National Grid
Advanced Metering Infrastructure (AMI)
Semi-Annual Metrics Report

November 27, 2024

Niagara Mohawk Power Corporation
d/b/a National Grid

nationalgrid

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1. Introduction

In accordance with the New York Public Service Commission's ("Commission") *Order Authorizing Implementation of Advanced Metering Infrastructure with Modifications* (November 20, 2020) (the "Order"), Niagara Mohawk Power Corporation d/b/a National Grid (the "Company" or "NMPC") submits its November 30, 2024 Advanced Metering Infrastructure (AMI) Semi-Annual Metrics Report.[1] The AMI metrics contained in this report are outlined in Exhibit AMIP-7R of the Order, specifically with respect to customer engagement, program operations, fiscal spend relative to the approved budget, and projected spend. Where metrics have not yet commenced, the Company has provided a brief qualitative update in the appropriate report sections below.

2. AMI Program Progress

Over the past six months, the AMI roadmap has continued to guide the program in delivering functionality and capabilities to enable full-scale electric meter installation. The program has also been focused on the functionality and capabilities to enable the start of gas module deployment.

In April of 2023, the program initiated an electric-only "soft launch" in advance of scaled deployment with six meters installed on April 24, 2023. Throughout 2023, the Company ramped up AMI meter deployment in Central Division.

In February of 2024, deployment operations expanded into the Eastern Division. Once the Eastern and Central divisions had a healthy Field Area Network to support endpoint installations, the focus turned to scaling endpoint deployment through increased installation contractor resources. The Company continues to make progress toward its ability to significantly scale deployment. The ensuing bullets highlight actions taken in relation to deployment and implementation, engagement with stakeholders, plans for future implementation, and risks and mitigation.

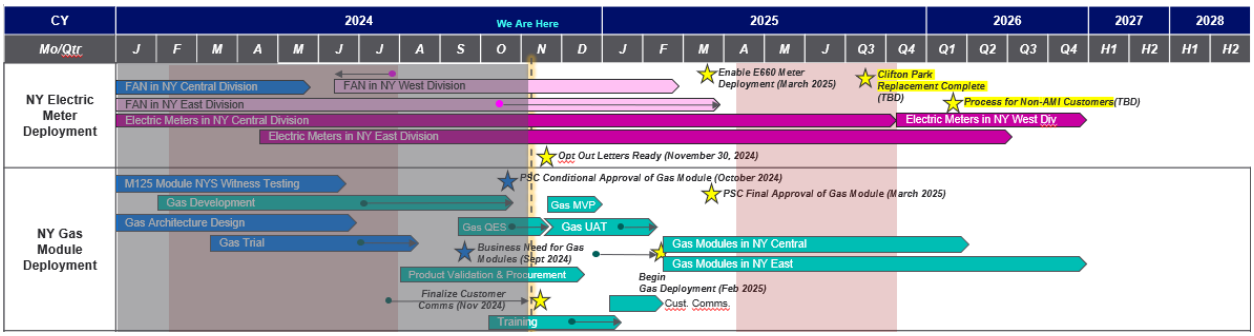


Figure 2.1: New York AMI Roadmap

[1] Cases 17-E-0238 and 17-G-0239, 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 and Gas Service ("Rate Case Proceeding"), *Order Authorizing Implementation of Advanced Metering Infrastructure with Modifications* (November 20, 2020) ("AMI Order").

- **Field Area Network ("FAN") Deployment:** The Company continues to follow its FAN deployment plan (subject to change), which began in the Central Division, moved into the Eastern Division, and has started in the Western Division. The AMI Program anticipates FAN installation to be largely completed in 2025; however, network optimization will continue through 2027. Network optimization is the process of evaluating and improving network performance and efficiency by making minor adjustments to the network and is discussed in greater detail below.

The original FAN investment was based on an initial network desktop design. The Company validated and amended the network design to increase network resilience and redundancy, while staying within the budget. As of October 31, 2024, the Company installed 4,748 of 6,307 FAN devices across all three operating divisions The Company expects to deploy a maximum of 10% additional FAN devices during network optimization.

- The Company and L+G have prioritized identifying and replacing non-communicating FAN device gateways, which are the routers that communicate with data centers, as these reduce the reliability of meter connectivity to the network. Non-communicating FAN devices are often the result of poor cellular coverage, moisture in the hardware, or firmware challenges creating communication errors. The Company is currently monitoring approximately 5% of the deployed gateways for these issues.

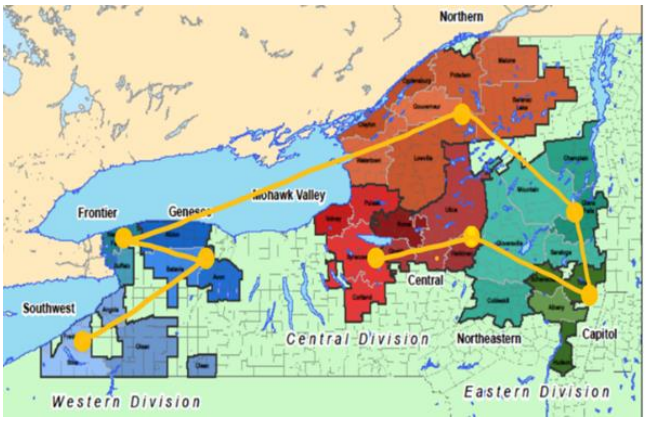


Figure 2.2: Network Deployment Sequence (beginning in Central NY)

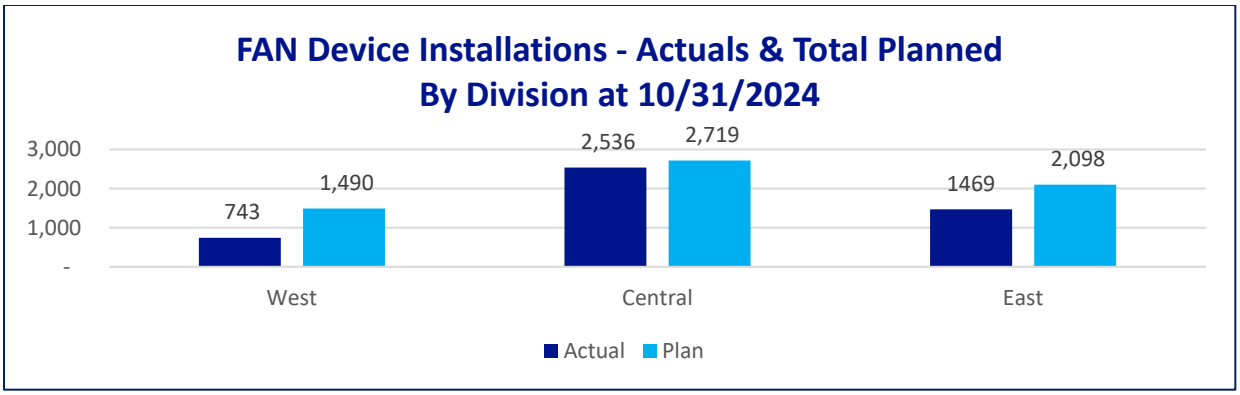


Figure 2.3: FAN Installations as of October 31, 2024

- **FAN Battery Backup Solution:** National Grid has been working with the Department of Public Service Staff ("DPS Staff" or "Staff") to implement a battery backup solution to approximately 20% of the grid routers that will be used to provide extended operation of the FAN infrastructure. This solution is expected to provide network backup for up to fifty-five percent of the Company's customer base. This solution involves a hybrid approach whereby the most densely populated areas will leverage pole mounted extended battery backup systems installed directly on distribution poles, while also augmenting the network coverage by using solar-powered mobile connected grid routers. The Company plans to install 300 units of the pole mounted extended battery backup system and 18 solar-powered mobile connected grid routers. The original target for initial deployment of the pole mounted solution was June 2024 in the Western Division to synergize with the FAN deployment; however, because non-communicating FAN devices are prioritized for FAN inventory, battery backup deployment has not started at scale. The Company plans to begin scaled up deployment once inventory recovers, which is planned for January 2025. The Company procured 5 additional solar-powered mobile connected grid routers with the plan of procuring an additional 12 units in the coming months to align with the meter deployment timeline.

