



MID-TERM REPORT OF GRANT AGREEMENT DTPH56-13-G-PHPT11

TAG 2013



AUGUST 22, 2014
CITY OF PORT ARANSAS
710 W. Avenue A, Port Aransas, TX 78373

Executive Summary

This is a progress report to provide you with our accomplishments, a cost to benefits (Cost-Benefit Analysis or CBA) comparison of our project initiatives established over the mid-term of Grant Agreement GTPH56-13-G-PHPT and the reason for our slippage on this project.

Objective

Despite the fact that we had a slow start with initiating this project due to municipal procedural complications as noted in my email dated May 2, 2014 to mahua.mazumdar@dot.gov & sam.hall@dot.gov, I can assure you that we are doing everything we can to get back on track. It is my opinion that enough data has been collected to measure a cost-benefit analysis for the extent of the project. The project consists of utilizing \$50,000.00 to improve how leak surveying data was collected, have the ability to remotely perform task with the use of mobile broadband, and improving damage prevention and overall public awareness. As part of the arrangement to receive 50% of the grant money (\$25,000.00), we have manage to initiate a portion of the project. The first portions of this project was to improve the way leak surveying is performed while collecting data and to have the ability to send and receive real-time data of certain task being performed in the field via Mobile Broadband.

Scope

Three (3) Portable Methane Detectors (PMD) with real-time data logging at a cost of \$26,175.00 + \$1,000.00 for Software/Training:

Prior to having the ability of real-time data logging, we would note all information manually with pen and paper. This information included;

1. Person in charge of Leak Survey
2. Persons performing Leak Survey
3. Area being surveyed (in miles)
4. Date & Time Leak is discovered
5. Location of Leak (hand drawn diagram with street intersections that included pipe material description, pipe size, & pipe location)
6. Percentage of Low Explosive Levels or Percent Gas in Air for each "Bar-hole" performed (noted on hand drawn diagram).
7. Date the Leak Survey was completed.

The average estimated time to complete each survey is one (1) to three (3) hours per leak investigation, depending on the significance of the leak. With the new equipment, the information on line items 3, 4, 5 & 6 above is automatically accumulated thus, eliminating the manual data entry process, cutting the amount of time it takes to complete. Not only did this improve the amount of time it takes to input this data into record, most importantly it has reduced the possibility of human error. This equipment has also given us the ability to incorporate the captured data into our mapping system (images below), allowing us to see an overall picture of tracking anomalies within our distribution system, giving us the ability to better manage our Distribution Integrity Management, Pipe Replacement, and Meter Replacement Programs.

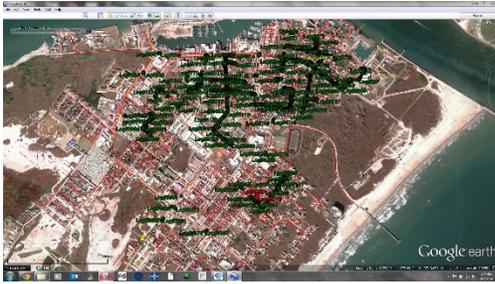


Image of Gas Distribution (Green: areas [PE] surveyed)

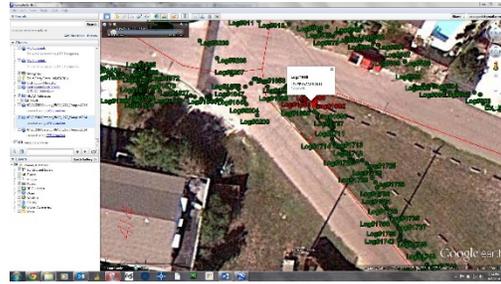


Image of Gas Leak with PPM (Red: Leak found on PE)

The process application outcome decreased the man-hours required and increased the accuracy of leak surveying with the use of state-of-art equipment; three (3) Portable Methane Detectors with Real-Time Data Logging, Software, and Training translates to \$1.04 for every \$1.00 invested. The Cost Benefit Ratio is sure to increase once the Intrinsically Safe Remote Methane Leak Detector is merged into the CBA.

Mobile Broadband implemented to send & receive real-time data of certain task being performed in the field:

Mobile Broadband has allowed Field Tech's the ability to send and receive real-time data over the internet versus having to come into the office for mapping, service orders, and excavation tickets, saving an estimated 10 hours a month on hourly wages, wear-and-tear on the vehicle, fuel, and avoiding the possibility of an auto accident. This translates to: \$4.12 for every \$1.00 invested on this project. The Cost Benefit Ratio is sure to increase once the Ticket Manager Enterprise is merged into the CBA.

Ticket Manager Enterprise, web-based solution to managing excavation notifications:

An Excavation Ticket Management Solution designed with powerful web-based tools for tracking excavation tickets, geospatially referencing dig site information, sending positive responses to excavators, and many other features. The monetary value to this will be integrated into the mobile broadband section once the project is implemented.

Intrinsically Safe Remote Methane Leak Detector (RMLD) is a revolutionary tool that uses laser technology to located leaks from afar:

This Device allows remote gas leak detection of hard-to-reach areas to safely be leak surveyed such as busy roadways, yards with large dogs, locked gates, etc... The monetary value to this will be integrated into the Portable Methane Detectors section once the project is implemented.

Closing

Cost to Benefit Analysis:

I have completed a mid-term Cost-Benefit Analysis (*Table 1*) to help you determine whether we should go forward with this project. Although this project isn't complete, the actual outcome looks great for the most part.

