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## Heavy-Duty Truck Idle Reduction Technology Demonstrations

### 2007-2008 Final Status Report

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U.S. Department of Energy  
**Energy Efficiency  
and Renewable Energy**

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## Executive Summary

**Schneider National, Inc.** SNI continues to develop electric air conditioning alternatives with battery operated air conditioning systems and now has over 250 tractors installed with seven different battery technologies. Schneider has also eliminated any consideration for a diesel powered APU due to its poor reliability, high maintenance costs, lack of payback, emissions and the fact new developments in battery technology enables improved electric A/C performance.

**Caterpillar, Inc.** demonstrated its technology in a project titled "*Demonstration of the New MorElectric™ Technology as an Idle Reduction Solution,*" which applies electrically driven accessories for cab comfort during engine-off stops and for reducing fuel consumption during on-highway operation. The field test was concluded at the end of 2006 as all five trucks were converted back to their original condition. Caterpillar made the decision to remove all equipment from the MorElectric Truck and to no longer pursue the project. Caterpillar has not participated in any further idle reduction projects since the 2006 Idle Reduction Status Report.

**Espar Heater Systems** completed their project titled "Idle Reduction Technology Demonstration and Information Dissemination," that demonstrates combined cab heating and cooling systems with results released in December 2006. They indicate a test truck fuel economy of 7.24 MPG (Nite System originally) and 7.28 MPG (Tripac originally), compared to the benchmark truck fuel economy of 7.01 MPG. This equates to a 3 – 4% fuel economy improvement.

**Navistar (International Truck and Engine Corporation)** The objective of their project, "Factory-Installed Idle Reduction Equipment for Navistar Sleeper Trucks," is to complete engineering development activities for the integration of on-board idle reduction technology into sleeper trucks as an original-manufacturer, factory-installed equipment option. The idle reduction equipment aims to be offered at an affordable price that provides an economic incentive for truck owners to purchase and use idle reduction equipment at an operating cost savings. The idle reduction systems consist of four elements; an APU, electric air conditioner, cab and engine heater, and improved cab insulation. The 7 phase project recently concluded with an overall fleet evaluation.

Navistar had a goal to sell 2000 factory-installed APU idle reduction systems under this program. The goal was not met with the factory-installed APU systems; the cost of the Mechron APU feature was a barrier to acceptance. However, Navistar has sold 2,628 trucks with wiring accommodation kits for aftermarket APUs, indicating that the goal of 2000 trucks with APUs installed by the end of 2007 was being achieved. The 2000 factory-installed idle reduction system goal was exceeded by the factory-installed fuel fired heater systems.

The Navistar project has demonstrated steady improvements in fuel economy reaching 10% and drivers have been very satisfied with the use and comfort of the system. As a result, Navistar has made available commercially a variety of idle reduction products both factory installed and aftermarket. Navistar is also proceeding with the development of a new low emissions "Maxx Power" APU to replace the original

Mechron APU. Navistar has also begun development of a thermal load calculation tool for truck tractor cabins with an unspecified release date.

In addition to the demonstration projects, this report briefly describes other idle reduction activities, including the CoolCab project to apply thermal management technologies to truck cabs, Clean Cities, and the Environmental Protection Agency's (EPA's) Smartway Transport Partnership.

## **Background**

In 2002, DOE's Advanced Vehicle Testing Activity (AVTA) initiated a study of diesel truck engine idle reduction technologies, which identified several barriers to widespread use of existing technologies. These barriers included initial cost, driver education and receptiveness, reliability, and maintenance requirements. The results of the study were used to develop a demonstration plan that defined a pathway to idle reduction technology implementation. The goal of the demonstration and evaluation effort outlined in the plan was to gather objective in-use information on the performance of available idle reduction technologies by characterizing the cost; fuel, maintenance, and engine life savings; payback; and user impressions of various systems and techniques.

Several phases of the demonstration plan have been completed, including a workshop for gathering industry input, held in April 2003 in Philadelphia. Input from the workshop was used to design a DOE solicitation for technology demonstration projects as well as help prioritize data types for collection and evaluation. A second workshop was held to identify cost reduction strategies; DOE subsequently released a technology introduction plan that outlines a path to implementation of these cost reduction strategies and refines the technology implementation strategies addressed in the earlier demonstration plan. In late 2003, idle reduction demonstration projects were awarded (Schneider and Caterpillar), a third project was awarded in 2004 (Espar), and a fourth (Navistar) in 2005. This report provides the status of those projects that continue today (all projects have concluded with regards to DOE support), as well as a brief synopsis of other idle reduction activities of the Federal Government.