Figure 2.4: Pole Mounted extended battery backup solution and mobile connecting grid router

- **AMI Meter Deployment:** In April of 2023, the program initiated an electric-only "soft launch" in advance of scaled deployment by installing six meters to volunteer customers that are also National Grid employees. As of October 31, 2024, the company has deployed over 439,351 electric meters in the Central and Eastern Divisions. The Company continues to deploy a customer-first approach, which is evident through several recent successes. With meter connectivity currently at 99%, the prioritization to identify, troubleshoot and resolve network and meter health issues was successful. Meter and Network device firmware patches were designed and released to increase and maintain a positive meter connectivity rate, preserving the existing functionalities associated with customer safety.

- **Gas MVP:** A Gas module Minimum Viable Product (MVP) solution has been developed, planned and put into action that will result in approximately 20 employee-customers receiving gas modules in November 2024. The Company will enable the back-office billing operations and a limited number of installation workflows to occur in support of the Gas Module MVP. Installing gas modules at small scale, with no impact to non-employee customers, will allow the Company to validate the overall solution prior to full scale deployment. Back-office changes have been completed and tested to support the November 2024 target date.

- **Installation Resources:** The Company faced deployment challenges associated with hiring and maintaining sufficient meter installation resources. Over the past quarter, the Company has partnered with the installation contractor, Utility Partners of America (UPA), to hire, train and retain resources. The installation contractor now has over 154 installation technicians across the Central and East regions, with a defined hiring plan to track and monitor hiring resources against plan to maintain overall installation schedules. The Company improved absenteeism by instituting a Quality-of-Life program that rewards UPA installation technicians for safely meeting their respective weekly goals. Improving retention and absenteeism increases endpoint installations, and reduces risks associated with maintaining a reasonable level of resources.

- **Return to Utility:** As the Company deployed in a defined area, consistent themes are developing requiring detailed planning and coordination to successfully install an AMI meter. Return-to-utility (RTU) is a substantial portion of the follow-up work, requiring Company technicians to install the electric meter, if UPA is not able to install. These instances include work required to repair service, repair meter channel, inactive accounts, customer access or obstructions preventing installation. Customer access related RTU's have increased as we increase the deployment rate. The Company and UPA are collaborating to improve customer access and enable UPA technicians to install more endpoints with less attempts.

- **Network Optimization:** As large areas become saturated with endpoints, network optimization will occur to increase meter connectivity and improve the operation of the network. These areas are known as "sectors," and the Company has begun Network Optimization in partnership with L+G, activities in two sectors. Example of network optimization activities include installing new FAN devices, installing specific meter locations, adjusting network configurations, and the use of passive antennas. The initial two sectors are electric-only service areas, and the Company will utilize the experience gained from network optimization in these two sectors to apply to the remaining sectors as gas modules are deployed.

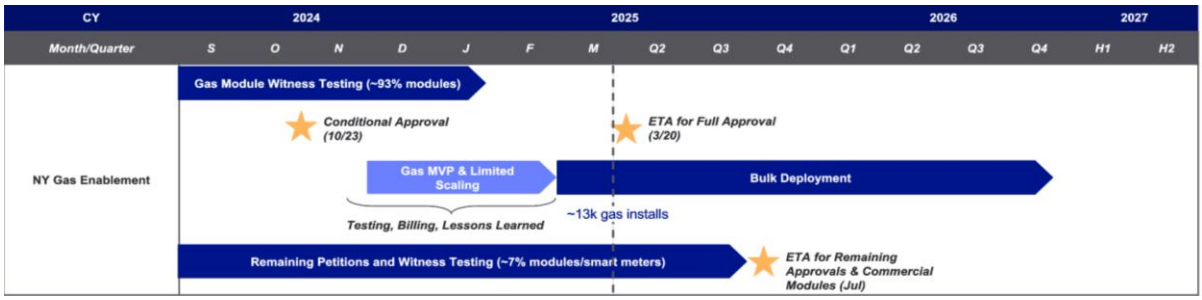
- Passive antennas are remote antennas that increase meter frequency energy and will be used in situations where there is a need to improve meter connectivity and reception to network from difficult to reach meter locations (elevator rooms, second basement, meter rooms, etc.). National Grid has taken a customer-focused, transparent approach and plans to perform direct outreach to customers for this installation where the devices are needed.

- The Company continues to monitor installation safety, performance, customer interaction, customer engagement, and opt-out intents throughout the deployment process. The Company is monitoring safety compliance through field visits, compliance assessments, independent inspections and comparing to the self-audits performed by the installation contractor. The Company monitors overall technician efficiency, total quantity of technicians actively installing meters daily, RTU's and meter installations against plan on a weekly basis. Additionally, the Company is collecting and monitoring customer interaction and engagement feedback to provide full context of the installation contractors performance. The protocols instituted to monitor and correct UPA safety and installation performance has resulted in increased technician efficiency, increased installations, and reduced of safety incidents.

In parallel with the above-described deployment activities, National Grid and L+G continue to work with DPS Staff to obtain regulatory approval for the additional electric meter forms and gas modules needed to accommodate the upstate NY deployment plan.

- **Electric AMI Meters:**
  - The Company had previously received Commission approval of the E360 electric meter forms being deployed.
  - The Company then submitted a Letter of Intent to utilize a new 1.2 WiSUN version of the E360. This meter underwent internal testing and subsequent witness testing, and Commission approval to utilize in NYS was granted on 10/23/24. The Company plans to begin deployment of the 1.2 version in calendar year 2025 after the 1.1 inventory is exhausted.
  - In addition, the Company expects to deploy the cellular variant of the E360 1.2 WiSUN. The petition was submitted on 10/4/24, and witness testing is expected to begin in the first quarter of calendar year 2025.
  - The E660 with Ferrite electric meter to be utilized with our commercial and industrial customers was also approved and added to the NYS approved list in June 2024. The program is currently developing and testing rates for these customers, and deployment is targeted to begin in the first quarter of calendar year 2025. E660 with Ferrite witness testing was successfully completed in March 2024, and Landis+Gyr is currently addressing related follow-up questions from DPS Staff. If similarity approval is obtained, the Company intends to begin deployment of the E660 meter in late 2024.
  - The Company also expects to deploy the cellular variant of the E660 with Ferrite. The petition was submitted on 10/4/24, and witness testing is expected to begin in the first quarter of calendar year 2025.

- **Gas AMI Modules:**



  - The witness testing of the M125A and M125D gas modules, which would accommodate approximately 93% of gas customers, is progressing well. A first round of witness testing was completed in June 2024, and a second round with design changes requested by DPS Staff (i.e., Rev B of the M125A and M125D modules) was commenced in August 2024. On October 23, 2024, National Grid received approval to begin deployment of the Rev B modules. This approval included a 1,000-module cap, and other conditions that must be met until witness testing is complete and a compliance filing is submitted and approved to remove the conditions.
  - The Company completed design reviews with DPS Staff in relation to a M125B module to be used with rotary meter applications (~1.5% of gas customers). A petition was filed, and witness testing was initiated September 2024.
  - The Company also completed design reviews with DPS Staff in relation to a M225 module to be used for commercial and industrial applications (~1.5% of gas customers). This module is undergoing final internal and independent third party testing, and the Company's intent is to submit a petition and initiate witness testing before the end of the calendar year.
  - Finally, the Company has been collaborating with DPS Staff on design reviews and testing approach for a smart gas meter to accommodate a portion of the meter population (~4% of gas customers). These discussions have been going well and the Company's intent is to submit a petition and initiate witness testing during the first quarter of calendar year 2025.
  - As noted above, the Company intends to pilot their deployment of gas modules to ~20 volunteer customers (also National Grid employees) late November/early December. After addressing lessons learned and exploring limited scaling, the intent is to transition to full scale bulk deployment starting February 2025. Bulk deployment will focus on areas with strong network health. The Company will also look for opportunities to synergize gas module installations with dual fuel customers that have not had an electric meter installed.

- **Digital Process Design:** The Digital Process Design effort continues to make progress with 'fast follow' functionalities that will add value for customers above AMI meter core functionality. AMI Technology and Software continues to progress in the following ways:
  - The billing systems are proving to be highly accurate and efficient.
  - Data is beginning to increase engagement with customers and improve satisfaction, a trend that the Company expects to continue in line with deployment.

