

The Port of Virginia GREEN OPERATOR - "GO" PROGRAM



Submitted by:

Heather L. Wood
Virginia Port Authority
Director, Environmental Affairs
April 29, 2011

TABLE OF CONTENTS

I.	Introduction.....	Page 1
II.	Goals and Objectives.....	Page 2
III.	Discussion.....	Page 3
IV.	Conclusion.....	Page 12

I. INTRODUCTION

The Port of Virginia is owned and managed by the Virginia Port Authority (VPA) and its operating affiliate, Virginia International Terminals, Inc. (VIT) for the Commonwealth of Virginia. The VPA is the Commonwealth's leading agency for international transportation and maritime commerce and is charged with operating and marketing the marine terminal facilities through which shipping trade takes place.

The Port of Virginia is the 7th largest container port in the United States, handling over 1.83 million TEUs in 2010. The Port consists of four marine terminals located in Newport News, Norfolk and Portsmouth and an inland intermodal facility located in Front Royal. These facilities have the deepest ice-free channels on the East Coast (50') and are located only 18 miles from the open ocean. The Port offers the shipping industry access to two-thirds of the U.S. population with almost all of the world's largest shipping lines delivering goods to the terminals. Two Class I railroads offer rail service to U.S. inland markets. Approximately \$44 billion in import/export cargo flows through The Port of Virginia each year.

As early as 1999, The Port of Virginia recognized that diesel exhaust emissions from port operations impact air quality within the Hampton Roads, Virginia region. Strategies targeted at reducing emission from marine terminal operating equipment were developed and implemented port-wide. With the advent of a formal environmental program, the Port increased its attention to air emissions generated by all aspects of port operations including drayage trucking. In 2005, the Port modeled its emission reduction program to determine past program effectiveness and to identify future emissions reduction objectives and targets for ocean going vessels, harbor craft, and drayage trucks. The model results indicated that the Port's emissions reduction strategies for its cargo handling equipment had been highly successful with reductions exceeding 33% during the first six years. Predictably, the large decline in emissions from cargo handling equipment amplified the results for the ocean-going vessels and drayage truck sectors and the need to address emissions from these sectors.

In 2006, the Port was invited to partner with the Environmental Protection Agency's (EPA) Smartway Program to develop and implement a voluntary diesel retrofit pilot project that targeted short-haul or local drayage trucks that service the Port of Virginia. The pilot project was launched in October 2007 by the Virginia Port Authority and the EPA. By January 2009, the pilot project would be revised and re-launched by the VPA and the local trucking community as a fully funded, voluntary, clean truck program with multiple partners, and a goal of retrofitting 20% of the pre-2004, local, drayage trucks that enter the VPA's marine terminals by December 2011. **The Green Operator "GO" Program is believed to be the first voluntary over-the road diesel truck retrofit/replacement program at a U.S. port, and is now serving as a model for the development of voluntary clean truck programs in Maryland, Pennsylvania, Delaware, North Carolina, South Carolina, and Georgia. It has been recognized by the EPA, the Coalition for Responsible Transportation, and the Retail Industry Leaders Association.**

II. GOALS AND OBJECTIVES

The goal of the Green Operator Program is clear; encourage and incentivize voluntary diesel retrofits and replacements among the trucking sector to reduce emissions and prevent any future need for a truck ban or restricted entry at Port of Virginia facilities. Program objectives include: **1)** Develop and implement a **voluntary** diesel retrofit and replacement program for drayage trucks using financial and operational incentives for independent owner-operators as well as locally owned or operated trucking companies. **2)** Target those pre-2007 trucks that enter the local port facilities on a daily or weekly basis and carry the highest volume of cargo **3)** Promote the use of EPA or California Air Resources Board (CARB) Level I verified retrofits on all pre-2007 trucks or the replacement of those trucks with a 2007 or newer model truck. **4)** Achieve a 20-30% reduction in diesel exhaust emissions from trucks entering VPA facilities using the 2005 inventory as a baseline. **5)** Promote "Green Operators" to port customers and encourage

customers to move their cargo using the companies that have volunteered to retrofit all or a portion of their local fleets. **The measurable goal is to retrofit or replace 350 pre-2004 trucks prior to December, 2011.** The VPA estimates that this 20% of the 1,750 trucks that often enter VPA facilities on a daily basis.

