not charging) but unavailable (vehicle plugged in). Port charge utilization rates varied from 1% at workplace ports to 26% at ports available for public charging (Table 7)[7]. As anticipated, port plug utilization rates were higher than port charge utilization rates, ranging from 4% to 60%. The ports available for public charging showed the highest average port charge utilization (26%), and ports available for multifamily and workplace charging showed the highest average port plug utilization (60%). Additional information on utilization rates at the site level is included in Appendix B.

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[7] PGE believes that the public use case includes some customer fleet charging and will further review their data prior to future evaluation.

Table 7. DCF Charging Ports and Plug Utilization Rates by Charger Use

Charger Use	Number of Charging Ports	Average Port Charge Utilization	Average Port Plug Utilization
Fleet	10	15%	25%
Fleet; Multifamily; Workplace; Public	7	4%	8%
Fleet; Public	9	8%	17%
Fleet; Workplace	8	1%	15%
Fleet; Workplace; Public	1	5%	7%
Multifamily; Workplace	1	1%	60%
Public	8	26%	29%
Workplace	1	1%	29%
Workplace; Public	9	3%	4%
All	54	9%	18%

Note: Utilization rates are calculated assuming that all ports are active from their first session through their last session. Utilization rates cannot be calculated for ports with only one session; these ports are excluded from this table.

Port utilization rates varied greatly between cohorts. The 2019 and 2022 cohorts showed the highest average port charge utilization (18% and 11%, respectively; Table 8), while the 2020 and 2021 cohorts showed the lowest average port charge utilization (7% and 4%, respectively). As anticipated, port plug utilization rates were higher than port charge utilization rates, ranging from 7% to 29%. Across all cohorts, average plug utilization is around double the average charge utilization.

Table 8. DCF Charging Ports and Plug Utilization Rates by Cohort

Cohort	Number of Charging Ports	Average Port Charge Utilization	Average Port Plug Utilization
2019	14	18%	29%
2020	12	7%	17%
2021	17	4%	7%
2022	11	11%	20%
All	54	9%	18%

Note: Utilization rates are calculated assuming that all ports are active from their first session through their last session. Utilization rates cannot be calculated for ports with only one session; these ports are excluded from this table.

The average site had all ports available approximately 85% of the time, including overnight hours and weekends. Utilization varied significantly between sites. It was relatively rare that more than 75% of the ports at a site were in use at the same time (3% of the average day), suggesting that charging ports are usually available at grantee sites (Figure 7). Site utilization varied slightly by cohort. The 2022 grantees had all ports available for the least amount of time (81%) compared to the 2021 grantees, who had all ports available for the most amount of time (92%). The 2019 cohort was most likely to have 75% or more of their ports in use (5% of the average day) relative to the 2020, 2021, and 2022 cohorts, which had 75% or more of their ports in use 1%, 2% and 1% of the day, respectively (Figure 8).

Figure 7. DCF Average Site Utilization, by Charger Use
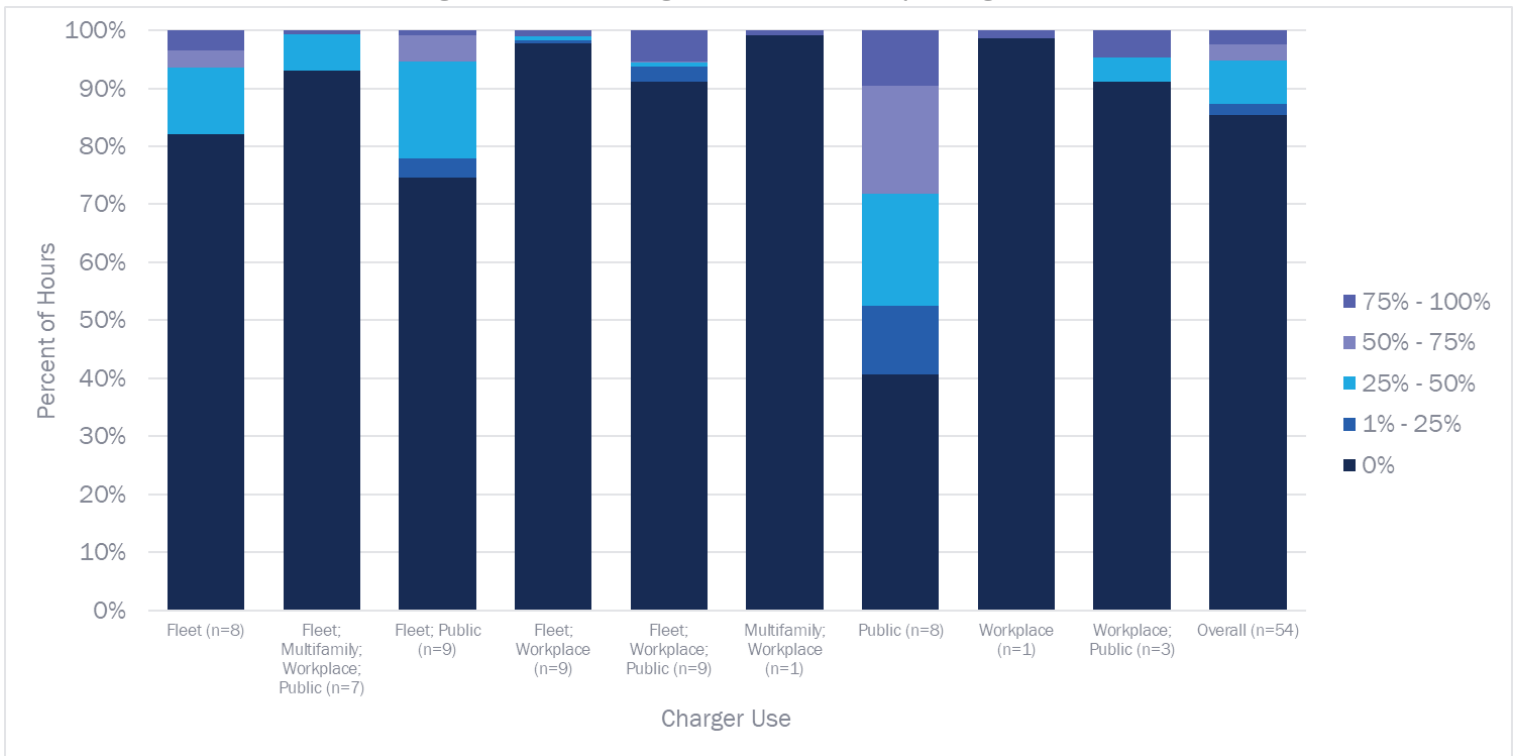
Note: Average daily utilization is calculated by identifying the number of ports charging versus the number of ports available per site per date per hour (across all days and all hours) since a site's first session in the relevant time period. The figure only shows data for ports that had sufficient interval data.