- Specifically for engagement, the Company has begun testing the Sense app with select customers, giving them real-time energy insights at no cost. Customer feedback will be captured and integrated into the Customer Engagement Plan going forward.
- Open integrations enable flexibility across AMI, "futureproofing" the system to handle new systems, apps, APIs, dataflow, and more.
- Over the air (OTA) updates are enabling the Company to add features on a regular basis to endpoints without needing to physically update them.
- Agile build methods have allowed the Company to pivot multiple times, including data storage to optimize pricing and APIs with the App Center integration.

- **Customer Engagement:** Customers continue to be a primary focus for the Company as it deploys more smart meters. Communications to customers aim to follow a comprehensive campaign for smart meter awareness. The Company is keeping its customers engaged, beginning with awareness (90 days prior to meter installation), empowerment (60 days prior to meter installation), and enablement, which brings meter installation messaging and smart meter education to customers (30 days prior to meter installation). The Company launched its mass media marketing campaign, targeting customers in regions of active smart meter deployment.

- **Market Intelligence:** As National Grid rolls out smart meters in its UNY territory, the Company's Market Intelligence team is monitoring customer awareness and experience with smart meters at three touchpoints along the customer's journey (pre-installation; 1-2 months post-installation; and 6 months+ post-installation). To date, the Company has conducted five waves of the Pre-Deployment Baseline Survey targeting customers by zip code in Central, Capital, Mohawk Valley, Northern, Northeastern and Southwest regions. In total, 2,701 customers have completed the Pre-Deployment Baseline Survey. Since December 2023, the Company has been fielding the Post-Installation Survey to customers approximately 2 months after receipt of their smart meter. Results to date include feedback from 1,362 customers who received a meter between September 2023 and July 2024.

  The Company fielded its first wave of the Long-Term Tracking Survey in June 2024 targeting customers who have had their smart meter for at least 6 months. Results to date include feedback from customers who received a meter between August and December 2023. This survey will be fielded again in December 2024 and will continue to be fielded at six-month intervals.

- **Change Management:** The Company is also working with employees to ensure that they have the information and resources necessary to confidently adapt to the new ways of working with AMI. To drive a comprehensive employee experience, the AMI Change Management Team is delivering targeted internal stakeholder engagements and deploying meaningful internal communications. The AMI Training Team is currently developing and delivering a variety of trainings to stakeholders highly impacted by AMI, including the following groups: Contact Center, Customer Metering Services (CMS), Overhead Line, AMI Operations Center (AOC), Account Maintenance Operations (AMO), and more.

- **AMI Roadmap:** In the next six months, the AMI program roadmap projects the release of capabilities and functionality to enable gas deployment, as well as add automation and resilience to the electric and gas deployment efforts. Reaching these milestones will enable the NY AMI program to maximize its deployment rates and optimize customers' experience.

3. Customer Engagement Metrics

3.1. Awareness

Customer Engagement

The Company continued implementing its customer engagement plan for 60 and 30-day communication initiatives ahead of meter installation. During the reporting period, the Company also launched its 90-day communication, which included mass media communications such as radio advertisements, social media posts, online banner ads, billboards, bus wraps, Spotify ads, and newspaper ads. The billboards were rolled out in the Cortland area in October and will continue to roll out to new regions/communities based on the deployment schedule.

The Community and Customer Engagement team updated and enhanced communication pieces mid- 2024 based on feedback provided by customers, surveys, and field and office staff. Further, the Company continually updates frequently asked questions (FAQs) on its website based on inquiries and concerns raised by customers, field employees, and/or customer service representatives.

Figure 3.1.1: Sample of customer communications

The Company has sent over 1,380,000 pieces of communication (60 and 30-day communication initiatives) to customers from program inception through October 31, 2024. Figure 3.1.2 below shows the number of 60/30 Day communications sent by calendar year quarter.

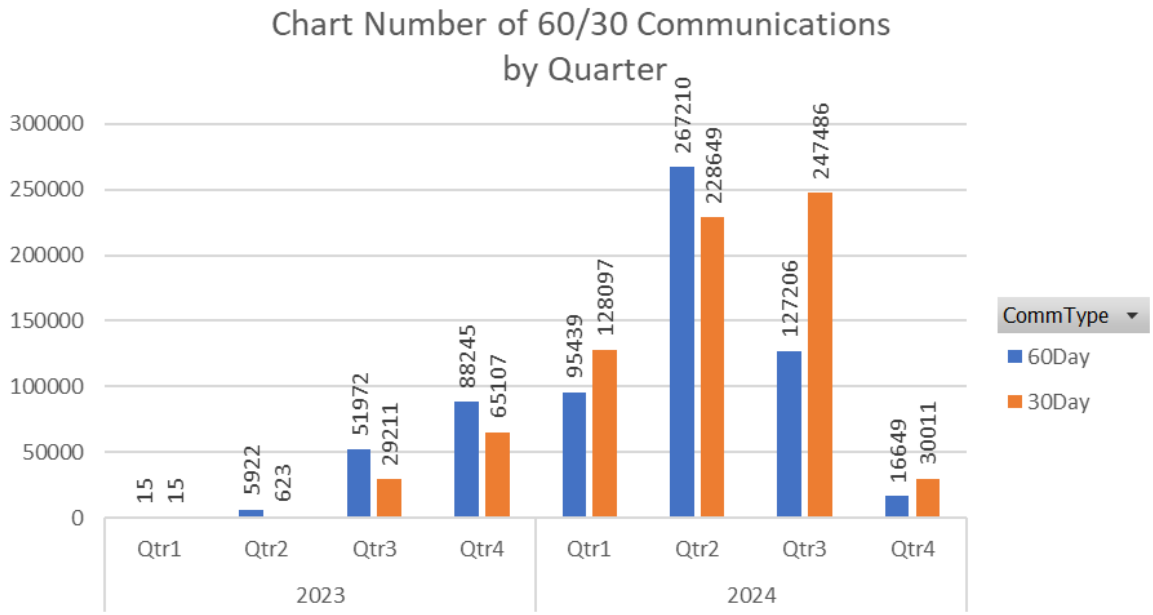


Figure 3.1.2 Smart Meter Communications sent by Quarter.

Community Engagement Events

The Company has participated in multiple outreach events and community forums to enable discussions with customers and to answer questions regarding the Company's smart meter program. Conversations typically revolve around deployment schedules, the installation process, and online data presentment. Table 3.1.1 shows the types of events attended and how many. Consumer advocate expos and senior events help target low to moderate income customers. During the current reporting period there have been ten events in the Company's Central division and eight events in the Capital division. Events will continue to be scheduled throughout deployment generally aligning with meter installations.

Community Event Type	CY2024 at10/31/2024
National Grid Consumer Advocate Expos	8
Senior Organizations	7
Farmers Markets	3
Youth Education	3
Libraries	2
Municipalities	1
Community Organizations	9
Total	**33**

Table 3.1.3: Smart Meter Community Engagement Events

In general, customers have responded positively to the smart meter roll out. They like the idea of having access to a visual representation of their energy use, are positive about the automatic power outage detection, and understand that the current metering infrastructure has nearly reached end of its useful life. Frequently asked questions include whether they need to be home during installation, especially if they are 'snowbirds', if it's safe for the workers because they have a backup generator, what happens if they have an inside meter, and if there are changes to how they can pay their bills. As new concerns are identified they are typically addressed in the FAQ section of the Company website. The Company has supplied the jurisdictional customer and community teams with smart meter focused tear pads to assist with general questions they receive as they interact with customers and community members.

The Company has engaged members of the various communities in the Mohawk, Capital, Central and Northern regions at thirty-three events this year. Throughout our community efforts, we've targeted events to attend alongside the Company's consumer advocates to ensure we are equitable in our approach to meet the needs of each community we serve. Events have included senior fairs, community expos, and neighbourhood and youth group events.

The Company has added an additional team member to support smart meter community engagement efforts, enabling the ability to target additional events across the service area as smart meters are deployed. In the coming months, the Company plans to attend several larger scale home shows in Utica, Albany, Buffalo, and Syracuse, while continuing to attend more local community events. As meter deployment expands to western New York, community events in that area will be added to the schedule.