## **Demonstration Projects**

The four projects consisted of teams of a truck fleet, truck manufacturer, and idle reduction technology manufacturer. Including all these major participants on the teams ensures successful implementation and demonstration of the complete onboard idle reduction systems. Highlights are presented above in the Executive Summary, and details are presented below:

- Schneider National Inc.—“Cab Heating and Cooling”
- Caterpillar Inc.—“Demonstration of the New MorElectric™ Technology as an Idle Reduction Solution”
- Espar Heater Systems—“Idle Reduction Technology Demonstration and Information Dissemination”
- Navistar (International Truck and Engine Corporation)—“Factory-Installed Idle Reduction System for Navistar Sleeper Trucks”

## **Schneider National, Inc.**

Schneider National, a Wisconsin-based provider of truckload and intermodal services throughout North America has historically taken a proactive stance to reduce idling in its fleet of 15,000 trucks and offered incentives to its drivers to keep idling time to a minimum. Schneider National trucks idle considerably less than the industry average: 480 hours/year vs. 1,830 hours/year for the industry.

Schneider completed projects with truck manufacturer Freightliner and Webasto Thermosystems and Bergstrom to devise and test truck cab heating and cooling technologies to reduce idling to five percent of total engine operating time in September 2005. For that evaluation, Schneider National chose to demonstrate heating and cooling technologies separately, to take advantage of climatic extremes in evaluation and data collection – testing spanned two summers for cooling and two winters for heating applications. For a detailed discussion and the results of this DOE supported project which ended in 2005, see the Heavy-Duty Truck Idle Reduction Technology Demonstration 2005 Status Report. The 2005 report also includes the results of a survey of Schneider National drivers who participated in this idle reduction fleet demonstration.

Work continued with Webasto Cab Heaters, equipping tractors with the diesel fired cab heaters, but after further testing eliminated any consideration for a diesel powered APU due to its poor reliability, high maintenance costs, lack of payback, emissions and the fact new developments in battery technology enables improved electric A/C performance. SNI however continues to develop electric air conditioning alternatives with battery operated air conditioning systems and now has over 250 tractors installed with seven different battery technologies.

Other Schneider activities did include work with Caterpillar Inc. on the MorElectric Truck. These are heavy-duty trucks that deliver energy savings by reducing idling during rest periods and increasing on-road efficiency. However, Caterpillar recently made the decision to remove all equipment from the MorElectric Truck and to no longer pursue the project.

## **Caterpillar, Inc.**

The Caterpillar MorElectric™ technology system, developed in a joint DOE/CAT project, was designed to reduce fuel consumption during on-highway truck operation and during rest periods when the truck normally idles. It consisted of an auxiliary power unit (APU); a heating, ventilating, and air conditioning (HVAC) unit; and a high-efficiency generator that replaces the alternator.

This project started in October 2003 and Caterpillar began data collection from the test trucks in the Fall 2004, with all trucks operational since January 2005. Fuel, operation, and maintenance data were collected regularly from the test and control trucks for direct comparison. The field test was concluded at the end of 2006 as all five trucks were converted back to their original condition. Caterpillar made the decision to remove all equipment from the MorElectric Truck and to no longer pursue the project. For more information, please see the 2006 Idle Reduction Status Report.

## **Espar Heater Systems**

Espar Heater Systems was awarded the third DOE idle reduction project in Fall 2004 to demonstrate combined cab heating and cooling systems in Class 8 trucks and conduct performance monitoring to demonstrate the potential fuel savings and emissions reductions that can be achieved during normal commercial operation. They completed their project titled “Idle Reduction Technology Demonstration

and Information Dissemination,” that demonstrates combined cab heating and cooling systems with results released in December 2006. They indicate a test truck fuel economy of 7.24 MPG (Nite System originally) and 7.28 MPG (Tripac originally), compared to the benchmark truck fuel economy of 7.01 MPG. This equates to a 3 – 4% fuel economy improvement. For more information, please see the 2006 Idle Reduction Status Report.

