

2014 State Damage Prevention Program Grants Final Report
CFDA Number: 20.720

Award Number: DTPH5614GPPS14

Project Title: New Hampshire Public Utilities Commission State Damage Prevention Grant

Date Submitted: December 31 2015

Submitted by: Mr. Randall Knepper

Specific Objective(s) of the Agreement

Under this grant agreement, the NHPUC will:

- ☐ Develop and implement methods for effective communication
- ☐ Reviewing the adequacy of internal performance measures
- ☐ Resolving disputes to define State authority's role
- ☐ Laws and regulations of the damage prevention process
- ☐ Foster and promote the use of improving technologies
- ☐ Review the effectiveness of Damage Prevention Programs

Workscope

Under the terms of this grant agreement, the Recipient will address the following elements listed in the approved application as stated in 49 U.S.C. §60134 (b).

- ☐ **Element 1 (Effective Communications):** Participation by operators, excavators, and other stakeholders in the development and implementation of methods for establishing and maintaining effective communications between stakeholders from receipt of an excavation notification until successful completion of the excavation, as appropriate.
- ☐ **Element 3 (Operator Internal Performance Measurement):** A process for reviewing the adequacy of a pipeline operator's internal performance measures regarding persons performing locating services and quality assurance programs.
- ☐ **Element 6 (Dispute Resolution):** A process for resolving disputes that defines the State authority's role as a partner and facilitator to resolve issues.
- ☐ **Element 7 (Enforcement):** Enforcement of State damage prevention laws and regulations for all aspects of the damage prevention process, including public education, and the use of civil penalties for violations assessable by the appropriate State authority.
- ☐ **Element 8 (Technology):** A process for fostering and promoting the use, by all appropriate stakeholders, of improving technologies that may enhance communications, underground pipeline locating capability, and gathering and analyzing information about the accuracy and effectiveness of locating programs.
- ☐ **Element 9 (Damage Prevention Program Review):** A process for review and analysis of the effectiveness of each program element, including a means for implementing improvements identified by such program reviews.

Accomplishments for the grant period (Item 1 under Agreement Article IX, Section 9.02 Final Report: "A comparison of actual accomplishments to the objectives established for the period.")

Overall Description of Project :

The Safety Division of the New Hampshire Public Utilities Commission (NHPUC) was awarded this State Damage Prevention Grant on September 19, 2014 to purchase five mobile tablets and peripheral equipment for use by Safety Division personnel while in the field to educate and enforce underground damage prevention program rules and statutes. This equipment was used on inspections for all underground utilities including: telephone, water, electric, cable, sewer in addition to gas pipelines.

The Safety Division was required by New Hampshire agency policies to: 1) get prior authorization from the Governor and Council to spend monies awarded in the grant; and 2) coordinate and work through the State of New Hampshire Department of Information Technology (DoIT) related to information technology (IT) security and system compatibility protocols.

These administrative processes imposed unanticipated delays and necessitated a change in tablet technology from the proposed Microsoft Windows Surface Tablets to the actual purchase of five Apple iPad Tablets. The mobile devices were acquired in late January 2015. The tablets then needed to be set up for access to NHPUC network and email servers with compatible security applications. This was required because some of the field information gathered would eventually tie back to NHPUC networks and required secured mobile devices. This initial setup work was done by DoIT technicians in February (but is not charged to the grant). Cellular internet connection capability has been established for each device through a data sharing plan with Verizon Wireless.

Designated Safety Division pipeline and dig safe inspectors received iPad tablets in late February 2015. A work group was established for purposes of training and final setup to install the tools needed for using the devices in the field. We installed both the Dig Safe Quick Ticket Application and the RSS feed link to each tablet. The RSS feed allows each user to be able access and perform adhoc querying to ensure excavation site compliance verifications to see if valid notifications are in place in real time.

It had taken several months from the time of the grant approval, researching qualified vendors, and completing purchasing that met state specifications for network security. The Safety Division was able to acquire, set up and get familiar with how to use this new technology but this did not occur until late February 2015. During the winter months (December through mid-March) there is typically less excavation activity because of the depth of frost in the ground as well as snow accumulation in our region. Excavation activity began to increase in late March 2015, allowing our designated Staff to be able to begin using the new technology as intended: to provide awareness and information related to our underground damage prevention program, related statutes and regulations; to *educate*; and to *enforce* existing underground damage prevention program statutes and regulations.

