

Sustainable Transportation Options

for Protecting the Climate



A GUIDE FOR LOCAL GOVERNMENTS

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**International Council for
Local Environmental Initiatives**

ICLEI is an international association of local governments dedicated to the prevention and solution of local, regional, and global environmental problems through local action. There are over 350 ICLEI members comprising cities, towns, counties, and their associations from around the world.

ICLEI's **Cities for Climate Protection® Campaign (CCP)** is a global effort to reduce the emissions of greenhouse gases from urban areas and to improve local air quality and urban livability. More than 400 local governments, including 80 U.S. cities and counties, are currently participating in the CCP. The Campaign operates training and technical assistance projects that focus on reducing emissions through energy efficiency, renewable energy, waste management, land use planning, and transportation improvements.



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Introduction

Urban areas today are faced with a chronic demand for cleaner air, faster commutes, and endless parking. At the same time urban populations are exploding and the climate enveloping the world's cities is deteriorating. As a result, local governments face increasingly difficult decisions about transportation issues and land use policies in their communities.

THE PROBLEM IS NOT GETTING ANY EASIER.

Since 1960 the number of motor vehicles on the road in the United States has increased from approximately 75 million to over 200 million today. The number of miles these vehicles travel per year has increased in kind, from a total of about 700 billion in 1960 to over 2.6 trillion today. Around 12 million new vehicles are produced for sale each year, adding to an already bloated stock of motor vehicles plying the roadways of America's urban areas.¹

This unrestrained increase in motor vehicle use has led to four major problems for local governments:

- Motor vehicles are the largest source of **air pollution** in many urban communities. In most cases about 60 percent of the carbon monoxide (CO) and 30 percent of the nitrogen oxide (NOx) emissions that find their way into an urban atmosphere can be traced to the use of motor vehicles.
- **Traffic congestion** has grown much worse in most urban areas as a result of population growth and continuing migration toward the suburbs. About 100 million gallons of fuel are wasted every year in an average large urban area in the United States as a result of traffic congestion.
- Road construction leads to a **loss of urban space** that communities could otherwise use for parks, schools, or developments that generate tax revenue. Urban roads and highways in the United States today take up an amount of land that is greater in size than the State of Delaware.
- Most importantly, the use of motor vehicles has a significant and growing impact on **global climate change**—the slow but steady increase in average world temperature commonly known as global warming.

MOTOR VEHICLES AND GLOBAL CLIMATE CHANGE

Global climate change stems from the “greenhouse effect”—the process by which certain gases in the atmosphere trap energy that arrives from the Sun. Expanding economies and growing populations throughout the world are increasing emissions of these greenhouse gases into the atmosphere. The transportation sector accounts for nearly one-third of the greenhouse gas emissions originating from the United States. Motor vehicles are responsible for over 80 percent of those emissions. Transportation uses are also the fastest growing source of greenhouse gas emissions throughout the world.

Carbon dioxide (CO₂) is the most prevalent of the greenhouse gases resulting from human activity. In 1997, CO₂ emissions made up more than 80 percent of total U.S. greenhouse gas emissions. The use of transportation fuels made from fossil fuels, such as gasoline and diesel, result in large quantities of CO₂ emissions. Other transportation fuels may produce fewer (or no) tailpipe emissions but the production, transportation, and use of these fuels results in significant greenhouse gas emissions.

THE ROLE OF LOCAL COMMUNITIES

Local governments are uniquely positioned to address the problems of motor vehicle use and promote a more sustainable transportation system. By taking actions that minimize motor vehicle use, encourage transit use by citizens, and promote advanced vehicle technologies local governments can go a long way toward building communities that allow citizens access to their needs and destinations without causing undue harm to the climate.

This guide details steps local governments can take to advance the goals of sustainable transportation throughout their communities. The options on the following pages describe sustainable transportation initiatives that have been implemented and proven effective by communities across the United States (or elsewhere in the world).

Fifty-two different transportation-related actions local governments can take are organized into nine different sections in this guide. Each section represents an area of concern to one or more departments or agencies in a typical local government. For example, the two sections of this guide dedicated to land-use policy might be of most interest to a planning department.

Every local government faces different challenges based on demographics, geography, and the economic situation in that community. Nonetheless, all the options in this guide should be adaptable in some form to most local governments.

The real world examples accompanying each option demonstrate the variety of transportation-related actions taken by local governments. Where possible, results achieved by the local government are provided.² Many of the most important actions a local government can take, however, are not easily quantifiable. Land-use policies in particular have a dramatic impact on the transportation patterns of a community, but the impacts of these policies are often not adequately characterized by one number.

¹Statistics cited in this section are from the U.S. Department of Transportation *National Transportation Statistics 1999*, U.S. Department of Energy *Transportation Energy Data Book, Edition 20*, and the U.S. Environmental Protection Agency *Indicators of the Environmental Impacts of Transportation (1996)*.

GETTING STARTED

Local governments can get started minimizing greenhouse gas emissions and air pollution in their communities by doing the following:

1. Analyze the existing transportation system.

Determine the miles of existing roads and highways, the number of vehicle trips and miles traveled on average, the amount of air pollution and greenhouse gas emissions generated from transportation activities, the percentage of transit use, and review land-use plans to identify major developments.

2. Set goals for lower motor vehicle use and emissions.

These goals should be applied to both municipal operations and the community as a whole. Goals should include percentage reductions in travel and emissions, how that reduction is measured and the date by which the reduction should be achieved.

3. Select an appropriate combination of transportation options. Implementation of the selected options should be both technically feasible and politically realistic. The options chosen should represent a balance that will achieve emissions reductions in the short- and long-term in order to build both immediate and lasting support.

