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FINAL REPORT

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***Promoting Environmental Excellence Through Environmental
Leadership & Voluntary Performance Improvements***

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Table of Contents

Introduction	2
Project Objectives	2
Project Activities	2
Target Audience Selection	2
TAP Materials Development	3
TAP Implementation	5
On-site Assistance	6
Project Results	8
Improve Regulatory Performance	8
Increase KY EXCEL Membership.....	9
Increase Waste Reduction and Energy Efficiency.....	10
Lessons Learned.....	10
Define a Reasonable Scope.....	11
Build Program Support.....	11
Prepare for Rule Changes	11
Create Relationships	12
Appendices.....	12

Introduction

In 2004, the Department for Environmental Protection established the Division of Compliance Assistance. Its purpose was to train and certify environmental professionals, simplify the compliance process for regulated entities, and encourage Kentucky's facilities and citizens to grow greener. In the course of developing and implementing these programs, it became apparent that the entities most likely to place a high priority on compliance and to engage in voluntary stewardship were those entities with a strong environmental ethic. In response to this observation, the agency began seeing innovative ways to increase the environmental ethics of Kentucky corporate citizens with the expectation that it would increase environmental performance across the Commonwealth.

In 2007, U.S. EPA awarded the Division of Compliance Assistance with a State Innovation grant to evaluate the degree that targeted technical assistance would produce improved performance at Kentucky facilities and encourage participation in Kentucky's environmental leadership program, KY EXCEL. This report summarizes the project methodology, presents the project results, and offers recommendations to other states and organizations that wish to implement similar efforts.

Project Objectives

The objectives of this project were as follows:

- 1) To implement a Targeted Assistance Program (TAP) to improve performance at selected facilities;
- 2) To use implementation of the TAP as a recruitment opportunity to encourage participation in KY EXCEL; and
- 3) To increase the number of new KY EXCEL members that perform waste reduction or energy efficiency projects at their facility.

Project Activities

Target Audience Selection

The first activity undertaken by the division was selecting the sector targeted during the project. Initially the division had identified two potential sectors for consideration in the study – gas stations and small wastewater systems. After a review of agency inspection data the division decided to select gas stations as the targeted sector.

Small wastewater systems were not selected because the agency determined it would be difficult to achieve measurable results that would validate the effectiveness of the study. Small wastewater systems are not always actively staffed, which would make it hard to reach out to the operators; often violations at small wastewater systems are a result of inadequate infrastructure, not just operational considerations; and their rural locations make it hard to access.

Gas stations were chosen because the sector has a high rate of non-compliance as compared to other sectors, gas stations are routinely inspected, and during the beginning of the study the Underground Storage Tank program was actively working on a training program for gas station operators that complemented the goals of this project.

In spite of the characteristics that made gas stations an idea target for the study, the extent of the sector was too large for the division's staff and resources to adequately address consistent with the project work plan. Rather than changing the sector or simplifying the project work plan, the division decided to select four counties to target its efforts. Two counties, Franklin and Laurel, were selected for implementation of the TAP. Two counties, Scott and Pulaski, were selected to serve as controls, or comparison counties, to evaluate the effectiveness of the TAP. Later in the study, Scott County was replaced with Clark County because of an unanticipated change in inspection frequency.

For purposes of the study, Franklin and Scott Counties were compared because they were in the same geographical region of the state and were similar economically. They were also both covered, for compliance purposes, by the same regional office. Laurel and Pulaski counties were paired for the same reasons. By using these two groups paired according, the agency was able to control for possible social differences and for slight differences in compliance oversight that can occur across the Commonwealth.

TAP Materials Development

The division developed four TAP resources for use by Franklin and Laurel county gas station facilities. Each resource was designed to make the operator more aware of regulatory obligations or environmentally sustainable practices that would improve the environmental performance of their facility. The underlying objective of these resources was to increase awareness and enable that awareness to motivate a behavior change.

Gasoline Distribution Compliance Calendar

Using a model implemented by small business environmental assistance programs across the nation, the first TAP resource developed by the division was a compliance calendar. This proven resource designed typically for small businesses, such as dry cleaners, that have tracking and reporting obligations, are modeled after a traditional wall calendars. Rather than decorating the non-functional page of the calendar with an image, compliance calendars use these pages to provide a preformatted space for a user to track materials, waste generation, maintenance activities, etc.