## **Navistar (International Truck and Engine Corporation)**

Through the “Factory-Installed Idle Reduction System for Navistar Sleeper Trucks” project, Navistar completed engineering development activities for the integration of on-board idle reduction technology into Navistar’s sleeper trucks as an original-manufacturer, factory-installed equipment option. The goal of the project was to develop the production-intent idle reduction system, evaluate the system’s performance, factory release the system, install the system onto fleet trucks, and report on the performance and usage of the system in the field. The idle reduction equipment must be offered at an affordable price that provides an economic incentive for truck owners to purchase and use idle reduction equipment at an operating cost savings. The idle reduction systems consist of four elements; an auxiliary power unit (APU), a 120 Volt AC HVAC electric air conditioner, cab and engine heater, and improved cab insulation.

Navistar’s project was made up of the following 7 phases which have all been completed: 1) Specification and Supplier Selection; 2) APU Development; 3) APU Development; 4) HVAC Development; 5) Truck Integration; 6) Fleet Installation; and 7)Fleet Evaluation. Please look to the 2006 Idle Reduction Report for more information on Tasks 1 through 6. The results of Task 7 are reported below.

### **Fleet Evaluation**

Navistar has completed the fleet evaluation for this project. Table 1 and Figure 1 provide summaries of the data collected from telematics units from the 5 truck fleet spanning the period from April 1, 2007 through March 31, 2008. The test vehicles were 2007 ProStar trucks. In summary:

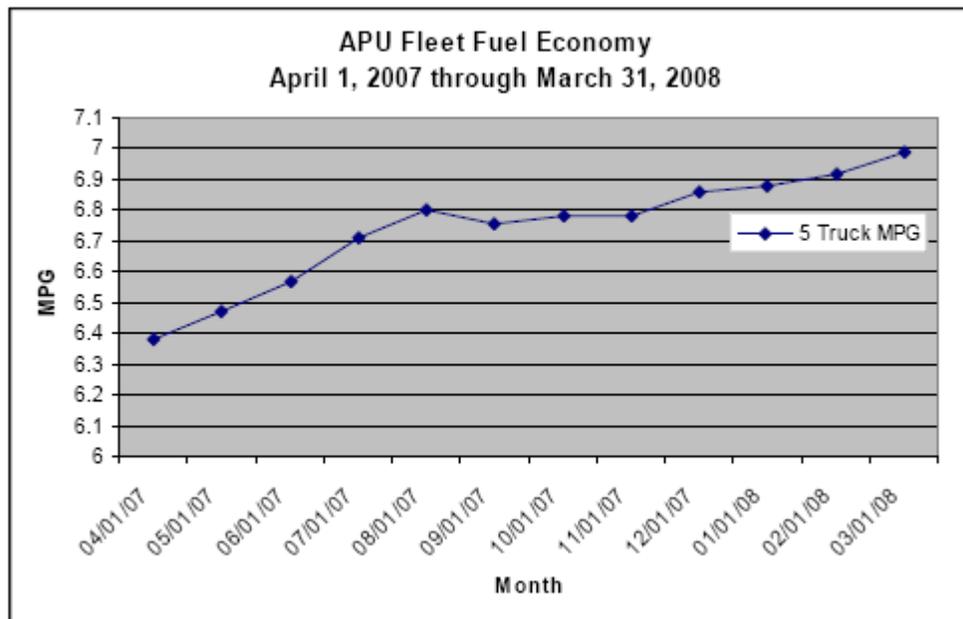
- During the 12-month study, the truck fleet was driven a total of 515,189 miles (an average of over 100,000 per truck), and used 76,109 gallons of fuel.
- The main engines were operated 12,817 hours for an average of 49 hours per week per truck.
- Main engine idle time totaled 2068 hours for the 5 trucks for an average of about 7.9 hours per week or 1.1 hours per day.
- APU total run time over the 52-week period was 3,662 hours total, or 14 hours per truck per week. The APU usage per truck ranged from 468 hours to 1259 hours per year. This translates into a savings of 421 – 1133 gallons of diesel fuel per truck per year. On average, this is a savings of 655 gallons of diesel fuel per truck per year, assuming a typical APU consumes 0.1 gal/hr of diesel fuel compared to 1.0 gal/hr when idling the main engine.
- Main engine idle time for the entire year of testing was 16% which is substantially lower than the industry average of about 40%.
- As drivers became more familiar with the idle reduction systems the average main engine idle rate decreased to approximately 7% in the last quarter of the evaluations compared to the year average of 16%.
- The truck fleet averaged 6.77 miles per gallon during the course of the evaluation. Fuel economy steadily increased from 6.38 MPG during the first month of the testing to 6.99 MPG for the last month of testing. This represents an approximate 10% increase in fuel economy achieved through the use of the idle reduction system.
- The idle reduction system was given overall very high grades by the drivers involved in the study both in terms of ease of use and comfort provided.

