



Taking Aim at the Utility Industry's Field Mobility Challenge

In 2020, AEP's seven operating companies spearheaded a multiyear technology effort to make communicating about field work simpler, safer, and smarter.

By **BILL PERRY**, Contributing Writer

Thumbing paper-based feeder maps while deciphering handwritten notes and swapping texts and calls is how coordinators, damage assessors, and crews generally work in the field, whether on blue- or gray-sky days. These manual processes are slow, error-prone, and frustrating for crews, industry professionals say. Change is coming, though.

According to IDC researcher Aly Pinder, who writes about field services, his colleagues are increasingly seeing technology buyers at utilities ask about software for mobile workforce management.

"Generally, utilities have focused on other areas of their business," says Pinder. "The larger utilities are further along in terms of exploring or building a digital infrastructure for fieldwork."

In 2020, AEP's seven operating companies spearheaded a multiyear technology effort to make communicating about field work simpler, safer, and smarter. AEP wants to digitize everything from construction and damage assessments to requesting material and recording time via one mobile application.

"Our vision is improving the connectivity and situational awareness of field employees, so workers have one mobile app for construction and restoration work," says Darrin Reeb, manager of Business Technology Optimization at AEP. "If we give line mechanics real-time information about customers, assets, outages, hazards, and more, we know they'll make the best decisions."

According to Reeb, getting more efficient about assessing damage was a driving force for the field mobility project, but

AEP also wanted its fieldworkers to have all the information they needed at their fingertips, for any kind of work.

Building on Mobile Workforce Management

Mobile workforce management software, or MWM, is the base on which Reeb is building AEP's solution for field mobility. According to the 2019 Gartner CIO Survey, "25 percent of utilities listed mobile applications as a top 10 game-changing technology area." Gartner describes MWM as software "to handle a breadth of utility-specific work," which means everything from initiating work orders and assessing work-site conditions to reporting on the progress of crews during blue-sky construction and complex storm restoration.

AEP's approach to MWM, says Reeb, provides "a one-stop shop for all the work that field personnel engage in." Once fully deployed, AEP fieldworkers will only have to tap one mobile application, instead of toggling between a confederation of computer systems, paperwork, and apps. AEP's field mobility project will enhance crews' "situational awareness" by delivering geospatial location, up-to-date maps and images for circuits and equipment, timekeeping reports, and storeroom inventory. Reeb says AEP is rolling out its mobile workforce app in phases and has trained an early adopter group. He notes the uptake has been high among AEP Texas and Southwestern Electric Power Company, which are the first of the AEP operating companies using the mobile app. In October, AEP Ohio will use the mobile workforce software. Eventually, the new system will help AEP deliver planned work to contractors, track what percentage of work they complete, and even speed up partial payments to its vendors.

