

NEW YORK MAKE-READY ELECTRIC VEHICLE CHARGING STATION
PROGRAM EVALUATION

Make-Ready Program Evaluation Report

Niagara Mohawk Power Corporation d/b/a/ National Grid

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1 EXECUTIVE SUMMARY

This report presents the results and findings of DNV's evaluation of the Niagara Mohawk Power Corporation d/b/a National Grid (National Grid) Electric Vehicle (EV) Make-Ready Programs approved through the 2020 NY Electric Vehicles Infrastructure Make-Ready Program Order.¹ The programs within the Order were designed by the New York Department of Public Service (DPS) staff and approved by the Commission to facilitate the development of Level 2 charging stations and direct current fast charging (DCFC) stations and to support fleet electrification throughout the State of New York (inclusive of National Grid's New York electric service territory). This report addresses the progress of the Make-Ready Program and the Fleet Programs (which include the Medium- and Heavy- Duty Vehicle (MHDV) Pilot Program, the Transit Make-Ready offering, and Fleet Assessment Services offering) from October 1, 2021, through May 31, 2022.

1.1 Evaluation objectives

The objectives of DNV's evaluation were as follows:

- Characterize and describe the implementation of the Make-Ready Program, assessing results and progress, focusing on external feedback and market conditions.
- Determine reasons why program goals are not being met, if applicable.
- Provide feedback and recommendations for program adjustments to National Grid before DPS commences the Program midpoint review in October.
- Provide a description of other electric transportation programs being offered by utilities across the U.S., with recommendations about which programs or program attributes might be attractive to or effective in New York.

1.2 Methodology overview

DNV completed the following evaluation activities for this evaluation:

- Reviewed and analyzed program materials, such as program tracking data and marketing materials.
- Conducted 29 in-depth interviews with program managers, participating contractors, and program participants of the Electric Vehicle Charging Station Make-Ready Program ("Make-Ready Program"), Transit Authority Make-Ready Program, and Fleet Assessment Services, and prospective participants (those that have applied but are not eligible for the program), in the Medium- and Heavy-duty (MHDV) Program. Table 3-1, below, provides further information regarding the number of interviews conducted.
- Completed a benchmarking review of other Program Administrators' (PAs') electric transportation programs across the country to make recommendations for improvements to National Grid's New York programs and provide information for potential future offerings (see Section 5).

1.3 Program achievements

The DNV team observed the following program achievements during the evaluation.

Finding 1: Effective program management is in place.

The programs are well-run and participants, prospective participants and participating contractors are highly satisfied with their program experiences. Participants expressed that National Grid staff, along with implementation contractors, provide the necessary support and technical guidance to enable smooth and easy participation. The participants interviewed found the application process to be easy and reported few challenges with communications, siting, or installation. Those who

¹ Case 18-E-0138, *Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure*, Order Establishing Electric Vehicle Infrastructure Make-Ready Program and Other Programs (issued and effective July 16, 2020) ("Order").

interacted with National Grid program staff spoke highly of the team. One participant said that the “communication [with program staff] was phenomenal” and another commended the program staff for being “patient and understanding with them throughout the process.”

Consideration: Continue to evaluate program performance and reassess goals during the midpoint reviews.

To continue successfully managing this program, the National Grid staff should continue to evaluate performance and reassess goals during the midpoint review and future meetings with the DPS to realign strategies and pivot marketing efforts to achieve program success. This will allow the program to constantly monitor challenges and successes within the program and realign implementation strategies to maximize participation.

Finding 2: Incentives enable project development.

The Make-Ready Program incentives are essential to enabling the installation of Level 2 and DCFC stations. These incentives continued to encourage customer participation and increase electric vehicle supply equipment (EVSE) deployment in New York. Most Make-Ready Program participants who were interviewed indicated that the majority of the cost of the charging hardware and infrastructure was covered by the Make-Ready Program and supplemental funding sources such as those from NYSERDA. Many participants noted that without multiple incentive sources, they would not have installed the charging stations. The closing of NYSERDA’s ChargeReady Program in September 2021 eliminated equipment incentives for customers and resulted in slowing National Grid’s progress to its goals.

Insufficient program incentives were also noted as a major barrier to program participation for National Grid’s Fleet Programs (the MHDV program and Fleet Assessment Services). The lack of incentives, combined with other strict eligibility requirements, limited the number of Fleet Program participants and slowed National Grid’s progress towards meeting its goals for the Fleet Programs. For example, high customer-side costs were cited as a major barrier for the MHDV Program (such costs are not eligible for program support as currently defined), suggesting that high EVSE development costs continue to be a major barrier for all programs and highlights the importance of program incentives.

Consideration: Since the equipment incentives are no longer offered by NYSERDA, the following suggestions should be explored with the DPS during the midpoint review:

EVSE incentives are needed more broadly, especially in disadvantaged communities (DACs). The Make-Ready Program tracking information showed that when the NYSERDA incentives were discontinued in September 2021, this impacted National Grid’s program and significantly slowed program activity. This supports the statement that all program segments need financial support to install EV charging stations, and almost all Make-Ready Program interviewees suggested that incentives are crucial to equipment installation decisions. If NYSERDA incentives remain unavailable, National Grid staff should explore alternative equipment incentive opportunities during the midpoint review with the DPS.

Finding 3: Supplier diversity is increasing.

In the previous evaluation, the DNV team found that one EVSE supplier provided 83% of the activated ports. In the current Make Ready Program, the tracking data showed much greater supplier diversity for the activated charging stations, with a total of 20 EVSE vendors providing Level 2 and DCFC equipment. While two EVSE vendors account for 55% of the total Level 2 ports installed, the overall spread of vendors shows increasing diversity compared to the previous evaluation. Interviewed participants also mentioned having a diverse selection to choose from when selecting an EVSE supplier.

DNV also learned that program participants make EVSE supplier decisions based on multiple factors including price point, software capabilities, previous experience with a manufacturer, and aesthetics, but also consider any recommendations from their contractor.

Finding 4: The Make-Ready Program is a competitive incentive offering.

National Grid's Make-Ready Program incentives are comparable to and, for certain project types, at times more generous than other EV utility programs, specifically compared to the other five programs included in the benchmarking study. National Grid's Make-Ready Program will fund up to 100% of the electric infrastructure costs associated with installing EVSE, while other programs offer between 50-80% of the costs.

1.4 Program challenges and barriers

DNV identified the following barriers and challenges to the program.

Finding 5: COVID-19 continues to impact New York EV programs.

While charging station development through May 31, 2022, is increasing, the COVID-19 pandemic continues to impact the New York EV programs, including:

- **Supply chain impacts.** The COVID-19 pandemic caused supply chain challenges that still exist in 2022, limiting equipment availability and creating labor restrictions that affect the timeline between application submission and station construction. Ongoing supply chain issues could pose a prolonged challenge and impact program participants' ability to complete projects in a timely manner. Several program participants mentioned this issue when discussing the installation process.
- **Impacts on site host development and utilization.** Fleet Program interviewees observed a continued reduced usage of existing fleet vehicles due to the impact of COVID-19 on in-person business operations. Interviewees also cited the COVID-19-related challenges of rising vehicle prices coupled with reduced budgets available for vehicle purchases. Small businesses are still struggling financially as they continue to see less business than expected. The program has also seen an increase in applications being placed "on hold" or being cancelled (306 ports on hold and 346 ports cancelled) due to reduced budgets and lack of NYSERDA funding to cover equipment costs. Interviewed contractors also noted staffing shortages; in particular, limited EV knowledgeable staff who are available to complete EVSE installations.

Finding 6: Level 2 station development is behind schedule and would benefit from increased incentives.

While the Make-Ready Program has made progress towards mid-point goals, the program has hit only 34% of its Level 2 midpoint goal for activated ports, compared to 54% of its DCFC activated port goal. The program still has a strong pipeline for Level 2 ports, with 1,167 Level 2 ports considered "in-flight" and "in-development," but as of May 31, 2022, the pipeline is not sufficient for the program to meet its Level 2 midpoint goal.

Consideration: Promote targeted segment outreach.

National Grid should discuss strategies with the DPS during the midpoint review to use focused marketing efforts to increase program participation in certain segments, specifically the lowest-participating segments (Fleets, Parks/Recreation, and Municipal Properties). An example of successful implementation of this approach comes from Austin Energy (see Section 5). After not meeting projected goals and evaluating segment gaps, Austin Energy conducted a targeted marketing campaign to multi-family property owners and associations, and successfully increased

participation in this sector from 2 participants to 85 participants during the timeframe of the targeted outreach. By diversifying customer segments and developing sector targets within the program, National Grid can also work to increase EV charger installations, program awareness and public awareness. National Grid and the DPS team can explore new customer targets and sector goals during the midpoint review, and use the programs included in the Benchmarking Study as examples of new customer segments for targeting by the program.

Consideration: Continue to coordinate internally between the Fleet Programs and the Make-Ready program.

National Grid staff should continue to cross-promote the Make-Ready Program and the Fleet Assessment Services to increase the number of fleet segment participants moving through the Make-Ready Program. The New York programs could increase coordination with each other to bolster participation within the fleet segment of the Make-Ready Program and continue to encourage participants in the Fleet Assessment Services to apply for Make-Ready funding. Staff members can also institute more structured, recurring meetings to evaluate cross promotion activities between the Fleet Programs and Make-Ready Program and constantly reassess opportunities to improve marketing.

1.5 Future program considerations

The DNV team identified the following considerations for future iterations of these programs.

Finding 7: The Fleet Programs are in pilot stages and have the potential to mature through further development, expansion and improvements.

National Grid's Fleet Programs are still gaining traction but have limited program participation. While there has been activity in all Fleet Programs to date, most are still not hitting their predicted participation targets. Those interviewed for the Fleet Programs all expressed satisfaction with the program and implementation teams but also shared ideas for improvement.

Consideration: National Grid should explore with the DPS the option to relax program requirements to increase levels of adoption by creating tiered incentives, with progressively greater incentives for those that can meet stricter criteria.

