

Clean Communities on the Move

A Partnership-Driven Approach to Clean Air and Smart Transportation



About the National Association of Local Government Environmental Professionals

Founded in 1993 by a group of local officials, NALGEP is a non-profit national organization representing local government professionals responsible for environmental compliance and the development and implementation of local environmental policy. NALGEP's membership includes more than 250 local government officials located throughout America. NALGEP brings together local environmental officials to network and share information on innovative practices, conduct environmental policy projects, promote environmental training and education, and communicate views on national environmental issues. NALGEP is conducting projects on a wide range of environmental issues, including brownfields, smart growth, USTfields, clean air, transportation innovation, and clean water. NALGEP is managed by Spiegel & McDiarmid, a national law firm located in Washington, DC. Please visit NALGEP's website at www.nalgep.org.

About this report

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Local governments are on the front lines of pollution and transportation planning and are uniquely situated to influence clean air and smart transportation innovation.

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The progress made toward clean air goals is in jeopardy as communities struggle with the difficult and growing challenges of sprawl and increasing levels of vehicle miles traveled.

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Local communities have taken the initiative to develop innovative programs to improve the quality of air in and livability of their communities.

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Executive Summary

Across America, local communities are striving to keep the air clean and healthy while they face the compounding challenges of choking traffic congestion, increasing vehicle emissions, and sprawling growth patterns. These challenges will increase as additional communities struggle with designations of nonattainment for ozone or fine particulate matter pollution under new federal Clean Air Act standards.

The National Association of Local Government Environmental Professionals (NALGEP) represents local communities across the nation who are seeking innovative approaches to their environmental and community challenges. In 2000, NALGEP issued the *Profiles in Local Clean Air Innovation* report, which called for new voluntary tools to complement command-and-control approaches to clean air. Since that time, the U.S. Environmental Protection Agency (EPA) has launched several initiatives, including the Clean Air Transportation Communities (CATC) effort to sponsor 10 pilot demonstration projects that show how voluntary transportation practices can improve the quality of the air, health, and environment in localities.

The CATC initiatives provide a broad range of innovative programs ranging from promoting smart parking meters and car sharing to cutting individual car use, upgrading local car fleets to alternative fuel technologies, and providing electric hook ups at truck stops to cut diesel engine idling. The CATC program supported community-based marketing efforts to raise awareness about public transit and alternative fuel technologies and helped local planners model the air impacts of smart growth development patterns.

There are a host of other local voluntary programs that are contributing to cleaner air. Prior to and since the launch of CATC, EPA has expanded support for voluntary partnership-driven projects that improve quality of air and the livability of our communities, including through its Best Workplaces for Commuters, Clean School Bus USA, SmartWay Transport Idling Reduction, and Diesel Retrofit programs and through its partnership with the Department of Transportation in the It All Adds Up to Cleaner Air project. Many local communities have taken the initiative to develop innovative programs, often in partnership with local community groups or private businesses, to improve the quality of air in and livability of their communities.

This *Clean Communities on the Move* report examines the contributions that voluntary approaches are making to achieving clean air goals around the nation and draws lessons about how federal, state, and local officials can better work together to make



these programs more effective and commonplace. The report is a culmination of a partnership between EPA and NALGEP to coordinate the 10 CATC pilot projects, research additional approaches to voluntary local clean air innovation, and identify lessons learned from these emerging community efforts. The project received guidance from a “Clean Air Communities Task Force” of 50 local officials, EPA officials, and representatives of national organizations representing communities.

This report concludes that promoting voluntary clean air initiatives at the local level should continue to be a vital concern of state and federal policy makers. Many of the projects highlighted in this report are resulting in substantial emissions reductions and – if spread to more communities across America – could make major contributions to cleaner and healthier air. At the same time, these initiatives are improving local quality of life by providing more local transportation and lifestyle choices and promoting wiser and more sustainable development patterns that are more amenable to family life and community building. However, these innovative clean air approaches could remain the exception without more investment, better regulatory incentives, and significant attention to how the impacts of voluntary programs can be measured and integrated into long term planning processes.

Section I of the report is an introduction and background. Section II provides “Key Findings on Fueling the Move Toward Clean Communities.” Section III contains 31 profiles of local efforts. Section IV provides resources for further information.

The five key findings in Section II of this report, identifying how to spur additional community investments in clean air and smart transportation, are:

1 Localities Should Take Advantage of EPA’s Partnership-Driven Initiatives –

In recent years, the EPA Office of Air and Radiation has launched a number of partnership-driven initiatives that promote voluntary, local actions to clean the air through innovative transportation projects. EPA initiatives such as the Clean Air Transportation Communities project, Best Workplaces for Commuters, Clean School Bus USA, SmartWay Transport, the Diesel Retrofit Program, and It All Adds Up to Cleaner Air have demonstrated the value of direct federal funding for local clean air demonstration projects that are reducing vehicle air pollution, improving quality of life, and serving as replicable models for the nation.

2 Localities Need Support to Measure and Obtain Regulatory Emission Credit for the Benefits of Voluntary Smart Transportation and Smart Growth Practices –

Local communities seek tools and technology to better measure the clean air benefits of smart transportation and smart growth efforts. Regulatory systems should recognize and credit the emissions reduction benefits of local initiatives that promote clean air through smart growth, transportation choices, advanced technology, and other approaches.

3 Expand Public Transit Systems, Choices, and Investments –

American commuters and travelers are choosing public transit now more than ever, but



the demand and need for public transit systems will not be met unless investment in these programs is expanded.

- 4 **Invest in Green Fleets** – Clean air progress at the local level can be fueled by advanced vehicle technologies that provide cleaner, more efficient, consumer-friendly vehicles. Localities are well-suited to promote the widespread adoption of these technologies through the deployment of fleets that put green municipal vehicles, clean school and transit buses, hybrid cars and trucks, and clean fuel infrastructure on America’s streets. Investment in green fleets will promote cleaner air, energy independence, improved quality of life, transportation choices, job creation, and economic competitiveness.

Clean Air Act Basics

The Clean Air Act was passed in 1970 and amended in 1977 and 1990. It is designed to “protect and enhance the nation’s air resources” and establishes a cooperative regulatory system among the federal EPA, state governments, and local agencies. The Clean Air Act (CAA) consists of six titles that direct EPA to establish overall National Ambient Air Quality Standards (NAAQS) for pollutants harmful to human health and the environment. These pollutants, called criteria pollutants, are ozone, nitrogen oxides (NO_x), carbon monoxide (CO), particulate matter (PM₁₀ and PM_{2.5}), sulfur dioxide (SO₂), and lead. Geographic areas that meet NAAQS are considered an attainment area. States take the lead in developing State Implementation Plans (SIPs) which determine strategies and controls that will be put in place to attain the EPA standards for the seven criteria air pollutants. EPA approves the SIPs and can also require states to take further action to prevent air pollution from crossing state boundaries.

EPA plays a lead role in regulating air emissions from mobile sources of pollution, including cars, trucks, buses, off-road vehicles, and other sources. Regulatory programs encourage transportation demand management, include requirements for cleaner vehicle fuels and vehicle inspections and maintenance programs, and provide standards for non-road vehicles.

EPA also set emission standards and specifies control technologies for sources of 188 hazardous air pollutants or “air toxics.” The air pollution programs are implemented by state and local entities through regulatory tools that include operating permits for sources of pollution, inspections, enforcement, public participation processes, technology and emission offset requirements, and a pollution “cap-and-trade” program for acid rain and NO_x emissions from utility and industrial boilers. EPA provides Clean Air Act funding to states and localities to conduct the programs.

Most recently, local governments have been affected by the implementation of the 8-hour ozone standard which was implemented in 2004. The standard is based on averaging air quality measurements over 8-hour blocks of time.

CAA regulations appear at 40 CFR Parts 50-99.



- 5 Utilize Programs that Focus on Smart Transportation Initiatives** – Programs like the Congestion Mitigation and Air Quality program provide support to localities struggling to meet air quality standards. As more local officials are able to utilize resources in developing creative solutions, local projects and programs will have a more pronounced effect on air quality.

By working to implement these policy proposals and by replicating some of the successful voluntary initiatives highlighted in this report, local communities and state and federal officials can work together to improve our air and communities. NALGEP and the Clean Air Transportation Communities Task Force hope that this report can help to spread information on successful strategies and practices and chart a path forward to keep America’s clean communities on the move.

1

The Need for Local Clean Air Innovation

Local communities have been making progress toward clean air goals for decades now and in many places air quality is improving. However, this progress is in jeopardy, as communities struggle with the difficult and growing challenges of sprawl and increasing levels of vehicle miles traveled (VMT). This section of the report highlights the difficult challenges facing local communities on the linked issues of transportation, sprawl, and air quality – and the need for local clean air innovation.

Vehicle Pollution is a Growing Problem

Local communities continue to face increasing air quality challenges related to vehicle emissions. Automobile and truck exhaust is a major public health concern and contains significant pollutants, including carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_x), and particulate matter (PM₁₀ and PM_{2.5}), most of which are subject to EPA's National Ambient Air Quality Standards. According to the 2003 EPA Air Quality Trends Report, 55 percent of CO emissions, 29 percent of hydrocarbon (HC) emissions, 36 percent of NO_x emissions, and 28 percent of VOC emissions were attributable to on-road vehicles. According to the EPA's 1996 National Toxics Inventory, on-road vehicles account for approximately 50 percent of the emissions of more than 20 different hazardous air pollutants.

Exposure to these pollutants can lead to chronic respiratory illness, bronchitis, and even cancer. EPA has estimated that the deaths of more than 64,000 Americans annually are hastened by air pollution. Both ground-level ozone and fine particulate matter pose significant health risks to residents of nonattainment areas. Particulate matter can aggravate respiratory disease, lead to decreased lung function, and provoke asthma attacks. Ozone is similarly detrimental to lung health and can hinder the body's ability to fight bacterial infections. An EPA-funded study, recently published in the *Journal of the American Medical Association*, showed that short-term changes in ground-level smog are correlated with mortality levels in 95 urban areas across the U.S. The California Air Resources Board's 2002 Staff Report indicated that attaining the California particulate matter standards would prevent about 6,500 premature deaths annually, or 3 percent of all deaths. These premature deaths shorten lives by an average of 14 years. Carbon

Local communities continue to face increasing air quality challenges related to vehicle emissions.

monoxide is estimated to have caused 852 million headaches in one year.¹ Air pollution degrades our building materials and hinders agricultural productivity, and greenhouse gases have the potential to alter our climate on a global scale.

Beyond the environmental and health benefits of reducing vehicle emissions, smart transportation provides economic and energy security benefits. EPA has estimated that the monetized benefit to the nation from tackling these problems will be \$20 to \$110 billion per year for particulate matter and \$1.5 to \$8.5 billion for ozone.² The Department of Energy has estimated that America could save 140,000 barrels of oil each day by 2020 by meeting the goals of its “Clean Cities” program which promotes

the use of cleaner fuels and fuel blends, better vehicle fuel economy, the deployment of hybrid vehicles, and idle reduction technologies. According to the Clean Cities 2004 Roadmap document:

Our increasing use of foreign sources of oil ... and the unpredictability of oil supply and price, make the United States economically vulnerable. The OPEC cartel ... market power ... cost the U.S. economy \$4–\$14 trillion in the past 30 years, roughly the same as total payments on the national debt during that time. In 2000, net oil imports cost the United States \$109 billion and are forecast to cost \$160 billion by 2020. Americans pay more than one-quarter-trillion dollars per year for retail oil products. Our dependence leads to oil price shocks and price manipulation. Each oil price shock in the last three decades has been followed by an economic recession (1973–1974, 1979–1980, 1990–1991).



[The Energy Information Administration] recently projected that the United States will become increasingly dependent on imported oil in the next two decades, citing an increase in oil imports from 54% today to 70% by 2025. According to DOE, the transportation sector accounts for 69% of total U.S. petroleum use, and the United States relies on petroleum for 95% of our transportation fuel. The United States accounts for only 9% of oil production. Two-thirds of the world’s crude-oil reserves are in the Middle East – the region the United States relies on for 41% of its imported oil... As it is, no country consumes more oil than the United States, which produces about 10% of the world’s oil, but consumes more than 25% of the global oil production annually. DOE’s 2003 strategic plan stated that avoiding dependence on imports is the “...heart of our national energy policy.”

—U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, *Clean Cities 2004 Roadmap*, pp. 7–9 (internal citations omitted).

Moreover, transportation congestion is bad for business. According to the Surface Transportation Policy Project, businesses across the nation are paying tens of billions

1 EPA Development, Community, and Environment Division, *Our Built and Natural Environments: A Technical Review of the Interactions between Land Use, Transportation, and Environmental Quality* EPA 231-R-01-002, p. 28 (2001) (citing D. McCubbin and M. Delucchi, *Health Effects of Motor Vehicle Air Pollution* (1995)).

2 GAO, *Analysis Under 5 U.S.C. § 801(a)(1)(B)(i)-(iv) of Major Rules Issued by the Environmental Protection Agency Entitled “National Ambient Air Quality Standards for Particulate Matter; Final Rule and National Ambient Air Quality Standards for Ozone; Final Rule”* (August 4, 1997). The GAO report indicates that not all benefits were monetized and concludes that in some areas the costs outweigh the monetized benefits.

of dollars extra each year in absenteeism, excess parking, medical care, employee benefits, turnover, and lowered productivity expense. In 1995, the average American spent 443 hours (or 55 eight-hour workdays) behind the wheel of a car.³ In a study of 68 cities, the Texas Transportation Institute estimated that the total congestion “bill” for the areas studied in 1999 came to \$78 billion, which was the value of 4.5 billion hours of delay and 6.8 billion gallons of excess fuel consumed.

Much has been done over the last three decades to reduce emissions of air pollutants from cars and trucks. These efforts have primarily focused on tailpipe emission controls and cleaner fuels. Compared to passenger cars in 1970, today’s vehicles emit 60 to 90 percent less air pollution.⁴ But people today are driving more often and for longer distances, threatening to reverse the positive trend in decreasing emissions from vehicle sources. Since 1952, “the number of cars and trucks in the U.S. has more than quadrupled while population has less than doubled.”⁵ The average annual mileage driven per capita in 1995 (9,567 miles) was nearly twice as high as in 1970 (4,587 miles).⁶ Total vehicle miles traveled in the U.S. increased 63 percent between 1980 and 1997.⁷ VMT has been growing at a steady rate of about 3.1 percent per year since the 1980s – three times as high as the rate of population growth and consistently outpacing the rate of growth in employment or gross domestic product.⁸

A large part of the increase in VMT can be attributed to an increase in the use of single-occupancy vehicles for commuting. According to the American Public Transportation Association, the percentage of workers commuting in a single-occupant vehicle was 64.4 percent in 1980, 73.2 percent in 1990, and 75.7 percent in 2000.⁹

Much of this trend toward increasing VMT and single-occupancy vehicles may result from market distortions in which consumers are neither aware of nor accountable for, the true costs of their traveling patterns. For example, when deciding whether to drive, consumers of the roadways may not consider costs such as air pollution, potential effects of greenhouse gases, noise pollution, water pollution, traffic congestion, potential costs of accidents, or the costs of roads. According to an EPA report titled *Opportunities to Improve Air Quality through Transportation Pricing Programs*, “[p]eople will drive more when driving is cheap, and less when driving is more expensive. The subsidy on automobile usage leads to increased VMT and must be paid for through higher taxes, increased health costs, and increased costs of consumer goods. The current transportation system denies people choice and control over what they pay for and information about the true costs they bear.”

Unmanaged growth is also a main cause of increasing air pollution. One recent study found a region’s degree of sprawl to be the best predictor of its ozone pollution levels.¹⁰ The rate at which VMT is outpacing population growth can be attributed in major part to land use expansions and the predominant sprawling design pattern of modern subdivisions, which make people heavily dependant on automobiles. In the 34

3 As of the print date of this report, 1995 was the most recent year for which drive time data was available.

4 EPA, *EPA Guidance: Improving Air Quality Through Land Use Activities*, EPA 420-R-01-001, p. 10 (January 2001).

5 EPA, *Recognizing the Air Quality Benefits of Local and State Land Use Policies and Projects in the Air Quality Planning Process* (2000) (citing American Automobiles Manufacturers Association, *World Motor Vehicles Data*, 1996 Edition (1998)).

6 *Improving Air Quality Through Land Use Activities*, p. 10.

7 *Our Built and Natural Environments*, p. 19 (citing U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics* (annual editions)).

8 *Our Built and Natural Environments*, p. 19.

9 Brendon Hemily, *Trends Affecting Public Transit’s Effectiveness: A Review and Proposed Actions* (2004).

10 Reid Ewing, Rolf Pendall, and Don Chenn, *Measuring Sprawl and Its Impact*, p. 21 (2002).

According to the Boston Foundation, census data for 1990-2000 showed a 34 percent increase in car ownership for residents of Boston and an increase of 26 percent for citizens of the broader metropolitan area. Unsurprisingly, the rate of increase was highest in areas further removed from the urban center and less convenient to public transportation systems. The Boston Metropolitan Planning Organization projects the consequent increase in VMT between 1995 and 2025 to be approximately 33 percent. The anticipated increase in vehicle hours traveled presents an even more striking illustration of citizens' lifestyle change: by 2025, residents of Metropolitan Boston are expected to spend 4.8 million hours per day in their vehicles, compared to 3.3 million hours per day in 1995.



U.S. metropolitan areas whose populations exceed one million, urbanized land area has grown at 2.65 times the rate of population.¹¹ Single-use zoning – particularly the disassociation of employment and housing areas – makes heavy car use inevitable. Pedestrian activity is further discouraged by a lack of sidewalks and crosswalks on newly paved streets which are designed primarily to facilitate fast vehicular travel.

One consequence of sprawling development is the reduction of transportation choices for citizens, commuters, and travelers. Poorly planned, low-density, single-use development makes it difficult to provide options for smart public transit, live-near-work situations, and convenient walking and biking alternatives. Because pollutants are released most copiously at the beginning of a trip (before a car's emissions controls have warmed up), the elimination of potential pedestrian or bicycle trips (and the resulting increase in short vehicle trips) can be extremely

detrimental to air quality.

At the same time, existing and planned public transit systems are under escalating demand and strain. Metropolitan transit systems have been put under immense strain by growing ridership, aging equipment, and rising pressure to offer new services. However, if financial shortfalls and decreasing service quality affect a train or bus system, it may drive away ridership. Additionally, the American Public Transportation Association estimates that meeting heightened security demands will require at least \$5.2 billion in additional capital funding and at least \$800 million in increased operating costs. To mitigate this strain, planning and transportation issues must be addressed in tandem to ensure that growth occurs in a manner conducive to public transportation. Additionally, public transit programs must be provided with the funds necessary to make capital improvements, security enhancements, and service expansions.

More Communities Designated Air Nonattainment Areas

Under the Clean Air Act, if local areas do not meet health-based national standards for certain "criteria pollutants," these communities are designated "nonattainment" and are subject to a substantial level of planning, permitting, pollution control, and other re-

¹¹ *Our Built and Natural Environments*, p. 5.

quirements. These regulatory mandates will strain localities and increase the importance of identifying more and better tools for local clean air and transportation innovation. The national mandate for local clean air must be matched with resources and methods to reach these goals, including support for voluntary local transportation initiatives.

In June 2004, EPA issued a final rule finding 474 counties across the nation to be in nonattainment of new 8-hour ozone standards, with deadlines for those areas to improve air quality ranging from 2007 to 2021. The designation was assigned to areas whose smog levels exceeded 0.08 parts per million, as well as to areas whose emissions caused a downwind county to be in noncompliance.¹²

On December 17, 2004, EPA made final designations of counties and communities that do not meet the nation's first fine particulate matter (PM_{2.5}) air quality standards. All or part of 225 counties and the District of Columbia were designated nonattainment areas. By February 2008, nonattainment areas must submit plans for reaching the PM_{2.5} standards; compliance deadlines will range from 2010 to 2015.¹³

Following the identification of a nonattainment zone, state and local officials are required to develop a State Implementation Plan (SIP), which describes how their area will combine a variety of measures to meet the new health standards. Some communities that do not currently meet the 8-hour ozone standard have avoided the nonattainment designation by forging innovative solutions to their air quality deficiencies and entering into agreements with EPA to reduce ozone pollution in advance of the Clean Air Act's deadlines.

All localities need to be pro-active in finding and implementing new measures to reduce air emissions – including emissions from vehicles – whether or not they have been designated as nonattainment areas. However, not all communities have the tools and resources to implement these types of measures on their own. Despite its constructive role in improving air quality, a nonattainment designation often presents a formidable challenge for local officials. While the health benefits of federal regulations are unquestionable, the national mandate for clean air must be matched by the resources to help localities reach these goals.