In addition, community leaders across the upstate New York service territory are slated to receive a semi-annual smart meter program update. The next community leader letter will be mailed by year end. This letter series provides community leaders with updates on where deployment has occurred, how it's going, and where deployment can be expected over the next several months.

Figure 3.1.4 Smart Meter Community Events Table

Market Intelligence

As the Company rolls out smart meters in its UNY territory, the Market Intelligence team monitors customer awareness and experience with smart meters at three touchpoints along the customer's journey (pre-installation; 1-2 months post-installation; and 6 months+ post-installation).

The Pre-Deployment Baseline Survey is fielded to customers prior to the start of 90-day communications in a given geographic area and is designed to establish a baseline measure of awareness, interest, and attitudes towards smart meter offerings prior to formal communications launch. This is valuable information for the Company to understand the "starting point" of where customers are at in terms of smart meter knowledge. The Post-Installation Survey is fielded to customers 1-2 months after receipt of their smart meter. This survey is designed to monitor changes in smart meter awareness and provide insights into the installation experience. This survey was first launched in December 2023 and will be fielded monthly through the duration of deployment. The Long-Term Tracking Survey is fielded to customers who have had a meter for 6-months or longer. This survey continues to monitor changes in smart meter awareness, satisfaction, and attitudes. This survey first launched in June 2024 targeting customers who have had their smart meter for at least 6 months. This survey will be fielded again in December 2024 and will continue to be fielded at six-month intervals.

The findings in this report present a combination of results from the three surveys conducted between July 2023 and September 2024 and encompass insights from customers in the Central, Capital, Northeast, Northern, Mohawk Valley, and Southwest regions prior to the installation of their meter; customers who received their smart meter between September 2023-July 2024 at 2-months post-installation; and insights from a portion of customers who received their smart meter between August and December 2023 at 6-months or more post-installation. Results are among residential customers only.

Region	Baseline Survey	Post-Installation Survey	Long-Term Tracking Survey
Central	622	1,059	400
Capital	499	185	
Northern	476	65	
Mohawk Valley	270	53	
Northeast	449		
Southwest	385		
Total	2,701	1,362	400

Figure 3.1.5: Survey Participation to Date by Region

The Company's marketing communications are designed to educate our customers, and the data indicates that they are effective.

The Company is targeting 80% awareness of "Smart meters" at 6 months post installation. In all regions measured, customers have a shallow in-going depth of understanding of smart meter technology prior to exposure to our communications. Within the Central region, smart meter awareness at 6-months+ post-installation exceeded the target, surpassing pre-deployment levels (by a significant 33 points).

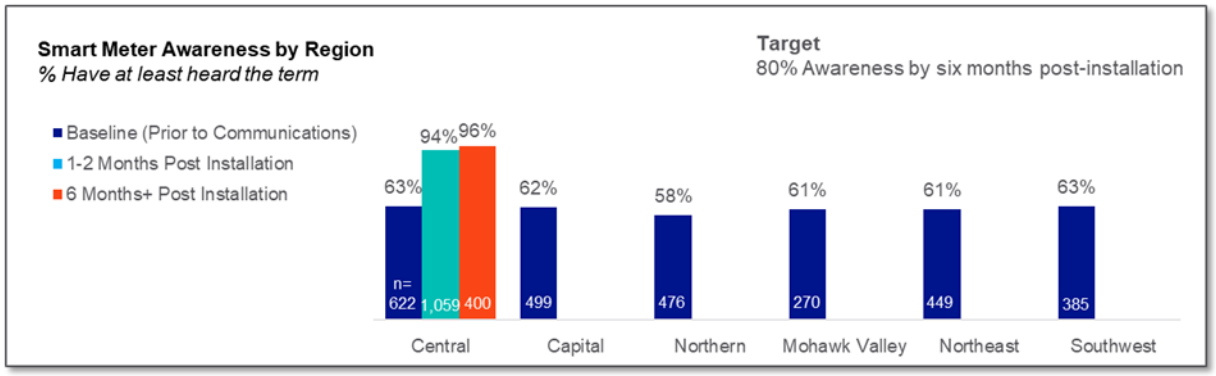


Figure 3.1.6: Awareness of smart meter (By Region)

In addition to increased awareness, a large majority of customers are highly satisfied with the Company's efforts to inform them about the smart meter installation (66%); and strongly agree that communications were timely (75%), easy to understand (72%) and provided all the information they needed (68%).

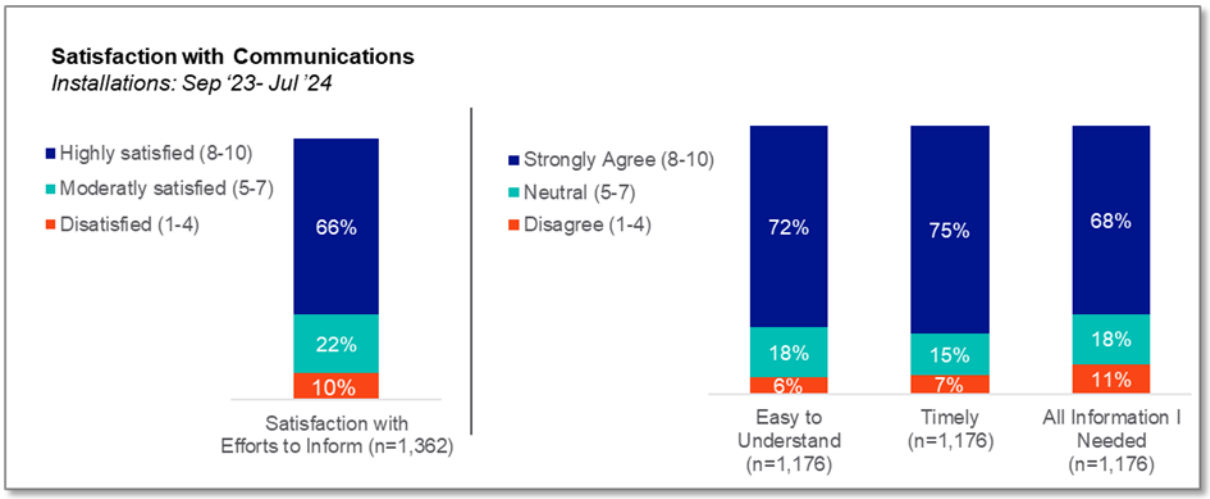


Figure 3.1.7: Satisfaction with Communications Efforts

Customers are largely satisfied with the installation process as well, with around three quarters highly satisfied (75%). A moderate proportion (60%) of customers either spoke to or saw an installer during their meter installation. Most who did interact with or see the installer feel the

installers were courteous/respectful (87%), had a professional appearance/manner (92%), and left the surrounding area undamaged (85%).

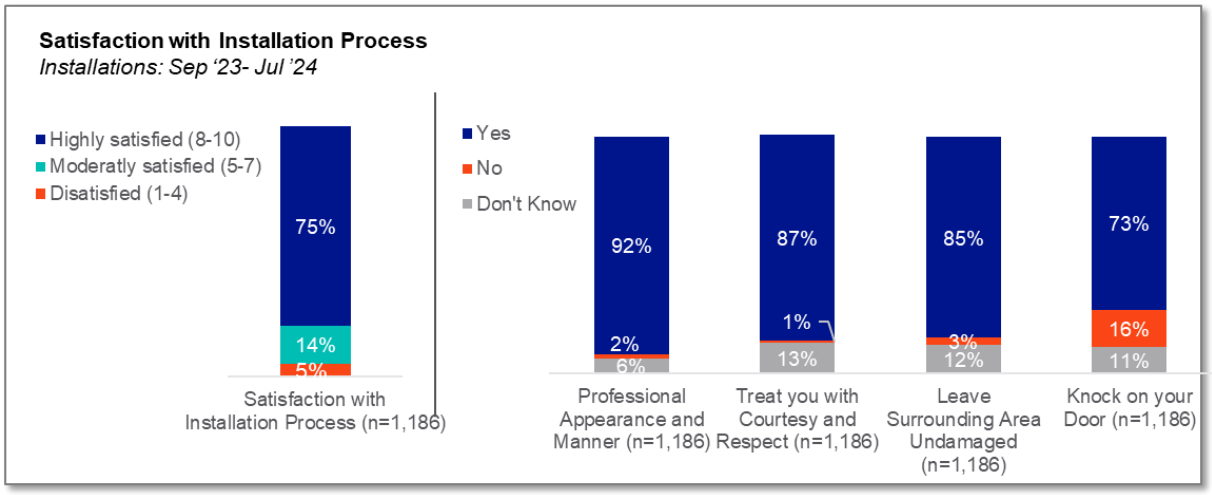


Figure 3.1.8: Satisfaction with the Installation Process

3.2. Enablement/Empowerment

Customer Energy Management Portal

The Company's website has been enhanced to show the customer's 15-minute interval data through several views (daily view, bill period view, etc.). Customers are also able to retrieve their usage data in a near-real time manner to see what their usage has been in the past 24 hours. They are also able to see their 5 highest usage days within a bill period and can drill down into any of those days to understand their detailed usage within each day. These capabilities will educate customers on their usage patterns and provide insights to better-manage their energy usage.