Implementing the right transportation options requires a serious, long-term commitment by local decision-makers and officials. Sufficient funding, adequate staffing and continuous monitoring and follow-up are essential for long-term success. Nonetheless, with perseverance, foresight, and the help of this guide, a local government can lay the groundwork for a sustainable transportation system in their community.

²Many results are provided with an estimate of the “tons of CO₂” reduced by the action. The number of tons provided is actually in units of “equivalent CO₂”, which is a combined measure of the impact of all greenhouse gases, normalized to tons of CO₂ for the sake of convenience.

Improving Fleet Efficiency



Every day, every hour, vehicles owned by local governments throughout the United States sweep streets, patrol neighborhoods, and perform other important services.

Initiatives to “green” these fleets can play an important role in reducing global warming and air pollution emissions.

To initiate a “Green Fleets” program first document the impact of fleet activities by conducting an inventory of vehicles and their energy use. Then set goals for reducing their energy use and emissions. Finally, put together a set of measures to attain these goals. Implemented wisely, a Green Fleets program will reduce emissions and generate cost savings with little or no adverse impacts on operations.

USE SMALLER, MORE EFFICIENT VEHICLES

“Downsizing” by matching duty requirements of staff to the smallest possible vehicle for the task is a critical step toward increasing the efficiency of a fleet. Smaller vehicles should be substituted for larger vehicles by phasing them in as new vehicles are purchased or by selling larger vehicles. Include fuel efficiency standards in bid specifications to ensure the most efficient vehicles are purchased. Bid specifications can be written based on minimum engine power to ensure only the smallest, most efficient vehicles necessary are purchased. If life cycle costing is used when purchasing vehicles, weigh the cost of fuel heavily in the calculations.

- **Denver, CO implements fleet downsizing as part of its Green Fleets program, saving the city at least \$40,000 a year in operating expenses and preventing the emission of 10 to 15 tons of CO₂ annually.**

OPTIMIZE VEHICLE USE

The manner in which fleet vehicles are used for travel in your city or county is a key determinant of the fleet’s overall efficiency. Schedule travel so that multiple tasks can be accomplished with one trip. With proper planning, staff should also be able to share vehicles for all or part of a trip. Software designed to optimize fleet vehicle routes can also be used to achieve large reductions in fuel use and emissions.

- **A trip optimization program implemented by San Diego, CA maps the most efficient routes for waste collection trucks, resulting in an annual reduction of over 700 tons of CO₂.**



MAXIMIZE EFFICIENCY

A simple but important step that any city or county can take to improve the efficiency of its fleet is to ensure that regular maintenance is performed on its vehicles. Oil should be changed regularly and tires should be kept at the correct pressure. Maintaining correct tire pressure and a tuned engine can save over a ton of CO₂ per year! Vehicles need to be operated in the correct manner as well. Employees should receive driver training and be awarded incentives for driving efficiently. Finally, establish a policy against idling vehicles.

- **The fleet management policy in Alachua County, FL requires that county employees inspect vehicles weekly, perform preventive maintenance, monitor fuel consumption, and drive in a conservative manner without idling vehicles.**

PURCHASE ELECTRIC-DRIVE VEHICLES

Electric drive-trains are much more efficient than the drive-trains used on standard internal combustion engine vehicles. Electric motors, rather than pistons and shafts, provide the necessary propulsion. Electric vehicles (EVs) powered by batteries and gasoline-powered generators (hybrids) are already available. They're appropriate for many tasks and, especially in the case of battery-powered EVs, have much lower greenhouse gas emissions. Fuel-cell vehicles powered by hydrogen are even better and are increasingly becoming available. The only emission from these vehicles is water!

- **Over one million people a year in Chattanooga, TN ride in the City's 18 electric buses as part of its free downtown shuttle service.**

CUT THE SIZE AND USE OF YOUR FLEET

Many cities and counties have more vehicles than needed in their fleets. By analyzing how vehicles are used, you may be able to cut the size of your fleet.

Encouraging employees to use transit, bicycles, and walking instead of driving will allow you to cut the size of the fleet even more. Email, video conferencing, and telephones can replace face-to-face meetings, eliminating the need to travel and saving valuable work time. Even if vehicles can't be eliminated from the fleet, overall vehicle travel and fleet expenses can be cut down with these measures.

- **The San Francisco, CA Criminal Justice Department uses tele-conferencing to facilitate interviews between defendants and probation officers, eliminating 600,000 miles of vehicle travel and 300 tons of CO₂ emissions annually.**

CONSIDER ALTERNATIVE FUELS

There is a wide range of options available for light-duty vehicles to reduce greenhouse gas emissions. However, medium- and heavy-duty vehicles have fewer options and are good candidates for alternative fuels. But not all fuels provide equal greenhouse gas and air quality emissions benefits. For this reason, consider using fuels like compressed natural gas (CNG), liquid natural gas (LNG), or propane (LPG). While these fuels don't offer the same level of greenhouse gas benefits as electric-drive technologies they can provide a wide range of air quality benefits in your community without increasing greenhouse gas emissions.

- **Dallas, TX recently purchased 182 Honda Civic GX natural gas vehicles, resulting in an emissions reduction equivalent to removing 175 gasoline vehicles from its fleet.**

Targeting the Commuter



Commuting accounts for about one third of all vehicle trips in a typical U.S. community. Commuting distances have steadily increased over the past decade due to population growth and suburban sprawl. These two factors make commuters a prime target for reducing vehicle use. Commuters are especially good targets because trips to and from jobs and school tend to be made regularly, to the same destination, and at the same times of the day.

