



**Niagara Mohawk Power Corporation d/b/a National Grid
Residential Electric Vehicle (EV) Managed Charging Proposal**

Submitted in response to the July 16, 2020 Order in Case 18-E-0138

Updated and Revised

May 6, 2022

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1. Introduction and background

Niagara Mohawk Power Corporation d/b/a National Grid (“the Company”) submits this proposal for an electric vehicle (“EV”) managed charging program for residential customers in compliance with the New York Public Service Commission’s July 16, 2020 “Order Establishing Electric Vehicle Infrastructure Make-Ready Program and Other Programs” (the “Order”).¹ The Order directs the State’s utilities to file proposals for managed charging programs for mass market customers, in consultation with Department of Public Service Staff (“Staff”).

The Smart Electric Power Association (“SEPA”) defines managed charging as being either active or passive:

Passive managed charging (also known as behavioral load control) relies on customer behavior to affect charging patterns. For example, EV time-of-use rates provide predetermined price signals to customers to influence when they choose to charge their vehicles ... Active managed charging (also known as direct load control) relies on communication (i.e., ‘dispatch’) signals originating from a utility or aggregator to be sent to a vehicle or charger to control charging in a predetermined specific way.²

The Company is proposing an active managed charging program for residential customers. The benefits of a managed charging program include lower energy costs, less strain on the delivery network infrastructure at peak times, which can produce savings in potential avoided costs of building out or upgrading such infrastructure, and the beginning of consumer behavior change to enable those benefits to accrue over the long-term. Managed charging and vehicle-grid integration

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, July 16, 2020.

² SEPA, *A Comprehensive Guide to Electric Vehicle Managed Charging*, page 11.

also include additional use cases not explored in detail here, such as supporting variable renewable generation (e.g., reduced curtailments), energy resiliency, and participation in wholesale markets (i.e., under FERC 2222). Overall, managed charging has the potential to help reduce EV fueling costs for vehicle owners and system costs for all ratepayers.

In addition to the active managed charging program, and following Staff guidance, the Company is including complementary, supportive programs originally proposed in its rate case filing on July 31, 2020.³ In testimony filed in Case 20-E-0380, the Staff Efficiency and Sustainability Panel recommended that the Company include all elements of its Residential EV program from that case in this proposal.⁴ The additional elements reflected in this proposal include: (1) rebates to customers to purchase Level 2 (“L2”) chargers that can participate in the managed charging program; (2) a “turnkey” installation service; and (3) an expanded online marketplace. To incentivize Company and Customer behavior, the Company is also including its proposal for an earnings adjustment mechanism (“EAM”) that it originally filed in Case 20-E-0380. Finally, the Company will suggest appropriate cost recovery mechanisms for the full suite of residential offerings.

The Company filed a draft proposal on December 4th, 2020, presented a summary of that proposal at a March 17, 2021, public technical conference hosted by Staff, and received public comments on that proposal on April 1, 2021. The Company then filed a revised proposal on June 4, 2021. Since the original filing in Case 20-E-0380, the program has been revised to expand market coverage, reduce costs per customer, accelerate the program launch, clarify related technical

³ Case 20-E-0380, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Niagara Mohawk Power Corporation d/b/a National Grid for Electric Service.

⁴ Cases 20-E-0380 and 20-G-0381, Prepared Testimony of Staff Efficiency and Sustainability Panel, pp. 89-90 (Nov. 25, 2020).

requirements, and clarify the billing approach. As noted at page 124 the Order, “this is a very new market with a lot to learn,” and the Company has continued to revise this program as it learns more. This proposal is based upon the Company’s latest thinking on programs to manage EV charging for residential customers.

2. Existing Company programs and offerings

To date, the Company has only offered price signals to customers to passively manage their EV charging. In New York, the Company offers the SC-1 voluntary time of use (VTOU) rate that had 687 known EV driving customers enrolled at the end of 2021, roughly 3.8% of total EVs in the Company’s service area.⁵ As discussed in the Order, “the managed charging programs will provide customers with an alternative to the whole home TOU rates already in place.”⁶

Currently, the Company’s affiliates also are running passive managed charging programs in their Massachusetts (Charge Smart Massachusetts) and Rhode Island (SmartCharge Rhode Island) service territories. Those programs provide enrollment incentives and per-kWh rebates to incentivize off-peak charging (for both programs, “off-peak” is defined from 9:00 P.M. to 1:00 P.M.). The Company has received initial evaluation results for SmartCharge Rhode Island, where half of participants received off-peak rebates of \$0.04 (October to May) or \$0.06 (June to September) per kWh. Examples of the resulting EV charging load profiles with (“Treatment”) and without (“Control”) the off-peak rebates are shown for Tesla vehicles in Figure 1.⁷ The evaluation report also concluded that:

⁵ As submitted in Company filing on February 8, 2022, under Case 18-E-0206 – Tariff filings to Effectuate the Provisions of Public Service Law Section 66-o (Residential Electric Vehicle Charging Tariff).

