

2012 PHMSA State Damage Prevention Grant – Final Report

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Project Title: Utility Notification Center of Colorado State Damage Prevention

Date Submitted: September 30, 2013

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Utility Notification Center of Colorado (Colorado 811)

Specific Objective(s) of the Agreement

[Cut and paste from Article II, Section 2.03 of your agreement.]

Section 2.03 Specific Objective(s) of the Agreement

Under this grant agreement, the UNCC will:

- Foster Support and Partnership with Stakeholders (See Element 2)
- Support a Damage Prevention Education Program for industry stakeholders (See Element 4)
- Support Public Awareness and Stakeholder Education (See Element 5)
- Review the Effectiveness of Damage Prevention Programs (See Element 9)

Workscope

[Cut and paste from Article III. Workscope of your agreement.]

Article III. Workscope

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

- 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 (4): Participation by operators, excavators, and other stakeholders in the development and implementation of effective employee training programs to ensure that operators, the one call center, then 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 (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.

Note: Each element in the Specific Objectives aligns with a respective element in the Workscope. Further reference to accomplishments and future plans will reference only the Specific Objectives.

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Accomplishments for this period (Item 1 under Article IX, Section 9.01 Progress Report: “A comparison of actual accomplishments to the objectives established for the period.”)

[How are you progressing on each of the items/elements provided in the “Specific Objectives” and “Workscope”? Start with an overall description followed by item-by-item or element-by-element detail if possible.]

A) Progress Overview

Colorado811 is pleased with the progress we have made through August 2013 with our damage prevention efforts defined in the 2012 PHMSA State Damage Prevention Grant (Grant). The Damage Prevention Action Team (DPAT) was established in 2008 and continues to provide strong industry leadership and innovative public awareness programs. The DPAT is a group of about 50 representative industry stakeholders in Colorado that conducts an annual meeting. This industry group discusses, designs and coordinates the statewide public awareness efforts funded through the Grant and shares and reviews the progress made during the year on these programs. The Grant Facilitator, Colorado811 Public Relations Administrator, and the DPAT Executive Committee serve as the group’s leadership, provide project and funding oversight and meet with all the Damage Prevention Councils (DPC) throughout the year.

Each DPC is also allocated a share of the Grant funds to support local (multi-county level) 811 public awareness, public school education, and stakeholder education programs. These programs have proven to be both innovative and successful at raising public awareness (*as measured annually by the level of incoming tickets and our Awareness Metric*) and reducing the level of facility damages (*as measured annually by the level of damages and our Damage Metric; DIRT damages per 1,000 incoming tickets*). At the fall DPAT meeting, industry stakeholders and DPCs that have made significant progress or implemented innovative programs are recognized for their efforts. This recognition program has been quite popular with the stakeholders.

Finally, with the analysis from the *Colorado Annual Damage Data Report*® (published annually since 2001) and the *Colorado Damage Prevention County Report Cards*® (published annually since 2007), we have been able to measure and identify the areas of the state where significant progress has been made as well as those areas that need improvement in awareness and damage prevention. Each of the 64 counties in Colorado is evaluated on three industry metrics we developed, then given a composite damage prevention grade. By looking at past data, we have been able to produce report cards dating back to 2004 (for a total of nine years). Stakeholders as well as DPCs can review the county report card to identify the progress they are making in 1) public awareness, 2) damage prevention, and 3) damage incident reporting via the CGA Damage Information Reporting Tool (DIRT). In addition, this data allows us to establish that there has been a continuous, overall improvement in public awareness and damage prevention at the county level since 2004, and especially since 2008 when the PHMSA Grant began. With this information, in 2009 we utilized several statistical tests that validated progress has been made in public awareness and damage prevention and that those counties with a DPC are performing at higher awareness and damage prevention levels than counties without a DPC. We have worked diligently over the past five years (since 2008) to develop these report card metrics and statistical tests and are pleased that they support our statement that we have made significant progress with the assistance of the PHMSA Grant since 2008. Additional discussion of results is provided under “*Quantifiable Metrics*”.

Each of the four objectives is reviewed next and includes a summary status of the budget.

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Objective 1) Foster Support and Partnership with Stakeholders

The DPAT met in October 2012 to review Grant funding and approve summer and fall (2013) public awareness activities. Approximately 70 industry stakeholders from around the state attended the 2 day meeting including One-Call administrators, facility owners, excavators, and first responders. Discussion included:

- Programs and funding for statewide damage prevention advertising program
- Programs and funding for Damage Prevention Awareness Day (811 Day) in August 2013
- Programs and funding for DPC public awareness activities April through August 2013
- Review progress on the DP Portal under development since 2008
- Funding for development and delivery of a DP Stakeholder Education program in 2013

The DPAT then met in September 2013 to review damage prevention activities funded through the 2012 Grant as well as the 2012 State Damage Report and County Report Cards. We acknowledged top performers in damage prevention activities and their outstanding results and identified areas of the state needing improvement. Approximately 50 industry stakeholders from around the state attended the 2 day meeting including One-Call administrators, facility owners, excavators, locators, industry associations and industry vendors. Stakeholders identified major causes of facility damage, reviewed progress in public awareness, and discussed attitudes and habits leading to facility damage.

Each of the 17 DPCs reviewed public awareness and stakeholder education activities during 2013. A number of the DPCs discussed the innovative methods (non-Grant funding) used to raise additional funds for supporting expanded DPC activities. Some of these included:

- Annual stakeholder DPC support fees
- DP special program fees (primarily from pipeline operator support of RP1162 activities)
- Fees for vendor booths at excavator breakfasts
- Stakeholder advertising fees on clipboards and for media advertising venues
- Participant and sponsorship fees from industry activities such as golf tournaments

As the table below shows, Colorado now has 17 DPCs in the state, representing 44 of the 64 counties, 95.9% of the state population, 94.6% of the annual incoming ticket count and 91.6% of the annual facility damage count.

DPC	County Coverage	Ticket Share	Damage Share	Population	DPCs Added
TOTAL (Counties added pre 2005)	8	64.9%	56.1%	67.2%	3
TOTAL (Counties added 2005-2009)	15	20.4%	26.0%	19.7%	9
TOTAL (Counties added in 2010)	9	1.8%	2.9%	1.2%	2
TOTAL (Counties added in 2011)	6	6.8%	6.1%	6.8%	2
TOTAL (Counties added in 2012)	6	0.7%	0.5%	0.9%	1
TOTAL (Counties represented of 64)	44 (68.75%)	94.6%	91.6%	95.9%	17

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A new module was added to the Damage Prevention Portal to provide streaming of video content. The module will allow stakeholders to view multi-media content that will be developed for instructional purposes.