Figure 8. DCF Average Site Utilization, by Cohort
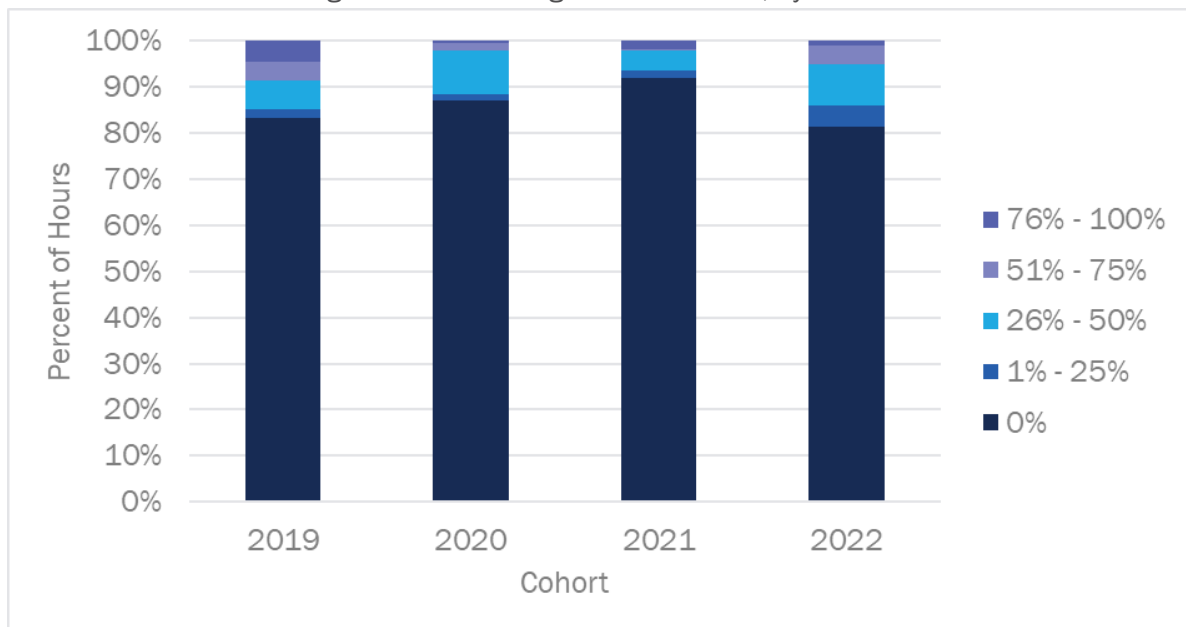
Note: Average daily utilization is calculated by identifying the number of ports charging versus the number of ports available per site per date per hour (across all days and all hours) since a site's first session in the relevant time period. The figure only shows data for ports that had sufficient interval data.

APPENDIX A.   DCF 2022 GRANTEE IN-DEPTH INTERVIEW GUIDE

This appendix includes the in-depth interview guide used for the 2022 grantee interviews.

INTRODUCTION

1. Can you describe your role at [ORGANIZATION]?
2. Can you describe [ORGANIZATION] and the work that you do?
3. What is your organization's operating budget?
4. Can you please briefly describe the project for which you applied for DCF funding?
5. What communities or populations in the PGE service territory does your organization target? [PROBE on following communities: lower income, elderly, rural, communities of color, agricultural/farm workers, frontier, coastal, harmed by environmental or health hazards]
[INTERVIEWER NOTE: HB2165 defines underserved communities as census tracts that contain high proportions of renters, multifamily housing, communities of color, low-income households, tribal communities, rural communities, and other communities adversely harmed by environmental health hazards.]

MARKETING

6. How did you first hear about PGE's DCF? [PROBE: email, social media, event, word of mouth, partner organizations, government organizations]
   a. What kind of information did you receive when you first learned about the DCF?
7. Why did you decide to participate in the DCF?
   a. Who was involved in making the decision to participate?
   b. [IF OTHERS INVOLVED] Did you have to convince others in your organization to apply for funding? Was this a difficult process? If so, why?
8. What is the best way that PGE could reach organizations such as yours to inform them of opportunities such as the DCF? [PROBE: in person events, associations, type of communications, etc.]

DCF APPLICATION SUPPORT

9. Can you please describe your experience applying for the DCF? [PROBE: positive aspects, challenges, barriers, etc.]
   a. What about your experience with the interview process?
10. What kind of application materials or guidance did you receive from the DCF, if any? [PROBE: applicant webinar, FAQ, application guide, etc.]
    a. Was the information that you received about the DCF application easy to understand? Why or why not?
11. Were there any sections or questions on the application that were difficult to complete? If so, what made it difficult to complete? [PROBE: time to complete, resources needed to complete, need to hire electrical contractor, difficulty of questions in application]
12. [IF CHARGING PROJECT] Did you need to hire an electrical contractor to help you complete your application?
    a. How did you find the electrical contractor that you ended up hiring?
    b. How was it working with the electrical contractor to complete your application?
13. How much information or knowledge did your organization have about transportation electrification prior to applying to PGE's DCF?
14. Did the DCF provide you with assistance during the application process?
    a. What kinds of assistance did you receive? [PROBE: technical, financial, administrative]

b.   Did you face any challenges receiving assistance?

15. Was there assistance that you would have liked to receive through the DCF that you did not receive? If so, what kind of assistance?

[IF Q2<$2 million]

16. Are you aware that the DCF offers financial assistance up to $2,000 to organizations with an operating budget of less than $2 million to reduce the administrative burden of applying for DCF grants?
    a.   Did you apply for this financial assistance?
    b.   **[IF NO]** Why did you not apply for this financial assistance? *[PROBE: Organization does not qualify, did not require assistance with application, etc.]*
    c.   **[IF YES]** Did you receive the funding?
    d.   How did the financial assistance help you complete your application for the DCF?
17. Do you have any recommendations for how PGE can improve the application process for future applicants?
    a.   Have you applied for other grant funding before?
    b.   What elements have worked well in other grant programs that the DCF could consider to improve the applicant experience?

DCF GRANTEE SUPPORT

Funding/Other Assistance

18. After your project was approved for funding by the DCF, did you receive your funding within your expected timeline?
    a.   **[IF WAIT REPORTED]** Did this wait time impact any of your planned activities? *[PROBE: Staff turnover, changes to project scope, timeline changes, wait list issues for EVs, etc.]*
19. Did the amount of funding you received from the DCF meet your expectations?
    a.   Was/is the amount of funding sufficient to complete your project? If not, why not? *[PROBE: cost to purchase equipment, turnover in staff impacted labor budgets, etc.]*
    b.   Did you encounter any additional project costs that were not originally a part of your scope? If so, how did this impact your project budget?
20. Did you pursue any other funding sources in addition to the grant you received from the DCF?
    a.   If yes, how did you learn about these other funding opportunities?
21. Would you have pursued this project had the DCF funding not been available? Why or why not?
22. After your grant was awarded, what assistance, if any, did you receive from the DCF staff or other parties? *[PROBE: Interview with program staff, 3rd party technical assistance, administrative assistance]*
    a.   **[IF ASSISTANCE RECEIVED FROM OTHER PARTIES]** What other organizations did you receive assistance from?
    b.   How did they assist you with your project?

Communication

23. How often do you communicate with DCF staff?
    a.   How do you typically communicate with DCF staff? *[PROBE: Phone, email, etc.]*
    b.   Do you feel that this is sufficient for your project needs?
24. We understand that the DCF requires Grantees to submit quarterly progress reports as part of your participation. Can you briefly describe your experience filling out these reports? *[PROBE: Time to fill out, administrative burden, etc.]*
    a.   Do these progress reports help you to keep your project on track? Why or why not?

b. What aspects of filling out the progress reports, if any, have you found challenging?

c. Are there any changes would you recommend the DCF make to the quarterly reporting process?

[ASK IF PROJECT NOT COMPLETED]

25. Have any challenges prevented you from completing your project within the DCF timeline? *[PROBE: staff turnover, time management, equipment procurement, administrative issues, etc.]*

a. What, if anything, could the DCF do to help overcome these challenges?

OPERATIONS

Charging Projects

26. Did the DCF offer materials or information to help you meet charger requirements?

a. How did the DCF communicate those requirements to you?

b. Did you find these resources helpful?

27. Please describe your experience procuring the chargers you needed. *[PROBE: challenges finding chargers]*

a. What assistance did the DCF provide to help you procure the chargers, if any?