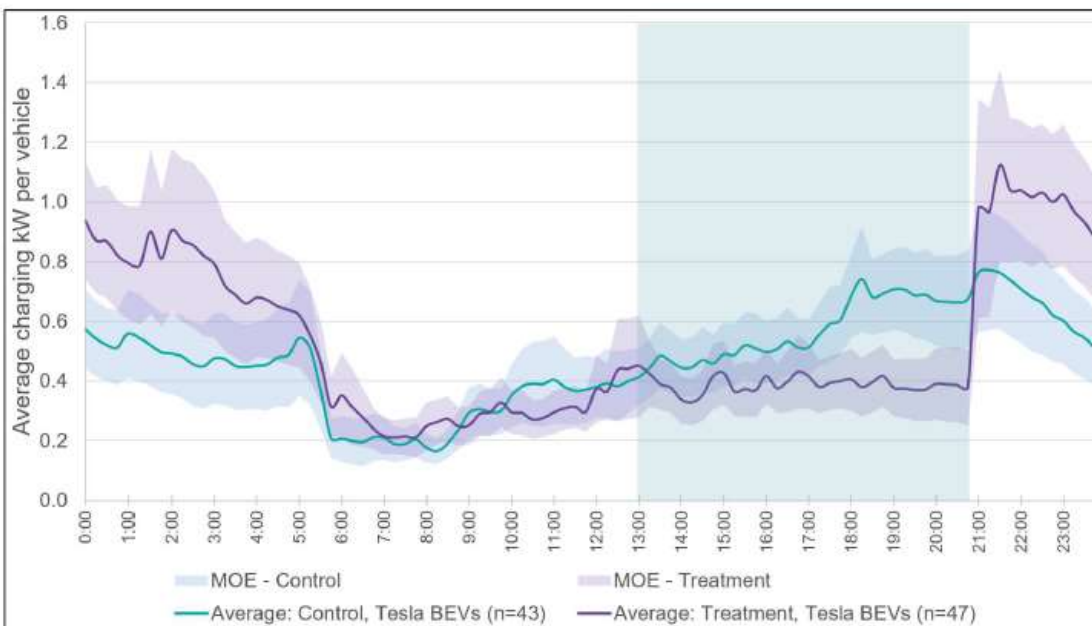
⁶ Order, page 124.

⁷ Figure 1 and associated findings originally appeared in a filing for the Company’s affiliate in Rhode Island: *Narraganset Electric Company d/b/a National Grid, Rhode Island PUC Docket No. 4770, Article II Section 17 – Electric Transportation Initiative Rate Year 2 Annual Report*, filed October 30, 2020.

- There was a statistically significant increase in off-peak charging between participants that received the off-peak rebates versus those that did not.
- For battery electric vehicles (“BEVs”) and plug-in hybrid electric vehicles (“PHEVs”), there was a persistent amount of on-peak charging that participants who received the off-peak rebates still did not shift off-peak.

These results suggested, among other things, that for future programs and rate designs, the Company should investigate technologies and incentives to mitigate and manage any timer or rebound peaks induced from time of use (“TOU”) rates (e.g., charging peaks at 9:01 P.M. as the off-peak window begins), as shown in Figure 1.

Figure 1 Charging Load Profile Comparing Control and Treatment – Tesla BEVs



The Company is proposing an active managed charging program to achieve greater benefits than under a passive managed charging framework. Such additional benefits include avoiding timer peaks, shifting an even greater portion of EV charging off-peak, and developing capabilities and

shaping customer behaviors that better support other managed charging use cases in a clean energy future.

3. Managed charging program design

Summary of the managed charging program design

The Company proposes an active managed charging program (“the program”), where the Company will be able to control directly the timing or power level of EV charging for select charging stations and vehicles. This proposal covers residential customers who take supply service from the Company and have qualifying vehicle or charging equipment, as clarified later. This proposal does not directly address small commercial and industrial (“C&I”) customers; however, the Company will consider whether and how to expand managed charging programs to other customer classes and charger types.

The program will support both networked L2 chargers and vehicle-based telematics. All participating customers will be enrolled in the EV Smart Plan tariff, which provides a flat monthly price for at-home off-peak charging, either \$20 or \$25 per month, for up to 225 or 325 kWh of off-peak charging per month, respectively. The program will provide upfront and ongoing benefits to participating customers. The Company will offer enrollment incentives of either a one-time incentive up to \$500, designed to help cover the costs of new installations of qualifying L2 chargers, or a one-time incentive up to \$150 for participants not installing a new L2 charger, including those using telematics or who are using an existing networked L2 charger. Participants will only be allowed to claim one enrollment incentive. Enrollment incentives and rebates are subject to change based upon customer demand for the program and other market factors. Participating customers also will experience ongoing benefits from the EV Smart Plan pricing

through reduced cost of at-home charging of up to \$160 per year (as compared to the Company's proposed SC-1 rates as filed in Exhibit___(E-RDP-4CU), Schedule 4 in Case 20-E-0380 ("Proposed SC-1 Rates")). Further details are described in EV Smart Plan pricing section.

The Company intends to manage at-home charging so that it happens in the off-peak hours by default (currently 11:00 P.M. to 7:00 A.M. daily, as specified by the SC-1 VTOU tariff), while taking into consideration factors such as the customer's desired "ready by" or departure time, the vehicle battery's state of charge, whether the vehicle can be sufficiently charged during only off-peak hours, and other factors. The program will generally require a customer to "override" or opt to charge during on-peak hours when at home. If a customer does override the active charging management during on-peak hours at home, they will be charged an "on-peak" rate for that energy consumption, a rate based upon the Company's SC-1 VTOU rate and specifically included surcharges. In the future, the Company expects that managed charging and vehicle-to-grid ("V2G") technologies can be used for additional purposes beyond the avoidance of charging during peak hours, such as enabling integration of variable renewable energy generation during the day. More use cases are described elsewhere in industry literature.⁸

This design addresses and balances a number of key issues, including:

- Shifting a large share of at-home charging to off-peak hours, while avoiding the "timer peaks" that can occur with some TOU rates.

⁸ Industry literature describing managed charging use cases includes SEPA, *A Comprehensive Guide to Electric Vehicle Managed Charging*, and the *Final Report of the California Joint Agencies Vehicle-Grid Integration Working Group*, gridworks.org/wp-content/uploads/2020/09/GW_VehicleGrid-Integration-Working-Group.pdf.