In this project, the calendar was "accessorized" with compliance and sustainability tips. Each month hosted a series of bullets related to a sustainability theme, such as recycling, energy efficiency, water conservation etc. Each month also had an area set aside to discuss a compliance element that pertained specifically to gas station facilities. These compliance notes covered air, water, and waste obligations.

In developing this resource, the division worked with agency inspectors, permitting staff, and other subject matter experts to ensure that the content was accurate and pertinent to gas station operations.

Ideally, a gas station operator would place this calendar on the wall near a work station or a common area where employees frequented and as they used the calendar to track traditional

scheduling items, they would browse the compliance and sustainability information located on each page and educate themselves on environmental performance opportunities.

Gasoline Station Green Scorecard

This resource focused on the non-regulatory activities that could be implemented at a gas station to minimize their environmental footprint. It was designed to be self administered by a facility operator. The operator would rate the facilities efforts on each provided topic to determine how well the facility was performing.

Initially, the division planned to incorporate a large variety of sustainable activities into the scorecard. However, after considering the feedback that the agency had received for the facilities during the implementation of the gas station compliance calendar, it was decided that it would only focus on six areas – recycling, water conservation, energy efficiency, green products, green purchasing, and environmental leadership. All of these items were things that facilities had expressed an interest in and most of them also would provide economic savings for the facilities if implemented.

Because the scorecard needed to allow a facility to easily score their status while also serving as an educational and motivational tool, the division kept the scorecard simple. The number of questions in each category was limited. The card also allowed a user to select a response of “Will Implement.” This enabled unrealized intent to count toward increasing their and serving as motivation to begin implementing an unachieved objective. The score card also identified Champion Projects, which provided bonus points toward the sustainability score. After rating each question, the user calculated an overall sustainability score for the facility based on their responses.

Care was taken in defining the scoring system to ensure that a facility would be able to look at performance deficiencies as an opportunity for growth. The division did not want the scoring process to result in demotivating a facility from advancing their sustainable behaviors. Final scores were translated into contextual terms defining stages of plant growth – seed, cultivated, and matured. Each category had a description that congratulated the facility on their current status and encouraged them to continue to strive for the next growth stage.

Gasoline Stewardship DVD

Initially intended to be a traditional training workshop, the Gasoline Stewardship DVD was the third significant TAP resource developed by the division. The decision to convert the traditional classroom workshop into a DVD was made as a result of interaction with Franklin County gas station operators. It became clear to the division that operators would not be able to leave their stations to attend training. It was also evident that more than just one person at a facility could benefit from training and an alternative format would create a greater reach.

The division used a software program that permitted the agency to convert a Microsoft PowerPoint file into a narrated movie. This way the agency could still cover the key points that it would have discussed in classroom training as the operator watched the DVD at their own leisure. The DVD addressed many of the same sustainability elements that were included in the compliance calendar and the green scorecard. By continuing to emphasize these key areas, the agency hoped that the user would remain cognoscente of their opportunities.

One aspect of sustainability that the DVD emphasized that was not included in previous TAP resources was the business case for implementing sustainability projects at gas stations. For each element being discussed, whether it was recycling, waste reduction, energy efficiency, water conservation, etc., a general analysis was provided regarding the fiscal savings that a gas station could achieve as a result of implementing the activity. For example, upgrading lighting is an investment that reduces energy bills, eliminating water leaks reduces water utility costs, and recycling cardboard reduces solid waste disposal assessments. Interaction with gas station operators revealed to the agency that these small businesses were much more motivated by bottom line savings than they were by environmental benefits. When they could see the fiscal savings associated with the activity, they were much more likely to consider it.

Compliance Webinar

Similar to the Gasoline Stewardship DVD, the initial intent of the division was to provide a classroom training to cover the key environmental compliance elements applicable to a gas station facility. However, because gas station operators informed the division that they would be unlikely to attend a traditional training event, the division decided to use another available training tool to offer the training online. The division has had mixed results with webinars in its compliance assistance program. Attendance varies depending on the topic and the target audience. The division was uncertain how well the training would work for gas stations.