Local governments are ready to take the lead in fostering a new approach to clean air progress but are calling for partnership with the federal and state governments.

Local Governments are Key Movers on Clean Air

Local governments are on the front lines of pollution and transportation planning and are uniquely situated to influence clean air and smart transportation innovation. Local governments are ready to take the lead in fostering a new approach to clean air progress but are calling for partnership with the federal and state governments to achieve these goals.

Local communities are playing, and should play, a key role in clean air initiatives because local governments are best able to integrate the economic development, community revitalization, and public health and environmental goals of the local citizenry:

- ▶ More than 225 counties, cities, and local air quality districts take a lead role in air quality regulation and improvement.
- ▶ Local communities have prime responsibility for comprehensive growth planning, zoning, and land use, all of which will affect transportation options and future pollution levels.

12 A list of communities in 8-hour ozone nonattainment can be found at www.epa.gov/ozonedesignations/statedesig.htm.

13 Preliminary designations can be found at www.epa.gov/pmdesignations/.



- ▶ Localities have the initial responsibility for future transportation planning through the Metropolitan Planning Organizations established by the nation's transportation law.
- ▶ Local governments are best able to foster the changes needed to put new vehicle technologies and new transportation options into action because they are the closest to their citizens and business communities. Localities can also lead by example with their municipal fleets, buses, and other vehicles.
- ▶ Local governments often have established relationships and shared objectives with the local business community, industry, non-profit organizations, and other key stakeholders.
- ▶ Local governments are a prime conduit for local, state, and federal funding and other resources.
- ▶ Localities are best able to provide public outreach and education on, and foster citizen participation in, efforts to align transportation practices with clean air goals.

Many localities are seeking to pursue more innovative approaches that match clean air goals with efforts to reduce sprawl, increase local quality of life, promote technology innovation, and provide more transportation choices. Now, as the nation moves toward the establishment of new transportation, clean air, and energy laws and policies, is the time to forge a renewed local-state-federal collaboration on these opportunities.

Communities Seek New Approaches to Complement Traditional Clean Air Act Controls

Many communities are finding that traditional means for improving air quality cannot by themselves achieve local clean air progress. Unquestionably, command-and-control approaches have been vital to progress in the fight against pollution. Yet, these mandates need to be complemented by voluntary, partnership-driven approaches that promote smart transportation practices.

With respect to vehicle emissions, the variables that influence VMT – such as development patterns and transportation systems – lie at the intersection of culture and clean air policy. Consequently, solutions must reach beyond regulatory approaches to address the lifestyle and technology choices that contribute to higher emissions. Because those choices are largely dependent on community and metropolitan infrastructure, innovative policies must focus at the local level. Voluntary, community-based methods for reducing VMT must ultimately complement the command-and-control methods already in place to reduce tailpipe emissions.

In communities across America, there is broad recognition that successful implementation of these measures will improve the quality of life of all citizens. Communities with clean air and efficient transportation systems are more livable and more attractive to businesses. Well-managed growth can reduce regulatory burdens on a city's commercial base, improving the fiscal health of the entire community. As a result, communities are searching for innovative, cost effective ways to clean the air.

The profiles in this report highlight ways in which localities are using these approaches, like alternative fueled fleets, transit oriented development, and public transit, to reach clean air and community goals.

So, how can we drive local clean air innovation?

Communities with clean air and efficient transportation systems are more livable and more attractive to businesses.

2

Key Findings on Fueling the Move Toward Clean Communities

This section of the report presents five key findings on what local governments require to move toward clean air and smart transportation innovation. Derived from the profiles featured in the report and the lessons from EPA's partnership-driven transportation initiatives, the findings here can support ongoing policy, partnership, and legislative efforts to promote cleaner communities.

Finding 1: Localities Should Take Advantage of EPA's Partnership-Driven Initiatives

In recent years, the EPA Office of Air and Radiation has launched a number of partnership-driven initiatives that promote voluntary, local actions to clean the air through innovative transportation projects. EPA initiatives such as the Clean Air Transportation Communities project, Best Workplaces for Commuters, Clean School Bus USA, SmartWay Transport, the Diesel Retrofit Program, and It All Adds Up to Cleaner Air have demonstrated the value of direct federal funding for local clean air demonstration projects that are reducing vehicle air pollution, improving quality of life, and serving as replicable models for the nation.

In NALGEP's 2000 report, *Profiles of Local Clean Air Innovation*, local governments emphasized the need for EPA to provide more direct federal funding to localities for innovative clean transportation initiatives because of their potential for reducing vehicle emissions and promoting clean air goals. In 2001, EPA launched the Clean Air Transportation Community (CATC) initiative to demonstrate the value of these low-cost, voluntary, community-based approaches. Although the grants were offered only in that year, CATC served as a foundation for a new generation of federal-local cooperation and has helped to spur a number of new initiatives that are using advanced technologies, smart growth, public education, and transportation choices to improve communities, reduce air emissions, and demonstrate the potential of wider scale implementation.

Profiles of the completed CATC pilot projects are provided in Section III.¹⁴ Some of these CATC pilot efforts are surging forward in more and more localities and are becoming

¹⁴ One of the pilot projects, the Thunderbird Trail project of the Little River Band of Ottawa Indians, was not completed.



ing major clean air initiatives. For example, the Truck Stop Electrification program that began as a CATC project in the Bronx has expanded into a national program that is decreasing emissions by tens of thousands of tons of pollutants each year. Program sponsors estimate that 1.7 billion gallons of diesel fuel could be saved each year if all truck rest stops in the nation were outfitted with this innovative technology. The Flexcar car sharing company partnered with several communities and the CATC program to experiment with customer response to the introduction of low-emissions hybrid vehicles into its fleets. After an overwhelmingly positive response in its CATC test communities, the company is now integrating hybrid cars into its fleets around the country, including 100 percent of its Los Angeles and San Diego cars.

Many other CATC projects have provided replicable models for other communities. The California Air Resources Board, for example, showed that community-based marketing in low-income communities can be an effective tool for increasing public transportation ridership and decreasing VMT. Dane County, Wisconsin developed an innovative smart parking program that provides more accurate price signals to people driving to school or work. Philadelphia worked with a local company to develop human-powered vehicles for many of the City's agencies.

The CATC pilot program provides further evidence that voluntary transportation initiatives can lead to significant reductions in vehicle miles traveled and associated emissions.

- ▶ Truck stop electrification systems at just two truck rest stops displaced nearly 300 pounds of PM, 5.6 tons of NO_x, 2.9 tons of CO, 1.3 tons of HC, and 349 tons of CO₂ emissions. Approximately 34,000 gallons of diesel fuel were saved. Analysis of data at one truck facility found a significant (8.5 percent) decrease in black carbon levels in the surrounding air, largely attributable to use of the technology. One 500-unit Advanced Truck Stop Electrification facility can produce over 30,000 tons of emissions reductions in a year.
- ▶ King County officials estimate that the integration of 24 low-emission, high-mileage hybrid vehicles into the successful Flexcar car sharing program saved 3,790 gallons of fuel and prevented the emission of 73,514 pounds of CO₂ and 614 pounds of CO in one year.
- ▶ The Vancouver Housing Authority saved 4.2 tons of greenhouse gas emissions and used 62 percent less fuel by switching from an old sedan pool car to a new hybrid vehicle.
- ▶ After the California Air Resources Board's outreach and marketing efforts in poor communities, half of all surveyed riders stated that they increased their use of public transit and eliminated what would have otherwise been auto trips because of information received through the program. The program eliminated more than 1,600 auto trips weekly and reduced over 435,000 vehicle miles traveled in Sacramento and Fresno alone. In Monterey, the program reduced 159 tons of CO₂, 2.5 tons of CO, and 0.6 tons of HC, NO_x, and small particles in a year.

Clean Air Transportation Communities Pilot Projects

- ▶ **Human/Electric Powered Utility Vehicles:** City of Philadelphia, Pennsylvania
- ▶ **On the Thunderbird Trail:** Using Tribal Traditions to Reduce Vehicle Emissions: Little River Band of Ottawa Indians, Michigan
- ▶ **Tulsa Air Quality Enhancement and Education Program:** Indian Nations Council of Governments, Oklahoma
- ▶ **Flexcar Hybrid Vehicle Program:** King County, Washington
- ▶ **Ecotrans: A Multimodal Neighborhood Transportation Project:** City and County of Denver, Department of Environmental Health
- ▶ **Innovative Projects to Improve Air Quality and Reduce GHG:** Dane County, Wisconsin
- ▶ **Truck Stop and Terminal Electrification:** Northeast States for Coordinated Air Use Management (NESCAUM), New York
- ▶ **Green Fleet Shared Vehicle Project:** City of Vancouver, Washington
- ▶ **Community-based Transit Improvements:** Simple Solutions and Measurable Results: California Air Resources Board
- ▶ **Owings Mills Transit Oriented Development Project:** Maryland Dept. of Planning

- ▶ At the University of Wisconsin-Madison more than 600 “Smart Parking Meters” have replaced flat fee annual passes, providing accurate price signals for employees to reduce driving and take public transit. Dane County estimates that the new meters are reducing VMT by over 350,000 miles per year and will decrease annual HC emissions by over four tons, assuming that each participant reduces driving by one day per week.
- ▶ Owings Mills, Maryland, estimated that use of smart growth and transportation oriented design planning could allow the area to grow by over 20,000 people while reducing VMT by 1.1 percent and increasing non-motorized trips by 18 percent.
- ▶ Students in Tulsa, Oklahoma who participated in the “Driving Towards Clean Air” sustainable commuting contest avoided over 33,000 VMT, saved 1,900 gallons of fuel, and reduced emissions of 47 pounds of VOC, 742 pounds of CO, and 49 pounds of NO_x.

Other voluntary programs have accomplished similar successes. The extension of Portland’s “Fareless Square” free public transit area to the growing Lloyd District increased the use of public transit in the District by over 70 percent and decreased auto trips between the District and downtown by 12 percent. Ridership on the San Pablo



Avenue bus in Oakland rose by 66 percent after the introduction of the “NextBus” rapid bus transit service. Smart growth and transportation oriented design in Charlotte, North Carolina is saving nearly 100 million VMT a year.

EPA’s focus on partnership-driven approaches to clean transportation extends to a number of other important initiatives. The *Best Workplaces for Commuters* program offers recognition to employers who craft innovative solutions to commuting challenges by providing alternatives to single-occupancy vehicle commuting and traffic congestion. *Clean School Bus USA* is a public-private environmental partnership that seeks to reduce children’s exposure to air pollution from diesel school buses through anti-idling strategies, engine retrofit and clean fuels, and bus replacement. *It All Adds Up to Cleaner Air* is a joint EPA and Department of Transportation program to promote cleaner air through trip chaining (combining errands into a single car trip), keeping cars regularly maintained, refueling in the evening to help reduce air pollution from gasoline vapors, and choosing alternate modes of transportation, such as carpooling, mass

transit, biking or walking. *SmartWay Transport Idling Reduction Project* is a voluntary partnership between various freight industry sectors and EPA that establishes incentives for fuel efficiency improvements and greenhouse gas emissions reductions. The *Diesel Retrofit Project* seeks to complement recent regulatory mandates for improved diesel engines and diesel fuels with a program to promote voluntary, early reductions in diesel air pollution through diesel engine retrofits.

These EPA-locality partnership initiatives are valuable. As local governments face increased challenges with Clean Air Act attainment, voluntary approaches to cleaner air become more and more important. In order to ensure their continued success, the public sector should renew its investment in these approaches through the following steps:

1 Increasing Grant Resources for Voluntary Programs

The investment in EPA’s partnership-driven transportation initiatives is growing, but hundreds of American communities are still struggling with dirty and unhealthy air. Localities are eager to expand their investment in these approaches but are seeking federal funding to catalyze these innovative practices and leverage their ability to reach quantifiable clean air goals.

2 Identifying “Clean Air Community Advocates”

Innovative, partnership-driven programs foster and support local community efforts. “Clean Air Community Advocates,” selected from among the local leaders in clean air innovation, can provide much needed technical assistance to communities on clean air and smart transportation issues by identifying resources for projects, connecting localities to peers in other communities, organizing regional networking efforts, planning conferences, and engaging in other actions to build a sustainable community of local clean air participants.

3 Fostering Community Networking

Networks of local communities are using partnership-based programs and seeking to collaborate on innovative smart transportation and clean air measures to increase

the success of their local programs. Interaction can be fostered through regular conference calls, dedicated websites and email listservs, and research projects that identify success story approaches to local smart transportation.

4 Continuing Collaboration of Clean Air & Smart Transportation Partners

Local community air and transportation leaders should encourage opportunities, particularly conferences, to foster networking and research between each other and with federal and state air quality and transportation officials. NALGEP held a “Clean Air Transportation Communities Summit” in 2002 which provided important training and networking opportunities to CATC pilot participants. In 2004, EPA’s Office of Air Quality Planning and Standards convened a workshop for localities and other stakeholders on the issues of smart growth, transportation, and air quality. These efforts are worthwhile and should be expanded.

NALGEP suggests that a useful model for an EPA-local government partnership on clean air and smart transportation is the successful EPA Brownfields Partnership program. Like the issue of brownfields, the smart growth and clean transportation initiatives highlighted in this report are activities that are locally-driven, voluntary rather than regulatory, and best fostered via a variety of resources and incentives. Launched in 1995, the EPA Brownfields Partnership with localities is now well-established and producing great results. There are more than 600 local communities that have established local brownfields programs using EPA grant funding for program development, environmental assessment and cleanup, and brownfields job training.

These localities are highly engaged in a national brownfields network of local governments and other stakeholders that meet regularly at national and regional conferences, communicate with the support of EPA regional and headquarters officials, and share lessons learned through collaborative websites, listservs, and publications. There are a wide variety of brownfields research and training projects underway with EPA sponsorship. Moreover, the EPA Brownfields Showcase Initiative and the EPA-sponsored Brownfield Communities Network have involved more than 20 federal agencies in an effort to provide resources and assistance to localities on tough brownfields issues. Altogether, the range of support provided from EPA to localities on brownfields has helped produce a sustainable, critical mass of localities who are spurring environmental innovation and achieving real, cost-effective results (including the establishment of a national brownfields law signed by the President in 2002).

NALGEP also emphasizes the importance and success of other, non-EPA sponsored partnerships with localities that promote clean air and transportation progress. These programs include the Department of Energy’s Clean Cities program, which provides funding, offers technical assistance, and supports collaborative partnerships for the deployment of alternative fueled vehicles. The Department of Transportation also provides an array of substantial resources for local transportation innovation and VMT-reducing activities, including the Congestion Mitigation and Air Quality (CMAQ) Program; the Transportation Enhancements Program; the Transportation, Community, and System Preservation (TCSP) Program; and the Bus and Transit New Starts capital programs. As explained further below, these programs are resulting in substantial reductions in VMT and vehicle emissions and should be continued.

Finding 2: Localities Need Support to Measure and Obtain Regulatory Emission Credit for the Benefits of Voluntary Smart Transportation and Smart Growth Practices

Local communities seek tools and technology to better measure the clean air benefits of smart transportation and smart growth efforts. Regulatory systems should recognize and credit the emissions reduction benefits of local initiatives that promote clean air through smart growth, transportation choices, advanced technology, and other approaches.

One of the greatest barriers to local clean air innovation is the difficulty communities face in measuring and demonstrating the specific air quality benefits of voluntary programs. The problem is not that these approaches are not producing benefits – the issue is that the approaches are not easily measured in the way that, for instance, a simple continuous monitor on a smokestack can measure emissions. In order to gain economic and regulatory support for innovative clean air approaches, communities must be able to document the effect those programs will have on air quality.

Moreover, in order to foster local actions to promote clean transportation and smart growth projects, the processes by which communities can gain regulatory credit for emissions reduction benefits need to be made less complicated. Communities struggling with nonattainment and other Clean Air Act requirements can often achieve most of the required pollution reductions with traditional means, but reaching the last increments of emissions reductions can often be difficult (and expensive). If communities had better tools and regulatory mechanisms to credit smart growth and clean transportation projects in SIPs and other regulatory programs, there would be a greater investment.

The goal of making it easier for local communities to document and gain credit for voluntary clean transportation and smart growth projects can be promoted through the following steps:

1. Promote existing emissions documentation tools

A key first step toward enabling local communities to take advantage of regulatory credits and incentives is to promote those tools that already exist for this purpose.

There are a number of helpful emissions measurement tools that may be used to gain regulatory credit for voluntary programs. The EPA has produced a “COMMUTER”

model that calculates the transportation and emissions benefits of the Best Workplaces for Commuters Program and other voluntary strategies to reduce solo commuting. Likewise, the EPA Smart Growth Office has provided 32 communities with an innovative software tool (and training) called the Smart Growth INDEX, which has been used by communities to evaluate the environmental and air quality benefits of smart growth projects and policies.

The EPA has issued guidance on “Incorporating Voluntary Mobile Source Emission Reduction Programs in State Implementation Plans,” which provides



that states may use voluntary efforts to reduce vehicle emissions to account for up to three percent of the required reductions for each criteria pollutant in their SIPs. The policy allows states to take up-front SIP credit based on realistic estimates of the emissions impact of the voluntary programs and a commitment to monitor the success of the program and remedy any shortfalls in a timely manner. There are a number of voluntary mobile source emission reduction programs that may be eligible for credit under the EPA policy, including:

- ▶ employer-based transportation management programs including Best Workplaces for Commuter Programs as well as stand-alone vanpooling, carpooling, subscription buses, walking, shuttle services, guaranteed rides home, alternative work schedules, transit passes and subsidies, and on-site support for transportation demand management;
- ▶ work schedule flexibility to commute outside peak travel periods, such as telecommuting, flextime, compressed work weeks, and staggered work hours;
- ▶ area-wide ridesharing incentives, such as marketing of ridesharing services, transit station shuttles, computerized carpool matching, vanpool matching, preferential parking locations or prices for carpools and vanpools, fee structures to discourage commuter parking, or reduced parking requirements for new developments;
- ▶ travel demand management for special events;
- ▶ restrictions and limitations on vehicle use, such as auto restricted zones, pedestrian malls, traffic calming, no-drive days, or restrictions on the parking or idling of commercial trucks;
- ▶ measures to reduce vehicle idling; and
- ▶ measures to reduce emissions from small engine and recreational vehicle use, such as programs to shift the time of lawn mowing and landscaping.¹⁵

EPA has also issued an excellent final policy guidance titled “Improving Air Quality Through Land Use Activities.” Under the guidance, credit can be given for adoption of sustainable land use activities as SIP control measures, the use of emissions reductions from smart growth practices in transportation conformity determinations, and the inclusion of emissions in SIP baselines that reflect the benefits of smart growth measures. Potential smart growth tools that could form the basis for regulatory credit include transit-oriented development, infill development, a shift in the jobs-housing balance in metropolitan areas, mixed-use development, and neotraditional design development.¹⁶

Unfortunately, these examples of EPA guidance have rarely been used by communities. Many communities do not know they exist and those that do know about them view them as overly complex and unworkable. Communities appreciate EPA’s initiative to reward innovation, and would welcome the opportunity to gain a better understanding of the relevant policies.

Regional training on guidance already in place would encourage communities to take advantage of these policies and ensure their correct implementation. For example, EPA has held voluntary measures workshops for localities, but it has been many

¹⁵ For more information, see www.epa.gov/oms/transp/traqvoml.htm.

¹⁶ For more information, see www.epa.gov/otaq/transp/traqsusd.htm.

years since they occurred. Localities would welcome more workshops and training opportunities to put these voluntary measures policies in place.

Effective training and collaboration with localities on these voluntary approaches will require more staff resources at EPA and other organizations that can provide the information and resources necessary to local governments. The partnership-driven approach to cleaner air takes staff to provide technical assistance, networking, and other resources.

2. Localities should work with EPA to develop better measurement tools

In some cases, the problem with measuring voluntary emissions reduction programs lies in the lack of appropriate tools. In fact, the Clean Air Communities Task Force, which consists of top local clean air officials from across the nation convened to support this project, reports that none of their communities has utilized existing voluntary emissions reduction measurement tools because they are perceived as too cumbersome.

The Clean Air Act requires that any emission reduction included in a SIP be “quantifiable,” “surplus,” “enforceable,” “permanent,” and “adequately supported.” Appropriately, these guidelines set a high standard for compliance. However, their current language has the unfortunate consequence of making the inclusion of voluntary programs in a SIP extremely difficult.

To allow regulatory credit systems to work, the difficulty of measuring and verifying emissions reductions from voluntary programs must be addressed. NALGEP recommends that research funding be directed toward the development of better measurement and modeling tools, tailored to local governments and the types of projects highlighted here. The process could be initiated by convening a steering committee of top environmental officials in localities across the country and soliciting input on what kinds of measurement tools would be most helpful to these officials in their work.

