Move Over Rover, Mobile's Taking Over

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ABSTRACT

In just a few short years, mobile technology has drastically changed the way Americans communicate, access the internet and share information. According to the Pew Research Center, nearly two-thirds (64%) of U.S. adults own a smartphone, up from 35% in 2011. Utilities have started to recognize the importance of mobile technology in their customer engagement strategies, as demonstrated by making their web sites mobile friendly (viewable) and rolling out apps that allow customers to check their usage, pay bills, etc. However, few utilities have taken the next step of seeking to leverage mobile technology to streamline and improve the delivery of their energy efficiency programs. This paper explores the power that mobile technology can offer utility energy efficiency programs and how it can help increase customer and contractor satisfaction, increase energy savings and drive down program costs. A case study will also be presented to show how Ameren Missouri, a large Midwestern electric and gas utility has successfully piloted Power Rebate™, the industry's first mobile rebate application that was designed specifically to address the pain points that are common to energy efficiency programs.

Rise In Mobile

While mobile phones and tablet computers have been evolving for some time, it can be startling to remember that the first iPhone was only released in 2007 and the first iPad was released in 2010. Yet in just a few short years, mobile technology has drastically changed the ways Americans communicate, access the internet and share information. According to Pew Research Center, nearly two-thirds (64%) of U.S. Adults own a smartphone, up from 35% from 2011 (Anderson 2015). In 2015 targeted advertising company AddThis observed that in their 2 billion monthly users, 54% came from mobile devices (AddThis 2015). Similar to this trend in the consumer marketplace, enterprise use of mobile has continued to grow. International Data Corporation (IDC) reports that in 2015 the U.S. mobile worker population (office-based mobile workers, non-office-based mobile workers, and home-based mobile workers) had reached 96.2 million and they foresee that by 2020 mobile will account for nearly three quarters (72.3%) of the total workforce. IDC reports that "key drivers behind the growth in the U.S. mobile worker population include the increasing affordability of smartphones and tablets combined with the growing acceptance of corporate bring your own device (BYOD) programs (IDC 2015)," which allow company employees to use their own devices to access corporate data.

This trend is also visible in the utility sector, where many companies have embraced mobile technology for their workforce. In a NetMotion Wireless Survey, Lee Johnson, Senior Market Development Manager says, "we recently surveyed 100 top utilities in the U.S. about the value of mobile devices. More than 70% of the respondents indicated that their field workers, particularly field technicians, became more productive and could complete more work orders per day (Mobile Worker 2015)."

The utility industry has also been evolving the use of mobile technology for their customers. For example, a 2014 survey by Northeast Group, LLC found that electric utilities are expanding their use of social media and mobile applications. Of the 50 largest utilities, all had Facebook accounts and 49 had active Twitter accounts, but only 15 had mobile apps (Northeast Group 2014). Similarly, a 2014 Booz Allen investigation found that utilities in general lag behind retail, communications, and even government in the adoption of digital technologies, with only 26% of those sampled having mobile applications (Booz Allen 2014).

While the number of utilities with mobile apps has most certainly grown since those surveys were conducted, utilities are still largely leveraging apps to provide their customers anytime, anywhere access to bill information and payment, view and report outages, and receive energy-saving tips. For example, Southern California Edison has a mobile app called SCE Outages. It lets customers report burned-out streetlamps and problems with their power. It also has an interactive map of all the current outages. A click on an individual outage tells you when it was reported, whether or not it's planned, and when it will likely be fixed (Talbot 2013).

A more advanced level of leveraging mobile technology is DTE Energy's Insight app, which links mobile devices to customers' advanced meters to provide a comprehensive view of their energy usage. This app has been downloaded nearly 90,000 times on to Android phones, iPhones and now Apple watches, since the tool was launched in July of 2014 (DTE 2015).

However, utilities have not embraced mobile technologies as part of their implementation of energy efficiency programs.