- Offering broad coverage of the EV market by including networked L2 chargers and vehicle telematics. These are complementary technologies, as neither has universal market coverage. Telematics provide greater present-day market coverage, however networked L2 chargers provide a pathway for nearly any EV driver to participate.
- Providing upfront and ongoing customer benefits to increase enrollment and ensure continued participation in the program.
- Supporting installation of at-home charging equipment that facilitates active managed charging.
- Mitigating the costs to non-participating customers through collecting a reasonable fee from participating customers to help cover the costs of the program's administration, as done through the EV Smart Plan design.

Customer eligibility

To be eligible to participate, residential customers must take supply service from the Company and maintain qualifying vehicle or charging equipment, as outlined below.⁹

Eligible managed charging technologies

The program will allow customers to participate via two complementary technologies:

1. Networked (or “smart”) L2 at-home EV chargers relying upon the customer’s local Wi-Fi or wireless network, or
2. Vehicle telematics systems, which typically use secure 4G wireless networks.

⁹ Charging rates and other aspects of the program are based on supply service provided by the Company, and therefore eligibility is initially limited to Company supply service customers. As the Company gains experience with the program, it will determine whether and how to extend managed charging to customers on alternative supply service.

Both technologies allow for measuring vehicle energy usage by time of day and offer direct load control for managing charging. For both technologies, the Company proposes to leverage the embedded metering and connectivity for information to support billing the monthly EV Smart Plan and manage customer EV charging. To be clear, the total energy usage at the site will still be measured by a Company meter; the Company will use information from the EV charger or the EV itself to segregate metered usage into EV charging and non-EV charging portions for purposes of determining charges to EV Smart Plan customers. The EV charging energy will be used in calculating the EV Smart Plan charges and credits while the rest-of-house usage would be priced at the otherwise applicable rate (i.e., SC-1).

Currently there are no standards regarding the accuracy of either electric vehicle supply equipment (“EVSE”)-based or EV-based energy metering for the purposes of this program and the Company will continue to rely upon approved and installed Company-owned premise metering for determining total customer usage. The Company will establish business rules regarding the use of EVSE- or EV-based energy measurements to bill the EV Smart Plan, including rules for billing participating customers when EV-related information may be missing or anomalous.

The Company expects the following charger and telematics qualifications to be established following program approval and based on a comprehensive evaluation of technology options, including responses to the Company’s procurement process for managed charging services. The Company also expects that these qualifications may be modified as the market evolves.

Networked L2 charger qualifications

The Company expects eligibility criteria for networked L2 chargers to include, but not be limited to the following:

1. Must be internet-enabled (e.g., Wi-Fi, ethernet) with an active, reliable internet service available at the customer site and whose EVSE-network provider is integrated into the program's managed charging platform;
2. Must provide sufficiently detailed interval metering (e.g., 15-minutes aligned to the hour);
3. UL listed;
4. OpenADR compliant;
5. Must enable the Company to receive charging data and information from the EVSE; and
6. Allow for remote operation consistent with the EV Smart Plan.

Vehicle telemetry qualifications

Vehicle telematics-based approaches to managed charging will meet similar data standards as networked L2 chargers. Specifically, vehicles must:

1. Be internet-enabled (e.g., 4G, Wi-Fi) with reliable service and whose telematics network is integrated into the program's managed charging platform;
2. Provide sufficiently detailed interval metering (e.g., 15-minutes aligned to the hour);
3. Enable the Company to receive charging data and information from the vehicle; and
4. Allow for remote operation consistent with the EV Smart Plan.

Customers with certain vehicle types may have to purchase an additional connectivity subscription from the manufacturer to enable them to participate (analogous to having a phone plan for your phone).

Rebate and Enrollment Incentives

Participating customers will receive an incentive to enroll in the Program, with the amount varying based upon whether they are installing a new qualifying L2 charger or not. Participants receiving a rebate or enrollment incentive will be required to participate in the program for a minimum period of time before being able to withdraw, no less than three months.

Rebate for new networked L2 installations

By offering the program, the Company strives not only to mitigate grid impacts of EV adoption, but also to help spur EV adoption. The proposed charger rebate helps serve those dual purposes. The rebate towards a networked L2 charger, up to \$500, creates a strong financial incentive for people to participate in the program by reducing the installation cost of EVSE, which is a known barrier to EV adoption.¹⁰

Based on customer feedback, the Company believes that robust enrollment in the managed charging program requires offering a rebate to customers. Research with the Company's customers shows that access to rebates/financing for smart chargers is likely to motivate customers to purchase an EV.¹¹ The same research shows EV drivers are likely to participate in a smart charging program, especially if a rebate for the charger is offered as an incentive. Moreover, reducing the installation costs for the customer of EVSE will help EV adoption by addressing concerns of potential EV buyers about the cost of home charging. Installing an L2 charger can be expensive,

¹⁰ See Case 20-E-0380, Testimony of the Company's Electric Vehicle Panel (EVP), pp. 29 and 30 (July 31, 2020).

¹¹ National Grid Customer Council Survey, March 2020.

averaging \$1,400 for single family homes that require a 240-volt outlet upgrade.¹² This expense increases the upfront costs customers face when considering purchasing an EV.

Enrollment incentive for other participating customers

The Company is proposing a one-time enrollment incentive up to \$150 to customers who enroll in the EV Smart Plan through the telematics option or who participate through a previously installed qualifying L2 charger. This incentive provides a strong financial motivation to enroll in the program and compensates customers for giving up some control of their at-home charging. A number of other utility managed charging and demand response programs offer rebates and enrollment incentives¹³ to spur participation,¹⁴ with \$500 being the most common rebate amount for programs supporting networked charger installations.

EV Smart Plan pricing

All participating customers must enroll in the EV Smart Plan tariff,¹⁵ which offers two pricing tiers to appeal to the diverse driving needs of different customers and vehicle types:

1. A \$20 per month pricing tier for up to 225kWh of off-peak at-home EV charging per month; and
2. A \$25 per month pricing tier for up to 325kWh of off-peak at-home EV charging per month.