3. Localities should engage in more collaboration with EPA

Collaboration between EPA and localities helps isolate where changes in measuring tools are needed, acts as a mechanism to help communities use existing tools, and helps foster better understanding of the details for SIP approval at an early stage in the process. For example, EPA’s support through the CATC pilot program for the Owings Mills, Maryland smart growth development project (described in Section III), in which the emissions benefits of the project are being evaluated for potential inclusion in the Maryland SIP, is a commendable start.

The Maryland example emphasizes the need for more pro-active collaboration among EPA, localities, and states to establish workable systems for crediting voluntary air quality projects in the Clean Air Act system.

Local leaders should collaborate with state and federal regulatory authorities to include smart growth and voluntary transportation measures in SIP revisions, aided by targeted technical assistance and key stakeholder support. Shared success with a limited number of such pilots would be the best way to spread these regulatory incentive approaches to other states and communities.

Finding 3: Expand Public Transit Systems, Choices, and Investments

American commuters and travelers are choosing public transit now more than ever, but the demand and need for public transit systems will not be met unless investment in these programs is expanded.

Public transit provides alternatives to individuals who would otherwise travel in single-occupant vehicles. Numerous options are becoming available to transit patrons in major metropolitan areas, particularly in this era of more comfortable commuter trains, rapid transit buses, and versatile light rail systems.

Expanding use of public transportation is one of the most important steps toward achieving cleaner air, energy independence, and more livable communities free of traffic congestion. Use of public transit saves at least half the fuel required to travel per passenger mile compared to use of a private vehicle. If Americans used public transportation at the same rate as Europeans – for roughly 10 percent of their daily travel needs – the U.S. would reduce its dependence on imported oil by more than 40 percent. The saving can dramatically increase when public transit systems use newer more fuel-efficient technologies like hybrid buses.

Increased use of public transportation can produce significant air quality benefits. A study commissioned by the American Public Transportation Association concluded that public transportation use produces 95 percent less carbon monoxide, more than 92 percent fewer volatile organic compounds and nearly half as much carbon dioxide and nitrogen oxides for every passenger mile traveled compared with private vehicle use. The yearly emissions benefit currently achieved by those who ride public transit instead of private vehicles was calculated at 70,430 metric tons of VOCs, 744,927 metric tons of CO, 27,164 metric tons of NO_x, and 7,405,856 metric tons of CO₂.¹⁷ By increasing public transit use, these reductions can be expanded – improving the health, livability, and financial well-being of the communities in which innovative solutions are implemented.

Public transit investments are investments not only in clean air and congestion reduction, but also investments in jobs and economic growth. Economic studies cited by the Surface Transportation Policy Project indicate that transit capital investments and operations funding are important sources of long-term job creation and that such transit investment generate more than double the jobs of highway investments. According to a recent study by Cambridge Systematics, 314 jobs and a \$30 million gain in sales for businesses are created for each \$10 million invested in transit capital funding and over 570 jobs are created for each \$10 million in the short run. With sustained local job and transit system creation comes a matching increase in tax and sales revenue for local communities. A recent report by the American Public Transit Association (APTA) found that every dollar taxpayers invest in public transportation generates \$6 or more in economic returns.

Demographic and cultural changes are creating an increase in demand for public transit just as our need for it to battle congestion and air pollution peaks. Many cities



Increased use of public transportation can produce significant air quality benefits.

¹⁷ Robert J. Shapiro, Kevin A Hassett, and Frank S. Arnold, *Conserving Energy and Preserving the Environment: The Role of Public Transportation*, p. 24 (2002)..

are being restored through brownfield revitalization, construction of civic facilities, and new transportation initiatives. Urban centers are consequently reemerging as attractive living environments. A variety of demographics, including young professionals, childless couples, empty-nester baby boomers, and immigrants, are choosing the culturally-dense urban landscape.

It all adds up to growing public transit ridership – an increase of 24 percent between 1995 and 2002. This development was facilitated, in many communities, by TEA-21 contributions to local transit investments. But recent gains have created new challenges that demand an infusion of innovation and resources.

1. Investment in public transportation needs to increase

To keep up with the current growth rate, public transit systems require additional capital and systems expansion. It is estimated that the average annual cost to accommodate ridership growth between 2001 and 2020 will be between \$9.7 billion and \$23.7 billion – just to maintain conditions and performance. To accommodate ridership while improving conditions and performance on an already strained system would cost between \$17.2 billion and \$32.2 billion annually.¹⁸

Certainly, localities and states are dedicated to funding their fair share of transit investments and indeed, in 2004 alone, more than 45 localities approved bond and funding measures that will provide more than 40 billion toward local and regional transit infrastructure improvement. More than 80 percent of these transit measures passed, many with overwhelming majorities. However, local governments, unable to overcome these financial hurdles alone, depend upon reliable, sufficient funding partnerships with the U.S. Federal Transit Administration.

Communities often face stiff competition for federal funding. Currently, federal highway funds may comprise 80 percent of a given project's budget; the local government must match the remaining 20 percent. However, in recent years, according to a 2001 GAO report, "the administration has recommended reducing the cap on new starts funding [for transit] to 50 percent of a project's cost...to ensure that local governments play a major role in funding these transit projects."¹⁹ In the Congressional debates over the reauthorization of the TEA-21 transportation law, some are calling for drastic reductions or even elimination of direct federal funding for transit systems. Raising the burden on communities for public transit investments vis-à-vis highway investments would be a huge step backward for local clean air progress and quality of life.

2. Specific resources should be directed toward supporting innovative public transportation programs

Our goal should not be merely to keep pace with demand. Rather, public transit use should be encouraged whenever possible and pursued with the best, most current approaches.

Many of the profiles in Section III highlight communities that are making transportation dollars go further through the use of innovative new public transportation programs. Rapid bus transit, for example, which utilizes a variety of techniques to make buses more comfortable and efficient – dedicated bus-HOV lanes, traffic signal prioritization, and more attractive vehicles, among them – can cut down on single-occupant vehicle use. Light rail, which operates on a variety of surfaces and often at street

¹⁸ APTA, *citing Cambridge Systematics, Expanded State and National Transit Investment Analysis (2002)*, at www.apta.com/research/stats/fundcap/costimp.cfm.

¹⁹ GAO, *Mass Transit: Bus Rapid Transit Shows Promise*, p. 9 (September 2001).

level, provides a flexible alternative to the heavy rail systems of cities like New York and Washington, DC. Public transportation use in Seattle and other localities is being promoted further through public support of car sharing programs that give people an option to use a car only when they need it to run an errand or reach a location not conveniently served by traditional public transit routes.

Localities need more information and technical assistance to choose the right public transportation investments for their communities. Information sharing forums and collaborations of localities with state and federal transit representatives could encourage emissions reductions through promotion of public transportation.



Finding 4: Invest in Green Fleets

Clean air progress at the local level can be fueled by advanced vehicle technologies that provide cleaner, more efficient, consumer-friendly vehicles. Localities are well-suited to promote the widespread adoption of these technologies through the deployment of fleets that put green municipal vehicles, clean school and transit buses, hybrid cars and trucks, and clean fuel infrastructure on America's streets. Investment in green fleets will promote cleaner air, energy independence, improved quality of life, transportation choices, job creation, and economic competitiveness.

While one of the key findings of this report is that more attention needs to be focused on reducing vehicle miles traveled to combat air emissions, it is also clear that new technologies can and should play a central role in combating air pollution and promoting energy independence.

According to the EPA, vehicles operating on compressed natural gas emit over 90 percent less CO, 25 percent less CO₂, and up to 60 percent less NO_x than traditional

The Transportation Equity Act for the 21st Century (TEA-21)

The Transportation Equity Act for the 21st Century (TEA-21) was enacted in 1998 and authorizes the Federal surface transportation programs for highways, highway safety, and transit. TEA-21 provides flexible funding and aims to improve the environment while planning for transportation needs and demands.

TEA-21 built on the initiatives established in previous legislation, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). TEA-21 was originally authorized for the six year period from 1998 to 2003. Congress has passed numerous extensions to the law and is now working on reauthorization of TEA-21.

For more information on TEA-21 visit www.fhwa.dot.gov/tea21/sumcov.htm. More information on the reauthorization of TEA-21 can be found at www.transact.org.

New technologies can and should play a central role in combating air pollution and promoting energy independence.

vehicles. Hybrid cars use the assistance of the electric motor to power a car, thus allowing the gasoline engine to be smaller (and therefore less polluting). Hybrid vehicles can reduce air emissions of smog-forming pollutants by up to 90 percent and cut carbon dioxide emissions in half. There are a host of zero emissions vehicles, including cars and trucks that run on hydrogen fuel cells, being developed and on the way to our streets.

Changing use to alternative fuel cars and trucks requires cultural and infrastructure change. These changes can be led by localities by sponsoring green fleets of city-owned alternative-fuel vehicles.

Many of the profiles highlighted in Section III display the innovative ways that localities are raising the utility and profile of alternative fuel vehicles. Vancouver, Washington replaced several city-owned fleet cars with use of hybrid shared cars sponsored and maintained by Flexcar. Philadelphia shifted a number of visible utility cars for its Zoo and other public areas to zero-emission human powered vehicles. Other localities highlighted in this report have switched their buses to natural gas, hydrogen, or hybrid powered vehicles.

What these community initiatives emphasize is that local governments can play a prominent role in adopting clean vehicle technologies, showcasing them to the general public, facilitating their adoption, and promoting their more widespread use. American market demand for alternative fuels can be spurred by the use of clean vehicles in prominent, visible ways – like our children’s school buses, the city trucks that work in our neighborhoods, local police cars, city buses, or the hybrid carsharing vehicles that we see at our subway stops and main street corners.

In addition, local governments can help fuel advanced vehicle technologies by supporting the creation of clean fuel infrastructure in our cities. Consider the increased public awareness of clean vehicle technologies that could result if alternative fuel stations were located at abandoned gas stations and petroleum brownfields on America’s main streets. Or, consider the new hydrogen car fueling station recently placed by the General Motors Company at a gas station near Capitol Hill in Washington, DC or the clean fuels visibility that comes when progressive companies like FedEx and UPS work in partnership with EPA and localities to put alternative-fuel trucks on the streets. Likewise, localities can play an important role in fostering the use of truck stop electrification technology infrastructure at rest stops, major trucking facilities, and prominent road corridors.

These efforts can be supported in several important respects.

1. Continue support for existing alternative fuel promotion programs

America is supporting alternative fuel vehicles with many important initiatives and investments, including the Administration’s Freedom Car hydrogen vehicle initiative, the Clean Cities alternative fuels program, federal income tax credits for hybrid vehicle purchases by consumers, and major new investments in clean school buses and truck stop electrification technologies. Likewise, the EPA Clean Air Transportation Communities initiative focused on a number of existing new vehicle technologies, including the Kronosport municipal fleet vehicle in Philadelphia, and green hybrid car sharing programs in Vancouver, King County, and Denver. Other localities profiled in this report include zero emission buses in Tennessee, clean school buses in Utah, alternative fuel transit buses in Dallas, and hydrogen fueled cars in California. EPA’s Clean School Bus USA, Diesel Retrofit, and SmartWay Transport Anti-Idling initiatives are all putting major, important investments into green fleets for American communities.

Localities are eager to partner with the federal government to dedicate more resources toward the deployment of green fleets and clean fuel infrastructure. This find-

ing of the report emphasizes that America should continue and expand great programs like the Clean Cities, truck stop electrification, clean school buses, and hybrid-vehicle support programs that are already underway.

2. Support green municipal fleets

Localities are increasingly seeking ways to promote alternative fuel vehicles through their municipal fleets. Municipal fleets, ranging from police vehicles to the cars used by other public servants, can raise the visibility of alternative fuel vehicles and create the necessary fueling, servicing and other infrastructure necessary to support more widespread use. But transformation of entire fleets to new technologies can be costly. Financial support and resources could help spur these efforts by setting aside resources for cities to help defray the cost of transforming fleets to alternative fuels. Localities should continue to seek resources to keep the American investment in clean fleets moving.

Finding 5: Utilize Programs that Focus on Smart Transportation Initiatives

Programs like the Congestion Mitigation and Air Quality program provide support to localities who struggle to meet air quality standards. As more local officials are able to utilize resources in developing creative solutions, local projects and programs will have a more pronounced effect on air quality.

The original Congestion Mitigation and Air Quality Improvement (CMAQ) program was established the year following the Clean Air Act Amendments of 1990, which imposed new strict new deadlines for meeting national air quality standards in nonattainment areas. The 1998 Transportation Equity Act for the 21st Century (TEA-21) reauthorized the CMAQ program for an additional 6 years and increased its funding to over \$8.1 billion.

While congestion mitigation is a goal of CMAQ, the primary policy focus since the program's inception has been on achieving the air quality goals of the Clean Air Act by assisting nonattainment areas in meeting the new mandates. States are required to spend the funds in nonattainment and maintenance areas.

CMAQ is the first and only federally funded transportation program explicitly targeting air quality improvement. The funds are intended primarily for new facilities, equipment, and services aimed at generating new sources of emission reductions. As such, CMAQ funds have been an extremely valuable source of funding for localities seeking to support new and innovative ways to promote air quality.

Communities are taking advantage of CMAQ funds for a wide range of innovative, environmentally-beneficial air quality projects including travel demand management strategies, transit improvements, shared ride services, pedestrian and bicycle programs, public education and outreach programs, alternative-fuel programs, and other initiatives.²⁰ Slightly more than half of the CMAQ budget is being spent on these alter-



²⁰ Transportation Research Board, National Research Council, *The Congestion Mitigation and Air Quality Improvement Program: Assessing 10 Years of Experience*, Special Report 264, Figure 3.2 (2002).

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

The Congestion Mitigation and Air Quality Improvement program provides a flexible funding source to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Eligible activities include transit improvements, travel demand management strategies, traffic flow improvements, and public fleet conversions to cleaner fuels, among others. Funding is available for areas that do not meet the National Ambient Air Quality Standards (nonattainment areas), as well as former nonattainment areas that are now in compliance (maintenance areas). Funds are distributed to States based on a formula that considers an area's population by county and the severity of its air quality problems within the nonattainment or maintenance area.

—taken from *TEA-21 – Transportation Equity Act for the 21st Century, A Summary – Protecting Our Environment*, Federal Highway Administration at www.fhwa.dot.gov/tea21/sumenvir.htm

Evidence shows that CMAQ is playing a significant role in U.S. emissions reduction.

native projects.²¹ A recent Special Report on the CMAQ program by the Transportation Research Board, concluded that “[a]rguably the most important benefits of the CMAQ program are the incentives and resources provided to local agencies to think seriously about strategies for improving air quality and reducing congestion” which demonstrates the number and variety of innovative programs funded through CMAQ.²²

The CMAQ program has demonstrated its value to communities seeking vehicle emissions reductions. For example, in 1999 the CMAQ program was estimated to have reduced NO_x emissions by 62,400 short tons, reduced VOC emissions by about 52,100 short tons, and reduced CO emissions by about 336,300 short tons. Projections for further CMAQ air pollution reduction benefits show even more potential if the program is continued. An EPA report predicted that in 2005, CMAQ's annual emissions reductions could rise to between 109,000 and 275,800 short tons of NO_x, 104,200 and 165,200 short tons of VOC, and 682,500 and 856,200 short tons of CO. These estimates represent the cumulative reductions from CMAQ projects funded through 1997 and 2003, respectively.²³ Projected emissions reductions from CMAQ increase as emissions effects from prior years add to the effects of new funding, showing that these investments are returning greater results over time. This EPA study also suggests that, despite increasing VMT in American communities, CMAQ is helping to keep emissions trends moving downward.

Overall, the evidence shows that CMAQ is playing a significant role in U.S. emissions reduction and could play an even larger role as funding continues. The following steps should be taken to continue and improve innovative programs like CMAQ:

21 *The Congestion Mitigation and Air Quality Improvement Program* explains CMAQ spending priorities, as a percentage of the total program budget, as follows: 44 percent to transit projects, 4 percent to rideshare projects, 3 percent to bicycle and pedestrian projects, 3 percent to demand management, and 38 percent to congestion management projects that focus on road and traffic flow improvements.

22 *The Congestion Mitigation and Air Quality Improvement Program: Assessing 10 Years of Experience*, p. 161.

23 Ken Adler, U.S. Environmental Protection Agency; Michael Grant and William Schoeer, Apogee Research, Inc. *The Emissions Reduction Potential of the Congestion Mitigation and Air Quality Improvement (CMAQ) Program: A Preliminary Assessment* (1998).

1. More funding should be dedicated to support creative programs to address air quality

There is a significant need for funding of transportation programs that specifically address reducing pollution and congestion and meeting the Clean Air Act's requirements.

NALGEP's members and the local environment officials represented by the Clean Air Communities Task Force stressed the need for programs that assists with reducing pollution and improving the health benefits and livability of communities.

2. Localities should support guidelines to increase the use of CMAQ for innovative clean air projects

Current CMAQ guidelines do not target resources toward innovative clean air projects in communities that are not in nonattainment or maintenance status.

In fact, the potential loss of CMAQ funds may act as a deterrent to communities coming into attainment. The program would be more effective if the funding guidelines were modified to make it clear that CMAQ funding can be provided to any community facing Clean Air Act regulatory mandates under Rate-of-Progress and Reasonable-Further-Progress rules as well as those communities under designations of "nonattainment" or "maintenance."



3

Profiles of Clean Communities on the Move

The report's profiles are focused around five key approaches to clean air and smart transportation that can be undertaken by local governments – smart public transit, alternative fuel vehicles, anti-idling programs, transit oriented development, and transportation choice programs. Each approach highlighted includes a section on “policy drivers” that could fuel further local innovation, case study examples, and points of contact for the communities profiled and for further information.

Creating Smart Public Transit

Policy Drivers

Public transit is becoming a prime choice for commuters in cities across the nation as traffic congestion worsens and transit systems expand. According to the American Public Transit Association, public transit use shot up 24 percent between 1995 and 2002, outpacing the growth in driving. The recent resurgence in use of public transit followed decades in which the share of people commuting to work using public transit declined.

Americans use more energy for transportation than for any other activity. Nearly 43 percent of America's energy resources are used in transportation, compared to industrial use (39 percent), residential use (11 percent) and commercial use (7 percent).

Per person and per mile, traveling by public transportation uses significantly less energy and produces substantially less pollution than comparable travel by private vehicles. According to the EPA, a transit bus carrying 40 passengers requires only about one-sixth the energy consumption it takes to transport each person in a private vehicle. For every passenger mile traveled, public transportation uses half the fuel of use of private automobiles. Per year, public transportation in the U.S. saves more than 855 million gallons of gasoline or 45 million barrels of oil.²⁴

Increased use of public transportation leads to cleaner air. Public transportation produces 95 percent less carbon monoxide (CO), more than 92 percent fewer volatile organic compounds (VOCs) and nearly half as much carbon dioxide (CO₂) and nitrogen oxides (NO_x) for every passenger mile traveled. The American Transportation Association estimates that current public transportation usage reduces annual emissions of the pollutants that create smog – VOCs and NO_x – by more than 70,000 tons and 27,000 tons respectively.

Public transit can also produce dramatic decreases in traffic congestion. One bus can replace a line of moving single occupancy cars stretching six city blocks; one full six-car train is equivalent to a line of moving automobiles stretching 95 city blocks. Decreased congestion can lead to other positive effects. According to the Texas Transportation Institute's 2004 *Urban Mobility Report*, congestion caused 5.7 billion gallons of wasted fuel and 3.5 billion hours of extra travel time in the 85 urban centers studied. The study put the total cost of congestion for 2002 at \$70 billion.

According to the American Public Transit Association, public transit use shot up 24 percent between 1995 and 2002, outpacing the growth in driving.

24 *Conserving Energy and Preserving the Environment*, p. 7.



Despite the rapid growth in use of public transit, transportation funding patterns and economic incentives continue to promote individual vehicle use. Americans do not receive accurate price signals that reflect the true costs of independent vehicle use to society. The Surface Transportation Policy Project reports that during the 1990s, the federal government put \$156 billion in federal funds into highways, but spent just \$45 billion on transit, bicycling, and walking facilities combined. The hidden costs of automobile use, including the cost of providing land for parking, increased cost of air and water pollution, petroleum supply line policing, uncompensated auto accidents, and increased congestion, drive the social costs of promoting individual automobile use higher. According to studies by the World Resources Institute and the Natural Resources Defense Council, the total annual hidden costs of automobile use ranges from \$378 to \$730 billion (1991 dollars), representing a subsidy of \$5.21 to \$10.07 per gallon of gas.