- During the course of the 12-month evaluation period, a number of issues were encountered and successfully resolved. Better air management was implemented to eliminate coolant over-temperature conditions and evaporator freeze-up in the electric HVAC unit due to increased capacity and inadequate interior air flow issues. The APU engine mounts were also redesigned due to failures caused by excess vibration. Improvements were made to the system including the replacement of the engine control modules with modified control system software, replacement of the 120VAC cables to be consistent with HV cable convention at Navistar, and incorporation of a switch in the cover on the APU units to disable starting when the APU cover is removed.

**Table 1. Demonstration Fleet Statistics**

Date	Engine (hr)	Idle (hr)	Driven (hr)	Distance (mi)	Fuel (gal)	Economy (mpg)
04/01/07	426.9	44.5	382.4	20971.98	3285.33	6.38
05/01/07	585.4	126.55	458.85	23055.04	3565.98	6.47
06/01/07	1100.6	349.85	750.75	40704.71	6193.32	6.57
07/01/07	1287	367.25	919.75	47925.74	7140.28	6.71
08/01/07	1278.15	330.65	947.5	47343.82	6967.34	6.8
09/01/07	1269.7	188.7	1081	55090.41	8151.12	6.76
10/01/07	1170.85	194.55	976.3	48073.39	7091.57	6.78
11/01/07	1182.45	151.5	1030.95	47632.21	7026.76	6.78
12/01/07	1139.55	79.15	1060.4	49113.72	7159.15	6.86
01/01/08	1081.1	73.65	1007.45	45808.72	6661.13	6.88
02/01/08	1135.2	104.05	1031.15	43082.61	6230.27	6.92
03/01/08	1159.9	57.75	1102.15	46387.53	6637.21	6.99
<b>Total</b>	<b>12816.8</b>	<b>2068.15</b>	<b>10748.65</b>	<b>515189.88</b>	<b>76109.46</b>	<b>6.77</b>

**Figure 1.**



**Table 3. Sales to Date of the Idle Reduction Features**

<b>Feature</b>	<b>Sales</b>
12WTK - APU and Power Distribution	65 systems
16UZV - Auxiliary Electric HVAC	65 systems
0008WRK – Aftermarket APU accommodation kit.	2,628 systems
16VRU – Coolant Heater System	4,325 systems

Navistar had a goal to sell 2000 factory-installed APU idle reduction systems under this program. The goal was not met with the factory-installed APU systems; the cost of the Mechron APU feature was a barrier to acceptance. However, Navistar did sell 2,628 trucks with wiring accommodation kits for aftermarket APUs, indicating that the goal of 2000 trucks with APUs installed by the end of 2007 was being achieved. The 2000 factory-installed idle reduction system goal was exceeded by the factory-installed fuel fired heater systems. See Table 3 for sales to date of idle reduction technologies by Navistar.

Currently, Navistar offers several factory-installed idle reduction technologies, including an engine with 5-minute idle shutdown timer, Espar coolant heater system, Air-tronic cab air heater, aftermarket APU accommodation, insulated sleeper curtain, shore power connection, 110vac inverter, and Cummins ICON start/stop system. Continuing its support of idle reduction beyond the DOE program, Navistar has carried several idle reduction systems forward from the 9000 model to the ProStar model. Navistar released the Bergstrom battery-powered air conditioner and a Behr 110VAC air conditioner for ProStar, and is currently developing the “MaxxPower” APU that will replace the Mechron APU in order to meet the emissions requirements of the CARB 2008 no idle rule. In addition to factory installed idle reduction systems, Navistar offers aftermarket idle reduction solutions through the Navistar Parts Distribution system: Bergstrom NITE battery-powered HVAC, Espar coolant heater, Mechron CCS auxiliary power unit, FleetRite auxiliary power unit, Webasto Blue Cool air conditioner, Autotherm cab heater, and Phillips and Temro 110VAC/1800W Inverter & wiring.