PROVIDE TRANSIT AND VANPOOL SUBSIDIES

Thanks to recent changes in tax law, businesses and institutions can provide tax-free subsidies to employees who commute using transit or vanpools. This subsidy can take the form of vouchers or a voluntary payroll reduction. The advantage to the employee over receiving the same amount in salary is that the subsidy is not included in taxable income—up to \$65 per month in 2000, rising to \$100 per month in 2002. The advantage to the employer is that it reduces their taxable payroll.

- **Hillsborough County, FL offers a \$20 monthly subsidy to each vanpool rider and a 50 percent subsidy on bus passes to employees, resulting in 67,200 fewer miles being traveled by commuters.**

USE CARPOOLS AND VANPOOLS

Sharing a car or van to get to work is much more efficient than driving to work alone. Less fuel is used per passenger and vehicle costs are spread over more than one person. Fewer vehicles on the road mean less congestion and a reduced need for parking. Local government can set an example by implementing a ride-sharing program for its employees. It can encourage or mandate other employers to do the same. A local government can also provide low-interest or interest-free loans to businesses that are setting up vanpool programs.

- **Los Angeles, CA operates comprehensive carpool and vanpool programs that result in a reduction of 730,000 commuter trips and over 10,000 tons of CO₂ per year.**



USE PARKING AS A LEVER

Parking can be a powerful lever. Local governments can use it in many ways. Eliminate the lure of free parking by installing parking meters. Target specific motor vehicle users by varying parking charges according to time of day or implementing a permit parking program for residents to park in their neighborhood. Charge municipal employees for parking to give them a financial impetus in the direction of transit, bicycling, or walking. Compound the incentive with subsidies for alternative transit. Encourage or mandate businesses and institutions to do the same.

- **Aspen, CO increased its parking fees to encourage businesses and residents to use public transit, resulting in a 30 percent increase in transit ridership.**

PROMOTE TELECOMMUTING AND FLEXIBLE SCHEDULING

Computers, modems, the Internet, telephones and fax machines—everything is now in place to allow many employees to work at home. Some can do it part time, some full time. A variation on this theme is to furnish or rent office space at a strategic location near employees who formerly commuted long distances. Other ways to reduce the need to commute: change the work week—to ten hours a day for four days, or nine hours a day for nine days, for example. All these options reduce commuting miles for employees and shift traffic to more efficient off-peak hours.

- **After Chula Vista, CA opened several neighborhood telecenters in existing suburban areas, vehicle travel decreased by 954 miles per week in those areas.**

OFFER PARKING CASH-OUT

“Parking Cash-out” is an innovative twist on parking charges. It offers an employee a choice—keep your free parking place or give it up for cash. Example: An employer who pays \$50 per month to lease a parking space offers an employee a \$50 per month tax-free transit subsidy to give it up. Experience has shown that many employees will choose the subsidy instead of the parking space. What’s in it for employers? They can lease fewer parking spaces and their tax burden is reduced due to the lower payroll. Parking cash-out also makes a lot of sense for businesses that own their own parking spaces by freeing up valuable real estate.

- **Santa Monica, CA requires that employers offer parking cash-out to employees, resulting in a reduction of 500,000 miles of commuter travel per year and annual CO₂ reductions of 200 tons.**

GUARANTEE A RIDE HOME

Studies have shown that many employees commute by car so they can get home quickly if something comes up—such as an emergency or a call from school. Address this concern by guaranteeing employees a ride home—by taxi or company car—when needed. The expense should be minimal because experience has shown that employees rarely take advantage of this service. The benefits will be compounded since both commute trips and incidental trips employees take during the day for lunch, banking, and shopping will be reduced.

- **Regular users of alternative transit modes in Chicago, IL can register for a guaranteed ride home program that ensures transportation in a city vehicle during an emergency and provides them with a taxi voucher for missed rides.**

Emphasizing Transit



Trains, trolleys, buses, and most large passenger ferries are environmentally friendly alternatives to cars being driven alone. Less air pollution and greenhouse gases are emitted per passenger for each mile traveled with these travel modes. Added benefits include saving commuters money on buying, fueling, maintaining, repairing, and insuring a car. Transit systems return more to a region's economy, especially in employment, than do private automobiles. Transit riders can use their time productively and safely—for business, pleasure, relaxation, or rest—while drivers perform these tasks at their peril.

PROVIDE AMPLE FUNDING

Funding mechanisms have long tilted the playing field toward private automobiles and away from public transit. Road and highway improvements are routinely approved, while improvements for bus and rail have traditionally been difficult to authorize. Leveling the field is crucial to all other steps. Local governments should work to get significant portions of revenues from gas taxes, tolls, motor vehicle fees, and similar sources permanently earmarked for public transit. To accomplish these goals local governments can adjust their own fee systems or work in concert with other localities to develop a regional transit strategy.

- **In San Francisco, CA a transit impact development fee that is assessed on new construction and converted office space pays for 1.5 percent of the annual cost of the municipal transit system.**

MAKE FARES LOW; KEEP THEM LOW

Keeping fares at reasonable levels that invite use by a wide segment of the population is essential to persuading drivers of motor vehicles to change their transportation habits and choose transit. Fares should be set low enough to make it clear that the cost of taking a train, trolley, bus, or ferry is lower than the cost of using a car. Recurring pressures to increase fares to meet funding crises need to be resisted—and counteracted by securing adequate long-term funding. Consider setting fares lower—even eliminating them—in your downtown core area to reduce congestion.