Smart public transit programs being developed around the country are promoting more efficient transportation choices by removing subsidies for parking and driving, while making use of public transit cheaper, easier, quicker, and more enjoyable. The profiles discussed below show how municipalities have promoted public transit use by charging more for parking, creating flat and no-fee public transportation options, and increasing the speed and efficiency of transit services through use of innovative technology and planning tools.

Profiles

Dane County Smart Parking

Dane County, Wisconsin, is a diverse region encompassing some of the nation's leading agricultural land, as well as the City of Madison, the state's capital and home of the University of Wisconsin. Madison, with a population of 500,000, and the adjacent university, with 40,000 students and 20,000 staff, are located on an isthmus between Lakes Mendota and Monona. The location provides the great beauty and recreational opportunities that have helped the city make numerous "top ten" lists for quality of life. But the setting also channels development into the region's countryside, earning the area the dubious distinction of being one of the fastest sprawling locations in the country.

The air in Madison currently meets state and federal quality standards, but sprawl is now causing increasing automobile use and decreasing air quality. Pollution measurements taken in the last few years indicate that, as the region grows by an estimated 21 percent by 2020, action will be needed to prevent its designation as an EPA ozone non-attainment area. Already, about 40,000 Dane County residents suffer from asthma.

In 2001, the University of Wisconsin and the County and City initiated an innovative partnership demonstrating how a large university and governmental agencies can work together to reduce VMT and improve air quality. Together, the partners introduced several important technology enhancements designed to implement an idea promoted by Donald Shoup, Professor of Urban and Regional Planning at UCLA. Professor Shoup's theory is that employers and municipalities often promote driving through the provision of unlimited-use, fixed-cost parking passes, while charging for public transit per

ride. Holders of a parking pass thus have an economic incentive to drive more and use public transportation less. In *Unlimited Access*, a book he coauthored with two other UCLA researchers, he explained:

Debit cards for parking and Unlimited Access for transit will together have a much greater impact on travel behavior than will either one acting alone because in combination they will turn transportation prices upside down.... Replacing parking permits with debit cards will shift the price of parking to a marginal cost with no fixed cost. Unlimited Access will shift the price of riding the bus to a fixed cost with no marginal cost.... This marginal-cost-but-no-fixed-cost arrangement gives everyone an incentive to consider the alternatives to solo driving for every trip.

To promote public transit use through more accurate price signals, the University and County's program began substituting personal in-car parking meters for the traditional flat fee parking passes usually assigned to students and staff. The personal parking meters are portable, in-car devices that hang on rearview mirrors and work in conjunction with pre-paid debit cards, called "smart cards." Unlike traditional parking permits, the personal parking meters make it possible to pay for only the specific amount of parking time used. This aspect has been particularly popular among students and staff who do not need to drive to school every day. Indeed, demand has been so strong that over the last two years there had to be a waiting list for assignment of new units because demand far exceeded projections.

In addition to creating better financial incentives for individuals to drive and park less, the parking meters are advantageous to the broader campus community. The personal meters collect valuable data regarding the use of specific parking areas for use by university planners. The in-car meters also eliminate the need for traditional meters and pay machines on campus, improving the visual landscape.

The County and University linked the introduction of marginal cost parking pricing to expansion of fixed-price universal transit passes. The partnership has created a universal bus pass program for all University students and is working to provide highly subsidized universal bus passes to all University employees. Dane County is also working with the University of Wisconsin-Madison, City of Madison, and the Wisconsin Department of Transportation to develop an internet ride matching service. The partners will soon be launching a Catch a Carpool program and website that will, among other things, help occasional carpoolers find rides on an as-needed basis, even for the next day.

More than 600 Smart Parking Meters are now in use at the University. According to initial estimates by the partners, participation by 500 employees who curtail driving by one day per week can reduce VMT by 350,000 miles per year, resulting in hydrocarbon reductions of four tons. In practice, demand for participation in the personal parking meter program has been much higher than projected, suggesting that larger benefits may be possible.

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500 employees who curtail driving by one day per week can reduce VMT by 350,000 miles per year, resulting in hydrocarbon reductions of four tons.

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The Denver Eco Pass

Eco Pass is an annual photo ID pass developed by the Denver Area Regional Transportation District (RTD) that is available to participating employers who provide the pass for their employees. The pass program cost, which is significantly discounted, can be administered in one of three options: employer pays 100 percent, employee pays 100 percent, or a cost-sharing plan where the employee and employer both pay a portion. The Eco Pass is tax deductible to employers and is a tax-free benefit to employees. It can be offered as a pre-tax benefit, saving even more in payroll taxes.

Pass holders can enjoy transit services seven days a week on all regular RTD transit, including Light Rail, SkyRide to Denver International Airport, and Call-n-Ride. At a price of about \$25 per month, with discounts available for larger bulk purchases, most people will enjoy dramatic savings over the cost of gas and parking. According to one study, the average employee in Denver spends \$2,200 a year to drive a car to work, versus about \$300 a year for the price of a Eco Pass. An additional feature of the Eco Pass program is the Guaranteed Ride Home, which provides a free taxi ride home for employees with an emergency or unexpected change in work schedule.

Denver Mayor Hickenlooper has offered Eco Passes to all City employees and indications are that over 35 percent of City employees will take advantage of the program.

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Washington Metropolitan Area Transit Authority CitiBank/ SmarTrip® MasterCard

The Washington, DC Metropolitan Area Transit Authority (WMATA) has been a leader in developing contactless smart card technology for payment of fares for public transit. Riders can currently use a single rechargeable smart card, called SmarTrip®, to access all buses and Metro trains in the system and to pay for parking at Metro lots. The SmarTrip® card was taken to market in May 1999 on the Metrorail and parking system, and extended to Metrobus in August 2004. Since June 2004, it has been the only means of paying for parking at Metro-operated lots. More than one million cards have been issued to date. Use of SmarTrip® speeds access to transportation, increasing the efficiency of the system.

The WMATA is now working with CitiBank to introduce a first of its kind combination CitiBank/SmarTrip® MasterCard that can pay for transit fares and act as a credit card for other transactions outside of the Metro system – thus allowing customers to use one bank card for all their transit and purchasing needs. The 20,000 card pilot is designed to further the long-term objective among transit agencies to become card-accepting merchants rather than card-issuing entities. In addition to the Citibank pilot project, WMATA is working with the District of Columbia on an employee identification and facility access smart card that will include the SmarTrip® chip, thus providing multiple functions on one card. This was due for a spring 2005 launch.

The WMATA is also working with other transit systems in Maryland and Virginia to create a regional system, offering seamless fare payment across these agencies. The first phase should be in place later in 2005.

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Extension of Portland's Fareless Square

Long an economically depressed periphery to the downtown core, the Lloyd District has become the fastest growing economic district in Portland, Oregon. In the last ten years, major public and private investments have located in the area, including the new Oregon Convention Center, Metro headquarters, the State of Oregon office building, approximately 400 new housing units, a renovated Lloyd Center Mall, and the relocation of many large corporate employers, including Liberty Mutual Insurance, Ashforth Pacific, Kaiser Permanente, KinderCare, and PacifiCorp. The Lloyd District is also home to the Memorial Coliseum, the Rose Garden Arena, and the Broadway-Weidler shopping corridor. Within the District are approximately 15,000 jobs and 1,000 housing units.

The phenomenal growth in the Lloyd District has prompted area planners to focus on developing transportation options for residents, employers, and visitors to the area while maintaining Portland's long standing commitments to encouraging smart growth through innovative transportation and planning tools. Toward this end, the City of Portland, the Association for Portland Progress, and the Lloyd District Transportation Management Association (TMA) established a package of programs to reduce use of individual vehicles in the area and improve transportation options.

A key component of the transportation planning for the Lloyd District concentrated on the relationship between the District and downtown Portland. One goal was to re-



Portland's Fareless Square was promoted in a 1974 city staff report as a way to reduce violations of federal air quality standards in downtown Portland that occurred one day out of every three. The plan called for promoting dramatic increases in transit use by eliminating all free parking, cutting the number of parking spaces within the downtown area, encouraging dense development around transit stations, and promoting the Fareless Square in the downtown area to allow workers and shoppers free transit service within the central business district. Public transit use in Portland has increased by 220 percent in the last three decades and TriMet ridership continues to outpace population growth and daily vehicle miles traveled in the region. Nearly half of downtown work trips are made by public transit; over 77 percent of transit riders are "choice riders," meaning that they either have a car or could own one but choose to ride transit instead. Portland has not exceeded federal air quality standards since 1984.

"In the past two decades, Portland has succeeded perhaps more than any other Western City in controlling sprawl, fostering public transportation and revitalizing the inner city."

—Wall Street Journal

duce the reliance on individual vehicles for 92 percent of all trips between downtown and the Lloyd District. Planners also sought to increase shopping and recreational opportunities through an "extended downtown" and to increase the potential for new development in the Lloyd District and downtown. To meet these goals, the planners partnered with the regional transportation agency, TriMet, to extend the downtown Fareless Square to include the Lloyd District.

Expanding the Fareless Square to include the Lloyd District allowed the city to better link the economic and shopping core of the city, conceptually link the Lloyd District to downtown, and decrease use of automobiles for transport between downtown and the Lloyd District. The extension of the Fareless Square was accompanied by a series of complementing planning and transportation initiatives. New hourly parking meters and maximum parking regulations for new developments were implemented throughout the district to decrease car use. Metering helps to increase turnover of parking spaces for merchants and generates over \$250,000 annually to the City of Portland and \$75,000 back to the TMA. The TMA, in turn, provides services back into the business district. Moreover, the need to create additional parking facilities at a cost of \$100 million over the next 15 years has been averted. Businesses receive benefits by having more available parking for customers and clients because employees are not taking parking spaces.

Development and zoning codes have been put in place to encourage high density, mixed use development along transit corridors. Further decreases in VMT in the area are being promoted by the Lloyd District TMA's ride sharing programs, guaranteed rides home, and reserved, on-street parking spaces for carpools and vanpools at a reduced fee. They have encouraged employers to allow employees to work from home or to compress their work hours into fewer days, and have sponsored numerous events to promote bicycling, including free breakfast for those biking in the wet winter months. An unlimited use annual transit pass (the PASSport) was created and sold to participating businesses at a substantial discount. Twenty-five percent of the Lloyd District workforce participates in the PASSport program, which has resulted in transit trips increasing by 72 percent.

The extension of the Fareless Square and other transportation initiatives in the Lloyd District have been a great success. Auto trips between downtown and the Lloyd District have decreased by 12 percent since the Fareless Square was expanded. Since

1997, there has been a 26 percent decrease in the number of employees in the area driving alone, while compressed workweek participation increased by 26 percent, carpools and vanpools by 10 percent, and telecommuting by 15 percent.

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Bikestation® Long Beach

The first Bikestation® in the U.S. was created in Long Beach, California. The idea for Bikestation® comes from Europe, where special bike parking areas near major transit hubs can store large numbers of bicycles, making bike/transit commuting more convenient.

Bikestation® Long Beach, which is supported by the City of Long Beach, the Long Beach Redevelopment Agency, and other private and non-profit partners, is a freestanding facility strategically located on the First Street Transit Mall, a nexus for light rail, buses, pedestrians, and a local shuttle that services neighborhoods and key attractions. Nearby, more than 30 miles of dedicated shoreline and river bicycle paths connect to other parts of the city.

For a low membership fee, Bikestation® members have access to a changing room and 24-hour bike lockers and discounted bike and scooter rentals, tune ups and adjustments in the repair shop, and accessories in the bike shop. The Bikestation® has a refreshment bar with outdoor seating and provides an array of bicycle, transit, and tourism information. Environmentally clean vehicles such as e-bikes and neighborhood electric vehicles are also accessible from the facility.

Over 9,000 bikes parked at the Long Beach Bikestation® on weekdays last year; 18 percent of all Bikestation® Long Beach users report that they would have driven instead of bicycling for their trip, if Bikestation® was not available. A new, permanent Bikestation® Long Beach is being built across the promenade from the current location. Other Bikestation® are located near major transit centers in San Francisco, Berkeley, Seattle, and Palo Alto, and planning is underway for other new facilities in Los Angeles, Santa Barbara, and Washington, DC.

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Long Beach users report that they would have driven instead of bicycling for their trip, if Bikestation® was not available.

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Rapid Bus Transit in California

California is home to three of the nation’s ten most congested metropolitan areas (Los Angeles, San Francisco-Oakland, and San Jose). Vehicle traffic delays cost Californians as much as \$2.8 billion a year in wasted time and excess fuel consumption.

Attracting more people to use public transit rather than single occupancy car use has long been a key policy objective in many California cities. It is a common misperception that Californians do not use public transit. In fact, Californians drive less, are less likely to have a driver’s license, own fewer vehicles per person, and ride transit more than the average American. Public transit carries over 1.2 billion passengers a year in California, seven times the number of annual airline passengers at the state’s 14 largest airports.

Reaching automobile commuters who put a premium on speed of travel has often focused on provision of rail transportation options. But building new rail lines can be costly and time intensive, particularly in the many urban areas in California where sprawling development patterns connected by freeways facilitate long commutes. Accordingly, many urban areas in California are following the example of Curitiba, Brazil, and establishing rapid bus transit systems that offer many of the amenities of rail travel without the same need for infrastructure investment.

Rapid bus transit (also called bus rapid transit) service generally refers to bus service that is significantly faster, modern, and more comfortable than traditional “local bus” service. Rapid bus transit services normally have fewer stops, improved scheduling techniques, faster passenger boarding, faster fare collection, and a system image that is uniquely identifiable.

In June 2003, Alameda-Contra Costa Transit initiated a Rapid Bus service called “NextBus” along 14 miles of San Pablo Avenue into downtown Oakland. The system includes new three-door, 40-foot buses identified with special logos and extra low floors to expedite boarding and alighting. New transportation technologies communi-

In Curitiba, the rapid bus transit system is known as the “surface subway.” The city established 36 miles of exclusive bus lanes through the center of the city that are separated from automobile traffic. The system has an express bus-only lane in the middle, with two adjacent lanes devoted to local traffic and the outside lane for automobiles. This system carries an average of 1.9 million passengers a day. Air quality in Curitiba is the best of any urban area in Brazil and fuel consumption is 25 percent less than average, despite having the highest rate of automobile ownership of any city in the nation.

cate with signals so they cycle or remain green when the bus is approaching. Another intelligent transportation system permits transmission of arrival information to electronic NextBus screens at all stops. Running time between San Pablo and Oakland is nearly 20 percent quicker than the earlier skip-stop service and ridership on the route has grown by over 66 percent.

In Los Angeles, bus companies operate along a special busway along the I-10 freeway connecting downtown and eastern LA County. The busway shares traffic with high occupancy vehicles over much of the route. At widely spaced intervals, there are transit stations situated in pull out areas in the middle of the freeway where patrons can board or disembark and link to local bus routes via an elevator to the surface street.

The three bus companies using the special I-10 busway carry over 45,000 passengers daily, translating to 11.5 million passengers a year. Los Angeles also sponsors nine Metro Rapid lines that serve over 140 miles of surface streets throughout LA County. Metro Rapid buses only stop at major intersections and have special sensors that keep traffic lights green when they approach, speeding commute times by up to 25 percent.

Other rapid bus transit systems are being planned and developed throughout California, as well as in other U.S. cities. Various forms of rapid bus transit services are currently operated in Boston, Massachusetts, Pittsburgh, Pennsylvania, Orlando, Florida, Minneapolis, Minnesota, Phoenix, Arizona, Honolulu, Hawaii, and Santa Clara, California.

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Communities are searching
for innovative, cost effective
ways to clean the air.

Promoting Alternative Fuel Vehicles

Policy Drivers

Over the last three decades, improvements in cleaner burning fuels, engines and tail-pipe controls have been a key driver in the improvement of air quality. Vehicular lead emissions have been virtually eliminated due to the phase-out of leaded gasoline. Today's gasoline burning vehicles emit between 60 to 90 percent less air pollution than cars from the 1970s.

Technological improvements and emissions controls have been a large factor in the cleaner air we now breathe. Between 1978 and 1997, concentrations of ozone (one-hour) fell by 30 percent, carbon monoxide concentrations have fallen by 60 percent and lead concentration has fallen by 97 percent. "Between 1988 and 1997, the total number of days exceeding air quality standards has dropped 56 percent in Southern California and 66 percent in the rest of the" country.²⁵

We are now on the cusp of a revolution in technology that, if widely implemented, can greatly increase our ability to cut harmful emissions much further. Hybrid vehicles that use a battery to offset use of a gasoline engine and thereby cut emissions and increase gas mileage are becoming more popular. Hybrid cars can reduce air emissions of smog-forming pollutants by up to 90 percent and cut carbon dioxide emissions in half. Natural gas vehicles emit 90 to 97 percent less CO, 25 percent less CO₂, and 35 to 60 percent less NO_x than traditional fuel vehicles. The U.S. Department of Energy projects that if 10 percent of automobiles nationwide were powered by fuel cells, regulated air pollutants would be cut by one million tons per year and 60 million tons of the greenhouse gas CO₂ would be eliminated. DOE projects that the same number of fuel cell cars would cut oil imports by 800,000 barrels a day – about 13 percent of total imports.

Localities around the country are leading the revolution toward cleaner fuel technologies. By using alternative fuel vehicles in their municipal fleets, public transportation programs, and for school buses, localities are raising the visibility of alternative fuels around the country. And by installing the necessary fueling stations and creating purchasing and servicing networks, localities are building the infrastructure necessary for wider dissemination of these important technologies.

Localities around the country are leading the revolution toward cleaner fuel technologies.

²⁵ EPA, Indicators of the Environmental Impacts of Transportation, EPA 230-R-99-00, 1 p. 12 (1999).

Profiles

King County Promotes Hybrid Car Sharing

As part of its aggressive efforts to combat sprawl and congestion, King County Metro became the first public transportation agency in the country to partner with the private sector to develop a car sharing program and integrate the program into its public transportation programs. The private car sharing provider, Flexcar, is now a national leader in providing car sharing programs, and supports 130 cars in King County alone. In 2001, King County began working with Flexcar to push its partnership one step further with the introduction of low-emissions hybrid vehicles into its fleet.

At the time the project began, Flexcar was operating primarily with small, fuel efficient gasoline burning cars. Hybrid vehicles were significantly more expensive than the standard vehicle options being used by Flexcar and their attractiveness to consumers was untested. To promote their use, King County partnered with the EPA's Clean Air Transportation Communities program to sponsor a pilot program that would pay for the cost difference between leasing a fleet of hybrid vehicles and the cost of leasing non-hybrid Honda Civics.

The program found that the introduction of hybrid cars was a major selling point for Flexcar. Flexcar placed the first hybrid vehicles in the most highly used and visible areas. The cars quickly achieved peak use, an average of 6-8 hours a day per vehicle. Statistics showed that members were choosing hybrid cars over standard vehicles. Flexcar also reported that many new members were stating that the addition of the hybrid cars to the fleet was a prime reason for their interest in joining.

Addition of the hybrid vehicles also attracted many businesses and organizations to Flexcar. More than 130 businesses have signed on to use Flexcar. The nation's largest natural food cooperative market – the Puget Consumers Co-op (PCC) – launched a partnership with Flexcar to locate hybrid vehicles at all of its stores. PCC promoted the program for its ability to enable its members to “feel good about knowing they are part of an innovative solution to the growing problems of traffic congestion and air pollution from vehicle emissions.” The Puget Sound Clean Air Agency got rid of their five standard vehicles for their commercial fleet and replaced them with Flexcar hybrid vehicles.

Following the proven success of the program, Flexcar committed to using hybrid cars for all new passenger cars added in King County. The company also integrated hybrid vehicles into all of its fleet upgrading plans in the cities in which it serves, including conversions of 100 percent of its fleets to hybrid vehicles in Los Angeles and San Diego in response to “more and more” requests of consumers for access to the hybrid vehicles.

King County has continued its strong support for car sharing. Flexcar and King County Metro launched a major promotional campaign with advertisements inside and outside of the County's buses reading: “One more reason for joining Flexcar: You're Breathing It.” Flexcar membership discounts were provided to holders of the County's “FlexPass” and “PugetPass” transportation passes and to participants

“We are proud to be part of a team that is improving air quality, increasing mobility and making a positive difference to our region. This is one more example of innovation that improves the quality of our lives in the Puget Sound.”

—King County Executive
Ron Sims



in the King County sponsored Vanpool program. Discounts on Flexcar membership are also available for members of Seattle's new Bikestation®, located at a transportation hub that links to Metro Transit and Sound Transit bus service, Sound Transit commuter rail, Amtrak, and the Washington State Ferry Terminal.

