

# Clean Air Excellence Award Recipients: Year 2010

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## Clean Air Technology

### **Genset Ultra-Low Emitting Locomotive**

*Union Pacific Railroad Company*

Union Pacific pioneered the technology behind the ultra-low emitting Genset locomotive, led the development of Genset, and funded construction of the prototype. Today, every major U.S. railroad utilizes Gensets. With a fleet of 165, Union Pacific owns more than half the Gensets in use across the railroad industry. The Genset significantly surpasses US EPA Tier 2 locomotive standards without using special fuels or exhaust after treatment. Rarely do large transportation equipment end users, including airlines, trucking companies or railroads, develop or produce new engine designs, relying instead on commercial manufacturers. However, Union Pacific saw the need for switching locomotives that could reduce diesel engine exhaust emissions. A switching locomotive is one which moves rail cars inside freight yards and between local industries. Switchers do not move freight trains across the country, a task reserved for high-horsepower, long-haul locomotives. Union Pacific was unable to find a locomotive manufacturer that would produce a prototype Genset locomotive, and consequently developed and funded the construction of the first one in 2004. The Genset can perform the same work as a conventional switcher by using multiple smaller, lower-emitting, high-speed diesel engines instead of a single large, medium-speed conventional locomotive diesel engine. The difference is the Genset reduces NOx and PM emissions by 80-90 percent, fuel consumption by 16-40 percent, and greenhouse gas emissions by an equivalent amount. The third generation Gensets will be placed into service later this year.

### **LNG Port Truck Project**

*California Cartage Company, LLC*

California Cartage Company developed the Liquefied Natural Gas (LNG) Port Project in response to growing concerns over emissions from high-polluting diesel trucks servicing the Ports of Long Beach and Los Angeles. The project has developed an innovative lease-to-own program to ensure that the \$32,000 federal tax credit for the natural gas trucks could be captured and passed along to owner-operators who would not have otherwise qualified for the credit. The fuel project has enabled 400 owner-operators to purchase LNG trucks in the largest single deployment of LNG trucks in the U.S., and the first commercial deployment of class-8 heavy-duty trucks meeting U.S. EPA 2010 emission standards. The project has developed important financing models, established LNG as a viable option for heavy-duty trucking operations; and spurred the proliferation

of factory-built LNG truck technologies. The net truck payments on these LNG trucks are nearly 50 percent less than new diesel trucks, making them a financially viable alternative. The project has measurably reduced emissions within the heavily impacted and disadvantaged port communities. The trucks annually replace 1.95 million gallons of diesel with domestically-produced LNG, resulting in an annual reduction of 13.9 tons of GHG per truck. Additionally, toxic particulate matter emissions have been eliminated and smog-forming NOx emissions have been reduced by 83 percent.

## Community Action

### **Forest Resource Sustainability in Placer County, California**

*Placer County Air Pollution Control District*

With over half of Placer County comprised of forested land, County leaders understand the risk and consequences of catastrophic wildfires. In response, the Placer County Air Pollution Control District and Placer County have teamed with public and private partners – including the U.S. Forest Service and Sierra Pacific Industries – to implement projects to cost effectively manage portions of the 550,000 acres of forest that are at severe risk for wildfire in the Lake Tahoe region and on the western slope of the Sierra Nevada Mountains. Efforts are aimed at reducing wildfire risk, protecting forest resources, improving air and watershed quality, lowering firefighting costs, and reducing the use of fossil fuels for energy in the region. Forest management operations for harvesting commercial products or for reducing wildfire hazards produce excess woody biomass in the form of limbs, tops, and brush. This biomass material usually has no commercial value and is disposed through mastication, or open burning which produces significant amounts of air pollutants. In the past four years, projects have been initiated focusing on waste that was otherwise destined for open burning. The project has processed and transported 15,000 tons of wastes to biomass energy facilities to fuel the generation of 15,000 megawatt hours of renewable electricity, enough to power more than 1,500 homes for one year. The projects, which are continuing, achieved emission reductions of 90 tons of fine particulate, 23 tons of nitrogen oxides, 70 tons of volatile organics, 900 tons of carbon monoxide, and over 6,000 tons of greenhouse gases. Additional impacts include reducing wildfire intensity, and preserving water, wildlife habitat, and soil productivity.