OBJECTIVE 1 STATUS: This objective is complete.

The following tasks were planned after the Mid-Term Report:

Fall DPAT meeting – Stakeholder Damage Prevention Awards	Complete
Approve Grant activities and track expenses/invoices	Complete
Mid-Term and Final Grant Report written and submitted	Complete

Budget Review	Budget	Paid Out (To 08/31/13)	Funds Not Spent	Date Approved
DPAT support (meeting room)	\$ 1,200.00	\$ 1,200.00	\$ 0.00	07/29/13
Web Portal development	\$ 3,750.00	\$ 3,750.00	\$ 0.00	03/28/13
Web Portal development	\$ 3,750.00	\$ 3,750.00	\$ 0.00	08/15/13

Objective 2) Support a Damage Prevention Education Program for industry stakeholders

The DP Stakeholder Education Program was created to deliver awareness and safety education programs for all stakeholders as mandated in the Colorado One-Call Law. In 2011, the first year for this project, the program focused on the requirements of the “Colorado One-Call Law”. In 2013, (the 2012 Grant), the educational program focused on “CGA Best Practices”. There are 26 CGA Best Practices classes scheduled around the state with classes sponsored by each local DPC. A certification test is administered and a course survey is conducted upon completion of the course. Additionally, an enhanced multi-media version of the course will be offered via the internet in 2014.

The course content, course test and course survey were developed by a committee of industry stakeholders and delivered by industry professionals. Unfortunately, Colorado 811 did not receive the first half of Grant funding until March, 2013 due to our difficulties in setting up the *e-invoice* process. Due to the lateness this funding and the unavailability of stakeholders in Colorado until the fall months, most of the classes are not scheduled until October and November of this year. Three pilot courses were completed in September and stakeholder feedback used to improve the course. After completion of the remaining courses in October and November, CO811 will forward the completion status of the program and results of the course surveys to PHMSA. The CGA Best Practices class has been well received by the stakeholders so far.

OBJECTIVE 2 STATUS: This objective not complete; remaining classes are scheduled.

The following tasks were planned after the Mid-Term Report and are complete:

Develop stakeholder education course	Complete
Develop CGA Best Practices certification test and course survey	Complete
Develop CGA Best Practices handouts	Complete
Develop Reasonable Care Case handouts and folders	Complete
Deliver pilot CGA Best Practices course for 3 DPCs	Complete

The following tasks are planned for October and November 2013:

Deliver course for 23 DPCs (Total of 26 courses)	<u>NOT Complete</u>
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Budget Review	Budget	Paid Out (to 08/31/13)	Funds Not Spent	Date Approved
Develop course presentation	\$ 7,650.00		\$ 0.00	
Foresight Advantage		\$ 1,912.50		07/15/13
Vanhooser Consulting		\$ 1,912.50		07/23/13
Foresight Advantage		\$ 3,825.00		08/29/13
Deliver course to DPCs	\$ 18,105.00		\$ 0.00	
Foresight Advantage		\$ 3,621.00		07/15/13
Vanhooser Consulting		\$ 5,431.50		07/23/13
Foresight Advantage		\$ 9,052.50		08/29/13
Education course support	\$ 3,400.00		\$ 0.00	
Foresight Advantage		\$ 1,700.00		07/15/13
Foresight Advantage		\$ 1,700.00		08/29/13
Education travel expenses	\$ 4,505.00	\$ 4,458.00	\$ 47.00	08/29/13
Foresight Advantage				
Color laser printer	\$ 1,000.00	\$ 1,198.37	-\$ 198.37 over	07/24/13
Print supplies	\$ 3,290.00		\$ 34.44	
Print cartridges		\$ 793.63		07/24/13
Course folders and paper		\$ 2,461.93		08/27/13
Education material	\$ 3,500.00		\$ 172.41	
CGA Best Practice books		\$ 642.00		07/15/13
Locate/ColorCode cards		\$ 2,685.59		07/23/13

NOTE: The contract instructors have been paid for delivery of all 26 courses.
The contract instructors have been paid for estimated travel expenses.
CO811 will provide an educational program completion status and travel expense
update upon completed delivery of the courses by December.

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Objective 3) Support Public Awareness and Stakeholder Education

OBJECTIVE 3 STATUS: This objective is complete.

The following tasks were planned after the Mid-Term Report and are complete:

Support for Damage Prevention Awareness Summer-Fall 2013

	Paid Out	Date
<u>Statewide 811 advertising campaign:</u>	(to 08/31/13)	Approved
Welcome Home Magazine, 811 advertising	\$ 1,000.00	04/08/13
Gold Leaf, 811 web advertising	\$ 1,750.00	05/29/13
Gold Leaf, 811 TV (PSA) commercial	\$ 2,080.00	05/29/13
CWOA Outdoor, 811 billboard advertising	\$ 1,050.00	05/29/13
Clear Channel Broadcasting, 811 radio advertising	\$ 5,000.00	07/05/13
Serial Boxe MMM, 811 athletic event advertising	\$ 1,200.00	07/19/13
Welcome Home Magazine, 811 advertising	\$ 1,000.00	07/22/13
CBS Outdoor, 811 billboard advertising	\$ 5,000.00	08/12/13

Local DPC awareness and education:

Burp Media, 4x 811 video playback monitors	\$ 1,070.00	05/16/13
Primal Clothing Wear, 2x Ride-The-Rockies clothing	\$ 2,180.70	05/29/13
Halo Branded, 811 conference tote bags	\$ 1,143.84	05/29/13
Alpha Graphics, 811 activity books (School Program)	\$ 474.99	07/02/13
Alpha Graphics, 811 activity books (School Program)	\$ 475.00	07/02/13
Alpha Graphics, 811 community parade disks	\$ 529.93	07/02/13
Alpha Graphics, 811 community parade disks	\$ 529.93	07/02/13
Welcome Home Service, 811 homeowner greeting	\$ 1,100.00	07/29/13
SignSmith, 4x 811 promotion floor banners and stands	\$ 1,614.75	08/03/13
SignSmith, 811 decals for auto/toolbox	\$ 3,227.35	08/03/13
Alpha Graphics, 811 community parade disks	\$ 1,528.84	08/12/13
Alpha Graphics, 811 emergency contact letters	\$ 816.58	08/12/13
West Colo Welcome Service, 811 homeowner greeting	\$ 627.00	08/22/13
TommyG Productions, 811 advertising Colo State Fair	\$ 1,500.00	08/26/13
PEG DPC, 811 advertising material, Viper car shows	\$ 1,712.69	08/28/13
Alpha Graphics, 811 excavator clipboards w/DP info	\$ 1,443.88	08/28/13