¹² Estimating electric vehicle charging infrastructure costs across major U.S. metropolitan areas, ICCT, August 2019. Available at: https://theicct.org/sites/default/files/publications/ICCT_EV_Charging_Cost_20190813.pdf.

¹³ E-Source EV Pilots and Programs Tracker, October 2020.

¹⁴ For example, the evaluation of Eversource's Massachusetts program for demand response of EV home chargers showed that 50% of the people that enrolled in the program did so primarily because of the incentives.

¹⁵ Details described in Case 20-E-0380, Testimony of the Company's EVP, pp. 17-28 (July 31, 2020).

For both pricing tiers, the Company estimates that the monthly fee covers the cost of the supply and delivery for the off-peak kWh charged usage, as well as the incremental costs to cover the third-party vendor that will manage the charging (estimated at \$8.00 per customer per month).

Any residential customer with a qualifying L2 charger or vehicle, who takes electrical supply from the Company may participate.

Given the diversity of travel and driving behaviors (i.e., high-mileage and low-mileage drivers) and the charging needs for EVs (i.e., PHEVs and BEVs) the Company is proposing a two-tier approach to enable the program to provide a savings opportunity to a wide variety of EV drivers while also providing pricing options that reflect the cost of the program. The lower tier of \$20 per month for up to 225 kWh of at-home EV charging per month is designed to cover BEV drivers who travel less than average or have other charging options (e.g., workplaces) and PHEV owners who often do not drive all their miles on electricity. The monthly cap of 225 kWh would allow an EV to travel roughly 700 miles per month, or 8,400 miles per year. Customers who use all 225 kWh each month would reduce their annual charging costs by about \$80 compared to otherwise applicable SC-1 rates, using the Company's Proposed SC-1 Rates. The second, higher tier of \$25 per month for up to 325 kWh per month is intended for EV drivers who drive average or above-average amounts. The monthly cap of 325 kWh would allow an EV to travel roughly 1,000 miles per month, or 12,200 miles per year (the average US light duty vehicle travels around 11,500 miles per year). Customers who use all 325 kWh each month could reduce their annual EV charging costs by about \$165 or about \$14 per month compared to the Company's Proposed SC-1 Rates.

Customers who wish to charge their EVs during on-peak hours will be able to "override" the managed charging system but must pay a higher per-kWh rate for any on-peak charging, in

addition to the fixed monthly program cost. The rate for charging outside the off-peak hours is based upon the SC-1 VTOU on-peak delivery rate plus a forecast estimate of the SC-1 average on-peak supply rate, which is higher than the standard SC-1 (non-VTOU) rate. Please refer to the Appendix – Derivation of EV Smart Charging Plan and example bill under the Plan, for more details.

This pricing design is intended to balance the need to cover the administrative and energy costs of the program while demonstrating clear and compelling customer benefits with this opt-in program. The kWh caps for each pricing tier are intended to provide the most kWh of charging possible while ensuring that the energy and program administrative costs for each customer are covered within their monthly program fee. If a customer uses more off-peak charging than their kWh cap for EV charging that month, the program will bill any off-peak kWh beyond-cap at the SC-1 rate, including supply and all applicable surcharges. The off-peak rate used to design this program is based on the SC-1 VTOU off-peak delivery rate plus a forecast annual off-peak supply rate and an estimate of the Systems Benefits Charge, Clean Energy Standard Supply surcharge and Merchant Function Charge. The SC-1 VTOU On-peak and Off-peak delivery rates are based on the Company's proposed SC-1 VTOU delivery rates as filed in Exhibit___(E-RDP-4CU), Schedule 4A in Case 20-E-0380 and the program rates will be revised at such time that the Company's SC-1 VTOU delivery rates change are revised. The Company will review at that time the need to adjust the monthly program fee and covered kWh caps.

Participants receiving the rebate for their L2 charger or the enrollment incentive will be required to participate in the program for a minimum period of time before being able to withdraw.

Billing approach and required IT and back-office system integrations

The Company proposes to leverage the embedded metering and connectivity of vehicle telematics and networked L2 chargers to segregate monthly EV Smart Plan load from non-EV load at the customer premise, and to manage customer EV charging. Using information from the EV's embedded metering to separate EV charging load from other load for billing purposes is reasonable given that installing a separate Company meter to measure and bill the load would be cost prohibitive and impractical. This proposed approach is similar in concept to the billing methodologies the Company applies for certain economic development programs (e.g., Rule 34.3.3, Alternate Billing Methodology: Non Separated EZR Load, and Rule 34.7.3, Alternate Billing Methodology: Non Separated EJP Load). The intent of the proposed billing methodology is “to provide customers with an alternative to separately metering incremental electric load when the cost to physically separate the incremental load is prohibitive.”¹⁶

Both alternate billing methodologies used for Non Separated EZR and EJP Load and the proposed alternate billing methodology for this EV charging proposal will use the Company's meter to measure the total load at the premise. The difference is that the EZR/EJP alternate billing methodologies determine incremental load by subtracting the total meter load from a baseline load. The EV alternate billing methodology determines the incremental EV usage using information from the EV embedded metering, and the difference between that and the total metered load would be considered the non-EV load at the premise.

¹⁶ P.S.C. 220 Rule 34.7.3 Alternate Billing Methodology: Non-Separated EJP Loads, Leaf 194.7.

