



Douglas County, Oregon

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SMART Emissions Reducer Trial Program Report

February 18, 2013

prepared by:



SMART Air Fuel Saver of California
Go green with the same machine.

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Douglas County, Oregon SMART Emissions Reducer Trial Program

Introduction

SMART Air Fuel Saver of California had offered Douglas County, Oregon a paid trial program that would assist in the validation of the SMART Emissions Reducer installed in their vehicle fleet. The purpose of the program would demonstrate to Douglas County, Oregon that the SMART Emissions Reducer would reduce harmful vehicle emissions while providing a return on investment by reducing fuel consumption.

Douglas County, Oregon agreed to the trial program proposed by SMART Air Fuel Saver of California. If the SMART Emissions Reducer did not prove its worthiness, then the equipment would be removed from the vehicles, and returned to SMART Air Fuel Saver of California, at the cost of the company, and SMART Air Fuel Saver of CA would restore the vehicles to their previous state before the modifications took place. In the event Douglas County, Oregon found the devices to have value, and perform as represented, then the Douglas County, Oregon would have the option to purchase the equipment, pay for labor services, and continue a rolling production of installs of the devices, provided by SMART Air Fuel Saver of California. This trial program would last a period of 90 days.

On August 7, 2012, SMART Air Fuel Saver of California and their Service Provider Extreme Energy Solutions Inc. began to install devices on vehicles authorized to be retrofitted for the trial program with Douglas County, Oregon. This authorization and program was supervised by Mike Blanck, Douglas County, Oregon Fleet Services.

Action Plan

On Tuesday, August 7, 2012, SMART Air Fuel Saver of California and their service provider Extreme Energy Solutions reported to the Douglas County, Oregon Facility, located at 2586 NE Diamond Lake Blvd. Roseburg, OR 97470, to begin installing the SMART Emissions Reducers on the selected vehicles. All installs were then concluded by Tuesday, August 7, 2012.

Prior to the SMART device installation, a series of vehicle verifications to insure the vehicle was free from any mechanical issues that would effect the results of the overall outcome of the testing would be performed. Each vehicle would undergo an emissions test, using a calibrated five gas analyzer and provide a copy of the results on site. At the conclusion of the 90 day period, each vehicle would again be tested for emissions readings. This would demonstrate the emissions increase or decrease at that time.

A total of three (3) vehicles were originally selected to be offered as candidates.

Douglas County, Oregon would track its fuel mileage results throughout the 90 day trial period, and SMART Air Fuel Saver of California would monitor the emissions results before and after the 90 day trial program, then compile all results in a report, and share them with Douglas County, Oregon for review. Douglas County, Oregon would share fuel consumption data with SMART Air Fuel Saver of California Representatives, so the SMART Representatives could examine the trend of the program. SMART Air Fuel Saver of California would be in contact with Douglas County, Oregon to ensure vehicle usage and to determine if the SMART Emissions Reducer would need to be serviced.

During the 90 day trial program, SMART Air Fuel Saver of California Representatives and Extreme Energy Solutions Technicians would be responsible for troubleshooting any and all issues with the device, perform periodic emissions testing of vehicles retrofitted with the SMART Emissions Reducers, and assist in servicing the SMART Emissions Reducers, as required by the manufacturer (SMART Air Fuel Saver LLC). SMART Air Fuel Saver of California Representatives and Extreme Energy Solutions Technicians would share how to maintain the unit with Douglas County, Oregon Fleet Mechanics, so Douglas County, Oregon Fleet Mechanics could take on the responsibilities of maintaining the SMART Emissions Reducers. In Addition, SMART Air Fuel Saver of California Representatives and Extreme Energy Solutions Technicians would bring to the attention of Douglas County, Oregon Fleet Mechanics, any potential vehicle faults that SMART Air Fuel Saver of California Representatives and Extreme Energy Solutions Technicians would find during their monitoring of the vehicles, for priority to be repaired. This would allow for vehicles with faults not to run out the clock of the 90 day trial program without being repaired, and those faults effecting the vehicle's test results.