28. Did you have to do any site maintenance or electrical upgrades before installing the chargers? *[PROBE: increase panel capacity, service upgrades]*

a. [IF YES] Did you face any challenges in finding contractors to perform these upgrades?

b. Did the DCF assist you in finding contractors or maintenance staff to perform these upgrades?

29. How was your experience installing the chargers? *[PROBE: choosing a site for the charger, electrical upgrades, property management issues]*

a. What assistance did the DCF provide to help you install the chargers, if any?

30. What additional support would you like the DCF to provide to assist you in the charging purchasing and installation process, if any?

31. Do you have an operation and maintenance (O&M) plan for the chargers? If yes, can you briefly describe your plan?

32. Did you need any maintenance work done after installing the chargers?

a. [IF YES] Did you find contractors or maintenance staff to work on the charger?

33. Have you received any other support from the DCF for your charging project that we have not discussed yet?

Charging access & Utilization

34. Where on your site(s) are the chargers that you installed with DCF funding located?

35. Who has access to the chargers? *[PROBE: are they public, private, etc.]*

36. How do you manage the use of the charging stations? *[PROBE: monitoring charging activity including usage and parking enforcement, reduced speeds at certain hours of the day]*

a. Do you monitor any trends in your charging data?

37. [IF CHARGERS ARE PUBLIC] How do you promote chargers to potential users?

38. What feedback, if any, have you received from charger users about their experience with the chargers? *[PROBE: chargers satisfy their needs (in terms of speed of charging and availability), ease of use, illegal parking hindering usage]*

EV Equipment Projects

39. [ASK IF VEHICLE PURCHASED] What EV make, and model(s) did you purchase?

40. Did you purchase the same [READ IN: EV or EV or electric equipment] that you had planned on purchasing, or did your purchase decision change?

       a. **[IF CHANGE NOTED]** Why did your purchase decision change? *[PROBE: New model that better suited their needs in terms of range or utility, supply chain issues, etc.]*

41. Did you have any issues purchasing your **[READ IN: EV or EV or electric equipment]**? *[PROBE: Supply chain issues, timing, availability, technical issues, etc.]*
       a. How did this impact your project timeline?
       b. **[IF ISSUES REPORTED]** Did the DCF help you to navigate those issues?

42. Prior to applying for DCF, how would you describe your knowledge of **[READ IN: EV or EV or electric equipment]**? *[PROBE: most popular EVs, types of electric equipment, brands, price range, availability]*

43. Did the DCF help you to better understand the **[READ IN: EV or EV or electric equipment]** market in any way?
       a. How did their assistance influence your **[READ IN: EV or EV or electric equipment]** purchasing process?

44. Have you received any other support from the DCF for your **[READ IN: EV or EV or electric equipment]** that we have not discussed yet?

45. What additional support would you like the DCF to provide to assist you in the **[READ IN: EV or EV or electric equipment]** purchasing process, if any?

ME&O Campaign Projects

46. Can you please briefly describe the goals of your education and outreach activities?
       a. Who are your target audiences?
       b. What was the focus of your messaging through the campaign?

47. What were the main avenues through which you engaged with your target audiences? *[PROBE: in person trainings, classes, community outreach and events, social media, email lists, events,]*

48. What would you say have been the key lessons learned in your education and outreach efforts?

49. Did you track engagement with your campaign? If so, can you please describe the metrics you are tracking?
       a. Did the DCF or others support you in developing or tracking these metrics? If so, how?

50. What were the main outcomes of your campaign? *[PROBE: how audience was influenced by messaging, any metrics they have]*
       a. Did the DCF or others assist you in evaluating those outcomes? If so, how?

51. Was there assistance that you would have liked to receive through the DCF that you did not receive for your education and outreach [project OR component of your project? If so, what assistance? *[PROBE: Planning, metric development, metric tracking, evaluation of campaign effectiveness, organization]*

IMPACT ON UNDERSERVED COMMUNITIES AND ORGANIZATIONS

52. Thinking about the people that your organization serves, what impact has your DCF-funded project had on the lives of your target community members? Please provide as many specific examples and stories as possible about the people your project affected. *[PROBE: Increased mobility and access to essential goods and services, job training, education about electric vehicles, electric vehicle adoption, etc.]*

53. What impact has your DCF-funded project had on your organization? *[PROBE: Reduced vehicle operational costs, increased employment (e.g., drivers), new services, ability to expand services to more people, support clean energy/environmental goals, etc.]*

54. Are there any other key metrics that you have tracked while implementing this project? *[PROBE: Number of people in the community served, project represented a community based solution to an issue, project management/implementation milestones, funding resources, miles driven, GHG reduced, etc.]*

CHALLENGES & RECOMMENDATIONS

55. Can you please describe any other challenges that you faced in your participation in the DCF that we have not already discussed?
56. Beyond what we have already covered, what recommendations do you have for the DCF to improve so that you better serve your community members?
57. Finally, would you like to be connected with other applicants or awardees of the DCF to share lessons learned or support other community engagement?

CLOSING: Thank you for taking the time to speak with me today. Have a great day!

APPENDIX B.   DCF IMPACT ANALYSIS METHODS AND CHARGING PATTERNS

DATA CLEANING AND PREPARATION

The evaluation team relied on the comprehensive data extract provided by PGE for participant, session, and interval data. The data received included charging data for ten different software vendors. PGE shared that a few vendors were missing session data toward the end of the season. The missing data are expected to comprise a small percentage of the total charging sessions and, therefore, would not significantly impact the analysis. A breakdown of the available data is included in Table 9.

Table 9. DCF Available Data Summary

Unit	Participant Data	Session Data	Interval Data
Customers	19	16	16
Sites	29	24	22
Chargers	61	48	45
Ports	71	57	54

Interval Data Verification

The evaluation team verified the interval data construction conducted by PGE. In doing so, we identified a small percentage of misalignment between the session and the constructed interval data. We concluded that the issues would not significantly impact results, and the interval data were usable for the charging pattern analysis.

Participant Data

The evaluation team extracted the information about the DCF grantees from the comprehensive data file provided by PGE. The participation data were complete, with no cleaning required.

Session Data

The evaluation team relied on the comprehensive data extract provided by PGE for session data. Some sessions were duplicated since the same file was used for interval data reconstruction. We filtered the data to only session-level information and removed any duplicates to apply cleaning steps to the session data. As part of the session data cleaning, we reviewed the data for duplicate records, addressed gaps and conflicting information (where possible and reasonable), and subset the data to the relevant reporting period (March 2021–August 2024). The data were aggregated at the plug-session level when provided at the charge-session level.

Table 10 summarizes cleaning steps made to the session data set as part of the data preparation and cleaning process. The cleaned session data were then used to update the interval data.

Table 10. DCF Session Data Cleaning Steps

Step	Type	Update/Drop	Remaining Unique Session IDs	Percentage Remaining
Initial Count	N/A	N/A	10,648	100%
Aggregate duplicates to plug-session	Aggregation	22	10,648	100%
Invalid plug start and end times	Drop	0	10,648	100%
Missing charge start and end times	Drop	15	10,633	100%
Invalid charge start and end times	Drop	33	10,600	100%
Updating plug start times to align with charging start times	Update	968	10,600	100%
Updating plug end times to align with charging end times	Update	41	10,600	100%
Sessions with 0 seconds between plug start and end	Drop	5	10,595	100%
Sessions with 0 seconds between charging start and end	Drop	236	10,359	97%
Sessions with 0 consumption	Drop	89	10,270	96%
Subset data to the relevant time period	Drop	104	10,166	95%
Aggregate to plug-session	Aggregation	151	10,015	94%

Interval Data

The cleaned session data were used to update the interval data. Sessions dropped in session data cleaning were also eliminated from the interval data, and any updated session information was applied to the interval data. Exact duplicates were also dropped. No cleaning was conducted on the charging start and end dates; therefore, data reconstruction was not required. Once the interval data were updated, it was then aggregated to an hourly level, missing records were imputed, and the data were subset to the relevant reporting period. Days missing 24 hours of interval data were removed from the analysis.