This same high-level load disaggregation is available to the Company's customer service representatives for customers that call service centres with questions regarding their energy usage and bills.

Figure 3.2.1 Graphical Representation of Energy Usage and Costs

The Company has also enabled proactive alerts that are triggered when the average usage for the current billing period is trending to exceed 25% more than the same billing period in the previous year. The alert is sent in the middle of the bill period, allowing the customer to make behavioural changes with enough time to influence the next bill.

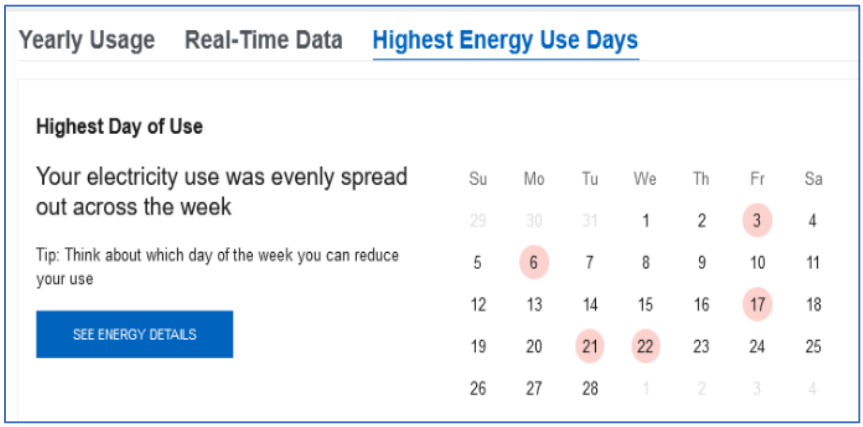


Figure 3.2.2: High Energy Use Days

Since the Company released CEMP functionalities on the MyAccount portal, we have seen over 72,000 new smart meter customers who have logged into the portal to view the new widgets and over 270,000 returns to the portal over the last reporting cycle. We have also seen over 66,000 customers who are using the high bills alerts and over 157,000 using the weekly energy usage updates sent to customers.

According to the Post-Deployment and Long-Term Tracking surveys, nearly half (47%) of customers in the Central region who received a smart meter are aware of CEMP at 2-months (45%) and 6-months (48%) post-installation. This is similar to awareness compared to baseline (52%). Among those engaging with CEMP and its features, perceived usefulness of CEMP is higher at 2-months post-smart meter installation (69%) compared to baseline (55%). While more customers have used the online management tools at 6-months+ post-installation, the perceived 'usefulness' of the online tools drops off at 6-months+ post-installation (46%).

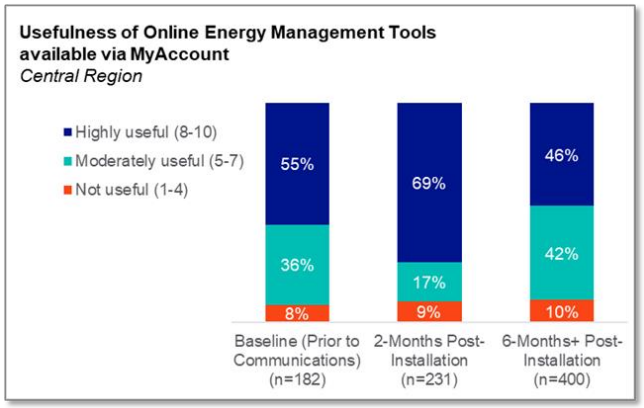


Figure 3.2.3: Usefulness of CEMP

To improve perceived usefulness, the company will highlight new features on the portal through post installation campaigns, leverage improving in-tool tips for customers when they receive the weekly energy updates and/or the high usage alerts once they have subscribed. By focusing on continuous improvement and personalised insights, the Company can reinforce the values and benefits the features bring and improve customers' experience.

The Company also added a banner on the MyAccount portal to highlight new functionalities provided by the smart meter making it easier for customers to discover, access and maximise use of the functionalities. The banner appears on a customer's portal after they have had their smart meter installed.

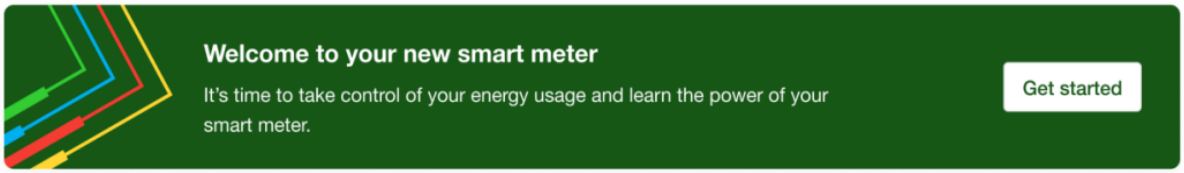


Figure 3.2.4: Smart meter banner on MyAccount Portal

Grid Edge Computing - Load Disaggregation

The Company is deploying next-generation AMI technology (commonly referred to as smart meters) with an embedded grid-edge computing platform, a first of its kind in the world. This innovation enables a range of use cases not possible with the previous generation of AMI, unlocking new value for customers such as appliance-level load disaggregation and a real-time power meter. Load disaggregation will provide significant customer benefits, including higher control and automation, improved energy management, and increased home awareness and reliability.

The Company is partnering with a third-party vendor, Sense, to deliver appliance level usage data to our customers through a mobile application. The Company is taking a very cautious approach to ensure this disruptive technology is well understood and managed appropriately. The mobile application was released to a small group of 4 customers to test the infrastructure and integrations. The app is now being released to additional customers with an intent to learn about customer's experience and perceptions. This knowledge shall enable the Company to develop appropriate customer engagement and support plan when the mobile application is ready to be used by all customers.

Figure 3.2.5: Sample Sense mobile platform

3.3. Green Button Connect My Data

Prior to AMI deployment, National Grid enabled Green Button Connect My Data ("GBC") for all upstate New York residential and small commercial customers on March 31, 2021. Once authorized by the customer, GBC shares relevant customer data with certified third-party companies. To qualify, third-party companies must enter into a Data Security Agreement and execute a Self-Attestation.

As of November 04, 2024, seventy-three (73) qualified third-party companies have registered with the Company's Green Button Connect platform. A list of authorized third parties can be found on the Company's website.

The Company has streamlined the third-party registration process by making it possible for third parties to fill out the Data Security Agreement and Self-Attestation forms online instead of having to complete them in hard copy. The Company's GBC administrator receives an automated message prompting them to go into the system to review and approve each third party. Once approved, third-party companies will receive an email notifying them of their approval and will receive access to designated customers' energy data.

The Company intends to further expand this program to include MV-90 and AMI meter data for the Niagara Mohawk service territory.

4. Operational and Program Metrics

4.1. Deployment

The Company continues to make good progress with the implementation of back office technical systems, introduction of processes and tools, and development of requisite capabilities. Deployment continues to afford opportunities to test end-to-end system integrations and make refinements based on lessons learned, while mitigating potential risk.

To reach fully scaled deployment, the Company is working closely with Utility Partners of America ("UPA"), the endpoint installation partner, along with system integrations to their work management system, Ensight+. UPA deployment activity began in August 2023 and continues to support most of the residential meter/module installs for the program. UPA continues to increase resources and integrate processes and systems needed to be successful.