Implementing the program involves integrating new types of data and capabilities into the Company's back-office systems and processes. Specifically, the Company requires integrating energy usage data from two new types of technologies (EVSE and EVs) into the Company's Billing and Billing Support systems to bill the EV Smart Plan and to help evaluate the program's impact on EV charging. These are not insignificant challenges, especially as the underlying technologies, data, and business rules to handle such data are still evolving. After continued review of the options available to bill the EV Smart Plan, the Company has concluded that:

1. The most appropriate billing approach will need to balance scalability, flexibility, and cost-effectiveness. For example, at the time of the program's launch the Company expects to use manual or semi-automated billing approaches, rather than investing the capital (approximately three million dollars) and time (approximately 20 months) required to fully upgrade and automate the Billing and Billing Support systems before the program launches and before the customer enrollment trajectory becomes clear.¹⁷
2. The Company cannot determine the exact billing approach it will take until after the program vendor is hired and the data delivery format, cadence, process, and quality control procedures are determined in conjunction with that vendor.
3. The Company will ensure that the pricing and billing practices in use at any time are fully transparent and clear to customers. Customer research has shown a significant interest for a subscription-style plan for EV charging. The Company believes that the transparency and simplicity of the EV Smart Plan pricing is a strength of this proposal, while further

¹⁷ There are several adjustments to the timing and billing credit calculations that would simplify manual or semi-automated billing approaches. Possible adjustments include a one-month delay in billing the EV Smart Plan, relative to the rest of the customer's bill, and selectively using forecasted versus actual rates for certain components of the tariff, as both would help reduce the complexity of billing the EV Smart Plan.

acknowledging that the exact mechanics of calculating and implementing any bill adjustments, relative to the customer's SC-1 bill, can become rather complicated.

At this time, the expected high-level bill creation process is to:

- Calculate the customer's otherwise applicable SC-1 bill, based upon the utility meter reading for total energy use at the premise and present on the bill in the traditional manner
- Add a single-line entry for the EV Smart Plan Monthly Charge. For example: +\$25.00
- Add a single-line entry for an EV Smart Plan Charging Credit. For example: -\$38.66
- Add a single-line entry for the EV Smart Plan Net Bill Impact. For example: -\$13.66

An example bill for both Tier 1 and Tier 2 are shown in the Appendix.

The EV Smart Plan Charging Credit is the sum of two calculations. First, it includes incremental charges above the SC-1 rates for any on-peak EV charging. Second, it includes a credit for any off-peak charging that was billed at SC-1 rates (as any kWh for off-peak EV charging would be included in the default SC-1 bill). The EV Smart Plan Net Bill Impact is the difference between the EV Smart Plan monthly charge and the charging credit.

To calculate the EV Smart Plan credit, the Company proposes using a simplified approach that may leverage a mix of actual and forecast rate components and may involve a one-month delay in the processing of that credit to minimize any potential impact on the timing of the bill's arrival due to the availability of the EV or EVSE-metered data. The Company will use the actual delivery charges for SC-1 to bill the customer at the whole house meter. In addition, on-peak EV charging rates (to calculate incremental costs associated with charging on-peak) and off-peak EV charging

rates (to be used to calculate the credit from the SC-1 rates) will use the SC-1 VTOU delivery charge values. Differences in the delivery charges represent about 80% of the expected off-peak savings under this pricing plan, with supply costs and various surcharges representing the other 20%. For the supply and surcharge components, the Company may choose to use forecast values for that rate year. If the Company does use select forecast rate components, the Company may institute business rules to ensure customers are not unduly impacted because of forecasting variances. Once a program vendor is chosen, the exact processes and benefits of these simplified billing approaches will become clearer; however, the Company has anticipated the need to investigate such simplifications to reduce program costs for all customers and accelerate the program's launch.

Within the Company's billing systems, this EV Smart Plan billing approach will result in the following changes relative to an SC-1 bill:

1. A change (likely a reduction) in delivery costs, which will flow through the revenue decoupling mechanism;
2. A change (likely a reduction) in supply costs, which will flow through the electric supply reconciliation mechanism;
3. Changes in the delivery and supply surcharges that will flow through their respective surcharge reconciliation mechanisms; and
4. A change in the Company's net program costs to be recovered through the Electric Vehicle Make-Ready Surcharge. As discussed in Section 7, the Company proposes to recover any costs from ratepayers that it is unable to recover from program participants via the Electric

Vehicle Make-Ready Surcharge. Costs the program recovers from participants will also flow into the Make-Ready surcharge as an offset or credit.

The Company will leverage third parties to run the managed charging program, including developing and operating the platforms that integrate and provide charging and vehicle data, sending “dispatch” signals to the vehicles or chargers to manage their charging, and supporting the program’s marketing and implementation. The Company expects to hire these third parties through a request for proposal (“RFP”) process. The timeline for billing related process improvements is discussed in Section 4 on the program timeline. The associated costs are included in the budget table in Section 8.

Marketing

Since EVs are a developing market and many consumers are not familiar with the benefits of EVs, a marketing plan is essential to make customers aware of the Company’s new programs and the associated benefits. The Company will conduct education and outreach to promote the managed charging program to existing and potential EV drivers throughout its service area. The Company will use traditional forms of marketing such as direct mail, email, and social media, and also will leverage relationships with industry partners such as charging providers, auto dealers and trade allies. The importance of marketing and education plans for EV programs also has been recognized by stakeholders in the Company’s rate case¹⁸ and in the public comments on utility managed charging filings in this case.¹⁹

¹⁸ See Case 20-E-0380, Direct Testimony of the New York Power Authority’s Electric Vehicle Panel, pp. 26-33 (Nov. 24, 2020).

¹⁹ Alliance for Transportation Electrification public comments, April 1, 2021, page 4 and EnelX public comments April 2, 2021, page 2.

4. Program timeline and implementation

The key steps in launching the managed charging program as designed include:

- Hiring a program manager.
- Conducting an RFP process for managed charging technology platforms and implementation services, including integration for networked L2 chargers and vehicle telematics.
- Developing billing processes and integrations for the EV Smart Plan in the Company's billing and back-office systems, which will include updating program fees and covered kWh caps following a Commission Order in Case 20-E-0380.
- Creating marketing and outreach plans, including updates to the Company's customer-facing websites.
- Developing managed charging accelerator programs (described below).

