2008 State Damage Prevention Program Grants Final Report
Funding Opportunity Number: DTPH56-08-SN-0001
CFDA Number: 20.720

Award Number: DTPH56-08-G-PHPS13
Project Title: Vermont State Damage Prevention Program Grant
Date Submitted: August 6, 2009
Submitted by: GC Morris, VT Dept of Public Service Gas Engineer

Specific Objective(s) of the Agreement

Under this grant award Vermont Department of Public Service will perform a study on the scope and effectiveness of the underground utility damage prevention system within the state of Vermont. The study will help to gain a better understanding of the system in place, identify deficiencies, and foster the relationships necessary for effective implementation of programs addressing the nine elements.

Workscope

Under the terms of this agreement, the Grantee will address the following elements listed in 49 USC §60134 through the actions it has specified in its Application.

Element (1): 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 (2): A process for fostering and ensuring the support and partnership of stakeholders, including excavators, operators, locators, designers, and local government in all phases of the program.

Element (3): A process for reviewing the adequacy of a pipeline operator's internal performance measures regarding persons performing locating services and quality assurance programs.

Element (4): Participation by operators, excavators, and other stakeholders in the development and implementation of effective employee training programs to ensure that operators, the onecall center, the enforcing agency, and the excavators have partnered to design and implement training for the employees of operators, excavators, and locators.

Element (5): A process for fostering and ensuring active participation by all stakeholders in public education for damage prevention activities.

Element (6): A process for resolving disputes that defines the State authority's role as a partner and facilitator to resolve issues.

Element (7): 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): 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): 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 Section 9.02 Final Report: "A comparison of actual accomplishments to the objectives established for the period.")

[How did you progress on each of the elements provided in the "Specific Objectives" and "Workscope"? How did your progress compare with established objectives? Start with an overall description, followed by item-by-item or element-by-element detail if possible.]

The Vermont Department of Public Service (VT DPS) worked with a team of researchers from the University of Vermont (UVM) to complete the objectives detailed in our grant application. This team received final contract approval to commence work on September 4, 2008 and completed the performance period work in March 2009.

The team completed tasks listed in the numbered items below. These are grouped according to headings developed with the VT DPS and were designed to fulfill the activities included in the PHMSA grant application. As we discussed in our PHMSA grant application addendum, we recognized many of the 9 elements are related to one another. Our approach combined relevant outreach efforts whenever possible. For example, stakeholder interviews with utility employees were designed to cover issues related to all 9 elements at once to avoid duplicate interview sessions. Public outreach efforts undertaken to assess public knowledge resulted in educational opportunities and distribution of one call center promotional materials provided by Dig Safe Systems Inc. to equipment rental companies and the public at large.

A copy of the comprehensive final research report is included with the submittal of this grant report.

Project Management

1. Eight coordination and oversight meetings between Vermont Department of Public Service staff and the UVM team along with numerous email and phone communications.
2. Creation of a website for public education regarding this research project and general underground utility safety issues. This is available at http://www.vt811.org/

Interview and Survey Stakeholders

3. Regular communication and outreach with the Vermont chapter of MUST (Managing Underground Safety Training), including attendance at a state chapter meeting to solicit in-person feedback on potential improvements to all aspects of the 9 elements of effective damage prevention programs.
4. Direct interviews with key stakeholders completed include:
    a. Vermont Gas Systems
    b. Dig Safe Systems, Inc (the one call center)
    c. Green Mountain Power
    d. Central Vermont Public Service
    e. Burlington Electric Department
    f. Comcast cable company
    g. Fairpoint Communications (formerly Verizon)
    h. On Target (a contract locator)
    i. Vermont Electric Co-op
    j. PHMSA
5. Many additional stakeholders have participated in the interview process. In particular, five individuals from the excavation contracting community were interviewed.
6. Creation and execution of a survey to measure the general public's understanding of Vermont's Dig Safe system and gather user feedback. This survey was conducted in person at two Home Depot stores across the state as well as online. The online survey was linked through a local homeowner email listserv for neighborhood discussions known as Front Porch Forum http://www.frontporchforum.com. Approximately 350 completed public surveys were analyzed in the research effort.
7. Creation and execution of a survey to measure municipal public works officials' understanding and experience with underground utility damage prevention programs. This survey was distributed at a statewide municipal official conference held by the Vermont League of Cities and Towns in Killington, VT and was also directly emailed to public works managers in communities around the state. Approximately 20 surveys were completed and analyzed.
8. Creation of a survey to measure construction contractor experience with underground utility damage prevention program issues. The project team worked with the Vermont Association of General Contractors to distribute this survey to excavation contracting companies operating in Vermont. Approximately 40 surveys were completed in this effort.
9. Creation of an interview questionnaire for locating firms under contract to Vermont utilities to provide one call locating services. This was distributed to several locating firms operating in the state as well as utilities with their own locating staff. One of the major regional locating contractors has responded to this questionnaire and provided additional follow-up information by phone and mail.
10. A representative from the research team attended the Northeast Gas Association Damage Prevention Workshop in Saratoga, NY from 10/23-10/24/2008. In attendance were utility representatives from New York, Connecticut, New Jersey,