In short, despite not meeting its original goal of 2000 trucks with APUs installed by the end of 2007, the project has been very successful. Steady improvements in fuel economy reaching 10%, with associated reductions in main engine idling have been demonstrated and drivers have been very satisfied with the use and comfort of the systems. As a result, Navistar has made available commercially a variety of idle reduction products both factory installed and aftermarket and is continuing to pursue additional options.

## **Status of Other AVTA Idle Reduction Activities**

### **CoolCab**

The CoolCab project continues to quantify truck cab heat loss and further investigate reducing the thermal load of the truck heating, ventilating, and air conditioning (HVAC) system during driver rest periods. Working with truck OEMs Volvo and Navistar, CoolCab tested and analyzed two trucks at NREL’s outdoor test facility. The main objective of the project was to identify design opportunities to reduce the thermal load inside truck tractor cabs. A secondary objective of reducing cabin thermal load is to decrease heating and cooling loads while a truck or other vehicle is traveling. Load reduction will help reduce these energy demands and help extend vehicle range and efficiency in both light and heavy vehicles.

## Approach

Truck testing was conducted outdoors at NREL's test facility. Two trucks were tested with a third truck tractor used as a control for comparison and baseline data. All trucks were fully instrumented and subjected to a series of four tests to help measure heat transfer and identify high heat loss areas:

1. Co-heat tests
2. Solar soak
3. Air exchange
4. Infrared (IR) imaging.

Data from the testing were used to validate a computational fluid dynamics (CFD) model and this model was used to predict reductions in cooling loads during daytime rest periods. The test configurations included the application of standard-equipped sleeper privacy curtain and window shades, an optional insulated or arctic sleeper curtain, and insulated window coverings. The standard curtain reduced sleeper area heating load by 21% in one test truck, while the arctic curtain decreased it by 26%. Insulated window coverings reduced the heating load by 16% in the other test truck and lowered daytime solar temperature gain by 8°C. The lowered temperature resulted in a predicted 34% reduction in cooling load from the model. Modeling also predicted doubling cab insulation could reduce cooling load by 35% and up to 54% with the sleeper curtain closed. Infrared images of the truck cabs identified other potential areas to reduce heat loss that included areas around window and door seals, at body and structural seams, and areas where insulation may be lacking around air circulation ducts.

## CoolCab HVAC Load Calculation Tool

Working with truck OEMs, NREL has tested truck sleeper tractors to baseline cab thermal properties and investigated the effects of sleeper curtains and window glass area. Data from this testing has been used to validate a thermal model that can be used to calculate HVAC load under varied conditions. The main objective for this fiscal year is to begin development of a software tool to predict heating and cooling loads for a truck tractor sleeper cab while stationary. These calculated loads can be used to size HVAC equipment used during driver rest periods. The tool can also be used to estimate potential load reductions with changes in cab design and material properties.

## Other Idle Reduction Activities within the U. S. Government

### Clean Cities

DOE's Clean Cities (<http://www.eere.energy.gov/cleancities/>) is a part of Clean Cities and a deployment activity within DOE's FreedomCar and Vehicle Technologies (FCVT) Program (<http://www.eere.energy.gov/vehiclesandfuels/>) to advance the economic, environmental, and energy security of the United States by supporting local decisions to adopt practices that contribute to the reduction of petroleum consumption in the transportation sector. Since its inception in 1993, Clean Cities has grown to over 80 coalitions and 4,800 stakeholders across the country, placed close to 1 million alternative fuel vehicles (AFVs) on the road, and displaced over 1 billion gallons of gasoline. In 2004 alone, Clean Cities displaced 237 million gallons of gasoline through the use of alternative fuels, AFVs, idle reduction technologies, fuel economy measures, and hybrid vehicles. Clean Cities idle reduction strategies include: idle reduction technologies education; niche market workshops; outreach documents; special project grants; and national/regional goal establishment and tracking.

DOE's State Energy Program (SEP) (see [www.eere.energy.gov/state\\_energy\\_program](http://www.eere.energy.gov/state_energy_program)) is a part of Clean Cities and provides funding to states for renewable energy and energy efficiency projects. Through a

competitive solicitation, DOE's Office of Energy Efficiency and Renewable Energy (EERE) awards these projects annually to state energy offices. Funding for the projects comes from EERE technology programs and is managed by SEP.