The Company expects to launch the program approximately eight months from approval. The expected launch date is driven by the timeline required to hire a vendor and develop the data integration and billing processes for the EV Smart Plan. The program would launch with a focused marketing effort to spur enrollment.

As the program progresses, the Company will track key metrics including enrollment, share of Customers enrolled using telematics and networked L2 chargers, retention rate, and others. The Company also plans to have an independent evaluation of the program after at least one full year of program operation, aimed at providing guidance on ways to improve the program.

Based on these metrics and evaluation, the Company will assess potential program changes such as:

- Refining or expanding the types of eligible technologies that support managed charging;
- Improving participant enrollment, marketing, and incentive/rebate processes;
- Modifying the EV Smart Plan pricing; and
- Expanding to different customer classes, including small business customers, customers with EV fleets of light, medium, or heavy-duty vehicles, and charging station site hosts.

In addition, in light of the Commission’s recent approval of the Company’s Advanced Metering Infrastructure (“AMI”) project proposal, the Company plans to look for potential ways during the multi-year roll out of the new metering technology to leverage AMI capability to support EVs and managed charging more effectively in the future.

Finally, this proposal includes program enrollment estimates and costs through fiscal year (“FY”) 2025, ending March 31, 2025; the Company, however, expects the need for managed charging programs to continue beyond this time period as EV penetration increases.

5. Managed charging “program accelerators”

The Company believes that managed charging is a key part of a comprehensive approach to supporting EV adoption that includes equipment rebates, customer-friendly online resources for charging education, EVSE and EV-related programs, and simple at-home charging installation services. The turnkey installation service and expanded online marketplace (“program accelerators”) will directly support and accelerate participation in the managed charging program

by providing important guidance, removing barriers to installation of qualifying charging at-home equipment, and offering qualifying charging equipment for sale.

Turnkey installation service

The Company will offer a turnkey installation service to handle all components of a charging station installation at the customer's premise, including the purchase of the station, identification of an installer, and scheduling of that installer. The Company expects to hire a third-party program administrator to manage this offering and develop a network of qualified EVSE installers to provide widespread geographic coverage, affordable pricing, and reliable service to customers. Not only will this provide benefits to the program participants, but it also has the potential to expand the business opportunities for the participating installers. Different customers have different charging installation and vehicle needs; some homes have 240-volt outlets already on hand, while others may require upgrades to install L2 charging equipment. In addition, the technical considerations with EV ownership may appear new and significant for many residential customers, involving different voltage outlets and charging standards terminology (e.g., Level 1 vs Level 2 chargers, J1772 plugs and adapters). The turnkey program will ensure each customer goes through a clear and streamlined process to obtain the equipment and services needed to install a managed charging-capable charger at their residence. Participating customers will be responsible for paying for the cost of their charger installation.

Online marketplace

The expanded online marketplace will serve as a key resource for customers to learn about their home charging options and to purchase EVSE and related services. The online marketplace is

intended to address the knowledge gap associated with buying and installing a home charging station during the early stages of EV adoption. For example, research with Company customers shows that more than half of survey respondents are unfamiliar with the difference between using an L1 versus an L2 charger. Customers also tend to be unfamiliar with the costs to install, maintain, and operate a home EV charger. The Company's marketplace will include L2 chargers and associated products, specifically focusing on networked charging stations that qualify for the smart charging program. The marketplace will also contain a list of qualified electricians to install a home charging station for those who prefer to install their station independently of the Company's turnkey install program.

The costs for these managed charging "program accelerators" (turnkey installation service and the online marketplace) are included and identified in Table 1, as are the program costs that will be recovered from customers participating in the turnkey installation and online marketplace charger sales. The Company proposes that revenue received from the turnkey installation service and expansion of the E-Commerce Marketplace will be treated like the existing electric Platform Service Revenues ("PSR"). As stated in Case 20-E-0380, the Company proposes to continue to retain twenty percent of PSR fees, deferring the remaining eighty percent for the benefit of customers.²⁰ The dollar figures are reflected in the Section 8 (Program budget), Table 1, line D, below.

6. Managed charging EAM

The Company proposed a Managed Charging EAM in Case 20-E-0380. The Company believes the core outcomes of the Managed Charging EAM include reduced need for future distribution

²⁰ See Case 20-E-0380, Testimony of the Company's EVP, pp. 33 (July 31, 2020).

system upgrades/increased utilization of existing grid assets, lower overall energy costs for customers, and associated environmental benefits. As stated in the DPS Staff EVSE Whitepaper, “increasing EV penetration to meet 2025 ZEV targets could increase average weekday demand for electricity in New York by nearly 6,900 MWh, a nearly two percent increase compared to 2016 levels.”²¹ Providing an EAM to support managed charging incentivizes the Company to reduce infrastructure costs, further aligning the Company’s business incentives with the State’s goals. Further, given that EV adoption is still relatively low today (as are the system peak reduction impacts), the Company proposed a design aimed at enrolling a large share of the EV-owning market and positively influencing EV driver charging behavior. This design is intended to demonstrate the program’s potential to scale as EV adoption grows towards the State’s 2025 ZEV goal. The Company believes the Managed Charging EAM is justified by the EV customer behavioral change and the system benefits generated by shifting charging to off-peak hours. The Company supports this EAM as a meaningful and appropriate earnings pathway to help achieve the intended outcomes of this important program.

7. Program cost recovery

The EV Smart Plan pricing design allows the Company to recover some program administration costs from participating customers, as described earlier. To the extent that the Company is unable to recover program costs fully from program participants, the Company proposes recovering program costs through the Electric Vehicle Make-Ready Surcharge until the costs of the program are included in base rates. Table 1 in Section 8 differentiates between costs recovered from program participants and costs expected to be recovered through the EV Make-Ready Surcharge.

