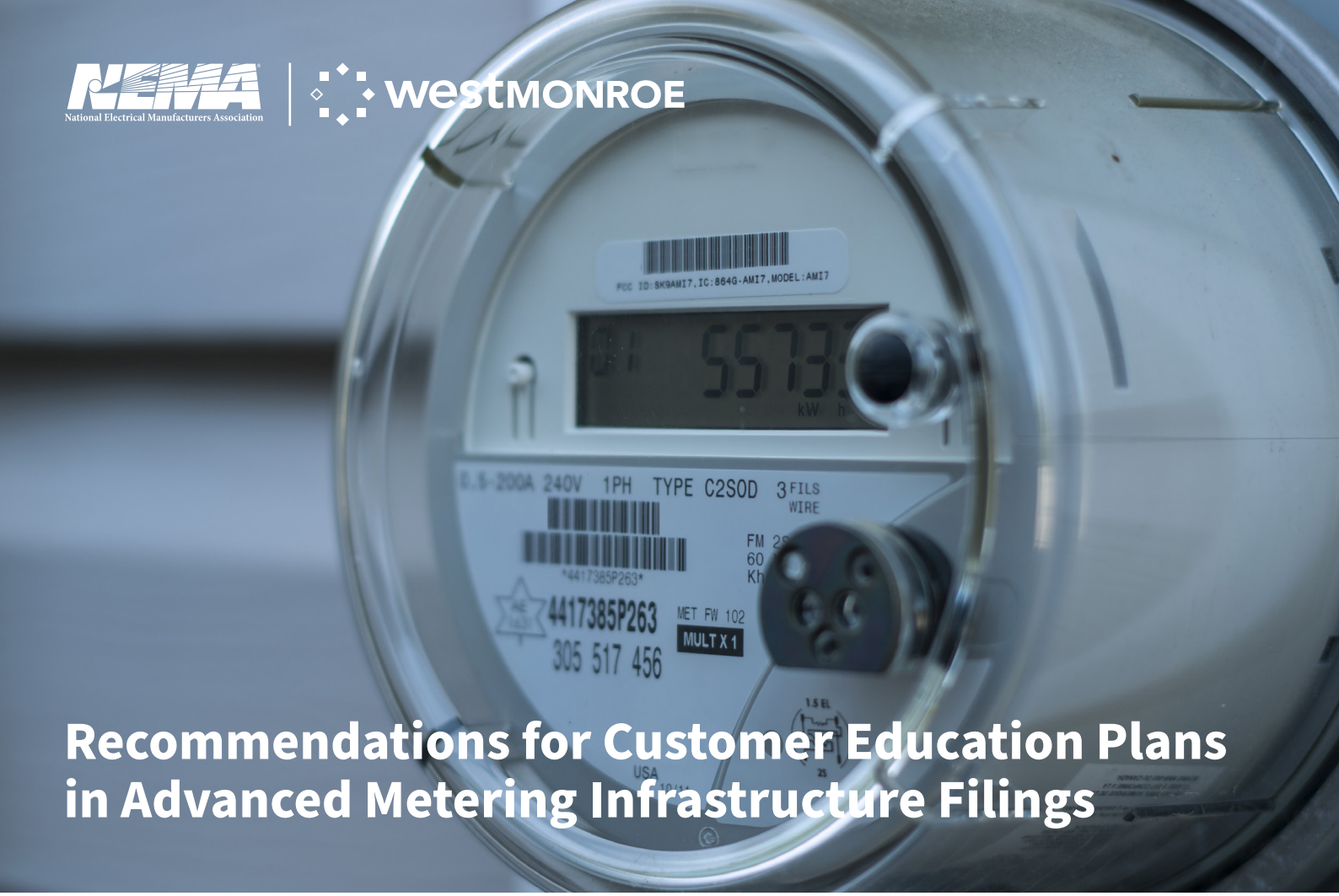

Recommendations for Customer Education Plans in Advanced Metering Infrastructure Filings

Introduction

Approval of a smart meter investment plan—either through a rate case or separate proceeding—depends on a variety of factors, one of which is a proactive and comprehensive Customer Engagement Plan (CEP). Utility customers pay for the smart meters and associated infrastructure and stand to reap the associated system-wide, operational, and energy use savings. Customers will also be the beneficiaries of future grid capabilities and advanced programs and choices that the deployment of smart meters help to unlock.