As the Company scaled its deployment, it identified minor issues related to communication firmware, resulting in pockets of delayed meter registration and the need for manual meter reads to minimize customer impact. In partnership with L+G, the Company launched a team to monitor performance, evaluate the root cause, test, and deploy solutions to support the connectivity of meters. The team is continuously improving with firmware upgrades, while continuing to measure and monitor daily performance that would support full scale deployment.

Table 4.1.1, below, shows the four-year deployment plan by program year described in the filing and subsequent Commission Order. Note that these counts represent total endpoints and include both electric meters and gas modules. While delivery on the original volume of total endpoints is still the goal, the impacts associated with gas module availability, non-communicating electric meters and absenteeism of installation contractor resources have affected the forecasted endpoints to be deployed in each program year. The Company will continue to communicate these impacts, if realized, in subsequent updates to Staff.

Deployment Program Year	**Original Deployment Plan (Total Endpoints)**	**Revised Deployment Plan (Total Endpoints)**	**Electric Meter Installs**	**Gas Module Installs**
Year 1 (7/23 – 6/24)	485,000	235,000	204965	0
Year 2 (7/24 – 6/25)	849,000	1,000,000	234,427 at 10/31/2024	0
Year 3 (7/25 – 6/26)	849,000	900,000		
Year 4 (7/26 – 6/27)	165,000	213,000		

Table 4.1.1: Projected Meter Deployment Count by Deployment Year

As of October 31, 2024, the company has deployed over 439,392 AMI smart meters in the Central and Eastern Divisions. Figure 4.1.1 below shows the AMI meter installations by quarter.

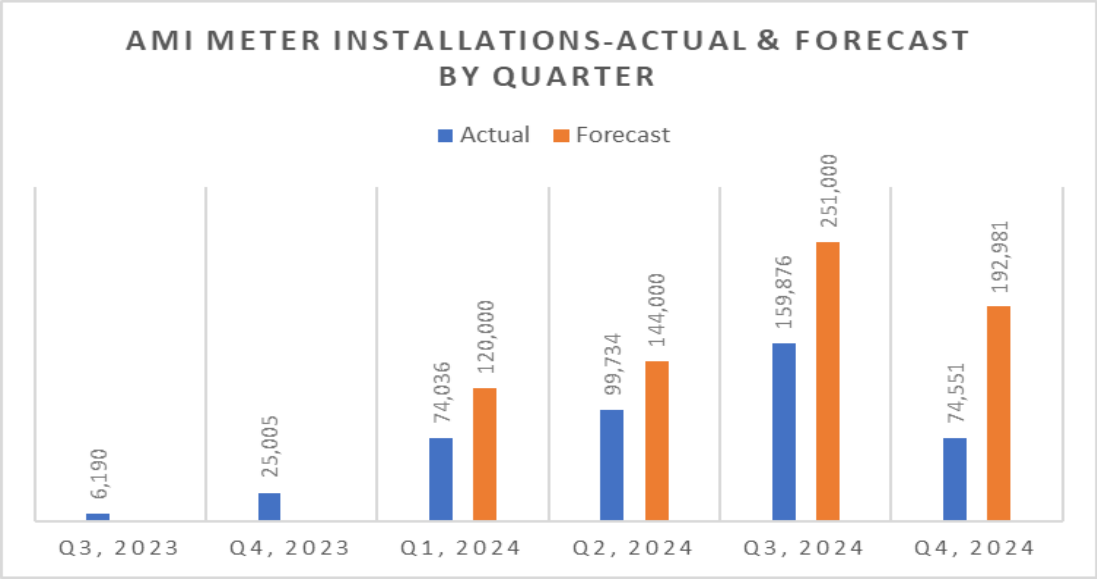


Figure 4.1.1: Progress of Meter Installation

4.2. AMI Meter Opt-Out Intents

Since AMI deployment started, the Company has received AMI meter opt-out intent requests from 5,166 customers as of October 31, 2024. This represents 5,146 electric meters and 2,737 gas meters, noting that some customers have electric-only service or gas-only service, and some have both electric and gas service. Based on the number of unique communications sent out, the rate of opt-out intent stands at 0.63%. Once a customer submits their intent to opt-out, they are provided additional information outlining the loss of benefits, additional fees, next steps, links to additional information, and instructions on how to opt back into the smart meter installation pool. To date, no non-communicating meters have been installed for opt-outs nor have associated fees been implemented for customer meter opt-outs.

Regions	Total Number of Bill Accounts	Total number of Electric Meters	Total number of Gas Meters	Total number of Opt Outs Cancelled
Capital	1336	1330	795	86
Central	2,483	2,476	1584	149
Frontier	159	159	0	4
Mohawk Valley	622	615	341	28
Northeast	52	52	14	1
Northern	404	404	3	25
Western	110	110	0	2
Grand Total	**5,166**	**5,146**	**2,737**	**295**

Table 4.2.1: AMI Opt-Out Intents by Region and Fuel Type

Table 4.2.1 shows Opt-Out Intents by region by bill account, electric and gas service. To date, there have been 295 customers who have cancelled their opt-out intent and will now receive an AMI meter.

Opt-Out reasons	Number of Accounts	Percent
No reason given	279	5.40%
Health / Safety	597	11.56%
Privacy / Data Security / Trust	325	6.29%
Other or Multiple Reasons Stated	737	14.27%
Don't Want / Personal Preference	1,519	29.40%
Opt out in field-no reason noted	1,709	33.08%
Grand Total	**5,166**	**100.00%**

Table 4.2.2: Distribution of Opt-Outs by Reason

Table 4.2.2 shows the distribution of opt-out reasons to date. The combined reasons of: 'No reason given' and 'Opt Out in field – no reason noted' are the most common categories noted, followed by 'Don't Want/Personal Preference' (customer stating they do not want the meter) has been a strong second category.

The Company has begun to do some additional research around the biggest opt-out reason categories and will continuously work to improve customer communications around these areas.

The Company sends follow up AMI materials addressing data privacy and safety concerns to all customers that have opted out. The goal is to educate customers in hopes they cancel their opt-outs and choose to have AMI meters installed.The Company intends to track opt-outs from vulnerable populations such as medical emergency, elderly-blind-disabled, and income eligible. These values will be reported in future reports and quarterly updates.

5. Billing

On October 25, 2023, the Company filed a petition to update residential bill estimation procedures that align with AMI technology and capabilities. The Company filed an updated petition in August 2024, and recently responded to a DPS information request regarding existing bill estimation procedures. The Company anticipates approval of the petition will enable more accurate MDMS bill estimations and reduce truck rolls for manual meter reads.

The Company is awaiting response from the Commission on its petition filed June 23, 2023 regarding remote connect and disconnect fees.

AMI metrics include reporting the percentage of bills that were estimated for AMI accounts during the reporting period with a target of no more than 1.5%. For the period of May 2024 to October

2024, 1,538,829 bills were produced of which 12,895 were estimated. This resulted in an estimated bill rate of 0.84%, significantly below the target rate.

The AMI Operations Center ("AOC") is responsible for meter health and data integrity. The mission is to ensure that the meters are online, communicating and bringing in accurate, valuable reading data to the billing stream. The AOC focuses on Meter Data Management System ("MDMS") operations and exceptions, as well as mitigating meters that are not communicating. The AOC works with multiple internal stakeholders including Account Maintenance and Operations ("AMO"), Customer Meter Services ("CMS"), Meter Field Deployment ("MFD"), Revenue Assurance, the Unified Technology Operations Center ("UTOC").

Once there is sufficient residential customer AMI data, the Company will use the data to develop new delivery rate options.

6. Outage Management

The company is building integrations to automatically pass electric meter power loss notifications (aka "Last Gasps") from AMI-enabled meters to initiate outage restoration actions in the field. **Smart Data for Outage Management (SD-OM)** is a L+G Application Module within MDMS that serves as an intelligent intermediary between Command Center and Outage Management System and performs necessary filtering of outage notifications from the meters before forwarding them to OMS/ADMS. In the initial phase, the SDOM setup and integrations will enable key outage data availability to Outage Management systems. As the systems and processes are enhanced, the Company will be able to report on operational metrics.