Aside from the Transit Authority Make-Ready Program, the remaining Fleet Programs are not meeting their goals and do not have as much program participation as expected. Compared to the Fleet Programs included in the Benchmarking Study (see Section 5), National Grid's programs have the most limiting eligibility criteria. DNV acknowledges the value in these criteria but suggests that National Grid discuss with the DPS at the midpoint review the ability to relax program requirements and explore the possibility of creating tiered incentives based on tiered eligibility criteria. This approach would open the program to more participants while preserving the existing eligibility criteria to support and reward those that can meet the most robust criteria with the greatest incentive levels. The program can simplify their marketing materials to ensure messaging of the program is simple and easy to understand. Additionally, the program should consider expanding the scope of infrastructure services provided to include customer-side make-ready in the MHDV Pilot Program.

Consideration: The program should provide participants with additional technical guidance and support.

Many interviewees noted their lack of knowledge with EVs, EV charging equipment and renewable energy, and requested additional technical guidance and support, along with a robust incentive structure to improve their program experience. Customers suggested that more comprehensive, hands-on support from National Grid would be helpful when participating in Fleet Programs. For example, the Benchmarking Study showed that robust technical assistance

and advisory services offered by other program administrators' programs, such as Peninsula Clean Energy's (PCE's), are successful and prioritize customer education. Providing technical resources to all program participants outlining program processes, requirements for participants, and National Grid's involvement and expectations would help further define the program for participants and avoid confusion and delays. The program should also discuss options with the DPS to educate customers on electrification scenarios that incorporate market trends and forecasts to help make better informed decisions based on costs and projected needs. To further support their needs, customers also requested actionable and detailed recommendations on how to implement any next steps and suggested electrification opportunities (such as installing the appropriate number of charging stations and purchasing the appropriate EV for their use).

Consideration: The Fleet Programs should continue to focus on providing dedicated technical staff to implement the Fleet Programs.

While National Grid has a team of staff managing the Fleet Programs and recently hired a Program Manager to focus on fleet, program staff should continue to ensure there are dedicated technical staff within National Grid to provide participants with the additional support needed to successfully electrify fleets. As more fleet customers express interest in National Grid's Fleet Programs, having dedicated staff to manage the Fleet Programs will continue to benefit customers by letting staff focus specifically on their program participation and experiences.

Consideration: Continue to collaborate with National Grid Massachusetts and promote collaborative marketing among the New York Fleet Programs to develop more robust fleet programs.

National Grid Massachusetts' Fleet Advisory Services are mature and contain robust strategies for successful implementation that are being shared and should continue to be shared with the New York National Grid team. The program has completed 40 fleet assessments through June 2022 and has evaluated over 9,500 vehicles. While the Fleet Program staff at National Grid communicate between utility territories, to operate robust and successful programs, we recommend that the fleet managers continue to collaborate and share implementation strategies.

Finding 8: There are opportunities for standardization within program tracking spreadsheets and data management.

National Grid program staff retain program tracking information in GridForce for each of the New York programs. These data management tools track project-specific information, program goals, and costs; they serve as the system of record for the programs. Strengthening and standardizing these tracking systems would expand accessibility internally and for others (e.g., evaluators) and would better enable National Grid to expand the EV Make-Ready Program in the future. DNV observed, for example, that 71 out of the 223 activated project records in the program tracking workbook were missing equipment cost data. While the program does not incentivize charging equipment (and as such the "EVSE Costs" data field was not included in the cost analysis), DNV recommends that National Grid address these data gaps to provide a full and accurate picture of all project costs.

Finding 9: Participants in all programs can benefit from additional information and education about EVs and EV charging station technology.

Throughout program interviews, a common theme from participants was the desire for more education and information sharing on EVs and EV charging technology. Several participants were unfamiliar with EVs (sedans, SUVs, and fleet vehicles), noted range anxiety, and were unfamiliar with different charging station types and capabilities. For example, when one Make-Ready program participant was asked why they did not install a DCFC station, they said they didn't know what a DCFC station was. This suggests that the program staff and contractors should provide additional information on different charging station types, different charging methods for different EVs (e.g., CSS, CHAdeMO²), the benefits and limitations of different station types (including software, hardware, and monitoring capabilities), and information on expected changes to the market. DAC communities, in particular, need more access to information to increase education on EVs and EV charging equipment.

Consideration: The program staff and contractors should consider tailoring their program experience and marketing materials to the customer and provide additional educational materials as needed based on the customer's level of knowledge.

Specifically for National Grid staff, the program could lean heavily on the example of PCE's technical assistance offerings (see Section 5) and implement a more robust technical assistance guide to customers either internally or with program contractors. PCE's comprehensive technical assistance provides EVSE advisors who guide and assist customers through the entire planning process. This assistance helps increase customer education and awareness of different technologies and market trends by providing various design plans based on cost, the number and type of equipment installed, and planning for future potential needs based on market evolution.

Consideration: Consider taking steps to combat range anxiety, another frequently mentioned barrier to adoption.

As more EVSE is deployed throughout the state and as part of an overall education campaign, National Grid should provide information and direct customers to resources that address range anxiety. Austin Energy has addressed the challenge of range anxiety in its program implementation by creating two interactive online maps of Level 2 and DCFC stations in its service area, which users can search to find nearby stations. The two maps help users find a charging station to fit their needs based on their location and the time needed to charge. The implementation team could also

² Combined Charging System (CSS) is a DC Fast Charger connector that is used in North America. CHAdeMo is the official standard charging connector in Japan used for almost all DC fast chargers, used specifically for Nissan and Mitsubishi.



help point program participants to PlugShare, A Better Route Planner, or other mapping resources that provide users with information on the extensive and rapidly expanding charging network throughout the state.

The remainder of this report presents a summary of National Grid's New York Electric Vehicle Charging Station Programs, DNV's evaluation methodology, and the results of our evaluation research and analyses.

2 INTRODUCTION

This section describes National Grid's New York EV Make-Ready Program and Fleet Programs that DNV evaluated for the period from October 1, 2021, through May 31, 2022. Background

National Grid's EV Charging Station Programs consist of four programs designed to encourage charging infrastructure development and EV deployment throughout New York State.

2.1.1 Electric Vehicle Charging Station Make-Ready Program

This program, commonly referred to as the "Make-Ready Program," provides financial incentives to support infrastructure costs associated with Level 2³ and DCFC⁴ charging station deployment to serve light-duty vehicles throughout New York. The program engages internal staff and third-party contractors to recruit potential program participants and facilitate EVSE installations. The program will fund up to 100% of the electric infrastructure costs associated with installing electric vehicle charging stations. Incentive levels vary by target charging segment as shown in Table 2-1, which presents the incentives by segment for Level 2 and DCFC electric infrastructure costs. The program requires network and station monitoring through 2025.

Table 2-1 Summary of Make-Ready Program incentives

| Incentive level ⁵ | Project criteria |
|------------------------------|---|
| Up to 100% | <p>Level 2 projects at multi-unit dwellings located within DACs.</p> <p>Publicly available DCFC projects with standardized plug types located within Disadvantaged Communities.</p> |
| Up to 90% | <p>Publicly available Level 2 and DCFC projects with standardized plug⁶ types located outside of Disadvantaged Communities. Includes municipal pay-to-park and free parking locations.</p> <p>Publicly available Level 2 and DCFC projects including proprietary plugs⁷ must have an equal number of standardized plugs of an equal or greater charging capacity to the proprietary plugs (outside of Disadvantaged Communities).</p> |
| Up to 50% | <p>Non-public Level 2 and DCFC projects, such as workplaces with restricted access and privately-owned pay-to-park lots.</p> <p>Public and non-public Level 2 and DCFC projects consisting only of proprietary plugs.</p> <p>Public and non-public Level 2 and DCFC projects where proprietary plugs are not co-located with an equal number or greater number of standardized plugs of equal or greater charging capacity.</p> |

2.1.2 Medium- and Heavy-duty (MHDV) Program

This is a pilot program for funding investments in grid-side infrastructure to support the electrification of medium- and heavy-duty vehicles, which tend to be larger and more difficult to electrify than light-duty vehicles. The program covers up to 90% of

³ Level 2 charging uses a 240-volt AC service and typically has a power rating between 6 and 19.2 kW. Level 2 charging stations deliver charging speeds faster than Level 1 chargers (which use a standard 120-volt wall socket and charge at less than 1.8 kW) but slower than DCFC, defined below.

⁴ Direct Current Fast Charging (DCFC) is the fastest type of commercially available EV charging. It typically features charging speeds of at least 50 kW and can restore approximately 80% of an EV's charge in about 30 minutes.

⁵ Customer is responsible for charger costs, annual maintenance cost, and ongoing electricity costs

⁶ Standardized plugs are those that use the Society of Automotive Engineers (SAE's) J1772 charging coupler for Level 2 ports or SAE's Combined Charging System, or CCS, coupler for DCFC stations.

⁷ Proprietary plugs are those that do not fall under the description for a standardized plug (i.e., Tesla's connector for both Level 2 and DCFC).

utility-side make-ready costs. During the evaluation period, the MDHV program had no participants, but several projects are in the pipeline and require the following eligibility criteria:

- Projects are prioritized to support a direct reduction in diesel emissions for those in DACs most impacted by vehicle pollution
- Participants must participate in the New York Truck Voucher Incentive Program (NYTVIP)⁸

2.1.3 Transit Authority Make-Ready Program

National Grid has \$5.09M in funding and currently supports the two eligible transit authorities in its territory. The program has supported both entities extensively toward their short-term goals of 25% electrification of their fleets by 2025 while planning for 100% electrification by 2035 providing Make-Ready infrastructure funding, optimizing grid infrastructure, and offering technical guidance and expertise to electrify their fleet and install EV charging stations.

2.1.4 Fleet Assessment Services

The Fleet Assessment services pilot program helps customers determine their available electrical capacity for supporting fleet electrification as well as the potential bill impact or savings by electrifying their fleet and installing EV charging stations. These services include a site feasibility analysis to understand power demand and distribution impacts, and a rate analysis to help the customer understand electricity costs required to electrify their fleet. As of May 31, 2022, the program currently has 22 applications submitted and 17 fleet assessments have been delivered to customers.

