NATIONAL LEAGUE OF CITIES
INTERNATIONAL PROGRAMS

Helping City Leaders Respond to Global Change

• Global Solutions for Transportation Efficiency
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Global Solutions for Transportation Efficiency

Introduction
Congestion is a severe problem that is only going to get worse in the coming years. The 2007 Urban Mobility Report, prepared by the Texas Transportation Institute, concludes that traffic congestion deprives the national economy of $78 billion every year through 4.2 billion wasted hours and 2.9 billion gallons of fuel. Congestion lowers productivity, increases air pollution, and aggravates residents. With the nation’s population expected in increase by around 150 million over the next fifty years and existing infrastructure vastly under-funded, local governments must experiment with transportation innovations being implemented around the globe.

This paper describes some of the solutions that municipal governments have enacted in order to solve their transit woes.

Mass Transit
When it comes to municipal transportation solutions, mass transit options are frequently the most visible. Large public transportation projects move people and goods cheaply and efficiently. Paradoxically, most of these systems are expensive and complicated. Each system must be carefully designed to fit the individual city’s needs. This section focuses on unique approaches to bus and light rail systems.

Los Angeles, California: When an abandoned railroad line in the nearby San Fernando Valley was obtained by the Los Angeles Metro transit agency, a light rail system was deemed too economically and politically costly. Instead, the Metro system, previously comprised only of light rail, designed a Bus Rapid Transit (BRT) system which opened in October 2005. The Orange Line BRT acts as an extension of the area’s Metro system, connecting the San Fernando Valley to the rail line (the Red Line) at the North Hollywood stop. The Orange Line features a two-lane, 14-mile dedicated busway with a stop approximately every mile. Buses are fueled by compressed natural gas and can accommodate 57 passengers. Riders waiting at stations are treated to real-time bus arrival updates. Many stations also feature bicycle lockers and free parking spots. “Loop detectors” have been installed at every stoplight to give Orange Line buses priority. Rubberized asphalt, sound walls, and special tailpipes were installed to minimize the noise impact to neighboring communities. The bus/light rail hybrid system has achieved increased ridership and satisfaction with a cost-efficient alternative. For more information, see the report at the bottom of the Transit Coalition’s webpage at: http://thetransitcoalition.us/TTC_BRT_Orange.htm.

Santiago, Chile: Transantiago, the Chilean city’s Integrated Public Transport System, experienced widespread problems after its implementation. Nonetheless, Santiago’s experience is instructive.

This attempt to revamp the area’s transportation was focused on integrating the various levels of public transportation: buses, subway, and taxis. However, the program was implemented before enough bus lanes had been constructed. Only a fraction of the prepaid fare card’s charging stations were functional, bus routes were not linked to customer demand, and the bus fleet management center was shut down. Bus operator contracts did not allow for extra compensation based on passengers, and the fines for noncompliance were trivial, so it was not in the operators’ best interests to pick up more people.

Santiago's citizenry was quite upset with the congestion that caused total traffic time to more than double. Subsequently, the transport minister in charge of overseeing the program has been replaced. Bus contracts have been renegotiated, allowing for more buses and better bus routes. More prepaid smart card stations are operational. Nonetheless, troubles still remain, and it is now clear that Transantiago should not have been implemented until its basic infrastructure had been finished.
Morgantown, West Virginia: The community of Morgantown, home to the West Virginia University (WVU) campus, is three decades ahead of the world when it comes to mass transit alternatives. Established in 1975, the personal rapid transit (PRT) system travels to five different stops across town and on the university’s two campuses. Reminiscent of a monorail, the small cars on the PRT rail can only hold eight seated passengers. The system is powered by clean electric motors and the ride is smooth, averaging 14 miles per hour. At first, passengers were forced to stop at every station. The system has since been designed to allow for users to skip other stations and go directly to their final destination. Morgantown’s PRT system is largely funded through student tuitions, so WVU students can simply swipe their student cards to activate the PRT car; others must pay a nominal fee of fifty cents. The West Virginia University PRT system is available at: http://transportation.wvu.edu/towing.

Heathrow Airport, London, England: Heathrow Airport is experimenting with the next generation of PRT technology. Tracks are currently being constructed to accommodate eighteen vehicles, each capable of seating four people. These electrically-powered vehicles are embedded with laser sensors and are about 50% more energy efficient than standard buses. The Heathrow Airport PRT is being billed as a “driverless taxi” that will shuttle passengers between the parking lot and a terminal. Authorities even claim that the PRT system allows for quicker, more flexible transportation than personal vehicles. The current model is slated to launch in 2009 in conjunction with the opening of the new airport terminal. If the trial run goes well, Heathrow Airport may expand its PRT system to every terminal. Information on these “driverless pods” is available at: http://news.bbc.co.uk/2/hi/uk_news/7148731.stm.