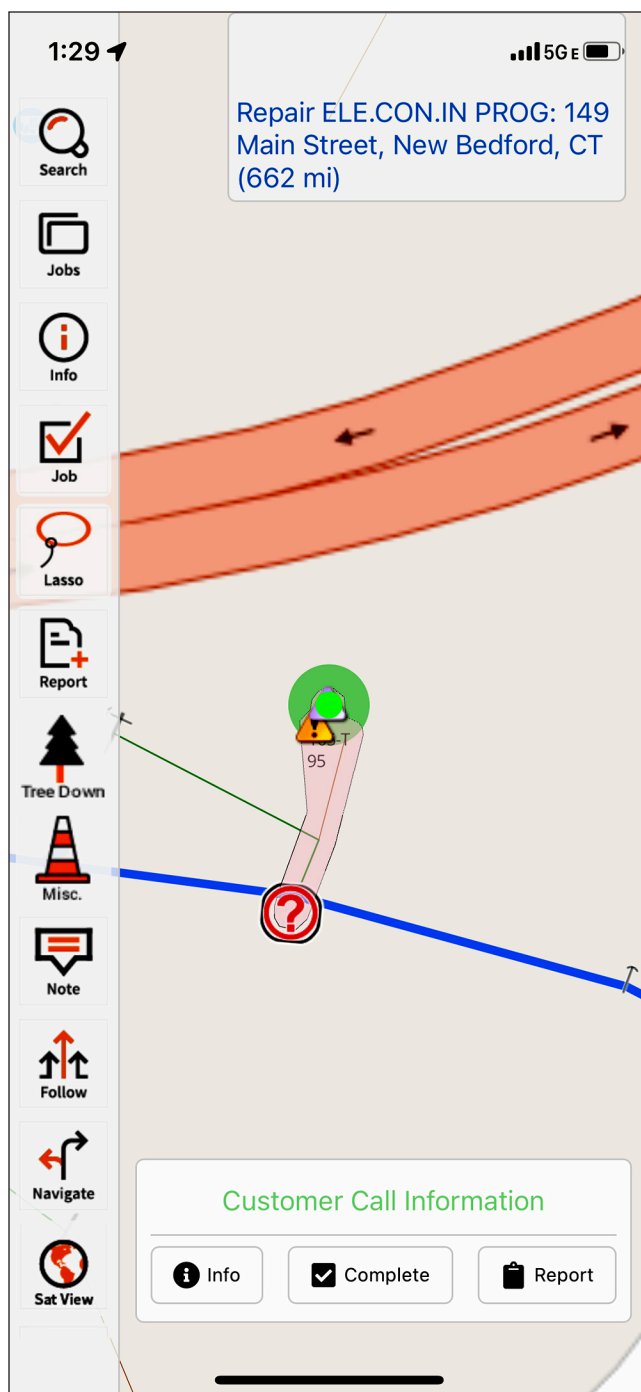
Managing Work with One Mobile App

Reeb and his colleagues clearly want to upend the status quo for fieldwork. But what does fieldwork look like now at AEP?

Imagine a windstorm topples a tree, which falls on a conductor and knocks out a recloser and pole on a Sunday night; the damage cuts power to a nearby school and homes. An AEP dispatcher launches a callout for a line servicer, then a crew. The dispatcher would then contact the crew via their in-truck radio and fire off instructions to the vehicle's computer (currently, AEP's 800 MHz radio system only sends and receives small data packets and no photos or files). The crew would study the information while also grabbing an address to put in a mapping system. A flurry of calls and texts between the crew and other entities would also happen as everyone gets their bearings and clarifies what the crew needs in the way of people and equipment.

By year's end, Reeb says the outage scenario described above will become remarkably streamlined and require one mobile app. By leveraging a cellular network for its communication platform, including signal boosters for cellular data continuity, AEP can deliver field workers outage information and other notifications via mobile device.

Here's how it will work: When AEP learns about the tree knocking out the recloser and pole, dispatch sends a callout to field workers' mobile app to get a crew. In that same app,



A distribution circuit and outage in the Mobile Workbench app.

AEP sends a trouble ticket to the line servicer and/or crew accepting the callout, and in one more tap, they get a map and directions. Once on site, they leave their vehicle with their mobile device and take and share photos of the pole. With a voice-to-text feature, a lineworker sends up to a 1,000-word hands-free message to tell other entities, like vegetation management or an environmental team, what is happening or needed.

"The crew could also use their field mobile app to send a message and share photos of the damage with public relations," adds Reeb. "PR could post on social media and add customer

outage alerts to tell the school and homeowners it's Mother Nature's fault, and crews are busy restoring power."

Other Approaches to Field Mobility

Other utilities that have developed, or are exploring, field mobility solutions include Alabama Power, Dominion Energy, Florida Power & Light, Oncor, and Pacific Gas & Electric.

"We have several mature mobile apps for different purposes, and we have a newly deployed, state-of-the-art ADMS system years in the making," says Chris McClain, team leader for Power Delivery Technology at Alabama Power. "Mobile workforce management gives your field forces the ability to receive assignments and communicate back from their device, so they don't have to rely on paper. Whether that's one app or multiple ones, it's under the umbrella of a mobile workforce solution."