Budget Review	Budget	Paid Out (to 08/31/13)	Funds Not Spent
State 811 Public Awareness	\$ 18,000.00	\$ 18,080.00	-\$ 80.00 over
Local 811 DPC Support	\$ 20,000.00	\$ 19,975.48	\$ 24.52

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Objective 4) Review the Effectiveness of Damage Prevention Programs

Our damage prevention review process has been defined over the past five years (since 2008) and allows us to review local and statewide progress on an annual basis at a county level. Analysis of valid data forms the cornerstone of the review process. This data is provided by both the excavators and facility owners and originates in the Norfield One-Call ticketing system (Norfield) and the CGA Damage Information Reporting Tool (DIRT), respectively. The DPCs are the focal point of the damage prevention programs and the annual improvement process. Without them, we would not have the resources to implement either the public or the stakeholder programs.

If the DPCs are in fact effective at increasing public awareness and improving damage prevention at the local level, then the critical question to answer is whether continued financial support of damage prevention programs for the DPCs is a worthwhile and desired outcome of the five year PHMSA Grant project.

The purpose of the review and evaluation then is to determine if public awareness and damage prevention are improving and if the DPCs are contributing to that improvement.

The damage prevention review and evaluation process includes the following 10 steps:

Data Collection and Analysis Phase

1. Collect incoming ticket data at the county level from the Norfield Ticket System
2. Collect facility damage data at the county level from CGA DIRT
3. Collect demographic data at the county level from government sources
4. Analyze the data, produce and publish the *Annual Colorado Damage Report*
5. Produce and publish the *Annual Colorado County DP Report Cards*

Data Evaluation Phase

6. Evaluate the effectiveness of public awareness efforts, as measured by the *Awareness Metric*, in counties with an active DPC versus those counties with no DPC. Determine the number of counties above and below the *current year Awareness Threshold*. Recent public awareness efforts are effective if more counties have moved **above the current year Awareness Threshold**.
7. Evaluate the effectiveness of damage prevention efforts, as measured by the *Damage Metric*, in counties with an active DPC versus those counties with no DPC. Determine the number of counties above and below the *2004 Damage Threshold*. Recent damage prevention efforts are effective if more counties have moved **below the 2004 Damage Threshold**.

Feedback and Improvement Phase

8. Review *Annual Colorado Damage Report* and *Annual Colorado County DP Report Cards* and measures of effectiveness with each DPC for the relevant counties they influence.
9. Assist each DPC with developing local public awareness, public education and stakeholder education programs.
10. Assist each DPC with funding public awareness, public education and stakeholder education programs.

In this section we have outlined the effectiveness review process and will next detailed our progress in completing the process. The actual metrics determined from the review and analysis will be discussed in detail the **Quantifiable Metrics** section to follow.

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OBJECTIVE 4 STATUS: This objective is complete.

The following tasks were planned after the Mid-Term Report and are complete:

- Obtain and review relevant data from all sources
- Analyze the data and determine the two DP Metrics for current year
- Chart the two current year DP Metrics
- Evaluate the progress made for each county and DPC
- Write the *Annual Damage Report* and *Annual County DP Report Cards*
- Post the two reports to the CO811 DP Portal
- Review *Annual Damage Report*, *Annual County Report Cards*, DP Metrics and program effectiveness results with DPCs at fall DPAT meeting
- Discuss funding and damage prevention activities for PHMSA SDP 2013 Grant awarded CO811 in mid-September, 2013 for the 2014 year

Budget Review	Budget	Paid Out (to 08/31/13)	Funds Not Spent
Review effectiveness with Quantifiable Metrics	\$ 0.00	\$ 0.00	N/A to PHMSA Grant

NOTE: PHMSA elected not to fund this important effort for the 2012 PHMSA SDP Grant. CO811 understands the importance of this critical data collection, evaluation and feedback stage. This well-defined process contributes immensely to the continual improvement in damage prevention efforts in Colorado. Therefore, CO811 funded (\$ 11,000) this effort to collect, measure and evaluate quantifiable metrics and provide the feedback to PHMSA as well as DPAT and the DPCs in 2013.

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Quantifiable Metrics/Measures of Effectiveness (Item 2 under Article IX, Section 9.01 Project Report: “Where the output of the project can be quantified, a computation of the cost per unit of output.”)

[This is 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 is the data looking 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 pitched 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.]

A) Overview of Quantifiable Measures of Effectiveness

As defined under *Objective 4) Review the Effectiveness of Damage Prevention Programs, Data Evaluation Phase*, we defined two quantifiable measures of effectiveness:

1) Awareness Metric and Awareness Threshold

The Awareness Metric is a measure of Incoming Tickets versus population for each county. The Incoming Tickets are first adjusted by the population density, to compensate for vertical building design in denser population areas. As population density increases, there is a tendency for relatively fewer notification tickets since fewer utility lines serve a greater number of people. The Natural Log is taken of both the density adjusted tickets and the population since the two numbers are of vastly different scale. The ratio of LN(density adjusted tickets) and LN(population) is formed. Each of the 64 county ratios is then weighted by the percent share of tickets and a weighted average of all 64 counties is formed. This weighted average is used as the Awareness Threshold for each year. A number of counties will rise above the threshold, with the remaining counties falling below the threshold. Our stated goal is to have more counties above the Awareness Threshold over time, indicating that public awareness is improving over time. This goal is accomplished by helping support the DPCs financially and by providing annual feedback on the progress of the two Damage Prevention Metrics. The feedback is provided to stakeholders at the annual DPAT meeting as well as through the Annual Damage Report and the Annual County Damage Report Cards.

2) Damage Metric and Damage Threshold

The Damage Metric is a ratio of DIRT Damages versus 1,000 Density Adjusted Incoming Tickets for each county. The ratio for each of the 64 counties is then weighted by the percent share of damages and a weighted average of all 64 counties is formed. The 2004 weighted average is used as the Damage Threshold for all future years. Some counties will fall above and some below the 2004 Damage Threshold. Our stated goal is to have more counties below the 2004 Damage Threshold over time, indicating that damage prevention is improving over time. This goal is accomplished by helping support the DPCs financially and by providing annual feedback on the progress of the two Damage Prevention Metrics. The feedback is provided to stakeholders at the annual DPAT meeting as well as through the Annual Damage Report and the Annual County Damage Report Cards.