### **NYU Climate Action Plan**

*New York University*

New York University's Climate Action Plan (CAP) addresses NYU's recent participation in NYC Mayor Bloomberg's PlaNYC Challenge to Universities regarding sustainability. The CAP encapsulates NYU's initiatives that are reducing campus-wide greenhouse gas (GHG) and criteria air pollutant emissions. NYU achieved cuts of more than 20% between 2006 and 2010 through building retrofits, efficiency, and conservation from behavioral change. Greater progress is achieved in 2011 with the completion of an expanded on-campus cogeneration (CHP) power plant that provides twice the power of NYU's old facility and avoids the combustion of 500,000 gallons of fuel oil and 280,000 therms of natural gas per year. This new plant yields an additional 23 percent decrease in GHG emissions and a 68 percent decrease in criteria air pollutants. NYU has also reduced air pollution by cutting electricity demand through its successful inter-residence hall competition called NYU unplugged. This month-long competition generated an 8 percent energy savings across more than a dozen dorms. NYU has also created a Sustainability Task Force that has made over 100 recommendations to improve environmental performance and foster a campus culture of sustainability. The university is currently

implementing one of these recommendations by upgrading the efficiency of NYU's shuttle bus fleet route changes helped to cut diesel fuel use by 16 percent in 2010, and the university's new contract will replace existing buses with efficient hybrid–electric equivalent buses at a rate of one per year. These and other projects combine to form a comprehensive strategy to reduce emissions, moving NYU closer to its long–term commitment to carbon neutrality by the year 2040.

## Education/Outreach

### **The Carbon Yeti Program**

*Cities of Bellevue Utilities*

The City of Bellevue's Utilities Conservation and Outreach Group created the Carbon Yeti program to help reduce greenhouse gas emissions to target levels. This program was created in response to Bellevue signing the U.S. Mayors Climate Protection Agreement, which set a goal to reduce community–wide greenhouse gas emissions to 7 percent below 1990 levels by 2012. The program raises awareness about climate change, motivates city residents to reduce their individual carbon footprints through behavior change, and measures the overall reduction in carbon emission equivalents associated with that change. The program messages include: waste reduction/ recycling, pollution prevention, water conservation, natural yard care, and energy conservation. Branded giveaways, a “smaller footprint” pledge book, online pledging, trading cards, a mascot, a Facebook page, and an interactive online Yeti house with embedded games ([www.bellevuewa.gov/yetihouse](http://www.bellevuewa.gov/yetihouse)), are popular program elements. The program reaches a wide audience, including students, parents, the general public, the business community, and regional jurisdictions. To date, the city has received over 850 pledge cards. This equates to 9,008 tons of CO<sub>2</sub> which is equivalent to the annual greenhouse gas emissions of 1,563 passenger vehicles.

### **Commute Solutions Program**

*Houston–Galveston Area Council*

Commute Solutions is a regional partnership program in the Houston– Galveston area that promotes voluntary trip reduction programs and services designed to reduce traffic congestion and improve the region's air quality. These programs are funded through private and federal transportation funds. Commute Solutions offers advice, answers, and assistance to employers and their employees on all commuting options including: carpooling/NuRide, teleworking, vanpooling, guaranteed ride home, mass transit, biking and walking, and alternative work schedules. The NuRide program, an incentive–based rideshare network that rewards people for sharing rides, has been one of the most successful aspects of Commute Solutions. There are 14,643 NuRide members that have reported over 30 million vehicle miles travelled reduced since 2005. The regional vanpool program is the third largest in the nation with 749 vanpools and 7,830 average daily riders. There are also 3,500 participants in the regional telework program. Commute Solutions is marketed through radio, print, and web site advertisements, outdoor billboards, and over 150 public outreach activities per year.