The hybrid program has produced significant air quality benefits. Program officials estimate that by selecting hybrid cars over traditional automobiles, the Flexcar Program saved 3,790 pounds of fuel, as well as preventing the emission of 73,514 pounds of carbon dioxide, 614 pounds of carbon monoxide, and 26 pounds of hydrocarbons into King County's atmosphere.

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Vancouver's GreenFleet

Over the last several years, downtown Vancouver has begun attracting a larger number of residents and businesses as part of a "back to the city" movement. As the region has attracted denser development patterns, Vancouver's responses to its clean air problems have centered on the promotion of public and alternative transit to replace the growing dependence on individual vehicles. In partnership with the EPA's Clean Air Transportation Communities program and Flexcar, Vancouver developed the GreenFleet program to provide affordable and environmentally friendly transportation options for Vancouver's citizens and employers.

The Greenfleet vehicles consisted of three gas-electric hybrid shared cars managed by Flexcar – the first all-hybrid car sharing fleet in the nation. Two of the cars were stationed in downtown Vancouver, spaced so as to be within walking distance of the majority of employees in the area. The third car was placed at the Vancouver Housing Authority (VHA) and is available for use by VHA staff during business hours and other Flexcar members the remainder of the day and on weekends.

The first goal of the GreenFleet program was to promote use by organizations as their fleet cars, as an alternative to standard high emissions pool vehicles. The hybrid car at the VHA, for example, replaced a standard gasoline car that the agency used for site visits and other official purposes. The shared vehicles downtown are used as fleet cars for Wallis Engineering, the City of Vancouver, and Clark County, in many cases displacing previous reliance on older cars with higher maintenance costs and emissions.

"What most drivers do not understand is that their annual tail pipe emissions typically weigh more than four times their car's actual weight," explained Todd Boulanger, manager of the City's GreenFleet program. "VHA's old pool car emitted over 7.4 tons for an average year, but the car only weights 1.6 tons." With VHA staff's use of a hybrid sedan they will save 4.2 tons of greenhouse gas emissions (57 percent) and \$776 dollars in gasoline (62 percent) during one year of driving.

To promote public and alternative transit use, the GreenFleet program made the downtown cars available for free during the day to any participating employee who

"By partnering with Flexcar and GreenFleet we were able to provide additional community benefit. Employees who need a car occasionally will now have that option, while carpooling or taking public transportation to work, and the vehicle can be used by area residents as an alternative to owning and maintaining a car."

—Alice Porter, VHA Director of Housing Management



“We have approximately 20 full time employees at Wallis Engineering, about a third of which live within biking distance of work. Before Flexcar, there was only one employee commuting to work without a car. Now that Flexcar is available for them to use for free during the day if they need to run errands, six or seven employees bike, walk or take public transit to work at least once a week, and three now do so every day.”

—Chad Kays, Wallis Engineering

walked, bicycled, carpooled, or rode public transit to work on that day. This aspect of the program was designed to cater to people who drive out of a concern that they might need their cars to run errands or attend to an emergency during the day. Flexcar and Vancouver’s GreenFleet program pays for the hour and mileage charges normally charged to members. Every participant receives a personal Flexcar membership at no extra charge to use after-hours or on weekends (subject to the service’s regular use fees of \$5–\$9 per hour).

A third goal of the program is to use car sharing to increase mobility options of lower income people in the city who cannot afford access to the greenest and cleanest vehicles on the market. To further this goal, GreenFleet sponsors special membership programs for residents of recently built, mixed-use, affordable housing projects that are now coming on line in the downtown area. Any resident of the new affordable apartments who signs a one year lease is eligible for five hours of free Flexcar use each month for the first six months.

At the time it initiated its partnership with Flexcar, Vancouver was among the first suburban areas to introduce a car sharing program and was the first to have a car sharing fleet entirely composed of hybrid vehicles. It is now among a larger group of successful suburban car sharing programs, including such towns as Greenbelt and Silver Spring, Maryland outside of Washington DC, Somerville, Charlestown, and Watertown, Massachusetts outside of Boston and Hyde Park and Lakeview, Illinois outside of Chicago.

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Philadelphia Creates Human-Electric Vehicle Fleet

The City of Philadelphia spans 135 square miles and is home to more than 1.5 million people. A thriving metropolis, Philadelphia has watched its greater metropolitan area expand to encompass nine counties and more than 7 million residents. Sprawling growth has resulted in increased vehicle miles traveled, rapidly worsening traffic congestion, strain on roadway infrastructure, and the emission of harmful levels of air pollutants. As a result, the Philadelphia metropolitan region has been unable to meet Clean Air Act standards for ozone, earning the city a severe nonattainment designation, with one-third of air pollution attributable to transportation emissions.

Acting on an obligation to make significant improvements in clean air policy, city officials worked with EPA to acquire 26 zero-emission human-electric powered utility vehicles to replace gas and diesel powered trucks at a variety of city-owned agencies and enterprises. The City worked closely with a local entrepreneurial start-up company, Kronosport, Inc., on the redesign of the vehicles so they would meet City specifications for operation, safety, and utility. The partnership resulted in electric utility vans,

trucks, and people-movers that are being deployed at the Philadelphia Zoo, Fairmount Park, the Health Department, and the Recreation Department, with plans to integrate vehicles within the Philadelphia International Airport and the Police Department.

The inception of the project was a landmark effort by a local government to assess the emission reduction opportunities presented by human-electric assist vehicles. The fully articulated chassis can carry a driver and cargo or passenger loads over various terrains and within campus settings. The City is assessing not only the emission reduction opportunities presented by the zero-emission vehicles, but also fleet reduction opportunities, including replacing full size gasoline and diesel vehicles with more utilitarian and size-appropriate Kronosport vehicles.

The project has also led to a number of research and development efforts that will help address power generation and emergency back-up power generation needs. Because the Kronosport vehicles are lightweight, a hydrogen-powered fuel cell can be integrated cost-effectively. Kronosport is in the final stages of developing new zero-emissions mini-trucks that will operate on 1kW, 3kW or 5kW fuel cells to supply extra power for emergency back up or for activities requiring larger power demand. Fuel cell partners include the Department of Defense's Fuel Cell Test and Evaluation Center, Air Products, and others. The Philadelphia project has also given the company the chance to showcase their vehicles and gauge potential buyers' reactions, helping them to design more efficient and user-friendly vehicles.

In the long term, city officials hope to quantify the health benefits achieved, as well as inspire individual health and exercise lifestyle changes. Most importantly, the City of Philadelphia aspires to be a model for other local governments around the country.



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Jordan School District Promotes Clean School Buses

The nation's fleet of school buses releases a total of 95,000 tons of NO_x, 213,000 tons of CO, 3,100 tons of PM, and 10.7 million tons of Greenhouse Gasses (GHGs) each year. This averages out to about 400 pounds of NO_x, 900 pounds of CO, 14 pounds of PM, and 23 tons of GHGs per bus per year.

School buses offer an ideal application for alternative fuels because they have predictable routes and centralized fueling. They also offer the potential for improving the air in the immediate vicinity of one of the most at-risk populations for asthma and other harmful effects of air pollution – children.

The Jordan School District, the largest school district in Utah, is building a model for alternative fuel school bus programs around the country. A natural gas bus user since 1993, it now has 30 natural gas buses.

In addition to buses, the district operates three natural gas mail vans, plans to buy four to six alternative fuel maintenance vans this year, and has initiated a pilot program to place dedicated compressed natural gas (CNG) sedans in the drivers' education program. The vehicles will be fueled on site, using time-fill, natural gas fueling appliances.

Each new CNG bus increases the amount of natural gas pumped at the district's fueling site by an average of 1,040 gallons per year, which displaces that amount of diesel fuel. Each CNG bus typically runs 13,082 miles per year. A fleet of 25 CNG school buses will reduce total criteria pollution emissions by 1,400 pounds per year.

The district has added to its alternative fuel bus fleet nearly every year. District leaders like them because they are cleaner, last longer, are cheaper to operate, and are great for public relations. The fleet superintendent and drivers have nothing but praise for the buses. The fleet also adds value to the district's reputation as a successful DOE Energy

Smart School/Rebuild America program site.

Nationwide, there are between 2,700 and 3,900 alternative fuel school buses in use in over 130 school districts in 21 states. These alternative fuel buses are displacing 4 to 5 million gallons of petroleum fuel each year. Raising the market share of alternative fuel buses to 17,000 by 2010 would result in an estimated reduction in emissions of roughly 850 metric tons of NO_x, 350 metric tons of CO, 25 metric tons of PM, and 5,700 metric tons of GHGs per year.

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Dallas Uses Liquefied Natural Gas Buses

Using alternative fuels in bus applications can greatly reduce emissions and provide local energy diversity. It can also promote ridership and public support for transit. The EPA reports that they receive more complaints from the public about bus emissions than all other issues combined. By replacing diesel buses with alternative fuel buses, transit operators believe that public transportation will be perceived as environmentally friendly and thus a more desirable alternative.

Dallas Area Rapid Transit (DART), a public transit agency in Dallas, Texas, estimates that over 200,000 people use its public transit every day. In 1998, DART began operating a fleet of transit buses fueled by Liquefied Natural Gas (LNG). LNG is a naturally occurring mixture of hydrocarbons that has been purified and condensed to liquid form. At atmospheric pressure, it occupies only 1/1,600 the volume of natural gas in vapor form. As part of a \$16 million commitment to alternative fuels, DART now operates 139 LNG buses serviced by two LNG fueling stations.

The buses, purchased from NovaBUS in New Mexico, began operating in November 1998. On behalf of the U.S. Department of Energy (DOE) Office of Heavy Vehicle Technologies, the DOE's National Renewable Energy Laboratory (NREL) conducted a research project to collect and analyze data on the performance and costs of LNG buses. Data were gathered from DART's fuel and maintenance tracking systems daily. Emissions tests showed that, on average, the LNG buses had 17 percent lower NO_x emissions than the diesel buses, as well as lower levels of non-methane hydrocarbons.

A primary reason for hesitancy in switching to alternative fueled buses is the expectation that, relative to diesel buses, costs of purchase, maintenance, and operation will be higher. In Dallas, NREL's comparison of operating costs had mixed results. The operating cost for the original 10 LNG buses was, on average, 3 percent higher than for the diesel buses. The original LNG buses averaged \$0.799 per mile, while the diesel buses averaged \$0.773 per mile. However, a newer batch of LNG buses boasted an operating cost of \$0.713, about 8 percent less than the diesel buses.

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Wind-Powered Buses Planned in Michigan

The Bay Area Transportation Authority (BATA) in the Michigan counties of Grand Traverse and Leelanau has received a \$4 million federal grant for the purchase of 8 to 10 hybrid electric buses. The hybrid buses are capable of operating in a pure-electric, zero-emission mode when traveling in environmentally sensitive areas. At other times, the batteries will be charged by regenerative braking and with a biodiesel-powered electric generator, utilizing a catalytic particulate trap to reduce emissions.

BATA officials have been in discussions with local utilities to structure an agreement that will result in the construction of a wind turbine to provide the electricity to recharge the buses' batteries. The first hybrid electric bus was expected to reach Traverse City in the spring of 2005.

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Hydrogen Fuel Cells Power Cars in Palm Desert

The City of Palm Desert, California, partnered with the Schatz Energy Research Center (SERC) at Humboldt State University to launch the Palm Desert Renewable Hydrogen Transportation Project. Upon the culmination of their work, they introduced the first street-ready, hydrogen fuel cell-powered car licensed to drive on the streets of America.

Hydrogen can be used as a transportation fuel in cars, trucks, and planes. When used as a fuel for a fuel cell, it can produce electricity quietly, cleanly, and efficiently. Hydrogen combustion does not contribute to global warming, acid rain, or other air pollution. Hydrogen is not a primary energy source, however. In order to be a clean, sustainable source of energy in the long term, it must be generated using renewable energy resources such as solar or wind power.

In Palm Desert, the goal of the Renewable Hydrogen Transportation Project is to demonstrate a clean and sustainable transportation system, from energy production to the transportation end-use. An on-site hydrogen generation center, designed and built by SERC engineers, features a fully functional hydrogen production, compression, storage, and dispensing facility. The fully automated facility provides compressed hydrogen at 3600 psig (pressure per square inch gauge) for use in the SERC hydrogen fuel cell-powered vehicle fleet operated by SunLine Transit and the City of Palm Desert. A large solar electric system provides the power necessary to generate and dispense hydrogen and excess solar electricity is used to power other parts of the SunLine facility.

The Palm Desert fuel cell-powered vehicle fleet includes four personal utility vehicles (PUVs) and one neighborhood electric vehicle (NEV). The PUVs are electric golf carts and the NEV is a street-legal, European-made electric vehicle. All of the vehicles were modified and equipped with fuel cell power systems by SERC. The NEV is intended to provide a simple, efficient way to get around when freeway travel is unnecessary. The vehicle is fast enough for a quick trip to the store, large enough for a passenger and several bags of groceries, and comfortable enough to operate in bad weather. An NEV is a street-legal alternative to a car in urban areas. The fuel cell-powered NEV is used by employees at the City of Palm Desert and SunLine Transit Agency for short-range transportation.

The fuel cell vehicles have a greater range than battery-powered vehicles and can be refueled in minutes, in contrast to the hours required to recharge a bank of batter-

ies. Furthermore, they are true zero-emission vehicles, as their hydrogen fuel is made using clean solar power and their only exhaust is pure water.

When the Palm Desert Renewable Hydrogen Transportation Project was initiated, not much practical work was being done regarding the use of hydrogen as a transportation fuel. Today, however, hydrogen is widely recognized as a viable alternative transportation fuel and much work is being done to move it toward commercialization. Partnerships such as the DOE-led FreedomCAR initiative and the California Fuel Cell Partnership have been formed to encourage private companies and government agencies to work together to move hydrogen fuel cell vehicles toward commercialization. Most major car companies are developing fuel cell vehicle technology, the major energy companies are developing hydrogen generation and dispensing technologies, and the State of California has embarked on a Hydrogen Highway initiative that seeks to provide access to hydrogen fuel along the State's major highways by the year 2010.

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Stopping unnecessary vehicle idling
can directly improve air quality
and reduce environmental health
risks in our communities.

Anti-Idling Initiatives

Policy Drivers

When cars, trucks, and buses are left running while parked, they produce pollution that contributes to climate change, smog, and toxic air pollution. Many people unnecessarily leave their cars idling while waiting for someone they are picking up or to “warm” their engines.

Contrary to popular belief, idling is not an effective way to warm up most car engines. Today’s automobile manufacturers recommend waiting no more than 30 seconds before driving, even on the coldest days. Idling a car for more than 10 seconds takes more gas than restarting an engine. Idling an average car for 10 minutes a day can produce more than 500 pounds of pollutants and consume about 22 gallons of gas per year.

The problem is compounded for large diesel-burning trucks and buses. Combustion ignition engines used to power commercial vehicles are among the largest sources of fine particulate matter and ozone-forming nitrogen oxides. In the aggregate, the Department of Transportation estimates that idling trucks produce over 11 million tons of carbon dioxide and 150,000 tons of nitrogen oxides each year.

Excessive engine idling of any vehicle results in increased maintenance and engine wear costs. Frequent restarting of a car’s engine has little effect on it, but excessive idling can damage a car’s engine components, including cylinders, spark plugs, and the exhaust system. Studies indicate that long term idling by trucks can increase maintenance cost per truck by as much as \$2,000 per year. The trucking industry estimates that engine idling for the average vehicle results in the equivalent of 64,000 miles in engine wear and tear annually, dramatically increasing the need for engine overhauls.

Stopping unnecessary vehicle idling can directly improve air quality and reduce environmental health risks in our communities. Many states and communities have adopted anti-idling laws that prohibit truck and bus idling in moderate weather conditions and have adopted a number of programs to encourage or require that cars stop idling in certain areas, particularly around schools. These programs are helping to change an idling culture among car owners and commercial truck and bus drivers, improving air quality, and reducing noise pollution and waste of fuel.

The Department of Transportation estimates that idling trucks produce over 11 million tons of carbon dioxide and 150,000 tons of nitrogen oxides each year.

Profiles

Truck Stop Electrification in New York State

In the U.S., there are approximately 1.3 million large “long-haul” diesel trucks with sleeper cabs transporting over 80 percent of all the goods we consume each year. Under recent Department of Transportation safety regulations, long-haul truck drivers must rest for at least 10 hours for every 14 hours of driving. Many of these rest periods are spent in idling trucks at the nearly 350,000 parking spaces nationally at truck stops, travel plazas, and rest areas around the country. Operators of Class 7 and 8 diesel trucks idle their engines during rest periods to provide heat or air conditioning to the sleeper cab, to keep the engine warm during cold weather, to keep refrigerated trailers cold, and to provide electric power for their on-board electrical appliances, such as televisions, refrigerators, and microwave ovens.

New York State, through a public-private partnership led by the Northeast States for Coordinated Air Use Management (NESCAUM), IdleAire Technologies Corporation, and other public and community-based partners, has been at the forefront of promoting advanced truck stop electrification (ATE) systems at rest stops and commercial facilities to reduce many of the harmful effects of truck idling. ATE replaces diesel engine idling with grid supplied electricity and services connections.

Energy can be produced more cleanly and efficiently by commercial power plants than by the idling diesel engines of over-the-road trucks. By using the power grid to provide services to a truck’s cab during layover, ATE systems emit to the atmosphere about 70 percent less CO₂, 95 percent less NO_x, 98 percent less PM, and 99 percent less VOC and CO as would the truck’s diesel engine.

The first ATE demonstration project in the nation was used to help ameliorate the particular hardships borne by low-income residents of a neighborhood in South Bronx, New York, that contains one of the busiest trucking destinations in the nation. The Hunts Point Cooperative Market, which is surrounded by a residential neighborhood of 9,000 people, is one of the world’s largest food distribution centers. More than 20,000 diesel truck trips in and out of the market area occur each week, with hundreds of trucks at a time resting in the area for long durations while they wait to load or unload or to meet federal rest requirements.

The high level of diesel fumes in the neighborhood impact local air quality, posing health risks to the area’s inhabitants. One of every three children in the area has asthma and the childhood asthma hospitalization rate is 12 times the national average.

Advanced truck stop electrification systems provide independent services to the truck, including an externally powered heating and cooling system and a range of services, such as satellite television with pay per view movies, 110 volt electricity outlets, and phone and internet connections. ATE systems do not require that the truck have any special hardware installed. The driver pays about \$1.25 per hour to use the ATE system, less than the cost of fuel used to idle an engine for the same hour. A portion of the gross receipts from the service is paid to the rest stop or facility operator, providing a stream of income for participating operators.

NESCAUM and IdleAire partnered with Sustainable South Bronx, Clean Air Communities, and EPA to install a 28-bay ATE facility at Hunts Point. At peak use, the project can eliminate 2,000 total tons of criteria and toxic pollution from the air each year by displacing idling vehicles. Early monitoring of the use of the facilities showed that driver interest was strong and that substantial savings were being achieved by users over the costs of idling their engines.

Following the initial success at Hunts Point, the New York State Energy Research and Development Authority, the New York State Thruway Authority, and Niagara Mohawk Power Company co-funded two demonstration projects of ATE technology at rest stops along the I-90 freeway. The first, with 21 truck parking spaces, was installed at the DeWitt Service Area on the eastbound side of I-90 in June 2002. The second site, with 24 truck parking spaces, was completed in April 2003.

Monitoring at the DeWitt and Chittenango rest stops showed that the systems were used in the first year for over 34,000 hours, displacing nearly 300 pounds of PM, 5.6 tons of NO_x, 2.9 tons of CO, 1.3 tons of HC, and 349 tons CO₂ emissions. Approximately 34,000 gallons of diesel fuel were saved. By saving fuel and prolonging engine maintenance costs, it can be estimated that truckers saved approximately \$39,000 during the one-year monitoring period, net of the cost of user fees paid to access the system. Analysis of data at the Chittenango facility found a significant (8.5 percent) decrease in black carbon levels in the surrounding air post ATE technology installation.

Focus is now shifting toward the support of ATE and other truck stop electrification technology at large rest stops and travel plazas in high traffic corridors. Many large truck stops along major freeways house hundreds of trucks at a time. One 500 unit ATE facility can produce emissions reductions of over 30,000 metric tons of pollutants a year. If all drivers who use the 272,000 parking spaces available at commercial travel plazas nationally were able to avoid extended idling while in those spaces, approximately 1.7 billion gallons of fuel could be saved annually.

The Department of Transportation, the Department of Energy's Clean Cities program and the EPA's National Transportation Idle Free Corridors initiative are supporting truck stop electrification programs in a number of ways, including through grant funding for local projects. The recent omnibus appropriations bill for fiscal year 2005 contains support for truck stop electrification programs. In January 2004, the EPA sought to encourage states to replicate the efforts of communities like Hunts Point by passing guidance on incorporating emission reductions from truck stop electrification into State Implementation Plans and Transportation Conformity.

