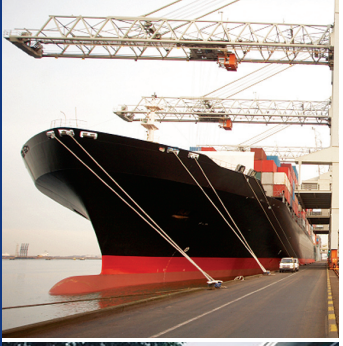


Air Quality Improvement

Guide for Local Governments

NACo National Association of Counties

The Voice of America's Counties

Air Quality Improvement

Guide for Local Governments

Produced by the Community Services Division of the County Services Department

July 2007

NACo National Association of Counties
The Voice of America's Counties

About NACo – The Voice of America's Counties

The National Association of Counties (NACo) is the only national organization that represents county governments in the United States. Founded in 1935, NACo provides essential services to the nation's 3,066 counties. NACo advances issues with a unified voice before the federal government, improves the public's understanding of county government, assists counties in finding and sharing innovative solutions through education and research, and provides value-added services to save counties and taxpayers money. For more information about NACo, visit www.naco.org.

For more information about this publication or to request copies, please contact:

Kelly Zonderwyk
Senior Community Services Associate
The National Association of Counties
25 Massachusetts Avenue NW
Washington, DC 20001
Phone: 202.942.4224
Email: kzonderwyk@naco.org

This guide was published in July 2007 and made possible through support from USEPA Purchase Order #EP06H002650. It was written by Kelly Zonderwyk, NACo Senior Community Services Associate and through contributions from featured counties. The guide was edited by Abby Friedman, Program Director, and Alison Abbors, Environmental Intern, and graphic design and layout was performed by Sonia Chu of NACo. The opinions in this publication are those of the contributors, and do not necessarily reflect the views of the USEPA, or NACo.

Acknowledgements

NACo wishes to thank the county staff, departments, and officials who provided information for the case studies and are acknowledged at the end of each case study.

Table of Contents

Table of Contents *(continued...)*


Featured Local Governments

INTRODUCTION

Many scientific studies have linked breathing ozone and particle pollution to significant health problems. To help communities reduce air pollution and achieve new federal health-based standards, NACo has developed the *Air Quality Improvement Guide for Local Governments*. The guide includes examples of local government strategies and best practices to reduce air pollution from a wide range of sources, as well as techniques to inform and educate citizens about air quality issues.

The examples and best practices can help counties meet new federal standards. The U.S. Environmental Protection Agency (USEPA) announced revisions to the National Ambient Air Quality Standards for ground-level ozone and particle pollution in 1997 and the USEPA revised the particle pollution standards again in September 2006. Counties and local governments across the country are using a variety of policies, programs and control strategies to comply with these standards and protect the public from unhealthy air.

Because there are different types of local governments based on population size, geographic location and physical size with different air pollution sources, the *Air Quality Improvement Guide for Local Governments* includes examples being used by rural, suburban and urban areas. These strategies range from air awareness education campaigns to diesel engine retrofits and lawnmower buyback programs.

As communities' populations grow and budgets shrink, effective air pollution strategies often include collaboration with local stakeholders. Counties and cities engage groups ranging from auto repair shops, local colleges, media outlets, business and civic organizations, and state-wide and regional coalitions. For many local governments, the approach is twofold; the first approach is educating and promoting sound environmental choices among county employees; and the second is advocating those same practices to residents and employers. Regardless of location, size, or approach, the local governments featured in this guide have proven the effectiveness of local programs in reducing air pollution.

The following pages are a compilation of some of the strategies implemented at the local level to control ozone and particle pollution to achieve and/or remain in attainment. NACo hopes these case studies will assist other local governments and local air coalitions in developing tailored approaches to addressing air pollution, whether those strategies are voluntary, mandatory, or a combination of the two.

Background

The Clean Air Act of 1970 required the USEPA to develop National Ambient Air Quality Standards (NAAQS) and divided the country into 247 air quality control districts. These regions are categorized as "attainment" or "nonattainment" areas for each of the six criteria air pollutants for which USEPA has set national standards: carbon monoxide, lead, nitrogen dioxide, ground-level ozone, particulate matter, and sulfur dioxide. These pollutants come from factories; mobile sources such as cars, trucks, buses and construction equipment; and domestic sources such as woodstoves. Although the USEPA sets the standards, states and local governments are free to adopt stricter standards for industrial and commercial operations.

In September 2006, the USEPA announced revisions to the NAAQS for particle pollution, also known as particulate matter (PM). States must develop State Implementation Plans (SIPs) to meet the newly revised standards to reduce air pollution in nonattainment areas. SIPs are required for each state to implement, maintain, and enforce air quality standards. Since local agencies share responsibility in implementing the components of the SIP, it is important that local government officials are active in the development of these plans. As of 2006, at least 39 areas were wholly or partly designated as nonattainment for particle pollution (for a map of county nonattainment areas see page 8).

Numerous sources emit pollutants that make poor air quality an issue difficult to overcome. What was once thought to be a problem only for urban areas has now grown to include rural areas because air pollution is moved by winds hundreds of miles from its origin. Air pollution is not only a concern for health matters in children; people that are active outdoors; the elderly; and people with heart or lung disease (including asthma), but also for haze, and building and vegetation damage.

About Particle Pollution

Nationwide, particle pollution causes between 2,600 to 11,000 premature deaths every year. Particle pollution is a mixture of microscopic solids and liquid droplets suspended in the air that contain components such as acids, organic chemicals, metals, soil or dust particles, and allergens. Particle pollution also has negative health effects such as aggravated asthma, chronic bronchitis, reduced lung function, irregular heartbeat, and heart attacks.

Fine particles, also known as $PM_{2.5}$, are 2.5 micrometers in diameter or smaller. Sources that emit fine particles include all types of combustion (power plants, motor vehicles, wood burning, etc.) and some industrial processes. Roughly one out of every three people in the United States is at a higher risk of experiencing $PM_{2.5}$ related health effects. For people with heart disease, very short-term exposures of one hour to elevated fine particle concentrations have been linked to irregular heartbeats and heart attacks.

In 2006, the USEPA revised the 24-hour health standard for $PM_{2.5}$ to 35 micrograms per cubic meter, which is considerably

lower than 65 micrograms per cubic meter standard set in 1997. The USEPA retained the annual $PM_{2.5}$ standard at the same level of 15 micrograms per cubic meter.

According to USEPA, the 2020 benefits of meeting the 1997 $PM_{2.5}$ NAAQS standards as well as the 2006 revised 24-hour $PM_{2.5}$ standards result in the estimated annual reduction of:

- 3,800 – 24,000 premature deaths in people with heart or lung disease (Note: This range includes estimates based on the opinion of outside experts, along with published scientific studies),
- 7,600 cases of chronic bronchitis,
- 17,000 nonfatal heart attacks,
- 5,830 hospital admissions for cardiovascular or respiratory symptoms,
- 4,900 emergency room visits for asthma,
- 22,300 cases of acute bronchitis,
- 357,000 cases of upper and lower respiratory symptoms,
- 191,000 cases of aggravated asthma,
- 1,330,000 days when people miss work or school, and
- 7,800,000 days when people must restrict their activities because of particle pollution-related symptoms.

Coarse particles, also known as PM_{10}, are between the size of 2.5 and 10 micrometers in diameter. These particles can easily pass through a person's throat and nose and into the lungs. Sources of coarse particles include crushing or grinding operations, and dust from paved or unpaved roads. The 24-hour PM_{10} standard will remain at the current level of 150 micrograms per cubic meter; however, the USEPA has revoked the annual PM_{10} standard because of the lack of evidence between long-term PM_{10} exposures and health problems.

About Ground-Level Ozone Pollution

Ozone pollution, a colorless gas, is not emitted directly into the air, but forms at ground level from sources such as motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents. Ground-level ozone is one of the main components of smog, which is created by a chemical reaction between oxides of nitrogen and volatile organic compounds in the presence of sunlight. Sunlight and hot weather cause ground-level ozone to form in harmful concentrations that can be carried hundreds of miles from their origins, causing air pollution over wide regions.

Even at very low levels, ground-level ozone triggers a variety of health problems including aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses like pneumonia and bronchitis. Symptoms may include wheezing, coughing, pain when taking a deep breath, and breathing difficulties during exercise or outdoor activities. Ozone pollution is also blamed for damage to crops, the leaves of trees and other plants, and common artificial materials such as rubber.

A recent study published in the Journal of the American Medical Association found that that an increase of 10 parts per billion (ppb) in weekly ozone levels was associated with a 0.52 percent daily increase in deaths the following week. The study calculated that a 10 ppb reduction in daily ozone, approximately 35% of the average daily ozone level, could save nearly 4,000 lives throughout the 95 urban communities included in the study. [i]

The 8-hour ozone standard is based on averaging air quality measurements over 8-hour blocks of time. The USEPA uses the average of the annual fourth highest 8-hour daily maximum concentrations from each of the last three years of air quality monitoring data to determine a violation of the ozone standard. As of March 2006, at least 455 counties were wholly or partly designated as nonattainment for ozone.

1997 and 2006 National Ambient Air Quality Standards Comparison

	1997 Standards		2006 Standards	
	Annual	24-hour	Annual	24-hour
$PM_{2.5}$ (Fine Particle)	**15 µg/m3** Annual arithmetic mean, averaged over 3 years	**65 µg/m3** 24-hr average, 98th percentile averaged over 3 years	**15µg/m3** Annual arithmetic mean, averaged over 3 years	**35µg/m3** 24-hr average, 98th percentile averaged over 3 years
PM_{10} (Coarse Particle)	**50µg/m3** Annual average	**150µg/m3** 24-hr average, not to be exceeded more than once a year on an average over a 3-yr period	Revoked	**150µg/m3** 24-hr average, not to be exceeded more than once per year on average over a 3-year period

[i] http://jama.ama-assn.org/cgi/content/short/292/19/2372

8-Hour Ozone Flex Program

The 8-Hour Ozone Flex Program encourages voluntary agreements between USEPA, State, Tribal, and local communities to reduce emissions contributing to ozone in 8-hour attainment areas. To participate, a county must develop a formal agreement to develop emissions inventories and implement voluntary control measures to effect air quality improvements. The program allows States and local governments to receive credits for these efforts in the SIP. Qualifying areas should already have monitors in place and be designated as attainment areas for ozone. The program plan must be continued for five years. Corpus Christi, Texas is one of the first program participants.

For more information visit *www.epa.gov/ozonedesignations/regs.htm*.

Counties Designated Nonattainment for PM-10[1]

Counties Designated Nonattainment for PM-2.5[1]

Partial counties are shown as whole counties

[1] as of November 2006

Air Awareness Programs

A local air awareness program is a public outreach effort to engage residents in voluntary actions to reduce air pollution. These programs can also issue health advisories and warnings about local air quality conditions. An air awareness program promotes partnerships throughout the community, including other government agencies, non-profit organizations, schools, and local businesses.

Because ground-level ozone is odorless and colorless, informing citizens at times when ground-level ozone is unhealthy is important, especially for people with asthma or other respiratory diseases. Keeping citizens informed at these times will help reduce emergency room and doctor visits.

Unlike summertime ozone, particle pollution can occur year round. Notifying people at times when particle pollution is unhealthy is especially important for sensitive groups such as the elderly, children, and people with respiratory illnesses and heart conditions. The size of particles is directly linked to their potential for causing health problems. Once inhaled, these particles can affect the heart and lungs and cause serious health effects.

Local Government Snapshots:

Broward County, Florida

Population: Approximately 1.6 million
Seat: Fort Lauderdale
Population Change (1990-2000): +28.5%

Miami-Dade County, Florida

Population: Approximately 2.3 million
Seat: Miami
Population Change (1990-2000): +15.9%

Miami-Dade County and Broward County, located in south Florida, are partners against air pollution and traffic congestion in the national "It All Adds Up to Cleaner Air" Campaign (see box on page 11). Together, these counties are educating south Floridians on simple actions to improve air quality and reduce traffic congestion.

For the past three years, these counties have organized October Car Care events to promote regular vehicle maintenance. Each county partners with its regional American Automobile Association Auto Club to offer free services to residents, including 24-point maintenance inspections; battery, electrical and charging system inspections; child-seat inspections; and vehicle identification number window etching. Over 250 local auto repair shops and over 200 area gas stations have distributed information. Several hundred vehicles have been inspected.

In May, National Clean Air Month, Miami-Dade County developed and promoted an episode of "Down to Earth", an environmental television series to discuss local air quality and what citizens can do to help.

Broward County also held a poster contest at local elementary schools during Clean Air Month. Twenty-two schools participated, submitting 315 posters on the topic of "Clean Cars of the Future."

For more information on Broward County's efforts visit *www.broward.org/air* or contact Catherine Zimmerman at czimmerman@broward.org or 954-519-1220.

For more information on Miami-Dade County's efforts visit *www.co.miami-dade.fl.us/derm/air/home.asp* or contact Debbie Griner at grined@miamidade.gov or 305-372-6789.

"An invisible problem like ground-level ozone requires a highly visible solution. Our 'Ozone Reduction Campaign' raises awareness of the dangers of ground-level ozone and addresses them with practical, fun, and accessible programs. Through pollution reduction, ozone alerts, and lifestyle changes, the Campaign contributes in positive and measurable ways to the overall health of our community."

Annabeth Surbaugh
County Board Chair
Johnson County, KS

Clark County, Nevada

Population: Approximately 1.4 million
Seat: Las Vegas
Population Change (1990-2000): +81.9%

In 2005, Clark County issued 17 air quality advisories, including 12 for fine particulate matter and five for ozone. The county continues to issue advisories to television, radio and print media, the school district, the health district, and medical facilities. The county's online forecast page gives real-time, air-quality information and advisories on periods when air quality is forecast to be unhealthy.

New television, radio, and newspaper advertisements focused on off-road vehicles. The county ran additional advertisements focused on "Tips to O-liminate Ozone." As a result of this campaign, a medical advisory committee was formed to respond to public inquiries.

Clark County also entered into agreement with the Nevada System of Higher Education through the Desert Research Institute to develop and distribute air quality science kits in elementary and middle schools. The kits explain the health effects and impact of dust pollution and include an environmental calendar featuring student poster entries.

For more information visit *www.accessclarkcounty.com/daqem/index.html*.

Johnson County, Kansas

Population: Approximately 450,000
Seat: Olathe
Population Change (1990-2000): +26.2%

Ground-level ozone is the biggest air quality concern in Johnson County. In 2004, Johnson County created an "Ozone Reduction Campaign." The annual campaign runs June through September, and includes actions such as improving the county's fleet operations, increasing the use of alternative fuels and vehicles, and promoting low-maintenance lawn care solutions.

To help keep the air clean and maintain their attainment designation, Johnson County, along with representatives from local and state governments, industry, business, health groups, and citizens, became actively involved in two regional task forces in the Mid-America Regional Council. The task forces developed a "Regional Clean Air Action Plan" which outlines a variety of options (both short-term and long-term) for reducing ozone pollution.

Campaign coordinators met with each county department to create ozone reduction strategies and incentive programs. For example, gift certificates were awarded to employees who rode a bike, walked, or carpooled to work 80% of the time. Monthly drawings were also held to award participating employees with prizes such as no-spill gas cans.

Other activities in Johnson County include:

- a computer desktop alert to inform over 25,000 people about ozone, and
- gas cap testing for county fleet vehicles and employees' personal vehicles along with a 20% discount for new gas caps from a local vendor.

In 2004 alone, the "Ozone Reduction Campaign" eliminated over 90 tons of pollution. In 2005, over 200,000 vehicle miles were eliminated and over 1,000 ozone reducing measures were taken.

For more information visit *www.sharetheair.com* or contact Jennifer Logan at 913-492-0402 or Jennifer.logan@jocogov.org.

Spokane County, Washington

Population: Approximately 418,000
Seat: Spokane
Population Change (1990-2000): +15.1%

Spokane County also participates in the "It All Adds up To Cleaner Air Campaign." The county launched the program at worksites to promote responsible transportation choices. A worksite toolkit of resources was provided to participating employers. Information was included through inserts in payroll envelopes, print advertisements, and email messages to employees.

In the Spring and Summer of 2007, the county will partner with the Commute Trip Reduction Office to promote the clean air message with the "Get on Board" grant program. Approximately 130 of the area's largest employers have signed up to promote the clean air and commute alternative messages. These worksites are helping to improve air quality by raising awareness among their employees.

Additionally, the county hopes to partner in 2007 with businesses that have drive-thru's, such as latté stands and banks to promote the clean air no-idle zone message.

For more information visit *www.scapca.org/it_all_adds_up_to_cleaner_air.asp* or contact Lisa Woodard at 509-477-4727 or lmwoodard@scapca.org.

VOC + NO_x + heat + sunlight = OZONE

Sustainable Environment for Quality of Life (SEQL)

SEQL is a federal-state-local partnership in North Carolina and South Carolina to address the environmental quality of life. The partnership includes 15 counties (11 in North Carolina and four in South Carolina). A key aspect of the partnership is incorporating environmental concerns in local decision making, which is accomplished through the leadership of the Centralina and Catawba Regional Councils of Governments.

As of April 2006, 314 actions were taken by area jurisdictions for 12 air quality measures including open burning limits, tree planting standards, and carpooling/vanpooling.

SEQL recommends that a local community interested in developing a similar regional environmental program consider these ten steps:

1. Identify a Local Champion
2. Engage a Respected Regional Organization to Manage the Effort
3. Develop a Multi-Year, Reliable Source of Funding
4. Be Prepared for a Long-Term Commitment
5. Develop a Regional Vision
6. Celebrate Early Successes
7. Develop a Marketing Strategy and Maintain Community Involvement
8. Develop Partnerships
9. Enhance Participation by Providing Options for Involvement
10. Identify and Develop Staff Who are Committed to Action

The SEQL website (*www.seql.org*) also offers a detailed plan for a community or organization looking to implement an air awareness program, and includes information on tree planting, ozone awareness, smoking vehicles, and much more.