⁸ The New York Truck Voucher Incentive Program (NYTVIP), administered by the New York State Energy Research and Development Authority (NYSERDA), provides vouchers, or discounts, to fleets across New York State that purchase or lease medium- and heavy-duty zero-emission battery electric (BEV) or hydrogen fuel cell electric (FCEV) vehicles. This assistance is for fleets that want to adopt zero-emission vehicle technologies while removing the oldest, dirtiest diesel engines from New York roads.

3 EVALUATION METHODOLOGY

To evaluate National Grid's New York EV Charging Station and Fleet Programs, DNV completed the following activities:

- **Program manager (PM) interviews** – DNV interviewed the National Grid program managers responsible for the EV Make-Ready Program and Fleet Programs. These interviews helped the team understand initial program successes and challenges and enabled us to refine the scope of participant interviews and other research.
- **Participant and prospective participant in-depth interviews** – DNV interviewed participants in the Make-Ready Program and participants and prospective participants in the Fleet Programs. These interviews were designed to solicit participants' experiences within the program, addressing successes and barriers, eligibility criteria, incentive levels needed to support participation, comprehensive support needed, and other aspects that can influence participation.
- **Contractor interviews** – DNV conducted interviews with contractors who perform the site assessments, infrastructure upgrades, and installation of the EVSE. This task helped the team understand what drove site hosts to install charging infrastructure, what is working well with the existing program, and how future programs can be adapted to maximize participation and accelerate the deployment of EV infrastructure
- **Program information review** – DNV reviewed program materials for the Make-Ready Program and Fleet Programs to inform both the design of interview guides and our understanding of the program components and progress. Materials included marketing collateral, program information, logic models/process flows, tracking spreadsheets, and other materials.
- **Data analysis** – DNV analyzed Make-Ready Program tracking data to quantify program progress and assess high-level trends related to EV charging station adoption, including infrastructure and per-station/per-port costs, as well as any trends in the types and locations of facilities that choose to install EVSE.
- **Benchmarking study** – DNV completed a benchmarking review of other PAs' electric transportation programs across the country to make recommendations for improvements to National Grid's New York programs and provide information for potential future offerings.

Table 3-1 summarizes the primary interviews conducted by DNV.

Table 3-1 Summary of program interviews

| Interviewee | Number of Interviews |
|--|----------------------|
| Program Managers | 4 |
| Make-Ready Program Participants | 11 |
| Make-Ready Program Prospective Participants | 0 ⁹ |
| Make-Ready Program Contractors | 8 |
| Medium- and Heavy-duty (MHDV) Program Prospective Participants | 2 |
| Fleet Assessment Services Participants | 2 |
| Transit Authority Make-Ready Program Participants | 2 |
| Total | 29 |

⁹ The DNV team could not interview any partial participants on the phone but were able to gather some insights via email.

4 RESULTS AND FINDINGS

This section presents the evaluation results of National Grid's New York EV Make-Ready Program and Fleet Programs, including cumulative program results, from October 1, 2021, through May 31, 2022.

4.1 Make-Ready Program

The following sections outline the analysis of program data and interview results for the Make-Ready Program.

4.1.1 Data analysis results

The team analyzed data for charging station development, the geographic distribution of stations, and project costs.

4.1.1.1 Charging station development

National Grid has made progress across the Level 2 and DCFC segments, most notably in workplaces (50% of activated ports to date) and multi-unit dwellings (MUDs) (27% of activated ports to date). As of May 31, 2022, the program has activated 1,080 Level 2 ports across 741 stations and 208 sites; it has also activated 55 DCFC ports across 51 stations and 15 sites. The program has a strong pipeline of 1,167 Level 2 ports and 152 DCFC ports. Of the activated and in-flight ports, 50% are located within an environmental justice community (EJC) or a low-to-moderate income (LMI) community.¹⁰

The Make-Ready Program shows good progress in DCFC development ahead of the program's midpoint (October 1, 2022); activated DCFC ports represent 54% of the program's midpoint goal, compared to the 34% achieved for Level 2 ports to date. Table 4-1 presents the program goals and progress for the midpoint review.

Table 4-1. Make-Ready Program progress against midpoint goals as of May 31, 2022

| Category | Program midpoint goal | Activated ports to date | Progress against Midpoint Goals |
|----------|-----------------------|-------------------------|---------------------------------|
| Level 2 | 3,146 | 1,080 | 34% |
| DCFC | 101 | 55 | 54% |

Table 4-2 presents the program's progress against the CY2025 regulatory goals set forth in the Order.

With 152 DCFC ports in the pipeline, it is possible that the program will meet its midpoint DCFC goal by October 1, 2022, if at least one third of those projects are activated during the summer of 2022. The current size of the Level 2 pipeline (1,167 ports) is not sufficient for the program to meet its Level 2 midpoint goal.

Table 4-2. Make-Ready Program progress against CY2025 regulatory goals as of May 31, 2022

| Category | CY2025 port projection | Activated ports to date | Progress against CY2025 goals |
|----------|------------------------|-------------------------|-------------------------------|
| Level 2 | 15,728 | 1,080 | 7% |
| DCFC | 504 | 55 | 11% |

¹⁰ Projects that fall under EJC or LMI criteria must meet at least one of the following criteria: 1. Census block groups that meet the LMI Area Threshold (top quartile of census block groups in New York, ranked by the percentage of LMI households in each census block, with households that have an annual income at or below 50% of the Area Median Income of their Census block group) that are located within the DEC Potential Environmental Justice Area, 2. New York State [Opportunity Zones](#)

National Grid has a strong pipeline of projects at various stages of development. For this evaluation, the site statuses in the Make-Ready tracking worksheet are grouped as follows:

- **Activated** status indicates stations that have completed construction and are operational. This includes the tracking worksheet status of “paid.”
- **Project pipeline** stages track project development from lead generation through construction as defined below:
 - **In flight** status indicates sites that have been approved by National Grid but are not yet both complete and activated. This includes the tracking worksheet statuses of “construction complete,” “under construction,” and “application approved.”
 - **In development** status indicates sites that have not yet been approved by National Grid but have completed the application process. This includes the tracking worksheet statuses of “under review” and “application submitted.”

There are additional statuses in the tracking data representing projects that are not actively moving forward, including “cancelled” or “on hold.” These stations are not included in this analysis.

Table 4-3 and Table 4-4 present the progress through May 31, 2022, for Level 2 and DCFC infrastructure development, respectively, measured in the total number of charging ports by status and by segment. Table 4-3 shows that the workplace and MUD segments have the highest numbers of activated and in-flight Level 2 ports, while the fleet and parks/recreation segments have the least activity to date.

Table 4-3. Make-Ready Program Level 2 port development by segment as of May 31, 2022

| Level 2 Segment | Activated | In flight | In development | Total |
|--------------------------------------|--------------|------------|----------------|--------------|
| Workplace | 542 | 422 | 144 | 1,108 |
| MUD | 296 | 223 | 42 | 561 |
| Municipal Properties | 108 | 109 | 43 | 260 |
| Fleet | 2 | 1 | 0 | 3 |
| Parks/Recreation | 36 | 30 | 8 | 74 |
| Non-Workplace Public Charging | 96 | 129 | 16 | 241 |
| Total Level 2 | 1,080 | 914 | 253 | 2,247 |

Table 4-4 shows that the workplace and non-workplace public charging segments have the highest number of DCFC ports, which mostly appear at gas stations and retail locations. There are no DCFC ports activated or in the pipeline in the MUD, fleet, and parks/recreation segments, which aligns with DNV's expectations since these locations tend to support long-duration charging and would be better suited to Level 2 stations. Public stations, on the other hand, are more likely to be used for "convenience charging" and help to address range anxiety by allowing for short duration charging while drivers are away from home.

Table 4-4. Make-Ready Program DCFC port development by segment as of May 31, 2022

| DCFC Segment | Activated | In flight | In development | Total |
|--------------------------------------|-----------|-----------|----------------|------------|
| Workplace | 16 | 35 | 9 | 60 |
| MUD | 0 | 0 | 0 | 0 |
| Municipal Properties | 6 | 4 | 18 | 28 |
| Fleet | 0 | 0 | 0 | 0 |
| Parks/Recreation | 0 | 0 | 0 | 0 |
| Non-Workplace Public Charging | 33 | 44 | 42 | 119 |
| Total DCFC | 55 | 83 | 69 | 207 |