### **Dust Handbook and Field Guide**

*Maricopa County Air Quality Department*

After Maricopa County was designated a “serious nonattainment area,” the county is required to show a 5 percent reduction in particulate matter pollution each year until the standard is met. Controlling for particulate matter proved difficult in Maricopa County’s dry, desert environment and businesses needed help in understanding new, comprehensive dust control regulations. The Maricopa County Air Quality Department developed the Dust Abatement Handbook and accompanying Dust Abatement Field Guide for the construction industry as one component of a comprehensive, aggressive regional program to reduce dust emissions. Over the course of several months, stakeholders actively participated in a collaborative effort to develop a dust control handbook explaining the dust control rules and how they apply to different activities. In addition to the handbook, the department also developed an easy-to-use, pocket-sized “field guide” providing a quick reference on how to limit airborne dust during common types of dust generating operations. While the handbook and manual are being used as welcome tools to achieve compliance, perhaps the greatest immediate improvement was creating and strengthening relationships between regulators, regulated industries, and businesses. The handbook and field guide reflects a shared commitment to achieve improved air quality.

### **The *MOVE!* Program**

Southern Maine Regional Planning Commission

The *MOVE!* Program, created to provide air quality based education from a transportation perspective, is a K–12 multi-disciplinary education program that promotes student awareness and understanding of the environmental, economic, societal, historical and technological elements of transportation and its impacts. The Program supports existing classroom units of study, aligns with the *Maine Learning Results* and encourages students to use grade appropriate skills in mathematics, reading, writing, science, social studies, technology, visual arts and career preparation. Over the last 11 years *MOVE!* has provided presentations to over 20,000 students and has extended learning opportunities and teaching resources to hundreds of educators in southern Maine. The *MOVE!* Program centers around three concepts: Connections, Choices, and Consequences. These themes are incorporated into all classroom presentations, teacher workshops, and educational resources. One such presentation, *Trip Chainers*, allows middle school students to collect their own transportation data that they use to calculate impacts such as CO<sub>2</sub> output/savings and fuel used/savings. Students learn that by changing habits and thinking ahead they can generate real savings in pollution output and resources used. Other presentations such as *Map Skills*, *Data Gathering and Graphing*, *The Lean and Green Challenge*, *Pollution* and *Climate Change* are other examples of classroom presentations and activities that engage students in core learning activities while also making them aware of transportation choices and impacts.

## Regulatory/Policy Innovations

### **Energy Performance Standards for Developments of Regional Impact**

*The Cape Cod Commission.*

In 2009, the Cape Cod Regional Policy Plan, a five-year planning and land-use regulatory framework prepared for Barnstable County, Massachusetts, was amended to include an energy goal and minimum performance standards that target emissions and energy use for projects reviewed by the Cape Cod Commission, the region’s planning and regulatory agency. For development proposals above a certain threshold (i.e., commercial development greater than 10,000 square feet in area), the development must obtain Energy Star

certification, follow efficient building-envelope design standards, and provide 10 percent of the project's energy demand on-site. Projects implementing green building practices or pursuing LEED certification may be eligible for waivers from the on-site standard. The standards acknowledge the inherent energy savings of compact, mixed-use development located in areas with existing infrastructure. The first project permitted and built under the new standards is a 60,000 square foot warehouse/office redevelopment completed by the F.W. Webb Company, a local plumbing and heating supply distributor. The building features a hybrid solar thermal and geothermal heating system designed to utilize 15 kBtu per square foot. Ongoing energy monitoring has shown the building is performing to the level at which it was designed and is realizing an annual energy cost savings of approximately \$20,000 based on current natural gas prices in the Hyannis area. The facility has become a model project for the company and the energy-efficient design features are being implemented at other F.W. Webb locations throughout New England.

