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CLIMATE CHANGE 101
Local Action

Across the United States, cities, towns, and counties are enacting policies and programs to reduce greenhouse gas emissions. Many local governments are motivated by concerns about the impacts of climate change in their communities as well as an understanding that energy and climate solutions can benefit local economies and residents. Their actions reflect a strong history of local leadership in climate protection in the United States. While local governments face a number of limitations in addressing climate change, they can be a key part of the solution. Like states and regions, local governments can demonstrate leadership by implementing strategies to confront climate change and laying the groundwork for broader action at the national and international levels.

All levels of government have roles to play in addressing climate change. Some aspects of the climate problem must be addressed at the local level, such as greenhouse gas reductions through smart growth and adapting to climate impacts. Local governments have also been inspired to act when federal and state climate action has not been forthcoming because they face some of the greatest challenges when it comes to climate change. Local governments have already started implementing climate action plans, financial incentives, and other measures that encourage climate-friendly behavior. They have also included greenhouse gas (GHG) considerations in transportation and urban planning. While localities are not large enough by themselves to enact the broad policy changes that are needed to address global climate change, they can take proactive measures to reduce their own GHG emissions, advance the issue of climate change among local residents, and encourage broader action at the state and federal levels.

WHAT DRIVES LOCAL ACTION?

There is Much to Lose… Many of the impacts of a changing climate will be felt on a local level. Cities and local governments will be directly confronted with the challenges of extreme weather, rising sea levels, and climate-related natural disasters.

More Warming in Cities. One of the major factors motivating local governments to act on climate change is the recognition that it poses a direct threat to cities and towns. Cities can experience exaggerated effects of warming due to the urban heat island effect, in which the urban infrastructure retains heat and causes cities to be several degrees hotter than their surroundings.

Weather-related Disasters. Cities, towns, and counties will also be responsible for addressing the local impacts of climate change. The more extreme events scientists expect from a warming climate—including stronger hurricanes, heavier rainstorms, and more frequent floods—directly threaten local infrastructure. Hurricane Katrina, which ravaged New Orleans and other Gulf Coast cities in 2005, drew the attention of local governments throughout the nation by demonstrating their vulnerability to weather-related disasters and indicating the long-term risks that localities face as weather patterns shift and extreme events become more common due to expected climate change.

PEW CENTER ON Global CLIMATE CHANGE

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Changes in Freshwater Resources. A number of climate impacts will alter the quality and availability of fresh water. Extreme weather and changes in precipitation will require localities to re-examine critical issues, such as the water supply, storm water management, and the influx of pollutants into water sources. Particularly in the West, decreased snow pack, earlier runoff, and higher drought incidence will affect water supplies. Local governments will be forced to address water rights and management issues.

Rising Sea Levels. In addition to extreme weather events, rising sea levels pose challenges for coastal cities and communities. The implications of higher sea levels include damaged buildings close to shore, increased flood potential, and the contamination of the fresh water supply.

Heat and Health. Local officials also are concerned about the health implications of higher temperatures. Cities all over the United States are expected to face more heat waves each year; the U.S. Centers for Disease Control estimates that by the 2050s, heat-related deaths will increase from their current level of 700 per year to about 3,000–5,000 per year if emissions continue at business-as-usual levels.[1]

In addition to fears of future heat waves, mayors have voiced concern about the effect of higher temperatures on local air pollution. As temperatures rise, ground-level ozone and smog levels increase and can exacerbate respiratory illnesses, such as asthma and bronchitis. Preventing rising temperatures can also mitigate the harmful effects of air pollution and lower associated costs. Cities and localities face economic costs from increased air pollution—from such things as additional hospital admissions, missed work and school days, and a higher incidence of respiratory and heat-related illnesses, as well as premature deaths. Communities that face these costs find that climate action would have positive effects on local health and the local economy.

...and Much to Gain. It is not only the potentially damaging impacts of climate change that are spurring local action. Many cities see opportunities in protecting the climate. Often, policies that reduce greenhouse gases also achieve other benefits for communities. Local governments have many important tools available for climate action and have an important role to play in influencing public behavior and increasing the availability of climate-friendly choices.