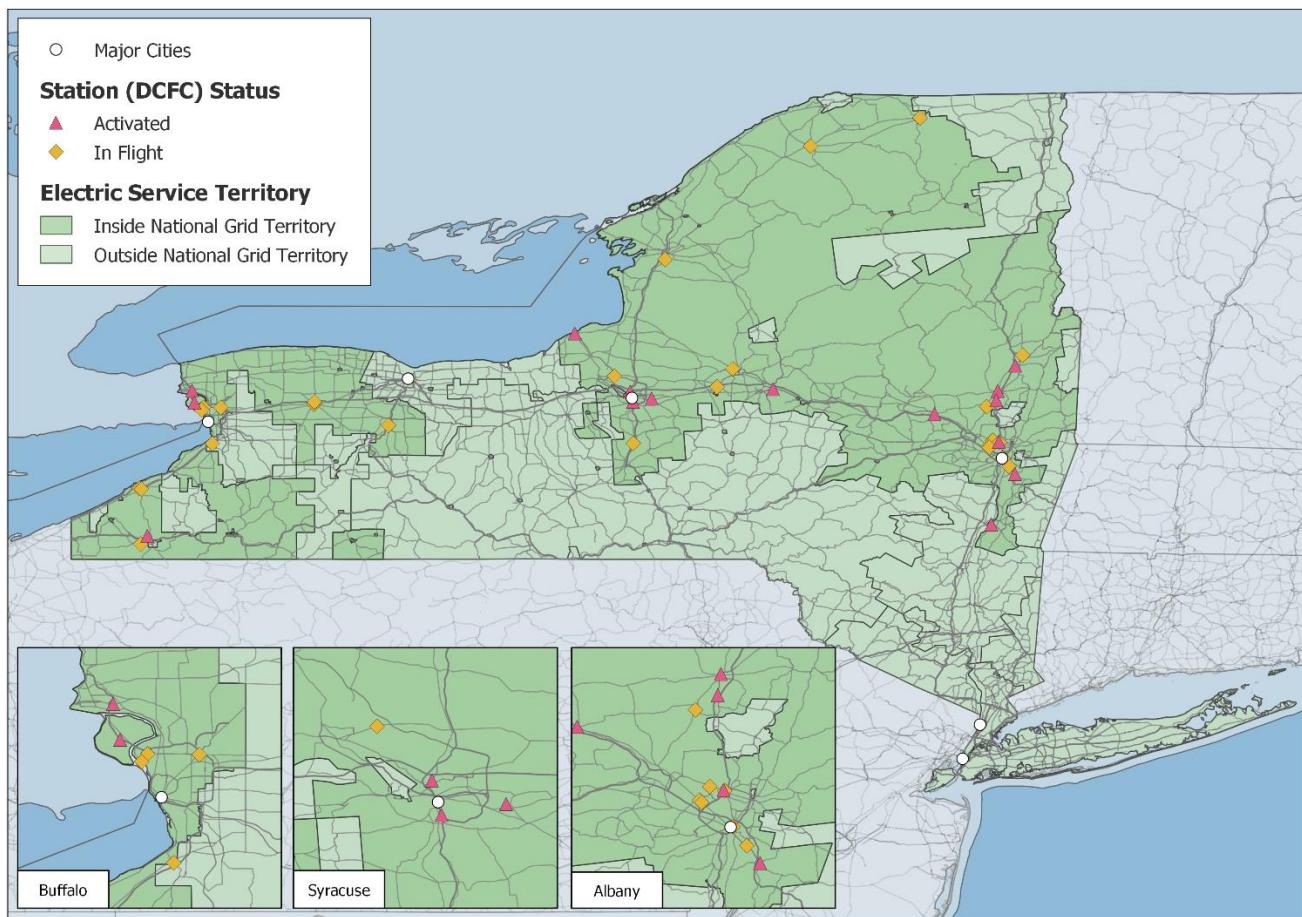
Table 4-5 lists a breakdown of the subsegments tracked in National Grid's tracking spreadsheet. The program has made more significant progress installing Level 2 ports at general workplaces, MUD sites and municipal properties sites. Program efforts with retail buildings, public parking lots/garages, and hotels are also strong, though these sectors do not have as much activity in the program. The program appears to show slower progress in installing Level 2 ports at public transit adjacent parking sites, which could support the type of long-dwell charging times for which Level 2 is well-suited.

Table 4-5. Make-Ready Program site and port development by subsegment as of May 31, 2022

| Segment | Subsegment | Activated Level 2 Ports | Activated DCFC Ports |
|--|---------------------------------|-------------------------|----------------------|
| MUD | MUD | 294 | 0 |
| MUD | Parking Lot/Garage | 2 | 0 |
| Total MUD | | 296 | 0 |
| Municipal Properties | Municipal Properties | 108 | 6 |
| Total Municipal Properties | | 108 | 6 |
| Fleet Segment | Corporate Fleet | 0 | 0 |
| Fleet Segment | Government Fleet | 2 | 0 |
| Total Fleet Segments | | 2 | 0 |
| Parks/Recreation | Parks/Recreation | 26 | 0 |
| Parks/Recreation | Parking Lot/Garage | 10 | 0 |
| Total Parks/Recreation | | 36 | 0 |
| Non-Workplace Public Charging | Public Transit Adjacent Parking | 8 | 0 |
| Non-Workplace Public Charging | Parking Lot/Garage | 88 | 10 |
| Non-Workplace Public Charging | Highway Rest Stops | 0 | 0 |
| Non-Workplace Public Charging | Gas Stations | 0 | 23 |
| Total Non-Workplace Public Charging | | 96 | 33 |
| Workplace | College/University | 54 | 0 |
| Workplace | General Workplace | 196 | 0 |
| Workplace | Hotel | 86 | 0 |
| Workplace | Industrial/Manufacturing | 44 | 0 |
| Workplace | Medical | 38 | 0 |
| Workplace | Mixed-use (retail and offices) | 26 | 2 |
| Workplace | Retail | 94 | 14 |
| Workplace | Gas Stations | 4 | 0 |
| Total Workplace | | 542 | 16 |
| Total | | 1,080 | 55 |

To date, the program has activated 23 DCFC ports at 5 gas stations (see Figure 4-1), all of which are located adjacent to a major highway in Upstate New York; however, the program has not activated any DCFC ports at highway rest stops. This suggests that gas stations near high-traffic corridors are well-suited to host DCFC stations, which support faster charging and shorter dwell times than Level 2 charging. Notably, there are only 4 Level 2 ports deployed at gas stations and highway rest stops, which aligns with the expectation that fast charging is most useful to EV drivers traveling on highways.

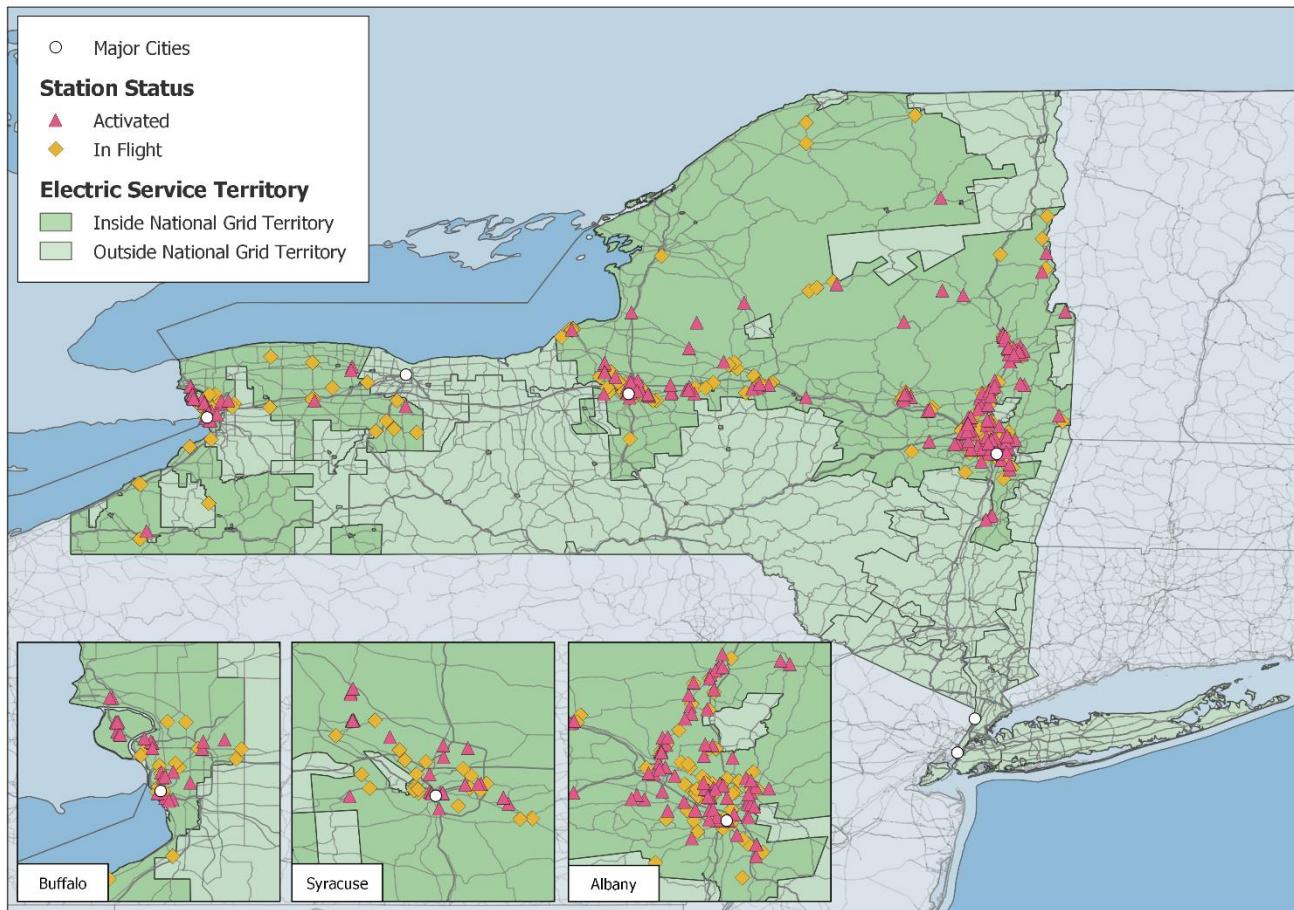
Figure 4-1. Activated and in-flight DCFC stations in National Grid service territory through May 31, 2022



4.1.1.2 Geographic distribution of EV charging sites

Charging station development is occurring throughout National Grid's New York electric service territory, with concentrations in the Albany, Syracuse, and Buffalo metropolitan areas. Figure 4-2 shows the statewide distribution of the activated and in-flight charging stations throughout the service territory.

Figure 4-2. Activated and in-flight Level 2 and DCFC charging stations in National Grid service territory through May 31, 2022



4.1.1.3 Make-Ready Program station development cost analysis

The Make-Ready Program covers up to 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 the EVSE, signs, painting, aesthetics, or other in-house work performed at the sites.

DNV analyzed the infrastructure costs through May 31, 2022, including all reported utility make-ready infrastructure costs, the contribution in aid of construction costs (CIAC), and the future-proofing costs (the cost for a customer to install additional infrastructure now to streamline future station installation) – and the total costs, which reflect all program tracked costs for the station installation including infrastructure costs, equipment costs, and other items like networking fees, signage, and bollards¹¹. Table 4-6 presents the aggregate program costs by station type and segment, with the average per-station and

¹¹ The total project costs listed in National Grid's project tracker do not include a breakdown into cost categories, thereby limiting the cost analysis DNV was able to complete.

per-port costs below in Tables 4-7 and 4-9. This analysis is based on the 1,135 Level 2 and DCFC activated ports included in National Grid's program tracking spreadsheet.