²¹ See Case 18-E-0138, Staff Whitepaper Regarding Electric Vehicle Supply Equipment and Infrastructure Deployment, p. 12 (January 13, 2020).

8. Program budget

Table 1 shows the Company's estimated budget for the proposed managed charging program for the four fiscal years covered. This program is sized to support nearly 20 percent of the EVs on the road under a steeply accelerating sales trajectory that meets the Company's portion of the State's ZEV MOU goal of 850,000 EVs by the end of 2025. The primary cost components are:

- Vendor costs, including fixed/annual fees and per-vehicle or per-customer costs, based upon the Company's market research for such services.
- Marketing and customer enrollment incentives and L2 charger rebates. Marketing efforts will be multi-purpose in order to address the managed charging program, accelerator programs, and other related programs and topics efficiently.
- Company staffing for the managed charging program, estimated at one-half FTE in year one (FY22) (equal to one FTE for half a year) and two FTEs in the remaining years.
- Billing and Billing system costs to implement the EV Smart Plan billing and integrations.
- Administration and staffing costs for "program accelerators" (online marketplace and turnkey installation program), including one-half FTE in year one (FY22), one FTE in year two (FY23), and two FTEs in the remaining years.
- Program evaluation costs are expected to be incurred primarily during years three and four (FY24 and FY25). The evaluation will review the managed charging program and related "accelerator" programs.

Finally, the program will recover some costs directly from participants via the EV Smart Plan, estimated at \$8.00 per customer per month (Table 1, line C), which is part of the \$20 and \$25 monthly EV Smart Plan. The program accelerators of turnkey installation and the online marketplace are anticipated to recover funds from participants as well (Table 1, line D).

The total costs of the program over the term are estimated at \$16.4 million, with net costs of \$11.7M (after accounting for costs recovered directly from participants). On a per-participant basis, net costs to ratepayers are around \$275 per participant, per year, with future year costs of about \$220 per participant, per year. Given that most costs scale with the size of the program, a lower EV forecast or lower rate of participation would result in a smaller program with lower total costs than those shown in Table 1.

Table 1 Proposed Residential Managed Charging Program Budget (\$M)

	FY22 <i>(ends 3/31/22)</i>	FY23 <i>(ends 3/31/23)</i>	FY24 <i>(ends 3/31/24)</i>	FY25 <i>(ends 3/31/25)</i>	Term FY22-FY25
Vendor operating costs-Telematics	\$0	\$0.277	\$1.161	\$1.692	\$3.129
Enrollment incentives-Telematics (\$150-per)	\$0	\$1.344	\$0.769	\$0.958	\$3.071
Vendor-Networked L2	\$0	\$0.154	\$0.488	\$0.666	\$1.308
Enrollment incentives-Networked L2 (\$150-per)	\$0	\$0.185	\$0.093	\$0.110	\$0.388
Networked L2 equip. rebates (\$500-per)	\$0	\$1.143	\$0.575	\$0.682	\$2.399
Billing, billing system, and IT costs	\$0.500	\$0.520	\$0.360	\$0.460	\$1.840
Company staffing for managed charging	\$0.075	\$0.307	\$0.312	\$0.319	\$1.013
Marketing	\$0	\$0.291	\$0.438	\$0.338	\$1.067
Evaluation Costs	\$0	\$0.046	\$0.260	\$0.269	\$0.574
A. Total/Gross managed charging program costs	\$0.575	\$4.266	\$4.455	\$5.494	\$14.790
B. Total/Gross program accelerator costs*	\$0.155	\$0.433	\$0.532	\$0.538	\$1.657
C. Costs recovered from EV Smart Plan participants for program admin.	\$0	\$0.299	\$1.599	\$2.355	\$4.253
D. Costs recovered from program accelerators*	\$0	\$0.201	\$0.120	\$0.129	\$0.450
Net Program Costs (= A + B - C - D)**	\$0.731	\$4.198	\$3.268	\$3.547	\$11.744
EVs at end of year	49,805	81,612	117,607	157,791	
EVs enrolled Telematics	-	8,961	14,087	20,474	n/a
EVs enrolled Networked L2	-	3,515	5,283	7,381	
Total EVs enrolled	-	12,476	19,370	27,855	n/a
% of EV drivers enrolled	0.0%	15.3%	16.5%	17.7%	n/a

* As described in the proposal, the managed charging “program accelerators” are the Company’s expanded online marketplace and turnkey installation service for at-home chargers.

** Net program costs will depend upon program enrollment. An enrollment estimate is provided based upon a forecast of EV adoption that meets the State’s 2025 ZEV MOU goal of 850,000 light-duty EVs and the Company’s portion of that statewide goal.

9. Appendix – Derivation of EV Smart Charging Plan and example bill under the Plan

Originally filed as 'Schedule I' in Exhibit____(E-RDP-11) (CU) in Case 20-E-0380.