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Minnesota Works to Reduce School Bus Idling

Levels of air pollution around schools can be particularly high when school buses idle while lined up back-to-front waiting for students to board. When concentrated idling occurs near school buildings, fumes can enter ventilation systems and flow through open windows, raising air pollution levels for students indoors.

In May 2002, Minnesota adopted legislation that calls for schools to reduce unnecessary idling of school buses in front of schools and reroute bus parking zones away from air-intake vents (or, if necessary, relocate the air-intake vents). Minnesota was the first state in the nation to pass a law that addresses minimizing idling and moving bus parking away from air-intake vents. Ten other states – California, Connecticut, New York, Maine, Alabama, Texas, New Jersey, Nevada, Pennsylvania, and Vermont – have taken action to minimize children’s exposure to diesel emissions since February 2002.

The Minnesota Office of Environmental Assistance is working with the Sierra Club and other organizations to provide resources to help schools comply with the new law and protect students from diesel emissions. The partners have sample letters to help explain the new law and posters and camera-ready signs to designate Clean Air Zones. They have also gathered information on private, federal, and state funds to help schools reduce students’ exposure to diesel emissions. The partners are working with schools to implement several basic steps that can minimize children’s exposure to harmful diesel emissions:

- ▶ Adopting no-idling zones by posting “no idling” signs around school grounds and alerting bus drivers, parents, and administrators that engines should be turned off when a bus (or any vehicle) is waiting or parked;
- ▶ Passing no idling policies and training bus drivers how to reduce exposure to diesel emissions;
- ▶ Redesigning bus parking zones by moving bus parking areas away from school air-intake vents and parking buses at a diagonal to avoid front-to-back passing of emissions;
- ▶ Promoting good maintenance of bus fleets and investment in cleaner fuels and technologies, such as exhaust pipe retrofits for current buses, use of biodiesel, and the purchase of newer, cleaner buses, over the long term; and
- ▶ Sending notices to parents alerting them to the health risks of exposure to diesel exhaust and what the school is doing to reduce children’s exposure.

Through these simple measures, schools in Minnesota are cutting harmful emissions around schools and ensuring that buses provide the safest possible ride for children.



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SECAT Makes Heavy-Duty Cleanups in California

Although air quality in the Sacramento, California region has improved significantly over the past 10 years, the city continues to experience violations of the federal 8-hour and 1-hour ozone standards. Most of the pollution is created by mobile sources, including automobiles and heavy-duty vehicles. Over 30 percent of NO_x emissions from mobile sources come from heavy-duty vehicles.

In 1994, the five air districts within the Sacramento Region adopted a federally mandated State Implementation Plan (SIP) which requires the region to decrease emissions from heavy-duty vehicles as one part of a larger strategy to attain the federal ozone standards by 2005, as mandated by the federal Clean Air Act. Sacramento Area Council of Governments (SACOG) is the designated planning organization for the region responsible for ensuring that transportation projects and plans do not impede the region's clean air goals. SACOG also evaluates all projects included in the federal Metropolitan Transportation Plan and the Metropolitan Transportation Improvement Program to ensure consistency with air quality objectives and the SIP.

As part of the region's overall effort to meet clean air standards and achieve conformity with transportation plans, SACOG established the Sacramento Emergency Clean Air Transportation (SECAT) Program. SECAT provides incentives to help public and private, on-road, heavy-duty truck owners purchase technologies to reduce emissions in the Sacramento region in order to meet federal air quality standards. The SECAT Program includes a variety of options to help truck owners and fleet managers reduce emissions:

- ▶ Replacing older, higher polluting vehicles with newer, lower-emission vehicles (Fleet Modernization);
- ▶ Purchasing new, low or zero-emitting vehicles;
- ▶ Retrofitting of existing heavy-duty vehicles with after treatment systems to reduce NO_x;
- ▶ Repowering of existing high-emitting diesel vehicles with new, lower-emitting engines;
- ▶ Using "cleaner" diesel fuel formulations and/or diesel emulsion fuels in place of California diesel fuel; and



- ▶ Implementing other verifiable, enforceable, and cost-effective technology for reducing NO_x emissions from heavy-duty on-road vehicles.

SECAT recognizes that it will cost fleet owners more, in many cases, to buy and operate cleaner equipment. In 2000, the SECAT Program established a \$70 million fund to reduce emissions released from heavy-duty vehicles in the Sacramento Federal Ozone Nonattainment Area by providing incentives to offset the costs of purchasing lower-emission technologies. This program was originally created by California Assembly Bill (AB) 2511. In 2004, SACOG's Air Quality Funding Program approved a proposal to add an additional \$3 million to the SECAT Program, which will be used to support the Fleet Modernization and other emission reduction projects. The SECAT Program can help finance both the incremental capital costs of emissions control measures, and also pay for operating costs, facility modifications, out-of-cycle replacement, and financial incentives for participation.

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A Grassroots Effort in Maine Leads to a Reduction in Idling

In the town of Freeport, Maine, the Maine Council of Churches has partnered with the Maine chapter of the Sierra Club and the Maine Department of Environmental Protection (DEP) in a grassroots movement to reduce vehicle idling. The initiative began as an effort of the Maine Council of Churches and the Maine chapter of the Sierra Club to promote cost-effective ways to reduce children's exposure to diesel exhaust.

In April of 2002, community volunteers began working to spread the word about anti-idling. Volunteers conducted informal baseline surveys in the town of Freeport

to determine how many people idled in a given area. The surveys showed that idling at schools was a major problem. On one foggy day, only 25 cars waiting for children turned off their engines while 37 left their vehicles idling. Nearly half of the idling vehicles left their engine running for over 10 minutes and one car idled for more than 40 minutes.

The community organizers enlisted the help of Doug McKenzie-Mohr, an environmental psychologist, to learn how community groups could best work to alter local idling behavior. Dr. McKenzie-Mohr taught community members about "social marketing tools," including goals of obtaining commitments from community members to take action and transforming those commitments into community norms through visual displays and other "prompts" that remind people to sustain behavior.

At the start of the school year that fall, the team visited the Mast Landing School to begin transforming idling behavior. The group re-



cruited students and parent volunteers to approach idling cars around schools to ask for pledges to stop idling and distribute no-idling pledge cards and window decals. The Maine DEP also ran a workshop in the Mast Landing School for 3rd and 4th graders to educate the children, and, in turn, parents about how they can help reduce air pollution by not idling. Patagonia, an outdoor sporting goods store, donated organic cotton T-shirts for the campaign and so far the response has been encouraging.

Initial success at Mast Landing led the partners to expand their efforts to other schools in the area. Today, almost all of Freeport's school parking lots have been declared "no-idling zones," resulting in a 50 percent reduction in idling of more than 10 minutes at participating schools.

Beginning in January of 2005, the team will move into other areas of the community, including local high schools, church congregations, super markets, and doctors' offices, and are hoping to work with local tour companies to discourage idling of tour buses. The group has been working with the town of Freeport to reduce idling by municipal vehicles. Organizers are also working to post signs at major thoroughfares into Freeport declaring the town to be a "No-Idling Community" for all residents and visitors.

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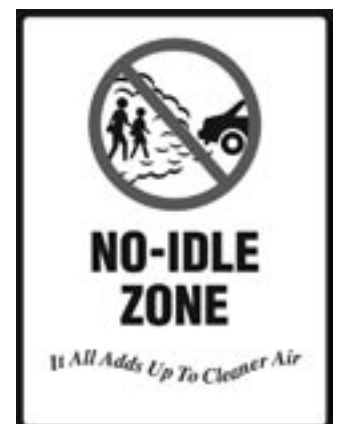
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Air Program Promotes No Idle Zones in Washington State

In Washington State, the *No Idle Zone – Dare to Care About the Air* program enlists parents to sign a pledge not to idle at school. Every class that achieves 100 percent participation, or close to it, receives an award, such as a pizza or ice cream party. Parents who agree not to idle get a key tag that can be used for discounts from participating sponsors and serves as a prompt to remind them to sustain their anti-idling behavior.

Participating schools adopt no-idling policies to assure that only minimal idling of school buses occurs, mostly off-site and in colder weather. Bus drivers are given the discount key tag to remind them to shut off their engines. Prominent signs at school parking lots inform delivery drivers and others that the school is a "No Idle Zone" and



remind them to shut off their engines. This message is reinforced by letters from the school principal to primary vendors.

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Transit Oriented Development

Policy Drivers

Most of the increase in vehicle miles traveled in recent decades is a direct result of sprawling residential and commercial development patterns. According to the Federal Transit Administration, only 13 percent of the growth in driving between 1983 and 1990 can be attributed to population growth, the remainder is due to factors influenced by sprawl, including increasing number and length of trips in vehicles, decreased car pooling, and switching travel modes from biking, walking, or transit to driving.

The EPA has identified smart growth projects that incorporate the “three D’s” – higher *densities*, *diverse* land uses, and pedestrian-friendly *designs* – as being capable of achieving meaningful air quality benefits by displacing car use. Studies have also shown that transit-oriented development (TOD), which concentrates dense mixed-use development around transit hubs, can significantly decrease vehicle miles traveled.

A number of communities around the nation are showing that smart growth and TOD planning can have meaningful effects on reducing emissions. Portland, Oregon estimates that its smart growth strategies will reduce VMT by 8 percent, NO_x emissions by 6 percent and CO emissions by 3 percent over the next 20 years. In Sacramento, California, land use and transit policies are projected to reduce VMT by 4 to 7 percent over 20 years. In Baltimore, Maryland, modeling exercises show that a centralized development pattern will decrease daily VMT by 0.9 percent over 20 years, compared to a baseline development scenario where VMT increases by 1.8 percent.

While federal organizations, like EPA and the Department of Energy, play an important role in the funding and general policies of Transit Oriented Development, it is local governments that are able to make the most immediate impact. Local governments control almost all land use regulations that are pivotal in the success of many TOD plans and policies, and are better able to understand the development principles that will benefit their community.

“The physical characteristics and patterns of land development in a region, also known as the urban form, can affect air quality by influencing the travel mode choices citizens have available to them.”

—EPA Guidance: Improving Air Quality Through Land Use Activities (2001)

Between 1954 and 1997, the average U.S. city land mass grew outward at a rate nearly three times that of population growth. Some areas, including Pittsburgh and Buffalo, spread 20 times faster than population. From 1983 to 1995, the average length of work trips in America increased by 36 percent, from 8.5 to 11.6 miles.

Profiles

Owings Mills Models Smart Growth

The area of Owings Mills, Maryland is a suburban area approximately 10 miles northwest of downtown Baltimore. The area was planned primarily in the 70's and 80's and built mostly in the 80's and 90's, with some continuing development. It is positioned at the intersection of the Baltimore Beltway (I-695) and the Northwest Expressway (I-795). The Owings Mills Metro Stop is the last stop on the northern portion of the single line Baltimore subway system and is one of the busiest in the Maryland transit system. Over 4,200 commuters, most of whom reach the station by auto, use the Owings Mills Metro Stop each day.

Most of the development in Owings Mills has occurred over the past two decades and largely follows the development pattern common to that period. The urban form consists of a lack of mixed uses, few transportation connections within the area, and poor links to the subway stop. The main commercial center is the Owings Mills Mall, which is separated from the metro station by high traffic roads and sprawling parking lots. High speed roads and freeway interchanges also separate the several main residential areas from the mall and metro and from each other. Over 40 acres of parking lots, with 3,500 spaces, surround the metro station.

Ironically, the Owings Mills Master Plan adopted by Baltimore County in 1984 presented a very different vision. The plan called for guiding dense development around the metro stop, envisioning "a transit station linked through related, space sharing uses to the Mall and a focal point of a group of significant institutions and activities" that would be "far different from the typical station, isolated from its surroundings by acres of cars."

Owings Mills is located in what has been identified by the County as a primary growth zone. Estimates are that over 20,000 people in more than 12,000 households will be added to the area in the next two decades, along with 44,000 new jobs. The Baltimore metropolitan region is designated as a severe ground level ozone nonattainment area by the EPA. Accordingly, planning future growth in the area in a way that minimizes harmful air emissions is a priority.

The Maryland Department of Planning partnered with other state and local government offices and the Center for Clean Air Policy, with funding from the EPA's Clean Air Transportation Communities program, to estimate the clean air impacts of transit oriented development for Owings Mills. The planning exercise showed that the baseline development scenario can only accommodate 25 percent of the projected residential growth and 50 percent of the projected employment growth within the town boundaries, forcing sprawl into surrounding areas in the County or region. All of the projected growth can be accommodated in Owings Mills if the area is developed with denser, infill development that incorporates mixed-use and transit-oriented designs.

The modeling exercise showed that significant VMT and emissions reductions could be accomplished through the transit oriented development design option. By preserving open space surrounding the town and concentrating development in existing areas and through development features that would improve pedestrian, bicycle and transit access within Owings Mills, the County could expect a 1.1 percent decrease in VMT and 18 percent increase in non-motorized trips. These achievements were estimated

Significant VMT and emissions reductions could be accomplished through the transit oriented development design option.

to translate into a 2.6 percent decrease in CO emissions, 2.4 percent decrease in NO_x emissions, and 1.1 percent decrease in CO₂ emissions.

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Charlotte Creates Smart Development Plan

Charlotte, North Carolina, was the fastest growing city in the U.S. in the 1990s. Its low density, suburban development patterns have forced this growth into a classic suburban sprawl pattern. The 50 percent increase in population that is projected over the next 25 years and steadily increasing traffic congestion compelled the City to develop the “Centers and Corridors Concepts Plan.”

The Centers and Corridors Plan is a long-term growth management guide that seeks to integrate transit and land use by concentrating transit-supportive development and redevelopment along five major transportation corridors. Implementation of the plan is now well underway.

Transit improvements, including the construction of rapid transit lines and expansions of bus services and amenities, are being financed by a half-cent sales tax that was approved by a popular referendum in 1998. The sales tax generates about \$1 million a week for expanded transit service and other transportation improvements.

Within each corridor, the public was given frequent opportunities to give input into the modes and routes of transit provided. The South Corridor was the first corridor to complete an investment study and is now moving forward with the construction of a light rail route that extends approximately 10 miles from Uptown Charlotte to Interstate 485 near Pineville. The line is anticipated to begin operating in Spring 2007. In the meantime, some immediate transportation upgrades have been introduced, including the addition of express bus routes and the provision of small, neighborhood shuttles that serve local destinations and connect to other public transit routes that service downtown. The neighborhood shuttles include fixed route services as well as special “demand-response” vehicles that answer calls within their service area.

In November 2001, the Charlotte City Council adopted the Transit Station Area Principles that guide development and redevelopment of areas around transit stations. The policies will be applied within a half mile of identified rapid transit stations and will promote mixed-use development with increased density, interconnected street networks, pedestrian ori-



ented streetscape and site designs, and open spaces to serve as activity centers. An additional set of principles passed by the City Council encourages placing public facilities at or near transit stations, providing basic public infrastructure in station areas, developing a variety of affordable housing near stations, and developing public/private partnerships aimed at encouraging transit-oriented development around the stations.

In 2003 alone, Charlotte saved over 98 million vehicle miles traveled through its ridesharing and express and neighborhood shuttle programs. The increase in vehicle miles saved since 1997 is 120 percent.

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Denver “Builds Green” at Highlands’ Garden Village

Denver area residents are exposed to increasing air quality problems caused by emissions from cars and trucks, despite major reductions in stationary sources of air pollution such as power plants and refineries. Part of the increase in vehicle emissions has been due to rapid population growth: 161,000 people moved to the region between 1990 and 1996, and it is expected that by 2020 the region will reach 3.2 million people. But the growth in vehicle miles traveled has been increasing at over twice the rate of population growth for many years, propelled by the region’s sprawling development pattern.

The Denver area has focused on regional planning and transportation solutions as central components of its battle against “Brown Cloud” conditions in its air quality. The Denver Regional Council of Governments created Metro Vision 2020 which creates an urban growth boundary and encourages measures to link transportation, land use, and air quality. In addition, the Regional Air Quality Council created a Blueprint for Clean Air recommending land use and urban design measures to reduce vehicle travel and related air emissions. The measures promoted by the Blueprint included many elements of smart growth and transit oriented design, including improving street continuity, mixed-use development, high density development along travel corridors, and site planning to improve pedestrian and bicycle access.



DENVER’S BROWN CLOUD Motor vehicle emissions are responsible for about 70 percent of the pollutants in the air that cause the “Brown Cloud” that hangs over the Denver area many days. The area exceeded visibility standards more than 50 days each winter since 1990 and frequently has over 150 days a year with air quality in the moderate-unhealthy range as measured by the Pollutant Standard Index.

MEASURING THE IMPACT OF ALTERNATIVE FUELS FOR CLEAN AIR Use of two natural gas powered vehicles in Highlands' Gardens was monitored to estimate emissions reductions compared to use of a standard fuel vehicle. Through a modeling exercise based on the data collected, the Denver Department of Environmental Health estimated that the region could eliminate 110 tons of VOC, 750 tons of CO and 10 tons of NO_x by achieving an alternative fuel vehicle market penetration rate of 2.5 percent.

The Highlands' Gardens Village "Built Green" development represents much of what Denver officials are attempting to encourage. The development stands on the former site of Elitch Gardens, which started in 1890 as an urban zoological and botanical gardens and grew into a popular amusement park. Elitch Gardens was shuttered in 1994 when the Six Flags group purchased the park and moved it to another location, leaving the community with acres of vacant parking lots and a cluster of old amusement rides and vacant buildings several miles from the city center. In 1998, Highlands' Garden Village Land Company purchased the site to develop a model smart growth development.

Housing options in the new Highlands' Garden Village were consciously designed to promote income and age diversity, including a senior housing project and rental apartments with units designated for low income individuals. Other housing options include single family detached homes, row houses, and 33 "co-housing" units that share a 4,800 sq. ft. common facility with an industrial kitchen, guest rooms, and recreation space. Walking and bicycling within the community is encouraged through attractive landscaping, wide sidewalks, and carless pathways. Mixed-use development patterns are used, with restaurants, retail establishments, "live/work" studies, and small offices for artists and artisans integrated throughout the plan. There are no auto-oriented land uses, such as gas stations or restaurants with drive-through windows.

Through a partnership with Zipcar, Denver's Department of Environmental Health, and the EPA's Clean Air Transportation Communities program, village residents were provided with access to two natural gas powered shared vehicles that could be rented for \$4 an hour plus 40 cents a mile. The program received a high degree of publicity and resulted in greater understanding throughout the metropolitan area of the benefits of low polluting CNG and hybrid vehicles. Unfortunately, the car-sharing program was terminated because of lack of participation which has been attributed to inadequate urban density necessary to create a critical mass of potential car-share users. Since the program terminated, the City of Denver has been using the CNG vehicles as part of its motor pool and the benefits of low polluting vehicles continue to receive public attention.

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Location Efficient Mortgages in Chicago

In nearly every city across the country, there are neighborhoods that now support many of the key elements of transit oriented design. Compact neighborhoods with easy access to public transit, shops, schools, and other services are common near the downtown of large and medium sized cities. In these “location efficient” neighborhoods, car ownership is less common and people walk, bicycle, and use transit more frequently. These areas are also becoming more popular to live in. According to a 2004 study sponsored by the Federal Transportation Agency, more than 14.6 million households are likely to want to rent and buy housing near transit by 2025, double the number that live in these neighborhoods today.

The large and increasing demand for housing near transit and closer to downtown neighborhoods has driven prices up. To find an affordable house, many home buyers are forced to the urban fringe where commutes are longer and car ownership is often necessary. In addition to increasing VMT and associated emissions, living away from location efficient neighborhoods increases the household cost of transportation.

Transportation is the second largest expense for the average American family, consuming 18 percent of the average household’s budget. Ninety-eight percent of U.S. transportation spending is for the purchase, maintenance, fuel, and insurance for automobiles. High transportation costs compromise household savings that could otherwise be used for better social and economic investments. The Surface Transportation Policy Project estimates that, over the course of a decade, \$30,000 invested in owning a car can be expected to result in just \$3,000 in equity, while investing \$30,000 in owning a house on average yields more than \$13,000 in equity.

The idea behind Location Efficient Mortgages® (LEM) is to provide tools to lenders to enable them to estimate the savings associated with living in location efficient areas and include those savings as income for qualifying for a mortgage. The first LEM program was developed by Chicago’s Center for Neighborhood Technology, the Natural Resources Defense Council, and the Surface Transportation Policy Project, working with FannieMae. Funding for research and implementation was provided by EPA, the Department of Energy, and the Federal Transit Administration.