Opportunities For Mobile In Energy Efficiency Programs

In 2014 ICF began exploring opportunities for leveraging the use of mobile technology in the energy efficient HVAC programs that we implement on behalf of utilities around the country. We focused our efforts by trying to address the typical challenges that hamper HVAC programs, which include:
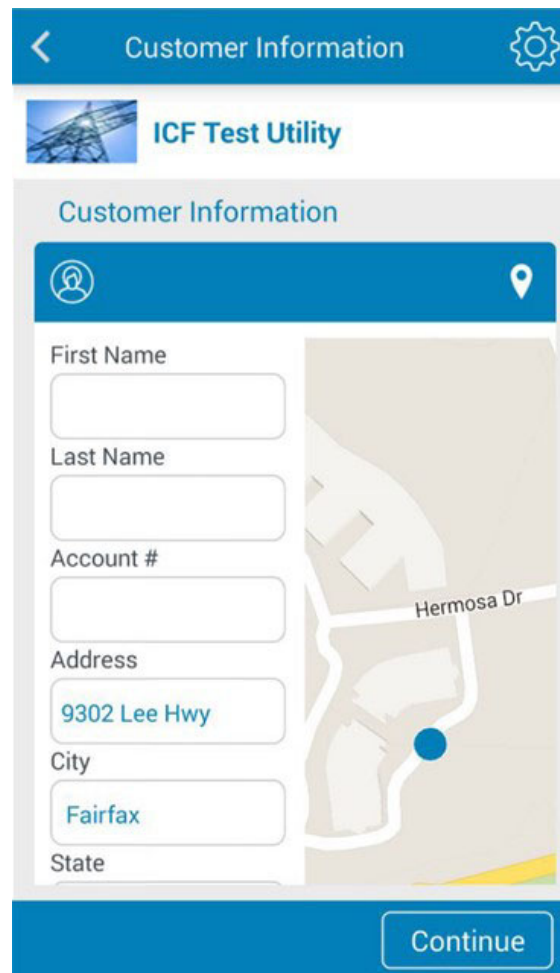
- A heavy administrative burden on contractors. HVAC programs typically collect a tremendous amount of data and it can be very time consuming and costly for contractors to gather this information.
- A high level of incomplete and/or flawed applications. While we saw an improvement in transitioning our programs from paper to online applications, there is still a high level of incomplete and/or flawed applications being submitted by contractors.
- Unnecessary delays in customers receiving rebate checks. Many HVAC contractors hire an administrative person to complete and submit their applications. However, we have seen applications sit on the admin's desk for as long as three weeks before they are submitted to the program, creating unnecessary delays in customers receiving their rebate checks.
- A missed opportunity for improved quality assurance (QA). Our programs typically have a 5 – 10% field QA component, where we visually confirm that the equipment installed at the house matches what was submitted on the application. However, because most of our utility clients do not want to unnecessarily burden their customers by having them stay home twice (once for the equipment installation and once for a QA inspection), we typically only inspect the equipment that is visible outside of the home. Thus, we are really only inspecting about half of the equipment installed on the QA visits.

We realized that the capabilities inherent in mobile technology could readily address these challenges and improve the delivery of our HVAC programs. As a result, we decided to invest in developing a mobile app that was focused on the data collection needed for rebate applications.

Introducing Power Rebate™

In 2015 ICF launched Power Rebate™, the energy efficiency industry's first mobile rebate app designed to address some of the challenges common in typical energy efficiency programs. The mobile app leverages the power in today's smart devices to streamline and significantly improve the rebate process.

Power Rebate™ was developed for energy efficiency program participating contractors to complete and submit rebate applications from the field, and it can be used on iOS and Android devices. Power Rebate™ reduces contractor effort by utilizing native functionality such as bar code scanning, geotagging, text-to-speech and auto-fill functionality. For example, Figure 1 illustrates how Power Rebate™ uses the smart device's GPS to determine location and auto-fill the home's address.

Figure 1. Screen shot from ICF's Power Rebate™ app.

Once the incentive application is submitted to the program, it is reviewed, processed and paid following the same process that was established prior to the creation of the Power Rebate™ app.

The benefits of ICF's Power Rebate™ App include:

- Increased customer satisfaction. By shifting data collection and submission to the field, rebate applications are submitted and uploaded to the back office database after completion of work. This step eliminates the normal one to three week delay from the contractor's back office and results in customers receiving their rebate checks sooner.
- Increased contractor satisfaction. By streamlining the data collected and leveraging a combination of barcode scanning, photographs, geotagging, speech-to-text and auto-fill functionality, the level of effort required by contractors is minimized.
- Reduction of flawed or incomplete applications. Native smart device functionality is leveraged, significantly reducing input errors.
- First visit quality assurance. Use of geocoding, barcode scanning, photographs, and other native smart device features results in programs with almost 100 percent QA of the measures both inside and outside the home during installation, avoiding future inconvenience to customers and providing a tangible audit trail.
- Integration with third party diagnostic tools. By integrating Power Rebate™ with third party tools such as Imperial® iManifold™, contractors benefit from a seamless experience with no need to re-enter duplicate data.
- Improved cost-effectiveness. The improved data quality, integrated diagnostic insights, and streamlined processes (including major reduction in field QA) deliver improved program cost-effectiveness.
- Higher protection of customer information. While paper rebate forms could be lost by technicians or stolen from their vehicles, all personal identifiable information (PII) captured by Power Rebate™ is removed from the technician's device upon successful submission to the program. In addition, technician is required to use a password to access the app and all data is encrypted for transmission.

Despite these potential benefits, HVAC contractors are stereotypically resistant to change. As a result, ICF decided to conduct an initial field pilot with a limited number of HVAC contractors. This pilot allowed contractors to experience the technology, and hence become future advocates with their HVAC peers, while allowing ICF a live test environment to identify potential challenges and areas for improving the app.

Initial Field Pilot

Beginning in June of 2015, the Ameren Missouri Heating and Cooling program conducted a field pilot test for Power Rebate™. The intent of this pilot was to test the app in a live, but controlled contractor environment. The pilot was conducted over several months and involved several different contractors who used a variety of smart devices to capture the range of scenarios that could be encountered in a broader release. In addition to providing initial training for the HVAC contractors, program staff joined the technicians in the field for their first few uses of the app. This allowed program staff to identify any potential areas that were needed for additional training as well as areas for improvements with the app. Contractors used Power

Rebate™ to submit a range of energy efficiency improvements, including equipment replacement and tune-ups of existing systems. Over the course of three different testing periods, we identified a number of feature enhancements and additional development requirements that ultimately contributed to a more user friendly and stable product.