As of October 29, 2024,

- Ping capability is enabled in OMS/ADMS that allows operators to validate the meter status for all types of outages reported before rolling trucks/dispatching crew to field. This results reduction of truck roll due to false outages in turn reducing fuel consumption and vehicle emissions.

Beginning January 2025, the Company anticipates providing:

- AMI ADMS integration to maximize outage awareness. The number of outage cases that the Company positively confirms through the AMI system.

Beginning March 2025, the Company anticipates providing:

- Number of power restorations identified because of AMI and that did not require confirmation by the customer or in the field.

7. Remote Disconnect & Connect

Remote Connect/Disconnect capabilities will be rolled out in three phases.

Phase 1 Move In / Move Out (December 2025):

Upstate New York National Grid (UNY) operation will be able to issue remote connect and disconnect command(s) from the Customer Service System (CSS). CSS will be able to issue commands from CSS to the MDMS that will instruct the MDMS to connect or disconnect a meter remotely. This command remotely opens or closes an internal service switch to turn on or off a customer.

Remote Connect or Disconnect batch command(s) originates with CSS that will send a request to the MDMS to Connect or Disconnect the customer. The MDMS then sends the request to the command center (Headend system), which then communicates to the meter via the mesh network to open or close the switch. Once the switch status has been changed, the meter communicates back to the command center, which communicates back to the MDMS. Finally, the MDMS communicates back to CSS, confirming that the Connect/Disconnect was successful or unsuccessful.

Phase 2 Emergency (February 2026):

An emergency is reported to Upstate Dispatch and Scheduling. In response, Upstate Dispatch and Scheduling will generate two tickets in Salesforce for Overhead Line and Customer Metering Services. The AMI Electric Meter(s) will be remotely disconnected by Upstate Dispatch and Scheduling using the Command Center. Subsequently, Overhead Line and Customer Metering Services will address the emergency in the field. Once the emergency is resolved, Upstate Dispatch and Scheduling will update and close the tickets.

Following the resolution of the emergency, an Advance Metering Operation (AMO) or Contact Center representative will initiate a work order in Salesforce and FSL (Field Service Lightning) for CMS. This work order will ensure that the customer's premises are safe for reconnection of the AMI electric meter.

Phase 3: Collections (April 2026)

Design work has not been started.

8. System Operation & Environmental Benefits

The Company anticipates providing the following metrics associated with Volt-VAR Optimization (VVO), upon implementation:

- Number of network/feeders with AMI deployed that have implemented VVO.
- Incremental load reduction (MWh) attributable to VVO.
- Emissions reductions savings attributable to VVO.
  The Company will track avoided emissions using costs provided by NYSERDA's annual Clean Energy Standard Solicitations for Large-Scale Renewables.

VVO deployment is not expected until later in the project and therefore metrics are not available currently. Any VVO benefits are not anticipated until Year 7 of the AMI Program. The AMI program will continue to work with Electric Operations and in coordination with the Company's overall long-term VVO strategy.

9. Change Management

The AMI Change Management team develops learning and engagement opportunities for affected internal stakeholder groups to enhance their awareness and adoption of the AMI program. The goal is to assure employees are trained and prepared for changes in business processes as AMI is deployed.

To date, the AMI Change Management team has developed over 300 tangible training materials and provided approximately 176 live learning opportunities for all impacted internal stakeholder groups. Training topics are derived from the Digital Process Design workshops to ensure process alignment with internal stakeholder approval.

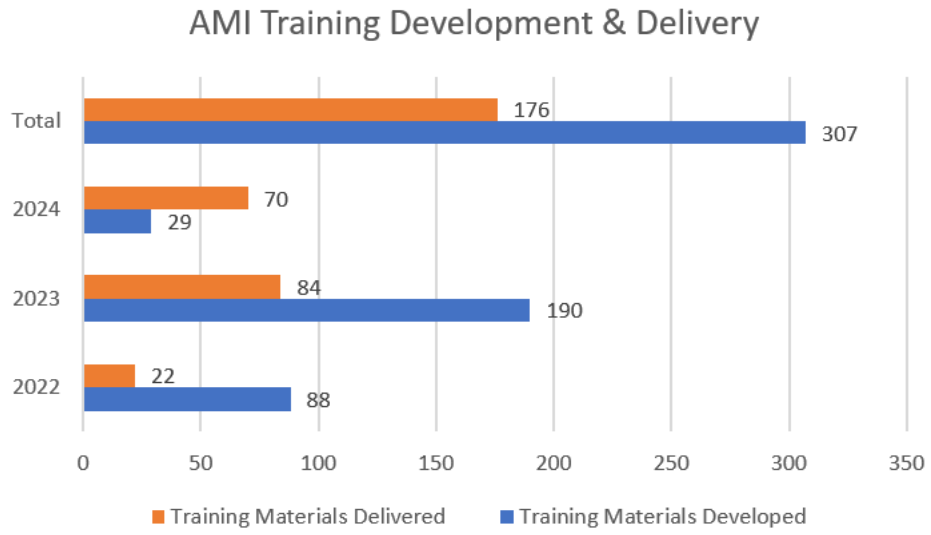


Figure 8.1 AMI Training Sessions & Training Materials

Trainings continue to be well received with strong attendance and positive survey feedback:

Survey Question	Average Rating
On a scale of 1-5 stars, how helpful was this training session? (1=not helpful at all, 5=extremely helpful)	4.1
On a scale of 1-4 stars, how would you rate the usefulness of the training materials? (1=not helpful at all, 5=extremely helpful)	4.1

Figure 8.2 – AMI Internal Stakeholder Training Feedback

In addition to training, the Change Management team has facilitated informative engagement activities to continue building positive sentiment and excitement towards the benefits AMI technology will bring to employees and customers alike. For example:

- May 22nd: A workshop was held for the Upstate NY Contact Center agents to show updates to customer's MyAccount portal after a smart meter is installed, highlighting the customer benefits of 15-minute interval data, highest usage days, and email alerts.
- September 12th: An interactive Sense Lunch & Learn was held to share the functionality of the Sense app with the greater business through a panel of National Grid employees who are also customers sharing their experience testing the app.
- NY Electric, NY Gas and Customer Change Network calls have been joined to share AMI program updates to the greater business as functionalities are released, providing an opportunity for employees to ask questions.

Figure 8.3 – Internal AMI Communications

Strategic communications are also shared with internal stakeholders to keep them abreast of program updates and milestones in the form of newsletters, FAQs, information sessions, bulletins, and live videos. We released an AMI BIG Work video that showcases how the AMI program contributes to the BIG Work National Grid is leading in the energy transition.

10. Expense Summary

Details of the cumulative expenditures related to AMI, from program inception through October FY 2025 (April- October CY2024), are provided below in Table 9.1 and Table 9.2. The reported expenditures contributed to back-office system support and development, infrastructure development, and progress toward the 6-year program implementation.

Capital Grouping	AMI Capital Types	Capital Description	FY21	FY22	FY23	FY24	FY25 (April to October)	Cumulative Total
A	AMI Electric Development	AMI Electric Meter Equipment and Installation	$0	$147,748	$13,443,190	$55,130,493	$84,140,488	$152,861,918
		Equipment and Installation Refresh Cost						
		Support Infrastructure						
		Project Management						
B	AMI Gas Development	AMI Gas Module Equipment and Installation	$0	$148,994	$1,622,609	$1,884,510	$3,309,896	$6,966,008
		Equipment and Installation Refresh Cost						
		Support Infrastructure						
		Project Management						
C	AMI Field Area Network Development	Network Equipment and Installation	$0	$206,147	$1,205,579	$22,213,087	$9,529,368	$33,154,181
		Equipment and Installation Refresh Cost						
		Support Infrastructure						
		Project Management						
E	AMI IT Development	Ongoing Business Management	$0	$2,565,927	$15,088,131	$17,944,593	$7,353,982	$42,952,633
		Customer Service System						
		Cyber Security Software						
		IS Infrastructure						
	Total		**$0**	**$3,068,815**	**$31,359,509**	**$97,172,683**	**$104,333,734**	**$235,934,740**

Table 9.1: Cumulative Capital Expense Summary through Fiscal Year 2025 (October)