Development of Residential EV Smart Charging Plan Rates

Rates for Rate Year 1 - July 1, 2021 to June 30, 2022

Calculation of EV On-peak and Off-peak Charging Rates

Line	EV Delivery Rates	On-peak Rate	Off-peak Rate¹
1	Delivery Rate (SC1VTOU)	\$0.07888	\$0.01047
2	Systems Benefits Charge (SBC)	\$0.00520	\$0.00520
3=1+2	Sum Delivery	\$0.08408	\$0.01567
	EV Supply Rates	On-peak	Off-peak
4	Supply Rate (Forecasted)	\$0.04606	\$0.02630
5	Clean Energy Standard Supply	\$0.00556	\$0.00556
6	Merchant Function Charge	\$0.00157	\$0.00104
7=4+5+6	Sum Supply	\$0.05320	\$0.03290
8=3+7	Residential EV Smart Managed Charging Rates	\$0.13728	\$0.04857

Calculation of EV Fixed Monthly Charge (for Off-peak Charging)

EV Fixed Monthly Charge Rate Tier 1			
	Rate	Quantity	Charge
9	Incremental Customer Charge	\$8.00	\$8.00
10=3 (Off-peak)	EV Off-peak Delivery Rate	\$0.01567	225
11=7 (Off-peak)	EV Off-peak Supply Rate	\$0.03290	225
12=9+10+11	Sum		\$18.93
13=Roundup 12	EV Monthly Charge - Tier 1		\$20.00
14=13/10 (Quantity)	Effective price per kwh		\$0.08889
EV Fixed Monthly Charge - Tier 1			
	Rate	Quantity	Charge
15=9	Incremental Customer Charge	\$8.00	\$8.00
16=10 (Off-peak)	EV Off-peak Delivery Rate	\$0.01567	325
17=7 (Off-peak)	EV Off-peak Supply Rate	\$0.03290	325
18=15+16+17	Sum		\$23.78
19=Roundup 18	EV Fixed Monthly Charge - Tier 2		\$25.00
20=19/16 (Quantity)	Effective price per kwh		\$0.07692

Note 1 - The EV Off-peak charging rate is only used in the development of the EV Monthly Charge and is not billed separately.

Residential EV Smart Charging Plan

Monthly Bills for Illustrative Purposes

Usages (kWh/month)

EV kWh Max usage under program by Tier	225
EV On-peak kWh	5
EV Off-peak kWh	225
EV Over Tier kWh	0
Non EV kWh	600
Total Billed kWh (at house meter)	830

Tier 1 bill

Tier 2 bill

325
5
325
0
600
930

EV Program Charges

	Rate	Quantity	Charges	Rate	Quantity	Charges
EV Smart Plan Monthly Charge	\$20.00	1	\$20.00	\$25.00	1	\$25.00
EV Smart Plan Charging Credit			-\$26.74			-\$38.66
EV Smart Plan Net Bill Impact			-\$6.74			-\$13.66

SC1 Charges - Delivery

	Rate	Quantity	Charges	Rate	Quantity	Charges
Customer Charge (SC1)	\$17.33	1	\$17.33	\$17.33	1	\$17.33
Delivery Charge	\$0.06689	830	\$55.52	\$0.06689	930	\$62.21
SBC	\$0.00520	830	\$4.32	\$0.00520	930	\$4.84
TRAC	\$0.00000	830	\$0.00	\$0.00000	930	\$0.00
RDM	\$0.00000	830	\$0.00	\$0.00000	930	\$0.00
DLM	\$0.00015	830	\$0.13	\$0.00015	930	\$0.14
EAM	\$0.00048	830	\$0.40	\$0.00048	930	\$0.45
VDER	\$0.00000	830	\$0.00	\$0.00000	930	\$0.00
LTC	\$0.00230	830	\$1.91	\$0.00230	930	\$2.14
Other Surcharges	\$0.00000	830	\$0.00	\$0.00000	930	\$0.00
Total SC1 Delivery			\$79.60			\$87.10

SC1 Charges - Supply

	Rate	Quantity	Charges	Rate	Quantity	Charges
SC1 Supply Cost	\$0.03558	830	\$29.53	\$0.03558	930	\$33.09
SC1 ESRM (NHA) Cost	\$0.00173	830	\$1.44	\$0.00173	930	\$1.61
SC1 CESS	\$0.00556	830	\$4.61	\$0.00556	930	\$5.17
SC1 MFC	\$0.00134	830	\$1.11	\$0.00134	930	\$1.24
Total SC1 Supply			\$36.69			\$41.11

Total Home Bill

\$109.55

\$114.55

Average Rate (\$/kWh)

\$0.13199

\$0.12317

Max. possible Monthly Savings vs Standard Rates

\$6.83

\$13.75

Max. possible Annual Savings vs Standard Rates

\$81.91

\$164.99

Not including taxes

Calculation of EV Smart Plan Charging Credit in Illustrative Bills (for reference)

Line		Tier 1 bill	Tier 2 bill	Source
1	EV kWh Max usage under program by Tier	225	325	From illustrative bill scenario
2	EV On-peak kWh	5	5	From illustrative bill scenario
3	EV Off-peak kWh (up to max allowed)	225	325	From illustrative bill scenario
4	EV Over Tier kWh	0	0	From illustrative bill scenario
5	Non EV kWh	600	600	From illustrative bill scenario
6	Total Billed kWh (at house meter)	830	930	From illustrative bill scenario
On-peak Charging - Costs to be added to bill				
7	SC-1 total cost per kWh*	\$0.11923	\$0.11923	Sum of proposed SC-1 supply and delivery rates (per-kWh) used in illustrative bills
8	On-peak EV charging cost per kWh*	\$0.13727	\$0.13727	Schedule 1, line 8
9	Incremental cost to be added per kWh	\$0.01804	\$0.01804	Line 8 - Line 7
10	Incremental charge for on-peak EV charging	\$0.09	\$0.09	Line 9 * Line 2
Off-peak Charging - Credits to be added to bill				
11	Credit for off-peak EV charging	\$26.83	\$38.75	Line 3 * Line 7
12	EV Smart Plan Charging Credit	\$26.74	\$38.66	Line 11 - Line 10

*Note 1: The Company expects to calculate any on-peak costs or off-peak credits using individual rate components (e.g., SBC, TRAC, etc.), as described in the proposal. The total costs per kWh used here (Lines 7 and 8) are to simplify the example calculations.

*Note 2: The Company may calculate any on-peak costs or off-peak credits using forecast values for certain rate components, as described in the proposal.