Now, in Chicago and several other cities around the country, a potential home buyer can give a loan officer the address of a home and the lender can pull from a database the dollar value of transportation savings at that location. The location efficient value of a home is calculated by a computerized mapping tool that assigns values based on residential density, automobile ownership, annual income, and access to public transportation and major retail and employment centers. As a result, the buyer can qualify for a larger loan with a smaller down payment than would otherwise be possible, providing a financial incentive to purchase in an urban neighborhood. In the transit-rich Edgewater neighborhood, for example, a couple jointly earning \$60,000 would qualify for a home selling for \$212,218 with an LEM methodology, but only \$158,364 under a traditional approach. On a regional scale, LEM programs help the market to better value location efficiencies, so that capital flows are targeted toward already developed areas linked to transportation infrastructure, rather than toward further increases in suburban sprawl.

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Oregon Promotes Pay as You Drive Insurance

The Oregon Environmental Council (OEC) is working with the Environmental Protection Agency, Environmental Defense, and other partners around the country to encourage the auto insurance industry to offer Pay-As-You-Drive (PAYD) insurance. PAYD is an innovative new insurance pricing concept that rewards motorists for driving less and gives drivers more control over insurance premiums. Under PAYD, customers have the option of buying insurance by the mile, instead of the calendar year, with all existing rating factors incorporated into the per-mile price. Customers will likely pay in advance for a predetermined amount of miles, be required to purchase more miles if they drive more than expected, and receive a rebate for driving less. Studies suggest that drivers paying per-mile premiums will reduce driving by about 10 percent and save up to 25 percent on their premiums. A 10 percent reduction in driving is estimated to result in a 17 percent reduction in automobile accidents.

Oregon passed legislation in 2003 providing a limited tax credit (2005-2010) to companies that offer per-mile insurance premiums to customers in Oregon. Auto insurers are interested in providing PAYD premiums, but face the costs of developing a new rating system and tracking mileage. OEC expects one or more companies to test pilot PAYD soon, providing a model for widespread reform of insurance pricing.

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American commuters and travelers
are choosing public transit now
more than ever.

Promoting Transportation Choices

Policy Drivers

A number of programs around the country are reducing VMT by promoting the use of alternative commuting and travel choices through marketing strategies, contests, and benefit programs. Educating the public to influence commuting behavior is largely a local enterprise, but local efforts need the support of federal programs like EPA's Best Workplaces for Commuters Program, DOE's Clean Cities program, and the recently completed EPA E-Commute Program. The goal of these initiatives is to provide more information, more commuter options, and more alternatives to America's congested roads through community-based marketing and readily available information sources. Transportation education is an exercise in positive reinforcement, rewarding communities by opening their eyes to efficient, quality transportation alternatives.

Profiles

Community-Based Marketing in California

Efforts to decrease vehicle miles traveled are often aimed at higher income groups who own individual vehicles and drive them to work. But research in California has shown that encouraging mass transit use among low-income, "transportation dependent" populations can also decrease VMT while increasing access to employment, educational opportunities, and services.

To increase public transit ridership in low-income communities in Monterey, Sacramento, and Fresno, the California Air Resources Board partnered with Odyssey, an innovative organization that links marketing and community organizing tools. The Bay Area project was based on the assumption that communities and neighborhoods know best what types of transit service improvements they need. When community advisors facilitate information-based improvements in existing transit services, it creates an opportunity to achieve short-term benefits and long-term impacts concerning increased ridership and improved air quality. Further, community engagement leads to public support and trust for transit systems.

Odyssey began each project by talking to transportation authorities to identify underutilized transportation routes that serve low-income communities and to obtain

Transportation education is an exercise in positive reinforcement, rewarding communities by opening their eyes to efficient, quality transportation alternatives.



commitments to implement community recommendations. The team then went into the targeted communities, interviewing social service providers, organization leaders, service professionals, community colleges, and current and potential transit riders about perceived lack of access to information about transit services.

With a community-based research focus, Odyssey identified many cost-effective marketing strategies. It discovered that Spanish-language, “Fotonovela” comic books were an effective mechanism to reach many Hispanic community members, particularly first generation immigrants acclimated to similar formats in many Latin American countries. The research studies found that in the Hmong community in Fresno, personal training on how to use the bus for older community members could decrease fear and unfamiliarity with public transport. Odyssey also found that in many communities, simple and easy-to-read maps and information posted at all bus stops could have dramatic effects in improving community understanding of bus route destinations.

In each area, Odyssey built databases of community members and leaders who were interested in working with transit officials to improve services and provided transit officials with common recommendations that emerged from focus groups. These resources have proved to be extremely valuable; many of the community recommendations are already being implemented by transportation officials.

In the South County area of Monterey, several thousand bilingual marketing flyers and transit schedules were posted in local commercial areas and at local festivals, thanking the community for their involvement in improving Line 23, one of the lines specifically targeted for community outreach. As part of the Line 23 strategy, South County churches helped get the word out at religious services, and social service providers explained the available services to their clients.

In the Sacramento region, Odyssey targeted 11 different bus routes for increased ridership. The primary groups targeted were East Indians, Latinos, low-income families, service workers, seniors, and students. Local interviews and surveys produced lists of routes and corridors to target and facilitated community input and collaboration at the grassroots level.

For Fresno’s 75 percent ethnic minority population, transportation access is a critical environmental justice issue. Low-cost strategies for increasing access and service focused on maximizing existing capacity, forming partnerships between transit agencies and communities, and increasing low-income community involvement in transportation planning. Recommendations were gathered from community groups to identify gaps in connecting neighborhoods with access to jobs, education, and social services.

At the end of the project, Odyssey surveyed transportation riders to assess the impact of their low-cost marketing strategies in each area. Half of all riders surveyed reported increasing their public transport use because of information received through the marketing campaigns. Notably, over 50 percent of riders who increased their public transit use stated that they would have driven or been driven by someone else, if they had not taken the bus. This is consistent with other studies, indicating that increasing mass transit use among transportation dependent people may have significant positive benefits in terms of reduced VMT.

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Portland's TravelSmart Marketing Program

The City of Portland, Oregon, and TriMet have partnered to test an innovative new way to encourage the use of environmentally friendly travel modes called TravelSmart. TravelSmart is a social marketing program, based on a successful program in Perth, Australia, that identifies individuals who want to change the way they travel, motivates them to think about their travel options, and provides them with information about how to use transit, bike, walk, or carpool for some of their trips.

The TravelSmart Portland project contacted 732 households, from which 600 were selected to participate in the project. The initial survey determined how household members currently travel and whether they were interested in receiving information and assistance about traveling using environmentally friendly modes. Those people who were not interested were left alone. About 41 percent of the respondents were interested in finding out more about transportation options and received the information they needed by mail, telephone, or personal at-home visits. A follow up survey showed that car travel in participating households decreased by about 12 percent as a result of the individualized marketing campaign, amounting to 640,000 fewer vehicle miles traveled per year.

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Richardson, Texas is a Best Workplace for Commuters

The City of Richardson, Texas has been recognized by the EPA's Best Workplaces for Commuters program for implementing an outstanding commuter benefits program in a municipal government setting. The EPA's Best Workplaces for Commuters program showcases employers that offer the most exceptional commuter benefits to their employees, making the commute to work a more positive experience for thousands of local workers and demonstrating a strong commitment to improving the region's air quality.

To qualify as a Best Workplace, an employer must provide commuter benefits that meet the National Standard of Excellence developed by the EPA and Department of Transportation. Employers eligible to claim the Best Workplaces for Commuters designa-

tion rank among the top one percent of all employers in the nation for provision of commuter benefits. To meet the National Standard of Excellence, employers must offer:

- ▶ At least one primary commuter benefit, including:
 - a \$30 minimum monthly transit/vanpool pass subsidy to employees,
 - monetary compensation to employees as a trade-off for free or subsidized parking, or
 - a teleworking program that reduces 6 percent of monthly commute trips
- ▶ Depending on employer size, up to three supporting benefits, which may range from participating in a regional transportation or air quality program to providing shuttles from transit stations
- ▶ A central point of contact within the company that actively informs employees of available commuter benefits
- ▶ Access to a regional or employer-provided Emergency or Guaranteed Ride Home Program

According to EPA estimates, Best Workplaces practices in an employer of 950 people can take 175 cars or more off the road, resulting in annual savings of nearly 44,000 gallons of gasoline and 420-metric tons of global warming emissions.

Participating companies earn the designation “Best Workplaces for Commuters” – a mark of excellence for environmentally and employee-friendly organizations.

The City of Richardson has put in place a large number of commuter benefit and promotion programs to encourage its employees to reduce reliance on single occupancy vehicle commuting. Its benefit programs include discounted monthly transit passes, free daily transit passes for meetings or training, subsidized vanpool services, support for carpool, telecommuting, biking and walking (with bicycle storage and shower facilities), staggered scheduling to avoid rush hour, and an Emergency Ride Home program.

The City promotes alternative commuting programs through an award program for employees who use alternative commuting options and fill out a survey for the City’s Employee Transportation Demand Management (TDM) database. All participants, regardless of the amount of trips saved, are eligible to win prizes in monthly drawings and each year an awards luncheon is held to recognize top participants of the program. Other programs and events include Alternative Vehicle test drives, vehicle maintenance recognition, alternate fuel fleet vehicles, special scheduling for equipment on ozone days, monthly TDM trivia questions, a website for program information, and monthly email updates and email alerts of upcoming ozone days from the City’s Health Department.

The City of Richardson employs about 950 people. According to EPA estimates, Best Workplaces practices in an employer of this size can take 175 cars or more off the road, resulting in annual savings of nearly 44,000 gallons of gasoline and 420-metric tons of global warming emissions. If at least a quarter of all U.S. employees worked for employers offering commuter benefits at the National Standard of Excellence level, up to 22 million metric tons of CO₂ (6 million tons of carbon equivalent) from cars would be eliminated annually.

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Houston's Best Workplaces for Commuters Coalition

To combat air pollution and ease traffic congestion, Commute Solutions, a program of the Houston-Galveston Area Council, promotes employer programs that encourage employees to use alternative commuting means, including telecommuting, vanpools, carpools, and public transit. On August 25, 2004, the Houston-Galveston area's Best Workplaces for Commuters Coalition, led by Commute Solutions, announced the 2004 list of the area's Best Workplaces for Commuters. The list includes more than 50 companies, including four Fortune 500 companies that were listed on the EPA's list of the Top 20 Best Workplaces in the nation. These companies include Oracle, Devon Energy, Reliant Energy, and El Paso, each of which have been mentioned in at least 110 media stories nationwide. (See www.bwc.gov/campaign/housbest.htm.)

The Best Workplaces for Commuters program in the Houston-Galveston area has made significant contributions to air quality through reductions in vehicular travel. The program estimates that its participants' commuter benefits programs reduce vehicle miles traveled by over 1,800,000 miles per week, reducing emissions by 0.21 tons per average day of NO_x and 0.23 tons per average day of VOC. Commute Solutions anticipates that the number of companies on the Best Workplaces for Commuters list for the Houston-Galveston region will double, thus resulting in more emissions reductions.

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Driving Towards Clean Air in Tulsa

As in many communities, tremendous population growth and increases in single occupancy vehicle trips have resulted in congestion and air pollution challenges in Tulsa, Oklahoma. As part of a comprehensive effort to address these issues, the Indian Nation Council of Governments (INCOG) sponsored a "Driving Towards Clean Air" project to improve air quality by changing the behavior of teenage Tulsa drivers and soon-to-be-drivers. By providing information about "green" vehicles, carpooling, air pollution, and alternative transportation methods, the project is teaching young adults how to make informed decisions about their future transportation choices.

The Tulsa Air Quality Enhancement and Education project sponsored a competition aimed at introducing local high school students to the links between VMT and air quality and encouraging carpooling, alternative transportation, and alternative fuel vehicles. To take part, each participating school was required to work with INCOG's Commuter Choice Coordinator to set up a carpooling program at the school using RidePro Carpool Matching Software. Students pledged to carpool, ride the bus, walk, or ride a bike to school during the six-week competition and continuing through the school year. A new Toyota Prius gasoline/electric hybrid vehicle was awarded to the school with the highest percentage of students participating in its driver education program.



Five high schools participated in the first competition. Commuting logs were kept at each school to document progress, and RidePro Carpool Matching software was utilized to monitor VMT reduction and allow students to chart the emissions impacts of their transportation choices. During the course of the competition, each school was visited with the prize Toyota Prius, which generated great excitement while providing an opportunity to showcase the benefits of alternative fuels. To increase the incentive for students and staff to purchase “green” vehicles like the Prius, twenty rebates of \$2,000 were created for the purchase of EPA “green” vehicles. A standard fuel vehicle had to be traded in to receive the benefit, taking higher polluting vehicles off the road.

The contest generated great excitement among participating schools and the community at large. Kick-off and award ceremonies attracted significant media attention, allowing the campaign’s messages to reach a wide audience. The program documented the direct effects of the students’ transportation choices. In Round 1, students from five schools avoided 21,670 VMT, 1,274 gallons of fuel, 30 pounds of VOC, 475 pounds of CO, and 31 pounds of NO_x in six weeks. During Round 2, students saved more than 12,122 VMT and more than 713 gallons of fuel, displacing 17 pounds of VOC, 267 pounds of CO, and 18 pounds of NO_x. Combined, the two six-week competitions saved 33,792 VMT, 1,987 gallons of fuel, 47 pounds of VOC, 742 pounds of CO, and 49 pounds of NO_x.

The competition was considered a great success by its organizers. EPA recognized the program with a 2004 Clean Air Excellence Award, which recognized its innovative education and outreach efforts towards achieving cleaner air. INCOG also won first place in the 2004 Keep Oklahoma Beautiful Statewide Environmental Excellence Awards under Government Programs for Environmental Improvement Programs. Thus far, however, very few of the program’s rebates for purchase of green vehicles have been used.

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Atlanta's Clean Air Campaign®

The Clean Air Campaign® is an eight-year-old non-profit whose mission is to motivate Georgians to take action to improve air quality and traffic congestion. The organization accomplishes this by providing a wide range of programs and services, including free employer assistance, commuter incentives, public information, Smog Alert dissemination, and school-based learning and trip reduction programs. In May 2004, the Clean Air Campaign issued its second annual Clean Air Challenge, a competition among employers and property management companies with the goal of encouraging their employees to use alternatives to driving alone.

Eighty employers and property managers from the metro Atlanta region accepted the three-month challenge to get cars off the road during “smog season,” the summer months when air pollution is most likely to reach unhealthy levels. The employer that demonstrates the highest percentage of employee participation in alternative commuting behavior – including transit, vanpooling, carpooling, and teleworking – receives the Clean Air Challenge Cup, is recognized at the Clean Air Campaign's annual employer recognition event – the PACE Awards – and is acknowledged in a special section of the Atlanta Business Chronicle.

The 2003 winner, the Federal Highway Administration, Georgia Division, saw its 30 employees prevent an estimated 21,000 VMT during the three-month summer competition. Overall, the 2003 Challenge removed more than 3.5 million VMT from metro roads through carpooling, vanpooling, mass transit use, teleworking, cycling, and walking. 2004 marked the second successful competition, with employees from 80 competitors logging more than five million clean commute miles. The winning employer, the Office of Adam M. Goodman, Standing Chapter 13 Bankruptcy Trustee, had 40 percent of its employees avoid single occupancy vehicle commuting, logging nearly 22,700 clean miles from May 1 through July 31.

The Clean Air Campaign also introduced a successful Cash for Commuters incentive program. In its third year, Cash for Commuters allows solo drivers to try a commute alternative and earn up to \$180 over three months, three dollars a day, for carpooling, taking transit, teleworking, biking, or walking to work. According to independent research conducted on behalf of the Georgia Department of Transportation, 74 percent of participants in Cash for Commuters continue to use a commute alternative three to six months after the program ends and 64 percent of commuters continue to use an alternative even one year after the program ends.

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Seattle's One Less Car Challenge

The One Less Car Challenge is a new program that encourages Seattle residents to try life with one less car. It calls for participants to go on a "car diet" for a month by not driving a car, supported by financial incentives and tips on how to get around by bus, bike, and foot. To participate, a household cannot have more cars than licensed drivers. A one-person household with one car would need to give up driving his or her only car.

After registering at www.seattle.gov/waytogo, participants provide the odometer reading of the car and fill out a simple weekly online form telling how many drive-alone car trips were "saved" by going on the "car diet." The program provides information on biking, transit, carpooling, and car sharing, along with a number of financial benefits. The benefits include \$50 of free Flexcar use and discounted membership in the Cascade Bike Club. Participants who sell or give up a car permanently receive \$50 a month of free Flexcar use for an entire year, a free membership in the Cascade Bike Club (\$25 value), and a free membership in Bicycle Alliance of Washington (\$25 value).

During the pilot study for the program, 100 percent of the households that participated in the six- or nine-week challenge were successful in not driving the extra car. Over 70 additional households have participated in the One Less Car Challenge for one month and 30 households have sold the car parked for the challenge. The program has saved over 200,000 miles of driving and provided financial and quality of life benefits to participants.

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It All Adds Up to Cleaner Air in Southeast Florida

In 2003, the Miami-Dade County Department of Environmental Resources Management and Broward County's Environmental Protection Department joined forces to spread the *It All Adds Up to Cleaner Air* message about how local citizens can take convenient, everyday actions to reduce vehicle emissions. These two counties used the resources from EPA's national campaign to educate Floridians that small, simple actions can make a big difference in air quality and traffic congestion.

Because motor vehicle emissions account for more than half of the air pollution in the region, the Counties put great emphasis on spreading the word that regular vehicle maintenance helps clear the air, improves safety, and saves money. Since 2002, Broward County, with Miami-Dade joining the effort in 2003, has been organizing Car Care Month events each October to promote those messages.

In early October 2004, the two organizations partnered with their regional AAA Auto Club to offer several free services to residents, including 24-point maintenance inspections; battery, electrical, and charging system inspections; child-seat inspections; and VIN window etching. Each county held a day-long inspection event; in Miami-Dade, 104 vehicles were inspected and in Broward, 160 were inspected.

The counties partnered with their local auto repair shops to distribute supplementary information and tools. “Car Care & Cleaner Air” brochures, tire pressure gauges, and Car Care Logbooks – all using the *It All Adds Up* tagline – were distributed in over 250 repair shops during October.

The partners also looked to another location frequented by drivers – gas stations. They partnered with nearly 200 area gas stations and gas distributors to place gas pump toppers promoting car maintenance at the pumps.

To further disseminate the car care messages and draw people to the inspection events, they ran a TV ad that Miami-Dade produced based on the “Priceless” TV commercials and into which they incorporated the *It All Adds Up* tagline. They also ran radio ads with the tagline during morning and afternoon drive time.

Both organizations have used their websites to further disseminate car care messages by posting tips and statistics. The Broward County Environmental Protection Department also developed a specific Car Care section on their site and posted the *It All Adds Up* summer online quiz and a variation of an *It All Adds Up* flyer as well as an original flyer they developed – all of which focus on vehicle maintenance.

Both Broward’s and Miami-Dade’s air quality outreach funding comes from two sources – EPA’s 105 grant funding and the State of Florida’s Air Trust Fund. The Trust Fund consists of monies collected on a \$1 fee attached to state vehicle registrations. If the county in which the vehicle is registered has an approved air program, the county receives up to \$0.75 of the fee.

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Local communities and state and federal officials can work together to improve our air and communities.

4

Further Resources

Federal Resources

Clean Cities – A DOE initiative that encourages the use of alternative fuel vehicles.
(800) 224-8437

www.ccities.doe.gov

Clean Air Transportation Communities Program – This EPA program supports voluntary cooperative projects that promote transportation efficiency measures within the United States, encourage development patterns that reduce the growth in vehicle miles traveled, and expand the availability of environmentally-sensitive transportation alternatives.

www.epa.gov/otaq/transp/catc.htm

Clean School Bus USA – The goal of Clean School Bus USA is to reduce both children’s exposure to diesel exhaust and the amount of air pollution created by diesel school buses.

www.epa.gov/cleanschoolbus/

Commuter Choice Program – A DOT program that provides a tax benefit to commute to work, by transit or vanpool, rather than driving alone. The program is designed to reduce the number of cars on the road to improve air quality, reduce traffic congestion, and conserve energy. Employers benefit from a tax savings and employees that have an improved quality of life, which may enhance productivity
(202) 366-1698

www.fta.dot.gov/initiatives_tech_assistance/customer_service/ccp/2172_ENG_HTML.htm

Congestion Mitigation and Air Quality (CMAQ) – A DOT program that provides funding for transportation projects in nonattainment and maintenance areas that reduce transportation-related emissions.

www.fhwa.dot.gov/environment/cmaq.htm

Cookbook for Cleaner Air – An EPA guide to voluntary initiatives for air improvements.

www.epa.gov/oar/recipes

It All Adds Up to Cleaner Air – An EPA-DOT effort that provides communities with outreach materials to help reduce traffic congestion and improve air quality.