This was the one TAP activity that was applied outside the study area. Because of the regulatory significance of the training, the division did not want to limit it to just the targeted counties and wanted to encourage participation statewide. To keep a unique aspect of the activity applicable to the study, the division placed a special emphasis on advertising the training differently within the study area. Franklin County facilities received a mailing and were called by a division employee and personally invited to participate. Laurel county facilities only received a mailing.

The training covered the two compliance areas most applicable at gas stations. The newly adopted federal NESHAP applicable to gas stations was discussed and the UST compliance regulatory requirements were discussed extensively. The training was conducted by division staff and staff from the Underground Storage Tank program located in the Division of Waste Management. Attendance was lower than expected and most of the 30 attendees were representatives from business associations, major corporations that owned multiple facilities, and consultants that perform activities on behalf of gas station operators. Only a few gas station operators participated.

TAP Implementation

To provide two aspects of evaluation, it was decided that the TAP would be applied differently in the two study counties. Franklin County was provided a more involved, hands-on implementation when provided TAP resources. Laurel County was only passively provided TAP resources.

As each of the TAP resources were developed, they were mailed to the study counties for the targeted facilities use. All materials were sent to the facilities via first class mail. If materials were returned to the division as undeliverable, those gas stations were purged from the study group. Only a few of the study facilities were affected by this procedure. TAP materials were not sent to the control counties.

For Franklin County gas stations, where the involved, hands-on approach was implemented, the division called each facility 1 week after each TAP resource was mailed. This allowed the agency to ask the facility if they had received the resource, encourage them to go over it if they had not already looked at it, and allow the facility operator to ask any questions about the content of the resource. As a result of this additional content, the division was able to motivate facility operators to use the materials rather than set them aside or throw them away. Routinely, facility operators would tell the division that that they remember receiving the resource but hadn't used it or didn't remember where they had put it. The division resent or hand-delivered the "lost" TAP resource to the gas station when this occurred.

For Laurel County facilities, the division did not do any follow-up after sending a TAP resource. The division has no reason to believe that the Laurel county operators would handle the TAP resources any differently than Franklin County facility operators and, as a result, the division expected that a large percentage of these operators were not actively using the resources in their facilities, even though they were being received.

On-site Assistance

Throughout the study period, the division provided on-site assistance as a special service to Franklin County gas stations. This additional effort was consistent with the hands-on approach that the division intended to differentiate between the Franklin County and Laurel County study areas. As will be discussed later, this effort produced the most significant results but also required the largest commitment of agency time to implement.

During the course of distributing and following up on the TAP resources in Franklin County, gas station operators were asked if they needed help with anything or would like additional follow-up. At first operators were hesitant to work with the same agency whose inspectors conducted compliance inspections. However, over time as relationships were built, the operators began to realize that the division was as interested in helping them save money while implementing environmental projects as they were. Most of the on-site assistance focused on non-regulatory sustainability projects and very little interest was received related to compliance topics.

Cardboard recycling

Very early into the on-site assistance effort cardboard recycling became a clear target for assistance. Because of the convenience stores most gas stations maintain, they generate a large amount of cardboard. This volume rapidly fills up station dumpsters. Disposal costs are by volume, not by weight so reducing cardboard volume presents immediate savings to the station operator.

Interestingly enough, the primary savings in cardboard recycling for gas stations in Franklin County was in simple compaction. Although there is value in the fiber, because there is not an extensive cardboard collection service in Franklin County it would require a significant amount of time and money to either transport the material to a recycling company or have it collected. An alternative to selling the fiber was to give it away. Franklin County does maintain a drop off center for county residences to drop off recyclable materials but does not compensate for the donations. Gas stations could benefit from this simply because of the volume reduction it placed on their solid waste dumpsters. The simplest option for gas stations provided no environmental benefit – compaction. By crushing their boxes before putting them into the

dumpster, stations were able to reduce the frequency of dumpster pickup and, in some cases, reduce the size of their dumpsters. Both benefits produce direct savings to the gas station.