- **Syracuse, NY implemented a free fare program for downtown transit riders to encourage transit use and discourage automobiles in the dense core area of the City.**



MAKE TRANSIT SYSTEM COMPREHENSIVE AND CONVENIENT

Given a choice, few will trade a drive in an air-conditioned, stereo-equipped vehicle for a much longer trek on a series of sweltering, run-down buses and trains. Equipment built and maintained to high standards; comprehensive, convenient routes; frequent service; easy transfers; clear, simple route and schedule information; a feeling of safety and security—all these are important to lure people out of their cars. Intermodal facilities that allow clear and rapid transfers between transit modes like buses and trains are also a key component of a comprehensive transit system.

- **By providing timely service in attractive buses on routes calibrated to citizen's needs, the HOP and SKIP shuttle bus routes in Boulder, CO have experienced rapid growth in popularity and are reducing over 20,000 tons of CO₂ annually.**

TARGET PRIME TRANSIT USERS

To increase ridership most efficiently, communities should target key transit constituencies. A transit agency, for instance, can work with schools, colleges, and universities so that student identification cards can double as public transit passes. The institution pays a flat fee to the transit agency for this service. Major employers can do the same. The transit system may take in less revenues for each trip but take in more revenues overall while getting more people out of their cars. Reduced fees for seniors, disabled persons, as well as students make sense as well.

- **As part of a broad transit promotional campaign Missoula, MT provided free summer fares for youth that resulted in an increase in ridership of 66 percent over the course of one year.**

PROVIDE DEDICATED TRANSIT RIGHT-OF-WAYS

Extricating transit vehicles from the delays and frustrations of traffic congestion provides them with a major market advantage over private automobiles. The sight of a bus sailing along in its own dedicated travel lane next to several lanes of clogged freeway traffic is the best possible advertisement for transit. Highway lanes, dedicated bus ways, and other rights of way dedicated to transit vehicles in communities throughout the United States are yielding large dividends in increased transit ridership and reduced motor vehicle traffic.

- **After opening an 8-mile dedicated bus-way adjacent to one of the busiest highways in Miami-Dade County, FL, weekly ridership on the route increased by 56 percent and nearly 900 tons of CO₂ are being eliminated annually.**

ENCOURAGE NON-TRADITIONAL TRANSIT

Vans and mini-buses used for small-scale transit routes — sometimes called “jitneys” — can feed into regular train, trolley, and bus lines to significantly improve convenience and reduce transit times. Other transit systems in which vehicles respond to users on demand can help do the same. Municipalities and transit agencies should consider operating these kinds of programs themselves. They should also reverse longstanding policies that discourage or prevent private parties from operating them. These “para-transit” programs serve to enhance the effectiveness of larger-scale transit and provide needed flexibility for elderly and disabled transit patrons.

- **A jitney shuttle bus in Maplewood, NJ provides commuters and town residents with frequent and proximate access to the main train station in the downtown area, resulting in a reduction of greenhouse gas emissions of 80 tons per year.**

Supporting Bicycling



Bicycles are the most efficient mode of transportation. They produce no air pollution and place minimal burdens on natural resources. Bicyclists improve their health while biking. This is good for the bicyclist and good for the community because it lowers public health care costs. Bicycles are especially appropriate in reducing the number of short trips—up to five miles or so—which constitute more than half of all driving. But bicycles can also serve longer trips, on their own or in combination with bus, rail, and ferry.

INTEGRATE BICYCLES SEAMLESSLY INTO TRANSIT SYSTEM

Transit systems should reverse policies, common in many communities, which discourage or prohibit using a bicycle with a bus or a train. They can do this through measures like putting bike racks on buses, trolleys, and ferries, adding special cars or special equipment to trains, implementing bicycle-friendly policies in stations and trains, and training employees to be tolerant of the needs of bicyclists. They can also provide bike lockers or other secure facilities at stations and stops, as well as design stations with bike ramps and other amenities.

- **Milwaukee, WI provides bike lockers at transit stations and bike rack equipment on the front of buses, resulting in a reduction of 70 tons of CO₂ per year.**

PROVIDE FINANCIAL INCENTIVES FOR BICYCLE USE

Implicit and explicit financial subsidies are common for motor vehicles. They are far less common for bicycle users. To alleviate this situation local governments can give subsidies or reimbursements to employees who commute by bike. They can provide low-interest or interest-free loans for the purchase of bicycles and bicycle equipment for employees commuting by bicycle. They can also reimburse employees who use bicycles on the job. Finally, governments can encourage businesses and institutions in the community to do the same.

- **Bellevue, WA offers employees who bike to work at least 80 percent of the time a \$15 per month bonus as an incentive.**

BUILD AND MAINTAIN DEDICATED BIKE ROUTES

Dedicated bike paths and bicycle lanes on roadways reduce the danger motor vehicles pose to bicyclists. They also make bicycling faster and more pleasant. Well-maintained surfaces, good lighting, a feeling of security, and strategic locations constitute the elements of a good bicycle route network. Adding crossing signals specifically for bicycles at major roads also helps to ensure efficient flow on the bike path network as well as providing greater safety for bicyclists at dangerous road interfaces.

- **Twenty-two photovoltaic lights line a 4.5-mile bike lane in Albuquerque, NM; providing a safer, well-lit alternative transit route for city residents.**

USE BICYCLES IN MUNICIPAL OPERATIONS

Governments, businesses, and institutions can provide bicycles instead of motor vehicles for the performance of certain job duties. If employers don't want to supply bicycles, they can reimburse employees who use their own. Examples include building inspectors, meter readers, and employees traveling from one site to another for a meeting. Bicycles can also be used to create more effective government programs. "Cops on Bikes" programs have been wildly successful in many U.S. cities—not just in reducing vehicle expenses and impacts but also in improving police-citizen relations, speed, and flexibility.