Regulators across the country are focused on understanding how utilities plan to engage with customers throughout the lifecycle of a smart meter deployment, including driving awareness around the planned program and installation, educating customers on the programs and services enabled by advanced metering infrastructure (AMI), and the provisions utilities are making for customers to opt in or out of the program. They are focused on this element of AMI Programs for good reason—the most successful programs across the country invested the time and effort to build a CEP customized to their service territory.

To this end, the most effective plans clearly articulate to regulators how the lifecycle of communications will be planned and deployed to effectively demonstrate the value of smart meters to customers. This includes sustained information sharing, omni-channel messaging, and stakeholder and community outreach on a large scale. A fully informed CEP considers each of these, along with some additional components discussed below, and entails a fair amount of customer research and targeted analysis upfront to ensure the program's success. For a real-world example of a CEP that employs these concepts, please see Consolidated Edison's *Advanced Metering Infrastructure Customer Education Plan*[1].

This document was developed jointly by the National Electrical Manufacturers Association and West Monroe and constitutes a set of best practices for utilities seeking regulatory approval for AMI deployment. The authors understand that circumstances vary from utility to utility and region to region, and accordingly, the recommendations contained below will need to be flexible and adapted to local circumstances.

[1] https://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=15-E-0050&CaseSearch=Search, Serial Number (Sr.No.) 41.

Customer Research

The first step in developing and disseminating a CEP is conducting customer research, including data gathering, journey mapping, and persona development. For purposes of this document, **journey mapping** involves analysis and description of the ways customers typically interact with the utility, i.e., text, email, phone, website, etc. **Persona development**, on the other hand, involves categorizing customers into cohorts by demographic information (i.e., age, race, gender, and other descriptive information) that allows the utility to address needs of cohorts collectively. Much of this information is collected through utility service requests or customer surveys. Understanding these customer dynamics will inform outreach activities throughout the execution of the CEP. While existing (historical) data is a good place to start, it's also worth noting that understanding customers' needs and wants is an ongoing exercise. Survey data and benchmarking exercises are valuable tools in determining what information is actually reaching the target audience over a given platform and resulting in actions taken.

A follow-on segment of customer research is understanding current perceptions and misconceptions customers hold regarding AMI or "smart meters" and how different demographic subsets of customers view smart meters. It's also of value to know what customers might already know, think they know, or do not know about the technology. The results of this exercise can be surprising. For example, the authors have found that a common assumption among filing utilities is that high-load commercial and industrial customers are well-informed about AMI and its many benefits, but our experience is that this is not necessarily the case. Other incorrect assumptions may exist, which need to be clarified or corrected to properly inform development and execution of the CEP.

There are several ways through which utilities might collect customer data. Surveys are certainly useful, with responses broken down by demographics. We also recommend reviewing CEPs that have been filed by other utilities to understand how successful utilities (i.e. those whose AMI filings have been approved) have sought to better understand customer perspectives on AMI. In some cases, utility-to-utility discussions will be informative.

A third data-gathering channel is in-person engagement, for example, through relationship development with local opinion leaders and influencers and/or public information sessions. It can also be informative to review the results and customer feedback related to previous large initiatives or capital programs launched by a utility.

While AMI is unique in nature, scale, and reach, the feedback from other customer-facing programs and initiatives can help to establish an understanding of customer sentiment, levels of trust (or lack thereof), and preferences on specific communication methods.

Outreach and Engagement

Information dissemination and outreach should ideally begin four to six months prior to a regulatory filing with plan execution and refinement continuing throughout AMI program implementation. The filing should include a detailed summary of what has been done to-date and explain how customers will be engaged upon AMI approval and implementation. This portion of the filing will be derived from your customer outreach, formulated around three core principles: Information, Communication, and Collaboration.

What information do I need to disseminate and when?

If done properly, the customer research performed at the outset will yield helpful answers to the what. When customers receive information about smart meters is also critical. To this end, utilities should divide dissemination into three distinct phases based on timing, each with its own information sets.