To encourage gas stations to look beyond only the fiscal savings, the division conducted a pilot project with one Franklin county gas station in partnership with the Division of Waste Management's recycling program. This program recycles all of the paper and cardboard waste collected by state government facilities located in the capital. The service conducted during the pilot was providing the station with a cage to collect the cardboard in, removing the cage when filled, and delivering the cage to the recycling center. This process reduced the need for the station to crush the boxes and enabled them to reduce both their pickups and dumpster size.

At the conclusion of the pilot, the station decided that they could still use a smaller dumpster if they compacted the boxes and disposed of the boxes rather than recycling the boxes. It did decrease their savings by making this decision because they did need to increase the number of pickups again.

A few other stations also implemented this same strategy after learning of the savings found during the pilot. However, because Franklin County does not offer commercial recycling pick-up, none of these facilities recycled the material. They simply crushed the cardboard so they could reduce their dumpster size and pick-up frequency. While it was disappointing that cardboard recycling rates did not increase, this information gave the agency the ability to approach stations and provide them with a credible savings opportunity that then created an environment where facility owners were more willing to listen to other ideas from project staff.

Energy Efficiency

Over the course of the project, division staff were able to build strong relations with energy efficiency experts and enhance their energy efficiency knowledge. This enabled the division to give personalized assistance to gas station operators when conducting Franklin County site visits. Gas stations use a significant amount of energy to run their fuel pumps, light their islands, maintain their refrigeration units, and provide food services. This utility cost presented the greatest possibility for fiscal savings at gas stations implementing sustainability projects.

The division was able to facilitate visits of energy efficiency experts to gas stations with an interest in reducing their electric bill. These experts would provide audit services free of charge and produce recommendations on investments that could be done by the station operator. The auditor was also able to provide savings estimates for each project. The division found that these auditors were willing to provide these services in anticipation of potentially achieving long term contract work with the gas station operators.

Additional On-site Services

On-site discussions with gas station operators in Franklin County were not limited to cardboard and energy efficiency. The division also discussed water conservation, locally grown produce and Kentucky Proud products, non-toxic cleaning materials, storm water management, and public involvement. After every site visit, the agency staff involved would prepare a site visit report to document the discussions that occurred and any recommendations offered.

Project Results

The theory underlying this study was that as operators became more aware of environmental obligations that they would also become more interested in achieving compliance with environmental laws. In addition, as they realized the economic and social benefits of non-regulatory environmental opportunities that they would be more likely to participate in environmental leadership activities.

Improve Regulatory Performance

The first objective of this project was to determine the extent that compliance rates could be improved as a result of providing technical assistance to gas station operators. Because of the tiered aspect of the project, the division expected the following:

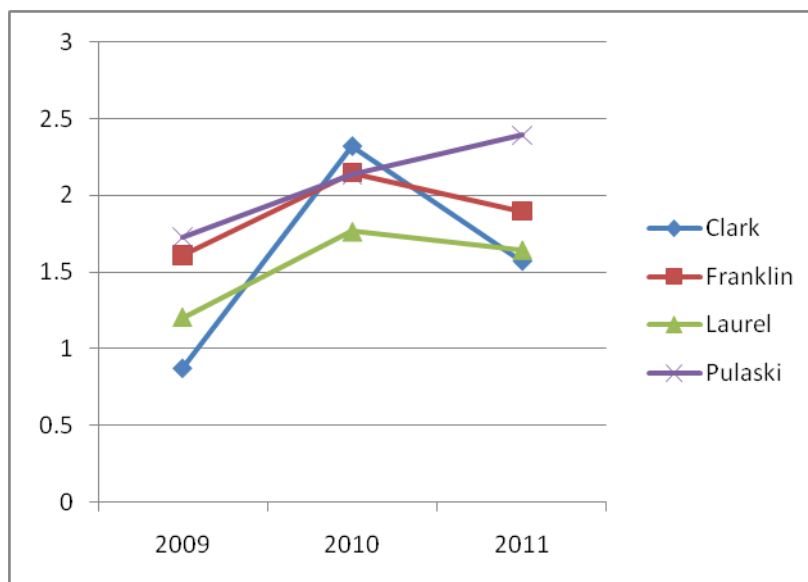
1. Franklin County gas stations would increase their compliance rates when compared to their control gas stations located in Clark County.
2. Laurel County gas stations would increase their compliance rates when compared to their control gas stations in Pulaski County
3. The increase in compliance rates would be greater in Franklin County than in Laurel County due to the more involved assistance provided to Franklin County facilities.