CHARGING PATTERN ANALYSIS

Figure 9–Figure 11 present additional average hourly electricity consumption load curves by segments and day types from March 2021 through August 2024.

Figure 9. DCF Average Load Shapes per Day Type

Note: The figure only shows ports that had sufficient interval data.

Figure 10. DCF Average Load Shapes per Customer Type
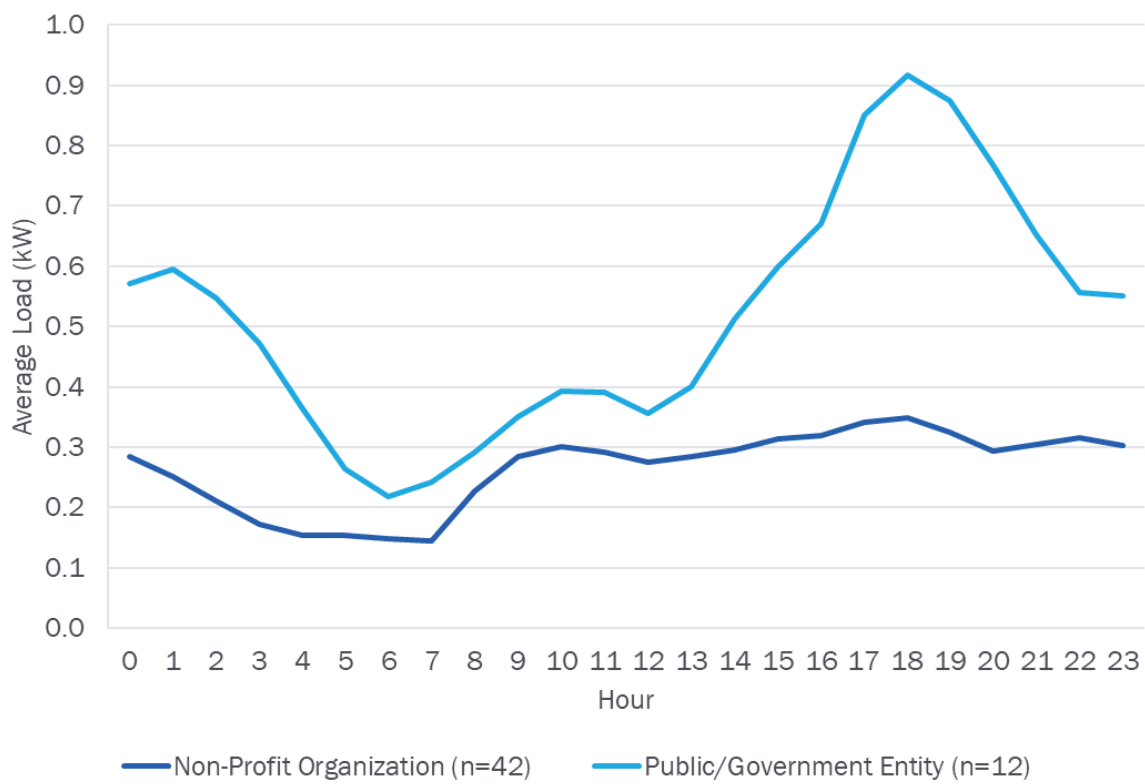
Note: The number of ports is represented by n in the above figure. The figure only shows ports that had sufficient interval data.

Figure 11. DCF Average Load Shapes per Rate
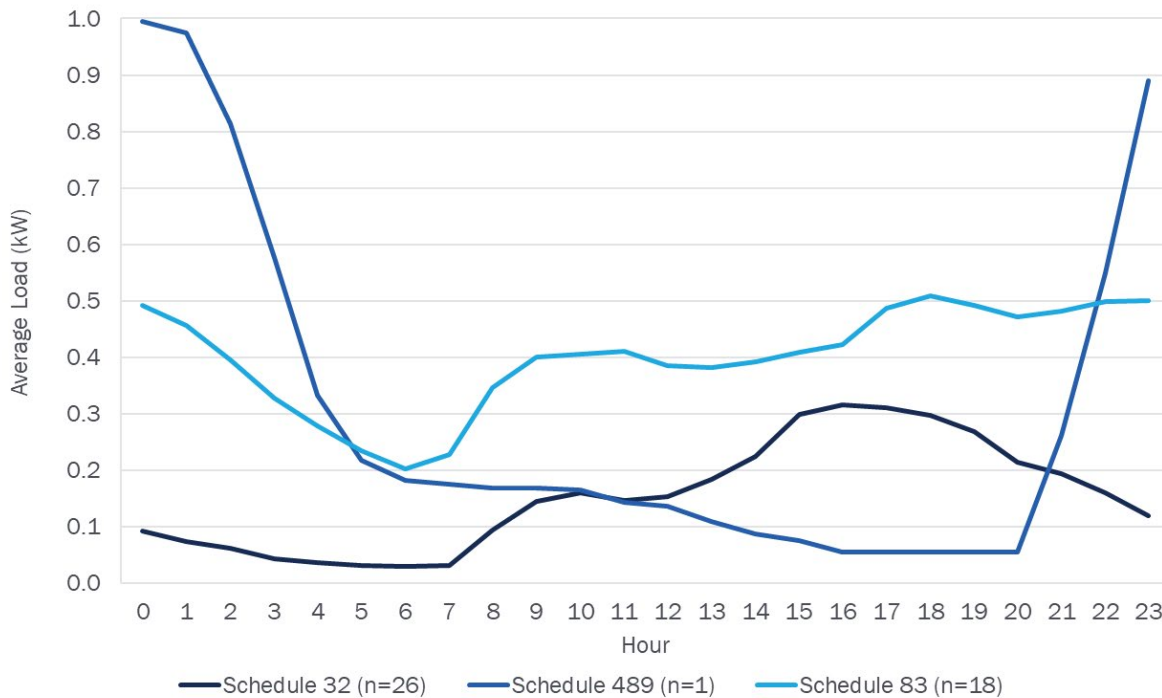
Legend: Schedule 32 (n=26) — Schedule 489 (n=1) — Schedule 83 (n=18)

Note: The number of ports is represented by n in the above figure. The figure only shows ports that had sufficient interval data.

Figure 12–Figure 15 present monthly energy consumption by the grantee cohort from March 2021 through August 2024. Notably, there is a gap between the grantee cohort year and when the charging load begins in earnest. The 2019 cohorts recorded their first consumption in March 2021, but it wasn't until April 2023 that most ports came online. The 2020 cohort recorded their first charging consumption in late 2021/early 2022, but it was also not until April 2023 that most ports came online. The 2021 cohort did not have active ports until mid-2023 and did not record significant consumption until 2024. Similarly, the 2022 cohort had active ports in mid-2023 and began recording consumption shortly after. Across all cohorts, there were fluctuations in the number of active ports. This is not due to the ports being retired or removed but because no sessions were recorded for some ports. This could be due to missing data, the port being offline, or an absence of sessions occurring.