Officially, the 90 day trial program calendar had concluded on November 10, 2012, however the trial program was monitored and facilitated until Monday, January 7, 2013 (160 day trial), when SMART Air Fuel Saver of California Representatives had the opportunity to collect emissions data, and meet with the Mike Blanck, to review the data, and report generated by his department concerning the fuel economy results collected by Douglas County, Oregon. SMART Air Fuel Saver of California was asked to compile all data, reports, and proposals for review.

Vehicle Inventory

Douglas County, Oregon vehicles retrofitted with the SMART Emissions Reducers for the trial program include the following:

1. Douglas County, Oregon Service Vehicle ID # 11-12-01: 2012 Chevy Tahoe 4WD SSL

VIN: 1GNSK2E01CR194066

Fuel: Gasoline

Retrofitted with the SMART Emissions Reducer Model: R200

2. Douglas County, Oregon Service Vehicle ID # 12-11-02: 2011 Ford F250 Crew Cab

VIN: 1FT7W2B65BEC16703

Fuel: Gasoline

Retrofitted with the SMART Emissions Reducer Model: R200

3. Douglas County, Oregon Service Vehicle ID # 10-11-09: 2011 Ford Crown Victoria

VIN: 2FABP7BV7BX134553

Fuel: Gasoline

Retrofitted with the SMART Emissions Reducer Model: R200

Incidentals

The Douglas County, OR SMART Emissions Reducer Trial was extended from its original 90 Day Trial period by SMART Air Fuel Saver of CA and Douglas County, OR. Both parties agreed to the extension due to some anomalies in the fuel economy data. The extension provided both parties better opportunity to verify the SMART Emissions Reducer's performance in the test vehicles.

However, it should be noted that there are five (5) areas of concern in this final report:

1. SMART Air Fuel Saver of CA was not allowed to provide final emissions results for Vehicle(s) #11-12-01 and #12-11-02.
2. Vehicle #10-11-09 reported incidental negative fuel economy results with simultaneous emissions reduction.
3. SMART Air Fuel Saver of CA offered to diagnose Vehicle #10-11-09 to correct the negative reading, but was denied access to the vehicle(s).
4. No baseline fuel economy raw data was provided by Douglas County, OR for any of the test vehicles
5. The 5th Month of fuel data for the Vehicle ID # 10-11-09 was missing from the summary findings.

Therefore, this report simply reflects the information provided to this point. Comparisons from other studies are provided as a guide to assist in understanding, discerning and potentially diagnosing the missing data and anomalies.

Review and Results

In the recent 160 day test trial with Douglas County, Oregon the SMART Emissions Reducer has performed positively for both Emissions Reduction and Fuel Economy Results overall. This report is to give a summation of those results as well as the short term and long term benefits to Douglas County, Oregon's Fleet and expenses.

Original data before SMART Emissions Reducers' installation and after the 160 day trial have been put into comparison charts for each vehicle. With each test subjects data, an explanation of variables will be reflected if there are results that may not be experienced due to external factors.

1. **Douglas County, Oregon Service Vehicle ID # 11-12-01: 2012 Chevy Tahoe 4WD SSL**

VIN: 1GNSK2E01CR194066

Fuel: Gasoline

Retrofitted with the SMART Emissions Reducer Model: R200

Mileage (Baseline - Pre SER)	Mileage (Emissions Test with SER)	Total Mileage
12997	23250	10253

Emissions	Emissions Baseline Test (Before SER Installed) 8.7.12	Emissions Test (160 days with SER) 1.7.13	Emissions Results (difference)	Percentage Change
NOx	2	n/a	n/a	n/a
CO	0.2	n/a	n/a	n/a
HC	93	n/a	n/a	n/a
CO2	14.9	n/a	n/a	n/a
O2	0.67	n/a	n/a	n/a