Table 4-6. Total infrastructure and project costs, by charger type and segment through May 31, 2022

| Charging level | Segment | Total infrastructure cost | Total project cost |
|----------------------------|-------------------------------|---------------------------|---------------------|
| Level 2 | Workplace | \$3,084,077 | \$5,593,369 |
| | MUD | \$1,606,477 | \$3,034,569 |
| | Municipal Properties | \$596,346 | \$1,262,160 |
| | Fleet Segment | \$17,730 | N/A* |
| | Parks/Recreation | \$188,112 | \$395,660 |
| | Non-Workplace Public Charging | \$619,432 | \$1,068,956 |
| Total Level 2 costs | | \$6,112,174 | \$11,373,245 |
| DCFC | Workplace | \$637,238 | \$1,341,689 |
| | Municipal Properties | \$542,119 | \$1,429,663 |
| | Non-Workplace Public Charging | \$1,922,077 | \$5,644,384 |
| Total DCFC costs | | \$3,101,434 | \$8,415,736 |
| Total costs | | \$9,213,608 | \$19,788,980 |

* The Level 2 Fleet stations only have infrastructure costs tracked and therefore do not have reported project costs to include.

Table 4-7 presents the average per-port cost by station type and segment.

Table 4-7. Per-port average infrastructure and project costs by charger type and segment through May 31, 2022

| Charging level | Segment | Number of Ports | Average infrastructure cost per port | Average project cost per port |
|--------------------------------|-------------------------------|-----------------|--------------------------------------|-------------------------------|
| Level 2 | Workplace | 542 | \$5,690 | \$10,320 |
| | MUD | 296 | \$5,427 | \$10,252 |
| | Municipal Properties | 108 | \$5,522 | \$11,687 |
| | Fleet Segment | 2 | \$8,865 | N/A* |
| | Parks/ Recreation | 36 | \$5,225 | \$10,991 |
| | Non-Workplace Public Charging | 96 | \$6,452 | \$11,135 |
| Overall Level 2 average | | | \$6,197 | \$10,608 |
| DCFC | Workplace | 16 | \$39,827 | \$83,856 |
| | Municipal Properties | 6 | \$90,353 | \$238,277 |
| | Non-Workplace Public Charging | 33 | \$58,245 | \$171,042 |
| Overall DCFC average | | | \$62,808 | \$164,392 |

*The Level 2 Fleet stations only have infrastructure costs tracked and therefore do not have reported project costs to include.

To align with National Grid's incentive calculation approach for DCFC ports, which operate on a per-kW rather than a per-port or per-station basis, the DCFC costs are alternatively shown per-kW in Table 4-8 below. This approach is appropriate

for DCFC stations since there is significant variability in per-port power ratings that makes it difficult to compare per-port costs accurately and consistently.

Table 4-8. Per-kW average infrastructure and average project costs by segment for DCFC stations through May 31, 2022

| Charging Level | Segment | Average infrastructure cost per kW | Average project cost per kW |
|-----------------------------|-------------------------------|------------------------------------|-----------------------------|
| DCFC | Workplace | \$352 | \$740 |
| | Municipal Properties | \$516 | \$1,362 |
| | Non-Workplace Public Charging | \$262 | \$771 |
| Overall DCFC Average | | \$304 | \$826 |

Table 4-9 presents the average per-station cost by station type and segment.

Table 4-9. Per-station average infrastructure and average project costs by charger type and segment through May 31, 2022

| Charging level | Segment | Number of stations | Average infrastructure cost per station | Average project cost per station |
|--------------------------------|-------------------------------|--------------------|---|----------------------------------|
| Level 2 | Workplace | 373 | \$8,268 | \$14,996 |
| | MUD | 225 | \$7,140 | \$13,487 |
| | Municipal Properties | 72 | \$8,283 | \$17,530 |
| | Fleet Segment | 2 | \$8,865 | N/A* |
| | Parks/ Recreation | 21 | \$8,958 | \$18,841 |
| | Non-Workplace Public Charging | 48 | \$12,905 | \$22,270 |
| Overall Level 2 average | | | \$9,070 | \$16,065 |
| DCFC | Workplace | 15 | \$42,483 | \$89,446 |
| | Municipal Properties | 6 | \$90,353 | \$238,277 |
| | Non-Workplace Public Charging | 30 | \$64,069 | \$188,146 |
| Overall DCFC average | | | \$65,635 | \$171,956 |

*The Level 2 Fleet stations only have infrastructure costs tracked in the spreadsheet and therefore do not have reported project costs to include.

4.1.2 Interview findings

For this evaluation, DNV interviewed 11 program participants with activated stations and 8 program contractors. The following are key takeaways about the Make-Ready Program from these interviews, interviews with the program managers, and analysis of program data:

The Make-Ready Program is making progress toward its midpoint (October 1, 2022) and CY2025 goals.

Overall, the program has reached 34% of its midpoint goal for Level 2 ports and 54% of its midpoint goal for DCFC ports¹². The program has also reached 7% of its overall CY2025 goal for Level 2 ports and 11% of its overall goal for DCFC ports but has a strong pipeline of 1,167 Level 2 ports and 152 DCFC ports, and still more in preliminary stages of the program.

Program participants and contractors are both very satisfied with the program.

Program participants consistently expressed high satisfaction with the program. Interviewed contractors were also very happy with the program, noting that communication with National Grid is excellent, and program staff are easy to work with. Satisfaction ratings among program participants (n=11) averaged 9 out of a maximum rating of 10 and the program contractors (n=8) averaged a satisfaction rating of 8.8 out of a maximum rating of 10.

“GREAT STAFF TO WORK WITH. THEY ARE VERY RESPONSIVE.”

“THE TEAM ON THE [MAKE-READY] PROGRAM DOES A GREAT JOB OF SUPPORTING CONTRACTORS. [WE] COULDN’T ASK FOR MORE.”

“THEY’RE DOING A WORLD CLASS JOB.”

- Make-Ready Program Participants

The incentives provided by National Grid are driving EVSE adoption and customer participation.

All participants interviewed mentioned that the incentives were critical to the decision to install charging stations. All participants stated that they either did not have the budget to install charging stations, or that they would have installed stations in the future, but that it likely would not have been a top priority. The contractors interviewed also highlighted how essential the Make-Ready funding is for EV adoption, stating that funding is “really critical for people to even consider [installing charging station equipment]” and “without funding there would be no EV industry.”

NYSERDA incentives helped drive the installation of EVSE.

Funding from NYSERDA was made available to all New York residents to help cover the cost of charging station equipment, and while it's no longer offered, it helped program participants offset the costs of the charging station equipment that was not covered by National Grid's program. During the interviews, most participants stated that they received NYSERDA funding, and most potential participants stated that the reason they did not move forward with the program was due to the lack of EVSE funding from NYSERDA. The contractors interviewed echoed the same theme, stating, “We saw the program take a hard hit with the lack of NYSERDA funding.” Several contractors and program managers reported that many projects have been put on hold or have been completely lost due to the loss of NYSERDA funding.

Program participants expressed their main motivation for program participation is largely due to long-term visions to support vehicle electrification and GHG emissions reductions.

When asked about their main motivation for installing an EV charging station, most participants stated that they want to support the long-term electrification of vehicles and prepare for the market transition to EVs. Participants are also motivated by the reduction in GHG emissions and in supporting their employees' and customers' current and future EV adoption.

¹² Through May 31, 2022

Continued education on EVs, charging station equipment, and clean fuel options is recommended to encourage future EV adoption.

Most participants reported having little knowledge of EVs, EVSE, and energy efficiency before participating in the program. Feedback from National Grid staff and program contractors also supported this statement, stating that program participants have very little knowledge of EVs and EVSE prior to engaging with the program. For example, one program participant was not aware of what a DCFC was, and others mentioned not having adopted DCFC technology due to an uncertainty of market directions and baseline knowledge. Contractors mentioned that continued education and more robust marketing materials to educate program participants on basic EV and EVSE attributes are critical when it comes to helping customers feel comfortable with installing EVSE. Contractors expressed interest in the development of materials like one-pagers or videos highlighting specific stages of the process like parking lot siting, specific details for installation and siting based on site location, and basic EV and EVSE information.

Contractors suggest several avenues to streamline their experience.

Contractors consistently praised National Grid's Make-Ready Program team's communication and support, but also identified opportunities to improve their program experience. Contractors noted, for example, that the program portal is adequate for its intended purpose to submit Make-Ready Program applications but does not allow documents to be edited once uploaded. One vendor mentioned preferring to work with National Grid's Distributed Generation department that utilizes a platform similar to the Make-Ready Program's portal but allows documents to be edited. Transition of the Make-Ready portal to this platform could be a possible solution to improve the contractor experience. Contractors also noted difficulties in communicating with the National Grid New Connections Department; common themes included a lack of communication about delays in establishing a new connection or meters that ultimately delay the whole project. While this department is separate from the Make-Ready Program implementation, inter-departmental communication about delays could help alleviate vendor frustration.

Most participants have not considered partnering with other businesses to arrange a "charging hub" but are open to learning more about this partnership opportunity.

National Grid asked DNV to solicit feedback from participants on their initial perspectives regarding a potential opportunity to partner with other commercial entities to increase the use of their chargers in a "charging hub" and receive increased funding incentives in return. Participants' responses varied depending on the type of site and customers they served, but those who might be sited appropriately for this arrangement were interested in learning more about the opportunity and requirements/logistics, the potential incentive increases, and avenues to increase their charging station's utilization. Those participants that did not express interest in the partnership were privately owned sites and ideally wanted their stations to be limited to specific end-users.

Most participants have not considered pairing their EV charging stations with battery energy storage (BES) but are open to learning more about the technology and arrangement with National Grid.