1) Pre-filing

It's imperative in this phase that customers receive information on the benefits they could expect to receive through smart meter deployment. These include potential cost savings from utility operational efficiencies as well as customer savings opportunities through changing use patterns, new rates programs, and other benefits. Even though this is a preliminary phase, it is important to reference the benefits and explain how smart meters will deliver these benefits. For example, a utility might create a tutorial for how a customer can monitor energy usage on a smart phone app and use the information to adjust thermostat settings. Another example could be placing information on the utility's website about how smart meters can help distributed solar customers track revenue in states with net metering programs (see section below on **Demonstrating AMI as a Platform**). To this end, this information will need to be adapted to the different customer classes (i.e., residential vs. commercial and industrial) and potentially even within customer classes (i.e., single-family vs. multi-family).

Data privacy and corresponding protection of customer information is another important topic to address early and often, as it is typically the largest concern among customers. This, of course, means that filing utilities will need to have developed privacy protection protocols to include in the CEP. For more information on this topic, see the section on Data Access and Privacy.

Utilities must also explain clearly from the outset what the opt-in/opt-out provisions imply. Not only will customers be eager to understand their options, regulators will also make it a point of focus to ensure that customers were apprised of their options early on. In some cases, customers who opt out will pay a small monthly fee to reimburse the utility for meter read costs.

Finally, pre-filing is the time to commence collaboration activities (see *Collaboration* section below) so communicating important information such as date, time, and place of in-person meetings is imperative. Feedback provided during meetings and through other collaboration platforms about customer concerns, for example, could merit changes in the CEP moving forward.

2) During Filing

This phase begins once a utility officially informs its regulator that it plans to invest in AMI. There may not be much information to share during this phase, but since this stage can take months (as opposed to weeks) it's beneficial to keep some communication channels open with customers to keep them accustomed to looking for information. Most customers do not understand the proceedings process, so providing basic information regarding benchmarks and timelines is advisable.

The filing process can also help to inform needed changes to the CEP based on feedback provided by external stakeholders, commission staff, and other groups. While the filing process is lengthy, time-consuming, and data-intensive, it does provide a unique and valuable opportunity for proactive utilities to listen carefully to the nature of any concerns or feedback that is provided during the process to further gauge the sentiment, preferences, and expectations of customers.

3) Post-Approval

Once the AMI investment plan is approved by regulators, communication with customers should become more targeted based on geography (i.e., when smart meters will be installed in each municipality or community). Roughly a month and a half prior to the first install date in an area, customers in that area should begin receiving notifications followed by information on how to effectively use smart meters. This might include availability of apps and other tools and any synergies with concurrent programs such as dynamic rate designs, net metering, or data sharing (see the section below on *Demonstrating AMI as a Platform*).

In-person information sessions are also an important part of the AMI CEP communications, so utilities should consider the proper combination of online vs. in-person engagement. Sessions should focus on next steps for deployment, point customers toward available resources (websites, etc.), discuss AMI as a platform, and allow time for customers and stakeholders to provide feedback and apprise the utility of any concerns (expect an avalanche of questions!). For more information on these sessions, see the section on *Collaboration*.

Many successful AMI deployments have also leveraged other elements of community-based outreach, including attending local events activities in the areas where deployment is taking place to provide direct information and outreach around the program and the associated benefits. This could include festivals, faith-based organizations, sporting events, concerts, or other opportunities where large groups are gathering across the service territory. This hands-on, personalized approach to outreach has provide to be very impactful, particularly in ethnically diverse areas.

When planning implementation activities, utilities should begin devise communication strategies for engaging hard-to-reach customers (i.e., indoor meter sets) for installation purposes, where gaining access will require more than a knock on the door. This begins with analysis of where meters are located within the service territory. We recommend developing an engagement plan that includes opportunities for customers to make appointments or have a call center that proactively attempts to schedule appointments.

To whom do I disseminate the information?

While it is true that most CEPs should address each of the above topics, plans will vary from utility to utility, among and within different customer classes. However, these differences will largely be of degrees and gradations, not necessarily of type. Some messages will need to be reinforced to a greater extent depending on customer personas and journeys as informed by the initial survey. It may help to consider the following as potential key demographics: senior citizens, non-English speakers, low-income customers, high-usage customers, sub-metered customers, and small businesses.

Local civic and opinion leaders can help amplify utility messages around AMI benefits. This is an important and helpful subset of the customer base, if engaged early. These opinion leaders and influencers open doors to additional communication platforms while providing valuable insights about utility customers that might not be available through traditional information-gathering. When identifying this subset, keep in mind city mayors, councils, chambers of commerce, trade groups (particularly those who represent small businesses or socio-economically disadvantaged customers) and religious groups.