Figure 12. DCF Monthly Energy Consumption for 2019 Cohort
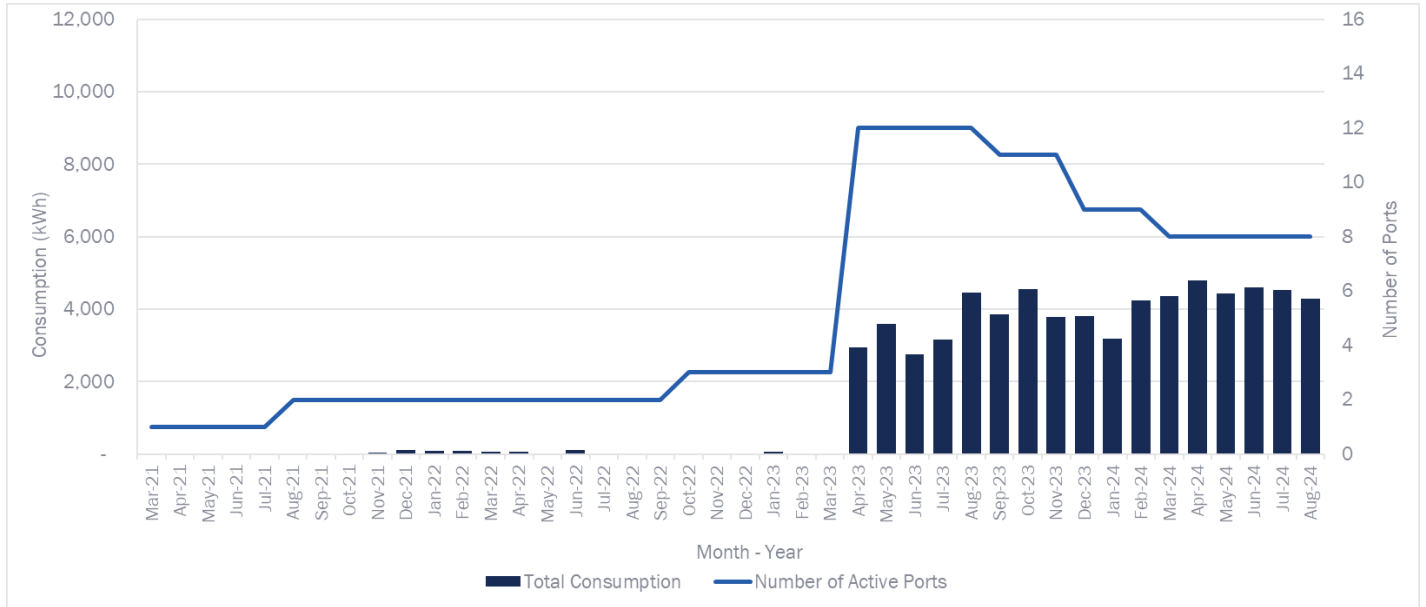
Note: A port is considered active between its first and last recorded charging session.

Figure 13. DCF Monthly Energy Consumption for 2020 Cohort
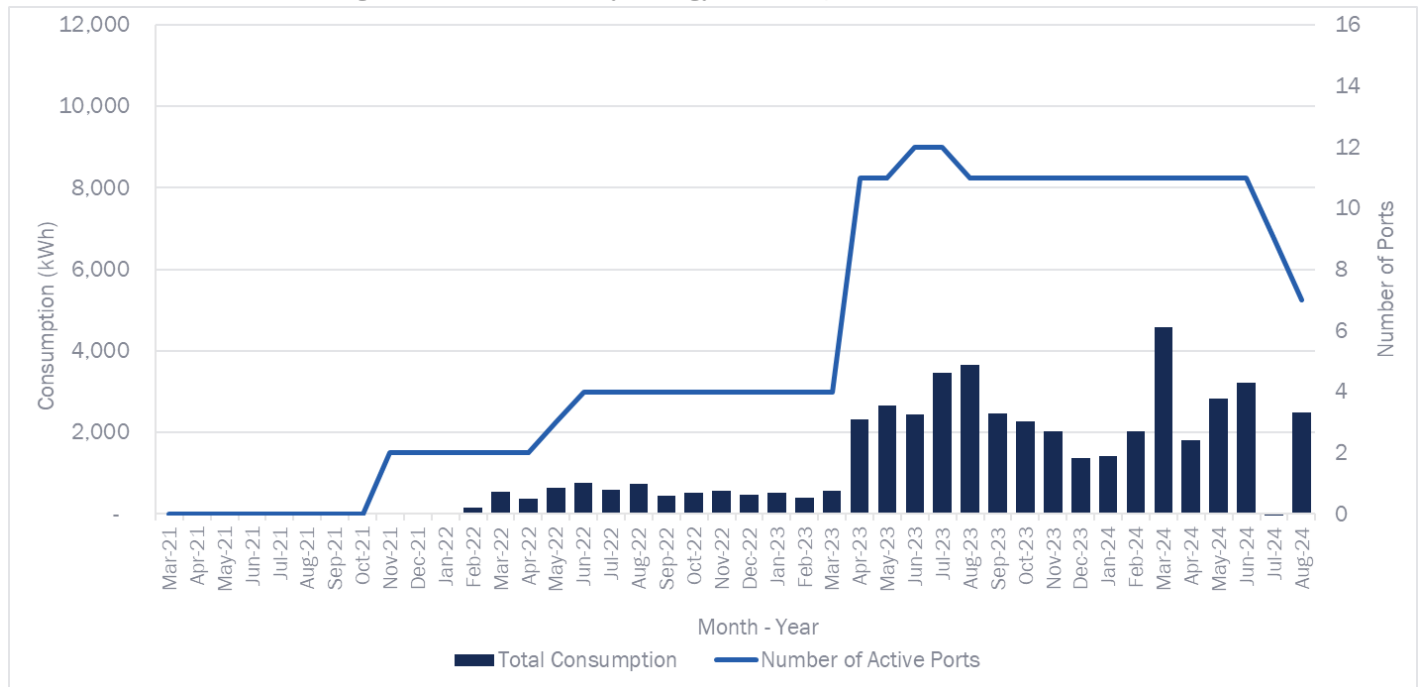
Note: A port is considered active between its first and last recorded charging session.

Figure 14. DCF Monthly Energy Consumption for 2021 Cohort
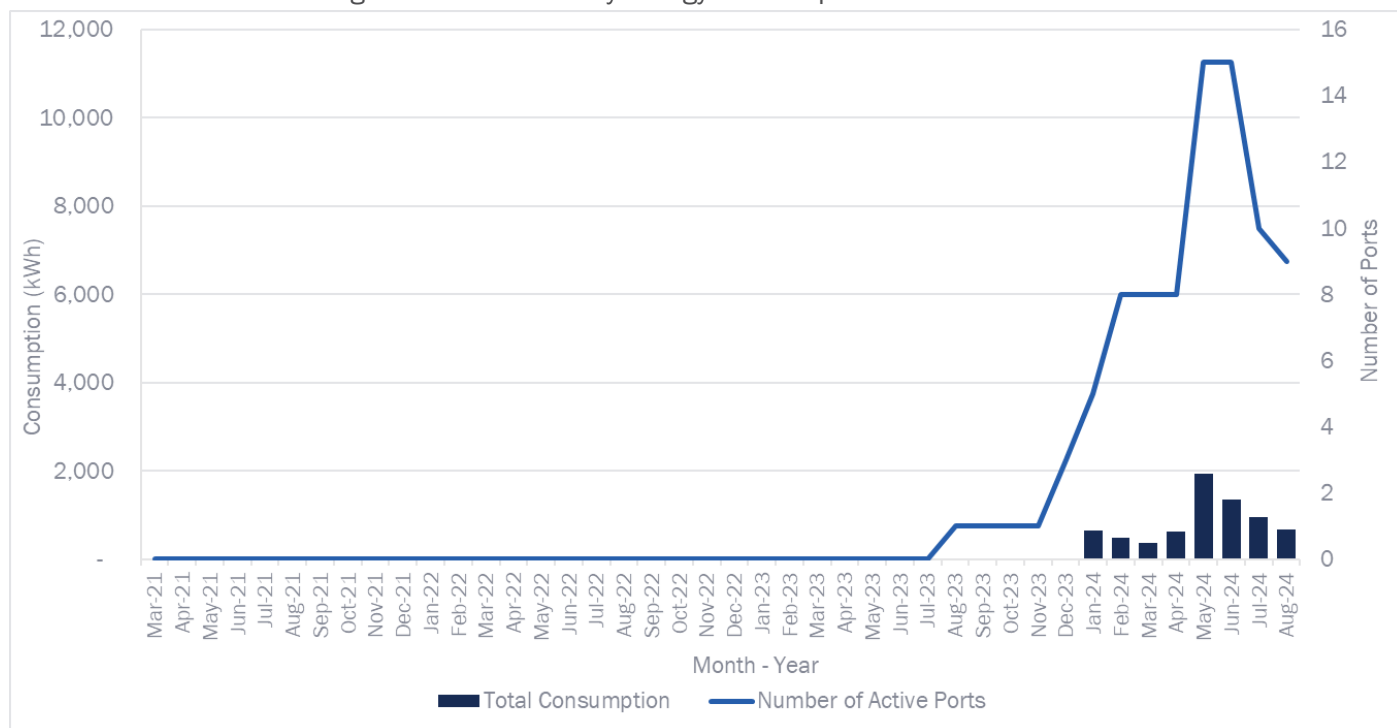
Note: A port is considered active between its first and last recorded charging session.