National Grid asked DNV to solicit feedback from participants on their interest in pairing EV charging stations with BES, and if they would benefit from a National Grid program that supports on-site storage. Most participants stated that they are not familiar with this technology and therefore have not considered BES yet or have not had any discussions with their staff or contractors regarding this technology. The interview responses regarding the lack of existing BES knowledge suggest that participants are still learning about renewable technology such as EV charging stations and BES and would likely be open to learning more about this potential program offering with more information and technical guidance. The program contractors

often have the primary relationship with customers engaged in this program, and there is an opportunity for these contractors to help advise and educate customers with educational materials to help accelerate adoption of BES and EV projects.

4.2 Fleet Programs

For this evaluation, DNV interviewed four participants and two prospective participants from the three Fleet Programs. However, the MHDV program is still in a pilot stage with only prospective participants who have applied or inquired about the program, so for the MHDV program, only prospective participants were interviewed.

4.2.1 Medium- and Heavy-duty (MHDV) program

The following are key takeaways from the two interviews with those who applied to the MHDV program but have not fully participated:

Program requirements are difficult to meet and limit program engagement.

The MHDV program has several eligibility requirements that prove difficult for many to meet and have resulted in no participants to date, similar to all other participating utilities in the state of New York. This was mentioned by all interviewees including prospective participants and program managers.

- Proving disadvantaged community (DAC) eligibility can require substantial time and resources from prospective participants to analyze existing routes. One interviewee mentioned how difficult it is to prove DAC criteria internally but spoke highly of National Grid's assistance using internal GIS capabilities to determine DAC compliance. This suggests that where possible, National Grid should consider relaxing the DAC requirements, continue to provide assistance using internal GIS capabilities to determine DAC compliance, and explore incentive tiers designed around proximity to DAC to allow more participants in the program and provide additional tiered incentives for those that can meet the requirements.
- Requiring participation in the New York Truck Voucher Incentive Program also restricts new vehicles¹³ from participating in the MHDV program by removing vehicles from the road with the oldest diesel engines, therefore limiting participants for program engagement. This requirement also affects most new businesses that have newer fleet vehicles, for example. While this requirement does help electrify older vehicles, the NYTVIP goals do not align exactly with the MHDV program and disassociating the two programs would likely not hinder the progress of the NYTVIP. MHDV could be relaxed to a tiered incentive approach to incentivize those in the NYTVIP but still allow others to participate.
- Customers must need utility-side upgrades to participate in the MHDV program (as the program only supports the utility-side portion of MHDV projects), which is a major barrier to participation. Potential customers do not always require the grid-side portion of their electric service to be upgraded and are therefore not eligible for any funding support from the National Grid program. This frequently leads to customers not going forward with their electrification project. To meet the aggressive New York MHDV electrification goals, programs like this pilot need to be as inclusive as possible to accelerate adoption in these segments as early as possible. Following the model of the broader Make Ready Program and allowing for the pilot to cover both utility- and customer-side infrastructure would enable more participants and allow for increased learnings to inform future programs. Continued coordination with the Fleet Assessment Services will streamline program marketing and promote participation.

A Fleet Assessment can kickstart the MHDV program by ensuring that participants are knowledgeable on what is required to electrify their fleets while also providing National Grid the opportunity to better understand the participants' intentions and

¹³ The NYTVIP program is only for 2009 models or older.

goals. If a customer is eligible for both programs, National Grid can work with a customer to first provide guidance on fleet conversions and then direct them to the MHDV program for funding.

4.2.2 Fleet Assessment Services

The following are key takeaways from the interviews with two participants in the program:

The program is helping support the development of fleet electrification but participants would like ongoing support and direct guidance

Both individuals interviewed for this program were satisfied with their experience to date and plan to find avenues to support fleet electrification, but noted that their lack of EV, EV charging and industry knowledge limited their ability to take advantage of the program's technical expertise and reports. Interviewees suggested that rather than pasting supporting links in the reports, they should provide more written technical background and detail, such as: specific vehicles to replace, EV model information and related costs, a summary of key details, and direct and actionable recommendations for electrification strategies (i.e., a plan for EV purchases and EV charging installations). As support beyond infrastructure related processes is beyond the scope of what is required, National Grid should discuss the scope of their work and requirements with the DPS during the midpoint review and evaluate what is being requested by customers that is not offered by National Grid. This discussion can identify what potential offerings might be better suited to help customers and should therefore be added to National Grid's program implementation. One participant also advocated for more hands-on support and discussions about next steps for fleet electrification. One participant suggested that National Grid offer a collaborative report review process in which National Grid and the recipient review the report together while National Grid offers additional insights on market trends.

There are opportunities for improvement within the onboarding process for new participants.

Program participants noted in their interviews that the onboarding process for the program was confusing at times and cited opportunities for improvement. One interviewee mentioned that a consultation with the applicant following the receipt of their application could help National Grid better understand the organization's goals and positioning to electrify their fleet and therefore produce a report more tailored to individual sites.

4.2.3 Transit Authority Make-Ready Program

The following are key takeaways from the two interviews with program participants:

The program is promoting fleet electrification in New York, providing equitable access to clean transportation, and supporting local communities in reducing their carbon footprint.

Looking beyond 2022, both participants have goals to reach the 100% clean energy transportation target and are helping set examples around their communities by electrifying their fleets. By helping electrify transit fleets, the program is also providing equitable access to clean transportation and setting an example for other organizations.

Participants are satisfied with the program but expressed interest in increased program administrative support.

Participants noted in their interviews that they appreciate National Grid's hands on approach and recurring team meetings, but also noted issues with the turnaround time and the level of support provided by the National Grid team. Those interviewed requested additional focus on the project timeline and processes from National Grid and further detail on



program requirements. Participants experienced delays in program processes and suggested that there may be issues with availability of staff to dedicate to this program. As a result of this feedback, National Grid has hired a fleet-specific staff member to provide focused guidance on this program, along with other Fleet Programs, but should continue to focus on providing customers with timely guidance.

There are opportunities for expanding the program for future EVSE development within new construction.

One interviewee mentioned their organization's new construction plans and noted the importance of the program to help design power requirements for new buildings and planning for future EVSE development. They highlighted the value of expanded program services for new construction facilities to aid in future infrastructure planning and construction.

5 BENCHMARKING STUDY

This section presents the results of DNV's benchmarking study of EV programs in utility territories with unique and successful offerings. National Grid New York is exploring potential program enhancements and new program design initiatives for its EV Make-Ready and Fleet Programs. The study includes an assessment of National Grid's commercial EV charging and fleet electrification programs by benchmarking against program attributes and best practices from other well-performing and unique programs across the U.S.

5.1 Methodology

To support this study, DNV researched electric transportation program offerings by other PAs and summarized the current programs that might be attractive as additional offerings for National Grid. The initial list of PA programs to benchmark was agreed upon by DNV and the National Grid team. This study benchmarks five programs throughout the United States in the high-penetration EV markets listed in Table 5-1.

Table 5-1. Summary of programs

| Program name | PA | Region | Number of customers ¹⁴ |
|--|----------------------------------|--|-----------------------------------|
| Workplace, Retail, and Multifamily Charging Station Rebate | Austin Energy | Austin, Texas | 507,660 |
| Smart Charging Infrastructure Pilot (SCIP) | Dominion Energy | Virginia ¹⁵ | 2,600,000 |
| EV Ready | Peninsula Clean Energy (PCE) | San Mateo County and Los Banos, California | 295,000 |
| Charge Ready and Charge Ready Transport | Southern California Edison (SCE) | Southern California | 5,000,000 |
| EV Supply Infrastructure and Fleet Electrification Advisory Program | Xcel Energy | Colorado | 1,700,000 |

DNV completed the following activities for this benchmarking study:

- **Program manager interviews** – DNV conducted interviews with program managers and staff at Austin Energy and Peninsula Clean Energy to supplement secondary research and gain first-hand knowledge of how their respective EV and fleet programs are progressing against initial program targets. These interviews were also designed to capture information on current and/or planned innovative services and best practices for program success.
- **Secondary research** - DNV conducted secondary online research to obtain high-level information on eligibility criteria, incentive levels, and other program services. The types of data reviewed include:
 - Program fact sheets and workshop presentations
 - Program application forms
 - Program terms and conditions
 - Published case studies
 - Public reports

¹⁴ Residential and commercial electric customers for each utility service territory.

¹⁵ Dominion Energy currently offers Commercial EVSE incentives for its Virginia-based customers, and thus its service territory in North Carolina was excluded for this study.

5.2 Program comparison

The following section includes a comparison of the commercial and fleet EV programs included in this study.

5.2.1 Commercial programs

Commercial EVSE programs allow utilities to support EV adoption by providing technical and financial assistance for the installation of EVSE, including Level 2 and DCFC charging stations as well as port deployment across multiple segments, such as retail, multi-family, workplace, and other public locations. These programs help utilities, businesses, and local and state governments meet their sustainability goals while positioning them as innovative leaders.

5.2.1.1 Incentive offerings

National Grid is aligned with other utilities in its incentive offerings by charger type and rebate design structure for commercial EVSE, but the actual incentive amount is comparable to or higher than the benchmarked utilities.

National Grid and Peninsula Clean Energy are the only two programs included in this benchmarking study that have local incentives from other agencies that complement the incentives from the utility programs. These additional incentives may help support program funding, design and installation, education, and outreach activities. However, complementary funding can also make the incentive application process confusing and difficult to navigate for interested customers as well as create frustration if and when incentive amounts are reduced as a result of closed programs. Table 5-2 and Table 5-3 provide a summary of the EVSE incentive offerings for National Grid and the five benchmarked utilities.