Traffic Flow

Stop signs, large intersections, and traffic lights can lend a sense of organization to a city grid, but they can also slow vehicles to a crawl. Traffic flow experts are currently using state-of-the-art technology to take full advantage of a city’s infrastructure in order to fight congestion.

Portland, Oregon: In 2004, the city of Portland sought a method to decrease traffic, fuel consumption, and carbon emissions. Traffic engineers synchronized 135 intersections on just 16 streets within the city, resulting in more efficient traffic conditions. By coordinating the length of green lights with existing traffic flow, the city decreased the amount of time cars spend idling and accelerating. Signal timing is altered depending on the location and time in order to ease congestion. The goal is to allow cars moving at the right speed to be able to go from intersection to intersection without having to stop at a red light.

This process has resulted in an estimated savings of 1.75 million gallons of gas and 15,460 tons of carbon dioxide emissions each year. The project, with an initial funding of $533,000, saves residents approximately $4.13 million every year in gas money. Each intersection costs between $1,000 and $3,000 to be calibrated. Traffic light optimization cannot be performed as accurately if signal priority systems are in use for municipal vehicles and buses, so a certain amount of prioritization must take place.

Bakersfield, California: One of several jurisdictions in California to experiment with bicycle “loop detectors,” Bakersfield has installed the devices at intersections across the city. If a bicyclist pauses on top of the loop detector, the stoplight should turn green faster. Inductive loops, the latest version of these detectors, are more sensitive and are triggered by a break in the magnetic field. Road markings show where bicyclists must stop in order for the stoplight to react. A common problem is that signs or markings have been confusing or nonexistent. Bakersfield has advertised its bicycle detection program very well, including online directions aimed at bicyclists. It also has installed video detectors at some intersections. Signal priority is most commonly used today for emergency vehicles and buses. Based on local priorities, such technology may be applied to efforts to increase bicycle use. Bakersfield’s online directions are available at: http://www.ci.bakersfield.ca.us/cityservices/pubwrks/trafficeng/pdf/bike_loop_info.pdf.

London, England: When former Mayor Ken Livingston began moving towards a congestion pricing policy in London’s downtown area, several interest groups arose in protest. Since the program’s successful implementation, however, motorist groups, business interests, newspapers, and politicians have gradually come to support the idea. Congestion pricing has since expanded into the city’s West End.
Cars entering the downtown area between 7 AM and 6:30 PM on weekdays must pay a toll of 8 Euros (approximately $11.85). Drivers can pay at various retail outlets, payment machines, through the Internet, or by text messaging with their cell phone. Residents who live downtown receive a substantial discount, and motorcycles, alternative energy vehicles, licensed taxis, buses, emergency vehicles, and disabled drivers are all exempt. The city installed a network of video cameras with optical character recognition software to capture and record license plates in order to compare the plate numbers to the list of paid vehicles.

As a result of the program, peak period congestion has decreased by 30 percent while bus ridership has increased by 14 percent. Average traffic speeds in the area have increased between 8 and 13 miles per hour. The revenue from tolls and fees is reinvested in the city’s infrastructure. Possibly most significant is the large degree of public satisfaction with the congestion pricing system. While many cities will not be able to enact such a policy (London’s residents have a low rate of personal vehicle use), major cities dealing with severe downtown congestion now have an established program to follow. A report on the city’s congestion pricing is available at: http://www.vtpi.org/london.pdf.

Stockholm, Sweden: Swedes are taking advantage of the high rate of cell phone use in their capital city by utilizing the latest mobile technology to make parking easier for residents. Drivers can now search for available parking spots using GPS technology on their cell phones. After parking, they call a number, enter in the parking meter’s number, and are charged to their cell phone account. If the meter is in danger of expiring, the driver will get a warning via text message. This all-electronic method of parking also is simple for parking attendants, who simply need to wave a device to see if the parked car is logged in. Residents no longer need to worry about carrying around pocket change.

Traffic Calming

Proponents of traffic calming have recommended a variety of counterintuitive policies: design streets to slow down cars in order to decrease commute time, replace stoplights with roundabouts to ease traffic flow, and remove traffic signs to increase safety. Multiple evaluations of traffic calming techniques have shown that the integrated traffic and increased confusion inherent in these strategies has resulted in lower accident rates and more continuous movement.

Chattanooga, Tennessee: Roundabouts have existed in various forms for centuries. Modern roundabouts, on the other hand, are a 20th century invention, and only came to the United States in 1990. Cities across America are now experimenting with modern roundabouts, replacing inefficient and dangerous intersections. Modern roundabouts ease traffic concerns by forcing a slow but continuous flow of vehicles. Two recent roundabouts in Chattanooga are expected to decrease congestion in the area by 35 percent. Entrances into the roundabouts are diverted to the right, forcing cars to slow down but allowing them to enter easily. Instead of stoplights, traffic must yield to those vehicles already in the roundabout. The end result reduces idling and accelerating, improving gas mileage and easing congestion.