MPG Average (w/o SER)	MPG Average (w/ SER)
13.68	14.34

**+0.66 miles per gallon
+4.85% increase in fuel efficiency**

2012 Chevy Tahoe Tank Capacity:	26 gallons	Fuel Savings with SER during 5 Month Trial:	\$125.52
2012 Average Fuel Cost in California:	\$3.63	Total Cost of InterCharger/SMART Emissions Reducer Unit:	\$504 installed
Increase of MPG with SER:	.66 mpg	Net Profit/Loss per month of trial:	\$25.10
Average MPG Range on a 26 gallon Tank without the SER: (13.68 mpg x 26 gallon tank)	355.68	Average Return on Investment (ROI):	16.13 months
Average MPG Range on a 26 gallon Tank with the SER: (14.34 mpg x 26 gallon tank)	372.84	Projected Annual Fuel Savings with SER:	\$301.26
Increase of Milage per Tank with SER:	17.16 miles per tank		

2. Douglas County, Oregon Service Vehicle ID # 12-11-02: 2011 Ford F250 Crew Cab

VIN: 1FT7W2B65BEC16703

Fuel: Gasoline

Retrofitted with the SMART Emissions Reducer Model: R200

Mileage (Baseline - Pre SER)	Mileage (Emissions Test with SER)	Total Mileage
42969	63855	20886

Emissions	Emissions Baseline Test (Before SER Installed) 8.7.12	Emissions Test (160 days with SER) 1.7.13	Emissions Results (difference)	Percentage Change
NOx	0	n/a	n/a	n/a
CO	0.16	n/a	n/a	n/a
HC	2	n/a	n/a	n/a
CO2	15	n/a	n/a	n/a
O2	0.63	n/a	n/a	n/a

MPG Average (w/o SER)	MPG Average (w/ SER)
11.5	12.87

**+1.37 miles per gallon
+11.9% increase in fuel efficiency**

2011 Ford F250 Crew Cab Tank Capacity:	35 gallons	Fuel Savings with SER during 5 Month Trial:	\$701.32
2012 Average Fuel Cost in California:	\$3.63	Total Cost of InterCharger/SMART Emissions Reducer Unit:	\$504 installed
Increase of MPG with SER:	1.37 mpg	Net Profit/Loss per month of trial:	\$140.26
Average MPG Range on a 35 gallon Tank without the SER: (11.5 mpg x 35 gallon tank)	402.5 miles	Average Return on Investment (ROI):	3.59 months
Average MPG Range on a 35 gallon Tank with the SER: (12.87 mpg x 35 gallon tank)	450.45 miles	Projected Annual Fuel Savings with SER:	\$1,683.12
Increase of Milage per Tank with SER:	47.95 miles per tank		

3. Douglas County, Oregon Service Vehicle ID # 10-11-09: 2011 Ford Crown Victoria

VIN: 2FABP7BV7BX134553

Fuel: Gasoline

Retrofitted with the SMART Emissions Reducer Model: R200

Mileage (Baseline - Pre SER)	Mileage (Emissions Test with SER)	Total Mileage
33910	51774	17864

Emissions	Emissions Baseline Test (Before SER Installed) 8.7.12	Emissions Test (160 days with SER) 1.7.13	Emissions Results (difference)	Percentage Change
NOx	0	0	0	0%
CO	0.54	0.07	-0.47	-87%
HC	8	2	-6	-75%
CO2	14.8	14.8	0	0%
O2	0.89	0.94	0.05	+5%

MPG Average (w/o SER)	MPG Average (w/ SER)
17.36	16.88

**-0.48 miles per gallon
-2.76% decrease in fuel efficiency**

Because the SMART Emissions Reducer performs in the “production side of the engine” and not the tailpipe, a reduction of emissions equals a **direct increase** in fuel economy. The EPA defines emissions as “unburned fuel.” (EPA 1999 Definitions)

Possible Diagnosis for Vehicle ID #10-11-09:

Without access to actual physical inspection of this test vehicle with the SMART Emissions Reducer still installed, it's impossible to determine the exact cause of a negative fuel economy result while experiencing a reduction in engine emissions.