Table 5-2. Summary of EVSE Program incentive offerings by PA

| PA | EVSE infrastructure incentive | Type of stations offered | EVSE equipment incentive, rebate, or discount provided | Preferred pricing ¹⁶ |
|----------------------------|-------------------------------|--------------------------|--|---------------------------------|
| National Grid (New York) | ✓ | Level 2, DCFC | | |
| Austin Energy | ✓ | Level 1, Level 2, DCFC | ✓ | ✓ |
| Dominion Energy | ✓ | Level 2, DCFC | | |
| Peninsula Clean Energy | ✓ | Level 1, Level 2, DCFC | | ✓ |
| Southern California Edison | ✓ | Level 1, Level 2, DCFC | ✓ | ✓ |
| Xcel Energy | ✓ | Level 2, DCFC | ✓ | ✓ |

¹⁶ Preferred pricing indicates the utility offers participating customers a discounted rate or time-of-use rate as a benefit of participating in the program.

Table 5-3. Summary of commercial EVSE incentive offerings by PA

| PA | Incentive amount | Additional incentives (i.e., time-of-use rates) | Additional complementary funding |
|----------------------------|--|--|--|
| National Grid (New York) | Up to 100% of utility-side and customer-side infrastructure project costs | N/A | NYSERDA ¹⁷ |
| Austin Energy | Up to 50% of the cost (or up to \$4,000) to install Level 2 charging stations and/or Level 1 outlets | Level 2 stations must join Austin Energy Plug-in Everywhere program, where utility applies pricing to stations | None |
| | Up to \$10,000 to install DCFC | | |
| Dominion Energy | Incentives vary across segments and charger types with incentive caps and/or a percentage of project covered by the program ¹⁸ | N/A | None |
| Peninsula Clean Energy | Incentives vary across segments and charger types with incentive caps and/or a percentage of project covered by the program E.g., up to 75% of project cost for Level 2 chargers installed at multi-family dwellings or \$2,000 per Level 1 charger (no cap) for existing workplace buildings | Preferred pricing | CaleVIP funding and Bay Area Air Quality Management District Charge! Program ^{19, 20} |
| Southern California Edison | Up to 80% of costs for customer-side make ready (customer design and install) | Time-of-use (TOU) rate options depending on charging demands (kWh) | None |
| Xcel Energy | Low- to no-cost turn-key construction services for infrastructure (additional costs for line extensions) | Off-peak pricing | None |

¹⁷ NYSERDA provides incentives to cover a portion of the costs of purchasing eligible charging equipment.

¹⁸ <https://www.dominionenergy.com/virginia/save-energy/electric-vehicles/powering-smart-transportation>

¹⁹ <https://www.baaqmd.gov/~media/files/strategic-incentives/tfca/charge/fye-2021-charge-program-guidance-pdf.pdf?la=en#:~:text=www.baaqmd.gov%2Fcharge%20charge%21%20is%20a%20grant%20program%20that%20helps.area%20air%20quality%20management%20district%20%80%99s%20%28air%20district%29%20jurisdiction.>

²⁰ Customers may combine incentives from CaleVIP and BAAQMD, but Peninsula Clean Energy EV Charger Incentives may be reduced so total incentives do not exceed the applicable caps indicated by PCE

5.2.1.2 Focus areas

Similarly to National Grid, most commercial EVSE programs offer incentives for eligible customers at multi-family, workplace, and publicly accessible locations; however, there are utilities that additionally target unique segments, such as beaches and schools. Austin Energy's school offering, Dominion Energy's transit and school bus offering, and Southern California Edison's parks and beaches offering cover three sectors that are not explicitly offered by the other utility programs.

Table 5-4 provides a summary of the eligibility criteria by sector and charging station/outlet type.

Table 5-4. Summary of commercial EVSE program eligibility criteria by PA

| PA | General eligibility requirements | Sector(s) offered |
|----------------------------|---|---|
| National Grid (New York) | Must be a non-residential electric customer of National Grid | Multi-family, workplace, retail, and publicly accessible properties |
| Austin Energy | A minimum 4 outlets or more per site for Level 1 outlets A maximum 4 (DCFC) or 6 (Level 2) stations per site per fiscal year | Workplace, multi-family, and schools |
| Dominion Energy | Must be a non-residential electric customer of Dominion Energy | Multi-family, workplace, transit ²¹ , and publicly accessible properties |
| Peninsula Clean Energy | Must install 4 or more ports to be eligible for the main panel upgrade incentive | Workplace, multi-family, and publicly accessible properties |
| Southern California Edison | A minimum 4 ports per site for Level 1 or Level 2, or 2 ports for DCFC | Multi-family, commercial, public-sector properties, schools, non-road sectors (i.e. Airport ground support) and state parks/beaches |
| Xcel Energy | A minimum 4 ports per site, or a minimum of 50 kW of charging capacity for projects with less than 4 ports | Workplace, publicly accessible properties, commercial, and public-sector properties (community) |

Table 5-4 shows National Grid is aligned with most of the other programs because it includes the following “core” sectors in its program offerings: multi-family, workplace, and publicly accessible properties. Four of the six programs (67%), including National Grid’s, offer incentives to these sectors. Only one of the six programs does not specifically target workplace charging (SCE), and only one does not specifically target multi-family (Xcel). Some utilities target more niche sectors, such as schools and parks and beaches, as these sectors may provide a high-visibility opportunity to market the program’s value and boost general EV awareness among the public.

DNV learned via the program manager interviews that one best practice National Grid can consider is to optimize outreach efforts and increase market adoption by creating sector-specific goals and conducting targeted outreach campaigns to these specific sectors, especially where the program is seeing a lack of participation or potential equity issues. National Grid’s current mid-program review would allow time to evaluate and refocus goals based on current participation and program

²¹ This transit segment overlaps with Dominion’s fleet offerings noted in Section 5.2.2.

progress. For example, **Austin Energy** looked at its installed stations to understand any current geographic or sector gaps. Because of the major focus on workplace and publicly accessible chargers, Austin Energy began a targeted outreach campaign to the multi-family sector, which was extremely underrepresented. They were able to significantly increase the number of participating multi-family properties through this marketing campaign and even continued it after over two dozen successful installations.

To help bridge the education gap and increase awareness of the benefits of EVs, **Austin Energy** piloted the EV for Schools program at four schools in the Austin Independent School District. This pilot included the installation of EV charging stations for school staff, students, parents, and visitors and the creation of an Educational Living Lab designed to allow students to enhance their science, technology, engineering, and mathematics (STEM) education through the collection and measurement of stations' real-time charging data. Austin Energy is also currently in the process of conducting EV storage research. Using grants, they completed a first round of battery storage integrated with solar. The research also consists of a vehicle-to-grid (V2G)²² component, technology which is being explored through testing two-way charging from vehicle to home in a lab setting.

Dominion Energy is supporting electric school bus deployment by piloting its Electric School Bus Program, which has provided over 50 electric school buses to date to 15 school districts in Virginia. Dominion is working to provide fast-charging infrastructure to support these schools and has planned for the buses to have the potential to be tapped for V2G services²³.

Through the passage of Assembly Bill 1082 (AB 1082) in 2017, **SCE** was able to design and implement a two-year pilot for the installation of EV chargers at Southern California schools as well as state parks and beaches, with priority being given to locations within polluted and economically disadvantaged communities. The pilot provided funding for approximately 250 EV chargers at numerous school and administration buildings throughout the service territory. The original pilot proposal included designated funding for educational materials to help build public awareness at both schools and parks. SCE also piloted a Charge Ready for Transport program, which was designed to provide school bus operators and transit agencies, in addition to other industrial vehicles, with additional rebates to help with the purchase of charging stations. This program aims to install EV chargers at 870 commercial sites.

5.2.1.3 Technical assistance and advisory services

Among the utilities included in this benchmarking study, most only offer basic technical assistance and advisory services²⁴ through the utility or partnered contractors for commercial programs. These technical services include **charger/vendor selection support, charger siting support, and site planning and design**. National Grid is providing the same baseline services that the majority of other utilities provide; however, through our research we learned of a more comprehensive technical assistance service being offered by Peninsula Clean Energy in Northern California.

More information on the type of technical assistance and advisory services provided for the commercial EVSE programs can be found in Table 5-5.

²² Vehicle-to-grid technology, also known as V2G, allows EVs to send power back to the electric grid via bidirectional EV chargers in response to automated control or pricing signals. For example, V2G technology allows power to be drawn from stationary EVs to bolster the grid during a reliability event or provide ancillary grid services.

²³ <https://www.dominionenergy.com/our-stories/electric-school-buses>

²⁴ Technical assistance and advisory services are defined as any services provided by a program administrator or third-party company that help a customer assess, review, and evaluate the deployment, installation, and cost options for EV and EVSE adoption which deliver subject matter findings and recommendations.

Table 5-5. Summary of commercial EVSE program technical assistance

| PA | Advisory team | Advisory service offerings |
|----------------------------|---|--|
| National Grid (New York) | Advisory services provided by utility and approved contractors from a network of trade allies | Site design, charger selection |
| Austin Energy | Advisory services provided by utility | EV and charging station technology selection as well as cost analysis |
| Dominion Energy | None, potentially provided through contractor ²⁵ | None |
| Peninsula Clean Energy | Technical assistance by third-party advisor ^{26, 27} | Site visit, load analysis, site layout, contractor bids, permit support, rebate assistance |
| Southern California Edison | Advisory services provided by utility | Site plan and evaluation, design and planning, permit support, material procurement |
| Xcel Energy | Advisory services provided by utility | Engineering advisory, procurement planning, site design |

Peninsula Clean Energy offers comprehensive, no-cost technical assistance through a third-party provider. This provider will send a field technician to conduct an on-site evaluation of the facility. The technical assistance takes an engineering design approach that maximizes the number of ports a customer installs while minimizing cost and panel upgrades. Each customer is given a “Charging Evaluation” report that includes a load analysis of the number of chargers that can be supported by the existing infrastructure and a summary of two different cost scenarios. The first scenario is what a customer needs to support current policy and local EV adoption trends today whereas the second scenario takes into account future market trends and policy and what is anticipated to be needed in the near future. After providing the report, the technical assistance team will create bid documents and assist in the contractor selection process, including any post-selection permit support needed for construction and installation. Throughout the process, the team provides oversight, documentation management, and project support as well as education to site owners and landlords.