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B) Summary Review of Data from 2003 Through 2012

The two Damage Prevention Metrics are reviewed in more detail and an analysis provided in *Section C*). First, it may be helpful to provide a quick summary review of the data used to compile the County Damage Prevention Report Cards. The following table lists the statewide data from 2003-2012. 2012 is the last full year for which damage data has been reported and analyzed. Note that the 2012 Annual Damage Data Report was published in mid-September, 2013.

- Demographic data
 - population
 - population density
 - net migration
 - home building permits
- One-Call data
 - Norfield incoming tickets
 - DIRT facility damages
 - DIRT facility damages for each facility type
 - DIRT damages for each facility type within each county
- Public Awareness Metric (density adjusted incoming tickets / 1,000 population)
- Damage Metric (facility damages / 1,000 incoming tickets)
- Reporting Metric (facility damages for each facility type)

Table A

2003-2012 UNCC State Damage Prevention Data														
DEMOGRAPHICS														
Land Area:	104,093		Square Miles									%Change	%Change	%Change
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2003-2012	2007-2012	2011-2012	
Population:	4,583,430	4,649,698	4,718,562	4,813,536	4,908,108	5,013,015	5,083,221	5,160,189	5,119,778	5,189,245	13.2%	5.7%	1.4%	
Population Density:	44.0	44.7	45.3	46.2	47.2	48.2	48.8	49.6	49.2	49.9	13.3%	5.8%	1.4%	
Net Migration:	24,315	26,412	30,126	54,784	54,686	49,843	29,531	45,736	33,488	34,714	42.8%	-36.5%	-3.7%	
Building Permits:	39,569	46,199	45,891	38,343	29,454	18,998	9,355	11,591	13,502	23,301	-41.1%	-20.9%	72.6%	
ONE-CALL DATA														
Incoming Tickets:	788,314	789,539	764,883	727,039	643,647	563,041	470,716	500,622	503,408	560,378	-28.9%	-12.9%	11.3%	
Counties w/ Reported Damages:	56	56	52	56	56	51	55	53	59	59				
DIRT Facility Damages:	13,540	10,573	9,371	8,947	6,358	4,900	3,192	3,130	3,588	3,584	-73.5%	-43.6%	-0.1%	
Telecommunications Damages	6,425	5,216	4,639	4,144	3,195	2,602	1,911	1,391	1,897	1,467	-77.2%	-54.1%	-22.7%	
Natural Gas Damages	4,489	2,627	2,435	2,939	2,185	1,521	768	1,194	1,095	1,310	-70.8%	-40.0%	19.6%	
Electric Damages	1,666	1,561	790	1,497	635	472	231	349	303	430	-74.2%	-32.3%	41.9%	
Cable TV Damages	847	1,079	1,434	258	235	226	200	152	172	258	-69.5%	9.8%	50.0%	
Water Damages	90	84	53	89	77	62	40	33	49	70	-22.2%	-9.1%	42.9%	
Sewer Damages	19	5	17	16	21	6	17	2	7	8	-57.9%	-61.9%	14.3%	
Liquid Pipeline Damages	0	1	1	2	5	1	1	2	7	4				
Other Damages	4	0	2	2	5	10	24	7	58	37				
DAMAGE METRIC														
Damages / 1,000 Tickets:	17.2	13.4	12.3	12.3	9.9	8.7	6.8	6.3	7.1	6.4	-62.8%	-35.3%	-10.3%	
Telecom Damages / 1,000 Tickets	8.2	6.6	6.1	5.7	5.0	4.6	4.1	2.8	3.8	2.6	-67.9%	-47.3%	-30.5%	
Nat Gas Damages / 1,000 Tickets	5.7	3.3	3.2	4.0	3.4	2.7	1.6	2.4	2.2	2.3	-58.9%	-31.1%	7.5%	
Electric Damages / 1,000 Tickets	2.1	2.0	1.0	2.1	1.0	0.8	0.5	0.7	0.6	0.8	-63.7%	-22.2%	27.5%	
Cable TV Damages / 1,000 Tickets	1.1	1.4	1.9	0.4	0.4	0.4	0.4	0.3	0.3	0.5	-57.1%	26.1%	34.8%	
Water Damages / 1,000 Tickets	0.11	0.11	0.07	0.12	0.12	0.11	0.08	0.07	0.10	0.12	9.4%	4.4%	28.3%	
Sewer Damages / 1,000 Tickets	0.02	0.01	0.02	0.02	0.03	0.01	0.04	0.00	0.01	0.01				
Other Damages / 1,000 Tickets	0.01	0.00	0.00	0.00	0.01	0.02	0.05	0.01	0.12	0.07				

The following six multi-year trends stand out in the data from Table A:

- 1) State population has steadily increased by 1.4%-2.0% per year
- 2) Building permits decreased 80% from 2004 to 2009, but increased 149% from 2009 to 2012
- 3) Incoming tickets decreased 40% from 2004 to 2009, but increased 19% from 2009 to 2012
- 4) Facility damages decreased 70% from 2004 to 2009, but increased 12% from 2009 to 2012
- 5) The Damage Metric decreased 49% from 2004 to 2009, and also decreased 5.7% from 2009 to 2012
- 6) While the decrease in facility damages (44%) from 2007 to 2012 was concurrent with a decrease (and then cyclical increase) in construction activity (Building Permits 21%) and excavation activity (Tickets -13%), the unexpected decrease in the Damage Metric from 2007 to 2012 (-35%) represents the time frame that PHMSA provided Grant funding to finance collaborative damage prevention efforts in Colorado.