Using compliance data from the study area obtained from routine compliance inspections conducted by Division of Waste Management inspectors, it was determined that none of the anticipated changes in compliance rates occurred as a result of the project.

When conducting an inspection, agency inspectors score each inspection on a scale of 0-4. A score of 0 represents non-compliance addressed with a Notice of Violation; a score of 1 represents non-compliance addressed with a Letter of Warning; a score of 2 represents non-compliance addressed with a verbal warning; a score of 3 represents compliance but with impending violations observed; and a score of 4 represents full compliance. By averaging these scores across all the inspections conducted in the study area, the agency was able to determine the compliance trends of each county - the higher the score, the better the compliance. The results were as follows:

Average Compliance Scores at Gas Stations

Year	Clark	Franklin	Laurel	Pulaski
2009	0.9	1.6	1.2	1.7
2010	2.3	2.1	1.8	2.1
2011	1.6	1.9	1.6	2.4



During the project, which was conducted in 2010 and the first part of 2011, compliance scores improved in all counties in 2010 and then fell in three counties during 2011. The most significant increase in 2010 actually occurred in Clark County, a control county. The only county that did not see a reduced compliance score in 2011 was also a control county. These observations would not have occurred if the project had positively impacted compliance rates. The only two counties that should have seen an increase in 2010 were Franklin and Laurel counties.

Although not outlined in the project work plan, the division worked with a University of Kentucky social scientist to further evaluate the compliance data to determine if there was more information to be gleaned from the data than basic descriptive statistics could describe. After conducting a statistical analysis, the university determined that there was insufficient power to conduct a repeated measures ANOVA analysis. However a T-test comparing the counties was able to demonstrate that there was no statistical difference between the counties' compliance rates in any year. Based on this additional evaluation, it was confirmed that the project activities had no quantifiable impact on compliance rates.

Increase KY EXCEL Membership

The second objective of this project was to use the TAP as an opportunity to recruit participants into Kentucky's environmental leadership program, KY EXCEL. To be a member of KY EXCEL, a participant would need to commit to performing voluntary environmental projects. Full compliance is not necessary to become a KY EXCEL member, but poor past performance does eliminate a facility from consideration at the highest membership level.

Similar to what the KY EXCEL program has found historically, encouraging facilities that are not environmentally sophisticated to join an environmental leadership program is a difficult challenge. When a small facility, such as a gas station, doesn't have a full time environmental employee or is having a difficult time making a profit, it is hard for the facility to see how joining a government leadership program provides them a benefit.

As a result of implementing this project, the division only realized one new KY EXCEL member. No gas stations joined KY EXCEL and the only organization that did join KY EXCEL was a cardboard recycling company located in London, KY.

Increase Waste Reduction and Energy Efficiency

The third project objective was to realize implementation of energy efficiency and waste reduction projects. At the time the agency applied for the grant funding this project it anticipated that this increase would occur as a result of an increase in KY EXCEL membership. However, this objective was achieved outside of the context of KY EXCEL.

While implementing the TAP in Franklin County, the ongoing assistance offered to those facilities allowed the agency to observe the following:

- A facility installed two water efficient toilets during a bathroom upgrade
- A facility increased their attic space insulation
- A facility installed a programmable thermostat
- A facility purchased energy star appliances for a kitchen upgrade
- A facility installed LED lighting for their walk-in coolers
- A facility installed energy efficient overhead lights
- A facility replaced a poorly insulated door
- A facility reduced its lighting following an energy audit
- A facility installed an Energy Star rated sign
- A facility reported reduce water use after repairing leaks
- A facility indicated plans to replace inefficient canopy lights with LED lighting

Following implementation of all of the TAP resources, the division also called gas stations from both Franklin and Laurel Counties to qualitatively determine if any behavior changes had occurred as a result of implementing the TAP materials. While not scientific in nature, the 49 facilities that responded to the phone calls provided the agency with the following information:

- Just over half reported making positive environmental behavior changes at their stations
- 10 of the gas stations reported that their environmental changes were a direct result of the TAP materials
- The compliance calendar and the DVD were the most helpful resources for the stations
- More than half of the stations indicated they would like to continue receiving environmental resources from the division
- One third of the gas stations in Franklin County and one quarter of the gas stations in Laurel County that responded to the phone calls indicated that they would be willing to consider joining KY EXCEL in the future.