Massachusetts, Rhode Island, and Maine. This workshop provided excellent opportunities to learn more about underground utility damage programs in surrounding states, ideas for improving damage prevention initiatives, and networking opportunities for future inquiries. Of particular interest contact was made with Kevin Hopper, operations manager of Dig Safely. New York, and Steven Blaney of the New York Public Service Commission.

11. Several members of the project team met with Terry Sylvester of On Target locating services in February 2009 to gain a better understanding of On Target's training program for locators. On Target provides contract locating services for several major utilities in the state.
12. A representative from the research team attended the annual regulators meeting for Dig Safe Systems, the one call center operating in New England, on March 12, 2009 in Woburn, MA. A summary presentation of our research project and significant findings was made and feedback was solicited from members in attendance.

Best Practice Analysis and Recommendations for Improvement

13. Review of various damage prevention publications, including PHMSA's recent DPAP publication (Sept 2008) to ensure recommended best practices were considered in the study.
14. Analysis of Vermont underground utility damage incident data available through the CGA DIRT application and Vermont state data sources. Data was mapped to latitude/longitude points to examine geographic trends in damages.
15. Peer state regulators in New England were contacted to inquire about best practices related to enforcement and other issues.
16. Common Ground Alliance staff were contacted to solicit information on CGA best practices and specifically whether any quantitative studies of best practice benefits and costs have been completed. We heard from CGA they are not currently aware of any benefit/cost studies related to their best practice guidance. Contacts at PHMSA and other state regulators and one call centers also were not aware of any studies examining the cost/benefit ratios of damage prevention best practices.
17. A comprehensive final research report for this grant activity was completed. This report provided detailed recommendations for improvement based on data analysis, stakeholder interviews, and best practices.

Quantifiable metrics/measures of effectiveness (Item 2 under Agreement Section 9.02 Final Report: "Where the output of the project can be quantified, a computation of the cost per unit of output.")

[This may be difficult to explain across the board, but we're trying to get a gauge for how effective this grant work is in improving your program. If your grant is more data oriented, you likely had some sort of metrics in mind to improve upon. If so, what were those metrics and how does the data look now compared to when the program started? If you're doing something along the lines of enforcement that involves incident review, how many cases have you been able to review/close and/or fines collected compared to before the grant work? If you are working on

something more along the lines of public awareness, to how many stakeholders have you been able to reach? Even if you don't have the metrics fully defined, put whatever you can here.]

1. Contacted 45 stakeholders and interviewed 25 individuals through a direct outreach process targeted to members of VT MUST and other key groups.
2. Received 350 completed public surveys.
3. Distributed 50 and received 18 completed municipal official surveys.
4. Distributed 255 contractor surveys and received 40 responses.
5. Reviewed 1,428 records in the VT DPS incident database for complete excavator type data and updated records based on incident descriptions when possible. Many additional metrics associated with damage incident analysis are included in the study final report.
6. Calculated damage incidents per 1,000 notifications to benchmark Vermont damage trends with other states.
7. Held a workshop on June 18, 2009 with 37 individuals in attendance to present information on damage prevention and gather detailed feedback on the damage prevention study findings and recommendations.

Issues, problems or challenges (Item 3 under Agreement Section 9.02 Final Report: "The reasons for slippage if established objectives were not met. ")

[If the project has successfully concluded on schedule, simply state there are no issues, problems or challenges to report. If there have been delays for any reason, explain what they are and how that has impacted the grant work. For instance, with some States, even after an agreement is in place, it has to be sent back to the Governor's office or Information Technology agency for approval, and this takes more time than originally anticipated. Even if work began immediately after the agreement was in place, other delays could have been caused by personnel changes or issues that arose as the project progressed.]