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There are four general conclusions that can be drawn from these six multi-year trends:

- 1) Incoming tickets decreased at a much slower rate (about one-half the rate) than construction activity decreased, as measured by building permits from 2004 to 2009. **But since 2009, incoming tickets are increasing at a much slower rate than construction activity is increasing.** While the faster decrease was a positive trend indicating that the general awareness level increased over time, the recent slower increase may indicate that the construction industry could do a better job of requesting notifications.
- 2) Facility damages decreased at a much faster rate (nearly twice the rate) than incoming tickets decreased from 2004 to 2009. **And since 2009, facility damages are increasing at a slower rate (about 2/3's the rate) than incoming tickets are increasing.** The best result is for facility damages to decrease. But if incoming tickets are increasing, we likely expect facility damages to increase also. If facility damages increase at a slower rate than incoming tickets increase, progress is made. This result is a positive trend that points to a driving force that has improved damage prevention efforts by stakeholders.
- 3) **The Damage Metric (facility damages / 1,000 incoming tickets) has continued to decrease since 2004, even while both incoming tickets and facility damages have increased since 2009.** Since this is a ratio of two industry measures, either of the measures could be impacting the decrease in the ratio. In this case, both measures have increased, but since the numerator (damages) increased at a slower rate than the denominator (tickets) increased, the ratio decreased. This is a positive trend that points to a driving force that has improved damage prevention efforts by stakeholders.
- 4) **Since PHMSA provided Grant funding to CO811 from 2008 through 2012 for public awareness and stakeholder education, there has been a significant improvement (decrease) in the Damage Metric.** We view this as a positive trend that points to a cause and effect relationship between: a) encouraging and supporting the DPCs, b) improving local public awareness, and C) reducing the Damage Metric.

C) Quantifiable Measures of Effectiveness

In addition to inspecting a table of numbers (all valid results), we will visually present the relationship between the Awareness Metric and its Threshold and the Damage Metric and its Threshold on a two dimensional scatter chart to see if there is an observable pattern or trend in the data.

The three scatter charts on Page-15 visually demonstrate the improvements made in damage prevention for Colorado in 2004, 2009, and 2012. Each chart provides a snapshot of a measure of Facility Damage (a variation of the Damage Metric) versus a measure of Public Awareness (a variation of the Awareness Metric) for 2004, 2009 and 2012.

We can state two hypotheses regarding damage prevention efforts:

- 1) As we create and support active Damage Prevention Councils (DPCs) within a county, public awareness should improve each year (as measured by the Public Awareness Metric) as a result of their efforts in the community.
- 2) As we fund and support improvements in the quantity and quality of public awareness and stakeholder education efforts within a county, the Damage Metric should decrease within the county over time.

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To understand how the three charts demonstrate these improvements, we must first explain how the charts are setup and how to interpret the information.

- a) Each chart (one for each of three different years) depicts a **measure of Public Awareness** on the horizontal X axis and a **measure of Facility Damage** on the vertical Y axis. This represents a cause and effect relationship between awareness and damages.
- b) The **measure of Public Awareness** is the County Awareness Metric for the year less the Awareness Threshold for the state that year. The Awareness Threshold (the current year ticket weighted average of the Awareness Metric) becomes the -0- vertical axis line and positive numbers to the right of the axis line represent higher levels of public awareness, while negative numbers to the left of the axis line represent lower levels of public awareness. The change over time (improvement) is easier to visualize using this measure instead of the raw value.
- c) The **measure of Facility Damage** is the 2004 Damage Threshold (the 2004 damage weighted average of the Damage Metric) for the state less the County Damage Metric for that year. The 2004 Damage Threshold becomes the -0- horizontal axis line and positive numbers above the axis line represent lower levels of facility damage, while negative numbers below the axis line represent higher levels of facility damage. The change over time (improvement) is easier to visualize using this measure instead of the raw value.
- d) The two axes divide the chart into **four quadrants**. Each quadrant represents a hypothesized cause-effect relationship between the Awareness Metric and Damage Metric.

Quadrant-1 Upper Right	Higher Public Awareness	Lower Facility Damage
Quadrant-2 Upper Left	Lower Public Awareness	Lower Facility Damage
Quadrant-3 Lower Left	Lower Public Awareness	Higher Facility Damage
Quadrant-4 Lower Right	Higher Public Awareness	Higher Facility Damage
- e) There is a small **green box** with a number and a small **blue box** with a number in each quadrant. The green box identifies the number of counties in the quadrant with an active Damage Prevention Council. The blue box represents the number of counties in the quadrant without a Damage Prevention Council.
- f) The 64 **data points** represent each of the counties within the state for that year. The green data points are counties with an active Damage Prevention Council that year. The blue data points are counties without a Damage Prevention Council that year.

Table B summarizes the number of counties that fall in each quadrant for each year, showing both counties with and counties without a Damage Prevention Council. Careful study of the scatter charts on Page-15 and Table B reveal progressive improvements from 2004 through 2012 in both the public awareness metric and the facility damage metric as Damage Prevention Councils have been created and supported.

Table B - Summary of the Awareness Metric versus Damage Metric Scatter Chart
Counties in each quadrant with and without a DPC

QUADRANT	Quadrant-1	Quadrant-2	Quadrant-3	Quadrant-4	Quadrant-1	Quadrant-2	Quadrant-3	Quadrant-4	Total
YEAR	With DPC	With DPC	With DPC	With DPC	W/O DPC	W/O DPC	W/O DPC	W/O DPC	
2004	6	2	0	0	2	28	26	0	64
2009	9	11	3	0	3	30	8	0	64
2010	10	18	4	0	3	25	4	0	64
2011	12	20	6	0	2	19	5	0	64
2012	11	26	7	0	1	13	5	1	64

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Observations

- 1) **Quadrant-4 represents the worst relationship for a county to attain** – high public awareness and high facility damages. Note that 1 county moved into this quadrant in 2012.
- 2) **Quadrant-1 represents the best relationship for a county to attain** – high public awareness with low facility damages. Note the number of counties in this quadrant increased from (6+2=8) in 2004 to (11+1=12) in 2012. Over these 8 years, 4 counties moved from Quadrant-2 into Quadrant-1, a positive development as these counties improved their Awareness Metric and moved above the Awareness Threshold. Eleven of the 12 counties in Quadrant-1 in 2012 had an active Damage Prevention Council, while 1 county did not.
- 3) **Quadrant-2 represents the next best relationship for a county to attain** – lower public awareness with lower facility damages. Note the number of counties in this quadrant increased from (2+28=30) in 2004 to (26+13=39) in 2012. Over these 8 years, 9 counties moved from Quadrant-3 up into Quadrant-2, a positive development as these counties reduced their Damage Metric and moved below the 2004 Damage Threshold (above -0-line). Twenty-Six of the 39 counties in Quadrant-2 in 2012 had an active Damage Prevention Council, while 13 counties did not.
- 4) **Quadrant-3 represents a worse relationship for a county to attain** – lower public awareness with higher facility damages. Note the number of counties in this quadrant decreased from (0+26=26) in 2004 to (7+5=12) in 2012. Over these 8 years, 13 counties moved out of Quadrant-3 into Quadrant-2 or Quadrant-1, a positive development as these counties reduced their Damage Metric and moved below the 2004 Damage Threshold (above -0- line). Additionally, 1 county moved into Quadrant-4, a negative development. Seven of the 12 counties in Quadrant-3 in 2012 had an active Damage Prevention Council, while 5 counties did not.