Field implementation of the technology was used through the period from April 2015 through November 2015 to complete 550 site visits. December 2015 was used to review and summarize the data to create the final report. Note: In September of 2015 the NH

PUC Safety Division requested and was granted an extension, through an email exchange, of the grant period being extended to the end of 2015.

Final Report Accomplishments:

Element 1 (Effective Communications):

The NH PUC Safety Division facilitates participation by operators, excavators, and other stakeholders in the development and implementation of methods for establishing and maintaining effective communications between stakeholders from receipt of an excavation notification until successful completion of the excavation, as appropriate. Use of the iPad tablets by our inspectors while at work sites has proven to be an effective way to share information with operators, excavators and other stakeholders related to underground damage prevention programs. Some examples of how the iPads allowed us to demonstrate the ease of accessing information such as; 1) pipeline safety rules available on the PUC web page; 2) underground damage prevention statutes available from the State of NH web page; 3) “Quick Ticket” request forms, available from the Dig Safe Systems, Inc. mobile app; and 4) Dig Safe ticket history for a particular job site. The NH PUC Safety Division inspectors found the iPad tablets proved to be a more effective communications tool than a mobile telephone device because of the size of the tablets allowed us to more clearly display various pieces of information to operators and excavators while in the field. The iPad screen size and resolution were much more efficient at communicating information to these stakeholders.

We have also incorporated into our training presentations how mobile device and cellular communication technology, as well as the development of new mobile apps, are becoming effective tools that can be used by all stakeholders, in our efforts to reach our common goal of mitigating underground damage prevention in New Hampshire.

Element 3 (Operator Internal Performance Measurement):

The NH PUC Safety Division currently measures and analyzes a pipeline operator’s internal performance regarding persons performing locating services and accuracy of marks. We find that the increased number of field verifications has more than doubled as a result of this grant. We have taken what used to be available to two people (cameras only) and expanded it to where we now have five members of our Safety Division staff who are able to access information from the field in real time through the RSS feed, supplemented with the use of embedded cameras. This allowed us to visit more sites and confirm the accuracy of markings made by locators. It incrementally increases the existing confidence of the performance metrics that the PUC already measures of its operators. Our existing data suggested there are less than one mismarking per thousand locates. In the 550 field visits this year we witnessed zero mismarks. If we had seen a single mismark or two, we would have had a lower confidence in our existing metrics.

Our inspectors now have the capability using the iPad technology to take the locator pre-marking of underground facilities and electronically send the information back to the office for processing by the underground damage prevention specialist. The underground damage prevention specialist, in turn, can quickly identify if this potential “evidence”

transmitted was clear, or needed to be enhanced with clearer photo documentation from the field.

Element 6 (Dispute Resolution):

The use of the iPad tablets, because we have not had to resolve any disputed violations based on the 550 field visits, did not lend itself to aiding this element as originally envisioned. The good news is that overall program results show a very high percentage of excavator and operator self-reporting of underground damage when it occurs, with no examples of dispute resolution for us to be able to note in this report.

Element 7 (Enforcement):

Nearly 100% of the NH PUC Safety Division enforcement actions related to Dig Safe violations are reported to the Safety Division by the excavators/utility operators prior to our inspectors randomly finding the infractions. This is primarily because it is a requirement that both excavators and operators report damage and potential violations or infractions of the New Hampshire Underground Damage Prevention System. The Safety Division estimated that enforcement actions would be increased by 10% if we had mobile technology that allowed for updated and real time access to Dig Safe Notifications. To our surprise less than 0.2% (1 out of 550) of field visits indicated that a Dig Safe notification infraction had occurred. We attribute this to New Hampshire's long standing and mature program of 32 years and the constant messaging, education, and training of excavators for both civil penalties as well as for informational purposes have truly paid off. We now know with increased confidence that we are capturing nearly 99% of the violations in NH based on this limited pilot. This could not have been accomplished without this grant. Prior to this pilot project using field tablets there was no real time access to the Dig Safe notifications and no way to verify Dig Safe notifications efficiently in the field.

We note a side benefit is that enforcement actions for Dig Safe violations in 2015 are already 15% greater than the 2014 total and are projected to exceed 20% when the final numbers are updated. Although we cannot attribute the increase to the use of the iPad tablets by our inspectors in the field, there may be a correlation between the awareness of excavators and operators that our inspectors now have on site access to real time information. One may infer that the excavator community is now aware that there are increased capabilities for the enforcement by regulators for identifying those who do not comply with the State requirements.