### **Regional Emissions Enforcement Program**

*North Central Texas Council of Governments*

The Regional Emissions Enforcement Program was developed and is administered by the North Central Texas Council of Governments (NCTCOG), to assist local law enforcement to reduce fraudulent and illegal emissions inspection activities. Approximately 10 percent of vehicles are responsible for over 50 percent of emissions in the North Central Texas nine-county nonattainment area. Many vehicles failing the emissions inspection opt to display counterfeit or fraudulent inspection certificates instead of performing repairs. The NCTCOG Emissions Database (NED) was developed to provide law enforcement 24/7 access to emissions records to assist in identifying improper inspections and counterfeit certificates. NED is also utilized to perform covert investigations to determine which inspections stations are conducting improper inspections. This program has revealed issues such as counterfeit inspection certificates and vehicle inspection reports, "clean scanned" vehicles (a passing vehicle is tested in place of the failing vehicle), and simulators used in place of the actual emissions analyzers. Activities are also linked to money laundering, other counterfeit government issued documents, drug, weapons and human trafficking/smuggling rings in Texas and Mexico. NCTCOG also works with the Texas Attorney General to prosecute auto dealerships offering "clean scanned" vehicles for sale to the public. These ongoing collaborative efforts by the various agencies reduce fraudulent activity to reduce emissions and improve the overall quality of life for the citizens of North Central Texas.

### **Eglin Air Force Base Air Quality Compliance**

*96 CEG/CEV (Environment Management Division)*

Eglin Air Force Base (AFB), home of the Air Armament Center, in partnership with its associate units, is the heart of the team that covers the complete weapon-system lifecycle from concept through development – research & development testing, operational testing and evaluation, acquisition and procurement, and deployment into combat. This synergy is called, "Team Eglin." The Eglin AFB Air Quality Compliance Assistance Program (AQCAP) is an air quality assurance program that combines web-based compliance tools, standardized procedures, compliance checklists and a knowledgeable compliance team that empowers everyone to use the homegrown tools to assure compliance with air quality regulations and policies. Eglin AFB established the AQCAP in 2002 to ensure continuity of operations in spite of regular personnel deployment and changeover inherent to military operations at organizations that effect air quality compliance. The AQCAP takes a "white hat" approach to compliance, working with shop personnel and organizational commanders. The program has produced innovative guidance documents such as the Air Source Manager's Guide, which is used by the base's 64 Air Source Managers (ASM). The program also developed web-based tools including

training courses and database systems that provide ready access to air quality inventory and related data. A compliance team member visits each organization quarterly and assists the ASM in developing, implementing and maintaining a customized organizational Operational Air Management Plan and Continuity Guide. As the number of compliance assistance team site visits increased, Eglin's criteria pollutant emissions have decreased by 36 percent, from 600 tons in 2005 (297 site visits) to 384 tons in 2009 (404 site visits).

## Transportation Efficiency Innovations

### **Advancing Electric Vehicle Charging Stations**

*Pacific Gas and Electric Company, San Francisco, CA*

Plug-in Electric Vehicles (PEVs) present an opportunity for significant climate protection benefits, reducing CO<sub>2</sub> equivalent emissions to one-third that of their gasoline counterparts and also provide significant criteria pollutant reductions. Pacific Gas and Electric Company (PG&E) is supporting the transition to PEVs by helping to expand California's electric transportation infrastructure. Last year, funded in part by a grant from the California Air Resources Board, PG&E constructed and refurbished 14 public Level II (240V) electric vehicle charging stations at nine different sites throughout northern California, and installed the nation's first publicly available DC fast charger. The majority of charging sites are located at existing municipal facilities along the heavily-traveled freeway corridor between San Francisco and Sacramento. The DC fast charger is also served by an existing 45 kW photovoltaic solar system installed by the City of Vacaville, demonstrating that renewable energy can effectively supply electric vehicle charging stations. The charger, produced by Takaoka Electric Manufacturing, and supplied by the Tokyo Electric Power Company, can recharge battery electric vehicles at an accelerated pace, allowing some electric vehicles to go from 20 to 80 percent charged in as little as 20 to 30 minutes. The DC fast charging infrastructure will enable wider adoption of electric vehicles and allow more people to use their electric vehicle as their primary vehicle. The DC fast charger/solar system combination sits at an existing public charging station adjacent to a restaurant for the convenience of restaurant patrons. PG&E is also testing power quality impact of the DC Fast charger on the connecting distribution grid.