Expense Grouping	AMI O&M Expense Types	FY21	FY22	FY23	FY24	FY25 (April to October)	Cumulative Total
A	Energy Monitoring Portal CSS Enhancements Data Lake ESB Information Management	$0	$850,447	$1,469,620	$2,227,548	$1,607,696	$6,155,309
B	Meter Inventory Management Upgrade Load Disaggregation Software OMS Integration	$0	$0	$0	$0	$0	$0
C	Cyber Security Project	$0	$38,435	$34,780	$106,449	$55,878	$235,543
D	Professional Services - Head End/MDM Solution Program Management Professional Services - Head End/MDM Systems Implementation Workstream	$0	$0	$0	$0	$0	$0
E	Software Purchase Fees - Headend Software (HES, MDMS, NMS, FDM) Software Fees - Headend Software (HES, MDMS, NMS, FDM)	$0	$0	$0	$0	$0	$0
F	Telecom	$0	$113,896	$122,306	$791,888	$499,642	$1,527,732
G	AMI Additional Meter Data Services Labor	$0	$0	$167,759	$134,884	$0	$302,642
H	Cost from account maintenance and operations, implementation	$0	$0	$96,486	$955,282	$341,475	$1,393,243
I	Customer Engagement Plan Customer Engagement Plan Labor	$0	$37,134	$1,330,563	$3,340,521	$2,383,766	$7,091,983
J	AMI Demonstration Period	$0	$17,888	$76,979	$79,555	$43,519	$217,942
K	AMI External Project Management AMI Internal Project Management AMI Internal Project Management Business Support	$325,149	$9,559,952	$16,959,781	$12,958,926	$10,132,420	$49,936,228
	Total	**$325,149**	**$10,617,752**	**$20,258,273**	**$20,595,052**	**$15,064,395**	**$66,860,622**

Table 9.2: Cumulative Downward Only Operational Expense Summary through Fiscal Year 2025 (October)

Appendix A – AMI NY Metrics Tracker

National Grid NY AMI Regulatory Metrics - Reporting through Oct 31. 2024

Category	Metric	Metric Targets	Data as of Oct 31, 2024
			Total
Awareness	**Customer knowledge of smart meters: Measurement of awareness of smart meter technology, features, and benefits via survey.** *Baseline awareness to be measured 6 months prior to deployment*	80% of customers with Awareness of AMI at 6 months post deployment for each specific region.	96%
	Targeted Energy Forum Presentations: Number of forums to provide smart meter information:	**Two or more events per region** based on demand; western, central eastern, and northern regions	
	Type of forum (town hall(in-person or virtual), neighborhood, community group, expo, etc.).		**10 Central**
	Target audience (elected officials, customers, etc.).		**8 Capital**
	Date and Frequency.		**Please see report**
	Attendance numbers.		**Please see report**
	Income-Eligible Customer Forum Presentations and Awareness	**Two or more events per region** based on demand; western, central eastern, and northern regions.	
	Number of income-eligible events where smart meter information is presented.		**Please see report**
	Percent of new and returning income-eligible customers logging on to platform during the reporting period.		**n/a**
Enablement/ Empowerment	**Customers Using the Customer Energy Management Platform:**	**Number of customers** to be measured post deployment	
	Number of new and returning customers in each region with smart meters that log onto the usage / analytics page at least once broken down by service class and income-eligible customers.		**New - 72,815** **Returning - 274,509**
	Percent of customers logging on to platform more than once per reporting period.		**16.85%**
	Customers Using Customer Energy Management Platform Functions: **Breakdown of customers using specific platform functions:**	**Number of customers** to be measured post deployment	
	Personalized insights.		**157,187**
	High-bill / usage alerts.		**66,182**
	Energy marketplaces (i.e., E-Commerce Platform and Solar Marketplace).		**n/a**
	Measure percent of customers using platform year over year.		**n/a**
	Customer Energy Management Platform Satisfaction:	**Baseline customer satisfaction** to be measured 6 months post to deployment	
	Measurement of satisfaction with Customer Energy Management Platform and other tools via survey.		**n/a**
	Measurement of smart meter awareness campaign effectiveness to drive actions.		**n/a**
	Customer use of smart phone app to access real-time energy usage data	Number of customers to be measured post deployment	
	Track number of customers using smart phone app to track real-time usage data.		**n/a**
	Green Button Connect:	The Company will report this information for tracking purposes.	
	Track the number of third parties onboarded with Green Button Connect.		**53**
	Track the number of customers sharing their data via Green Button Connect.		**n/a for AMI customers**
Deployment	**Number and percentage of AMI electric meters and gas modules installed in comparison to targets established by the AMI deployment schedule.**	October 2024: 439,351 (?%)	**439,351 electric AMI meters at 10/31/2024**
	Number and percentage of AMI electric meters and gas modules that were deemed to be faulty during the installation process.	October 2024: 2,330 (0.5%)	**n/a**
	Number and percentage of AMI gas modules that were required to be replaced during the installation process (to accommodate gas module installation) in comparison to estimated volume of replacements.	October 2024: 0	**Gas modules have not been deployed yet. Please see report.**
	Number and percentage of AMI network communications devices installed in comparison to targets established by the AMI deployment schedule.	Year 1: 1,216(20%) Year 2: 2,128 (35%)	**4,702 FAN devices installed at 10/31/2024**
	Number and percent of residential customers who opt out of receiving a new AMI meter.	Year 1: 4,190 (1%)	**5,166 accounts have expressed intent at 10/31/2024 (0.63%)**
	Number and percent of income-eligible customers enrolled in the Energy Affordability Program who opt out of receiving a new AMI meter.	1%	**n/a**
	Number and percent of small commercial and industrial ("C&I") customers who opt out of receiving a new AMI meter.	Year 1: 482 (1%)	**n/a**
Billing	**Percentage of bills that were estimated for accounts with AMI meters during the reporting period.**	Less than 1.5% of bills will be estimated for customers with AMI	Total Billed Meters: 1,538,829 Total Estimated Meters: 12,895 **Estimated Read Percentage: % 0.84**

Outage Management	**Number of power restorations identified through AMI that the Company did not have to send a crew or call to confirm.**	**Number of operator commanded meter pings** in lieu of rolling a truck. Operator pings the meter to get information.	**Please see report.**
		Number of ADMS commanded meter pings. ADMS pings every meter in an outage area to see if power has been restored after an outage ticket has been closed.	**n/a**
		Manual ping of the meter to get status or ADMS ping based on list of meters contained in an outage to see if any report back. During a storm we would not use ADMS as it would put too much strain on the system, we would only do this in blue sky.	**n/a**
	Reduction in fuel consumption and vehicle emissions due to reduction in false outages requiring a truck roll. Add: meter investigations, connects and disconnects from item below.	Report of inside trouble calls not assigned to a crew.	**n/a**
	The number of outage cases that the Company positively confirms through the AMI system.	Report of last gasp signals	**n/a**
		Outages created by ADMS, AMI, Manually.	**n/a**
		Run a report for the number of outages created by AMI over the number of outages that would have been called in by a customer.	**n/a**
System Operation & Environmental Benefits	**Number of networks/feeders with AMI deployed and have implemented Volt-VAR Optimization ("VVO").**	FY 18-2 Sub-stations	**Please see report.**
		FY 20-3 Sub-stations	**n/a**
		FY 21- 4 Sub-stations	**n/a**
		FY22-FY25 Estimated 21 Substations pending NIMO 2020/2021 Rate Case Settlement	**n/a**
	Incremental load reduction (MWh) attributed to VVO.	1% Estimated load reduction	**n/a**
	Emissions reductions savings attributed to VVO.	*To be calculated pending the success of the prior two metrics.* Avoided emissions costs are provided by NYSERDA annual Clean Energy Standard Solicitations for Large-scale Renewables	**n/a**
AMI Program Progress	**Achievements of key program milestones**. Program milestones, such as the completion of the back-office systems, customer engagement solutions, and the number of meters installed. These metrics will provide for the appropriate control and oversight of the program.	The Company will report this information for tracking purposes.	**Please see report.**
	Identify and track delays in meeting key program milestones, the cause of such delays, and updates to the project schedule by key milestone. At a minimum, these key milestones shall include progress under the AMI Benefits Implementation Plan, use of AMI data for complex billing, and progress under the Customer Engagement Plan.	The Company will report this information for tracking purposes.	**Please see report.**