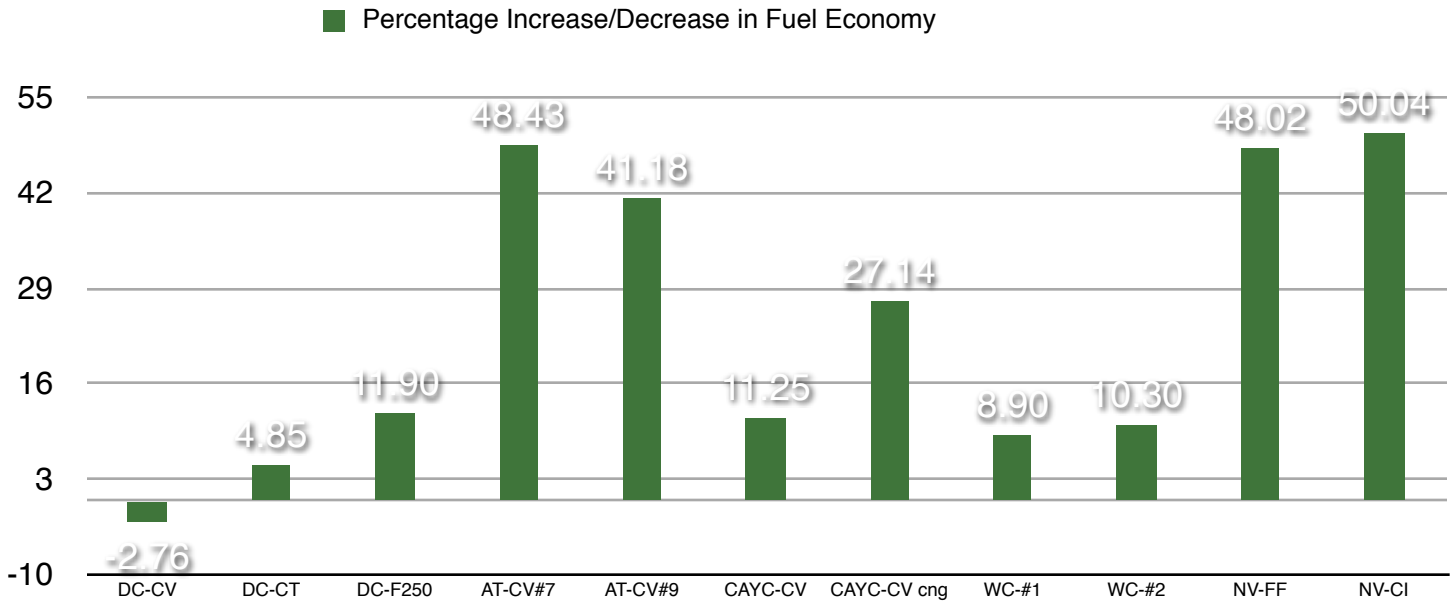
Clearly the SMART Emissions Reducer is performing positively as promised pertaining to reducing emissions on the production side of the engine. However, this effect has not translated into increased miles per gallon for this particular vehicle.

Lacking exact diagnosis information allows for only speculation as to the cause of this type of challenge. In the past, other fleet vehicles of this type have been diagnosed as follows:

1. Oxygen sensors need to be replaced.
2. The engine is running cooler because of the SMART Emissions Reducer causing the engine computer to dump more fuel in the catalytic converter to maintain it's operating temperature.
3. The engine computer could be in “limp mode” without setting off an engine trouble light.
4. The engine computer could be in “coast mode” without setting off an engine trouble light.
5. Fuel records could be compromised.

These are a few quick possibilities that could indicate where the challenge originates for Vehicle ID #10-11-09. More inspection and diagnosis of the vehicle would be required to be more precise.

Trial Results Comparison At-A-Glance



The chart above represents the following test vehicles from Douglas County and previous trials as comparisons for SER overall performance in comparable vehicles:

DC-CV: Douglas County Crown Victoria
 DC-CT: Douglas County Chevy Tahoe
 DC-F250: Douglas County Ford F250 Crew Cab
 AT-CV#7: Andover Township Crown Victoria #7
 AT-CV#9: Andover Township Crown Victoria #9
 CAYC-CV: CA Yellow Cab Crown Victoria (gasoline)
 CAYC-CV: CA Yellow Cab Crown Victoria (cng)
 WC-#1: Winnebago County Vehicle #1
 WC-#2: Winnebago County Vehicle #2
 NV-FF: Nevada State Motor Pool Ford Fusion
 NV-CI: Nevada State Motor Pool Chevy Impala