- **The police department in Dayton, OH is saving 2,700 gallons of gasoline and 7.5 tons of CO₂ a year by using bicycle patrols instead of police cars for selected patrol beats.**

IMPLEMENT SPOT IMPROVEMENT PROGRAM

While dedicated bicycle paths are ideal, 70 percent of bicyclists travel along regular traffic lanes. Among the range of barriers these bicyclists must contend with are wide roads that are difficult to cross, signals that won't detect bicycles, and poor street maintenance along the edges of roadways. Local government repair schedules should include small-scale improvements for the benefit of bicyclists. A feedback process is essential to the program. Prepaid postcards placed in bicycle shops or a dedicated web page allow citizens to recommend improvements such as filling potholes, removing cracks, and replacing sewer grates with bicycle-safe grates.

- **Seattle, WA installed 19 bicycle-specific traffic signs and replaced 4 dangerous drain gates in the year 2000, adding to over a decade's worth of improvements as a result of the City's Bicycle Spot Improvement Program.**

SUPPLY BICYCLES FOR DOWNTOWN USE

A free community bicycle program is designed to provide tourists, residents, and business people access to city-owned bicycles located throughout a city's downtown area. Such programs encourage using bicycles rather than using a car for short distances and downtown travel. The bicycles, usually painted a bright color to facilitate visibility and discourage theft, are not locked up. Individuals may pick up a bicycle at one location, and leave it at a different location. Few restrictions to the program promote widespread participation.

- **In 1997, a Tampa, FL program called "Orangecycle" placed 150 bright orange bicycles around town for free public use, resulting in an estimated 43-ton reduction of CO₂ emissions annually from reduced downtown vehicle trips.**

Growing the Community Sustainably



Overall development patterns, distances to common destinations, housing density, transit coverage and accessibility, street and sidewalk design—these factors have a strong influence on the extent to which an urban area depends on motor vehicles. They establish the basic conditions that determine the degree of automobile dependence in a community. In most U.S. communities, the tilt toward the automobile is extreme. How does your community reverse this? Largely by including environmentally sound strategies when updating your community’s general plan and zoning laws.

DISCOURAGE SPRAWL

Sprawl means continual expansion of the urban boundary ever outward to accommodate new development. It’s the opposite of infill. Sprawl leads to more driving, as houses, shopping centers, and factories are located farther from each other, farther from urban centers, and farther from public transit. It also damages the environment as more and more open space is consumed.

Communities can stop sprawl by using their zoning and planning authority to set urban growth boundaries. Communities can discourage sprawl by charging developers the full cost of extending roads, utilities, and services to outlying areas. Cooperation between city and county governments is often needed to accomplish these goals.

- **To prevent sprawl Austin, TX created Desired Development Zones in which application and capital recovery fees are reduced or waived on a sliding scale, while charging higher capital recovery fees for development in environmentally sensitive Drinking Water Protection Zones designated by the City.**

STREAMLINE PERMITTING

Streamlined permitting is a low-cost or no-cost way to provide incentives to developers of projects that promote sustainable transportation. This policy can take the form of fewer bureaucratic steps, less paperwork, faster scheduling, expedited handling, and special staff assistance. Streamlining can be a powerful incentive because, for developers, every lost day, week, or month costs money. The bigger the development, the bigger the potential benefit will be to developers to implement sustainable transportation into their development schemes.

- **Lowell, MA offers a streamlined permitting process to developers who plan high density, mixed-use developments in the community.**



PROMOTE MIXED-USE ZONING

Minimize the number of automobile trips residents need to make out of their neighborhood by updating your general plan and zoning laws to allow residential, commercial, and business uses to mix. Bring jobs and housing closer together by offering incentives for housing near employment centers. Place anchor businesses in neighborhoods to reduce the number of out-of-the-neighborhood trips residents have to make. Mixed-use development can significantly reduce costs for developers and lower prices for buyers. It increases safety, livability, and economic viability as residents remain in the vicinity of businesses twenty-four hours a day.

- **An ordinance passed in Belmont, NC allows the City to designate “Traditional Neighborhood Development” districts based on historical neighborhood design to fully integrate mixed-use pedestrian oriented neighborhoods into the City.**

USE FINANCIAL INCENTIVES

You can use the power of money to channel development in the right direction. Communities can reduce permit fees in exchange for infill, mixed-use, and transit-oriented development throughout the city. They can reduce license fees or other taxes on businesses that meet targets for reduced commuting or use high-efficiency vehicles in their operations. They can analyze proposed development for increased car and truck use and assess appropriate impact fees. Development fees can also be based on the distance of a project from a town center or another area that has already been developed.

- **In Leawood, KS a development fee increases proportionally with the distance of a project from an approved arterial road or major highway, discouraging sprawl and rewarding compact development.**

PROMOTE TRANSIT-ORIENTED DEVELOPMENT

Maximize the utility of mixed-use developments by revising your general plan and zoning laws to favor dense developments near transit corridors and stations. This goes for all types of projects—residential, commercial, and retail. Consider setting minimum density requirements for projects within a set distance of public transit stations. Require major development to include transit stops, pedestrian ways, bike lanes, benches, plazas, safe lighting, and other transit-friendly features. Coordinate with transit agencies to ensure that transit lines serve new housing and commercial developments.

- **A municipal housing initiative in San Jose, CA aims to identify and encourage development of over 10,000 high-density dwelling units along existing transit corridors, including the light rail system.**

PROMOTE INFILL

Update plans and ordinances that focus on development of space within existing urban boundaries instead of expanding into open space. Are there pockets of vacant or underutilized land in the middle of the city? It is better to concentrate building in these areas rather than in open space at or beyond the city limits. Transit, biking, and walking will be easier for residents of the community. Many necessary trips will be shorter and, therefore, driving will be reduced. Infill is especially good when it includes other sound measures like mixed uses and transit-friendly design.