Relevant Authorities for Climate Action. Local governments have influence and oversight in areas with potential for greenhouse gas reductions, and exercising their authority in these sectors can result in substantial emission reductions. By adopting zoning laws and land-use plans that promote higher-density and mixed-use forms of development, cities can encourage the growth of livable, accessible communities. "Smart growth" planning—a strategy that highlights high-density, mixed-use, transit-oriented development—also has other goals, such as maintaining open space, farmlands, and other natural areas and directing city resources toward existing communities rather than diverting them to new development in outlying areas. Lancaster County in Pennsylvania, for example, has Urban Growth Boundaries that serve the dual purposes of encouraging higher-density development in urban areas and protecting agricultural land from development. Promoting dense, mixed-use development, creating safe and navigable roads for walkers and bikers, and making public transportation more accessible, extensive, and affordable also reduces the need for personal vehicles. Finally, ensuring that public transit and city vehicles utilize low-carbon technologies can lower GHG emissions directly and accelerate the use of these technologies by consumers as well.

Local governments, also responsible for issuing building and development permits, can set building codes that influence the energy efficiency of houses and commercial buildings in their communities. For example, they can create mandates and incentives for more energy-efficient construction, building operation, and use of renewable electricity. Similarly, governments that control the local electricity supply through municipal utilities or can influence action through agreements with utilities can ensure utilities produce a high percentage of their electricity using clean energy sources. Austin Energy, a municipal utility in Texas, has set a goal of generating 35 percent of its electricity from renewable sources. It has implemented a popular green pricing program

to generate interest and facilitate the transition to renewable sources. Many local governments also have authority over waste management and can implement landfill gas recovery programs. Landfill gas is made up primarily of methane, which is both a highly valued fuel (it is the primary component of natural gas) and a relatively powerful greenhouse gas. These programs prevent unwanted emissions of methane and harness this energy source for other purposes.

Co-benefits Are Experienced Locally. As mentioned previously, initiatives to reduce GHGs can reduce regional air pollution and help cities comply with federal air quality standards established under the Clean Air Act. Energy efficiency and fuel-saving efforts can also reduce the operating costs of government buildings and fleets, local businesses, and residences, creating financial savings for the local government and taxpayers.

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The creation of jobs from emission reductions and climate mitigation strategies also is likely to have significant benefits for local economies. A study released by the U.S. Conference of Mayors Climate Protection Center in 2008 indicated that adhering to federal, state, and local goals promoting renewable energy, energy efficiency, and alternative fuel can transform the economy by increasing the number of green jobs five-fold. The report suggests that cities are especially well-placed to reap the benefits, as more than 85 percent of green jobs are located in metropolitan areas.[2]

Other co-benefits may be less tangible but nevertheless provide important incentives for climate action. As mentioned in the previous section, mixed-use development that minimizes vehicle use reduces pollution as well as traffic and congestion. Programs that promote walking and biking contribute to healthier residents and a stronger sense of community.

A HISTORY OF LOCAL LEADERSHIP AND COLLABORATION

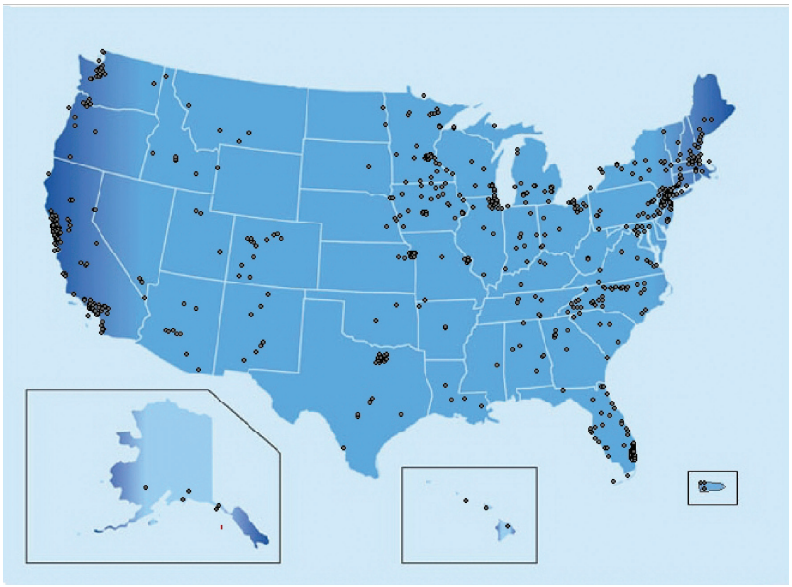
Local commitment to climate solutions is not new; in fact, cities were leaders in worldwide efforts to reduce emissions from the start. In 1989, the City of Toronto adopted the world's first greenhouse gas reduction target of 20 percent below 1988 levels by 2005.[3] The City's actions helped inspire the first formal municipal program for climate protection, the Urban CO_2 Reduction Project,[4] and ultimately developed into the ICLEI-Local Governments for Sustainability: Cities for Climate Protection (CCP) Campaign. The CCP program enlists local governments in developing targets, timelines, and implementation strategies for reducing their emissions and now represents more than 1,000 local governments worldwide, including the 600+ ICLEI members in the United States.