Figure 15. DCF Monthly Energy Consumption for 2022 Cohort
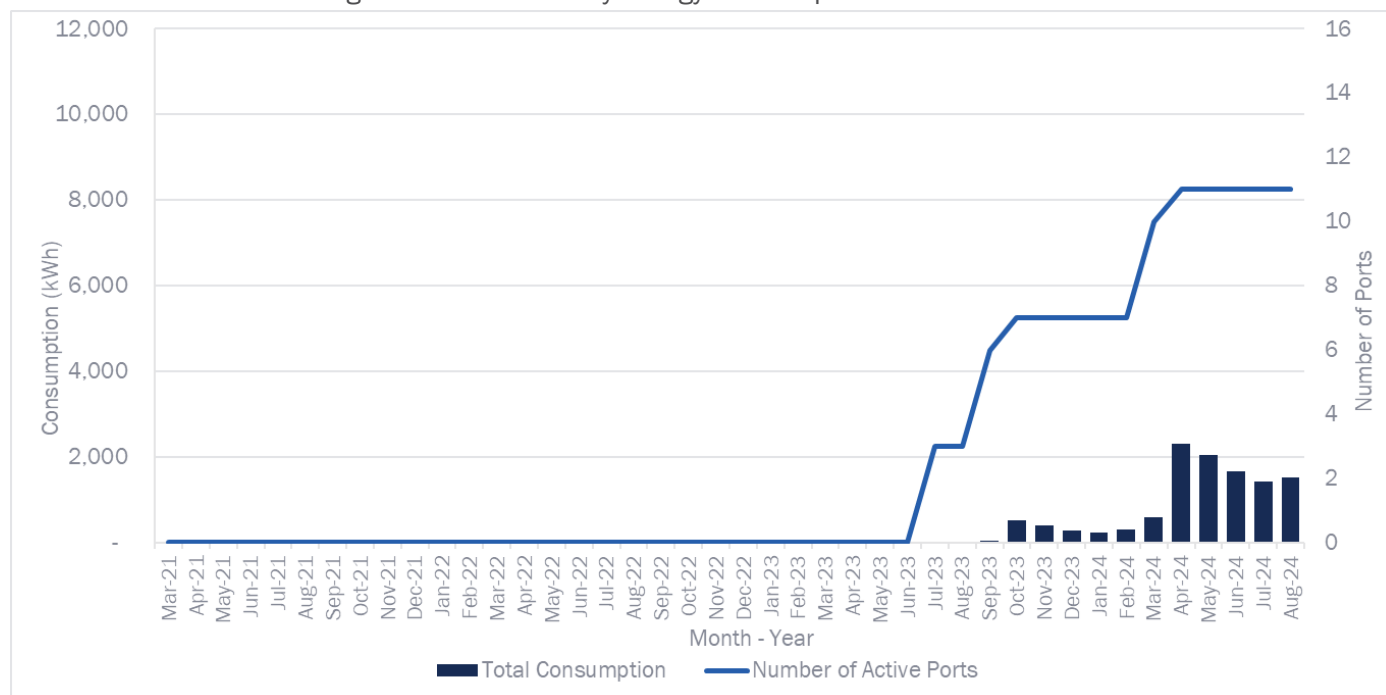
Note: A port is considered active between its first and last recorded charging session.

Figure 16–Figure 19 present the load factor per month by cohort from March 2021 through August 2024.