Summary

Five months (160 days) of testing validates that the product, the SMART Emissions Reducer, not only significantly reduces the toxic harmful emissions levels that are omitted into the environment, but the product also offers a return on investment in the form of saving valuable resources on fuel costs. SMART Air Fuel Saver of California suggests taking the following points into consideration when making a decision about purchasing the SMART Emissions Reducer:

1. The SMART Emissions Reducer effectively reduces emissions and is first and foremost an emissions control device. Due to its form and functionality, it has the ability to reduce emissions on the production side of the engine creating a directly proportional increase in fuel economy. **Whether this increase in fuel economy actually translates into a “miles per gallon” increase is exclusively due to external elements (including, but not limited too, vehicle maintenance, oxygen sensors, engine computer systems, driving terrain, tire pressure, driving conditions, driver habits...etc) that are out of the influence of the SMART Emissions Reducer.** It increases combustion efficiencies and addresses emissions on the combustion side of the engine, unlike all other emissions control devices that mitigate emissions after the fuel is burned and negatively affect the engine’s performance.

*[*No other emissions reduction device(s) or system(s) offers an increase of any kind in the efficiency of an engine’s operation without the use of replaceable filters, hazardous chemicals, electronics and/or moving parts.]*

2. The device improved the quality of health, by improving the quality of the air. The lowering or elimination of emissions provides a cleaner work environment for the mechanics, therefore improving air quality conditions for workers exposed to those conditions which potentially may save the County in healthcare costs.

3. The SMART Emissions Reducers pay for themselves. The Return On Investment (ROI) in fuel savings typically occurs at approximately a 2 to 12 month periods of time allowing for fuel savings.

[*There is a return on investment on emissions compliance, fees and fines, as well as the expense of retrofitting vehicles to CNG conversion (\$10,000/vehicle), the purchase of new "hybrid" vehicles *\$26,000 - \$40,000/vehicle) or new vehicles with a CNG conversion (\$40,000-50,000/vehicle) that is not factored into the overall Return on Investment (ROI) provided here in this report to Douglas County, Oregon.]

The annual savings for the three (3) Douglas County test vehicles are:

1. Chevy Tahoe: \$301.26
2. Ford F250: \$1683.12
3. Ford Crown Victoria: -\$254.88

[*The total annual savings for these three (3) vehicles was \$1729.50. The total cost of installation for all three (3) vehicles was \$1497.00, a \$232.50 annual savings.]

Although the data is incomplete and there were several challenges during the trial period, the average annual savings per vehicle for this trial is \$576.50. **It is SMART Air Fuel Saver of CA's experience that as more fleet vehicles receive SMART Emissions Reducer installations, that this average typically increases.**

Douglas County's fleet is approximately 500 vehicles. It's projected that a fleet of 500 comparable vehicles would save approximately \$288,250.00 per year of SER use at the annual savings per vehicle of \$576.50.

Installation and purchase of 500 SER R200's is \$252,000.00 one time.

Annual Savings for 500 comparable vehicles (\$288,250.00) minus Installation and Purchase Cost (\$252,000.00) is First Year's Savings Total (\$36,250.00)

The SMART Emissions Reducer's effective lifespan has been shown to be 8 years.

The Return On Investment figures in this report are only from the fuel cost savings while using the SMART Emissions Reducer. Actual Return on Investment may be higher due to, including but not limited to, emissions compliance, fees and fines, CNG vehicle conversions expense, healthcare costs and vehicle maintenance.

Certification

I hereby certify that the information that has been supplied herein this report is truthful and accurate to the best of my ability and true to the data provided to me by the SMART Air Fuel Saver of California Representative(s), the Extreme Energy Solutions Technicians and Douglas County, Oregon Representatives and Reports. I understand that I am presenting this information in good standing and any attempt to inflate or manipulate data is an unlawful act to cause or do harm to the integrity of the people and organizations involved in this report, punishable and enforceable under the color of the law. As President and CEO of SMART Air Fuel Saver of CA, I sign this report that I am in healthy state of mind to do so.

02.18.13



Tom Sweeney
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