How will I communicate with my customers?

When determining which communications platforms to use to engage customers, keep in mind that a multi-platform approach will be necessary. These platforms should include in-person stakeholder meetings, website portals, signs and postings in public areas such as parks and public transportation centers, call center staff talking points, mail/email, and text messaging, and doorknockers as appropriate. The journey mapping and persona development (discussed in *Customer Research*) should indicate from the outset which platforms are better suited based on customer demographics. But keep in mind that some of these are likely to evolve throughout development of the CEP and AMI implementation.

For service areas with a material volume of non-English speakers, utilities should develop at least some of the materials in corresponding foreign languages based on the demographic make-up of the customer base. In cases where a high percentage of the customer base does not speak English well, we recommend developing all materials and holding some in-person sessions in the relevant foreign language—most often this will be Spanish. In densely populated large urban areas with many diverse cultures, often several different languages might be primary. As a result, communications in multiple languages is advised.

How will I collaborate with my customers?

The final element of outreach and information sharing is collaboration with the customers. The prior two principles focused on the who, what, and how a utility should communicate with customers; the goal of collaboration is to facilitate (if not empower) customers to engage with the utility. Collaboration (i.e., receiving input from the customer) is valuable in the preliminary phases of the outreach and education plan, vis-à-vis surveys and in-person meetings, to inform effective development and evolution of the strategies involved. Since this type of collaboration will occur pre-filing, it's important to track questions and concerns that arrive and how the utility responded and addressed these.

Call centers and online resources (i.e., a website with a field for comments and concerns) will facilitate quantificational analysis of concerns and the ability to respond. A utility might then categorize incoming questions and concerns for purposes of the regulatory proceeding and explain how information disseminated had sought to address these.

Collaboration is just as essential post-approval to make sure that customers understand how to use and benefit from AMI. Utilities should consider developing simple, straightforward, and iterative training materials that can be posted online and used to supplement townhall meetings in communities next in line for meter installations. These materials (including depictions of online resources) should be included in the CEP filing to make it clear to regulators.

Through these phases, the filing utility should define and quantify what success looks like and track corresponding metrics to demonstrate success. In today's digital world, website hits and email/social media click-throughs can be easily tracked. Such metrics should be provided as part of the AMI implementation status filings with regulators.

For post-approval engagement, we recommend utilities provide information surrounding how they propose to continue defining and tracking success. These metrics could include the frequency of certain customers exercising options to reduce energy during peak periods or availing themselves of other dynamic pricing options. It could also include how often alerts regarding energy usage are opened.

Of interest to regulators are statistics on the percentage of customers that opt in or opt out[2]. This is an early indicator of AMI adoption and realization of program benefits. Utilities will also want to track opt-outs recovered—meaning how many customers initially refused a meter but through education and outreach the utility was able to convert the customer.

Demonstrate AMI as a Platform

Part of the reason—and perhaps the principal reason—why some AMI proceedings fall short of approval is because the filing utility presents the technology as an end as opposed to a means to an end. Doing so precludes a range of benefits that smart meters make available to customers and grid operators when used as a platform for other (future) technologies and programs and will continue to transform the energy landscape in a positive way. Used in isolation, smart meters can help customers make better informed decisions about their energy usage and will likely result in some cost savings. However, when used as a platform for participation in national and state programs such as net metering or smart electric vehicle charging (V1G) (discussed further below), smart meters begin to yield much more significant benefits to customers and society more broadly. Accordingly, we recommend that utilities include a section in the CEP that explains how customers can use smart meters to unlock benefits of other programs and initiatives and how this initial investment will continue to drive value in the long term.

Examples of state-level programs include time-coincident rates, dynamic pricing, solar net metering, and V1G charging[3] for electric vehicles. In an energy market with time-coincident rates, a better understanding of price signals (which is greatly facilitated by smart meters) is necessary for a customer to maximize benefits. The same could be said of other forms of dynamic pricing where price signals vary, for example, with high penetrations of renewable energy or for customers who wish to pay a premium for 100% of renewable energy.

In net metering or V1G (where the distribution system operator effectively pays the customer for use of a distributed energy resource that is owned by the customers) customer benefits may exist without smart meters but can certainly be enhanced through use of AMI.

If the AMI plan is being filed in a jurisdiction that does not yet have said programs available, we recommend that the utility consider pilot programs to establish and quantify the benefits that could be made available through AMI.