U.S. Mayors Climate Protection Agreement. Local action on climate change in the United States took a major step forward in early 2005 when Seattle's former Mayor Greg Nickels drafted the U.S. Mayors Climate Protection Agreement, which was endorsed by the U.S. Conference of Mayors. Under this agreement, mayors pledge that their communities will achieve a 7 percent reduction from 1990 emissions levels by 2012, and also recommend that state and federal governments take comparable action. More than 1,044 local elected leaders have signed the mayors' agreement from communities across all 50 states plus the District of Columbia and Puerto Rico, representing more than 87 million Americans (see Figure 1). A report released in 2007 indicated that the vast majority of signatories had incorporated renewable energy into their city's electricity mix and taken steps to make city vehicle fleets and buildings more energy efficient.[5] In 2007, the U.S. Conference of Mayors Climate Protection Center was created to assist mayors in meeting goals established by the agreement.

C40 Cities-Clinton Climate Initiative. Former President Bill Clinton launched the Clinton Climate Initiative (CCI) in August 2006. Partnering with members of the C40 Large Cities Climate Leadership Group, CCI is helping cities develop and implement a range of actions that will reduce

Figure 1

Cities Committed to the U.S. Mayors Climate Protection Agreement



Mayors of 1,044 cities have signed the U.S. Mayors Climate Protection Agreement as of October 2010.
Source: http://www.usmayors.org/climateprotection.

GHG emissions. The initiative provides technical assistance to measure and track emissions and emission reductions in individual cities as well as financial assistance for clean transportation and building efficiency retrofits. CCI has also created a consortium for cities to pool their purchasing power to negotiate discounts and reduce the costs of energy-saving technologies and products. This effort has increased the affordability and feasibility of efficiency programs.

World Mayors and Local Governments Climate Protection Agreement. At the 2007 UN Climate Change Conference in Bali, local government leaders worldwide reached an agreement to support the reduction of global GHG emissions to 60 percent below 1990 levels by 2050, with an 80 percent reduction for industrialized countries. The agreement, which currently has more than 112 signatories and was created in association with C40-CCI, ICLEI, United Cities and Local Governments, and the World Mayors Council on Climate Change, also calls for the implementation of complementary national and international policies that will facilitate continued local action and enable localities to create adaptive responses and mitigation measures for climate protection.

Cool Counties Climate Stabilization Initiative. In 2007, 12 U.S. counties launched the Cool Counties Climate Stabilization Initiative, which now includes 42 signatories. Under the Initiative, counties pledged to stabilize their greenhouse gas emissions by 2010 and reduce emissions 10 percent every five years until 2050. The Initiative includes several strategies for taking action on climate issues, including creating county greenhouse gas inventories and action plans for implementing emission-reducing programs, and promoting state and federal climate initiatives to create a market-based greenhouse gas reduction system and enact higher mileage standards for vehicles.

ADDRESSING CLIMATE AT THE LOCAL LEVEL

Action at the local level has taken many forms, often depending on leadership and public interest, regulatory gaps in state and federal policy, and local climate concerns. Some local governments have adopted initiatives that parallel state action, others have focused on influencing private behavior, and several have created detailed, multi-pronged approaches to addressing climate change.