To summarize these observations:

- 18.8% (12 of 64) of the counties have a high Public Awareness and a low Damage Metric (Quadrant-1). From 2004 through 2012, the number of counties in this quadrant increased from 8 to 12.
- 18.8% (12 of 64) of the counties have a lower Public Awareness and a high Damage Metric (Quadrant-3). From 2004 through 2012, the number of counties in this quadrant decreased from 26 to 12.
- 60.9% (39 of 64) of the counties have a lower Public Awareness and a low Damage Metric (Quadrant-2). From 2004 through 2012, the number of counties in this quadrant increased from 30 to 39.
- From 2004 through 2012, the number of counties with an active Damage Prevention Council increased from 8 to 44.
- From 2004 through 2012, the number of counties with a Damage Metric above the 2004 Damage Threshold (10.78) decreased from 26 to 13. This means 13 counties improved their Damage Metric over these years. This is an important improvement in damage prevention in Colorado.
- From 2004 through 2012, the descriptive statistics of the Damage Metric for the state improved significantly:
 - the average County Damage Metric decreased from 12.75 to 6.77, a significant 47% decrease.
 - the worst County Damage Metric decreased from 62.1 to 31.4.
 - the standard deviation, or range of the County Damage Metric decreased from 12.3 to 5.8, a significant 53% decrease.

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NOTE: Since the County Damage Metric is derived from a population density adjustment and mathematical transformation (Natural Log), the value of the metric does not have a direct interpretation to the number of facility damages, but a lower value is better than a higher value.

In conclusion, the data and observations presented above demonstrate that Colorado’s dedicated industry stakeholders have successfully improved damage prevention efforts from 2004 through 2012 by moving four counties above the Awareness Threshold and by moving thirteen counties below the 2004 Damage Threshold. In addition, stakeholders have decreased the Damage Metric from 2004 through 2012 for many individual counties as well as the state as a whole.

In the 2009 Mid-Term Report, we made the following 3 claims and provided a mechanism using this same information (from 2004 and 2009) to statistically validate each claim with a high level of confidence. The additional information from 2012 adds additional significance to these claims.

- Claim Statement-1: Counties with an active DPC have higher levels of public awareness than counties without an active DPC.
- Claim Statement-2: Counties with an active DPC have better (lower than the 2004 Damage Threshold) levels of damage prevention than counties without an active DPC.
- Claim Statement-3: The Damage Metric is now significantly lower in 2012 than it was in 2004.

Our conclusion is that creating DPCs and supporting appropriate public awareness and stakeholder education programs is an effective method to enhance public awareness and improve damage prevention efforts in Colorado.

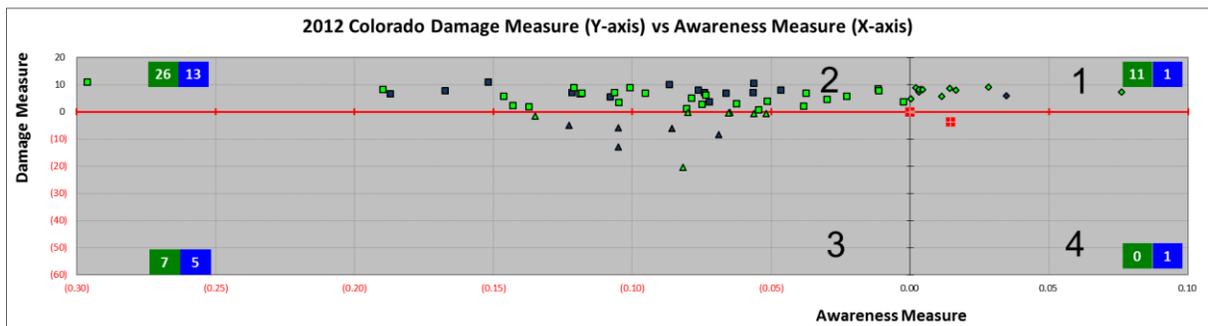
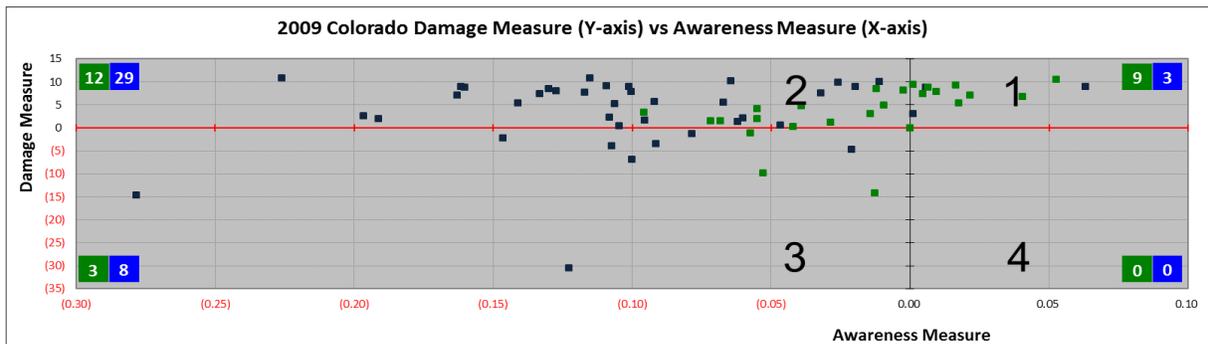
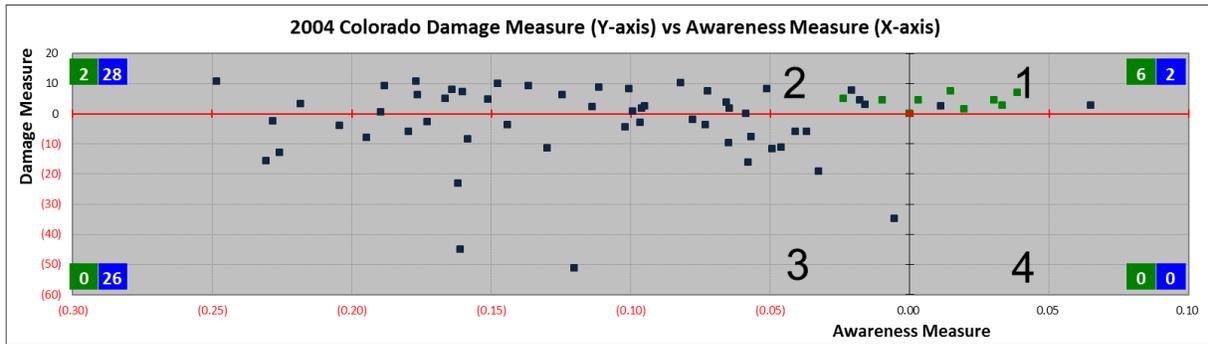
Page-16 shows the *Summary of Damage Prevention County Report Cards (Composite Score)* for the 64 Colorado counties from 2008 through 2012, the period of PHMSA Grant Funding. Visual inspection of the table demonstrates the improvement in damage prevention that Colorado has made over these five years. The table below summarizes these improvements by showing the increase in counties earning grades of A-, B+, and C+, while eliminating counties earning grades of D and D-.