Element 8 (Technology):

The high resolution camera app that comes with the iPad is frequently used by our inspectors to take pictures of excavation sites and dig safe markings and stakes, when available, in relation to the actual excavation. Digital pictures, field reports and other data compiled by our inspectors are saved to the commission's secure network servers and available for additional review and summary reporting.

The new technology associated with the iPad tablets allow our Safety Division inspectors to do dig safe ticket verifications while at work sites performing scheduled inspections. We have found that visits to these preplanned work sites rarely result in the discovery of dig safe ticket violations, but sometimes we discover that these locations have multiple excavation contractors working on different pieces of a larger project. In those examples, the iPad is used by our inspectors at the work site to verify valid dig safe tickets for each excavation contractor. Our inspectors list the following advantages of having the iPad mobile technology while working in the field: access to current and archived dig safe ticket information; access to electronic inspection forms; high resolution digital camera capability; email access; commission network server access to files and data; access to map apps such as Google Maps.

The majority of our field visits were based on non-schedule and random dig safe inspections, covering a large geographic portion of the State with known underground utility infrastructure. Specific towns included: Concord, Laconia, Rochester, Manchester, Nashua, Dover and Portsmouth, to name a few. These full day random inspections were a good way for us to randomly find and inspect excavation activity. By allocating an inspector's full day to perform random dig safe inspections, it was not unusual to come upon excavation work. Using the iPad made it easy to verify on-site whether or not the excavation activity had been called in for a dig safe ticket. This also provided a new level of awareness to excavators of our enforcement capabilities.

Element 9 (Damage Prevention Program Review):

Each of the elements above was able to be reviewed on an individual basis, but also how they interrelate to provide a greater overall underground damage prevention program. New Hampshire has always considered our program to be effective. This grant only verifies what we have had in place has been and continues to be effective. See details of the evaluation of each element above.

An unanticipated side benefit our pipeline safety inspectors have discovered when using the iPad tablets in the field, allows for more unscheduled pipeline safety inspections. The pipeline safety inspectors can log into the RSS feed to the Dig Safe Systems, Inc. data base and do filtered searches looking for nearby gas related Dig Safe excavation tickets opened within the last 24 hours with a request for an emergency repair. This provides almost real-time information to our inspectors for monitoring repair activities for recently discovered hazardous grade 1 gas leak nearby that are being promptly repaired. Our inspector can then proceed to the site of the leak, and if the timing is right, can do an inspection of the repair and interview a gas distribution technician or field supervisor at the work site.

Quantifiable Metrics/Measures of Effectiveness (Item 2 under Article IX, Section 9.02 Final Report: "Where the output of the project can be quantified, a computation of the cost per unit of output.")

The iPad tablets have proven to be effective tools for use in the field by our inspectors. The most common example is when an inspector comes upon an unexpected, random excavation site during normal travels to scheduled pipeline inspections. Using the new mobile information technology, it is easy to check for a valid dig safe ticket at the job site. The tablets have also proven to be a curiosity to the excavators and work site managers, giving our inspectors the opportunity to demonstrate the information available to us, as well as the availability of the “Quick Ticket” mobile app available to the excavator/work site managers. The Quick Ticket App gives the excavators and worksite managers the ability via a mobile device with an internet connection to open a new dig safe ticket, or renew an existing ticket, while at the job site. From a metrics standpoint we provide the following table:

Dig Safe Inspection Summary - Tablet Use Statistics (Calendar Year 2015)

Dig Safe excavation site visit inspections	Marked Dig Safe excavation sites	Valid ticket Dig Safe excavation sites	Expired or No ticket Dig Safe sites	Photos from all inspection sites	Dig Safe inspection site ticket violations	Photos from violation sites
550	549	478	72	344	1	10
Note: Although 72 site inspections confirmed no open tickets, no excavation activity was observed at 71 locations.						

Issues, Problems or Challenges (Item 3 under Article IX, Section 9.02 Final Report: “The reasons for slippage if established objectives were not met.”)

The Safety Division did experience delays related to getting the tablets purchased and set up to provide us with network access. These issues were explained in greater detail above, in the overall description section.

Final Financial Status Report

See enclosed Final Federal Financial Report with Attachment. All \$20, 265 was expended, any overages were not charged to the grant.

Requests of the AOR and/or PHMSA

No actions requested at this time.