Climate Action Plans. Many cities have created climate action plans to address climate issues. These plans include recommendations, guidelines, and location-specific ideas for emission reductions from key sectors, including transportation, waste management, and electricity. New York City launched PlaNYC, launched in April 2007, which includes a set of 127 initiatives addressing 10 goals relating to the city's economic, environmental, and climate-related challenges. Goals include improving public transportation, providing cleaner and more reliable energy, achieving the cleanest air of all the major U.S. cities, and reducing GHG emissions by more than 30 percent.[6] Albuquerque has also created AlbuquerqueGreen, a sustainability plan that reduced GHG emissions by 67 percent from 2000 to 2007 in city operations.[7]

Climate Task Forces and Coordinators. Recognizing that climate is an essential and long-term concern at the local level, cities, towns, and counties have established offices and task forces to understand climate issues better, create strategies to address climate change through both mitigation and adaptive measures, and coordinate between the various regional, state, and federal agencies that also work in this area. The Denver Mayor's Greenprint Council, for example, is comprised of individuals from various government offices and non-profit organizations, as well as other community members. This group guides the implementation of strategies identified in the city's Climate Action Plan.

Regional Climate Networks. Climate action is most effective when government entities collaborate on cross-border and multi-sector actions—a principle that applies to climate work at the regional, state, national, and international levels. Several localities have joined forces to implement common emissions targets and climate strategies. For example, the Sacramento Area Council of Governments is an association that encompasses 22 cities across six counties in the Sacramento, CA, region. Among the group's many goals is a commitment to air quality, public transit, bicycle and pedestrian planning, and land-use planning initiatives.

Emissions Fees and Taxes. Some localities have established taxes and fees to create incentives for reduced energy consumption and reduced emissions. In 2006, Boulder, Colorado, established the Climate Action Plan Tax, which taxes consumers' electricity usage and uses these funds for community action to reduce greenhouse gas emissions. It was projected to raise $1.6 million in 2010. In 2008, the California Bay Area Air Quality Management District also enacted a tax on stationary greenhouse gas emitters, such as power plants, oil refineries, and cement plants. Revenues from both the Bay Area and Boulder initiatives fund their respective climate plans and programs.

Leading by Example. Local governments have the ability to lead by example, serving as models for both state and federal governments as well as private citizens. Many cities have green building laws that require all public facilities meet certain energy efficiency and construction standards. Cities can incorporate low-emission vehicles into their public transportation and government vehicle fleets and they can also opt to meet electricity needs for public facilities with energy obtained from low-carbon sources.

LIMITATIONS AND CHALLENGES

Despite successes at the local level, many limitations exist on both the scope and effectiveness of local climate initiatives that make them poor substitutes for federal policy. Many of the limitations of local climate action parallel those that constrain state efforts. (See *Climate Change 101: State Action*.)

Limited Scale. Perhaps the biggest weakness of action by any one locality is that it simply cannot achieve the economies of scale necessary for widespread and aggressive emission cuts. Even the best individual efforts of cities, towns, and counties will be geographically limited and emission reductions will be correspondingly small. However, when localities join together, as is happening under many of the initiatives described earlier, the effects can be substantial.

Limited Scope. Though local governments have authority over several sectors that are important for climate action, regulatory and legislative authority to mandate economy-wide emissions reductions ultimately rests with the state and federal governments. For example, although localities can achieve GHG reductions by promoting smart growth practices and improving public transit, vehicle and fuel regulations are typically beyond their control. While localities may be able to inspire climate-friendly behavior changes, they often do not have the authority to guarantee emissions reductions through legislation or regulations. Likewise, municipal utilities and municipal power purchases have an important role to play, but the power to regulate many larger utilities—with the potential for more significant emissions reductions—lies at the state and federal levels.

Limited Resources. Local governments also are at a disadvantage because of other pressing needs and tight budgets. For many cities, towns, and counties, there are few resources available to devote to effective climate action. In addition, the different climate policies enacted by various communities can lead to a patchwork of regulation, posing challenges to businesses operating in different localities.

LESSONS LEARNED

Local leaders can provide models of climate action for other communities and levels of government to emulate. They

Examples of Local Action on Climate Change

Local governments have a wide range of options for reducing their communities' contributions to climate change. The following examples show some of the steps that localities with climate protection programs are taking.