For more details on the steps above, download the entire publication "SEQL in the Greater Charlotte Bi-State Region: Tackling Environmental Challenges in a Growing Metropolitan Area" at: *www.epa.gov/docs/air/toxicair/community/seql_report.pdf*.

"It All Adds Up to Cleaner Air" Campaign

The "It All Adds Up to Cleaner Air" Campaign is a public education and partnership building initiative developed by several federal agencies to help regional, state, and community efforts reduce traffic congestion and air pollution.

The campaign assists participating partners in communicating important information on transportation and air quality, such as simple steps drivers may take to help improve air quality. It is easy to participate in this program, which offers educational and outreach materials to download, a seasonal theme program to help communities deliver the important messages year round, and the It All Adds Up Exchange where participating communities can share successes and lessons learned. For more information, or to sign your community up for the program, visit *www.italladdsup.gov*.

For a complete list of community partners in this campaign, including many county agencies, visit *www.italladdsup.gov/community_partners/cp_allstates.asp*.

The AIRNow Site Provides Daily Air Quality Information

The multi-agency AIRNow site, available at www.airnow.gov, provides real-time air quality data, forecasts, general information on air quality and smog, ozone maps, and detailed daily reports from selected states. The Air Quality Index (AQI) provides daily air quality information and associated health effects that may be experienced from exposure to any of the five criteria air pollutants including ground-level ozone and particle pollution. The AQI is reported on a color-code scale as well as a numerical scale between zero and 500. The color and assigned number represents the level of health concern due to the air quality condition and is defined as follows:

- "Green" or "Good" The AQI value for your community is between zero and 50. Air quality is considered satisfactory, and air pollution poses little or no risk.
- "Yellow" or "Moderate" The AQI for your community is between 51 and 100. Air quality is acceptable; however, for some pollutants there may be a moderate health concern for some people. For example, people who are unusually sensitive to ozone may experience respiratory symptoms.
- "Orange" or "Unhealthy for Sensitive Groups" When AQI values are between 101 and 150, members of sensitive groups may experience health effects. This means sensitive groups are likely to be affected at lower levels than the general public. For example, people with lung disease are at greater risk from exposure to ozone, while people with either lung disease or heart disease are at greater risk from exposure to particle pollution. The general public is not likely to be affected when the AQI is in this range.
- "Red" or "Unhealthy" Everyone may begin to experience health effects when AQI values are between 151 and 200. Members of sensitive groups may experience more serious health effects and are advised to limit outdoor activities.
- "Purple" or "Very Unhealthy" AQI values between 201 and 300 trigger a health alert, meaning everyone may experience more serious health effects.
- "Maroon" or "Hazardous" AQI values over 300 trigger health warnings of emergency conditions. The entire population is more likely to be affected.

Air quality forecasts are provided on the website for over 300 major cities. Nationwide and regional real-time ozone air quality maps, which are updated hourly, also cover 46 states. Local governments that participate in AIRNow can also sign up for an email notification system that allows citizens to receive electronic notice of air quality information. Visit Enviroflash which is an electronic reporting system available to communities.

For more information visit *www.airnow.gov*.

Woodstove Programs

"Our community has traditionally depended upon woodstoves for heat in the winter. The older, inefficient stoves in many homes have exacerbated air quality-related health issues and contributed to deforestation in our region. With our 'Warm Homes Clean Air Program', the Lane Regional Air Protection Agency is helping families save money at the same time as we decrease fine particle pollution, improve public health, and conserve our forest resources."

Gordon Zimmerman
City Administrator
Oakridge, OR

Approximately ten million woodstoves are currently in use in the United States, and 75% of them are older, inefficient stoves that are more polluting than newer models. Replacing old stoves with newer technology helps make the air cleaner for everyone. This is especially important for children and teens, older adults, people with diabetes, heart disease, and people with asthma or other lung diseases.

In some communities, smoke from woodstoves and fireplaces is the largest source of outdoor air pollution and can account for as much as 80% of the particle pollution. Older, uncertified stoves and fireplaces typically release 15 to 30 grams of smoke per hour, while new USEPA-certified stoves produce only two to five grams of smoke per hour. The certified woodstoves are more efficient, using one-third less wood than older stoves to produce the same heat.

Some states and local agencies only allow the use of the certified woodstoves and many local governments are implementing changeout programs for old woodstoves. A woodstove changeout program involves educating residents on the health risks and pollution levels associated with non-certified woodstoves and fireplace inserts. Some local governments provide financial incentives, or simply provide the woodstoves at no cost to residents.

Local Government Snapshots:

Allegheny County, Pennsylvania

Population: Approximately 1.3 million
Seat: Pittsburgh
Population Change (1990-2000): -4.1%

In 2005, with funding assistance from the USEPA, the Allegheny County Health Department implemented a program to encourage citizens to remove and exchange old, non-certified woodstoves and fireplace inserts with new certified units.

Retailers and manufacturers offered 5% to 20% discounts on certified units. Some low-income families participating in one of the county's four low-income assistance programs were eligible for free woodstoves. The free woodstoves also included free installation. Participating retailers replaced the old stoves in qualifying low-income houses. For all other woodstoves, the retailer and customer determined how the installation was to be conducted. To ensure that the old stoves were not put back into circulation, the program required the local retailer to remove the stove door of the existing stoves and recycle the rest.

As a result, 153 woodstoves were replaced with certified units, including at least 46 units for low-income households. With those changeouts alone, the county estimates nearly 18,000 pounds particle pollution reduction each year.

For more information contact Tom Lattner at tlattner@achd.net or 412-578-7986.

Lane County, Oregon

Population: Approximately 323,000
Seat: Eugene
Population Change (1990-2000): +13.6%

The Lane Regional Air Protection Agency developed the "Warm Homes Clean Air Program" in collaboration with local, state, and federal government agencies and utilities. The program offers funding for home repair, weatherization and heating upgrades to residents in Oakridge and adjacent Westfir counties. During the winter months, Oakridge has the highest levels of fine particle pollution in Oregon. Although currently designated an attainment area for fine particles, the county is concerned that it may not meet the new standards USEPA set in 2006.

Lane County is proactively working on pollution reduction programs. By offering financial incentives to residents for improving their home energy consumption, 60 woodstoves were replaced and over 150 residents received assistance for home repairs and weatherization. Based on woodstove replacements alone, over 9,000 pounds of particle pollution is removed from the air each year.

For more information visit *www.lrapa.org/projects/warm_homes-clean_air_project* or contact Sally Markos at 541-736-1056 ext. 217 or smarkos@lrapa.org, or Kim Metzler at 541-736-1056 ext. 218 or kmetzler@lrapa.org.

Lincoln County, Montana

Population: Approximately 19,000
Seat: Libby
Population Change (1990-2000): +7.6%

In Lincoln County, wood is one of the primary or secondary sources for home heating in over 1,500 homes. During the winter months, over 80% of the particle pollution in the county comes from residential woodstoves. The county has acknowledged that these stoves alone contribute significantly to its nonattainment status for fine particles.

In partnership with the USEPA, the State of Montana, and the Hearth, Patio, and Barbecue Association, the county approached the woodstove changeout program in two phases beginning in 2005. The first phase targeted low-income households burning non-certified woodstoves and provided approximately 260 households with free woodstove replacements. The second phase supplied over 900 households with vouchers to help offset the cost of the woodstove replacements.

For more information contact Ron Anderson at 406-293-7781 x228 or lcdeh@libby.org or Jerry Marquez at 406-293-7781 x212 or jmarquez@libby.org.

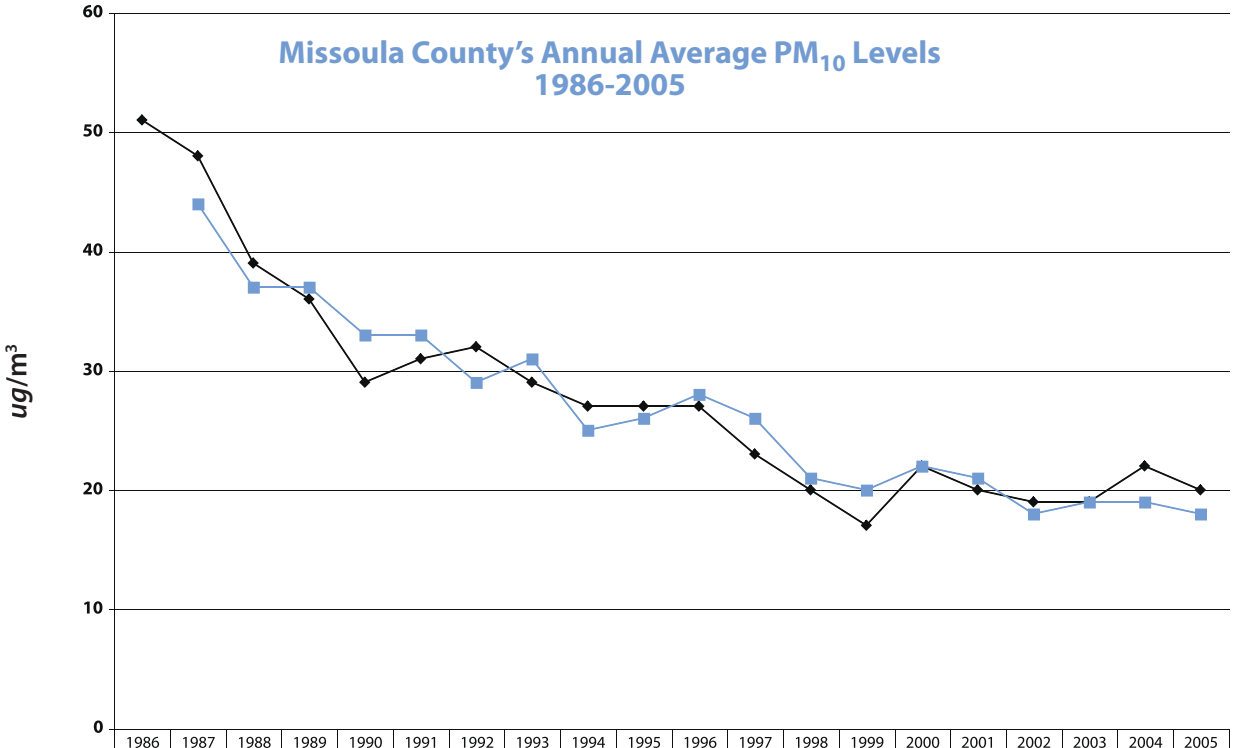
Missoula County, Montana

Population: Approximately 96,000
Seat: Missoula
Population Change (1990-2000):+21.1%

In less than a decade, Missoula County's major source of air pollution shifted from six industrial sources to approximately 20,000 residential woodstoves and fireplaces. The county responded to the increase in residential wood burning by identifying its impacts on air quality and by stressing potential threats to public health.

In the early 1980's, extensive public education efforts on the problem included production of public service announcements, informational pamphlets, a 20-minute slide show, creation of curriculum materials for schools, and the establishment of a Speakers' Bureau.

Still, woodsmoke remained a major source of air pollution for the county. In 1994, it became illegal to install woodstoves. Now, only pellet stoves and gas appliances may be installed. Solid fuel burning devices emitting more than 5.5 grams of particle pollution per hour must be removed upon the sale of a property. Media coverage and mass mailings remind citizens of the law.



	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Boyd	51	48	39	36	29	31	32	29	27	27	27	23	20	17	22	20	19	19	22	20
Health		44	37	37	33	33	29	31	25	26	28	26	21	20	22	21	18	19	19	18

Boyd is the Boyd Park monitoring/sampling site. Data was collected daily through March 2002, then every 6th day sampling started.
Health is the monitor/samplers located on the Health Department roof. Daily monitoring started April, 2002 by the TEOM.
*The Annual Average Federal Standard for PM_{10} is 150 ug/m3. This Standard has not been exceeded since 1986.

Over 300 stoves have been removed so far, contributing to a significant reduction in the county's particle pollution levels (see Missoula County's Annual Average PM_{10} chart for particulate matter emissions reductions between 1986 and 2005). Currently a nonattainment area for particle pollution, the county is hopeful that its efforts will help improve air quality and return the area to an attainment classification.

For more information contact Erik Englebert or Benjamin Schmidt at 406-258-4755.

According to the USEPA, just 25 non-certified woodstoves can emit more than one ton of fine particles into an area during the cold months of the year.

Washoe County, Nevada

Population: 339,486
Seat: Reno
Population Change (1990-2000): +32.3%

Washoe County's wood smoke control programs began in 1986 to enforce federal standards for new woodstove purchases. The county is currently designated as a nonattainment area for fine particulate matter.

The program requires the inspection and replacement of non-certified woodstoves upon sale of real estate. A public outreach and education program includes a "Green-Yellow-Red Campaign." This Campaign is a guide to citizens on burning wood, planning alternate transportation, and getting outdoor exercise during the winter. Green indicates an air quality index between zero and 79 and means burning is allowed. When the air quality index is between 80 and 100, yellow indicates voluntary action to stop burning. When the air quality index exceeds 100, red means no burning in woodstoves. As funds permit, the county runs a rebate program to replace old stoves.

Washoe County has eliminated or replaced approximately 5,000 non-certified woodstoves.

For more information visit *www.washoecounty.us/health* or contact Andrew Goodrich at agoodrich@washoecounty.us or 775-784-7200.

Additional Resources

- **The Bay Area Air Quality Management District of California** *www.baaqmd.gov/pio/wood_burning*

This site provides a model local government ordinance for wood smoke, as well as information on cities and counties in the Bay Area that have passed wood smoke ordinances. This site also has a list of the certified woodstoves, and health studies on wood smoke exposure.

- **USEPA Guidance for Quantifying and Using Emissions Reductions from Voluntary Woodstove Changeout Programs in State Implementation Plans** *www.epa.gov/woodstoves/pdfs/guidance_quantfying_jan.pdf*

Provides guidance for incorporating woodstove changeout programs in SIPs.

- **USEPA How-To Guide for Implementing a Woodstove Changeout Campaign** *www.epa.gov/woodstoves/how-to-guide.html*

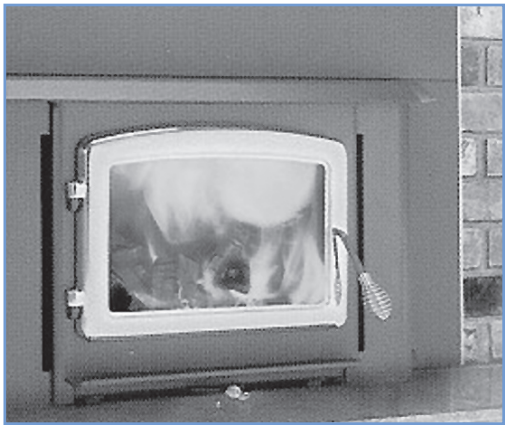
Helps local jurisdictions determine the feasibility of a woodstove changeout program in the area, and how to develop and implement such a program.

- **USEPA Residential Wood Smoke Workshop Presentation** *www.epa.gov/woodstoves/workshop2006/funding_options_2006.pdf*

This PowerPoint presentation from March 9, 2006 provides an overview of funding options for wood smoke programs.

- **USEPA Woodstove & Fireplace Changeout Campaign Partners** *www.epa.gov/woodstoves/partner.html*

The USEPA provides this site with links to the partners collaborating in the Woodstove Changeout Campaign, including the: Hearth, Patio and Barbecue Association, National Fireplace Institute, Chimney Safety Institute of America, and Hearth Education Foundation.



Public Transportation and Commuter Benefit Programs

Easy public-transportation access gives citizens more freedom and mobility, and reduces traffic congestion and pollution by limiting vehicle miles traveled. Public transportation uses less energy and produces less pollution than travel by private vehicles.

Local governments implement commuter-benefit programs to promote public transportation and other transportation options such as bicycling. Employers, like county governments, can offer each employee transportation benefits such as up to $110 per month to cover commuter costs by van, carpool, bus, or rail. Neither employers nor employees pay taxes on this benefit.

Some employers also allow employees to work a flexible schedule. An alternative to the traditional nine-to-five, 40-hour workweek, allows employees to vary arrival and/or departure times to avoid peak congestion hours.

Commuter-benefit programs and use of public transportation are beneficial beyond reduced traffic congestion and lower emissions. Such programs reduce parking needs and free downtown land for development; reduce urban heat islands; decrease runoff from parking lots into streams or storm sewers; and improve overall public health.

Local Government Snapshots:

Arlington County, Virginia
Population: Approximately 190,000
Seat: Arlington
Population Change (1990-2000): +10.7%

Arlington County's "Commuter Assistance Program" educates residents about Ozone Action Days by direct mail campaigns to employers and distribution of materials to the county's voluntary, registered and participating stores. Employers in the county can also become an Arlington Transportation Partner. The county works with these partners to develop commuter-benefit plans for their employees.

One example under the Commuter Assistance Program is the new Arlington transit bus service that supplements the Metrobus with smaller, neighborhood-friendly vehicles to provide access to area rail transit.

Employees of the county are encouraged to use mass transit or other alternative transportation methods. The county subsidizes 75% of public-transportation costs for employees and has other incentives for those who elect to walk or bike to work. The county also provides financial assistance for employees who purchase a home in the county, in an effort to reduce their commute distances.

For more information visit *www.co.arlington.va.us/Departments/EnvironmentalServices/dot/EnvironmentalServicesTransportation.aspx?lnsLinkID=1101*.