DISCUSSION - Background

The Virginia Port Authority was invited by the EPA's Smartway Program in 2006 to launch a pilot program for drayage truck retrofits based on the successful Smartway model encouraged long distance carriers to install fuel savings and emission reduction measures on their truck fleets. Drayage truckers move freight within local and regional areas and typically travel between 50 and 250 miles per day. Drayage trucks require diesel retrofit devices that operate at fluctuating engine temperatures and in constant urban "stop and go" traffic situations. Smartway's financing model and fuel saving and idle reduction technologies did not fit the typical drayage operation.

Smartway was interested in partnering with the VPA to develop a drayage program because of The Port of Virginia's high volume of drayage or short haul carriers. 80% of the trucks entering the VPA's facilities are drayage carriers that move freight to local rail yards and regional distribution centers.

The pilot program featured financing incentives in the form of low interest loans to truckers who wished retrofit and refinance their trucks or to purchase a new used truck with an EPA verified diesel retrofit. Local banks and truck dealers within the Hampton Roads region joined the partnership to offer ¼ to ½ percent discounts on loans to qualified truckers. The Port orchestrated the marketing and outreach and education program. For carriers who took advantage of the program and became Smartway members, EPA would promote their services to Smartway shippers such as Lowes and WalMart. Smartway shippers had agreed to ship 50% of their goods through Smartway carriers and EPA hoped that the additional business would help the truckers repay their loans.

During the first year of the program, there was limited interest from the trucking community. Both truckers and financial institutions were reluctant to take on the additional financial risks. By 2008, only one trucker had signed up for the program. In addition, Smartway was having difficulty promoting the local/regional Smartway truckers to the corporate offices of Smartway shippers. The promotional information about the carriers was not being passed down from the Smartway shippers to the freight forwarders and local distribution centers that hire and assign loads to local drayage truckers and trucking companies.

Another aspect that was not addressed by the Smartway pilot model was that 80% of the drayage community in the Port of Virginia is made up of independent owner-operator truckers who often do not have the income for a new truck or a retrofit device, or a credit rating that would assure financing from a commercial bank. As a result, potential GO truckers did not feel they could take on the additional cost of purchasing a retrofit device or obtain the financing required for the purchase of a cleaner 2007 or newer truck.

Between 2007 and 2008 and as the economic downturn began, the feedback VPA received from local trucking companies was that a financial incentive was needed to assist with the purchase of a new truck or retrofit device and encourage program participation. VPA's Intermodal Marketing Coordinator also believed that the program would be more successful if it was promoted from the local level by the VPA directly to its shipping customers and to the local freight forwarders. Under the pilot program, the Smartway program was responsible for marketing the program to shippers and Smartway partners. In January 2009, the VPA restructured the pilot based on the "lessons learned" and independently launched the "Green Operator" or "GO" program.

Objectives and Methodology

Using financial and operational incentives, the Green Operator goal is to encourage drayage truck owners transporting cargo through the Port of Virginia to serve as environmental stewards and replace their pre-2004 heavy duty diesel trucks with low emission and more fuel efficient 2007 or newer models, or install EPA or CARB approved diesel exhaust retrofit devices, if more practical. Using \$1.2 million in funding from EPA and the Virginia Department of Environmental Quality, a rebate of \$6,000 is offered to every truck that wishes to install a retrofit device and a rebate of \$15,000 is offered to every truck owner who replaces his or her pre-2004 truck with the purchase of 2007 or newer model.

Eligible trucks must operate locally or regionally and move freight to and from VPA facilities in Hampton Roads or at the Virginia Inland Port in Front Royal Virginia. Trucks that are replaced must be destroyed and proof of destruction provided to the GO program administrators.

Eligible retrofits are Level 1, 2, 3 devices that are CARB or EPA verified. The \$6,000 rebate covers the purchase and installation of a Level 2 device. Thus, the program managers encourage applicants to pursue a Level 2 device. The \$15,000 rebate serves as a down payment towards the financing or direct purchase of a 2007 or newer truck.

EPA Region 3 and the Virginia Department of Environmental Quality support Green Operator with Diesel Emissions Reduction Act and American Reinvestment and Recovery Act funding programmed for a State diesel emissions reduction program. GO is currently marketed, administered, and partially funded through a partnership between the Virginia Port Authority, the Virginia Department of Environmental Quality, Virginia Clean Cities, the Mid-Atlantic Regional Air Management Association, and Meadowbrook Leasing. Meadowbrook Leasing is a specialty, used truck finance company that provides financing and wholesale truck location services to eligible owner-operator truckers with higher risk credit profiles.