Roundabouts eliminate three particularly common and devastating forms of accidents: left-turn, right-angle, and head-on collisions. By traveling at lower speeds (typically 15 to 25 miles per hour) and approaching more cautiously, drivers are also acting safer. Despite the initial learning curve, roundabouts have been found to lower intersection accident rates by 80 percent. Additionally, roundabouts offer municipal governments a great opportunity to improve the aesthetics of their roads through landscaping. Many roundabouts are outfitted with fountains and parks in the center. Lastly, roundabouts can help relieve governments’ budgetary issues since they are cheaper to build and maintain than traditional intersections with stoplights. The example from Chattanooga is detailed in this article at: http://www.neel-schaffer.com/news.aspx?id=332.

Drachten, Netherlands: The Dutch traffic engineer Hans Monderman pioneered the “shared space” model of integrating vehicle traffic, cyclist, and pedestrian movement. Therefore, it is not surprising that the Dutch city of Drachten is being hailed as an international model of innovative transportation. Twelve of the original fifteen stoplights were removed, streets and curbs were repaved, and roadside trees were installed.

One busy intersection in particular is being examined. Nicknamed the “Laweiplein,” the four-way intersection was transformed into a square with a roundabout. The stoplights were removed and cyclists and pedestrians were
given priority over motorists. Sidewalks were lowered and paved to create one seamless surface at the square. Water fountains, the height of whose water jets correspond to the number of cars in the intersection, were designed to calm motorists and improve the square’s decor. Traffic moving through the intersection flows slowly but continuously; one study found that 81 percent of motorists and 97 percent of cyclists were able to move through the roundabout without having to stop. Traffic flow increased while simultaneously cutting accident rates in half. An article highlighting the city’s success in restructuring its streets is available at: http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2006/11/04/ntraffic04.xml

West Palm Beach, Florida: Although city thoroughfares can transport a large number of motorized traffic, they typically cut through valuable real estate and discourage foot traffic vital to local businesses. West Palm Beach has transformed several major streets into narrow two-way roads without lane dividers. This tactic has diminished both the speed of traffic and the number of accidents. By extending sidewalks into the street, planners slow down vehicles while giving the pedestrian more authority. Along with improving transportation, shared space tactics in West Palm Beach have increased development by attracting businesses to areas where more foot traffic is present. With a new city center created and two thoroughfares successfully remodeled, Clematis Street has seen its property rates more than double. Shops and restaurants are flocking to this downtown neighborhood now. A history of the shared space movement is available at: http://www.wired.com/wired/archive/12.12/traffic.html.

Vehicle Sharing
Several cities have attempted to enact vehicle sharing programs. Unfortunately, in many cases theft and vandalism have plagued these concepts. Yet recent technological and design innovations are allowing local governments to establish vehicle renting programs that take cars off the road, help the environment, and complement existing mass transit options.

La Rochelle, France: This French port city has had a car sharing agreement in place since 1999. The Liselec initiative placed fifty electric vehicles at seven stations around the city. Stations were chosen based on the amount of traffic to the destination. The service costs 5.50 Euros a month, and users can choose between a flat rate and a combined hourly/mileage rate. Residents do not have to worry about gas or parking fees when they drive their Liselec vehicle, making the program more cost-effective for many citizens.

Philadelphia, Pennsylvania: Faced with a budget crisis, Philadelphia revolutionized its passenger vehicle fleet system. Teaming up with PhillyCarShare, a local nonprofit, the city replaced 330 vehicles with hybrid cars, available to the community after regular work hours. Philadelphia was able to cut maintenance, fuel, and parking costs while taking existing cars off the roads and providing a valuable service for its residents. In addition to the initial money retrieved from car auctions, the city claims to save approximately $1.7 million per year. Philadelphia’s program was so successful that other American cities, notably Berkeley, California, Portland, Oregon, and Wilmington, Delaware, have followed suit. This example was drawn from Harvard University’s annual list of Innovations in American Government Awards at: http://www.innovations.harvard.edu/awards.html?id=15709.

Paris, France: Although the citywide bicycle-renting program, Velib’, has only been in existence since the summer of 2007, it is already inspiring similar efforts elsewhere in Europe and in the United States. The Paris program initially placed 10,600 bikes at 750 stations across the city; by 2008 those numbers had nearly doubled. Passes are available for purchase at the bike stations and require a credit or debit card with an initial deposit to insure against theft. After acquiring a pass, users can rent out a bicycle for up to thirty minutes without being charged. Bicycles can be returned to any station in town. Velib’ is fully funded by an outdoor advertising company in exchange for exclusive rights to the city’s billboards; rental income goes to the city. The program receives high satisfaction grades from both tourists and residents, and has been a crucial step in easing the city’s congestion problems. Detailed information on the program is available at: http://www.nytimes.com/2007/07/16/world/europe/16paris.html?_r=2&oref=slogin&oref=slogin.