Energy Supply

Green Power Purchase—Santa Monica, CA; Dallas, TX; Albuquerque, NM; Bellingham, WA; Austin, TX

In 1999, the City of Santa Monica became the first city in the nation to purchase green power for 100 percent of its public facilities' energy needs. Cities around the United States have followed this example, and many now purchase green power. Dallas, for example, meets 40 percent of its energy needs from wind power. Albuquerque obtains 20 percent of its electricity from wind and is making efforts to implement solar and landfill gas programs as well. Bellingham, WA not only purchases 100 percent renewable energy for public facilities but has also implemented a program to encourage citizens to do the same. To date, 11 percent of total electricity use in the community comes from renewable sources. In 2007, the City of Austin, Texas set a goal of achieving 100 percent renewable energy sources for city facilities by 2012, representing 45 percent of all city electricity accounts. As of 2009, the city has 19 percent renewable energy.

Landfill Methane—Murray, UT

Murray City Power created a landfill gas energy project to use methane from the Salt Lake Valley Landfill for power generation. The project has a 3-megawatt capacity and has contributed 8 percent to the utility's portfolio. The program has also been widely publicized as an effective way to bring together a diverse group of stakeholders to reduce emissions, increase air quality, and generate renewable energy.

Combined Heat and Power—St. Paul, MN

District Energy St. Paul burns wood waste to produce steam, which powers turbines that produce electricity. Waste energy from this process provides heat to downtown businesses and homes. Using wood waste displaces an estimated 110,000 tons of coal per year, reducing carbon dioxide (CO_2) emissions by an estimated 280,000 tons annually.

Lancaster County Landfill Gas and Cogeneration—Conestoga, PA

This Combined Heat and Power (CHP) program harnesses methane from two landfills for electric and thermal energy. The landfill gas is processed through generators owned by an electric utility and the heat is utilized by a local dairy company.

Renewable Energy and Energy Efficiency Financing

Renewable Energy Funding—Berkeley, CA

Through the Financing Initiative for Renewable and Solar Technology (FIRST), residents and businesses can receive a loan from the City of Berkeley to pay the up-front costs of renewable energy installations. Entities that receive funding pay off the loan over 20 years through a special property tax addition. Forty solar photovoltaic projects were funded in 2008–9 pilot year, and the program may expand to include solar thermal and energy efficiency technology in the future.

Municipal Utility Programs/Incentives—Fort Collins, CO

The City of Fort Collins' municipal utility department has instituted the ZILCH program (Zero Interest Loans for Conservation Help) to provide interest-free financing for home energy improvements and upgrades. Loans of up to $2,300 must be repaid within five years or less. Financed projects must have payback periods of 10 years or less in order to ensure that homeowners are getting the most out of their improvements.

Energy Efficiency

Low-income Weatherization and Efficiency—Boulder, Larimer and Gilpin Counties, CO; Phoenix, AZ

Weatherization programs reduce energy bills for low-income households by increasing building efficiency. Kansas City's program to weatherize homes provides energy audits and weatherization services, including repair or replacement of furnaces and water heaters, ductwork, and window repair.

To date since the program began in 2009, it has weatherized 700 homes. Phoenix has also implemented numerous efficiency programs, including one-time grants for energy-reducing home improvements in qualified households and the use of energy-efficient construction for new, low-income housing.

Transportation

Smart Growth/Land Use—Arlington, VA

Arlington's General Land Use Plan promotes the concentration of mixed-use, high-density development near transit centers. It primarily targets areas that are within walking distance of five specified Metro stations and provides residential, retail and recreational development guidelines. Area residents use public transportation at much higher rates than the national average: more than 50 percent take public transit to work and 73 percent walk to Metro stations.

Clean Diesel and Green Fleet Campaigns—Keene, NH

From fire engines to snowplows, all of the diesel vehicles in Keene's Public Works Department are running on B20 biodiesel fuel. The fleet is fueled onsite at the department's pump. The biodiesel performs well in cold temperatures and has improved the air quality inside the fleet maintenance facility. The city saves an estimated 417 tons of CO_2 each year from the use of biodiesel.

Green Fleet—Denver, CO

In 1993, Denver created the first Green Fleet program in the nation. Currently, the program incorporates a variety of green transportation options. As of 2010, there were 138 hybrid vehicles in the city fleet, 239 that use compressed natural gas (CNG) or have a gasoline-CNG dual-fuel system, 1,041 that use a biofuel blend, and 74 electric vehicles. Alternative vehicles make up 43 percent of the city fleet.