In June 2010, Meadowbrook Leasing approached the Virginia Port Authority after hearing of the success of Green Operator and assisted the VPA with the addition of a financing option for GO participants. By August 2010, Meadowbrook became a primary program partner and allowed the GO program to leverage another financial instrument to encourage truck replacement within the Port.

Green Operator has become a brand name in the Virginia drayage truck community. Marketing and outreach is conducted by Virginia Clean Cities through a 24-hour GO Hotline (**757-255-TRUK**), the GO website (www.greenoperator.org) and a Twitter account (**vagreen operator**). Meadowbrook Leasing, the financing partner, also provides outreach and marketing assistance with personal visits to trucking companies and dealerships. The official GO logo and decal can be seen on posters in dealerships and trucking companies, and on trucks on local roads and interstate highways throughout Virginia. Please see **Exhibit 1, Marketing poster.**

Green Operator Eligibility Requirements

To qualify for the GO program, truck owners must meet the following eligibility requirements.

1. Provide proof that the truck(s) transport(s) cargo to and from Virginia Port Authority facilities.
2. Complete the Green Operator Application Package and Credit Application (if necessary) (**Exhibit 2**).
3. Purchase a 2007 or newer model truck that meets 2007 EPA emissions standards, or purchase and install a EPA/CARB verified Level I or higher device.
4. Provide appropriate proof of purchase, including purchase invoice, and new title and registration.
5. Scrap the old truck (s) using a licensed scrap dealer.
6. Provide photographic documentation and certification of scrap in accordance with EPA requirements, including a copy of the title from the scrapped truck.
7. Affix the Green Operator Decal to the new truck.

Green Operator Process

Truck owners wishing to participate in Green Operator are asked to call the 24-HR Green Operator Hotline at 757-255-TRUK (8785) or 866-526-2258 to begin the application process. Representatives from Virginia Clean Cities and/or Meadowbrook leasing are available to assist drivers with application and

financing preparation as well as retrofit selection (through approved dealers), truck selection and destruction of existing trucks (if required). Once the application is filed and approved by the Mid-Atlantic Regional Air Management Association, and funds are available, the truck owner is notified to initiate the purchase and installation of a retrofit device or the purchase of a new truck and destruction of the truck to be scrapped.

At this point, the truck owner may choose to work with a truck dealer and financial institution of his or her choice to locate and purchase a 2007 or newer truck, or in the case of a retrofit, the owner has the flexibility to choose which authorized device and dealer to use. The truck owner also has the option of working with Meadowbrook Leasing to locate and finance his or her vehicle. Green Operator presently has an agreement with Meadowbrook Leasing whereby the \$15,000 replacement rebate can be applied as a down payment on the truck and a loan is made for the remaining cost of the vehicle.

For replacements, once the 2007 truck is purchased the older truck must be scrapped in accordance with EPA guidelines. Virginia Clean Cities assists truck owners with scrap documentation and photos. After the old vehicle is scrapped, the truck owner must submit proof of the 2007 truck purchase and the required destruction documentation to MARMA for approval. In the case of a retrofit, all invoices and works orders documenting the retrofit purchase and installation must be submitted. Photos documenting the retrofits and replacements are also required. Once MARMA confirms that all



Figure 1: Happy Green Operator Truck Owners - 2010

documentation is complete and meets EPA requirements, a rebate check is issued to the truck owner/applicant or to Meadowbrook leasing, if the truck was financed through them. The GO application, credit application and guidance package are shown in **Exhibit 2**.

The entire process averages 3-5 months depending on the quantity of retrofit devices required, availability of retrofits from the manufacturer, availability of 2007 or newer trucks, credit approvals, and submittal of required documentation.

Once the retrofit device is installed or the replacement truck obtained, the VPA issues "Green Operator" decals (**Exhibit 3**) for placement on the trucks. The decals serve not only to promote the program to other truckers but also to educate the public that the truck or trucking company has taken action to reduce the environmental impact or air quality impacts of its operation. The truck, truck driver, and trucking company are all considered "Green" Operators. "GO" decals are also available for existing 2007 trucks in the local fleet.