- **A Durham, NC policy aims to reduce citizens’ average vehicle travel by 10 percent by encouraging infill development in the downtown area where older industrial complexes are being converted to residential and commercial uses.**

Planning Facilities Wisely



It's not just overall development patterns that count. Each building has an effect, positive or negative, on the amount of driving that takes place. These effects are cumulative. Communities can take many actions to make sure that projects are designed and built with features that make it easy, convenient, and pleasant to use alternative modes of transit instead of driving. Where driving is necessary, communities can also promote the use of higher efficiency modes of personal transport.

RELAX RESTRICTIONS FOR SUSTAINABLE DEVELOPMENT

Communities can encourage developers to build high-density, mixed-use, transit-friendly, and infill projects by granting them greater design flexibility. Allow commercial space, for example, to be divided up into smaller units than would otherwise be allowed. Allow residential and commercial units to coexist on the same lot or in the same structure. Traffic congestion in a high-density, infill project can be a sign of vibrancy and mean less traffic in the rest of the urban area. Don't require the same anti-congestion "level-of-service" standards auto-centered projects are required to meet.

- **Fort Collins, CO enforces zoning and development regulations that relax restrictions for high-density, mixed-use, infill development proximate to public transit.**

ENCOURAGE ON-SITE FACILITIES

Keeping employees on site reduces driving by eliminating trips and removes the need to commute by car. Amend zoning laws to encourage or require developers to build cafes, restaurants, drug stores, banks, and the like, into major developments so workers don't need to use cars and trucks during the day. Encourage smaller businesses to do the same by removing barriers to food stands, ATMs, and similar amenities. Conversely, local governments can also work to ensure that necessary facilities for employees are encouraged to site themselves near major employment centers.

- **In Williamson County, TN surveys show that many commuters don't carpool primarily because they need to run errands on the way to work, requiring amenities like ATMs, grocery stores, restaurants, and post offices to be proximate to their workplace before they would consider doing so.**



MODIFY PARKING REQUIREMENTS

Minimum parking requirements for new development in many communities are unnecessarily high—sometimes requiring twice as many spaces as needed. The result: wasted space; unproductive investment for the developer; and acres of asphalt acting as a lure to driving. Developers often worsen the situation by including more parking than needed. Address these problems by amending your zoning laws to reduce parking requirements, especially when combined with transit-friendly features, and put limits on the excessive provision of parking by developers.

- **Sacramento, CA reduces parking space requirements for new commercial developments if they provide bicycle facilities, designate carpool-only parking spaces, or provide transit passes for those who lease in the new building.**

EQUIP FACILITIES TO SUPPORT ALTERNATIVE COMMUTING

Require or encourage amenities and services for transit users, pedestrians, and bicyclists at major developments. For places of employment and key commuter nodes, these can include showering and changing facilities, secure bicycle parking, ticket sales, schedules, and other information. Retail locations should also provide infrastructure for bicycles and offer convenient access to transit. Bus stops and bus shelters can be built or upgraded to be safe, comfortable, and attractive in major developments and retail areas.

- **The Oregon Department of Transportation in Portland, OR provides secure bicycle parking and clothing lockers to employees who bike to work, resulting in 5 to 10 percent of the employees commuting to work by bicycle.**

PROVIDE ALTERNATIVE FUELING & RECHARGING FACILITIES

In most areas, service stations for alternative fuels and charging stations for electric vehicles are few and far between. The situation isn't likely to change until there are more alternative fuel and electric vehicles on the road. Of course, the lack of fueling and charging facilities is one barrier to an increased supply of these vehicles. Local governments can tackle this chicken-and-egg problem by building facilities for their own alternative fuel vehicles and making them available to employees and the public. Businesses and institutions can do the same.

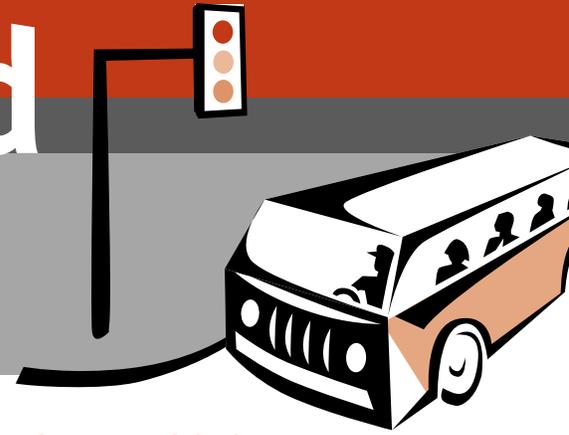
- **Little Rock, AR is working with a range of public and private sector stakeholders to put in place a total of 17 compressed natural gas and 15 propane fueling stations throughout the metropolitan region.**

OFFER PREFERENTIAL PARKING

Amend zoning laws and municipal policies to encourage or require developments to reserve free parking and the best spaces for drivers participating in programs that provide alternatives to driving alone in a car. Preference should be given to vanpools and carpools at businesses and in public parking facilities. Preferential parking can also be given to alternative fuel vehicles, such as those powered by compressed natural gas or propane, or to electric-drive vehicles that run on batteries, fuel cells, or hybrid combinations of technologies.

- **Carpools and vanpools commuting to downtown Minneapolis, MN park for free, with 35 percent of those in the vehicle pools having previously driven to work alone.**

Managing Roads for Improved Efficiency



Smoothing the flow of traffic allows engines to operate more efficiently. It decreases stop-and-go driving and idling at intersections. All this reduces fuel consumption, air pollution, greenhouse gas emissions, frustration, and accidents. But be careful—smoothing traffic flow and reducing congestion lures new cars and trucks onto your streets and roads. The result could be a net increase in driving, pollution, and greenhouse gas emissions. Address this danger by carefully assessing the full impacts of proposed congestion management measures and aggressively favoring those that facilitate carpools, vanpools, and transit at the same time that they smooth traffic.