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Sustainable Energy Practices for U.S. Cities and Towns

Introduction
City and town governments are enormous consumers of energy. Municipal buildings need electric lights and temperature controls. Police cars, fire trucks, street sweepers, and passenger buses demand gasoline, diesel, compressed natural gas (CNG) or electricity.

Municipalities also are significant producers of "greenhouse gases" such as carbon dioxide (CO$_2$). Local utilities that generate electricity from coal-fired plants emit carbon into the atmosphere. Methane from land fills and exhaust from vehicle fleets are some of the most common sources of pollutants that contribute to the growing concerns about global climate change.

The picture painted by the United Nations’ Scientific Expert Group Report on Climate Change and Sustainable Development is bleak. However, many bright spots can be found in the work of cities, regions and nations to replace fossil fuels with renewables such as biogas (e.g., ethanol), to “regreen” the community through urban forestry efforts, and to give greater attention to education about conservation strategies.

Municipalities that are more energy efficient not only save money, they also improve the environment. The purpose of this paper is to focus on several practical sustainable energy practices – conservation, alternative energy sources, green buildings – that can be implemented by U.S. cities and towns. Program examples with some of the longest track records for success come from outside the United States. American examples, while generally newer, also are referenced.

Conservation and Efficiency
Demand for electricity for homes, businesses, schools and government buildings continues to increase. According to data published by the Energy Information Administration, electricity consumption in the United States will increase by 1.5% per year between 2003 and 2030 for the combined commercial, residential and industrial sectors. Education campaigns to an audience of local citizens that focus on reducing overall consumption are a good first step toward controlling costs and reducing emissions.

Helsinki, Finland: The national energy conservation program in Finland dates to 1992. Within months, the municipality of Helsinki, which is the largest property owner in the country, had created its own Committee for Energy Savings. Committee members were drawn from all sectors of local services: buildings, urban planning, public transport, social services, utilities, and education. A significant effort was focused on educating children, from preschool through the conclusion of the primary grades, to understand energy, its uses, and connections to the natural environment. For example, the character "Auntie Green" introduces young children to the part in which trees play in the urban environment. A nationwide annual event, Energy Awareness Week, helps older children learn the fundamentals of rational energy use. The week culminates in a competition during which students develop energy-related projects such as films, exhibitions, role-play games and advertising campaigns. (This example was drawn from the Energie-Cites: Municipalities in Action data file, www.energie-cites.eu)

Stockholm, Sweden: In 1995, the city of Stockholm was one of the first major European cities to make an in-depth analysis of its energy use and to take serious steps to reduce energy consumption. The project deemed to offer a large energy-savings potential involved the modernization of the city’s traffic light system. The system used ordinary incandescent bulbs which have high energy consumption, are expensive to maintain, and need frequent replacement. The city moved in stages to replace over 27,000 incandescent light bulbs in 10,500 signal heads with LED-based (light-emitting diode) traffic signals. The average consumption per lamp, using LED instead of ordinary bulbs, decreased from 70 watts to 7 watts. The city estimated that the LED bulbs saved 5,800 megawatts/per year in energy. Annual power generation savings at the conclusion of the project are measured at US$470,900 per year with additional maintenance savings to be US$243,000 per year. And, LEDs only contain a small fraction of electronic waste and more parts are made of plastic material that can be recycled. Previously, 80,000 bulbs per year were deposited in landfills. (This example was drawn from the Energie-Cites: Municipalities in Action data file, www.energie-cites.eu)
**Vienna, Austria:** The project “Vienna Buys Ecologically” was launched in 1998 to promote long-term ecological procurement in city administration. The city annually buys a variety of products, goods and services worth more than five billion Euros ranging from textiles to detergents, office supplies, furniture, and construction materials. To better control the quality and characteristics of products, the city embarked on a vast awareness campaign which included development of a catalogue which included ecological criteria on almost everything required for city administration. The catalogue proved instrumental in simplifying and standardizing planning procedures and tendering of bids to the city and making the process more transparent. Pilot projects were launched to illustrate that ecological alternatives are both feasible and economically efficient. (This example was drawn from the UN-HABITAT Best Practices database, www.bestpractices.org)

**Alternative Energy Sources**

As the price of petroleum has risen, the price differential for use of alternative energy sources such as wind, solar and biofuels has diminished. Owners of electric utilities, whether municipal governments or private companies, are seeking to mix energy generating technologies to both save money and increase overall electric output. Utilities in California are aiming for 33% of electric generating capacity to come from renewable fuel sources by the year 2020. The European Union has set binding targets for renewable energy sources, such as wind, solar, hydro, and biofuels, to supply 30% of the Union's power needs by 2020.