(202) 366-6276

www.italladdsup.gov

Plain English Guide to the Clean Air Act – An EPA report explaining the Clean Air Act.

www.epa.gov/oar/oaqps/peg_caa/pegcaain.html#index

Smart Travel Resource Center - An EPA clearinghouse of transportation and air quality public education programs across the United States.

yosemite.epa.gov/aa/strc.nsf

SmartWay Transport Partnership – SmartWay Transport is a voluntary partnership between various freight industry sectors and EPA that establishes incentives for fuel efficiency improvements and greenhouse gas emissions reductions.

www.epa.gov/otaq/smartway/index.htm

Transportation Air Quality (TRAQ) Center – An EPA clearinghouse of transportation and mobile source incentive-based programs, partnership opportunities, grant funding sources, and technical assistance.

www.epa.gov/otaq/transp.htm

Transportation and Community and System Preservation (TCSP) – A DOT program that provides grants to improve transportation system efficiency, reduce costs and environmental impacts, and examine growth and development.

www.fhwa.dot.gov/tcsp/

Voluntary Diesel Retrofit Program – An EPA program that establishes guidelines for developing emission reduction estimates for the eventual use in state SIPs regarding retrofit / rebuild technologies.

www.epa.gov/otaq/retrofit/

Nonprofit Resources

Air & Waste Management Association – An organization that provides training, information, and networking opportunities to environmental professionals.

(412) 232-3444

www.awma.org

Association of Metropolitan Planning Organizations (AMPO) – AMPO serves the needs and interests of metropolitan planning organizations nationwide. AMPO offers its member MPOs technical assistance and training, conferences and workshops, frequent print and electronic communications, research, a forum for transportation policy development and coalition building, and a variety of other services.

(202) 296-7051

www.ampo.org

Center for Clean Air Policy – An organization founded by a bipartisan group of state governors that promotes innovative solutions to major environmental and energy problems which balance both environmental and economic interests.

(202) 408-9260

www.ccap.org

Center for Livable Communities – A program of the Local Government Commission that helps local officials and community leaders be pro-active in their land use and transportation planning, and adopt programs and policies that lead to more livable and resource-efficient land use patterns.

(916) 448-1198

www.lgc.org/center/index.html

Environmental and Energy Study Institute – EESI is a non-profit organization dedicated to promoting environmentally sustainable societies. EESI has formed a National Clean Bus Network to promote communication and coordination between clean bus stakeholders and to showcase clean bus projects being carried out by state, local, and regional transit authorities.

(202) 628-1400

www.eesi.org/programs/cleanBus/cleanbus.htm

Environmental Law Institute – A research and education center that published the report Fresh Air: Innovative State and Local Programs for Improving Air Quality.

(202) 939-3800

www.eli.org

International City/County Management Association – An association representing city and county administrators that produced the report Air Quality Tools: Local and Regional Strategies to Reduce Air Pollution.

(202) 289-4262

www.icma.org

International Council for Local Environmental Initiatives (ICLEI) – An association of local governments that launched the Cities for Climate Protection Campaign to reduce emissions of carbon dioxide and other greenhouse gases that contribute to global warming.

(510) 540-8843

www.iclei.org

National Association of Regional Councils (NARC) – For more than three decades, NARC has represented multi-purpose regional councils of government that assist community leaders and citizens in developing common strategies for addressing cross-cutting transportation, economic development, air and water quality, social equity, growth, and other challenges.

(202) 986-1032

www.narc.org

Smart Growth Network – A coalition of smart growth stakeholders that encourages more environmentally and fiscally responsible land use, growth, and development.

(202) 962-3591

www.smartgrowth.org

**State and Territorial Air Pollution Program Administrators (STAPPA)-
Association of Local Air Pollution Control Officials (ALAPCO)** – Two national associations representing state and local air pollution control agencies.

(202) 624-7864

www.4cleanair.org

Smart Public Transit Resources

The University of Wisconsin - Madison, Facilities Planning and Management – The organization is divided into eight departments which work together to coordinate the development and safe operation of buildings, grounds, campus infrastructure, and transportation systems. Transportation Services (TDM) manage the flex parking, in-car metering system currently in use.

(608) 263-6666

www2.fpm.wisc.edu/trans/TDM/Flex.htm

Regional Transportation District-Denver – RTD meets public transit needs by offering a range of commuter solutions, including special transit pass and payment programs.

(303) 299-2132

www.rtd-denver.com/FaresAndPasses/Passes/Eco_Pass/

Tri-County Metropolitan Transportation District of Oregon – TriMet is a public agency providing transit service for Portland-area residents, focused on providing convenient, reliable and efficient transit systems to increase mobility options and take cars off the road.

(503) 238-7433

www.trimet.org/fares/fareless.htm

Lloyd District Transportation Management Association (LDTMA) – A resource tool for visitors and employees of Portland’s Lloyd District. LDTMA works with businesses and public agencies in the Lloyd District to improve access and mobility for those who work, reside, shop, and commute in and to the Lloyd District. The association’s focus includes programs for improved public transit, ride sharing, alternative work hour programs, and programs promoting parking management, bicycle and pedestrian measures.

(503) 236-6441

www.ldtma.com/transit.htm

Bikestation Long Beach – Bikestation offers secure bicycle parking, bike-sharing, rentals, and repairs, as well as access to nearby vehicle-sharing service.

(562) 436-2453

www.bikestation.org/longbeach/index.asp

Los Angeles County Metropolitan Transportation Authority – Improving public bus transportation in Los Angeles through rapid bus transit programs. Los Angeles MTA is the transportation planner and coordinator, designer, builder, and operator for more than 9.6 million people - nearly one-third of California’s residents - within its 1,433-square-mile service area.

(213) 922-3064

www.mta.net/projects_plans/rapid/overview.htm

Alameda-Contra Costa Transit District – California’s third largest bus operator and the principal public transit service in the East Bay, serving 13 cities and adjacent unincorporated areas in Alameda and Contra Costa counties.

(510) 891-4777

www.actransit.org

Ohio Department of Transportation, Office of Intelligent Transportation System Program Management – Ohio ITS Vision Statement: “Ohio will have an exemplary ITS program that combines technology and advanced operational concepts to improve transportation decision-making by all partner agencies, while providing unprecedented levels of information to businesses and individual travelers.”

(614) 644-8137

www.dot.state.oh.us/its/its.asp

Promoting Alternative Fuel Vehicles Resources

Kronosport – The company designs and manufactures innovative, low speed electric utility vehicles (EUVs) for use in transporting people and products in urban centers, resorts, universities, airports, convention centers, gated communities, parks, stadiums, zoos, and other similar venues.

(215) 880-5926

www.kronosport.com

City of Philadelphia Municipal Energy Office – The City is using an EPA Innovative Transportation grant to introduce clean, low-speed, mini-electric utility vehicles (EUVs) for use in City operations.

(215) 686-9010

www.phila.gov/energy/development/euvs/euvs.html

Jordan School District – The U.S. Department of Energy Alternative Fuels Data Center has highlighted the success of Utah’s premier alternative fuel fleet and Energy-Smart school district.

(801) 567-8821

www.eere.energy.gov/afdc/progs/new_success_ddown.cgi?53

EPA Region 8 Clean School Bus Program – The goal of Clean School Bus USA is to reduce both children’s exposure to diesel exhaust and the amount of air pollution created by diesel school buses.

(303) 312-6445

www.epa.gov/Region8/r8.htm

Dallas Area Rapid Transit (DART) – Dallas has helped lead the way toward zero-emissions operations with their LNG-fueled buses.

(214) 979-1111

www.dart.org

Anti-Idling Resources

Northeast States for Coordinated Air Use Management (NESCAUM) –

NESCAUM’s purpose is to exchange technical information, and to promote cooperation and coordination of technical and policy issues regarding air quality control among the member states, the six New England States, as well as New York and New Jersey.

(617) 259-2000

www.nescaum.org/projects/TSE/index.html

The Northeast States Center for a Clean Air Future (NESCCAF) – NESCCAF is a non-profit organization bringing experts from the corporate, academic, government, and environmental communities together to address critical challenges to public health and the environment, utilizing cutting-edge scientific research, policy analysis, and outreach.

(617) 259-2000

www.nescaf.org/projects/cac.html

IdleAire Technologies Corporation – IdleAire provides a quiet, clean, cost-effective alternative to the extended idling of diesel trucks wherever they congregate.

(865) 342-3600; (877) 738-7024 (customer service)

www.idleaire.com/

New York State Energy Research and Development Authority (NYSERDA) – NYSERDA administers the New York Energy \$martSM program, which is designed to support certain public benefit programs during the transition to a more competitive electricity market, including standardized TSE facilities in America. Federally funded, the Energy Efficiency Services program is working with more than 540 businesses, schools, and municipalities to identify existing technologies and equipment to reduce their energy costs.

(866) NYSERDA or (518) 862-1090

www.nysesda.org

National Transportation Idle Free Corridors – The EPA launched this program in July 2003 to implement idle reduction projects along major transportation corridors that have air quality and long duration idling concerns for trucks and locomotives.

(734) 214-4767

www.epa.gov/smartway/idlingplan.htm

Sierra Club, Minnesota – Students throughout Minnesota are working on a School Bus Diesel public education campaign aimed at reducing the exposure of students to diesel pollution emitted by school buses.

(612) 659-9124

www.northstar.sierraclub.org/campaigns/air/schoolbus/

Minnesota Office of Environmental Assistance (MOEA) – MOEA is working with the Sierra Club in Minnesota to provide resources to help schools protect students from diesel emissions and gather information on private, federal, and state funds to help schools reduce students' exposure to diesel emissions.

(800) 657-3843 or (651) 296-3417

www.moea.state.mn.us/ee/noidle.cfm

Maine Council of Churches – In partnership with the Sierra Club, the Maine Department of Environmental Protection, and the Maine Lung Association, the MCC is working to organize Maine's first-ever No-Idling, Clean Air Campaign as a model program in Freeport. It will offer the town an opportunity to live in an anti-idling environment which provides cleaner, safer air for children at school bus stops and at other locations where trucks and cars are often found waiting with engines running.

(207) 772-1918

www.mainecouncilofchurches.org

Maine Department of Environmental Protection – Maine DEP is providing funding for retrofitting diesel school buses with emission control equipment designed to reduce particulate emissions, thereby improving air quality and contributing to improved health for both children and adults.

(207) 287-2437

www.maine.gov/dep/air/school/

Puget Sound Clean Air Agency – Under their Clean School Bus Program, approximately 7,500 diesel school buses will be retrofitted between now and 2008 to make them cleaner for the children who ride them. It will also provide cleaner air for citizens to breathe throughout the communities the buses serve.

(206) 689-4085 or (206) 343-8800 or (800) 552-3565

www.pscleanair.org/dieselsolutions/schoolbus/index.shtml

Transit Oriented Development Resources

Maryland Department of Planning – The department works with the Maryland Department of Transportation, Department of General Services, and the City of Baltimore to target the State Center and its surroundings for a new transit-oriented development effort. The State's goal is to create an economically vibrant place that takes advantage of the existing subway and light rail stations and to increase transit ridership.

(410) 767-4500

www.mdp.state.md.us/

Center for Clean Air Policy – The Center was organized by a group of state governors to develop and promote innovative policy solutions to energy and environmental problems. For over 15 years it has addressed issues such as climate change, air emissions and energy policy. The Center tries to promote the idea that sound energy and environmental policy solutions serve both environmental and economic interests.

(202) 408-9260

www.ccap.org/about.htm

Charlotte Area Transit System – The system is managed by the Public Transit Department. The Department manages day-to-day operations of the City's transit services while planning for a regional transit system, which will include bus rapid transit, light rail, commuter rail, and expanded bus service within a six-county area in an effort to spread public transport throughout the Charlotte region.

(704) 336-RIDE

www.charmeck.org/Departments/CATS/Home.htm

Pollutants Standard Index – The index is based on measurements of the concentrations of five pollutants: particulate matter, sulfur dioxide, carbon monoxide, nitrogen dioxide, and ozone. For each pollutant, a value of 100 is assigned to the maximum permitted concentration of that pollutant. A PSI level of

400 would constitute an emergency and require the cessation of most commercial and industrial activity.

www.sizes.com/units/pollutant_standards_index.htm

Denver Department of Environmental Health – The mission of the department is to protect Denver’s environment and safeguard the health and well being of its residents.

(720) 865-5452

www.denvergov.org/DEH/default.asp

Perry-Rose LLC – Law firm that provides planning, development, and advisory services to public and not-for-profit institutions throughout the Rocky Mountain region. It is committed to the development of affordable housing and mixed income communities, while preserving the bioregions. It is currently developing Highlands’ Garden Village, a mixed-use, mixed-income model infill project.

(303) 446-0600

www.rose-network.com/whoweare/index.html

Denver Regional Council of Governments – Focuses on quality-of-life issues such as mobility, service to older adults, environmental concerns, planning for the future, public safety, and the provision of information for sound decision-making.

(303) 455-1000

www.drcog.org/index.cfm

Center for Neighborhood Technology – The Center’s mission is to invent new tools and methods that create livable urban communities for everyone. It believes in promoting urban growth in order to improve living standards while simultaneously improving environmental conditions.

(773) 278-4800

www.cnt.org/

Surface Transportation Policy Project – The project is a diverse, nationwide coalition working to ensure safer communities and smarter transportation choices that enhance the economy, improve public health, promote social equity, and protect the environment.

(202) 466-2636

www.transact.org/

Oregon Environmental Council – The Council brings Oregonians together for a healthy environment through recycling programs, water cleanup, and minimizing vehicle pollution.

(503) 222-1693

www.orcouncil.org/

Hybrid Car Sharing Resources

King County Department of Transportation – The department serves 1.6 million people in an area covering more than 2,000 square miles. It provides residents with bus service, paratransit, carpool assistance, vanpools, and other alternatives to driving alone.

(206) 684-1570

www.metrokc.gov/kcdot/

King County Metro Online – King County has partnered with Flexcar giving individuals access to a shared car when they need one – without the cost and hassles of ownership. Flexcar will save you the cost of operating and maintaining a car – including insurance, depreciation, parking, maintenance and fuel costs.

(206) 553-3600

transit.metrokc.gov/tops/tri/tri-otranso-flex.html

City of Vancouver, WA Greenfleet – The City of Vancouver, Washington Transportation Services provide safety, planning and development projects for more than 150,000 residents.

(360) 696-8290

www.ci.vancouver.wa.us/transportation/departments.asp?dept/S=10431

Promoting Transportation Choices Resources

California Air Resources Board – The Air Resources Board uses the Emissions Inventory and Air Quality Models to evaluate air quality and reduce emissions in each of the 35 local air districts.

(916) 322-2990

www.arb.ca.gov/homepage.htm

Odyssey – The organization is using community based marketing, policy reform and marketplace improvements to promote public transit systems and ease traffic congestion, poor air quality, urban sprawl, compromised public safety, reduced access and mobility for millions of California residents.

(916) 448-1479

www.odyssey.org

City of Portland Office of Transportation – The City of Portland and TriMet have partnered to test an innovative new way to encourage the use of environmentally friendly travel modes. TravelSmart is a social marketing program that identifies individuals who want to change the way they travel, motivates them to think about their travel options and provides them with information about how to use transit, bike, walk or carpool for some of their trips.

(503) 823-5185

www.trans.ci.portland.or.us/Options/TravelSmart.htm

Houston-Galveston Area Council – Commute Solutions is a partnership in the Houston-Galveston area for both commuters and businesses. Members of Commute Solutions provide alternative transportation resource advice, answers and assistance on commuting options and employee transportation programs.

(713) 627-3200

www.commutesolutions-hou.com/index.html

Commute Solutions – Best Workplaces for Commuters-Houston – A coalition of local government and business organizations which has recognized employers offering exceptional commuter benefits to their employees. These top-performers are making the commute to work a more positive experience for thousands of local workers and demonstrating a strong commitment to improving the region’s air quality.

(713) 993-4577

www.bwc.gov/campaign/houston.htm

Tulsa Clean Cities – The focus of Clean Cities is to bring together key “stakeholders” to coordinate the local expansion of alternative fuel vehicles. Stakeholders include fuel suppliers, vehicle manufacturers, fleet managers, utilities, environmental and health groups, and state and local governments.

(918) 584-7526

www.tulsacleancities.com/

INCOG Transportation Planning Division, Tulsa Region – INCOG, in cooperation with the Oklahoma Department of Transportation (ODOT), is responsible for the development of regional transportation plans and programs for the Tulsa urbanized area. INCOG is a voluntary association of local governments serving Creek, Osage, Tulsa, and Wagoner counties.

(918) 584-7526

www.incog.org/Transportation/default.htm

Atlanta Clean Air Campaign – The mission of The Clean Air Campaign is to motivate Georgians to take action to improve air quality and reduce traffic congestion. The Clean Air Campaign offers a variety of voluntary programs and services, including free employer assistance, public information, and children’s education.

(877) CLEANAIR or (404) 817-7762

www.cleanaircampaign.com

Way to Go, Seattle – The City of Seattle’s umbrella for a variety of initiatives intended to improve livability by reducing automobile usage for non-work trips – and increasing the use of busing, biking, walking, trip consolidation, and carpooling instead.

(206) 615-1550

www.cityofseattle.net/waytogo/

Washington, DC Telework Resource Center – The Telework Resource Center is part of an expanded alternative commute program in the Washington metropolitan region. The program, known as Commuter Connections, is designed to improve air quality by reducing single-occupancy vehicle commuting. Commuter Connections is administered by the Metropolitan Washington Council of Governments (COG), and provides free information and assistance to help local organizations start or expand telework programs.

(202) 962-3286

www.mwcog.org/commuter/telresctr.html

Other NALGEP Publications

If you are interested in acquiring any of the NALGEP publications below, please contact us by phone at (202) 638-6258, by e-mail at nalgep@spiegelmc.com, or visit www.nalgep.org.

Unlocking Brownfields: Keys to Community Revitalization – 2004

Released by NALGEP and the Northeast-Midwest Institute, this report profiles over 60 innovative brownfield programs across the country. Also included are the 10 keys to redeveloping blighted properties in any community.

A Primer for Petroleum Brownfields – 2004

The goal of this primer is to help communities better understand the re-use of petroleum brownfields. This publication is a follow-up to the *Recycling America's Gas Stations* report published in 2002 by NALGEP and the Northeast-Midwest Institute.

Smart Growth is Smart Business: Boosting the Bottom Line and Community Prosperity – 2004

NALGEP and the Smart Growth Leadership Institute partnered to produce this report, which profiles 17 businesses and business groups that are putting smart growth into action in communities across the nation. It outlines the reasons why these business leaders are supporting smart growth policies and projects, and it puts forth five key smart growth business approaches.

Profiles of Business Leadership on Smart Growth: New Partnerships Demonstrate the Economic Benefits of Reducing Sprawl – 2004

Showcasing 19 profiles of innovative businesses and business coalitions, this report identifies how leading manufacturers, financial institutions, developers, utilities, retailers, contractors, chambers of commerce, and other business leaders are taking steps to promote smart growth and reduce sprawl in their communities.

Smart Growth for Clean Water: Helping Communities Address the Water Quality Impacts of Sprawl – 2003

This report is the result of a three-year Smart Growth for Clean Water project NALGEP conducted in association with the Trust for Public Land, Eastern Research Group, EPA, and the U.S. Forest Service. Based on the experiences of communities across the nation, this report highlights case studies and innovative approaches to help local government officials implement smart growth programs in their communities that can address various water quality challenges.

Recycling Americas Gas Stations: The Value and Promise of Revitalizing Petroleum Contaminated Properties – 2002

Issued by NALGEP and the Northeast-Midwest Institute, this report provides background on state and local partnerships' innovative approaches to UST contamination drawn from the experiences of the 50 USTfield pilot communities who took part in the EPA's USTfields Revitalization Initiative.

Profiles of Local Clean Air Innovation: Empowering Communities to Meet the Air Quality Challenges of the 21st Century – 2000

Drawn from interviews with more than 85 local environmental, economic development, and transportation officials in cities, counties, and regional entities nationwide, this report includes 20 key findings on new approaches and partnerships communities can use to achieve lasting air quality progress.

Building a Brownfields Partnership from the Ground Up: Local Government Views on the Value of Brownfields Initiative – 1997

This report presents the views of local government brownfields officials on the value of EPA's brownfields policies and provides proposals for building the next phase of federal brownfields programs.

HUD CDBG Brownfields Funding: A Building Block for Community Development – 1997

This report evaluates the impact of current Community Development Block Grant (CDBG) regulations on brownfields redevelopment and provides the views of local government brownfields officials to HUD as the Department considers revising these regulations.



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