"Boulder County Public Health's 'Clean Air Challenge' encourages commuters to take daily action toward improving air quality by limiting the amount of time they spend driving. By recognizing businesses that encourage their employees to find alternative modes of transportation and rewarding those individuals who choose a car-free commute, the Challenge is helping to promote a culture of health and conservation in Boulder County."

Gabi Hoefler
Environmental Health Specialist
Boulder County Public Health, CO

According to the American Public Transportation Association, compared to private vehicles, public transportation:

- **produces 95% less carbon monoxide, more than 92% fewer volatile organic compounds and nearly half as much carbon dioxide and nitrogen oxide for every passenger mile traveled; and**
- **reduces annual emissions of the pollutants that create smog such as volatile organic compounds and nitrogen oxides by more than 70,000 tons and 27,000 tons, respectively.**

Boulder County, Colorado

Population: Approximately 290,000
Seat: Boulder
Population Change (1990-2000): +28.7%

Through the "Clean Air Challenge," the Boulder County Public Health Department and the Boulder County Clean Air Consortium rewards prizes in categories such as driving to work least often. Points are earned based on the number of miles avoided. Prize categories also include the business with the most participating employees and individuals with the most vehicle miles reduced or most mileage on a tank of gas. In 2006, the grand prize of $500 went to a Boulder City employee who earned 65 points by no longer owning a vehicle, and relying solely upon public transportation.

Some 5,000 to 7,000 citizens receive information on the program through their employers and about 100 workers participate annually. Since 2004, the program has reduced ozone pollution by 746 pounds, carbon dioxide emissions by 67 tons, and vehicle miles traveled by 134,000 miles.

For more information visit *www.BoulderCountyAir.org* or contact Gabi Hoefler at 303-441-1147.

Fulton County, Georgia

Population: Approximately 815,000
Seat: Atlanta
Population Change (1990-2000): +25.4%

The 6,000 employees of Fulton County are encouraged to use public transportation and carpools through the "Commute Alternatives Program." More than 900 county employees have tried an alternate means of transportation since the program began in 2006. The county issues about 850 monthly subsidized transit passes. Additionally, 35% of its employees use a flexible work schedule that keeps about 1,470 individuals off the roads each workday.

About 90% of employees participate in the Commuter Rewards portion of the program. Participants submit online daily commute logs for the chance to win between $25 and $100 each month. Carpools can also earn monthly gas cards of about $50. The county provides a guaranteed ride home program in case of emergencies.

For more information visit *www.logyourcommute.com/fulton* or contact Jessica Corbitt at 404-730-8303.

Pinal County, Arizona

Population: Approximately 180,000
Seat: Florence
Population Change (1990-2000): +53.8%

Projections for Pinal County indicate the population will double by 2015. However, residents still commute to neighboring areas for work. Therefore, the county has initiated a "Subsidized Vanpool Program." With 21 vans in service in 2006, the program kept several hundred vehicles off the roads each day. Thanks to this effort, the county was designated by the USEPA as one of the Best Workplaces for Commuters.

Pinal County also has several departments participating in flexible work schedules (such as nine-nine hour days and four-ten hour days).

The Air Quality Division has a commuter program where its employees participate in surveys on commuting patterns and participate in prize drawings. These prize drawings use travel-reduction methods such as carpooling, vanpooling, or working a compressed workweek.

For more information visit *www.co.pinal.az.us/AirQual*.

Westchester County, New York

Population: 923,459
Seat: White Plains
Population Change (1990-2000): +5.5%

Westchester County's "Commute Alternatives Program" is an award-winning initiative designed to encourage companies and employees to use public transportation or commute alternatives. The county is working towards attainment for both ozone and fine particulate matter.

As the largest employer in the area, the county's employees (6,500 full-time and 500 part-time) are encouraged to participate. About 15% of county employees use one or more commute options offered by the county including pre-tax commuter benefits for using public transportation, compressed work weeks, flexible work schedules, and tele-working.

In 2006, the program helped divert more than 180 single-occupancy vehicle drivers to rail and bus transportation and over 254 to other alternative transportation. The county estimates that more than 300 employees are participating

in the tele-work option. This information is submitted by the county to the state for inclusion in the State Implementation Plan for transportation.

For more information visit *www.westchestergov.com/smartcommute/programs_services.htm* or contact Tony-Pascal Offurum at 914-813-6006 or tvo1@westchestergov.com.

Additional Resources

- **American Public Transportation Association** *www.apta.com/research/info/online/preserving_air.cfm*

Includes information on the benefits of public transportation in preserving air quality.

- **An Employer's Guide to Implementing Effective Commuter Choice Programs** *www.itsdocs.fhwa.dot.gov/JPODOCS/REPTS_PR/13669.html*

Through the USEPA and the U.S. Department of Transportation, this publication will assist employers looking to begin or expand a commute alternatives program for their employees. The report includes case studies, tools and resources, and a step-by-step plan for getting started.

- **RuralTransportation.org** *www.ruraltransportation.org*

Originally developed by the National Association of Counties and the National Association of Development Organizations, this site features resources and background information on rural transportation planning organizations, state department of transportation models for consulting with rural local officials, and research and policy reports on rural transportation issues.

- **U.S. Department of Labor Flexible Work Schedules Information** *www.dol.gov/dol/topic/workhours/flexibleschedules.htm*

This site defines flexible work schedules, and provides surveys, reports, and articles on the subject.

- **USEPA State and Local Transportation Resources***www.epa.gov/otaq/stateresources*

From the USEPA, this site provides state and local resources on transportation and air-quality tools, resources, policies, regulations, funding options, calculators and much more.

Neighborhood Connectivity

"Through careful, long-term planning and commitment to accessible public transportation along the Rosslyn-Ballston Corridor, Arlington County has fostered neighborhoods that are healthy and convenient places to live, work, and commute. The proximity of Metro stations to a wide range of housing options encourages walking and increases mobility of all segments of our population throughout the DC metro area. Breathing clean air is just one of the many benefits of living in our highly-connected community."

Paul Ferguson
County Board Chairman
Arlington County, VA

Connectivity is being able to get from one place to another without going long distances out of the way because of dead-end road networks or unavailability of inter-modal links (i.e. bicycle to bus). Connectivity directly affects land use patterns and air pollution. Local governments hold substantial authority and responsibility in land use decision making. Many local governments are involved in local and regional efforts to promote connectivity between different destinations and limit vehicle miles traveled.

A balanced, well-designed transportation system allows people to move around safely by bicycling, walking, riding public transportation, and driving, while encouraging social interaction. Segments of the population that otherwise would not be mobile (the elderly, young, and disabled) gain access to mobility in connected communities. Highly connected communities have been found to reduce obesity, increase property values, and save residents money.

Strategies for neighborhood connectivity plans may include:

- concentrating development around activity centers;
- increasing density near transit stations;
- interconnecting travel networks;
- designing for the pedestrian (e.g., sidewalks, benches, street lighting, signage, crosswalks, etc.);
- mixing land uses;
- ensuring diversity in housing sizes; and
- improving parking management.

Local Government Snapshots:

Arlington County, Virginia

Population: Approximately 190,000
Seat: Arlington
Population Change (1990-2000): +10.7%

Arlington County's transit-oriented development effort has been in place since the early 1970s and involves many county departments and community stakeholders. The goals are to:

- concentrate high-density development within Metrorail transit corridors;
- promote mixed-use development in these corridors to provide a balance of residential, shopping, and employment opportunities;
- increase housing supply by encouraging a variety of housing types and prices near Metrorail corridors; and
- preserve and enhance existing single-family and apartment neighborhoods and retail areas.

Today, the Rosslyn-Ballston Corridor (R-B Corridor) is approximately three-quarters of a mile wide and three miles long. Five underground Metro stations are located at close intervals. To help link people to the community and support walking, the density is purposefully a mixture of residential and commercial.

Planners and the community wanted to:

- strive for a 50/50 mix of residential and commercial development;
- strive for a mix of uses in each building;
- preserve existing single-family neighborhoods and garden apartments; and
- focus redevelopment and density within a walkable one-quarter mile radius of metro stations.

Highest densities were concentrated within walking distance of subway stations, with building heights and densities tapering down toward single-family detached residential neighborhoods

as you move further from the stations. Zoning for the rest of the county would remain low-density to preserve community character.

Each Metro station area serves a unique function: Rosslyn, on the R-B Corridor's eastern edge along the Potomac River, is a major business center, Courthouse is the local government center and Clarendon is planned as an "urban village."

Streetscape standards have been put in place to improve the pedestrian experience. These standards identify a consistent treatment for all public sidewalks in the R-B Corridor and are designed to enhance the different visual and physical aspects of each hub. This includes coordinating new development with existing development.

Nearly 50% of R-B Corridor residents are out of their cars and using transit to commute. Since the 1970s, the county's transit-oriented development initiative has helped prevent 409 tons of annual carbon monoxide emissions, about 70 tons of annual nitrogen-oxide emissions, and over 45,000 tons of annual carbon dioxide emissions.

The USEPA recognized Arlington County in 2002 with the first Overall Excellence in Smart Growth award and the county has received numerous other awards since.

For more information contact John Morrill at jmorrill@arlingtonva.us.

Broward County, Florida

Population: Approximately 1.6 million
Seat: Fort Lauderdale
Population Change (1990-2000): +28.5%

The Southeast Florida region is expected to grow by more than 2.5 million new residents by 2025. Broward County's issues include suburban sprawl, the loss of open and green spaces, increased traffic congestion, longer commute times, and air pollution. Emissions from motor vehicles contribute to more than 50% of the area's air pollution.

The Planning and Mobile Sources Section of the county's Air Quality Division recommends long-term planning methods to improve air quality. Blueprints for future development include air quality measures or provisions that will support alternative methods of transportation. These measures include using public transportation, carpooling, vanpooling, ridesharing and using alternative fuel vehicles. Other activities such as the use of pedestrian and bicycle friendly designs that include native tree shaded areas are also encouraged.

The Air Quality Division participates in the review and development of regional impact projects, and in requests for amendments to the Broward County Land Use Plan and the Broward County Trafficways Plan. The Division works to ensure planned activities will not cause violations of the National Ambient Air Quality Standards.

For more information visit *www.broward.org/air/aqi02200.htm* or call 954-519-1220.

Additional Resources

- **Active Living by Design** *www.activelivingbydesign.org*

An initiative to establish and evaluate innovative approaches that support active living.

- **Active Living Research Center** *www.activelivingresources.org*

Provides resources such as fact sheets and how-to documents for incorporating activities such as walking and biking into a community's lifestyle.

- **Air Quality and Smart Growth: Planning for Cleaner Air** *www.ccap.org/pdf/Air_Quality_and_Smart_Growth_FINAL.pdf*

Discusses the link between land development, transportation patterns and air quality. It draws upon case study examples from local governments.

- **Center for Clean Air Policy** *www.ccap.org*

Seeks to promote and implement innovative solutions to major environmental and energy problems that balance both environmental and economic interests.

- **Center for Neighborhood Technology** *www.cnt.org*

Promotes the development of more livable and sustainable communities.

- **NACo Center for Sustainable Communities** *www.naco.org/sustainable*

Assists counties to develop long-term policies and programs that lead to economic enhancement, environmental stewardship and social well being.

- **Robert Wood Johnson Foundation** *www.rwjf.org*

Provides grants related to improving health and health care for Americans, including the promotion of healthy lifestyles and communities.

- **USEPA's Smart Growth Website** *www.epa.gov/smartgrowth/index.htm*

Provides research, tools, partnerships, case studies, grants, and technical assistance to help communities grow in ways that expand economic opportunity, protect public health and the environment, and create and enhance the places that people love.

Non-Road Diesel Engines, Equipment, and Vehicles

"From its grassroots beginnings in 2001, the 'Lawn Care for Cleaner Air Program' has become a county-wide force in reducing emissions and other pollutants that result from conventional residential and corporate landscaping. Relative to their size, common gasoline-powered landscaping tools and diesel-powered equipment contribute disproportionately to air pollution problems. Our community awareness program encourages home and business owners to choose alternative landscaping techniques that both visually enhance their property and reduce pollution."

Matt Stull
Public Information Supervisor
Louisville Metro Air Pollution Control District, KY

Non-road diesel engines, equipment, and vehicles include construction equipment such as backhoes; agricultural equipment such as heavy forklifts; industrial equipment such as airport service vehicles; and utility equipment such as generators and pumps.

Almost all particulate matter coming from these sources is fine particulate matter. According to the USEPA, diesel engines dominate the market for non-road equipment and contribute nearly 45% of diesel particulate matter emissions from mobile sources nationwide.

In 2004, the USEPA announced a comprehensive rule to reduce emissions from non-road diesel engines by integrating engine and fuel controls as a system to gain the greatest emissions reductions. Engine manufacturers must produce engines with advanced emissions control technologies that will decrease emissions by more than 90%.

By 2030, according to the USEPA, controlling these emissions will annually prevent an estimated:

- 12,000 premature deaths,
- 8,900 hospitalizations,
- One million work days lost,
- 15,000 heart attacks,
- 6,000 children's asthma-related emergency room visits,
- 280,000 cases of respiratory problems in children,
- 200,000 cases of asthma symptoms in children, and
- 5.8 million days of restricted adult activity due to respiratory symptoms.

Local Government Snapshots:

Denver County, Colorado

Population: Approximately 555,000
Seat: Denver
Population Change (1990-2000): +18.5%

Denver County has launched its "Paving the Way to Cleaner Air" initiative as part of Denver's "Focus Neighborhood Program." This is the latest initiative through the 10-year county effort to eliminate unpaved alleyways. The county received $175,000 in federal funding to install retrofit technology on the off-road, heavy-duty diesel-paving vehicles responsible for this work.

Erosion of the currently unpaved, poorly managed alleyways can lead to elevated particulate matter pollution, as well as impact water quality and quality of life for nearby residents. By Spring 2007, the county will have installed 216 diesel-oxidation catalysts and 36 closed-crankcase filtration systems on its off-road vehicles.

For more information on this program visit *www.denvergov.org/alleyprogram*.

Louisville-Jefferson County Metro Government, Kentucky

Population: Approximately 694,000
Seat: Louisville
Population Change (1990-2000): +4.1%

The Louisville Metro Air Pollution Control District created the "Lawn Care for Cleaner Air (LCCA) Program" in 2001. LCCA is a public awareness program that recognizes property owners for minimizing air emissions from lawn

maintenance by relandscaping, or switching to cleaner yard-maintenance equipment. As of December 2006, the county was awaiting word from the USEPA on the request for the Louisville area to be designated as an attainment area for eight-hour ozone. The area is currently under a nonattainment classification for fine particulate matter.

The program began with small workshops at libraries, garden clubs, and neighborhood and community meetings where staff explained the public benefits of reducing gasoline-powered lawn-maintenance equipment. String trimmers and leafblowers generate high levels of pollution. Using native trees, shrubs, perennials and other plants, property owners can create a low-maintenance yard that requires up to 50% less work and also reduces emissions. As of early 2006 the participating property owners cut potential emissions of carbon dioxide by about 745 tons and volatile organic compounds by about 44 tons.

A rebate program began in 2003 for the purchase of either new electric-powered lawn equipment or push-reel mowers. The district also issues another rebate to residents who recycle a gasoline-powered lawnmower, string trimmer, leafblower, or batteries. Participants receive up to $100 in rebates which are funded through penalties on air quality regulation violations. In early 2006, emissions reduction calculations included about 520 tons of carbon dioxide and about 30 tons of volatile organic compounds.

For more information visit *www.louisvilleky.gov/APCD* or contact Michelle Stites at 502-574-7252 or michelle.stites@louisvilleky.gov.

San Diego County, California

Population: Approximately 2.8 million
Seat: San Diego
Population Change (1990-2000): +12.0%

San Diego County's popular "Lawnmower-Exchange Event" seeks to reduce air-contaminant emissions from gas-powered lawnmowers. According to the state Air Resources Board, operating a gas mower for one hour produces as much pollution as driving a car 340 miles.

Through the "Lawnmower Exchange Program," which costs an estimated $161,000 annually, county residents swap their old polluting lawnmower for a voucher toward a state-of-the-art, battery-powered rechargeable-mulching mower. The final cost for each participating resident is approximately $150 of the normal $379 retail price.

Through its "Mow-Down Pollution Event," the county takes necessary precautions to ensure proper disposal of toxic materials (residual oil and gasoline) and to scrap the traded-in mowers. The county pays for the event through the use of fines and penalties collected from businesses in violation of air pollution regulations.

Since 2000, more than 2,400 zero-emissions mowers have been distributed, resulting in a reduction of more than 57 tons of annual emissions.

For more information contact Richard Smith at 858-650-4503 or richard.smith@sdcounty.ca.gov.

Additional Resources

- **Diesel Technology Forum: Retrofit Tool Kit** *www.dieselforum.org/retrofit*

Designed for transportation and air-quality officials to assist them in starting a retrofit program. Includes success stories, funding options, and information for State Implementation Plans.

- **USEPA's Clean Air Non-Road Diesel Rule** *www.epa.gov/nonroad-diesel/2004fr/420f04029.htm*

Provides information on the clean air non-road diesel rule and includes a breakdown of anticipated health and environmental benefits.

- **USEPA's National Clean Diesel Campaign** *www.epa.gov/cleandiesel*

Provides comprehensive information about reducing emissions from diesel exhaust, including funding information and contacts for regional diesel collaboratives.

- **USEPA's Non-Road Engines, Equipment, and Vehicles Resource** *www.epa.gov/nonroad*

Offers background information on all kinds of non-road engines, equipment, and vehicles that contribute to air pollution. Offers related studies, voluntary programs, and other publications.