The production and use of biofuels, the most common of which is ethanol, is expanding exponentially. The United States is one of the largest producers of ethanol in the world. When combined with ethanol output from Brazil, the two countries combined produce 70 percent of the world’s ethanol. Energy from wind and solar are more dependent on advances in technology to bring generating costs down. The efficiency of wind turbines has increased dramatically in recent years while improvements in solar panels are still being tested.

**Solar in Zurich, Switzerland:** The solar power exchange was created by the electric utility of the city of Zurich (Elektrizitätswerk de Stadt Zurich, EWZ) in 1997 following a survey of customers about the desirability of purchasing solar power. The exchange system relied on the coordination of national and local partners to first increase the installed capacity of photovoltaics (solar panels) and second, to win customers who would commit to purchase solar power through a subscription at a starting price that was based on the actual cost of producing power from this non-conventional source.

Under the EWZ system, the utility purchases solar power on the free market from interested suppliers under 20-year contracts at an inflation-indexed price. The extended contracts were a sufficient incentive to prompt an increase in the installation of photovoltaics by the private-sector. In the first three years of the project (1997-2000) installed capacity soared from 32 kilowatts (KW) of power to 1,620 KW. This increased capacity reduced the price from solar power to consumers by twenty percent.

Power customers agree to purchase part of their electric consumption from solar sources (at least 30 kilowatt hours annually) at a cost that reflects the higher actual cost of production. Throughout the program, the cost of power from solar continues to be about four to five times higher than the price for power from more conventional sources such as coal, nuclear, and hydro. Private households were the first purchasers of solar power but in subsequent years commercial enterprises have joined the customer base.

Across Switzerland by the year 2000 (three years after project launch in Zurich by EWZ) EURO20 million had been invested to install 2.5 megawatts of capacity which served 20,000 customers through 80 utility companies. (This example was drawn from the Energie-Cites: Municipalities in Action data file, www.energie-cites.eu)

**Wind in Aachen Germany and Heerlen, Netherlands:** For shear capacity, Denmark leads the world by providing twenty percent of its electrical needs from wind power. Danish wind turbine maker Vestas controls about 35 percent of the world market. At a German-Dutch cross-border industrial park a joint venture to produce energy from wind is yielding an annual output of nearly 27,000 megawatts. Although this accounts for only two percent of the overall electricity requirement for the city of Aachen, the 9 turbine wind farm delivers a carbon dioxide-free (CO₂) energy supply to approximately 8,000 households.
The partners in the Euro Wind Park Aachen include the cities of Aachen and Heerlen, the municipal utilities, and the private sector. Individual citizens also participated in the project through the purchases of shares in a cooperative (Genossenschaft Energie 2030).

Finally, one of the most unusual aspects of this project is that there is very little excess undeveloped land in the vicinity of the historic center of Aachen. As part of the feasibility study before construction, experts evaluated the project for potential conflicts in areas of bird conservation, landscape protection, and recreational amenity. Further studies were conducted on noise and microclimate impacts.

While this initiative indicated that inland wind energy locations can be economical and cost-efficient, the spatial limits to the expansion of the wind park mean that the park's total share of energy production has a realistic maximum of four percent rather than the technically feasible figure of ten to fifteen percent. (This example was drawn from the Energie-Cites: Municipalities in Action data file, www.energie-cites.eu)

**Biogas in Lille, France:** This city sits at a strategic crossroads between Paris, London and Brussels. In 1983 Lille launched the first automated rapid transit underground network (véhicule automatique léger, VAL) in the world. The project to operate urban transport buses using biogas began in 1994.

The city's sewage treatment plant was already recapturing nearly 80 percent of the biogas (primarily methane) for use internally to supply heat and power to the plant. With the introduction of a biogas cleaning unit, Lille additionally was able to clean another 3,000 cubic meters of methane per day, resulting in production of 1,200 cubic meters of biogas fuel. The methane fuel has properties similar to the natural gas supplied by the nation's largest gas supplier Gaz de France.

By the end of 1998, Lille was running eight buses on biogas fuel rather than diesel. On a single tank of biogas fuel each bus can run 150 kilometers (approx. 93 miles). The annual saving on diesel fuel is upwards of 148,000 liters (approx. 40,000 U.S. gallons). The city's ongoing investment in biogas buses has resulted in a fleet of 127 vehicles to date. (This example was drawn from the Energie-Cites: Municipalities in Action data file, www.energie-cites.eu)

**Green Buildings**

The U.S. Green Buildings Council (USGBC) advocates using technological advances in building science to design, build, and operate structures that maximize both economic and environmental performance. USGBC developed its Leadership in Energy and Environmental Design (LEED) standards for constructing and certifying sustainable buildings in the year 2000. A state and local government tool kit was published by the Council in November of 2002. Cities, states and the federal government use LEED as the primary green building rating system.