Lessons Learned

Without additional funding, the division will not be able to continue implementing detailed assistance to this sector in the manner that was performed by this study. However, there were a number of lessons

learned that will be applied by the division in its routine compliance assistance and KY EXCEL program activities. The division believes that other states could benefit from these lessons as well.

Define a Reasonable Scope

Not every gas station is going to implement sustainable practices at their facilities. However, when dealing with large quantities of facilities, even a low participation rate can produce a significant environmental benefit. Care needs to be taken by others that wish to implement a project such as this that scaling be applied proportional to the tool being utilized. For example, the most effective tool used by the division to achieve a change was on-site assistance. This approach would not be practical for the total universe of 15,000 gas station locations in Kentucky. However, equipping all of the state inspectors with DVDs that could be distributed during the course of routine compliance inspections could be performed on a statewide basis with a cost of less than \$10,000.

Build Program Support

The Division of Compliance Assistance met with the Division of Waste Management staff prior to implementing the study. The Division of Waste Management is the entity that most frequently inspects and regulates gas station facilities. Although the Division of Waste Management participated in this project as a partner, there was unanticipated tension during the project development stage. This tension was realized in two ways.

First, field staff did not conceptualize the anticipated link between assistance and compliance. As a result, they did not actively encourage gas stations to participate in the project. In fact, the division documented at least one instance where a Division of Waste Management inspector advised that the station not perform a sustainability project because he thought it wasn't a good use of the facility's time.

The second source of tension arose between the Division and the Underground Storage Tank program staff. The concern was that they felt that gas station operators would get confuse who they should talk to for issues related to compliance. They were worried that if a strong relation was developed by the division and the gas station operator, then the operator would call DCA instead of the UST program to ask technical questions where DCA may not have expertise.

Over the course of the project, both of these concerns were minimized and the project was implemented without any of the concerns being realized. However, if DCA had spent more time working on the relations between the agencies, it may have reduced some of the unwanted delays that materialized.

Prepare for Rule Changes

During the course of the study, two major rule changes occurred that impacted the project schedule. These changes were the air quality area source rules applicable to gas stations and the development of new state regulations applicable to underground storage tank facilities. Both of these situations delayed the development of TAP resources because the division did not want to publish material that would be out of date and potentially lead a facility to non-compliance because they would not be aware of the new standards. Since it is not possible to delay indefinitely to accommodate the routine rule changes that occur, other states should consider highlighting generally applied standards in their materials and

then referencing the operator to other resources that can be updated over time to keep them up to date with current requirements.

Create Relationships

Perhaps the most significant lesson learned by the division during the course of this project was that the greater the relationship with the gas station operator, the more likely they were to get engaged in sustainable behaviors. Although these behaviors did not translate into improvements in compliance, they did produce meaningful actions that reduced the facilities' environmental footprint.

These relationships do not need to occur only in a compliance assistance setting. For example, inspectors have the opportunity during a compliance evaluation to point out actions that could be taken to reduce gas station costs, such as energy efficiency and waste disposal. When the facility operators see that the inspector is interested in the economic health of the station, they will be more likely to care about the environmental objectives being sought by the inspector.

Likewise, facilitating relationships between two private entities can also contribute to agency goals. The Division was able to facilitate positive relationships between energy efficiency contractors and gas station operators to help them both achieve their financial interests by jointly focusing on environmental opportunities. By building these partnerships the division was able to enable actions that would not have been done if the services had been left entire to the division to perform.

Appendices

- A. Gasoline Distribution Compliance Calendar
- B. Gasoline Station Green Scorecard