- **Verified Retrofit Technologies** *www.epa.gov/otaq/retrofit/retroverifiedlist.htm*

Provides a list of diesel engine retrofit technologies that have been approved by the USEPA.

Truck and Bus Fleet Retrofits

The Diesel Emissions Quantifier

This is a tool that helps fleet owners, school districts, municipalities, contractors, port authorities, and others estimate the cost effectiveness and environmental impacts of emissions reduction technologies that are added to vehicles and equipment. Estimates are made using specific information about a fleet, such as miles driven, fuel mileage, and others. To access the quantifier go to *http://cfpub.epa.gov/quantifier*. (Note: The quantifier cannot be used for calculations for State Implementation Plans).

Diesel engine exhaust from trucks, buses, and other vehicles is a large source of fine particulate matter pollution, which contributes to public health problems and poor air quality. Diesel engine retrofits, use of cleaner fuels, and anti-idling efforts help reduce diesel emissions and reduce asthma and other respiratory symptoms. (For more information on anti-idling efforts see page 33).

Diesel particulate filters and diesel-oxidation catalysts are common types of retrofit technology installed to control diesel exhaust. Diesel particulate filters collect particulate matter as exhaust passes through an engine and can reduce particulate emissions by about 90%. Diesel oxidation catalysts promote a chemical reaction that oxidizes pollutants into water vapor and gasses, such as sulfur dioxide and carbon dioxide, and can reduce particulate matter emissions by some 20 to 30%.

In 2004, the USEPA set new emissions standards for diesel engines. In October 2006, ultra-low-sulfur diesel fuel, containing 97% less sulfur, became the nation's standard for vehicles. In 2007, even more stringent emissions standards for heavy-duty vehicle engines with advanced pollution-control technology using ultra-low-sulfur diesel fuel mean that trucks and buses will be up to 95% cleaner than previous models.

Local Government Snapshots:

Hamilton County, Ohio

Population: Approximately 845,000
Seat: Cincinnati
Population Change (1990-2000): -2.5%

Hamilton County added diesel oxidation catalysts to its school bus fleets in 2004 to reduce children's exposure to diesel exhaust from school buses and work toward an attainment classification for ozone and fine particulate matter. Funding for this project (more than $240,000) came from multiple sources including the USEPA's "National Clean Diesel Campaign," the Cinergy Foundation, and the Ohio/Kentucky/Indiana Regional Council of Governments.

The USEPA funded the first phase of the program that allowed the county to retrofit 91 buses from six school districts, which also raised awareness of diesel engine retrofits in other counties and communities. Afterwards, the Cinergy Foundation found the county's program so successful, it provided an additional $100,000. With this additional funding, more than 130 buses were also retrofitted. The program is helping to prevent over nine tons of emissions annually.

Also in 2004, the county instituted the second phase of the program: an anti-idling campaign for school bus drivers. More information on that phase of the program can be found on page 33 of this guide. Additional free idling-reduction campaign materials from the USEPA's Clean School Bus USA program are available at *www.epa.gov/cleanschoolbus*.

For more information contact Ken Edgell at 513.946.7751.

San Diego County, California

Population: Approximately 2.8 million
Seat: San Diego
Population Change (1990-2000): +12.0%

In 2005, the San Diego County Air Pollution Control District developed the San Diego/Tijuana Clean Diesel Demonstration Project to improve air quality along the U.S./Mexico border. A study conducted through the project identified retrofitting Mexico-based heavy-duty trucks as a cost-effective approach to improve air quality.

To address the international framework and complexities of binational air quality issues, the San Diego/Tijuana Air Quality Task Force, comprised of a cross-section of government, industry, academia, nonprofit, and citizen representatives from both sides of the border, served as an

advisory committee on the project. The task force was critical to ensuring communication between both U.S. and Mexican stakeholders and conducted an educational workshop inviting members of the Mexican trucking industry to participate in the project.

Funding was provided by the USEPA to retrofit 40 Mexico-based trucks with diesel-oxidation catalysts and diesel-particulate filters in 2006. Anticipated emissions reductions from these technologies include:

- diesel oxidation catalyst: 25% reduction of particulate matter; 50% reduction of hydrocarbons; 40% reduction of carbon monoxide; and
- diesel particulate filter: 84% reduction of particulate matter; 60 to 90% reduction of both hydrocarbons and carbon monoxide.

For more information visit *www.sdapcd.org* or contact Robert Reider at 858-586-2640 or robert.reider@sdcounty.ca.gov.

Butte County, California

Population: Approximately 203,000
Seat: Oroville
Population Change (1990-2000): +10.6%

The Butte County Air Quality Management District (BCAQMD) has participated in the "Carl Moyer Program" for the past eight years. In California, the Carl Moyer Program provides monetary grants to private companies and public agencies to clean up their heavy-duty engines beyond that required by law through retrofitting, repowering or replacing their engines with newer and cleaner ones. The area does not meet the state or federal ambient air quality standards for ozone, or the state standards for fine particulate matter.

The district has funded over 100 clean air projects with approximately $934,000 of state funds and $32,565 in local funds. The district has primarily stationary and portable agricultural-irrigation diesel engines with cleaner burning diesel engines or electric motors. The district calculated average cost effectiveness (cost of project divided by tons of emissions reduced) in the past several years to be between $2,000 and $3,000.

For more information visit *www.bcaqmd.org* or contact Gail Williams at 530-891-2882 or gwilliams@bcaqmd.org.

USEPA Regional Collaboratives and Partnerships

Building on the successes of the USEPA's regulatory and voluntary efforts to reduce emissions from diesel engines, the agency created the "National Clean Diesel Campaign." The Campaign works to reduce pollution emitted from diesel engines across the country through the implementation of various control strategies and the aggressive involvement of national, state, and local partners.

Regional initiatives are an excellent example of how the Campaign uses a proactive, incentive-based approach to achieve environmental results. Members of these initiatives have agreed to collectively leverage additional funds and take a local approach to diesel mitigation. Benefiting from economies of scale while protecting against competitive disadvantages, these regional initiatives provide an ideal structure for significant reductions across a large geographic area. Below is additional information on the regional collaboratives:

West Coast Diesel Emissions Reductions Collaborative - This joint effort includes the USEPA, U.S. Department of Agriculture's Natural Resource Conservation Service, U.S. Department of Energy, U.S. Department of Transportation, Canada and Mexico, as well as state, local, nonprofit and private-sector partners from California, Alaska, Washington and Oregon to reduce air pollution emissions from diesel engines along the west coast. The collaborative works across sector workgroups to identify, fund, and implement regional diesel-emissions reduction projects. For more information visit *www.westcoastdiesel.org*.

Midwest Clean Diesel Initiative – In the Midwest, public and private partners are working toward reducing emissions from a fleet of approximately 3.3 million diesel-powered engines in the area. Their goal of affecting 1 million engines by 2010 will include a multi-pronged approach to include all fleets, but with a special focus on three key sectors: ports, agriculture/freight, and rail. The initiative also has a focus including the U.S./Canada border-crossing areas. The Midwest initiative includes Minnesota, Illinois, Wisconsin, Michigan, Indiana, and Ohio. For more information visit *www.epa.gov/midwestcleandiesel*.

Continued on page 24

"As a result of geography, climate, and population expansion, diesel pollution has become an issue for Butte County. In this highly agricultural region, air quality can be a daily concern; through our clean air programs, the Butte County Air Quality Management District has been able to fund improvements to many of the county's diesel engines, reducing dangerous emissions and enhancing quality of life in the Sacramento Valley."

Maureen Kirk
County Supervisor
Vice Chair
Butte County Air Quality Management District Governing Board, CA

USEPA Regional Collaboratives and Partnerships (*continued...*)

Blue Skyways - A public-private collaboration aimed at reducing diesel emissions in America's Heartland. Participants of the collaborative pledge to make that goal possible through active participation in planning or implementation of projects that use innovations in diesel engines, alternative fuels and renewable energy technologies. Working together allows members to leverage funding plus, share technology and professional expertise. Blue Skyways incorporates 10 states, Minnesota, Iowa, Nebraska, Missouri, Kansas, Arkansas, Oklahoma, Louisiana, Texas and New Mexico, and the area along the borders with Canada and Mexico. For more information visit *www.blueskyways.org*.

Mid-Atlantic Diesel Collaborative - A partnership between leaders from federal, state, and local governments; the private sector; and environmental groups in Delaware, Maryland, Virginia, Pennsylvania, West Virginia and the District of Columbia. The collaborative seeks to reduce diesel emissions to protect public health throughout the mid-Atlantic region. For more information visit *www.dieselmidatlantic.org/diesel/index.htm*.

Southeast Diesel Collaborative - Involves leaders from federal, state and local governments; the private sector; and others in Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina and Tennessee. The goal of this partnership is to improve air quality and public health by encouraging the use of clean, renewable energy and technology as well as by reducing diesel emissions from existing engines and equipment from the agriculture, heavy-construction and on-road sectors. For more information visit *www.southeastdiesel.org*.

Northeast Diesel Collaborative - A public-private partnership established in 2005 by the Northeast States for Coordinated Air Use Management and the eight northeastern states (Vermont, New Hampshire, Maine, Connecticut, Massachusetts, Rhode Island, New York and New Jersey). The collaborative combines the expertise of public and private partners in a coordinated regional initiative to significantly reduce diesel emissions and improve public health in the Northeast. For more information visit *www.epa.gov/NE/eco/gb3/index.html*.

Rocky Mountain Clean Diesel Collaborative - A partnership between the USEPA, Denver Regional Air Quality Council, Colorado Department of Public Health and the Environment, and Denver Department of Environmental Health. States included in this collaborative are Colorado, Utah, Wyoming, South Dakota, Montana, and North Dakota. For more information visit *www.epa.gov/region8/air/rmcdc.*

Additional Resources

● **Carl Moyer Program** *www.arb.ca.gov/msprog/moyer/moyer.htm*

In California, this Program provides monetary grants to private companies and public agencies to clean up heavy-duty engines beyond legal requirements through retrofitting, repowering or replacing their engines with newer, cleaner ones.

● **Diesel Technology Forum: Retrofit Tool Kit** *www.dieselforum.org/retrofit*

This tool kit, provided by the Diesel Technology Forum, is designed for transportation and air-quality officials to assist them in starting a retrofit program. The kit includes success stories, funding options, and information for State Implementation Plans.

● **USEPA SmartWay Transport Partnership** *www.epa.gov/smartway*

A collaboration between the USEPA and the freight industry to increase fuel efficiency and reduce pollutants. By 2012, the program's goal is to reduce between 33 million and 66 million metric tons of carbon dioxide emissions and up to 200,000 tons of nitrogen-oxide emissions per year.

● **USEPA Verified Retrofit Technologies** *www.epa.gov/otaq/retrofit/retroverifiedlist.htm*

Provides a list of diesel-engine-retrofit technologies that have been approved by the USEPA.

● **USEPA Voluntary Diesel Retrofit Program** *www.epa.gov/otaq/retrofit/overview.htm*

Designed to assist owners and operators of fleets and state and local government air quality officials in understanding diesel retrofits and creating effective programs.

Port Retrofits

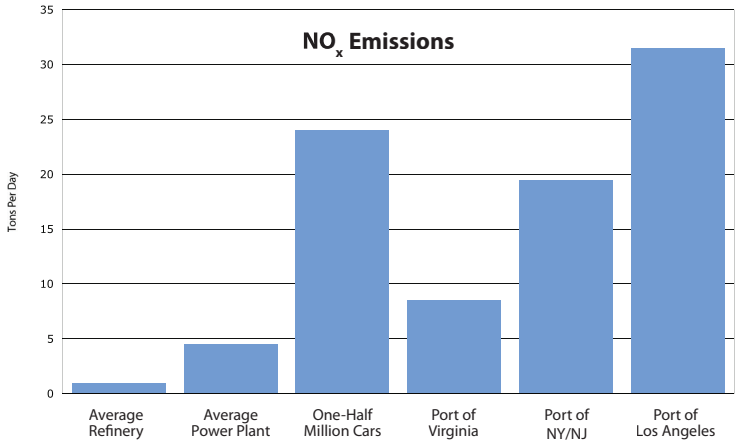
A growing amount of goods being shipped from overseas means U.S. ports are expanding. As they do, there is concern over increased air pollution from the vessels and the on-ground trucks and equipment used for offloading and transporting the goods (see the below chart comparing the pollution of three different ports to refineries, power plants and cars).

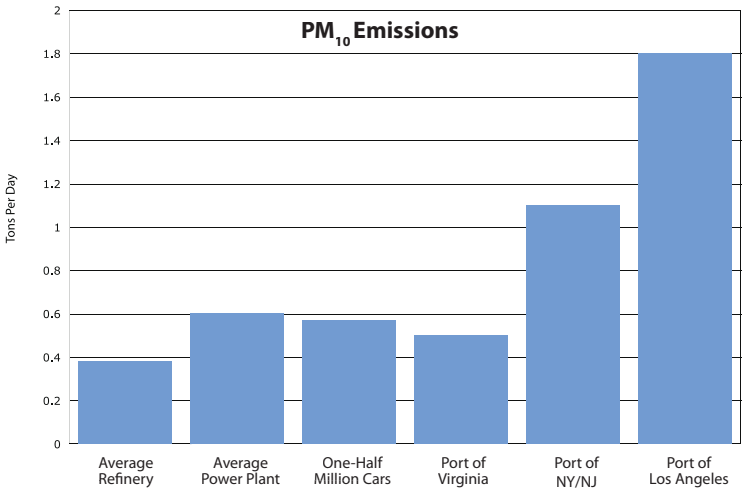
According to the International Maritime Organization, about 85% of international shipping traffic occurs in the northern hemisphere, and 70% is within 240 miles of land. Container ships, general cargo ships, roll on/roll off ships, tankers, bulk carriers and other vessels all have emissions that can cause pollution inland due to their proximity to the shoreline.

Coastal local governments are addressing air quality issues through efforts that require reduced vessel speeds near coastlines, reduced idling times, cleaner fuels, verified retrofits, repowers, and early replacements of trucks, cargo-handling equipment, vessels, and ships. These activities also can reduce noise levels, light pollution, and harm to marine habitats.

Local governments can use funds designated by federal law for congestion mitigation to retrofit trucks and non-road equipment such as those used in construction at expanding ports. Local governments can also partner with fleet owners for demonstration projects.

Pollution from Ports Compared to Refineries, Power Plants, and Cars





Source: National Resources Defense Council

"As Santa Barbara County looked for more and more ways to reduce onshore air pollution, we were discouraged to learn that any progress we made through our Clean Air Plan would be matched by increased emissions from offshore shipping lanes. Retrofitting an ocean-going vessel is a huge undertaking, but through our collaboration with the California Air Resources Board Maritime Working Group, we are looking forward to significantly improved air quality in the years to come."

Terry Dressler
Air Pollution
Control Officer
Santa Barbara County
Air Pollution Control
District, CA

Local Government Snapshots:

Santa Barbara County, California

Population: Approximately 400,000
Seat: Santa Barbara
Population Change (1990-2000): +7.8%

Santa Barbara County, a coastal community on the south-central California coast, does not have a port. However, within about ten miles of the shore are heavily traveled north and southbound shipping lanes. In 2005, there were nearly 7,100 vessel transits along Santa Barbara County from 44 different countries.

As part of its Clean Air Plan, the county estimated that by 2020, the increase in emissions from these vessels would cancel out any onshore pollution reductions. A Santa Barbara marine inventory, calculated in 2005, showed 10% of vessels passing by were contributing 56% of total nitrogen oxide emissions in the county.

The California Air Resources Board Maritime Working Group is working in collaboration with the county to conduct a marine retrofit demonstration project. The group is made up of the state's air districts, USEPA, the U.S. Department of Transportation's Maritime Administration, environmental groups, ship owner/operators, engine manufacturers, and control technology vendors.

Initially, two to five ocean-going vessels will be retrofitted. Technologies and strategies under consideration to reduce nitrogen oxide and particulate matter emissions include emulsified fuels, water injection, humidification, selective catalytic reduction, and others.

The first retrofitted vessel was the containership, Vessel APL Singapore, which is ranked 43rd out of 1,468 vessels for nitrogen oxide emissions and annually emits five tons of particulate matter. The retrofit is expected to reduce annual particulate matter emissions by four tons and nitrogen oxide emissions by 66 tons. It is expected to be completed in 2007.

For more information visit *www.sbcapcd.org/itg/shipemissions.htm* or contact Anthony Fournier at adf@sbcapcd.org or 805-961-8874.

New York City, New York

Population: Approximately 8 million
Population Change (1990-2000): +1.4%

Private ferry fleets in the New York Harbor are large contributors of particulate matter, nitrogen oxide and other pollutants due to their old diesel engines. According to the New York State Energy Research and Development Authority, private ferries in New York Harbor emit about 1,000 tons per year of nitrogen oxide and 145 tons per year of particulate matter emissions.

The New York City Department of Transportation received a grant from the Federal Highway Administration and the USEPA to create a demonstration project to improve emissions from private ferries. The state managed the program in conjunction with the city. They estimated a reduction of 150 to 300 tons per year of nitrogen oxide and 30-90 tons per year of particulate matter emissions.

For each fleet selected, emissions control technologies were researched and compared for potential decrease in nitrogen oxide and particulate-matter emissions. The project utilized a diesel oxidation and fuel-borne catalyst combination.

For more information visit *www.nyserda.org/publications/Report06-15FerryVesselReport-web.pdf* or contact NYSERDA at 518-862-1090 ext 3260.

Additional Resources

- **Diesel Technology Forum: Marine Vessel** *www.dieselforum.org/retrofit-tool-kit-homepage/success-stories/marine-vessels*

Part of the Diesel Technology Forum's Retrofit Tool Kit. Provides summaries of marine-vessel diesel-reduction programs.