Building "green" means incorporating appropriate materials (natural insulators, energy efficient glass), increasing the access to daylight for interior spaces, reducing water consumption, and investing in heating and cooling systems that help reduce the building’s "carbon footprint" and deliver cleaner air quality for the people working or living within the structure.

**Melbourne, Australia:** The Council House 2 (CH2) Project, which opened in August 2006, is Australia's greenest and healthiest office building. It has received the highest ratings from the Green Buildings Council of Australia and received a prestigious Green Buildings Award from the United Nations.

The ten-story office building, which houses 540 municipal staff, has sustainable technology incorporated into every aspect of its design. Features include a water mining plant in the basement that allows reuse of membrane filtered sewer water; automatic windows and vaulted concrete ceilings that improve air circulation and cool the building at night, wind turbines to draw hot air out of the building, façade louvers that shade the building from the sun, rainwater collectors, and parking spaces for bicycles.

CH2’s environmental features are estimated to pay for themselves within ten years. Compared to the existing Council House, the new building will use eighty-five percent less electricity and ninety-three percent less natural gas. Greenhouse gas emissions will be reduced by twenty percent. For further details visit the city of Melbourne website at: http://www.melbourne.vic.gov.au/info.cfm?top=171&pg=1933
**White Rock, British Columbia, Canada:** The new operations building for this city opened in May 2003 and has earned a Gold Level Certificate from the U.S. Green Buildings Council. The design is in keeping with the predominantly single-family residential neighborhood in which it is built.

The Facility has a green roof to reduce heat gain and natural ventilation to eliminate the need for air conditioning. Solar hot water tubes provide heat for the building and solar panels generate additional power onsite. Storm water is diverted from city streets into a detention tank and used for flushing toilets and washing city vehicles. The foundation is reused material from an abandoned wastewater treatment plant. The permeable surface of the parking lot allows water to infiltrate the ground. The 6,550 sq. ft. building is occupied by up to 40 city staff. (This example was drawn from a database at the U.S. Department of Energy, [http://www.eere.energy.gov/buildings/database/](http://www.eere.energy.gov/buildings/database/)).

**Steinhude, Germany:** The seaside recreational building is located on an island with a delicate ecosystem consisting of beach, field grass, a bird sanctuary, nature walk and children’s play area. With minimal ecological impact, the facility accommodates a cafe, boathouse, lifeguard station, storage space, public toilets and showers, exhibition area and observation deck.

Energy self-sufficiency has been accomplished by photovoltaic panels, solar hot water collectors, a biogas-fueled cogeneration microturbine, daylighting, natural ventilation and high performance materials. These systems provide complete lighting and power needs for the building, recharge a fleet of eight solar-powered boats, and also produce enough excess electricity to sell back to the utility grid. Water reuse (gray water) systems also are in place.

The building is open 84 hours per week and serves over 1000 visitors during that period. The facility was completed in June 2000. (This example was drawn from a database at the U.S. Department of Energy, [http://www.eere.energy.gov/buildings/database/](http://www.eere.energy.gov/buildings/database/)).

**Model U.S. Programs**

American cities and towns have learned much about sustainability from their peers in other countries. Many communities have taken significant steps to improve energy conservation measures, promote green buildings, purchase hybrid cars for municipal fleets, and mandate renewable energy sources for local utilities. Several noteworthy cities that have developed comprehensive sustainability programs include:

- **Austin, Texas:** CO₂ emissions reduction, increase renewable fuel use, conservation, green buildings, visit the website at [http://www.ci.austin.tx.us/sustainable/](http://www.ci.austin.tx.us/sustainable/)
- **Boulder, Colorado:** carbon tax on electric power, solar rebate ordinance, see the website [http://www.bouldercolorado.gov/index.php?option=com_content&task=view&id=1058&Itemid=396](http://www.bouldercolorado.gov/index.php?option=com_content&task=view&id=1058&Itemid=396)
- **Burlington, Vermont:** greenhouse gas reduction, urban forestry, Legacy Project for long-term sustainability, visit the website at [http://www.ci.burlington vt.us/city/](http://www.ci.burlington vt.us/city/)
- **Fargo, North Dakota:** energy efficient traffic signals, visit the website at [http://www.ci.fargo.nd.us/CityInfo/Environmentalprotection/](http://www.ci.fargo.nd.us/CityInfo/Environmentalprotection/)
- **Salt Lake City, Utah:** urban forestry, conservation, renewable energy, alternative transportation options, visit the website at [www.slcgreen.com/default.htm](http://www.slcgreen.com/default.htm)
- **Seattle, Washington:** alternative fuel vehicle fleets, green buildings, renewable energy sources, visit the website at [http://www.seattle.gov/html/CITIZEN/environment.htm](http://www.seattle.gov/html/CITIZEN/environment.htm)

*This paper was prepared by staff in The Center for Policy and Research at the National League of Cities.*
Comparative Strategies for Immigrant Integration

Immigrant growth beyond the traditional urban centers in the United States has introduced new social dynamics and problems, from overcrowded schools and health centers to a breakdown in communication between English and non-English speakers. In the absence of comprehensive federal action on immigration reform, many local governments have enacted their own ordinances to resolve tensions presented by the diversity of new members in the community.