How the Program Fulfills the Award Criteria

Benefits to Environmental Quality

Emission Reductions

Based on its 2010 drayage truck inventory, the Virginia Port Authority has identified 1,761 trucks in the drayage truck fleet that are 2003 models or older and eligible for replacement. Table 1 provides a breakdown of the model year range, the number of trucks eligible for replacement under the GO program, and the estimated emissions from the current fleet.

Table 1. Port of Virginia Drayage Truck Inventory and BASELINE Emissions Estimates

Model Year	Estimated # of Trucks	PM Emissions (tons/year)	CO Emissions (tons/year)	NO_x Emissions (tons/year)
1999-2003	1012	29	249	1,644
1994-1998	579	17	151	1,134
1993-later	170	23	76	362
TOTAL	1761	69	476	3,140

Based on GO program participation, a majority 215+ trucks retrofitted or replaced with 2007 or newer models are model year 1998 or older. Table 2 provides a breakdown on the estimated emission reductions calculated using the Diesel Emission Quantifier and based on the following assumptions.

- 15,000 gal/year
- 110,000 mil/year
- Average Idle Time ~ 5 hours/day
- For the 215 trucks already replaced or retrofitted, we used a 1998 (average) model year truck retrofitted with a Level 1 device or replaced with a 2007 model year truck
- For the 150+ trucks on the waitlist, we used a 1998 (average) model year replaced with a 2007 model year given that the demand for replacements is 99% of the list.

Table 2. Emissions Reduction

# of Trucks Replaced	PM (TPY)	% Reduced from Baseline	CO (TPY)	% Reduced from Baseline	NO_x (TPY)	% Reduced from Baseline
215 Current	22.97	33%	279.60	59%	241.23	8%
150 Wait list	3.78	5.5%	36	7.5%	252.25	8%
TOTAL	26.75	38.5%	315.60	66.5%	493.48	16%

Lifetime emission reductions from this program at 365 trucks are projected at approximately **6,271 tons of NO_x, 94 tons of PM and 894 tons of CO.**

Level of Independent Effort and Involvement by the Port

The Virginia Port Authority is the primary developer and promoter of the Green Operator program. Funding sources have been investigated, created, and obtained by the VPA for the program. The VPA, through its Port Promotions department, created the copyrighted GO decal which is distributed to all GO participants. The Port of Virginia receives weekly inquiries from independent owner-operators and trucking companies wishing to participate in the program and follows up on each inquiry personally before referring the prospective applicant to the GO Hotline. The VPA actively promotes the program on its website and through various publications and industry association meeting and presentations. Progress calls are initiated by the VPA with all program partners. The VPA has also shared its program development knowledge with port authorities in Georgia, South Carolina, Texas, Maryland, North Carolina, Delaware and Pennsylvania.

In addition, in August 2010, the VPA completed a drayage truck inventory of trucks serving its four container terminals. This has allowed VPA to establish measureable goals and assess the emission reductions achieved by the program.

In recent months, the VPA has begun to expand the program to include other aspects of freight logistics including rail, tug, and vessel operations. Discussions are currently ongoing with local tug operators, a major railroad, and a major shipline. The goal is to encourage these industry partners to become Green Operators through the replacement, retrofit, repower, or use of other emission reduction technology in the rail, tug, and vessel fleets serving the Port of Virginia. Financial and operational incentives to encourage the broader industry stakeholder participation are under development. The VPA is presently working with the Virginia Department of Environmental Quality on the expansion of the program.

Creativity of the Program

Ports and trucking companies around the country have spent millions of dollars retrofitting or replacing equipment at their facilities in response to regulatory mandates and pressure from environmental interest groups and regulatory officials. The creativity of the "GO" program stems from the Port's desire to involve the drayage trucking community from program inception, development, and implementation, and the trucking community's continued interest, participation, and overall support of the program since its initial launch in late 2007. This long standing relationship between the Port of Virginia and the Virginia trucking community is unparalleled in the industry.