- **Harboring Pollution: Strategies to Clean Up U.S. Ports** *www.nrdc.org/air/pollution/ports/contents.asp*

Links to the National Resource Defense Council's August 2004 report on air, water, light, and noise pollution in and around U.S. ports and their impact on the environment and marine habitats.

- **San Pedro Bay Ports Clean Air Action Plan** *www.portofla.org*

The ports of Los Angeles and Long Beach produced a joint comprehensive plan to reduce diesel emissions related to port operations over five years. The goal is to reduce particulate matter emissions by more than 50% and nitrogen oxide emissions by 12,000 tons.

- **SustainableShipping.com**

www.sustainableshipping.com

A forum for issues on marine transportation and the environment.

- **USEPA Clean Ports USA** *www.epa.gov/cleandiesel/ports*

An incentive-based, voluntary program designed to reduce emissions from existing diesel engines and fuels at ports and includes tools to evaluate cost-effectiveness of strategies.

- **USEPA Diesel Boats and Ships** *www.epa.gov/otaq/marine.htm*

Includes information on the Clean Air Non-road Diesel Rule and how it relates to diesel boats and ships.

Airport Ground Equipment Emissions

About one-third of U.S. commercial airports are in nonattainment or maintenance areas, according to the Federal Aviation Administration (FAA). Emissions from airport ground equipment can contribute to air pollution levels.

There are two types of ground equipment at airports. Access vehicles include shuttle buses, taxis, and rental cars, and they are considered to be on the land side of airports. Ground support equipment includes baggage tugs, belt loaders, and aircraft pushback tractors. Local governments with airports can implement programs to help reduce emissions from both categories of ground equipment.

The Vision 100-Century of Aviation Reauthorization Act was signed in 2003. The Act directs the FAA to establish a national program to reduce airport ground emissions in air quality nonattainment and maintenance areas. The FAA accomplishes this through the "Voluntary Airport Low Emissions Program," which is focused on the use of alternative fuels and low-emissions technologies. Airport sponsors may use the Airport Improvement Program and Passenger Facility Charges to finance low-emissions vehicles, refueling and recharging stations, gate electrification, and other airport air quality improvements.

Local Government Snapshots:

Broward County, Florida

Population: Approximately 1.6 million
Seat: Fort Lauderdale
Population Change (1990-2000): +28.5%

Broward County, currently an attainment area for both fine particulate matter and ozone, recognizes the air-travel industry is the fastest growing sector in its region. Due to concerns about the environmental and health effects, the county, in coordination with the Community Transportation Initiative (a private/public partnership promoting responsible clean-air transportation options in Broward County), is working to expand the use of alternative fuels at the Fort Lauderdale-Hollywood International Airport. This initiative includes the use of biodiesel and hybrid electric buses. Through this initiative:

- The county has also partnered with companies such as Southwest Airlines, Delta Airlines, Georgia Power, National Biodiesel Board, the Florida Council of Airports, and Shuttleport to promote responsible clean air transportation options;
- Broward County hosted an "AIRport AIRwareness Forum" in May 2005 for airport tenants, airlines, state and local agencies, and Community Transportation Initiative members. Thus far, the airport is operating 56 buses and three trams on biodiesel; and
- The county is also involved in the "Green Airport Initiative" through the "Clean Airport Partnership" and has examined opportunities to improve the airport's environmental impact on the community as it expands.

For more information contact Maribel F. Fields at mfields@broward.org or 954-519-1424.

"Broward County is growing, and the air-travel industry is keeping pace. In the face of this expansion opportunity, protecting the health of our community and promoting smart growth are foremost on our list of priorities. Our partnership with the Community Transportation Initiative is allowing us to explore innovative fuel options for airport ground support and access vehicles, thereby reducing the airport's impact on Broward County's residents and natural environment."

Kristin D. Jacobs
Commissioner
Broward County, FL

Additional Resources

- **Clean Airport Partnership** *www.cleanairports.com*

A not-for-profit organization dedicated to improving environmental quality and energy use at airports. This site includes information on the Green Airports Initiative and a variety of reports on environmental challenges facing airports.

- **Expanding the Use of Alternative Fuel Vehicles at Airports** *www.cleanairports.com/reports/CleanCities002.pdf*

This document, available through the Clean Airport Partnership, discusses the needs, benefits, and issues surrounding expanding alternative fuel vehicles at airports.

- **FAA Airport Improvement Program** *www.faa.gov/airports%5Fairtraffic/airports/aip*

Through the Federal Aviation Administration, the Airport Improvement Program provides grants to public agencies, and sometimes private owners and entities, for planning and development of public-use airports. Eligible projects include those that benefit the environment.

- **FAA List of U.S. Commercial Service Airports and their Non-attainment and Maintenance Status** *www.faa.gov/airports_airtraffic/airports/environmental/vale/media/vale_eligible_airports.xls*

Produced by the Federal Aviation Administration, this Excel spreadsheet lists U.S. commercial airports and their non-attainment status for eight-hour ozone, PM10, PM2.5, and carbon dioxide.

- **USEPA Nonroad Engines, Equipment, and Vehicles** *www.epa.gov/otaq/aviation.htm*

Provides information on air pollution from both aircrafts and ground support equipment.

- **USEPA Technical Support for Development of Airport Ground Support Equipment Emissions Reductions** *www.epa.gov/otaq/stateresources/policy/transp/airports/r99007.pdf*

Discusses control strategies for equipment emissions reductions at airports and provides a list of additional resources on the subject.

Energy Efficiency, Alternative Fuels, and Renewable Energy

Local governments have responsibility for their own energy consumption as well as their communities. Today, they are addressing energy concerns through energy efficiency, alternative fuels and renewable energy efforts.

Not only does promoting the supply and demand of renewable and alternative energies at the local level mean reduced energy costs, but it also benefits local air quality through reduced emissions, reduced peak energy demands, and reduced waste.

Many local governments are developing and implementing energy plans that ultimately reduce emissions. Included in these plans are strategies to reduce energy consumption and costs, increase energy performance of county buildings, and implement wise purchasing and procurement policies. Plans may also include renewable energy use, including wind, solar, biomass and geothermal.

Alternative fuels are used in place of gasoline or diesel fuel, which operate vehicles. Alternative fuels may include biodiesel, ethanol, hydrogen, methane, compressed natural gas, and even vegetable oil. Local governments use these fuels in their own fleets and sometimes provide monetary and other incentives (such as the use of High Occupancy Vehicle lanes or free parking) for individuals and fleet owners with alternative fuel vehicles.

Local Government Snapshots:

Story County, Iowa

Population: Approximately 80,000
Seat: Nevada
Population Change (1990-2000): +7.5%

In December 2006, Story County's Human Services Center earned its third consecutive ENERGY STAR plaque through the "USEPA ENERGY STAR Program" and the NACo "ENERGY STAR Courthouse Campaign." The 30,120 square foot building was built in 1999 with energy efficiency and environmental savings in mind. Geothermal energy replaced the need for a boiler room and cooling tower which resulted in large space and insurance savings. Features such as T-5 fluorescent lamps, window glazing, insulation, and efficient water monitoring were implemented.

The county was also awarded its first ENERGY STAR plaque for its Administration Building. This 46,417 square foot building underwent an extensive remodeling project that included a new geothermal heat pump system, energy efficient lighting, side wall insulation, point-of-use hot water heaters, and an energy management software program that allows the county to program only the energy that is needed for employee comfort. Early estimates show this building will save approximately 42% in energy.

Story County has applied for an ENERGY STAR plaque for the Justice Center. The county has also been rewarded for their energy efficiency efforts with rebates of more than $164,000 from Alliant Energy.

According to the county, these features, combined with good management, allow the buildings to use approximately 40% to 45% less energy than average buildings without compromising comfort or services. They have achieved a reduction of greenhouse gas emissions for all three buildings: the Administration Building at 822 pounds per year, the Human Services Center at 669 pounds per year and the Justice Center at 2,710 pounds per year.

For more information contact Al Hahn at AHahn@storycounty.com.

"As a participant in the NACo ENERGY STAR Courthouse Campaign, our county is committed to improving the environment by reducing our own energy usage in county buildings. The Courthouse Campaign has been an excellent resource for us as we evaluated our energy usage, made improvements, saved taxpayer dollars, and achieved an ENERGY STAR label for one of our buildings. We're now reducing greenhouse gas emissions by more than 4,200 pounds each year, resulting in annual energy cost savings of over $200,000."

Jane Halliburton
County Supervisor
Story County, IA

Winona County, Minnesota

Population: Approximately 50,000
Seat: Winona
Population Change (1990-2000): +4.4%

Winona County plans to build a publicly-owned wind turbine to generate both green renewable energy and economic development. The county, along with several partners, plans to build a $3.2 million, two-megawatt wind turbine. The single turbine will generate approximately six megawatt-hours of electricity, which is enough to power about 600 homes for a year.

The county will sell the turbine-generated energy to Xcel Energy, the local electric utility. In addition to making money, the county hopes to convince some traditional farmers to become wind farmers, who would benefit by leasing their land to allow wind turbine development on their property.

In 2005, Winona County was awarded a $200,000 grant from the Minnesota Department of Commerce for wind turbine projects. The county will not receive the funds, however, until after the turbine is built and connected to the grid.

Last year, the project was approved to receive up to $3.2 million in no-interest federal bonds under the "Clean Renewable Energy Bond Program," established by the federal Energy Policy Act of 2005. Unlike normal bonds that pay interest, these tax-credit bonds pay the bondholders by providing a credit against their federal income tax — in effect, providing interest-free financing.

Winona State University has pledged $10,000 toward the project. The University hopes to partner with local, county and state agencies to create a Wind Energy Resource Center to assist small businesses, farmers, and landowners with their renewable energy projects.

For more information contact Linda Grover at lgrover@co.winona.mn.us.

King County, Washington

Population: Approximately 1.7 million
Seat: Seattle
Population Change (1990-2000): +14.5%

In early 2007, King County announced a new partnership to bring about two million gallons of biodiesel to the area. The biodiesel, made from canola grown on Yakima County farms and fertilized with biosolids from King County's two wastewater treatment plants, will help power metro transit buses for nearly a year.

In 2003, the county partnered with Natural Selection Farms to determine how the biosolids produced at the treatment plants could help make biodiesel. Natural Selection Farms has since built a seed-crushing facility to make canola oil for shipment back to Seattle, where it will be further processed into biodiesel.

The biofuel will be enough to run all Metro diesel-powered buses on a 20% mix of biodiesel and ultra-low sulfur diesel for nearly a year. Metro expects to pay about $2.30 per gallon for initial shipments of the fuel containing the canola, about six cents per gallon more than it currently pays for soy-based biodiesel.

This new effort is expected to remove about 22,000 tons of carbon dioxide emissions in one year. That is the equivalent of removing 2,800 vehicles from the county's roads.

For more information visit *www.kingcounty.gov/exec/globalwarming.aspx*.

Henrico County, Virginia

Population: Approximately 262,000
Seat: Richmond
Population Change (1990-2000): +20.0%

Henrico County has developed a "Clean Energy Management Plan" to manage rising energy costs and consumption in county operations. The Plan, with the main goal of sustainability, was adopted in 2004 through the input of each department's Energy Steering Committee. The three major phases of the program are:

- Create enthusiasm in each department with "no-cost" savings generated from rate schedule corrections;
- Increase cost reductions and energy savings through "low-cost" projects with quick return on investments such as lighting retrofits and occupancy sensor installations; and
- Target the longer term and more expensive projects (such as heating, ventilation, and cooling replacements, and motor overhauls).

The county formed a Rebuild America partnership through the U.S. Department of Energy and in 2004, hosted a regional Rebuild America high performance school buildings seminar. The county has also incorporated energy concepts into standards of learning for schools through fact sheets on energy-related topics for each grade level.

Through an initial audit and rate schedule changes, the county easily saves $190,000 annually alone. Savings from each year's energy saving programs are applied to the following year's energy plans.

For more information contact Jerry Walker at 804-501-5763 or wal03@henrico.va.us.

Fairfax County, Virginia

Population: Approximately 970,000
Seat: Fairfax
Population Change (1990-2000): +18.0%

The Fairfax County fleet has 90 hybrid vehicles, including 56 Toyota Priuses and 24 Ford Escape Hybrids, making it the leader in purchasing alternative fueled vehicles in its region. Currently, the county is in the process of converting one of its Priuses to a plug-in, hybrid-electric vehicle.

The county is also pursuing grant funds to have a plug-in, hybrid-electric school bus transition completed, expecting to achieve a 40% decrease in diesel fuel consumption. The county is the only one in the region to have diesel retrofits on the entire school bus fleet. Retrofits have also been completed on 113 heavy duty trucks and four county transit buses with 91 more buses scheduled for 2007. County fire trucks will have retrofits completed in the 2007-2008 timeframe.

Currently, a nonattainment area for both fine particulate matter and ozone, Fairfax County has also purchased over five million kilowatt hours of wind energy in 2005 from Washington Gas Energy Services/Community Energy/Mountaineer Wind Farm in West Virginia, bringing an anticipated reduction of 6.2 million pounds of emissions between 2005 and 2006. The county plans to continue the wind power purchase for another two years through 2009.

Although no comprehensive quantifiable results on these efforts are available yet, the county is certain these measures contributed to decreased ozone levels in the county.

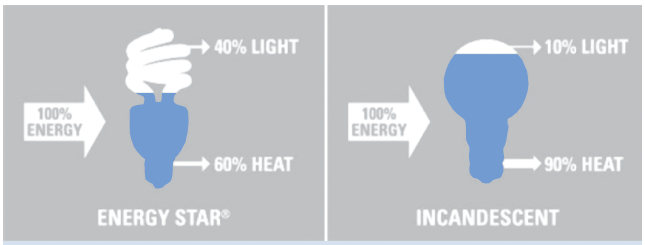
For more information visit *www.fairfaxcounty.gov/airquality* or contact Barbara Hardy at 703-246-8495 or Barbara.hardy@fairfaxcounty.gov

Using Energy Efficiency and/or Renewable Energy Projects for SIP Credits

The USEPA issued a guidance document on incorporating energy efficiency or renewable energy measures into State Implementation Plans (SIPs). The proposed measures need to be:

- Quantifiable – reasonable assumptions about how the electricity system will respond to the measures, where the reductions are expected to take place, and current and future air emissions limitations on electricity generators need to be considered.
- Surplus – emissions reductions are surplus as long as they are not otherwise relied on to meet air quality attainment requirements in air quality programs related to the SIP. In areas subject to a cap and trade program, this requirement could be met by retiring emissions allowances.
- Enforceable – the measure must either be enforceable against a responsible party or the state/local government submitting the SIP takes responsibility to the emissions reductions as a "voluntary" measure.
- Permanent – the measures need to be in place throughout the SIP timeframe.

To review this document, "Guidance on State Implementation Plan (SIP) Credits for Emissions Reductions from Electric-Sector Energy Efficiency or Renewable Energy Measures," in its entirety, visit: *www.epa.gov/ttn/oarpg/t1/memoranda/ereseerem_gd.pdf*.



NACo ENERGY STAR Challenge for Counties

Energy use in commercial buildings and industrial facilities is responsible for over 50% of U.S. carbon dioxide emissions. Therefore, it is imperative that any county looking to reduce greenhouse gas emissions within its jurisdiction pay special attention to the buildings in its community. The good news is that the opportunity to reduce these emissions is significant, since as much as 30% of the energy consumed in commercial buildings is often used unnecessarily or inefficiently.

The ENERGY STAR Challenge encourages buildings across the country to improve their energy efficiency by 10% or more. Counties play a vital dual role in the Challenge - they lead by example by improving their own buildings (through the NACo ENERGY STAR Courthouse Campaign) and they leverage their relationships with private sector organizations to motivate these groups to make energy efficiency improvements.

By participating in the NACo "ENERGY STAR Courthouse Campaign," counties can address the first goal of the Challenge – improving the energy efficiency of their own buildings. This voluntary program seeks to take action and improve the energy use of county buildings, including courthouses. As of April 2007, over 115 counties have made the commitment to energy efficiency. By taking advantage of the tools and resources provided by the USEPA's ENERGY STAR program, NACo offers educational materials, networking, training, and technical assistance to these participants.

By July 2007 at the NACo Annual Conference & Exposition, a tool kit will be available to assist counties in achieving the second goal of the Challenge – community outreach.

Archived newsletters, county presentations, news articles, and educational materials are available online at *www.naco.org/techassistance* and click on Energy Management.

For further information and to learn how your county can participate in the ENERGY STAR Challenge and the NACo ENERGY STAR Courthouse Campaign contact Kelly Zonderwyk at 202-942-4224 or kzonderwyk@naco.org.

NACo County ENERGY STAR Change a Light Campaign

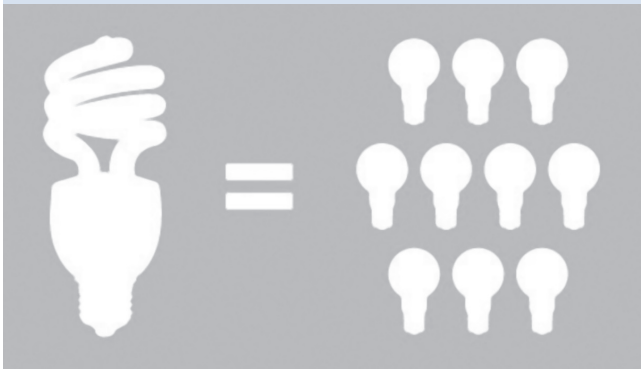
In 2006, NACo launched the first County ENERGY STAR "Change a Light Campaign." The national ENERGY STAR "Change a Light Campaign," sponsored by the USEPA, asks individuals to replace one incandescent bulb or fixture in their home with one that has earned the government's ENERGY STAR label.