[http://www.eere.energy.gov/state\\_energy\\_program/project\\_brief\\_detail.cfm/pb\\_id=996](http://www.eere.energy.gov/state_energy_program/project_brief_detail.cfm/pb_id=996)

- **Bus Drivers Pledge to Reduce Idling by Five Minutes a Day**

As of February 2008, 435 Utah school bus drivers have attended idle reduction education and awareness training hosted by Utah Clean Cities (UCC) and pledged to reduce idling by at least five minutes a day. UCC, along with the National Energy Foundation (NEF), Utah State Office of Education, and the Nevada Energy Office, received a U.S. Department of Energy grant to develop and implement the idle reduction training program to educate school bus drivers on the harmful effects of engine idling. Drivers from the Washington County, Salt Lake City, and Cache Valley districts have completed training, and three Nevada school districts will start the program offered by the Eastern Sierra Regional coalition in Reno.

- **Seventh Graders Help Legislate School Bus Idle Reduction in Vermont**

At Brown's River Middle School in Jerico, Vt., Patty Brushett's seventh grade class committed itself to a yearlong project called "Sustainability is Our Mission" (SOM). The project focused on researching the environmental effects of school bus exhaust. As a result of its findings, the preteen group became a driving force behind a law to limit bus idling on school grounds. Using the fuel savings calculator on the National Idle Reduction Campaign Web site, the SOM group determined that if 10 buses reduced idling time by five minutes every day for one year, the school district would save 75 gallons of diesel fuel and approximately \$185. With 1,800 school buses in Vermont, the annual savings added up to more than \$33,000 and 13,500 gallons of diesel. Vermont Gov. Jim Douglas visited Brown's River Middle School to officially sign into effect Act 48 (after several letters from the class) which mandates school bus operators to refrain from idling engines while waiting for children to board or exit buses on school grounds and from starting engines until they are ready to leave school premises. Not only were the students successful in getting the state law enacted, they were officially commended by the U.S. Environmental Protection Agency (EPA) for their efforts to ban school bus idling statewide.

- **100 Attend Tri-Coalition Idle Reduction Conference**

Three Midwestern coalitions teamed up in early May to host Idle Less, \$ave More, an idle reduction conference in Willowbrook, Ill. The joint event was organized by Clean Cities' Chicago, South Shore (Indiana), and Wisconsin coalitions. These three coalitions make up the Lake Michigan Clean Cities Consortium, which was started in 1999. More than 100 attendees participated in the one-day event, which featured seminars on idling laws and voluntary activities.

## **State Technologies Advancement Collaborative (STAC) Solicitation Grants**

The State Technologies Advancement Collaborative (STAC) (<http://www.stacenergy.org/>) was formed by an agreement between DOE, the National Association of State Energy Officials, and the Association of State Energy Research and Technology Transfer Institutions. STAC allows states, territories and the Federal Government to better collaborate and move forward on energy research, development, demonstration, and deployment projects using an innovative project selection and funding process.

There are currently no solicitations open under the STAC program. Since STAC did not receive a congressional appropriation for FY06, no future solicitations have been planned to-date. However, the South Carolina Energy Office received \$1.5 million in competitive federal grant funding to install idle reduction systems at three truck stops in 2004. The Advanced Travel Center Electrification (ATE) from IdleAire Technologies were installed in 150 parking spaces in the three truck facilities along the I-85

corridor in South Carolina, North Carolina, and Georgia. The grant came from DOE-sponsored State Technology Advancement Collaborative (STAC), which is managed by the National Association of State Energy Offices (NASEO).

## **EPA SmartWay Transport Partnership**

The SmartWay<sup>SM</sup> Transport Partnership (<http://www.epa.gov/smartway/index.htm>) is a voluntary collaboration between EPA (<http://www.epa.gov/>) and the freight industry, designed to increase energy efficiency while significantly reducing greenhouse gases and air pollution. In 2003, EPA launched the National Transportation Idle Free Corridors project in Atlanta, GA. The objective of this project is to eliminate all unnecessary long-duration truck and locomotive idling at strategic points along major transportation corridors. This will be achieved by studying, evaluating, and deploying technologies and strategies for trucks, locomotives, truck parking facilities, rail yards, and other idling locations. To implement idle reduction projects in a successful and cost-effective manner, EPA works with key partners and stakeholders, including state/local air quality planners, transportation and energy officials; idle reduction technology manufacturers; trucking fleets and railroad companies; truck stop owners and operators; environmental and community organizations; and other groups interested in reducing idling.