Though immigration policy is made at the national level, multi-ethnic communities develop at the local level – and it is municipal leaders who are working to build good community relationships. Whether immigrants are asylum seekers, economic migrants, students, or family members of existing immigrants, the majority end up in cities. The concern in many communities is developing policies and programs of immigrant inclusion which lead to cultural pluralism, reduced racial tensions, and increased civic engagement.

Parallel Experience in the European Union

Immigration has been one of the most debated issues in Europe for decades. The integration of newcomers is one of the most critical challenges for European cities. The children of immigrants constitute a growing percentage of metropolitan populations.

Of the European Union’s approximately 495 million people, more than 19 million are non-EU nationals, just under 4% of the total population. The European Union is developing a comprehensive European migration policy which must amalgamate the practices in the 27 member states, each with their individual historical and cultural ties to various countries that are traditional sources of immigrants. For example the Turks often immigrated to Germany, the Romanians to Italy, and North Africans to France. The largest immigrant populations in Europe are from Turkey, Morocco, Albania and Algeria.

The European Union has been working to develop new rules, programs and regulations to address issues such integration of immigrants, border management, illegal immigration, trafficking in human persons, and migration and development in countries of origin. In the meantime, European cities, like their American counterparts, continue to deal every day with the economic, social and political implications of immigration in an environment where no comprehensive immigration policy has been agreed upon.

In 2006 the Congress of Local and Regional Authorities of the Council of Europe, and other European organizations, created a European Network of Cities for Local Integration Policies for Migrants. This project focused on supporting the exchange of experiences and best practices between European cities, developing public and private partnerships, and collecting and analyzing innovative policies and their implementation at the local level. Cities affiliated with this network are in the process of developing and implementing strategies for immigrant integration, civic integration, language training and civic education and citizenship.

The German Framework

Germany, with more than seven million immigrants, is one of the best examples in Europe in the area of immigration and immigrant integration policies. However, this was not always the case. For many decades the German immigration system, and especially the integration of second generation Turks and other immigrant communities, was a controversial issue at the center of the public debate in Germany.

This situation changed following federal legislation in 2005. The new immigration act provided a better legal framework for immigration policy, facilitating the integration of the second generation into German society. Specifically, the new law allowed more civic participation and eventual German citizenship to the immigrant population living in the country.

Local governments play an important role in the immigrant integration process under the terms of the 2005 law. The German federal government established a commission to implement a national immigrant integration plan.
The German State of North Rhine is often mentioned as one of the best examples in Europe in the field of immigrant integration. With more than four million immigrants, this state developed a comprehensive work plan to address integration issues. In addition to establishing the very first cabinet ministry for integration, the state government focused on issues which include:

- Promoting German language skills for all pre-school children;
- Expanding and improving educational and career opportunities for children of immigrants;
- Implementing vocational training courses for young people with immigrant backgrounds;
- Establishing public and private partnerships to work on programs and plans for immigrant populations;
- Developing a statewide campaign to promote civic education and German citizenship among immigrant populations;
- Establishing the new “Social city” program to work with local governments on immigrant integration;
- Developing immigrant integration strategies with local governments and supporting municipalities in their outreach effort to newcomers.

Thanks in part to federal and state government support, German municipalities are able to develop and implement local integration policies such as vocational language training and civic education and citizenship programs.

One of the most valuable aspects of these local immigrant integration plans are the “Orientation Courses” designed to educate local immigrants about civics, German society, politics, culture, and legal foundations. This basic course is complemented along side a specially designed German language course. The program has several levels and after the completion the immigrant students receive a Certificate of Integration from their local municipality. This basic training is required in order to continue with the citizenship application process.

The French Experience

France, by contrast, has had little success in assimilating the six million persons, mostly Muslims from the former French North African colonies of Algeria, Morocco, and Tunisia, into the fabric of French society. And with the Muslim population of France at 10 percent and growing, the inability to reach the necessary compromises has led to predictable problems.

In 1946 the office of National Immigration was establish to organize and recruit immigrant workers to meet the labor demands of a growing French economy. Most of the foreign workers came from Italy, Belgium, Poland and Spain. By the 1970’s the French government expanded the quota of immigrants allowing family reunification. As a result, thousands of women arrived to join their husbands and fathers in communities across France. Records from 1975 show that by this time, the second largest population of foreign workers was Algerians. The 1990’s finds a France with a much larger and more diverse and growing immigrant population of families coming from Africa and Arab countries.