NACo and Office Depot partnered to challenge employees of the nation's 3,066 counties to take the ENERGY STAR Change a Light pledge. Office Depot provided those who signed the pledge with a coupon to use towards a new ENERGY STAR-approved light.

The 2006 Campaign, which ran from August to October, concluded as the third most successful campaign in the country, falling behind only a major utility and a manufacturer of energy efficiency light bulbs. With well over 6,600 county employees signing the pledge, this will help to prevent over 2.7 million pounds of greenhouse gas emissions by saving more than 1.7 million kWh of electricity.

On national ENERGY STAR Change a Light Day, October 4, 2006, NACo and Office Depot honored the three counties that collected the most pledges. In less than two months these three counties – Fairfax County, Virginia, Sarasota County, Florida and Marinette County, Wisconsin – collected the most pledges in their category from their employees. Nationwide, 278 counties as well as the District of Columbia participated in the County ENERGY STAR Change a Light Campaign.

To participate in the County ENERGY STAR Change a Light Campaign contact Kelly Zonderwyk at kzonderwyk@naco.org or 202-942-4224.



Additional Resources

- **ACEEE's Green Book Online** *www.greenercars.com*

The American Council for an Energy-Efficient Economy offers an online database with Green Scores and environmental information about all model year 2007 vehicles.

- **Alternative Fuels Data Center** *www.eere.energy.gov/afdc/index.html*

A U.S. Department of Energy site provides a collection of information on alternative fuels and the vehicles that use them.

- **American Council on Renewable Energy (ACORE)** *www.acore.org*

With a focus on trade, finance and policy, ACORE promotes all renewable energy options for the production of electricity, hydrogen, fuels and end-use energy including: solar energy, wind power, geothermal energy, hydro and ocean energy, waste energy and fuels, and biomass energy and biofuels.

- **Center for a New American Dream** *www.newdream.org/procure/index.php*

Offers information and tools on environmental purchasing, including a calculator to compare the costs and emissions of hybrid, electric vehicles to conventional vehicles.

- **Energy Finder** *www.energyfinder.org*

An interactive, web-based tool that enables communities to explore untapped opportunities for economic development, pollution prevention, and risk reduction through energy efficiency. It helps any community estimate these benefits and provides details to get them started on energy projects.

- **ENERGY STAR** *www.energystar.gov*

ENERGY STAR is a joint program of the USEPA and the U.S. Department of Energy helping us all save money and protect the environment through energy efficient products and practices.

- **International Council for Local Environmental Initiatives' Cities for Climate Protection: Green Fleets** *www.greenfleets.org*

Provides a series of steps and information on green fleets for local governments.

- **National Renewable Energy Laboratory: Advanced Vehicles and Fuels** *www.nrel.gov/vehiclesandfuels*

Provides information on alternative fuels, alternative fuel vehicles, fleets, and additional resources.

- **Rebuild America** *www.eere.energy.gov/buildings/program_areas/rebuild.html*

Through the U.S. Department of Energy, is a network of community-based partnerships across the nation that are committed to saving energy, improving building performance, easing air pollution through reduced energy demand, and enhancing the quality of life through energy efficiency and renewable energy technologies.

- **USEPA Alternative Fuels Web site** *www.epa.gov/otaq/consumer/fuels/altfuels/altfuels.htm*

Provides fact sheets, certification procedures and emissions standards, emissions models, and more.

Anti-Idling and Truck-Stop Electrification

Local governments are working to reduce heavy-duty vehicle emissions (such as trucks and buses) through anti-idling education, laws, and offering truck-stop electrification stations. Unnecessary idling of trucks and buses (such as when making deliveries) for a period of time increases fuel use and emissions. Idling also can increase maintenance costs and shorten the life of the engine, be harmful to the driver's health, and contribute to increased noise levels. Long-duration truck idling emits 11 million tons of carbon dioxide, 180,000 tons of nitrogen oxides, and 5,000 tons of particulate matter annually.

Truck drivers idle primarily for cab comfort needs. As the driver rests in the truck sleeper compartment, he or she will often need to cool or heat the cab to be comfortable. Another popular reason for idling is to operate on-board appliances such as a television or microwave or off-board electrical equipment such as school bus flashers or cranes.

Truck-stop electrification allows truckers to plug-in their vehicles to operate necessary systems without idling their engine. In some cases, a stand-alone system can provide heating, ventilation, and air conditioning directly to the sleeper compartment.

Local Government Snapshots:

Hamilton County, Ohio

Population: 845,303
Seat: Cincinnati
Population Change (1990-2000): -2.5%

According to the Ohio Environmental Council, the Hamilton County-Cincinnati metropolitan area ranks 19th nationwide for diesel particle health impacts. Along with an effort that began in the county in 2004 to retrofit diesel engine school buses, Hamilton County created the "Turn the Key, Be Idle Free" anti-idling campaign. The first goal of the campaign is to educate school bus drivers on the health and air quality effects associated with diesel engine exhaust. The second goal of the campaign is to reduce vehicle idling habits of the general public.

In the first phase, the county worked with 20 schools. The county's public affairs staff began putting together an outreach plan, including purchasing handouts and giveaways carrying the anti-idling message and geared to various audiences. Many were distributed during Prize Patrol visits to area schools. The campaign randomly targeted 51 school bus drivers to educate on the need to be idle-free. Approximately 2,250 gallons of diesel fuel was saved due to this effort in the 2004-2005 school year.

In the second phase, the campaign distributed over 1,500 brochures and promotional items (such as zipper pulls, lanyards, and mugs) to local schools and received 60 anti-idling pledge cards from drivers. These pledge cards were included in a tool kit for teachers, including lesson plans related to air quality, and more giveaways. On the postage-paid cards, parents sign their names and check off boxes with tips about idling, such as turning off the car at a drive-through, or turning the engine off while waiting to pick up their kids at school. The cards are entered into a drawing for two tickets to a Cincinnati Reds baseball game next season. Those taking the pledge are automatically entered into a drawing to win two tickets to a Cincinnati Reds game.

For more information visit *www.hcdoes.org* or contact Nan Firent at 513-946-7754 or nan.frient@hamilton-co.org.

"Exhaust produced by idling vehicles is an unnecessary and avoidable threat to the wellbeing of our communities. Hamilton County's "Turn the Key, Be Idle Free" campaign first focused on school bus drivers as a finite group whose driving and idling habits directly affect the health of our children, and then expanded to reach the general public. Through a combination of giveaways, driver and teacher outreach, pledge cards, and community education, the campaign has resulted in decreased fuel usage, decreased air and noise pollution, and improved air quality for county residents."

Todd Portune
President
Board of Commissioners
Hamilton County, OH

Rowan County, North Carolina

Population: Approximately 130,000
Seat: Salisbury
Population Change (1990-2000): +17.4%

Rowan County began a truck-stop electrification program in 2003 to reduce emissions from heavy-duty diesel engines in large trucks traveling the Interstate-85 corridor. The county works with a number of public and private partners including the USEPA and the Centralina Council of Governments.

When complete, the project will provide idle-free spaces for 50 trucks. The county estimates that this will reduce annual nitrogen oxide emissions by 3.76 tons, carbon dioxide by 29 tons, and particulate matter by 0.08 tons.

For more information contact Bjorn Hansen at bhansen@centralina.org or 704-372-2416.

Anderson County, South Carolina

Population: Approximately 166,000
Seat: Anderson
Population Change (1990-2000): +13.9%

South Carolina's first truck stop electrification site opened in 2004 in Anderson County off Interstate-85 at Highway-81. A U.S. Department of Energy grant was combined with private funding to install IdleAire Technologies Corporation's truck stop electrification. IdleAire provides electrical service for each parking space. The heating, cooling, and ventilation unit is connected to the service delivery module via a flexible, reinforced, concentric hose, which also houses the delivery mechanisms for the communications and entertainment packages. All services are independently controlled by each driver.

The county anticipates that the electrification site will prevent more than 1,600 tons of emissions and save over two million gallons of fuel annually.

For more information on Anderson County's efforts contact Joey Preston at jpreston@andersoncountysc.org or 864-260-4031.

For more information on IdleAire Technologies Corporation visit *www.idleaire.com*.

Additional Resources

- **Clean Cities** *www.eere.energy.gov/cleancities*

Sponsored by the U.S. Department of Energy, the mission of the Clean Cities Program is to advance the economic, environmental, and energy security of the United States by supporting local decisions to adopt practices that contribute to reduced petroleum consumption in the transportation sector.

- **Truck Stop Electrification Locator** *www.eere.energy.gov/cleancities/idle/station_locator.html*

Sponsored by the Federal Highway Administration, this site displays public truck stop locations that have idle reduction facilities for heavy-duty trucks.

- **USEPA Idling Reduction: Innovative Funding and Incentive Opportunities** *www.epa.gov/smartway/idle-fund.htm*

Contains an overview of federal, state and nonprofit organizations providing funding for the reduction of emissions from long-duration truck and locomotive idling.

- **USEPA National Transportation Idle Free Corridors** *www.epa.gov/smartway/idlingplan.htm*

This USEPA program, launched in 2003, seeks to implement idle reduction projects along major transportation corridors that have air quality and long-duration idling concerns for trucks and locomotives.

- **USEPA SmartWay Transport Partnership** *www.epa.gov/smartway/index.htm*

A voluntary collaboration between the USEPA and the freight industry designed to increase energy efficiency while significantly reducing greenhouse gases and air pollution.

Tree Planting Programs

As trees beautify and shade communities, the leaves and roots clean the air and water. Trees remove pollutants like nitrogen oxides, sulfur oxides, particulate matter, and ground-level ozone by either absorbing gases or attaching particles to their leaves.

Trees and vegetation provide a natural cooling effect due to shade and evaporation of water from soil and leaves. Tree planting measures by local governments can help reduce rising temperatures caused by heat islands (see page37 for more information). Trees decrease surface and air temperatures and reduce the demand for building and home air conditioning.

The American Forests organization advises communities to strive for an overall tree canopy coverage of 40% (30% in the arid Southwest) to ensure a healthy ecosystem and quality of life. A healthy tree with a trunk diameter of 30 inches removes about 70 times more pollution than a tree with a three-inch trunk.

County-wide tree planting programs can help energize and educate the public on the benefits of trees. Trees also reduce storm water runoff, enhance the beauty of the community and streets, improve water quality, produce oxygen, and moderate temperatures.

Note: According to the USEPA, some species of trees and vegetation emit volatile organic compounds, including eucalyptus, sycamore, willow, and certain oak varieties. Lower volatile organic compounds are emitted from trees including pine and maple trees. Areas in nonattainment for ground-level ozone may want to consider low VOC emitting species along with factors such as hardiness, disease and resistance, and irrigation needs, when investing in large-scale tree planting initiatives.

Local Government Snapshots:

Sarasota County, Florida

Population: Approximately 326,000
Seat: Sarasota
Population Change (1990-2000): +16.5%

Sarasota County has been implementing its "Urban Forestry Program" since 1988. The county developed the "Comprehensive Urban Forestry Management Plan" to provide a strategy for privately-owned trees and all tree populations in public parks. Components to the program include:

- a "Street Tree Program" that has planted over 73 public road projects (right-of-way and median plantings);
- a "Neighborhood Street Tree Program" which offers minimal-cost tree design, election and planting along neighborhood rights-of-way (has planted 43 neighborhood enhancement projects);
- a "Canopy Road Ordinance and Program" in response to widespread community support for preservation and protection of the region's natural canopy roads covering 65 certified Canopy Roads;
- a road, development and utility design, review and comment program;
- enforcement of the Sarasota Street Tree Protection and Canopy Road Ordinances; and
- a vigorous Community Outreach and Education Program that includes a full-service website, a developing kids website (fully-animated and interactive), over 14 powerpoint presentations, tree care and maintenance demonstrations and workshops, and teacher workshop programs.

For more information visit *www.scgov.net/forestry*.

"Urban forests—including single trees growing in front yards or sidewalk boxes—contribute immensely to the health and beauty of our communities. For nearly 20 years, Sarasota County's "Urban Forestry Program" has worked to increase canopy coverage and decrease the urban heat island effect by encouraging tree planting and preservation in parks and open spaces, along roadways, and on private lands. This dynamic program has helped to make Sarasota County a cooler, greener, and healthier place to live."

Shannon Staub
County Commissioner
Sarasota County, FL

Marion County, Indiana

Population: Approximately 860,000
Seat: Indianapolis
Population Change (1990-2000): +7.5%

Indianapolis-Marion County began a major initiative in 2007 to plant 100,000 trees over the next ten years. The "NeighborWoods" initiative will focus on hot spots for intensive community tree planting. Every plantable space approved by government and property owners will be targeted for tree planting to meet a 25% tree cover goal in each of the hot spots. Tree planting will occur through volunteerism, tree distribution days, wholesale/retail partnerships as well as other avenues.

Researchers using Geographic Information Systems mapped a variety of indicators including crime rates, ambient air temperatures, impervious surfaces and low income to determine areas in most need of trees. Computer modeling will continue to be used to measure environmental benefits of trees. Public safety experts and researchers will study the relationship between greening neighborhoods, volunteers, and crime statistics.

For more information on this new initiative visit *www.kibi.org/programs/urban_forestry/neighborwoods.htm*.

City of San Antonio, Texas

Population: Approximately 1.1 million
Population Change (1990-2000): +15.0%

In 2000 the City of San Antonio began to calculate its tree canopy loss and associated environmental impact. To complete the study the Alamo Forest Partnership was created with local area governments, universities, and non-profit organizations, and Bexar County. The area was found to have lost 22% of its tree canopy between 1985 and 2001. This loss of canopy resulted in a loss of $8.9 million per year in air quality benefits and $17.7 million per year in cooling costs.

As a result, the city adopted a target tree canopy goal of 35%. The area's new volunteer residential green building program encourages additional tree preservation and cooling strategies. The city's tool kit for tree planting was updated to include information on designs and products for new developments to enhance cooling.

For more information visit *www.alamoforestpartnership.org*.

Philadelphia, Pennsylvania

Population: Approximately 1.5 million
Population Change (1990-2000): -10.6%

Currently a nonattainment area for both fine particulate matter and ozone, the "Tree Vitalize Program" is designed to increase the tree canopy in the five counties comprising the Philadelphia area, Bucks, Delaware, Montgomery, and Chester counties). Using satellite imagery from 1985 and 2001, the city found an estimated 8% of heavy tree cover was lost in its five county region.

Many agencies are involved in the program. The City Air Management Services used fines and penalties to fund the planting of 1,000 trees in 2007 (an average of $199 per tree). The Pennsylvania Horticultural Society completes the planting and maintains the trees with its Tree Tenders volunteer program (over 1,400 volunteers). The William Penn Foundation also provides funding.

The air quality benefits from planting just these 1,000 trees include preventing approximately 12 tons of particulate matter emissions and 12 tons of ozone pollution in the next 50 years. Other benefits cited by the city include: increased property values, improved drainage due to reduction of impervious surfaces, mitigation of the area's heat island effect, traffic calming, and other social benefits.

For more information on the program visit *www.treevitalize.net*.

Montgomery County, Maryland

Population: Approximately 870,000
Seat: Rockville
Population Change (1990-2000): +14.1%

Forest land in Montgomery County is exposed to stresses such as disturbance from trails and roads, clearing of overstory and understory plants, high populations of white-tailed deer, invasive plants, and other pests.

The county has adopted a Forest Preservation Strategy with the goal of increasing the quantity and quality of trees throughout its area by increasing forests, canopy, and street trees. Through its Street Tree Planting Program, the county plants street trees every spring and fall in public rights-of-way and medians.

Air pollution removed by tree canopy across the county through this effort is valued at approximately $34 million per year.

For more information contact Laura Miller at laura.miller@montgomerycountymd.gov or call 240-777-7704 x 7739.

Urban Heat Islands

The term "heat islands" describes urban air and surface temperatures that are higher than nearby rural areas. Heat islands can increase the rate of ground-level ozone formation. In urban heat island areas, 3% to 8% of community-wide demand for electricity is used to compensate for this rise in temperature.

Cities and suburbs in the U.S. have air temperatures up to ten degrees warmer than the surrounding natural land cover. These areas form when natural land cover is replaced by pavement, buildings, and other infrastructure. Even waste heat from vehicles contributes to higher temperatures in an urban area. The formation and intensity of a heat island will also depend upon weather, climate, and topography of the area.

The USEPA's "Heat Island Reduction Initiative" (HIRI) works with community groups, public officials, industry representatives, researchers, and others to identify opportunities to implement heat island strategies. HIRI supports research to better understand the impacts that heat island reduction strategies have on urban meteorology, air quality, energy demand, and human health. The program translates this research into outreach materials, tools, and guidance that provide communities with information to develop programs, policies, codes, and ordinances to implement heat island reduction strategies.

For more information on Urban Heat Islands visit the USEPA's Heat Island website at: *www.epa.gov/heatisland/index.html*.

Additional Resources

- **American Forests** *www.americanforests.org*

American Forests works to protect, restore and enhance the natural capital of trees and forests.

- **Center for Urban Forest Research** *www.fs.fed.us/psw/programs/cufr*

Provides scientific evidence on the benefits that urban forests add to communities.

- **CITYgreen** *www.americanforests.org/productsandpubs/citygreen*

The CITYgreen software is a GIS application that conducts complex statistical analyses of ecosystem services and creates easy-to-understand maps and reports. CITYgreen calculates dollar benefits based site-specific conditions.

- **GreenInfrastructure.net** *www.greeninfrastructure.net*

The Conservation Fund, in partnership with USDA Forest Service, examines how a strategically planned and managed network of wilderness, parks, greenways, conservation easements, and working lands with conservation value supports native species, maintain natural ecological processes, sustain air and water resources, and contribute to the health and quality of life for America's communities and people.