Figure 16. DCF Load Factor per Month for 2019 Cohort
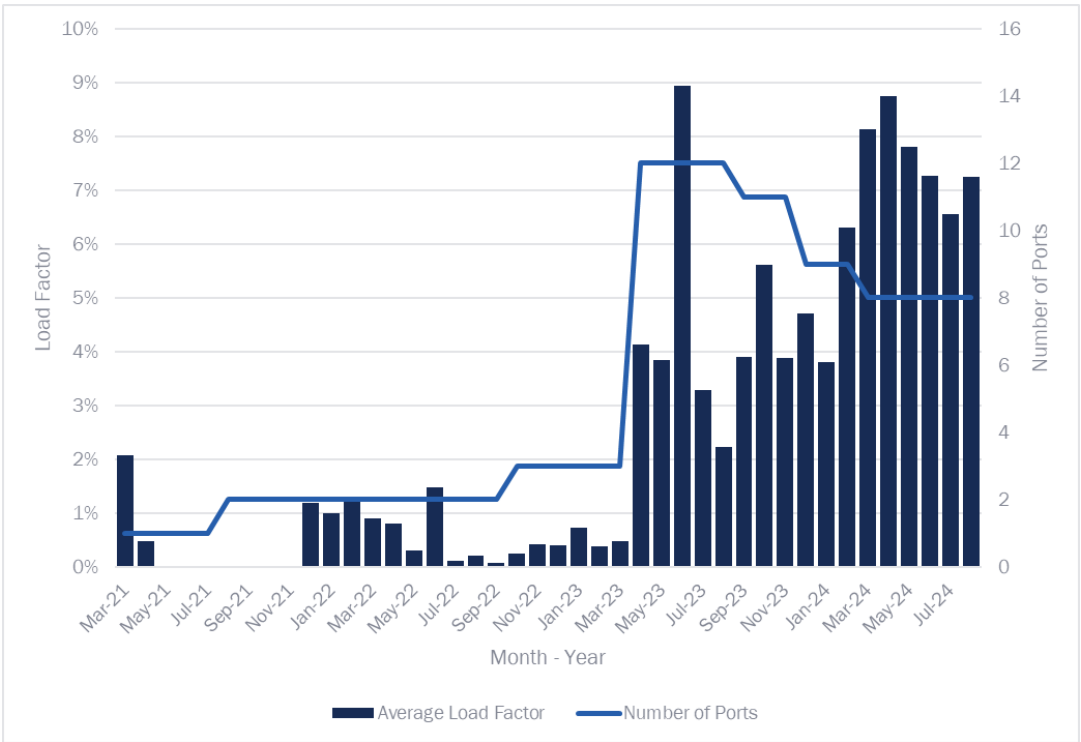
Figure 17. DCF Load Factor per Month for 2020 Cohort
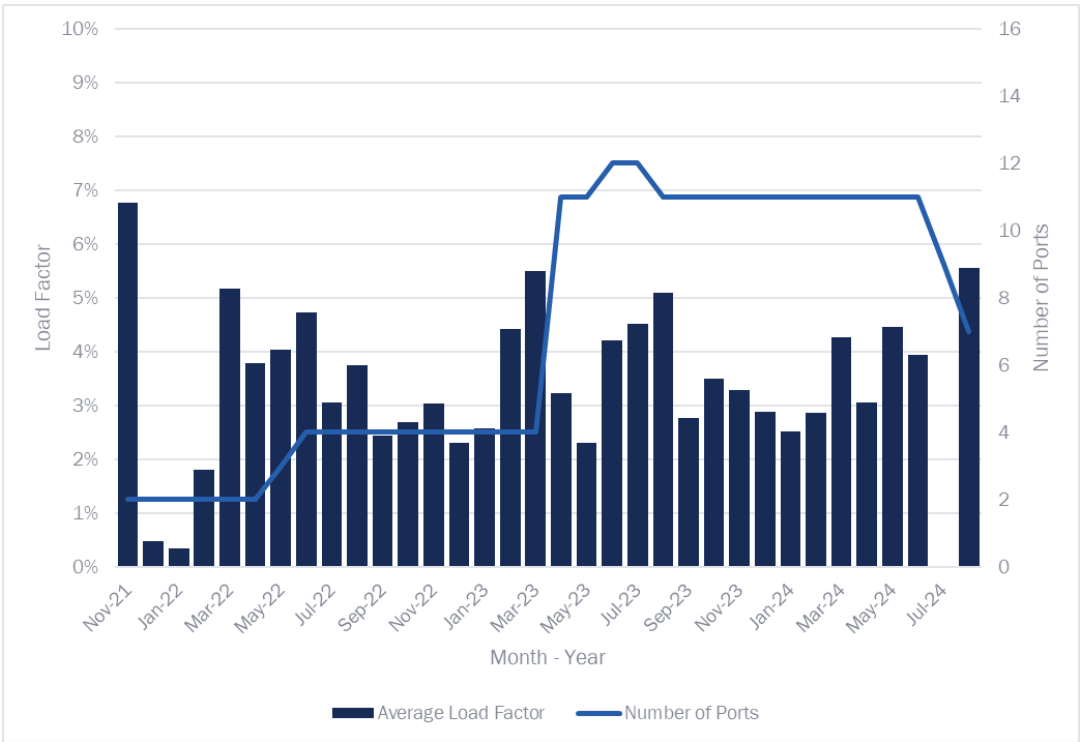
Figure 18. DCF Load Factor per Month for 2021 Cohort

Figure 18. DCF Load Factor per Month for 2021 Cohort

Figure 19. DCF Load Factor per Month for 2022 Cohort
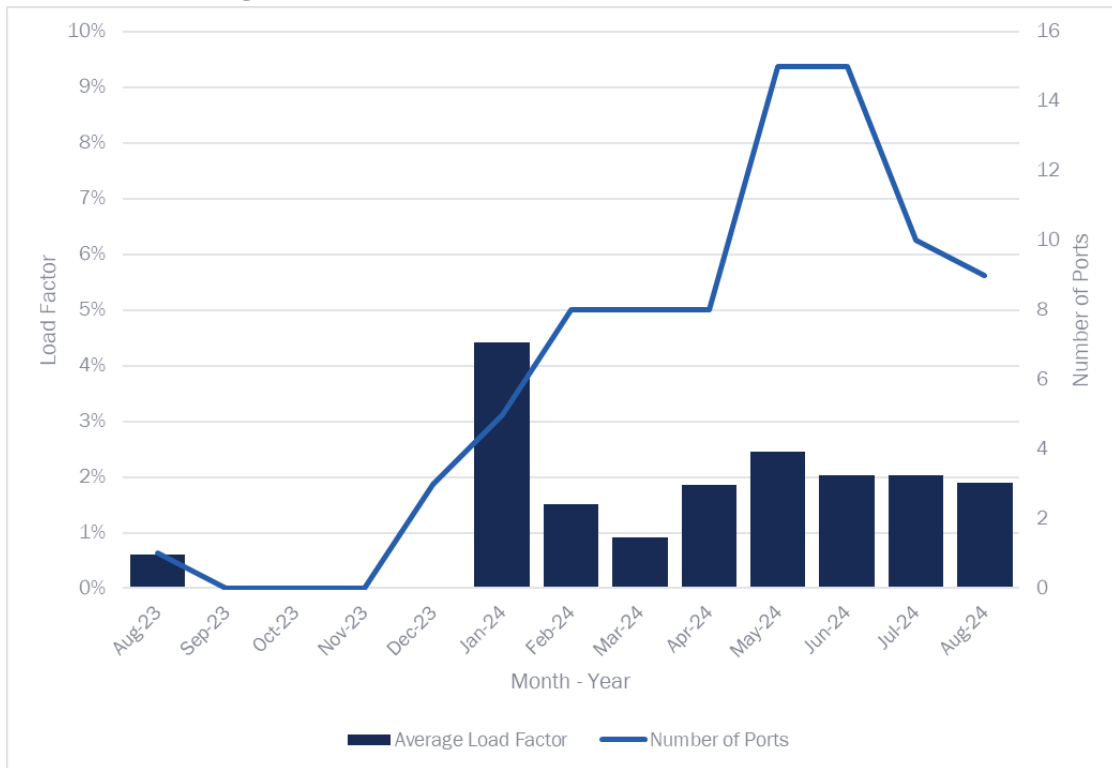
Figure 19. DCF Load Factor per Month for 2022 Cohort
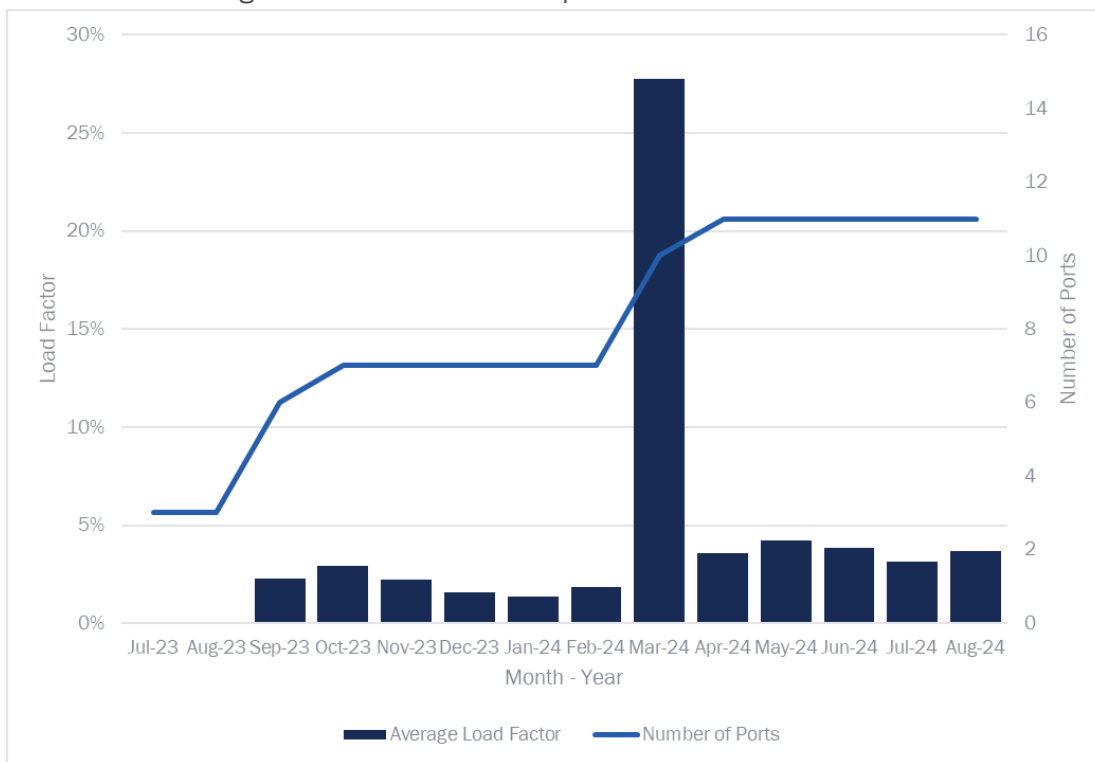
Table 11 presents the session summaries of the DCF grantees per site through the end of August 2024.