Trees and Vegetation

Green Roofs and Cool Roofs—Chicago, IL

Green roofs keep buildings cooler during the summer months by using vegetation to provide shade and cool the area through evapotranspiration; cool roofs use special materials to reflect sunlight, minimizing heat gain during the summer and reducing energy consumption by 20 to 70 percent. The City of Chicago requires that new construction with low- and medium-slope roofs adhere to certain standards of reflectivity in order to maintain energy efficiency and reduce the urban heat island effect. The city also offers a grant program for homeowners and small businesses to implement green roofs and cool roofs on their buildings. Today, there are more than 700 public and private green roof projects, totaling more than 7 million square feet in Chicago.

Cross-Cutting

Lead By Example—Seattle, WA

The 2009 Climate Protection Progress Report announced that, as of 2008, Seattle had reduced its greenhouse gas emissions 7 percent since 1990, partially through the implementation of green building standards in public facilities and alternative fuel vehicles in public fleets. In addition, the city's municipal utility, Seattle City Light, is the first utility in the nation to become "carbon neutral." The utility achieved this goal by offsetting (through funding greenhouse gas-reducing projects) any carbon emissions that it produced.

Community Outreach—Burlington, VT

The 10 Percent Challenge in Burlington is a voluntary program to raise public awareness about global climate change and to encourage households and businesses to reduce their greenhouse gas emissions by at least 10 percent. Participants are encouraged to reduce their energy use by 5 percent every year, with an overall goal of reducing emissions 25 percent by 2012. Enlisting innovative outreach methods, the program is achieving an estimated annual reduction of 1,500 tons of CO_2 in the residential sector alone. The 10 Percent Challenge highlights several initiatives for emissions reductions, including incentives to trade out gas-powered lawn mowers, a campaign to reduce vehicle idling, and a campaign to reduce speeding on highways to save fuel.

also provide the majority of government services to households and individuals; thus strong local leadership and proactive policies make it easier for individuals to contribute to changes that reduce GHG emissions. The experience of local governments suggests that certain key elements contribute to the success of local, state, or regional climate protection strategies, including the following:

Integration of climate protection into long-term planning. Marin County, California has incorporated climate change impacts and climate protection into its comprehensive general development plan, ensuring that actions to reduce greenhouse gas emissions will be implemented over the long term. Many localities have found that it is in their best economic, health, and ecological interest to invest in long-term climate strategies.

Leadership. Mayors and other local leaders have been instrumental in initiating climate action. Former Seattle Mayor Greg Nickels, for example, initiated the U.S. Mayors Climate Protection Agreement when the Kyoto Protocol was enacted in 2005, recognizing that localities would have to take action even if the federal government did not join the international climate agreement. The Mayors' agreement has inspired participation from almost 1,000 other mayors and has brought climate issues to the forefront of cities' agendas.

LOOKING AHEAD

In 1995, only 15 local governments in the United States were engaged in climate protection activities. Fifteen years later, more than 1,000 cities, towns, and counties across the nation have committed to climate action. Almost in tandem, state governments are taking action to adopt greenhouse gas reduction targets, develop climate protection plans, and adopt other policies aimed at protecting the climate. These local and state leaders recognize the importance of action and collaboration at all levels of government to address this global challenge. They can also serve as strong voices in favor of national action and should be supported by a comprehensive national and international commitment to climate protection.

ENDNOTES

1 Department of Health and Human Services. Centers for Disease Control and Prevention. "Heat Waves." http://www.cdc.gov/climatechange/effects/heat.htm

2 United States Conference of Mayors. 2008. "U.S. Metro Economies: Current and Potential Green Jobs in the U.S. Economy." Prepared by Global Insight. October 2008.

3 The targets adopted by the City of Toronto have since been revised. The new targets aim for a 6 percent reduction from 1990 levels by 2012, 30 percent by 2020, and 80 percent by 2050.

4 This program was launched in 1991 by the International Council for Local Environmental Initiatives (ICLEI).

5 United States Conference of Mayors. 2007. Survey on Mayoral Leadership on Climate Protection. Mayors Climate Protection Center. http://www.usmayors.org/climateprotection/climatesurvey07.pdf

6 City of New York. 2007. *PLANYC: a Greener, Greater New York.* http://www.nyc.gov/html/planyc2030/html/home/home.shtml

7 City of Albuquerque. http://www.cabq.gov/albuquerquegreen

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