REDUCE TOLLS FOR VANPOOLS AND CARPOOLS

Give vanpools and carpools another advantage by reducing their tolls. This is especially effective if you eliminate the toll and let the high occupancy vehicle proceed through the toll booth without stopping. You can provide these reduced tolls full time or during commute hours only. Reduced tolls are even more effective when this measure is combined with an exclusive-use lane for those commuting together. Carefully coordinate any such measure with your local transit agency to assess impacts on transit ridership and revenues. Routes, schedules, fares, and funding sources may need to be revised.

- **On the Golden Gate Bridge in San Francisco, CA carpools of three or more are free weekdays, except holidays, between the hours of 5 am and 9 am and 4 pm and 6 pm.**

GIVE PREFERENCE TO TRANSIT MODES

Communities can help buses and trolleys compete with cars and trucks on streets and highways. Electronic signaling systems can give buses green-light priority at intersections. Freeway entrances and exits can be modified to give buses unimpeded access at the same time cars and trucks are backed up by congestion or metering lights. The same technologies can be used for light-rail systems that share the streets with regular cars and trucks in a city or county.

- **The transit authority in Atlanta, GA installed a signal priority control system for 25 buses that has reduced the average inbound trip by almost 14 minutes.**



USE AREA TOLLS TO LIMIT TRAFFIC

A community can charge tolls to enter a specific part of an urban area to discourage severe traffic congestion in a central business district or other area. Several cities in Europe and Asia are using variations on this tolling system with success. You can use toll booths at entrance points, automatic toll collection systems, or the sale of special licenses—anything to charge extra for driving downtown. The use of transit can be further encouraged by allowing a permit or license necessary to enter the downtown area to serve as a transit pass in addition to its primary function as a vehicle permit.

- **In Trondheim, Norway the City charges a toll for vehicle entry to the main business district downtown, leading to a reduction in daytime vehicle travel by 10 percent and a 7 percent increase in transit use by city residents.**

USE CONGESTION PRICING

Congestion pricing is a new approach to road and highway tolls. It varies the amount of toll by time of day and/or level of traffic. This reduces congestion by getting some people to drive at other times, on other routes, or using other modes. Congestion pricing can employ conventional toll collection methods or advanced electronic systems using transmitters, receivers, and automatic billing. Congestion pricing needs careful planning and analysis before implementation to avoid unintended consequences like shifting traffic onto side streets or unfairly targeting the poorest segment of society.

- **On Interstate 10 in Houston, TX the 3-person HOV lanes are open during peak hours to carpools of two passengers for a fee of \$2.00 per trip, allowing the underused carpool lanes to accommodate additional traffic and increase the efficiency of the lanes.**

TIME SIGNALS TO SMOOTH TRAFFIC FLOW

Communities can help keep cars and trucks moving, increasing fuel economy and decreasing emissions, by retiming traffic lights. Sophisticated computer programs are available to help determine optimal timing. By linking your entire system, you can program computers to adjust signal timing continuously in response to changing conditions, including time of day, traffic levels, weather, accidents, construction, and special events. Again, make sure you combine this kind of measure with measures to promote alternative modes of transit, so you don't increase driving with the increased road capacity provided by these types of programs.

- **In Orlando, FL an analysis of 365 intersections found that traffic delays could be reduced by 56 percent and air pollutants by 9 to 14 percent through traffic signal optimization.**

PROVIDE EXCLUSIVE LANES

Give carpools, vanpools, and buses preferential use of your streets and highways by providing them with exclusive-use lanes. The sight of vans, carpoolers, and buses whizzing by while others are stuck in a traffic jam is a powerful inducement to change commuting modes. You can build these lanes into new construction or designate an existing lane. They can be used during commute hours only or all of the time. Adjust the number of occupants that qualify a car to use the lanes according to circumstances. Drivers using high efficiency or alternative fuel vehicles can also be allowed to use the special lanes.

- **Cars using High Occupancy Vehicle (HOV) lanes for multiple passengers (2 or more) in Fairfax, VA traverse the restricted route in 41 minutes on average, as opposed to the 69 minutes normally taken by non-HOV drivers.**

Engaging the Entire Community



Every car or truck trip results from a decision. Previous pages have covered options for addressing factors which influence that decision—like overall transportation patterns and options, neighborhood and building design, and the availability and convenience of alternative transit modes. But other, less concrete factors matter too—like awareness, information, and attitudes. Communities can influence these factors directly and significantly change transportation habits through promotion and education programs. Where education and promotion is not enough, some degree of regulation may be necessary if the local government has the authority to take this kind of action.

EDUCATE YOUR WHOLE COMMUNITY

Each person and sector of your community should be informed of the need to reduce driving. This can be achieved through a community-wide promotion and education program. The first requirement of such a program is that it be well coordinated—with all elements working together, providing accurate, consistent information and a clear, consistent message. Contests, bike-to-work and walk-to-work days, free-transit days, media coverage of transit-friendly development—all these increase awareness with minimal cost.

- **Chula Vista, CA offers a one-week curriculum to 6th graders that focuses on local transportation and energy use steps for reducing global warming emissions from the community.**

ENCOURAGE COMMUNITY TRIP REDUCTION PROGRAMS

Local governments can encourage employers to cut driving by mandating trip reduction programs. Don't target the private sector alone. Universities, hospitals, government agencies, and the like are good targets too. There are many ways to reach out to these organizations—staff assistance, one-stop information centers, chambers of commerce, and business associations. These programs should be comprehensive and offer a wide range of the options mentioned in the proceeding sections.