Composite Grade	A-	B+	B / B-	C+	C / C-	D+	D / D-	Total Counties
2004	0	5	15	10	25	5	4	64
2012	3	7	9	18	22	5	0	64
Improvement	+3	+2	-6	+8	-3	0	-4	0

Acknowledgement goes out to the staff at CO811, the volunteers on the Damage Prevention Action Team, the seventeen Damage Prevention Councils around the state, the facility locate companies, and the many excavators and facility owners who support damage prevention best practices. A special thank you goes to DOT-PHMSA for providing the Gant funding since 2008 that supported many of the damage prevention activities that have helped make a difference in Colorado.

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Scatter Charts of Damage Metric versus Awareness Metric, 2004, 2009, & 2012



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Summary of Damage Prevention County Report Cards (Composite Score)

2008	2009	2010	2011	2012	
Damage Prevention Composite Score					COUNT
Demonstrates Improvement in Damage Prevention Since 2004					2012
B+	B+	A-	B+	A-	3
B	B	B+	B+	B+	7
B	B-	B	B	B	4
B-	B-	B-	B	B-	5
C+	C+	C+	B-	C+	18
C	C	C	C+	C	8
C-	C-	C-	C	C	14
D+	D+	D+	D+	C-	5
D	D	D	D	D+	5
D-	D-	D-	D-		

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D) 811 Educational Series - Measures of Effectiveness

Our first stakeholder educational series, *State One Call Law* was developed and delivered in 2011. The program focused on presenting stakeholder requirements defined in the Colorado One Call Law. The second stakeholder educational series, *CGA Best Practices* was developed and delivered in 2013. The program focused on presenting best practices developed by industry stakeholders and CGA.

NOTE: The 2012 CGA Best Practices Class has been developed and tested on 3 pilot classes, but the delivery of the remaining 23 classes is not complete. Upon completion of the 2013 dig season in Colorado, CO811 will complete the delivery of the classes by November and provide an update to the Final Report in December.

- 26 classes will be delivered around the state in a number of large cities and rural towns
- 3 pilot classes are complete, with the remaining 23 classes scheduled for Oct, Nov, Dec
- The cost to develop the educational program: \$ 7,650.00
- The cost to deliver the program, including instructors and travel: \$ 25,963.00
- The cost of presentation and training material for the class: \$ 5,788.52
- The number of stakeholders attending the class: ###.
- A certification test will be given for each attendee
- A survey will be completed by each attendee – sample results are shown below

1) Educational Program Survey Results

- Each question was rated on a scale from 1 (low) to 5 (high)
- The average rating for all questions was 4.# and the average ranged from 4.# to 4.#
- The average rating for all classes was 4.# and the average ranged from 4.# to 4.#

2011 Colorado 811 Education Series					Survey Questions											
			Total Attendees	248	4.7	Class educational- Informative	Class helps understand OneCall Law	Class helps submit ticket request	Recommend class to others	Handouts were helpful	Class helped prepare for test	Were your questions answered	Instructor knowledge	Instructor presentation	Facility adequate	# of Comments
			Max Size	34	Lowest for Question	4.2	4.2	4.2	4.5	4.4	4.2	83.3%	4.6	4.7	4.4	3.0
			Min Size	6	Average for Question	4.6	4.5	4.5	4.7	4.6	4.6	93.2%	4.9	4.8	4.7	6.1
DPC	City	Date	Instructors	Attendees	Average per Class	Q-1	Q-2	Q-3	Q-4	Q-5	Q-6	Q-7	Q-8	Q-9	Q-10	Comments
Denver Metro DPC	Golden	2-Jul-11	CL-1 Brent Sumner, CL-2 Darrel Vanhooser	29	4.5	4.6	4.2	4.4	4.7	4.4	4.5	96.6%	4.8	4.8	4.6	14
EL Paso County DPC	Colorado Springs	13-Jul-11	Brent Sumner	17	4.7	4.5	4.6	4.6	4.6	4.7	4.5	88.2%	5.0	4.8	4.8	4
PEG DPC	Glenwood Springs	18-Aug-11	Darrel Vanhooser	12	4.7	4.7	4.5	4.4	4.7	4.6	4.6	83.3%	4.8	4.8	4.7	4
Denver Metro DPC	Evergreen	24-Aug-11	Brent Sumner	20	4.8	4.6	4.7	4.9	4.6	4.8	4.5	85.0%	4.9	4.8	4.9	5
Gunnison Area DPC	Gunnison	28-Sep-11	CL-1 Brent Sumner, CL-2 Darrel Vanhooser	20	4.7	4.8	4.7	4.5	4.7	4.7	4.6	100.0%	4.8	4.9	4.4	11
Denver Metro DPC	Aurora	11-Oct-11	Darrel Vanhooser	34	4.5	4.4	4.4	4.5	4.6	4.4	4.4	94.1%	4.6	4.7	4.7	7
Denver Metro DPC	Greely	13-Oct-11	Darrel Vanhooser	18	4.7	4.6	4.6	4.7	4.7	4.7	4.7	94.4%	4.9	4.8	4.8	3
Denver Metro DPC	Arvada	14-Oct-11	Darrel Vanhooser	20	4.6	4.5	4.6	4.6	4.7	4.5	4.6	95.0%	4.8	4.9	4.6	3
Mesa County DPC	Grand Junction	19-Oct-11	Darrel Vanhooser	11	4.8	4.8	4.6	4.6	4.9	4.9	4.8	100.0%	5.0	5.0	4.9	6
Montrose Area County DPC	Montrose	19-Oct-11	Brent Sumner	11	4.8	4.5	4.8	4.6	4.8	4.8	4.7	100.0%	5.0	4.9	4.7	4
Mesa County DPC	Grand Junction	19-Oct-11	Darrel Vanhooser	6	4.4	4.2	4.3	4.2	4.5	4.5	4.2	83.3%	4.8	4.7	4.7	3
Unknown	Monte Vista	9-Nov-11	Brent Sumner	18	4.6	4.5	4.5	4.4	4.6	4.6	4.8	94.4%	5.0	4.9	4.5	7
Las Animas County DPC	Trinidad	18-Nov-11	CL-1 Brent Sumner, CL-2 Darrel Vanhooser	32	4.6	4.6	4.4	4.5	4.7	4.6	4.6	96.9%	4.9	4.9	4.7	8

NOTE: This is a sample of the 2011 One-Call Class survey results. The 2012 CGA Best Practices Class survey results will be forwarded in December after the classes are completed.