Field Pilot Results

Overall, the technicians appreciated Power Rebate™'s functionality and recognized how it can potentially improve their process by eliminating the hand written forms and applications currently used in the field. In testing the Power Rebate™, technicians believed it worked well and reduced their field application submission time significantly. And as the technicians started getting familiar with using Power Rebate™, they were saving an additional 15 to 20 minutes in time not having to return traditional forms and paperwork to the home office. Even more notable, the contractor's back office personnel indicated they were saving another 30 – 45 minutes on administrative time per application.

It did take some time for technicians who were skeptical and uninterested in the technology to fully engage. However, after seeing firsthand how Power Rebate™ worked, they were impressed and committed to using it going forward. One contractor commented that surprisingly in his organization it was the more experienced technicians who were readily embracing the technology rather than the younger guys. He believed that the seasoned techs more quickly recognized Power Rebate™'s ability to improve quality and reduce time spent submitting applications.

This first opportunity to use Power Rebate™ in a live environment helped identify aspects that required further development to improve overall functionality and user experience. The following observations were made during this field pilot:

- The limitations of network connectivity can impact the solution. In addition to Power Rebate™, techs also used the iManifold App for capturing applicable tune-up data. Tests in the field showed that the use of a repeater for the iManifold was necessary in some cases to receive the proper signal to the gauge set. This is an important observation because there will be occasions where the indoor unit is located in a basement and not in close proximity to the outdoor unit, causing potential difficulty in receiving the signal.
- It was determined the most effective training method for technicians was to provide a live, on-site demo of Power Rebate™. Being able to systematically move through the steps of data input and application submission, while fielding comments and answering questions, proved to be the most thorough and efficient way to train the technicians. In addition, this allowed the technicians to test the app in a controlled environment prior to being at a customer's location.
- Based on input from pilot programs and contractor feedback, ICF also developed a series of hand-outs and online training videos to support the field training. This additional collateral and online training is available to contractors through ICF's online Energy Efficiency Learning Center. We are also exploring making the training videos accessible through Power Rebate™.
- New releases of the underlying mobile operating system require a flexible application update structure to match. Due to the nature of the current "App Stores" offered by Apple and Google, users don't have to upgrade mobile applications, even when their underlying

operating systems are upgraded. A flexible "update required" capability is needed to ensure technicians upgrade to the latest application software.

Lessons Learned

There were several notable lessons learned from the pilot that others should take into account when considering deploying a mobile app for an energy efficiency program, including:

- Contractor buy-in and support is critical. Despite the growing pervasiveness of mobile apps in our society, they are not a good fit for every contractor. Contractors must be shown the benefits of using the app (e.g., reduces their costs, increases their profitability, increases their customer satisfaction, etc.) and they have to buy-in to using it for their business.
- Identifying an internal contractor champion facilitates adoption. Once a contractor has committed to using a mobile app, it is critical they identify an internal champion who can act as a resource for questions and support. Having one or more individuals within the contractor's business to provide guidance and support to field technicians will ease resistance to change and enhance adoption.
- Contractor training on the app should be mandatory. While a well-designed app is very intuitive and self-explanatory, training provides the background and standardization necessary for technicians to develop a comfort level to use the tool on a regular basis.
- Ensure a local program level subject matter expert is available to provide ongoing support. Especially in the early stages of adopting a new technology, contractors need a local contact who can provide support, answer questions, and if necessary offer additional training.
- Provide training to the rebate processors to reduce flaws. Depending on the data collected and submitted by the app, it is possible that the rebate processors will be dealing with new information (e.g., geocoding, barcode scanning, photo images, etc.) Training will ensure that applications aren't unnecessarily flawed or held up in processing.
- Create an ongoing feedback loop from the end-user community to improve functionality. Developing a mobile app needs to be viewed as an on-going effort as it is not possible to get every potential variable identified and right the first time. Therefore, obtaining field input is critical to the ongoing development and enhancement of mobile apps.

Conclusions

The initial deployment of Power Rebate™ was very successful and we have subsequently been rolling it out to our other HVAC programs. We believe that mobile technology can successfully be used to improve the delivery of energy efficiency programs. A key decision that utilities will face as they consider mobile technology is whether to build or buy their mobile apps. Building mobile apps internally or in conjunction with a software consultant can be an expensive and time consuming venture. For example, a 2014 Kinvey survey of CIOs and Mobile Leaders found that the average cost to develop one app was $270,000 and could take from seven months to more than one year to build (Kinvey 2014). A better solution could be to leverage existing developed technology that can be tailored to the needs of the utility. In addition, as noted in the Lessons Learned section, utilities need to view any venture with mobile apps as an on-going effort to realize maximum benefits from this technology.

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