Along with a shift away from purely economic immigration came a less focused effort on immigrant assimilation. This would prove significant as the new immigrants were far more culturally and religiously distinctive than their predecessors, and then French society generally.

As in Germany, efforts were focused on the second generation of immigrants who constitute a growing share of the metropolitan population. In France, many are isolated, unemployed and at risk to be attracted by the lure of crime organizations. For local governments, especially the large urban areas, this situation has created a significant set of challenges. Unfortunately, the most common reaction has been to apply police powers to the growing cries for equality and social justice.

Much like circumstances in the U.S., French municipal leaders are exploring new ways to address the integration challenges. Lack of support from central government, and from French society as a whole, are limiting the impact and benefit that can be achieved by these limited local efforts. The result is that after 40 years of large-scale immigration, Muslims are not diffusing from their own neighborhoods in any significant number, nor are they moving into the mainstream economy. Additionally, they hardly participate in French politics or government.
City Examples in the European Union

**Rome, Italy:** In Rome, new immigrants who are not citizens can cast ballots for non-voting delegates on the city council. More than 30,000 immigrants have registered to vote. The representatives will participate in all council meetings and can propose local legislation, but cannot cast a vote in the council. Immigrant representatives hope this will be a step towards giving immigrants full voting rights in local elections, a move that will require national legislation. Other European cities have extended voting rights to immigrants for local elections including Vienna, Austria and Hamburg, Germany.

**Frankfurt, Germany:** Frankfurt has started a simple language program that has spread to several German states and was adopted nationwide in Austria. The program, Mama Learns German (Mama Lernt Deutsch) demonstrates a successful integration program that was built with a few small steps. This program focuses on the many isolated female immigrants. German language classes are held during the day when the children are at school, where child care for babies and toddlers is available. As most of these women are Muslim, the classes are for women only, in acknowledgement of generally strict customs on separation by gender.

**Birmingham, England:** Birmingham has long been a destination for immigrants and refugees. The city believes their presence is testimony to the city’s significance as an international city with a reputation for diversity and tolerance. The city has used the Internet and its web site extensively to promote cultural understanding among immigrant groups and between native-born citizens and those of foreign birth. Its “Diverse Birmingham” page contains links to information about many of the cities nationalities, as well as narratives written by immigrants. The website is visited by more than 470,000 visitors per month.

City Examples in North America

Remarkable programs are available from American and Canadian cities striving to build communities that are inclusive, diverse, and prosperous. The examples below focus on strategies for integration, language instruction, and workforce development.

**Omaha, Nebraska:** Omaha is becoming a Sudanese refugee population center where many find work, housing, and support. Non-profit organizations and faith-based groups first worked to attract the refugees to Omaha, and subsequently the city implemented programs that aid in the inclusion of these immigrants. Refugees have found opportunities and a sense of belonging. Omaha’s Sudanese Association provides the assistance needed for those whose transition to American life is a constant challenge. The Omaha Center, which is supported by a mix of grants, offers refugees transportation, interpreters, and daily English classes taught by fellow Nuer tribes people, the southern Sudanese natives most common in the United States. The Omaha Sudanese Association attempts to create a family atmosphere, translating mail, accompanying them in court, filling out immigration paperwork, and searching for jobs.

**Lakewood, Colorado:** The Adult Learning Source in Lakewood specializes in teaching English to Colorado’s growing immigrant population. There are fifteen Adult Learning Source centers throughout the Denver area in high-need locations. The nonprofit centers provide GED preparation, family literacy, and English instruction. Within four months of opening, forty families enrolled in the Lakewood facility’s Family Literacy Program.

**Louisville, Kentucky:** Louisville offers a Center for Microenterprise Development which offers a ten-week course that teaches business start-up skills to refugees and other immigrants. The participants have come from strife-torn countries such as Zaire, Russia, Bosnia, Cuba, Vietnam, Sierra Leone, and Haiti. Louisville is also concerned with retaining and attracting immigrants. The city’s population fell 5% in the 1990s and would have dropped more had it not been for the approximately 20,000 immigrants and refugees from places like Cuba, Somalia, and Vietnam during the decade. A new city office of international and cultural affairs provides the immigrant community with a single point of contact.
**Toronto, Canada:** Toronto is one of the most diverse and cosmopolitan cities on the planet. More than 150 languages are spoken daily and 50 percent of residents are foreign born. The city has a website that helps new and future immigrants learn more about the services available in the city and answers questions such as: "What documents do I need?" "What kind of housing and schools are available?" "Where can I get help to find a job?" "How do I start a business?" For Toronto, immigration is a building block for the economic, social, and cultural success of the region.

This paper was produced by the National League of Cities, Washington, D.C., contributing authors Ricardo Gambetta and Nancy Potter, Editor James Brooks.