- **EPA'S SmartWay Partnership and Midwest Clean Diesel Initiative to kick off campaign to cut air pollution from idling trucks**

U.S. Environmental Protection Agency's SmartWay Transport Partnership program and EPA Region 5's Midwest Clean Diesel Initiative launched their "Idle Free Quiet Zone Campaign" at a media event Nov. 28, 2007 in Detroit. The campaign is designed to promote emission reductions by reducing truck idling and to save energy wasted during idling. EPA will be joined at the event by representatives of Natural Resource Canada's ECOenergy for Fleets program, which originally developed the FleetSmart "Idle Free Quiet Zone Campaign" and launched it in Canada in 2001. Representatives of the two programs signed a memorandum of understanding two years ago to promote reductions in truck idling, which is a significant problem at truck stops in both countries. EPA will also recognize a few of its Smartway partners from both countries.

- **EPA grant helps Virginia Middle Peninsula schools reduce diesel exhaust pollution**

Announced on April 11, 2008 – In the next year, students who ride buses from the Virginia Middle Peninsula schools will be breathing cleaner air, thanks to a grant from the U.S. Environmental Protection Agency to reduce pollution in diesel-powered school buses. EPA's Clean School Bus USA program awarded \$143,068 to Hampton Roads Clean Cities to work with several Middle Peninsula school districts to retrofit over 100 school buses. The average bus ride for students benefitting from this project is an hour or more. The new pollution-control equipment, coupled with the use of cleaner burning fuel and the encouragement of less engine idling of school buses, will substantially reduce soot and exhaust pollutants.

The grant will be used by the school districts to install diesel oxidation catalysts on 100 buses, switch to cleaner burning fuel for 198 buses, promote reduced engine idling and purchase one new clean alternative propane-powered bus. The retrofit equipment in combination with ultra low sulfur diesel fuel can reduce pollution emissions from the diesel buses by 60 to 90 percent.

- **EPA awards \$51,840 grant to city of Chicago for clean-diesel project**

On March 20<sup>th</sup>, 2008, the U.S. Environmental Protection Agency Region 5 awarded a \$51,840 grant to the city of Chicago for an idling reduction project to cut diesel emissions from city garbage trucks. The grant was made to the Chicago Department of Environment and the Chicago Department of

Fleet Management to install diesel-fired engine coolant and hydraulic system heaters on 13 heavy-duty garbage trucks used daily by the Department of Streets and Sanitation. In addition to cutting air pollution, the project will demonstrate the effectiveness of idling reduction technologies on diesel engines, conserve fuel and reduce wear and tear on vehicles.

- **The U.S. Environmental Protection Agency is making nearly \$5.4 million in grants available for clean diesel projects under the 2008 Northeast Diesel Collaborative (NEDC) program to reduce harmful diesel pollution.**

Projects may include a variety of diesel emissions reductions solutions such as add-on emission control retrofit technologies; idle reduction technologies; cleaner fuel use; engine repowers; engine upgrades; vehicle or equipment replacement; and the creation of innovative finance programs to fund diesel emissions reduction projects. All projects must benefit the air quality in the geographic areas that include Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Puerto Rico, Rhode Island, the U.S. Virgin Islands and Vermont; and Tribal lands belonging to the federally recognized Indian tribes in these regions. The deadline for applying was June 12, 2008.

- **EPA awards \$37,271 grant to Manitowoc Public School District for clean school bus project**  
U.S. Environmental Protection Agency Region 5 has awarded a \$37,271 grant to the Manitowoc Public School District in Manitowoc, Wis., for a project to cut diesel emissions from the district's school buses. EPA said the grant will be used to install idling reduction equipment on 14 school buses. The buses already have diesel emission reduction equipment and burn low-sulfur diesel fuel. In addition, the buses will be getting crankcase filtration systems funded by the Wisconsin Department of Natural Resources.

- **EPA awards \$76,455 grant to Minnesota Environmental Initiative for clean-diesel project**  
U.S. Environmental Protection Agency Region 5 has awarded a \$76,455 grant to the Minnesota Environmental Initiative for a project to cut diesel emissions from loading equipment at four port facilities in the Minneapolis-St. Paul area. EPA said the project will retrofit four wheel loaders with emission-reduction equipment and provide an engine upgrade on another wheel loader. Idle-reduction equipment will be installed on all of the wheel loaders. The wheel loaders are used at four port terminals along the Mississippi River. Two facilities are just south of downtown St. Paul, one facility is on the south side of downtown St. Paul, and one is on the north side of Minneapolis. The equipment is used to move sand, aggregates, crushed limestone and stone.