5.2.2 Fleet Programs

Fleet Electrification programs are designed by utilities to help support the adoption of fleet EVs while reducing greenhouse gas emissions and ensuring the resiliency of the electric grid. Because fleet electrification is an emerging focus area, these programs are not currently offered by all utilities and are still in preliminary or pilot stages.

5.2.2.1 Services provided

In addition to National Grid, several utilities, including PCE, SCE, and Xcel Energy, have designed fleet electrification programs, though these programs all vary in maturity. In addition, Dominion Energy in Virginia operates a charging infrastructure program for transit fleets with or in the process of obtaining electric buses. Currently, Austin Energy does not

²⁵ https://cdn-dominionenergy-prd-001.azureedge.net/-/media/pdfs/virginia/save-energy/ev/scip/participation-guide_05062021.pdf?la=en&rev=3c06a0820b824cd866db1e3917c88ed&hash=104D66D87AD769F3564D5CEB203520F5

²⁶ This technical assistance is provided at no cost to the customer.

²⁷ All projects applying for Low Carbon Fuel Standard credit-backed incentives are required to enroll in Peninsula Clean Energy's Technical Assistance Program.

have specific fleet program offerings. Table 5-6 provides an inventory of the fleet programs offered by these utilities and Table 5-7 provides further details on the fleet services offered through each utility's program. Based on the eligibility criteria included in Table 5-6, National Grid's programs have the most limiting eligibility criteria amongst the other programs included in this Benchmarking study.

Table 5-6. Summary of fleet offerings by PA

| PA | Eligibility criteria | Medium- and heavy-duty vehicles ²⁸ | Fleet advisory services |
|----------------------------|--|---|-------------------------|
| National Grid (New York) | Located in a DAC and existing participant in the NYTVIP ²⁹ | ✓ | ✓ |
| Dominion Energy | Transit agency with electric transit buses or plans to procure electric transit buses | ✓ | |
| Peninsula Clean Energy | Public agency in service territory | | ✓ |
| Southern California Edison | Lease, purchase, or convert at least two medium- or heavy-duty battery-powered EVs | ✓ | ✓ |
| Xcel Energy | Existing fleet includes at least 5 light-duty vehicles (LDVs) used for commercial work or for distributing products/services | | ✓ |

Table 5-7. Fleet electrification program services by PA

| PA | Advisory services | Charger rebates available | Additional services |
|----------------------------|---|---------------------------|---|
| National Grid (New York) | No cost advisory services, including site feasibility and rate analysis | ✓ | Transit Authority program |
| Dominion Energy | None, potentially provided through contractor | ✓ | None |
| Peninsula Clean Energy | Incentive for advisory services | ✓ | Vehicle to building (V2B) |
| Southern California Edison | No cost advisory services | ✓ | Grant writing assistance through the Charge Ready Transport Program |

²⁸ Indicates that medium- and heavy-duty fleet vehicles are eligible for the program.

²⁹ These eligibility criteria are specifically for the MHDV program.

| PA | Advisory services | Charger rebates available | Additional services |
|-------------|---------------------------|---------------------------|--|
| Xcel Energy | No cost advisory services | ✓ | Access to online planning tools, including financial planning services |

Peninsula Clean Energy's Fleet Electrification services provide up to 25% of the project cost (up to \$25k)³⁰ per local agency project for fleet advisory services as well as education; contract resources; custom assistance; EVSE and EV incremental cost rebates/incentives; installation support; and/or energy management subscriptions. PCE also offers a vehicle-to-building (V2B)³¹ resiliency pilot program to study the costs and benefits of using V2B technology for resiliency. This pilot is still ongoing but includes design and installation support as well as pre- and post-evaluation.

The Charge Ready Transport program offered by **SCE** is available to any business customer that leases, purchases, or converts at least two medium- and heavy-duty EVs. The straightforward eligibility requirements, which also include owning the property and maintaining the chargers for 10 years, may decrease barriers to participation. The program provides numerous planning tools to help customers make informed decisions throughout the fleet electrification process to support a fleet of medium- and heavy-duty EVs. One of the tools provided by SCE to customers is a robust Charge Ready Transport Guidebook that walks customers through the basics of fleet electrification and the program process, providing helpful examples and highlighting industry definitions and terms. Customers can use the online Fuel Savings Calculator to help estimate fuel cost savings as well as access the Funding Finder Tool to get information on available EV and EVSE programs specific to their geographic location. In addition to its incentive and rebate offerings, SCE offers grant writing assistance and grant package review services to help customers apply for state and local grant solicitations. SCE's Transportation Electrification team hosts one-hour webinars for commercial, multi-family, and fleet stakeholders.

Xcel Energy offers fleet advisory services through a partnership with a third-party firm. Through the program, customers have access to online planning tools to help with vehicle selection (tool includes vehicle classes 1-8) and cost analysis. Xcel Energy helps customers build their fleet electrification plans and provides data-driven advice on vehicle and charging infrastructure procurement, rate plans, complementary programs, and expected operation costs.

Dominion Energy's Smart Charging Infrastructure Pilot is a program for transit busses that allows eligible transit agencies to receive rebates for installing qualified DCFC equipment. Transit agencies must have electric transit buses in their fleet or have plans to procure electric transit buses. The program does not provide any advisory services for electrifying the operator's fleet of vehicles, it only offers incentives for stations in the transit segment.

5.2.3 Unique offerings

Table 5-8 lists unique offerings included in the commercial and fleet programs, discussed in further detail below and in Section 5.2.2 above.

³⁰ Up to 50% or \$100K per project for schools.

³¹ Vehicle-to-build technology, also known as V2B, allows EVs to send power back to the building to which an EV charger is connected to reduce power draw from the grid and potentially manage utility costs. It is similar to V2G technology but stops short of exporting power to the grid itself. In V2B, the power drawn from a connected EV battery is used in the building itself.

Table 5-8. Unique Program Offering

| PA | Unique offering(s) |
|----------------------------|--|
| National Grid (New York) | Offers incentives up to 100% of project infrastructure costs Transit Authority Program |
| Austin Energy | EV storage research; EV for schools, including charging station installation and school curriculum for students |
| Dominion Energy | Electric School Bus pilot which provided electric school buses and charging infrastructure to 15 school districts in Virginia Transit sector-focused offering |
| Peninsula Clean Energy | Up to \$100,000 is allocated to fund resiliency projects designed to support charging needs during grid events, including shutdowns, failures, and natural disasters Energy management subscriptions for municipal fleets |
| Southern California Edison | Multi-family new construction rebate for chargers mandated by code, charge port estimator Park/Beaches-focused offering Grant writing assistance for fleets |
| Xcel Energy | Additional charging rebates for non-profit customers or those who operate in a high emissions community ³² Equitable charge share program Online planning tools for fleets |

In light of the reoccurring Public Safety Power Shutoffs (PSPS)³³ in its service territory, **Peninsula Clean Energy** has allocated funding to support EVSE project sites that include resiliency components that will aid in the event of an electricity outage. The funding can support projects that include solar components or back-up battery storage. However, to date, no projects have applied for this program offering.

Southern California Edison provides incentives through its New Construction rebate to offset part or all of the costs associated with installing EV chargers mandated under the CALGreen code³⁴. The utility also hosts a charge port estimator calculator on its website. This calculator allows prospective program participants to select their market segment, city, number of current parking spaces and ports and then provides an estimate on the number of ports needed by 2025 based on local EV adoption rates and projections.

³² A "High Emissions Community" is a project that falls within one of the census blocks identified in the approved high emissions map developed by Xcel Energy and filed with the Colorado Public Utilities Commission.

³³ Public Safety Power Shutoffs (PSPS) are events in the state of California where an electricity service provider turns off power as the result of severe weather in order to help mitigate potential damage that may result in wildfires.

³⁴ <https://codes.iccsafe.org/content/CAGBSC2019>

Xcel Energy is currently in the process of implementing the Equitable Charging Sharing Electrification Pilot in which site hosts participate in its Electric Vehicle Supply Infrastructure Program to host Colorado RideShare vehicles. This pilot program is intended for site hosts that serve low-income communities and is part of a partnership with a local ride-share non-profit that is seeking to electrify its vehicles.

5.2.4 Conclusions and considerations

Relative to the other top-performing commercial EV charging incentive and fleet electrification programs, National Grid's New York program is a top performer in this area:

- **Incentive amount:** National Grid offers up to 100% of utility-side and customer-side project costs for its commercial participants, which is more than comparable programs across the U.S.

Relative to the other top-performing commercial EV charging incentive and fleet electrification programs, National Grid's New York program could improve in the following areas:

- **Increasing technical assistance and advisory services offerings** to provide comprehensive site plans, cost scenarios, and selection processes to ensure customers are installing an appropriate number of chargers for both current and future needs.
- **Diversifying customer segments** to allow for increased EV charger installation and public awareness.
- **Setting segment-specific goals** to aid in generating visibility for the program, increasing EV adoption, and reaching broader program goals.
- **Comprehensive fleet electrification support** for a wider array of fleets (beyond selected major transit operators), potentially including grant-writing assistance and grant review services; online education and planning tools; end-to-end support from planning through EV procure and/or charger installation; and considerations for load management, including V2G.

Based on this benchmarking research, we identified three key areas of improvement and offer the following considerations:

- **Develop more robust technical assistance and advisory services** that prioritize education and provide customers with numerous electrification scenarios that incorporate market trends and forecasts to better help customers make informed decisions based on cost and projected needs.
- **Explore new customer segments based on the geographic region and create sector targets** to increase public EV awareness and encourage program participation.
- Continue to evaluate performance and reassess goals during the **midpoint reviews** and future meetings with the DPS to realign strategies and pivot marketing efforts to achieve program success.
- **Simplify eligibility requirements and program messaging** to reduce barriers to participation and eligibility confusion. At the midpoint review, program staff should discuss with the DPS the scope of infrastructure support for the Fleet Programs and discuss the opportunity for National Grid to provide both grid-side and customer-side infrastructure to fleet customers.



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