There are a wide range of additional grid capabilities that can be directly or indirectly enabled by the investment in AMI that will drive benefit and value to customers and grid operators. These include voltage optimization and improved power quality, improved proactive asset management, advanced outage restoration, and increased integration of renewable and distributed energy resources. By including these components in the CEP, utilities will drive support via an increased awareness and understanding of the true long-term benefits.

The CEP should provide ample information on these types of pilots including timeline, number of customers across different customer classes, dynamic rate structures, and other information surrounding program management and operations, including pilot program evaluation criteria. Consider as well citing and referencing results of pilots conducted by other utilities and in other states to reinforce the message.

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[2] Strategy recommendations for AMI deployment are beyond the scope of this paper. However, the authors encourage utilities to consider implementing an "opt-in" approach for customers to increase the likelihood of regulatory approval.

[3] The California independent System Operator (CAISO) defines V1G charging as "…the unidirectional flow of power enabling EVs to charge from the grid." https://www.caiso.com/Documents/Vehicle-GridIntegrationRoadmap.pdf

Data Access and Privacy

Another reason why some AMI proceedings fail is because the CEP does not adequately address data access and privacy standards for customer information. For purposes of this document, data access refers to the parameters surrounding which parties have access to what type of data. Data privacy refers to security provisions that are implemented to safeguard data from unauthorized access.

As part of the CEP, the filing utility should include Fair Information Practice Principles (FIPPs) that govern data access. There is no need to "re-invent the wheel" since several organizations have developed and widely shared governing frameworks. These include U.S. Federal Trade (FTC) Privacy Framework; the Department of Homeland Security (DHS) Fair Information Practice Principles; and the Organization for Economic Co-operation and Development (OECD) Privacy Principles. Several states including New York and California and others enacted privacy acts providing consumers with even greater control over their personal information, while at the same time being much more onerous for businesses to comply with. We recommend that utilities filing AMI rate cases review each of the frameworks and determine which to adopt and implement. Each of the frameworks guides users in developing protocols to ensure that personal information gathering is limited to only the extent necessary for the specific purpose for which it is being gathered; establishment and notification of individual rights; accountability and data quality.

Where data access governs authorized use of personal information, data privacy governs prevention of unauthorized access. The National Institute of Standards and Technology (NIST) published a report in 2014, "Guidelines for Smart Grid Cybersecurity" (Guidelines), to assist utilities in developing cybersecurity protocols to protect data gathered through AMI and other smart grid applications.

Among other helpful information, the NIST Guidelines contain recommendations that utilities should implement along 17 different categories that are applicable to AMI:

1. Management and Accountability
2. Notice and Purpose
3. Choice and Consent
4. Collection and Scope
5. Use and Retention
6. Individual Access
7. Disclosure and Limiting Use
8. Security and Safeguards
9. Accuracy and Quality
10. Openness, Monitoring, and Challenging Compliance
11. Personal Information in the Smart Grid
12. Wireless Access to Smart Meters and Secondary Devices
13. Commissioning, Registration, and Enrollment for Smart Devices
14. Smart Grid Data Access by Third Parties - Provides data privacy recommendations for third parties in accessing smart grid data
15. Awareness and Training
16. Mitigating Privacy Concerns within the Smart Grid
17. Emerging Smart Grid Privacy Risks

Utilities should review these recommendations and perform an assessment as to how existing cybersecurity protocols align. In categories where current protocols align with the NIST recommendations, utilities should provide a summary of these in the CEP. For categories where the utility either has no protocols are determines that existing protocols are inadequate, the utility should develop a plan to address these gaps and include the plan in the CEP. If some areas of the NIST Guidelines are not applicable, the utility should highlight these as well and provide an explanation.

Conclusion | While the term *transformational* can feel overused at times, AMI programs certainly qualify for that characterization given their scope, scale, price tag, and impact to all elements of utilities operations. Perhaps most important, these programs have a significant and direct impact on every single customer within the service territory in a relatively short period of time. This unique opportunity to ensure that customers are informed, engaged, and educated on the nature of the program and how it can benefit them is something that utilities must take advantage of. This can only be done through the thoughtful development of a comprehensive, customized Customer Engagement Plan. By following the steps and guidelines outlined above, utilities will be well-positioned to meet and exceed the expectations of regulators and drive a consistently exceptional experience by all of their customers.

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