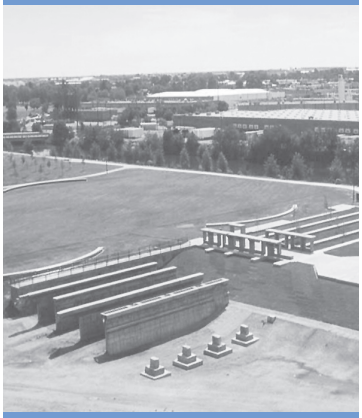
- **National Urban and Community Forestry Advisory Council** *www.treelink.org/nucfac*

Provides information on opportunities for cost share grants, ongoing projects, and project results.

- **USDA Forest Service, Urban and Community Forestry Program** *www.fs.fed.us/ucf*

Provides information on the technical and financial assistance available to help improve the livability of cities and communities through managing urban forest resources.

Infill and Brownfields Redevelopment



"The community of Claymont, while rich in history, architecture, and civic activism, needed to both revitalize its town center and address the quality of its air and water. The community and Council-driven Claymont overlay project preserves and builds on the character and diversity of the established working class neighborhood through mixed use, pedestrian-friendly development. Through a vibrant community effort, run down complexes and vacant lots are being reborn as housing, businesses, and open spaces, making Claymont an attractive, desirable, healthy place to live for future generations."

Chris Coons
County Executive
New Castle County, DE

A brownfield is a property where expanding, redeveloping, or reusing the land may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. It may be a lightly contaminated area, previous industrial land, or vacant land.

Smart growth encourages the redevelopment of these properties as pedestrian friendly, transit-accessible properties, built compactly with a mixture of land uses, and with access to public spaces, parks or plazas. Use of smart growth principles in redevelopment can create benefits from the reuse of infill sites, reduce demand for land for development on the urban fringe, and improve the air and water quality of the regions in which they are applied.

Cleaning up and reusing these areas can benefit the community because they are often close to urban areas. Short trips by car, mass transit, walking, or biking from these locations can benefit air quality by reducing vehicle miles traveled. Using these sites also helps preserve natural and open spaces where otherwise development may occur.

Local Government Snapshots:

New Castle County, Delaware

Population: Approximately 500,000
Seat: Wilmington
Population Change (1990-2000): +12.7%

A new economic development office was established in New Castle County to facilitate infill and redevelopment with an emphasis on brownfields. The County Office of Community Planning provides unincorporated communities the opportunity to create development and redevelopment guidelines to preserve those qualities that define their community. The implementing ordinance for community planning is the "Hometown Overlay Designation" (HOD). It provides a framework for active local involvement in community development and design.

A small unincorporated area of the county, Claymont, began in 2000 to address a 67-acre parcel of land that had once been an apartment complex. Members of the community formed the Claymont Renaissance. They worked in collaboration with the county to discuss strategies for redevelopment. The county dedicated staff and financial resources to the project.

The county adopted legislation initiating a new zoning overlay district which stated that the initiative, along with the development plan, had to come from the community. The plan needed to describe how development was intended to be compatible with the existing community character.

Through infill and redevelopment, Claymont residents set out to bring businesses into the community that would revive their neighborhood. In 2004, the Claymont Community Redevelopment Plan and Manual of Design Guidelines was submitted to the county.

A complimentary transportation plan was also developed which included use of medians, bike lanes, street trees, sidewalks, improved access to the area rail transit system, shops within walking distance of homes, and a mix of housing for all ages.

The old apartment complex was redeveloped and doubled the existing density to more than 1,200 units in a mixed-use, pedestrian friendly setting.

For more information visit *www.co.new-castle.de.us/landuse/home/webpage17.asp* or contact Karl Kalbacher at 302-395-5959 or KKalbacher@co.new-castle.de.us.

City of Alamosa, Colorado

Population: Approximately 8,000
Population Change (1990-2000): +2.7%

In 1911, the Mutual Power and Light Company built a coal-fired power plant in the city, which was later decommissioned in 1979 and closed in 1981. The building began to deteriorate, but costs for cleanup to make the site usable meant that the four acres covered by the building, utility huts, storage tanks, animal waste, coal particles and other containments, continued to sit empty.

A coordinated effort of local and state officials and the public helped to attract interest in redevelopment of this site. Then, under Colorado's "Targeted Brownfields Assessment Grant Program," the city sought public input for a vision for the site. An independent consultant evaluated the site for various uses and scenarios and city officials held a public meeting to inform citizens of the opportunities.

A private citizen bought the property and will reposition it for reuse. A portion of the property was also donated to the city. The site may be used for loft housing, a microbrewery, and commercial or industrial use.

For more information download the Colorado Brownfields Handbook at *www.dola.state.co.us/dlg/osg/brownfields.htm*.

Lane County, Oregon

Population: Approximately 323,000
Seat: Eugene
Population Change (1990-2000): +13.6%

Lane County was awarded a grant from the USEPA to help cleanup a brownfield that had been significantly contaminated by an abandoned gasoline station. Grant funds were used to develop plans and install a dual-phased (vapor and groundwater) remediation system and groundwater monitoring wells. Funds were also used to conduct community involvement activities.

Sequential Fuels, a company offering E10 gasoline, E85 bioethanol, and B5, B20, and B99.9 biodiesel, opened on the redeveloped site in September 2006. The biofuels station combines many innovative and sustainable design elements including passive solar architecture, a living roof, a solar array canopy, natural landscaping, and bioswales to filter runoff from the site. This redevelopment is expected to bring jobs to the local community and help reduce dependence on petroleum-based products in the area.

For more information call 541-682-4174.

City of Phoenix, Arizona

Population: Approximately 1.3 million
Population Change (1990-2000): +22.5%

The city has an aggressive infill program to help increase residential development in the central portion of the city. Since 1995, more than 3,600 new single family residential homes have been constructed under the program. Infill incentives include partial fee waivers of up to $2,250 per house. The infill program seeks to:

- encourage development of single-family owner-occupied housing on vacant, orphaned, or underutilized land located in the mature portions of Phoenix; and
- encourage quality house construction through higher development standards in an attempt to deter blight and decay by promoting neighborhood stability through home ownership.

For more information and to view the city's guidelines and checklists for the program, visit: *http://phoenix.gov/BUSINESS/infilpgm.html*.

Washtenaw County, Michigan

Population: Approximately 323,000
Seat: Ann Arbor
Population Change (1990-2000): +13.7%

Washtenaw County is concerned about sprawl. The county recognizes that it has many moderate-sized brownfields that if redeveloped and properly marketed could help push development back to urban areas where infrastructure already is in place.

The Brownfield Redevelopment Authority was established as a forum for the county's 28 communities to identify and treat environmentally distressed areas within county borders. Due to the state's home rule law, these communities each have separate land use plans. The goals of the Authority are to:

- seek public and private funding for redevelopment projects;
- partner with participating municipalities to develop, review, and approve project plans;
- prevent duplicative efforts by supporting cooperative land use planning;
- support tax base enhancement and job creation and retention;
- promote the reuse of established residential, commercial and industrial sites with
- protection of existing green spaces; and
- provide a mechanism for the cleanup of contaminated properties.

Currently, 15 of the 28 jurisdictions have joined the Authority. The county's brownfield coordinator assists these jurisdictions and applies for state and federal funds on behalf of the communities as well as helps to identify developers for redevelopment sites.

For more information contact Rebecca Head at heard@co.washtenaw.mi.us or 734-994-6361.

Additional Resources

- **National Association of Development Organizations: Rural Brownfields Awareness Project** *www.nado.org/rf/innocenters/brown.php*

Includes special research reports, and resource guides.

- **National Association of Local Government Environmental Programs (NALGEP)** *www.nalgep.org/issues/brownfields*

Includes information on the Brownfield Communities Network - a national network of local communities working to demonstrate how the cleanup and reuse of contaminated property can be an effective tool for community revitalization.

- **USEPA Brownfields Cleanup and Redevelopment Program** *www.epa.gov/brownfields/about.htm*

Contains basic information on brownfields, and grant funding for assessments, cleanup, trainings, and revolving loan funds. It also provides links to technical assistance and laws and statutes.

Greenways and Open Spaces

Open space refers to undeveloped areas which may or may not include significant environmental features like wetlands, and areas designated as agricultural land or parks. Open space preservation maintains habitats, protects diverse ecology, and benefits air quality.

Greenways are corridors of protected open space managed for conservation, recreation and transportation purposes. They often follow natural land or water features and link nature preserves, parks, cultural features, and historic sites with each other and populated areas. Greenways also benefit air quality, improve health and quality of life, and help economic and community development by increasing property values.

Local Government Snapshots:

Lake County, Illinois

Population: Approximately 644,000
Seat: Waukegan
Population Change (1990-2000): +23.9%

Lake County is home to more endangered and threatened species than any other county in Illinois. It is also home to a diverse and growing population of nearly 700,000 people.

Since 1999, Lake County voters and the Lake County Board of Forest Preserves Commissioners have made commitments to protect open space and wildlife corridors threatened by this growth. Voters have approved three referenda: two bond measures generating $140 million for acquiring, maintaining, and improving Preserves; and an additional tax increase that generates around three million dollars annually for managing Preserves.

In 2005, the commissioners approved another $85 million in bonds (non-referendum) over the following four-to-five years to purchase an additional 1,400 acres. The Lake County Forest Preserve District has leveraged voter-approved funds with over $20 million in state, federal, and private grants and donations.

Since 1999, the Lake County Forest Preserve District has protected an additional 5,000 acres of land (bringing the total to 25,300 acres), opened 12 entirely new preserves, expanded 17 existing preserves, and reached a total of 125 miles of trails. Each year, some 2.5 million visits occur on preserve lands, allowing the public to learn about nature, interact with wildlife, and participate in outdoor recreation. The District has strong partnerships, thousands of volunteers, and considerable community involvement in all facets of its mission.

Plans also call for a five-year "Capital Improvement Program" of nearly $50 million.

For more information contact Andrew S. Kimmel at akimmel@co.lake.il.us or 847-968-3209.

Philadelphia, Pennsylvania

Population: Approximately 1.5 million
Population Change (1990-2000): -10.6%

GreenPlan Philadelphia" is the area's blueprint for sustainable open space. It is the city's first comprehensive plan for its parks, recreation areas and open space. The plan will serve as a guide to making informed decisions about open space use, acquisition, development, funding, and management.

The development of the plan began in the Spring of 2006, with the formation of six working groups, made up of city employees from 13 agencies. The City of Philadelphia, through its Managing Director's Office, is leading the process, with the assistance, expertise, and support of a variety of other city agencies including:

- Capital Program Office
- City Planning Commission
- Department of Commerce
- Department of Human Services
- Department of Public Health
- Department of Recreation

"Since 1999, Lake County voters have approved several referenda showing they recognize the importance of open spaces and greenways to the health of our environment and our community. As our population grows, we have taken measures to balance development with protection of our diverse natural surroundings. By involving the public in the creation and management of preserve lands, the Lake County Forest Preserve District works consistently to safeguard air and water resources, protect wildlife and natural habitats, increase property values, and enhance quality of life for current and future generations.

Bonnie Thomson Carter
President
Lake County
Forest Preserve Board of
Commissioners, IL

- Department of Streets
- Fairmount Park Commission
- Mayor's Office of Community Services
- Neighborhood Transformation Initiative/Empowerment Zone
- Office of Housing and Community Development
- Police Department
- Water Department

The planning phase will continue throughout 2007, and implementation will happen when that phase is complete.

For more information on this new plan visit *www.greenplanphiladelphia.com*.

Broward County, Florida

Population: Approximately 1.6 million
Seat: Fort Lauderdale
Population Change (1990-2000): +28.5%

In the Spring of 1999, Broward County recognized the need to improve the quality of life in the urban environment. The county set a goal to create a county-wide system of greenways and trails. The County Department of Planning and Environmental Protection was responsible for developing the plan.

The county identified the following steps for its action plan:

1. Adopt the Broward County Greenways Master Plan
2. Continue the mission of the County's greenways
3. Create a technical advisory committee
4. Establish greenway funding sources
5. Establish an implementation schedule
6. Promote greenways and trails within Broward County
7. Construct greenway corridors

The greenways planning kicked off in the Fall of 1999 with an all day visioning session facilitated by the South Florida Regional Planning Council. Over 100 participants came together to draft the plan's vision statement. In the Fall of 2000, the public again attend a meeting to review the draft plan and assist in preparing the final conceptual greenways system plan.

Based upon public input and planning considerations, eight priority corridors were selected for more detailed planning. These phase one corridors were identified as those with the highest priority for development.

To review the county's master plan visit *www.broward.org/greenways*.

County Leadership in Conservation Award

NACo and the Trust for Public Land, in partnership with the National Association of County Planners and the National Association of County Park and Recreation Officials, recognize leadership, innovation, and excellence in county land conservation efforts through the "County Leadership in Conservation Awards."

Three awards will be presented to county officials representing NACo member counties with small, medium, and large populations during NACo's Legislative Conference held annually in Washington, D.C.

To read about past award winners and learn more about the program visit *www.naco.org/conservationawards*. Nominations for the 2008 award will be due in November 2007.

For more information contact Abby Friedman at afriedman@naco.org or 202-942-4225.

Additional Resources

- **The East Coast Greenway** *www.greenway.org*

Plans to connect all the major cities of the East Coast along a continuous, off-road path and spans 3,000 miles from Calais, Maine to Key West, Florida.

- **National Association of County Planners (NACP)** *www.countyplanning.org*

A NACo affiliate, NACP represents a resource of county planning officials and professional planners who can communicate ideas and share experiences.

- **National Association of Park and Recreation Officials (NACPRO)** *www.nacpro.org*

A NACo affiliate, NACPRO represents counties and regional parks systems on federal legislative matters. Its goal is to advance official policies that promote county parks and recreation issues while providing members with opportunities to network, exchange resources and achieve professional development.

- **Rails-to-Trails Conservancy** *www.railtrails.org/index.html*

A nonprofit organization working with communities to preserve unused rail corridors by transforming them into trails, enhancing the health of America's environment, economy, neighborhoods, and people.

- **Rails-to-Trails Conservancy's Trails & Greenways Clearinghouse** *www.trailsandgreenways.org*

Provides technical assistance, information resources and links to a wealth of other greenway sites.

- **The Trust for Public Land** *www.tpl.org/greenprinting*

Provides a lot of information on greenways and open space, including the publication "Local Greenprinting for Growth" a step-by-step guide for land conservation.

Air Monitoring and Air Emergencies

Air quality conditions continuously change whether due to extreme weather conditions such as excessive heat days, or toxic emergencies such as hazardous spills or fires. Many local governments monitor air-quality levels and typically have systems in place to inform the public of changes (also see page 9 of this guide on Air Awareness Programs). Effective local government strategies to monitor and inform the public of air quality conditions require and promote collaboration among government agencies and external stakeholders.

Local Government Snapshots:

Mecklenburg County, North Carolina

Population: Approximately 695,000
Seat: Charlotte
Population Change (1990-2000): +34.9%

Mecklenburg County informs the public of changes in its local air quality conditions through public outreach such as the Mecklenburg County Air Quality web site and a telephone hotline known as the "smogline." Air-quality monitoring for particulate matter and ozone is conducted directly by the county along with four other criteria air pollutants.

The county operates three $PM_{2.5}$ and four PM_{10} monitoring sites year-round through two different methods: a filter based method and a continuous instrumental method. $PM_{2.5}$ is measured through the use of a pre-weighted filter which collects the air sample for a 24-hour period and is then re-weighed to calculate the mass particulate concentration per volume of air sampled. PM_{10} monitoring occurs through a continuous method that collects particulates in a filter, which is mounted on the top of an oscillating glass element. The information is recorded by a data logger and compiled into one minute averages.

The county also operates three ozone monitoring sites that operate annually from April 1 to October 31. Every ten seconds, the three ozone analyzers measure the air's ozone concentration and record the reading which is later converted into one-hour averages.

The information that Mecklenburg County gathers is then used to update the air quality index information that is available on their website: *http://maps.co.mecklenburg.nc.us/website/airquality*. Through the use of Geographic Information Systems technology, the county provides air data for each of its monitoring sites and a map of the site locations.

For more information visit *www.charmeck.org/Departments/LUESA/Air+Quality/Home.htm*.

"Because Boulder County sits at the point where the heavily urbanized City of Denver and the rural wilderness of the Rocky Mountains meet, a complex air quality environment is created that can intensify organic trace gases. This study will help us to continue to better understand and assess local air quality and develop management strategies."

Pam Milmoe
Air/Waste Coordinator
Public Health Environmental
Health Division
Boulder County, CO

Hamilton County, Ohio

Population: Approximately 845,000
Seat: Cincinnati
Population Change (1990-2000): -2.5%

To address health and safety concerns in a community where a plastic manufacturing facility was recently responsible for a series of toxic gas releases, Hamilton County coordinated an effort in 2005 among stakeholders including the local emergency management services, the local school district, the Hamilton County Communication Center, and the plastic manufacturing facility.

Together they developed a real-time emergency response air monitoring system with automated notification procedures. This real-time monitoring and notification procedure allows for a rapid, coordinated response among all stakeholders to effectively deal with emergency response. In the event of a future release, a prerecorded message will be sent to the Hamilton County Communications Center which then responds with direct phone notification to the stakeholders.

For more information visit *www.hcdoes.org* or contact Michael Kramer at 513.946.7727 or michael.kramer@hamilton-co.org.