Since 2017, Alabama Power has tested and rolled out a mobile damage assessment solution along with mobile devices to more than 1,800 Power Delivery employees – a combination of line crews and engineering and support staff. Alabama Power says its mobile damage assessment solution eliminated paper feeder maps and multiple, physical hand-offs between damage coordinators, assessors, and crews. The solution is built around Alabama Power's advanced distribution management system, or ADMS, and interfaces directly with the utility's GIS and OMS. The mobile damage assessment solution, says McClain, helps dispatchers reach damage assessors with electronic assignments without the need for them to report physically to an office. Having access to near-real-time damage assessment information has enabled Alabama Power to make more expedient crew resource allocation decisions, leading to faster restoration times.

According to McClain, Alabama Power's workers currently toggle between mobile apps to get work done, depending on whether they are dealing with routine trouble or a large-scale storm restoration. For routine trouble on a blue-sky day, McClain says an internally used, ticket-based system is beneficial. During major events, the damage assessment solution is designed to: first, allow for temporary access for external resources brought on the property to help restore power quickly, and second, leverage an intuitive, mobile map-based interface that quickly and efficiently captures damaged assets. By comparison, Reeb notes AEP is the first to bundle mobile workforce management into one app; something he calls "application rationalization."

The springboard for field mobility efforts at Alabama Power and AEP draws on vendor-supplied technology like the AR-COS® Mobile Workbench. But some utilities like Dominion are pursuing proprietary solutions. The different choices, say analysts and utility professionals, indicate how much interest there is in finding ways to digitize communication with and among fieldworkers.

"We don't want to be a software development shop," remarks McClain when asked about proprietary solutions as an option. "There are some simple, less comprehensive apps that we have built in-house when it makes sense. However, things inevitably

break, code technology changes, and you have to update. Partnering with vendors is our primary strategy."

A Justification for Field Mobility

A major problem for utilities is outside parties damaging electric assets. Drivers hit poles, landscapers fail to call before they dig, and homeowners overestimate their ability to cut trees without knocking down conductors. In the wake of damage, utilities file an insurance claim to assign fault and secure reimbursement. The problem is so acute that Reeb made it part of his justification for investing in field mobility when he pitched the project to AEP executives. Investigating the cause of damage and collecting data (e.g., police reports, photos, etc.) to effectively file a claim chews up time because there is a paper trail often plagued by backlogs and omissions.

"When a claim hits a snag or lacks documentation, the responsible party may not be billed and a utility can end up charging work to general restoration," Reeb cautions.

With the field mobility platform, Reeb sees simplified insurance-reporting at AEP and hours of savings. Fieldworkers will arrive, take photos, identify broken equipment, electronically scan a police report, and transmit everything along with the responsible party's contact information to the proper department for a claim.

"We're standing up the insurance-reporting capability right now in fact," adds Reeb.

By the Numbers

While Reeb focuses on giving field workers what they need, he notes an investor-owned utility makes decisions to add value for shareholders, too. He estimates the field mobility project will improve business efficiency across AEP's seven operating companies by as much as five percent.

"That's a big number when you think of the scale of our operations," notes Reeb. "We're arriving at the number by analyzing how work is done now, digitizing it, and achieving savings."

For instance, today when an AEP line servicer gets a trouble ticket stating there's an outage at a recloser at a certain address, he or she flips between technologies and apps, copying and pasting information, and refreshing screens. The line servicer then gets information about the outage and directions.

With the new field mobility platform, that scenario will happen in one step, says Reeb. Line servicers (who, on average, get up to 30 trouble tickets per day) will save five minutes for each trouble ticket, or 150 minutes per day per worker. The new mobility system will also help storeroom staff and fieldworkers save calls, texts, and drive-time tied to calculating what materials they need for working on trouble tickets.

"We're eliminating guesswork," says Reeb. "When you extrapolate that across each incident, everyone benefits." **TDW**

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