- **In March 2008, EPA-Region 5, as part of the Midwest Clean Diesel Initiative, announced that it expects to Award \$5 Million in grants for diesel-emission reduction projects in Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin.** Projects may include, but are not limited to, a variety of diesel emission reduction solutions such as retrofit technologies, idle-reduction technologies, cleaner fuel use, engine upgrades, vehicle or equipment replacement, and creation of innovative financing programs for emission reduction projects. Engines and equipment may include school or transit buses, medium or heavy-duty trucks, marine engines, locomotives and non-road engines or vehicles.

- **In April 2008, EPA announced the availability of almost \$50 million in grant funding to Clean Up Diesel Engines Nationwide** - This unprecedented sum, which was authorized by the Energy Policy Act of 2005 and funded for the first time this fiscal year, will be administered by EPA's National Clean Diesel Campaign (NCDC) and its network of seven collaboratives, made up of EPA regional offices and public and private sector partners. The grants are targeting school or transit buses, medium and heavy-duty trucks, marine engines, locomotives and nonroad engines. Grant recipients can use a variety of cost-effective emission reduction strategies, such as EPA-verified

retrofit and idle-reduction technologies, EPA-certified engine upgrades, vehicle or equipment replacements, cleaner fuels and creation of innovative clean diesel financing programs.

- **In January 2008, EPA-Region 5 has awarded over \$340,000.00 for the clean school bus project to cut diesel emissions from school buses encompassing 3 initiatives:**
  - American Lung Association of Illinois (\$67,923) - for a project to cut diesel emissions from school buses in Madison County in the St. Louis Metro-East area. This grant will be used to install idling reduction equipment to cut diesel emissions from 15 buses in the Roxana School District's fleet. An added benefit is savings in fuel costs.
  - Canton Local School District for clean school bus project (\$154,848) - this grant will be used to retrofit 24 school buses with equipment that will reduce diesel emissions, and to help replace two 1988 school buses with new, low-emission 2007 model year buses.
  - Hamilton County, Ohio, for a Southwest Ohio Clean Diesel Campaign project (\$118,000) - this grant will be used to retrofit 60 school buses in six area school districts with equipment that will reduce diesel emissions, and to help replace three pre-1990 school buses in the Forest Hills and Northwest Local school districts with new, low-emission 2007 or 2008 model year buses.
  
- In March 2008, EPA awarded grants totaling more than \$500,000 to install advanced pollution control equipment on approximately 82 school buses operating in Mansfield and Newtown, Connecticut.
  
- **Everybody Wins Program – Lane Regional Air Protection Agency (LRAPA)**

"Everybody Wins" lease-to-own program is to reduce pollution caused by heavy-duty trucks that idle along the Interstate-5 corridor. LRAPA's program provides truckers with low-cost, lease-to-own arrangements on auxiliary power units (APUs). To date, the program has provided 350 APUs to Oregon-based truckers, resulting in annual fuel savings of more than a million gallons. An extension of this program now is being carried out by fellow SmartWay Affiliate Cascade Sierra Solutions to benefit the entire Interstate-5 corridor.

#### **Other Initiatives:**

- **Congestion Mitigation and Air Quality (CMAQ) Improvement Program**

U.S. Department of Transportation Federal Highway Administration – Office of Natural and Human Environment

  - Beaumont TX, South East Texas Regional Planning Commission provided \$5.2 million of CMAQ funds to install 532 ATSE units to stop diesel engine idling at four sites in the Beaumont Port Arthur Ozone non-attainment area. A private firm contributed \$2.6 million. The estimated emissions reductions were 29 kg/day CO, 39 kg/day NOx, 1.3 kg day PM, and 3.6 kg/day VOC.
  - The Knoxville Regional Transportation Planning Organization used \$1 million in CMAQ funds to install 100 ATSE units to stop diesel engine idling at the Petro Stopping Center along I-40/I-75 in Knoxville, TN. The project has resulted in emissions reductions of 25 kg/day CO, 60 kg/day NOx, 1.6 kg/day PM, and 3 kg/day VOC, during 826 days of use.  
(<http://www.fhwa.dot.gov/environment/cmaqpgs/idlereduct/index.htm>)