- **A Milwaukee, WI based company increased public transit use by its employees by 80 percent by offering a monthly discount on transit passes of \$21.**



ENCOURAGE CAR SHARING

Many people own a car so they can be sure they have one when they need it. Then, because they own it, they drive it even when they could have walked, biked, or taken the bus. To address this issue, residents can help initiate a car sharing group that owns, maintains, and insures one or more cars in common. The cars are available to members, on short notice, whenever they need them. Station-car programs are another example of car sharing. Shared cars are used for getting to and from a transit station. Local governments should encourage groups of citizens, or private entrepreneurs, who want to start car sharing programs in their local community.

- **Zipcar, a Boston, MA car sharing program, estimates that each shared car results in the replacement of 4 to 8 privately held cars in the City.**

OPEN A COMMUTER INFORMATION CLEARINGHOUSE

Local governments, businesses and institutions can create on-site information centers to display and provide transit, bicycling, walking, and telecommuting information. Community commuter stores and counters can provide one-stop service for tickets, passes, schedules, maps, and discount coupons. Along with hotlines, they can provide transit advice and information. Commuter stores can also offer ride-matching services using bulletin boards or computers.

- **Montgomery County, MD opened a full-service “Commuter Express” store which provides on-site sales of transit passes, information on bus or rail services, carpooling and vanpooling programs, and other commuting alternatives.**

DISCOURAGE UNNECESSARY IDLING

Idling is rarely necessary. Idling burns fuel to get you nowhere. Let drivers know that it makes no sense to keep engines running out of fear they won’t restart. Explain that the typical car radio doesn’t draw enough power to run down a battery. Encourage drivers and passengers to get out of their parked cars and trucks in hot weather. Public service announcements on radio, TV, and in newsletters aimed at schools and other institutions are good vehicles for spreading this information. More substantive action can be taken by initiating a community-wide anti-idling ordinance.

- **St. Paul, MN passed an anti-idling ordinance that restricts idling of all non-emergency vehicles to no more than three minutes.**

PROMOTE LOCATION-EFFICIENT MORTGAGES

Communities can reinforce another incentive to transit use and transit-oriented development by promoting “location-efficient mortgages,” under which lenders extend higher loan amounts to homebuyers purchasing homes near transit. Lenders do this because individuals who have ready access to transit tend to have lower automobile expenses and therefore more income available for mortgage payments. This additional income allows homebuyers to buy better houses. In addition, the community benefits as transit use is encouraged.

- **Seattle, WA works with lenders to offer Location Efficient Mortgages to homebuyers, resulting in higher rates of approval and larger mortgages for qualified buyers locating themselves near transit lines.**

Creating a Pedestrian-Friendly Community

Walking and bicycling offer similar health benefits in that they produce no pollution and improve cardiovascular health. In many communities over the past few decades, however, pedestrian needs have been given little attention from road builders and planners in major urban areas. Local governments and businesses should strive to ensure that pedestrian amenities are given high priority and that walkers are encouraged and rewarded.

MAKE STREETS SAFER FOR PEDESTRIANS

One dangerous intersection at the wrong place on an otherwise safe, beautiful walking path is enough to keep people from using the route. Safe interfaces between pedestrians and motor vehicles are crucial. Confusing lane design, bad striping, poorly timed signals, lax speed enforcement—your local government’s traffic department should analyze crossings and intersections for these and other pedestrian hazards, and then eliminate them. These kinds of improvements generally cost very little but have the potential for attracting more pedestrian traffic on key routes.

- **An alarming number of school-age children being killed at crosswalks led Salt Lake County, UT to institute several pedestrian safety programs, resulting in 85 to 100 percent fewer accidents near participating schools.**

SUBSIDIZE PEDESTRIAN COMMUTERS

As with transit and bicycling, government, businesses, and institutions can provide subsidies or reimbursements to municipal employees who commute by walking. One way to do this is to provide an annual shoe subsidy to employees who choose to walk to work. To give your pedestrian commuters equal treatment, make sure the total walking subsidy is as much as the transit or bicycle subsidy.

- **Municipal employees in Laguna Beach, CA receive an annual shoe voucher of \$50 if they walk to work as their primary mode of commuting.**



RENOVATE STREETS

To make streets more welcoming reclaim space and resources from motor vehicles for walking. Rebuild streets in such a way that the area allocated to sidewalks is expanded and the area allocated to motor vehicle lanes reduced. Plant trees and use light-colored paving to keep things cool and pleasant. The result is a safe, pleasant environment for pedestrians that discourages motor vehicles. Creating a more pedestrian-friendly street is not necessarily expensive if done when the street is scheduled for routine renovation.

- **As part of its Downtown Corridor Improvements Project, Indianapolis, IN included sidewalk replacement, tree planting, curb improvements, and major landscaping with significant success as pedestrians flocked to a previously little-used downtown area.**

SLOW TRAFFIC

Speeding vehicles discourage pedestrians and present a safety hazard. Traffic calming programs help to solve this problem by implementing a variety of measures that can be calibrated to be more or less intrusive, depending on the seriousness of the problem and the desires of those living in the neighborhood. As a first step, speed limits are lowered. Speed bumps, speed humps, or other measures are installed if necessary. More elaborate solutions, like roundabouts or traffic blockades, can also be used to slow traffic.

- **In a Cambridge, MA neighborhood 41 percent of vehicles were driving at or below the 25-mph speed limit, but after traffic calming measures were implemented 95 percent of vehicles were driving at or below the speed limit.**