Table 2 is a breakdown of the Benefit Cost Analysis & the Benefit Cost Ratio. As you may notice, I only used the average employee's hourly wage and did not add any of their actual fringe benefits while evaluating all of the cost performances. Other cost savings such as time reduction of integrating the valued data into our mapping system which, benefits the Distribution Integrity Management Program, Pipe Replacement Program, and Meter Replacement Program were not included in this assessment. Because parts of the project have not be initiated, the Benefit Cost Ratio may seem low but as I can foresee, it is sure to be viable and once completed the benefit will outweigh the cost.

Table 1

COST-BENEFIT ANALYSIS				
COST	Item	Details	Cost	Cost to Date
		TAG - 2013	Improve gas leak survey safety, speed, and accuracy. Have the ability to send and receive data over the internet while out in the field. Give us the ability to manage excavation tickets more efficiency and perform positive responses to excavators from the dig site.	\$ 50,000.00
DESCRIPTION OF BENEFITS	Item	Details	Cost	Cost to Date
	(3) Portable Methane Detectors (PMD) Software/Training	To perform gas leak surveys faster and with greater accuracy. The cost for this includes \$1,000.00 for Software/Training. It is estimated that we leak survey 120 hours per month of operations. That said, we are now managing to perform this task at a rate of 70 hours per month of operations. This translates to: \$1.04 for every \$1.00 spent on this project.	\$ 27,760.00	\$ 27,175.00
	(3) Mobile Broadband Air Cards	To allow Field Tech's the ability to send and receive real-time data over the internet versus having to come into the office for mapping, service orders, and excavation tickets, saving an estimated 10 hours a month on hourly wages, wear-and-tear on the vehicle, fuel, and avoiding the possibility of an auto accident. This translates to: \$4.12 for every \$1.00 spent on this project.	\$ 1,368.00	\$ 569.85
	Ticket Manager Enterprise	An Excavation Ticket Management Solution designed with powerful web-based tools for tracking excavation tickets, geospatially referencing dig site information, sending positive responses to excavators, and many other features. The monetary value to this will be integrated into the mobile broadband section once this project is implemented.	\$ 1,300.00	\$ -
	Intrinsically Safe Remote Methane Leak Detector (RMLD)	This Device allows remote gas leak detection of hard-to-reach areas to safely be leak surveyed such as busy roadways, yards with large dogs, locked gates, etc... The monetary value to this will be integrated into the Portable Methane Detectors section once this project is implemented.	\$ 19,750.00	\$ -
	Total		\$ 50,178.00	\$ 27,744.85

Table 2

Mobile Broadband Cost-Benefit Analysis & Payback Value												
NUMBER OF VEHICLES	TOTAL VEHICLE HOURS	VEHICLE HOURLY COST	VEHICLE EARNED VALUE	NUMBER OF EMPLOYEES	TOTAL EMPLOYEE HOURS	EMPLOYEE HOURLY PAY	EMPLOYEE EARNED VALUE	MONTHLY COST	MONTHLY EARNED VALUE	ANNUAL COST	ANNUAL EARNED VALUE	PAYBACK FOR EVERY \$1 INVESTED
3	10	\$ 3.65	\$ 109.50	3	10	\$ 12.00	\$ 360.00	\$ 114.00	\$ 469.50	\$ 1,368.00	\$ 5,634.00	\$ 4.12
PMD, Software/Training Cost-Benefit Analysis & Payback Value												
NUMBER OF VEHICLES	TOTAL VEHICLE HOURS	VEHICLE HOURLY COST	VEHICLE EARNED VALUE	NUMBER OF EMPLOYEES	TOTAL EMPLOYEE HOURS	EMPLOYEE HOURLY PAY	EMPLOYEE EARNED VALUE	MONTHLY COST	MONTHLY EARNED VALUE	ACTUAL COST	ANNUAL EARNED VALUE	PAYBACK FOR EVERY \$1 INVESTED
3	50	\$ 3.65	\$ 547.50	3	50	\$ 12.00	\$ 1,800.00	\$ 2,264.58	\$ 2,347.50	\$ 27,175.00	\$ 28,170.00	\$ 1.04
Ticket Manager Enterprise Cost-Benefit Analysis & Payback Value												
NUMBER OF VEHICLES	TOTAL VEHICLE HOURS	VEHICLE HOURLY COST	VEHICLE EARNED VALUE	NUMBER OF EMPLOYEES	TOTAL EMPLOYEE HOURS	EMPLOYEE HOURLY PAY	EMPLOYEE EARNED VALUE	MONTHLY COST	MONTHLY EARNED VALUE	ANNUAL COST	ANNUAL EARNED VALUE	PAYBACK FOR EVERY \$1 INVESTED
0	0	\$ 3.65	\$ -	0	0	\$ 12.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
RMLD Cost-Benefit Analysis & Payback Value												
NUMBER OF VEHICLES	TOTAL VEHICLE HOURS	VEHICLE HOURLY COST	VEHICLE EARNED VALUE	NUMBER OF EMPLOYEES	TOTAL EMPLOYEE HOURS	EMPLOYEE HOURLY PAY	EMPLOYEE EARNED VALUE	MONTHLY COST	MONTHLY EARNED VALUE	ACTUAL COST	ANNUAL EARNED VALUE	PAYBACK FOR EVERY \$1 INVESTED
0	0	\$ 3.65	\$ -	0	0	\$ 12.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
										TOTAL ANNUAL COST	TOTAL ANNUAL EARNED VALUE	TOTAL PAYBACK FOR EVERY \$1 INVESTED
The Vehicle Hourly Cost is based on High Rate of Depreciation over the replacement period.										\$ 28,543.00	\$ 33,804.00	\$ 1.18