Table 11. DCF Session Summaries by Site

Cohort	Site	Site Use	Number of Sessions	First Charge	Last Charge	Average Charge Duration (hrs.)	Average Session Duration (hrs.)	Average Electricity Dispensed (kWh)
2019	100005	Fleet; Workplace	148	3/29/2021	8/26/2024	2.10	13.90	11.68
2019	100006	Fleet; Workplace; Public	146	4/3/2023	8/31/2024	4.64	5.90	26.95
2019	100012	Fleet	32	4/3/2023	6/18/2023	13.95	34.78	17.64
2019	100013	Workplace	25	7/6/2023	2/27/2024	2.46	67.03	10.47
2019	100017	Fleet; Public	544	4/3/2023	8/29/2024	1.93	3.42	9.63
2019	100018	Workplace; Public	186	4/3/2023	11/15/2023	1.87	4.16	9.84
2019	100020	Public	4604	4/1/2023	9/1/2024	5.25	5.70	11.93
2019	100646	Multifamily; Workplace	27	10/18/2022	11/28/2023	2.27	224.24	5.47
2020	100003	Fleet; Multifamily; Workplace; Public	159	5/18/2022	8/24/2024	3.58	14.99	20.76
2020	100004	Fleet; Multifamily; Workplace; Public	507	11/29/2021	8/28/2024	3.20	9.33	20.23
2020	100008	Fleet	14	4/4/2023	7/18/2024	15.93	56.82	22.43
2020	100009	Fleet	310	4/2/2023	8/27/2024	5.64	15.96	22.03
2020	100015	Fleet; Public	2042	4/1/2023	9/1/2024	3.10	4.90	14.82
2021	102772	Workplace; Public	7	8/3/2023	8/15/2023	0.15	0.15	1.15
2021	105222	Fleet; Multifamily; Workplace; Public	81	1/3/2024	8/31/2024	8.00	9.78	29.87
2021	106432	Fleet; Public	150	12/18/2023	6/24/2024	2.35	4.60	11.73
2021	106434	Fleet; Workplace	27	2/1/2024	8/28/2024	2.55	4.17	6.83
2021	106435	Fleet; Workplace	66	2/5/2024	8/30/2024	2.06	20.24	7.40
2021	106741	Fleet; Workplace; Public	166	5/1/2024	8/29/2024	3.32	6.22	16.29
2021	107418	Fleet; Workplace	1	3/13/2024	3/13/2024	0.34	0.34	2.22
2022	104302	Public	335	9/27/2023	8/30/2024	2.70	4.46	11.74
2022	107415	Fleet; Workplace	1	8/30/2024	8/30/2024	0.04	0.05	0.26
2022	107628	Fleet; Workplace	159	7/5/2023	8/30/2024	2.59	36.24	11.08
2022	108546	Fleet	150	3/28/2024	8/30/2024	24.87	29.04	39.62

Note: Some sites have multiple chargers with different uses; charger uses are combined at the site level. The table only shows ports that had session data.

Table 12 presents the energy consumption summaries of the DCF grantees per site through the end of August 2024.

Table 12. DCF Energy Consumption per Site

Cohort	Site	Site Use	Rate	Total Consumption (kWh)	Average Number of Ports	Off-Peak %	On-Peak %
2019	100005	Fleet; Workplace	83	1,691	2	0%	100%
2019	100006	Fleet; Workplace; Public	32	3,865	1	80%	20%
2019	100012	Fleet	489	547	1	76%	24%
2019	100013	Workplace	32	245	1	89%	11%
2019	100017	Fleet; Public		5,204	2	87%	13%
2019	100018	Workplace; Public	32	1,788	2	93%	7%
2019	100020	Public	83	54,691	4	51%	49%
2019	100646	Multifamily; Workplace	32	131	1	59%	41%
2020	100003	Fleet; Multifamily; Workplace; Public	83	3,278	2	16%	84%
2020	100004	Fleet; Multifamily; Workplace; Public	83	10,222	2	3%	97%
2020	100008	Fleet	32	242	2	73%	27%
2020	100009	Fleet	32	6,687	2	73%	27%
2020	100015	Fleet; Public	83	26,444	3	45%	55%
2021	102772	Workplace; Public	32	3	1	100%	0%
2021	105222	Fleet; Multifamily; Workplace; Public	32	2,351	2	84%	16%
2021	106432	Fleet; Public	32	1,660	3	85%	15%
2021	106434	Fleet; Workplace	32	164	1	93%	7%
2021	106435	Fleet; Workplace	32	479	1	74%	26%
2021	106741	Fleet; Workplace; Public	32	2,459	7	54%	46%
2022	104302	Public	83	3,851	4	0%	100%
2022	107628	Fleet; Workplace		1,652	3	46%	54%
2022	108546	Fleet		5,910	3	77%	23%

Note: Some sites have multiple chargers with different uses; charger uses are combined at the site level. The Residential TOU rate schedule was applied for sites missing the rate schedule or on a flat rate. The table only shows ports that had sufficient interval data.

Table 13 presents the utilization summaries of the DCF grantees. Utilization rates are calculated between a charger's first recorded session and last recorded session, which are listed in Table 11.

Table 13. DCF Port Utilization per Site

Cohort	Site	Site Use	Number of Sessions	Average Port Charge Utilization	Average Port Plug Utilization
2019	100005	Fleet; Workplace	148	1%	4%
2019	100006	Fleet; Workplace; Public	146	5%	7%
2019	100012	Fleet	32	25%	55%
2019	100013	Workplace	25	1%	29%
2019	100017	Fleet; Public	544	4%	8%
2019	100018	Workplace; Public	186	4%	8%
2019	100020	Public	4604	50%	54%
2019	100646	Multifamily; Workplace	27	1%	60%
2020	100003	Fleet; Multifamily; Workplace; Public	159	1%	6%
2020	100004	Fleet; Multifamily; Workplace; Public	507	3%	10%
2020	100008	Fleet	14	1%	4%
2020	100009	Fleet	310	8%	22%
2020	100015	Fleet; Public	2042	13%	30%
2021	102772	Workplace; Public	6	<1%	<1%
2021	105222	Fleet; Multifamily; Workplace; Public	81	6%	8%
2021	106432	Fleet; Public	150	3%	5%
2021	106434	Fleet; Workplace	27	1%	2%
2021	106435	Fleet; Workplace	66	3%	27%
2021	106741	Fleet; Workplace; Public	166	4%	6%
2022	104302	Public	335	3%	5%
2022	107628	Fleet; Workplace	159	1%	21%
2022	108546	Fleet	150	34%	40%

Note: Some sites have multiple chargers with different uses; charger uses are combined at the site level. The table only shows ports that had session data.

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