2) Educational Program Quantifiable Metrics

- The total cost of the educational program development, delivery and material: \$ 39,401.50
- The total cost of the educational program per class: \$ 1,515.44
- The total cost of the educational program per attendee: \$ #.##

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Issues, Problems or Challenges (Item 3 under Article IX, Section 9.01 Project Report: “The reasons for slippage if established objectives were not met. “)

[If the project is progressing on schedule, simply state that there are no issues, problems or challenge to report. If there have been delays for any reason, explain what they are and how that may impact 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 for approval, which takes more time than originally anticipated. Even if work begins right away after the agreement is in place, other delays can be caused by personnel changes or simply having a better understanding of the effort required once the work is underway.]

The delivery of the CGA Best Practices Class in NOT complete. Unfortunately, Colorado 811 did not receive the first half of Grant funding until March, 2013 due to our difficulties in setting up the *e-invoice* process. Due to the lateness this funding and the unavailability of stakeholders in Colorado to attend classes until the fall and winter months (after dig season), 23 of the classes are not scheduled for delivery until October and November of 2013. Three pilot courses were completed in September and stakeholder feedback used to improve the course content.

After completion of the remaining courses in October and November, CO811 will forward the completion status of the program and results of the course surveys and other metrics to PHMSA. Vendors have been paid for the course development, delivery of the program, and travel estimated expenses prior to the end date of the 2012 Grant (August 30, 2013).

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Final Financial Status Report

[Per the instructions in Article IX, Section 9.03 of your agreement (included below), the financial status report should go to the Agreement Administrator (AA). For this section of the progress report, simply state “The mid-term financial report has been sent as a separate attachment to the AA.” However, if there are any issues with the Financial Status Report or additional explanation is needed, please provide that information here. If there are any delays for whatever reasons, these should be communicated to the AA and AOTR in advance.

From Article IX, Section 9.03 of your agreement: “During the performance of the grant, the Grantee must submit a mid-term Financial Status Report, Standard Form 425 (SF-425), to report the status of funds. In addition to SF-425, the Grantee should provide the break down of costs for each object class category (Personnel, Fringe Benefits, Travel, Equipment, Supplies, Contractual, Other, and Indirect Charges). This report must be submitted to the AA in electronic form via e-mail no later than [refer to your agreement for date.]”

The Mid-Term Financial Report was sent as a separate attachment to the AA on March 25 2013
The Final Financial Report was sent as a separate attachment to the AA on September 30, 2013

There are no issues with the Grant Finances.

A summary of the 2012 Grant budget, expense, funds available is presented below.

Table C

2012 PHMSA Grant Funding Summary	Program Item	Budget	Expended	Available
Objective 1) Foster Support and Partnership with Stakeholders	Element 2		To August 31, 2013	
	DPAT meeting rooms	\$1,200.00	\$1,200.00	\$0.00
	WEB Portal development - video streaming	\$7,500.00	\$7,500.00	\$0.00
Objective 2) Support Damage Prevention Education Program for industry stakeholders	Element 4			
	Develop new CGA Best Practice class	\$7,650.00	\$7,650.00	\$0.00
	Deliver stakeholder education class	\$18,105.00	\$18,105.00	\$0.00
	Administer classes and surveys, assess instructors	\$3,400.00	\$3,400.00	\$0.00
	Laser printer to print program material	\$1,000.00	\$1,198.37	(\$198.37)
	Printing supplies (paper, ink cartridge)	\$3,290.00	\$3,255.56	\$34.44
	Travel expenses to deliver program	\$4,505.00	\$4,458.00	\$47.00
Objective 3) Support Public Awareness and Stakeholder Education	Element 5			
	Statewide Public Awareness media campaign	\$18,000.00	\$18,080.00	(\$80.00)
	Local Public Awareness and Education programs	\$20,000.00	\$19,975.48	\$24.52
	Stakeholder education handout materials	\$3,500.00	\$3,327.59	\$172.41
Objective 4) Review Effectiveness of Damage Prevention Programs	Element 9 - NOT FUNDED			
	Write 2 required reports and assess quantifiable metrics, administer and track grant funding requests	\$0.00	\$0.00	\$0.00
Total		\$88,150.00	\$88,150.00	\$0.00

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Plans for Next Period (Remainder of Grant)

[In most cases, this section should just mention your plans for the remainder of the project. However, if you need to change the workscope at all for any reason, including whether you need to modify, remove, or add items, please explain.]

Although the funding for 2012 PHMSA SDP Grant is complete, CO811 must complete the 23 scheduled *CGA Best Practices* stakeholder classes. After these classes are complete in November 2013, CO811 will forward the completion status of the courses and provide the additional quantifiable metrics for the course.

Requests of the AOTR and/or PHMSA

[In most cases, any questions or actions requested of the AOTR and PHMSA (such as grant modifications in anyway) should have been addressed in advance of filing the report. If this is the case, simply state “No actions requested at this time” or explain any actions that are currently in process. However, if something has come up recently, or if you haven’t been able to discuss with the AOTR yet, please describe here.]

No additional requests were made.

Contact for Reports:

Final Report:

Final Report, Receipts

Email to GOTR and GA no later than 30 days after completion date of Grant award (09/01/2012)

GOTR Ms Annmarie Robertson
US DOT, PHMSA
annmarie.robertson@dot.gov
317-253-1622 (Indiana)

GA Ms Alicia Henderson
US DOT, PHMSA
alicia.henderson@dot.gov
202 366-0459 (Washington)

Financial Report:

Form SF-425, Object Class Category, Receipts

Email to AA no later than 30 days after completion date of Grant award (09/01/2012)

AA Who is this?