The VPA and the Virginia trucking community have voluntarily developed and implemented a strategy for reducing air emissions from the drayage truck sector that is cost effective in reducing emissions (average cost is \$6,000 per ton of emissions reduced), provides significant improvement to the region's air quality, improves the operating conditions and efficiency of the local drayage truck industry, and increases social capital within the local community and with local, state, and Federal environmental officials and

interest groups. The strategy was simple; develop a program with input from the drayage trucking community that provides financial and operational incentives. The GO program's success is due largely in part to the dedication and cooperation of its partners, the Virginia Port Authority, Virginia Clean Cities, the Mid-Atlantic Regional Air Management Association, Meadowbrook Leasing, the Virginia Department of Environmental Quality, and the drayage trucking community at the Port of Virginia.

Program Results and Cost Effectiveness

As of December 31, 2010, **over 215, pre-2004 heavy duty diesel trucks have been retrofitted using Class 1 or Class 2 EPA/CARB verified devices or replaced with a 2007 or later model truck at an average cost of \$5,500 per truck.** All trucks replaced or to be replaced under the GO program meet the EPA definition of a "drayage truck". Currently, **over 150 trucks are on a "waiting list"** to be replaced and will be replaced as additional funding becomes available in May 2011. Currently, the GO hotline averages 2-5 calls per week and the waiting list continues to grow. More than 25 trucking firms with local operations currently participate in Green Operator and an additional 40 companies are on the waiting list to join the program.

With 215 trucks retrofitted or replaced as of December 31, 2010, the Green Operator Program is **removing approximately 17% of the total emissions** (CO, VOC, SO₂, and PM) generated by diesel trucks serving the Port of Virginia. This equates to approximately 100 short tons or 200,000 pounds of emissions at an estimated cost of **\$6,000/pound.**

Transferability to the Port Industry

The GO program has become a national model for voluntary truck replacement. It is being used as a basis for port drayage truck program development at ports in South Carolina, North Carolina, Maryland,

Delaware, Georgia, and Pennsylvania, and the “Green Operator” name will be used for a larger Mid-Atlantic regional clean truck financing program that is presently underdevelopment and expected to launch in 2011.

GO is presently recognized by the Retail Industry Leader Association, the U.S. Environmental Protection Agency, Region 3, and the Coalition for Responsible Transportation (CRT) as a model for local and regional clean truck program development.

The GO program's recognition by the Coalition for Responsible Transportation, which was formed in 2007 in response to the air quality issues surrounding drayage truck emission in California, completes Green Operator by bring the beneficial cargo owners and “big box” retailers and their carriers to the program. The CRT membership includes leading importers, exporters, trucking companies, clean truck manufacturers and ocean carriers who represent the largest and most progressive customers and service providers at our nation's ports. Lowes, Target, and Home Depot are just a few of the founding members. Through the CRT Clean Truck Initiative, the private sector members of CRT are working in partnership with America's ports, including Virginia to establish clean action plans to develop and implement industry-supported clean truck programs that are both environmentally and economically sustainable. The Green Operator program partners are presently in discussion with CRT to develop links between Green Operator trucks and CRT members. This will add a “shipper” relationship to the Green Operator program that was missing in the early Smartway Pilot, and will help to ensure sustainability of the program.

III. CONCLUSION

In January 2009, the Port of Virginia teamed with the Virginia Department of Environmental Quality and the US EPA to re-launch its diesel retrofit program. The Green Operator – “GO” program encourages local trucking companies servicing the Port to voluntarily retrofit and replace diesel trucks to reduce

emissions from trucks servicing the Port. In 2009, the port received \$1.2 million in funding for this effort through the U.S. EPA and VDEQ.

Virginia was the *first state in the nation* to build a voluntary program specifically for creating a cleaner and more fuel efficient fleet of local trucks. The GO program is serving as a model for ports throughout the Mid-Atlantic and Southeast regions.

More than 25 trucking firms with local operations have completed to 177 retrofits and 38 truck replacements prior to January 2011. Another 150 trucks (from 40 companies) are waiting replacement funding which is expected to flow in May/June 2011. With 350 trucks retrofitted or replaced by of December 31, 2011, the Green Operator Program **will remove approximately 23% of the total emissions** (CO, VOC, SO₂, and PM) generated by diesel trucks serving the Port of Virginia. This equates to approximately 100 short tons or 200,000 pounds of emissions at an estimated cost of \$6,000/pound.

The Green Operator Program hopes to have over 75 companies participating in the program and 350 trucks retrofitted or replaced by December 31, 2011. This is equal to approximately 20% of the pre-2004 trucks that enter the VPA marine terminals daily, thus achieving the measurable targets and goals established with the program re-launch in 2009.