The grant effort encountered several schedule related issues early in the process leading to an extension request to PHMSA. The delay in grant allocation by PHMSA from an expected announcement in May 2008 to late June 2008, postponed the estimated start time for grant related research and analysis by an initial thirty days. Further, Vermont's internal process for receiving legislative authority to accept the grant deferred the start date for initiation of the contract between the Vermont Department of Public Service (DPS) and the University of Vermont (UVM) by an additional thirty days. The contract between DPS and UVM was fully executed on September 4, 2008.

Due to this series of delays, the UVM team required an additional three months to carry out the program analysis. This additional time allowed the team to fully complete the stakeholder survey and interview process necessary to analyze the efficacy of Vermont's existing damage prevention program.

The researchers were generally satisfied with stakeholder response and interest in the study, but the group did encounter some difficulty soliciting feedback and data from all our intended parties. A particular challenge involved the team's goal to collect data on incident costs. A few utilities track their internal costs of damage repairs, but our

national search for data on total costs of damages (including internal and external costs) was not successful. The research report does include summary data on repair costs and discusses the components of the total costs of damages.

Other pertinent information including, when appropriate, actions taken to address the recommendations PHMSA provided in correspondence dated [Different for each agreement] (Item 4 under Agreement Section 9.02).

[This section alludes to your initial notification, typically listed as "Recommendations*" under 3b where we asked* "Please acknowledge these recommendations, above, and carefully consider them as areas for program improvement. Although a detailed response addressing these areas is not necessary at this time, PHMSA would like to see these recommendations, and any actions taken addressing them, discussed in the Grant Progress Report.*"*

Please list each recommendation and describe whether or not you have been able to address it. Note the amount and types of recommendation differ slightly for each grantee, but at a minimum all should have received the recommendation "Solicitation, Section 6.01, Criteria (6) states, "A commitment to quality controls in timing, personnel, and costs for deliverables offered in exchange for the grant. We would like to see more detail on your commitment to this criterion.*" As most did not clearly describe this in their application, it may not have been clear enough in the solicitation. What we're looking for here is some description on how you perform with regard to timing, personnel, and costs associated with deliverables (basically delivering on what you say you will). We are most interested in timeliness as it's related to this grant, but you can also describe your general performance on completing other grants of this nature.]*

In accordance with PHMSA's June 5, 2008 Grant Conditions Recommendations, a series of quality controls were in place for the completion of the work tasks. Professor Larry Shirland was UVM's principal investigator and oversaw all aspects of work, including UVM's financial expenditures related to grant activities. The Vermont Department of Public Service supervised the work of the UVM team, including work tasks, deliverables, and financial reimbursements. GC Morris, Gas Engineer and Hans Mertens, Director of Engineering Services and Chief Engineer for VT DPS participated in regular coordination meetings with the UVM team to review progress. Additional UVM PhDs consulted with Dr. Shirland and the UVM research team. In particular, Professor James Sinkula provided support with survey design and review. David Attig, Safety Manager at Vermont Gas, MUST Chairperson, and Dig Safe Systems Inc. executive board member provided mentoring and material support in connecting the UVM team with stakeholder groups, and educating the team about damage prevention issues. In addition, the MUST stakeholders offered further insight as to avenues of investigation and potential study recommendations.

Regular communication between the UVM team and VT DPS further enhanced quality control in our grant activities.

Final Financial Status Report

[Per the instructions in Section 9.04 of your agreement (included below), this should go to the AA as a separate form and all you put here is something to the effect of "The final financial report has been sent as a separate attachment sent to the AA.". However, if there are any issues with the Financial Status Report, or additional explanation is needed, please put that here. If there are any delays for whatever reasons, these should be communicated to the AA and AOTR in advance.

"At the end of the grant period, the Grantee will submit a Final Financial Status Report, Standard Form 269 (SF-269), to report the status of funds. In addition to SF-269, the Grantee should provide the break down of costs for each object class category as stated in SF-424A. This report must be submitted to the AA in electronic form via e-mail no later than [refer to your agreement for date, but should be same as this progress report]*."]*

The final financial report has been sent as a separate attachment sent to the AA.

Requests of the AOTR and/or PHMSA

No actions requested at this time. VT DPS expresses their appreciation to PHMSA for funding this research to improve the State's damage prevention program.