Boulder County, Colorado

Population: Approximately 290,000
Seat: Boulder
Population Change (1990-2000): +28.7%

In the Winter of 2006-2007, the Boulder County Public Health Department began monitoring 40 air toxics at five locations over a one-year period. The county received a grant from the USEPA to conduct the air monitoring, which is the first and largest monitoring effort in the county since 1996, when just three air toxins were monitored at three locations. Environmental impacts such as traffic, agricultural burning, oil and gas development, and airflow are also recorded at the locations. Analysis of the findings will focus on indicator pollutants that will help estimate the sources of pollution.

The air monitoring study will be conducted with researchers at the Mechanical Engineering Department and an analytical laboratory at the Institute of Arctic and Alpine Research at Colorado University Boulder. Sample collection will be performed over 24 hours every sixth day. Continuous monitoring will be done for ozone at all stations. The study is also intended to evaluate the air quality impacts of industrial activities, oil and gas exploration, and vehicle emissions. It will define concentrations of local air toxics and build on the findings of previous studies.

For more information visit *www.co.boulder.co.us/health/environ/airquality/outdoorair/airToxics.htm*.

Additional Resources

- **AIRNow** *http://airnow.gov*

A multi-agency site that provides real time air pollution data, forecasts, general information on air quality and smog, ozone maps, and detailed daily reports from selected states. See page 11 of this guide for further information.

- **AirData** *www.epa.gov/air/data/info.html*

Provides access to yearly summaries of air pollution data taken from USEPA's air pollution databases.

- **USEPA Ambient Air Monitoring Listserv** *www.epa.gov/ttn/amtic/airlist.html*

Provides newsletters, information on conferences and work group meetings, and any relevant new information or technology for the air monitoring community.

- **USEPA Ambient Monitoring Technology Information Center** *www.epa.gov/ttn/amtic*

Contains information and files on ambient air quality monitoring programs, details on monitoring methods, relevant documents and articles, information on air quality trends and nonattainment areas, and federal regulations related to ambient air quality monitoring.

Air Quality Partnerships

Establishing partnerships to address air quality concerns can bring additional resources to local programs that promote cleaner, healthier air. Throughout the country, local governments have created formal partnerships with a range of private entities, state and federal agencies, and other local area governments. Prior to joining a partnership with a local government, an agency or company must first understand the direct benefit the partnership has to their business interests. Once on board, partners can provide both monetary and in-kind contributions to the local air quality program.

Local Government Snapshots:

Dane County, Wisconsin

Population: Approximately 427,000
Seat: Madison
Population Change (1990-2000): +15.8%

The Dane County Clean Air Coalition, created in 2003, is a private-public partnership of businesses, schools, associations, and state and local government agencies. The partners are working together to voluntarily reduce air pollution, keep the air healthy and help ensure Dane County continues to meet state and federal air quality standards. Coalition partners include: City of Madison, Dane County, Greater Madison Chamber of Commerce, Kraft Foods, Madison Area Metropolitan Planning Organization, Madison Gas & Electric Company, Madison Metropolitan School District, Petroleum Marketers Association of Wisconsin, University of Wisconsin - Madison, Wisconsin Department of Administration, Wisconsin Department of Natural Resources, and Wisconsin Petroleum Council.

Either through policymaking, or their own activities, each partner is in a direct position to impact air emissions in the county. The goal is to enhance the quality of life in Dane County through specific actions that promote cleaner, healthier air.

Coalition efforts focus on the following strategies:

- working with industries, businesses, and government agencies on specific, cost-effective ways to reduce air emissions;
- lowering emissions from mobile sources by using cleaner vehicles and fuels, and providing mass transit and clean commute programs;
- educating citizens about the importance of clean air and encouraging individuals to take actions that will help improve air quality; and
- implementing Clean Air Action Days to heighten awareness and encourage broad-based participation in air pollution reduction efforts.

The Coalition is engaged in clean air activities including: ozone awareness days, a gas can exchange program, a gas station vent-cap installation program, a green gas station initiative, bio diesel school buses, energy efficiency projects and much more.

For more information visit *www.cleanairdane.org* or contact Dave Merritt at 608-266-9063.

"Dane County citizens recognize that air pollution does not abide by property lines or city boundaries—it is a community-level problem that requires a collaborative solution. The Dane County Clean Air Coalition relies upon a partnership of more than a dozen local government agencies, utility companies, businesses, and non-profits to take actions that will promote cleaner air for everyone. Through education, outreach, or policy change on the business or local government levels, partner organizations each take on part of the challenge, resulting in a county-wide effort to reduce air pollution and improve public health."

Brett Hulsey
County Supervisor
Dane County, WI

Forsyth County, North Carolina

Population: Approximately 306,000
Seat: Winston-Salem
Population Change (1990-2000): +14.7%

In 1996, Forsyth County began to address mobile source issues after some North Carolina counties were designated nonattainment areas for both ozone and particulate matter. Due to reduced resources at the state level, the county established a Mobile Source Group in 2003 to address local transportation and air quality measures. This effort is unique to Forsyth County because it was the first known partnership where a state program was partially delegated to a local air pollution control agency with funding from local transportation agencies. The program utilizes existing county resources and pays for itself without additional county tax dollars.

Services through the program include:

- Grant application and project management
- Congestion mitigation and air quality projects
- Emissions reduction strategy development
- Cost/benefit analyses for new transportation projects
- Alternative transportation projects
- Regional air quality analyses
- Alternative fuel projects
- Long range transportation plan conformity

The development of conformity demonstrations is a major component of the program. These demonstrations address the generation of emissions factors based on projected transportation data and economic growth. Emissions factors are used to demonstrate whether local transportation plans conform to requirements designed to ensure attainment status.

For more information contact Robert Fulp at fulprr@forsyth.cc or 336-703-2440.

Resource Tools

Forsyth County's Mobile Source Group utilizes several computer programs to help estimate emissions quantities and assess their impact, including the following tools:

- USEPA's MOBILE6 Emissions Factor Model is an emissions factor model for predicting gram per mile emissions of hydrocarbons, carbon monoxide, nitrogen oxides, carbon dioxide, particulate matter, and toxics from cars, trucks, and motorcycles under various conditions. Download the tool at *www.epa.gov/otaq/m6.htm*.
- The Clean Air and Climate Protection Software was developed jointly by the National Association of Clean Air Agencies, the International Council for Local Environmental Initiatives (ICLEI), and the USEPA. The software is designed to track emissions on either a supply or demand-side basis, build emissions scenarios for use in the planning process, and create a full emissions reduction plan. Further information on the tool is available at *www.cacpsoftware.org*.
- USEPA's National Mobile Inventory Model (NMIM) helps to develop estimates of current and future emissions inventories for on-road motor vehicles and non-road equipment. The free software is available to download at: *www.epa.gov/otaq/nmim.htm*.
- USEPA's NONROAD Model is used for estimating air pollution inventories by professional mobile source modelers, such as state air-quality officials and consultants. The tool is available at: *www.epa.gov/otaq/nonrdmdl.htm*.
- USEPA's Ambient Air Dispersion Models help characterize the atmospheric processes that disperse a pollutant emitted by a source. A variety of dispersion models are available at: *www.epa.gov/scram001/dispersionindex.htm*.

Dane County Clean Air Coalition Works Towards "Green Gas Stations"

In 2006, the Dane County Clean Air Coalition received a $50,000 Air Innovations Grant from the USEPA to fund the county's "Green Gas Station" clean air project. The grant will help the county purchase and assess two gasoline vapor recovery systems at two gas stations. Vaporsaver systems use pressure-vacuum vent caps on large underground gasoline storage tanks. These caps hold in gasoline vapors that contain VOCs, one of the main components of ozone. The system captures hydrocarbons emitted from filling a gas tank and sends them back to the underground tanks in a compressed liquefied form. This process leaves only oxygen to escape from the vents.

The county estimates if every gas station in the area installed the Vaporsaver system technology, they would annually: save 440,000 gallons of gas, prevent 1,350 tons of ozone pollutants, and each station would save $6,644.

The grant will also help the county purchase and install additional vacuum pressure vent caps at 100 gasoline stations. These caps are used for underground gasoline storage tanks to keep gasoline vapors inside. After 50 stations received these caps in 2004, the county calculated a savings of 19 tons of ozone pollution each year, which is the equivalent of removing 450 cars from the county's roadways.

Air Quality Glossary

Criteria air pollutants - a group of common air pollutants regulated by USEPA on the basis of criteria (information on health and/or environmental effects of pollution). Criteria air pollutants are commonly found throughout the United States. There are six criteria air pollutants:

Carbon monoxide (CO) - a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust and industrial processes (such as metals processing and chemical manufacturing), residential wood burning, and natural sources such as forest fires.

Lead - a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources.

Nitrogen oxides (NOx) - the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. Many of the nitrogen oxides are colorless and odorless. However, one common pollutant, nitrogen dioxide (NO2) along with particles in the air can often be seen as a reddish-brown layer over many urban areas.

Ozone (O3) - a gas composed of three oxygen atoms. It is not usually emitted directly into the air, but at ground-level is created by a chemical reaction between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Ozone occurs in nature; it produces the sharp smell you notice near a lightning strike. High concentrations of ozone gas are found in the stratosphere, high above the earth. Stratospheric ozone shields the earth against harmful rays from the sun, particularly ultraviolet B. Smog's main component is ground-level ozone which is a product of reactions among chemicals produced by burning coal, gasoline and other fuels, and chemicals found in products including solvents, paints, hairsprays, etc.

Particulate matter (PM) - also known as particle pollution. PM is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles.

Sulfur dioxide (SO2) - belongs to the family of sulfur oxide gases (SOx). These gases dissolve easily in water. Sulfur is prevalent in all raw materials, including crude oil, coal, and ore that contains common metals like aluminum, copper, zinc, lead, and iron. SOx gases are formed when fuel containing sulfur, such as coal and oil, is burned, and when gasoline is extracted from oil, or metals are extracted from ore.

Acid rain - Air pollution produced when acid chemicals are incorporated into rain, snow, fog or mist. The "acid" in acid rain comes from sulfur oxides and nitrogen oxides, products of burning coal and other fuels and from certain industrial processes. The sulfur oxides and nitrogen oxides are related to two strong acids: sulfuric acid and nitric acid. When sulfur dioxide and nitrogen oxides are released from power plants and other sources, winds blow them far from their source. If the acid chemicals in the air are blown into areas where the weather is wet, the acids can fall to Earth in the rain, snow, fog or mist. In areas where the weather is dry, the acid chemicals may become incorporated into dusts or smokes. Acid rain can damage the environment, human health, and property.

Alternative fuels - Fuels that can replace ordinary gasoline. Alternative fuels may have particularly desirable energy efficiency and pollution reduction features. Alternative fuels include compressed natural gas, alcohols, liquefied petroleum gas (LPG), and electricity. The 1990 Clean Air Act encourages development and sale of alternative fuels.

Attainment area - A geographic area in which levels of a criteria air pollutant meet the health-based primary standard (national ambient air quality standard, or NAAQS) for the pollutant. An area may have an acceptable level for one criteria air pollutant, but may have unacceptable levels for others. Thus, an area could be both attainment and nonattainment at the same time. Attainment areas are defined using federal pollutant limits set by USEPA.

CFCs (chlorofluorocarbons) - These chemicals and some related chemicals have been used in great quantities in industry, for refrigeration and air conditioning, and in consumer products. CFCs and their relatives, when released into the air, rise into the stratosphere, a layer of the atmosphere high above the Earth. In the stratosphere, CFCs and their relatives take part in chemical reactions which result in reduction of the stratospheric ozone layer, which protects the Earth's surface from harmful effects of radiation from the sun. The 1990 Clean Air Act includes provisions for reducing releases (emissions) and eliminating production and use of these ozone-destroying chemicals.

Clean Air Act - The original Clean Air Act was passed in 1963, but our national air pollution control program is actually based on the 1970 version of the law. The 1990 Clean Air Act Amendments are the most far-reaching revisions of the 1970 law. In this summary, we refer to the 1990 amendments as the 1990 Clean Air Act.

● **Clean fuels** - Low-pollution fuels that can replace ordinary gasoline. These are alternative fuels, including gasohol (gasoline-alcohol mixtures), natural gas and LPG (liquefied petroleum gas).

● **Emission** - release of pollutants into the air from a source. We say sources emit pollutants. Continuous emission monitoring systems (CEMS) are devices which some large sources are required to install, to make continuous measurements of pollutant releases.

● **Mobile sources** - moving vehicles or objects that release pollution such as cars, trucks, buses, planes, trains, motorcycles and gasoline-powered lawn mowers. Mobile sources are divided into two groups: road vehicles, including cars, trucks and buses, and non-road vehicles such as construction equipment, trains, planes and lawn mowers.

● **Monitoring** - Measurement of air pollution is referred to as monitoring. The USEPA, state and local agencies measure the types and amounts of pollutants in the air. The 1990 Clean Air Act requires certain large polluters to perform enhanced monitoring to provide an accurate picture of their pollutant releases. Enhanced monitoring programs may include keeping records on materials used by the source, periodic inspections, and installation of continuous emission monitoring systems (CEMS). Continuous emission monitoring systems will measure, on a continuous basis, how much pollution is being released into the air. The 1990 Clean Air Act requires states to monitor community air in polluted areas to check on whether the areas are being cleaned up according to schedules set out in the law.

● **Nonattainment area** - a geographic area in which the level of a criteria air pollutant is higher than the level allowed by the federal standards. A single geographic area may have acceptable levels of one criteria air pollutant but unacceptable levels of one or more other criteria air pollutants; thus, an area can be both attainment and nonattainment at the same time.

● **Primary National Ambient Air Quality Standard** - a pollution limit based on health effects. Primary standards are set for criteria air pollutants.

● **Secondary National Ambient Air Quality Standard**- a pollution limit based on environmental effects such as damage to property, plants, visibility, etc. Secondary standards are set for criteria air pollutants.

● **Smog** - a mixture of pollutants, principally ground-level ozone, produced by chemical reactions in the air involving smog-forming chemicals. A major portion of smog-forming pollution comes from burning of petroleum-based fuels such as gasoline. Volatile organic compounds also are found in products such as paints and solvents. Smog can harm health, damage the environment and cause poor visibility. Smog formation is often linked to heavy motor vehicle traffic, hot summertime temperatures, and calm winds or temperature inversions (weather condition in which warm air is trapped close to the ground instead of rising). Smog is often worse miles away from the original source of the smog-forming chemicals.

● **Source** - any place or object from which pollutants are released. A source can be a power plant, factory, dry cleaning business, gas station or farm. Cars, trucks, and other motor vehicles are sources, and consumer products and machines used by industry can be sources too. Sources that stay in one place are referred to as stationary sources; sources that move around, such as cars or planes, are called mobile sources.

● **State implementation plan (SIP)** - a detailed description of the programs a state will use to carry out its responsibilities under the Clean Air Act. State implementation plans are collections of the regulations used by a state to reduce air pollution. The Clean Air Act requires that USEPA approve each state implementation plan. Members of the public are given opportunities to participate in review and approval of state implementation plans.

● **Stationary source** - a place or object from which pollutants are released and which does not move around. Stationary sources include power plants, gas stations, incinerators, woodstoves, etc.

● **Volatile organic compounds (VOCs)** - Volatile chemicals produce vapors readily; at room temperature and normal atmospheric pressure, vapors escape easily from volatile liquid chemicals. Volatile organic chemicals include gasoline, industrial chemicals such as benzene, solvents such as toluene and xylene, tetrachloroethylene, and perchloroethylene, (the principal dry cleaning solvent). Many volatile organic chemicals are also hazardous air pollutants such as benzene which causes cancer.

General Air Quality Resources for Local Governments

- **National Association of Counties (NACo)** *www.naco.org*

The National Association of Counties (NACo) is the only national organization that represents county governments in the United States. Founded in 1935, NACo provides essential services to the nation's 3,066 counties. NACo advances issues with a unified voice before the federal government, improves the public's understanding of county government, assists counties in finding and sharing innovative solutions through education and research, and provides value-added services to save counties and taxpayers money. Specific NACo environmental program links are provided throughout this guide.

- **U.S. Environmental Protection Agency (USEPA)** *www.epa.gov/air*

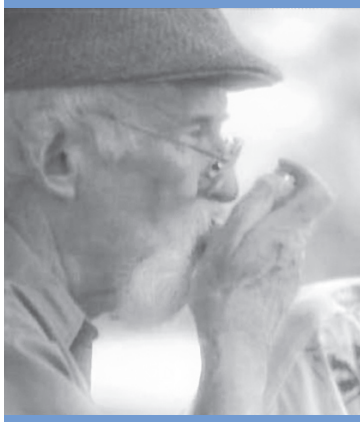
The Office of Air and Radiation (OAR) develops national programs, technical policies, and regulations for controlling air pollution and radiation exposure. OAR is concerned with pollution prevention and energy efficiency, indoor and outdoor air quality, industrial air pollution, pollution from vehicles and engines, radon, acid rain, stratospheric ozone depletion, climate change, and radiation protection. Specific USEPA environmental program links are provided throughout this guide.

- **National Association of Clean Air Agencies (NACAA)** *www.4cleanair.org*

The National Association of Clean Air Agencies (NACAA) represents air pollution control agencies in 53 states and territories and over 165 major metropolitan areas across the United States. State and local air pollution control officials formed NACAA (formerly STAPPA/ALAPCO) over 30 years ago to improve their effectiveness as managers of air quality programs.

- **National Association of Local Government Environmental Programs (NALGEP)** *www.nalgep.org*

The National Association of Local Government Environmental Professionals (NALGEP) is a not-for-profit organization that represents local government personnel responsible for ensuring environmental compliance and developing and implementing environmental policies and programs.



Notes:

Notes:

Notes:

25 Massachusetts Avenue, NW / Suite 500 / Washington, DC 20001
202.393.6226 / fax 202.393.2630 / www.naco.org