Mayors Climate Protection Center

Energy Efficiency and Technologies in America's Cities

A 288-City Survey

January 2014

THE UNITED STATES CONFERENCE OF MAYORS

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The U.S. Conference of Mayors is the official nonpartisan organization of cities with populations of 30,000 or more. There are 1,398 such cities in the country today, each represented in the Conference by its chief elected official, the Mayor.

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Philips partners with cities to enhance people's lives with light, while protecting the environment. As the world's largest lighting company, Philips consistently delivers the most innovative, energy-efficient solutions that save money, improve public safety, beautify cityscapes, and promote economic development. Philips works with mayors to understand their needs and to unleash the power of innovations that truly matter in improving their city's day-to-day operations and the lives of their constituents. Philips and The U.S. Conference of Mayors formed the *Mayors' Lighting Partnership* as a practical resource to provide mayors with access to lighting technology solutions to meet all their cities' lighting needs, creative ideas for financing projects, and best-practice resources that show results achieved by cities throughout the country.

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Foreword

Tom Cochran
CEO and Executive Director
The United States
Conference of Mayors

Mayors have long recognized their invaluable roles in promoting energy efficiency and in deploying new energy technologies in their cities. This survey, *Energy Efficiency and Technologies in America's Cities,* provides timely and useful information on how mayors are leading in ways that save taxpayers money, reduce dependency on foreign energy, curb harmful air emissions, and grow jobs, businesses and the economy.

We are so grateful to have such a great partner in Philips, supporting the energy and climate leadership of the Conference and the nation's mayors through our joint Conference of Mayors-Philips *Mayors' Lighting Partnership* and as a sponsor of this important survey. We are particularly excited about this year's report, with 288 cities (representing all 50 states) sharing data on their energy technology and energy efficiency and conservation initiatives.

Importantly, our survey work in 2011 established important baseline information on city energy priorities, which we could draw upon in preparing this year's survey. With this data, not only can we document local energy activities more effectively, but we also see a record of local success that continues to build over time.

Whether it is deploying LEDs and other state-of-the-art lighting technologies, retrofitting public and private buildings or installing new solar energy systems, these priority activities are examples of how mayoral leadership is changing energy use in our cities. And, the findings in this survey also demonstrate how mayors and cities are adapting to changing conditions and partnerships, while still leading the nation on its energy and climate challenges.

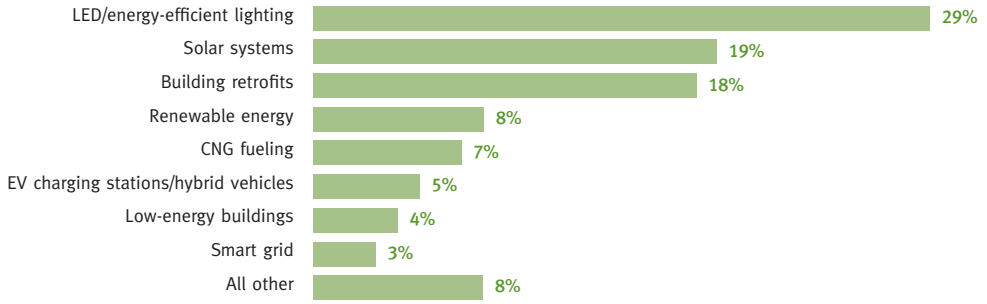
Survey Results

Nearly three in ten cities are making LED/energy-efficient lighting technology their top priority over the next 24 months. Mayors choose LED/energy-efficient lighting (29%) as the energy technology receiving top priority in their cities within the next two years.

In addition to prioritizing LED/energy-efficient lighting technology, mayors rank solar technology systems as their second choice, with nearly one in five cities (19%) making this selection. The third and fourth priorities are building retrofits (18%) and unspecified renewable energy technologies (8%), respectively.

Technologies Receiving Top Priority by Cities within Two Years

(percentage of cities)

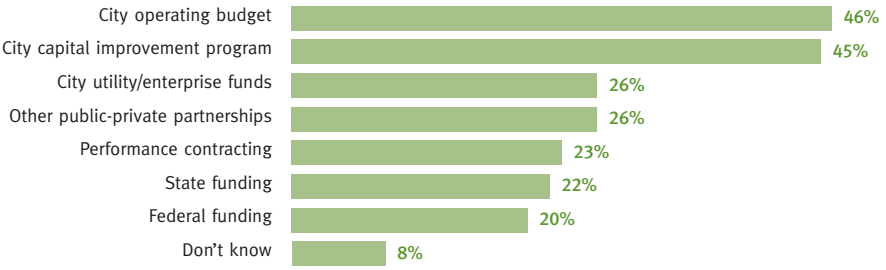


Cities were asked to describe their one "top priority" in their own words, rather than selecting from multiple choice answers, the format used for nearly all other questions in this survey. Ninety-one percent of all cities participating in the survey – 263 out of 288 cities – responded to this question, with the responses as shown above grouped by categories. The "All other" category captures several additional response categories, including cogeneration, waste-to-energy, and water treatment technologies.

Most mayors expect to use their own local resources, followed by partnerships with the private sector, as the sources of financing for their "top priority" technologies over the next 24 months. Mayors identify three city fund sources – city capital funds, city operating funds and city utility/enterprise funds – as the primary resources for advancing their priority technologies. Near majorities expect city operating budgets (46%) and capital improvement program funds (45%) to be the top two sources. One in four cities (26%) list utility/enterprise funds (e.g., solid waste, water or wastewater utility funds) as a source of funding for these deployments.

How Cities Expect to Finance Their Top Priority Technology

(percentage of cities)



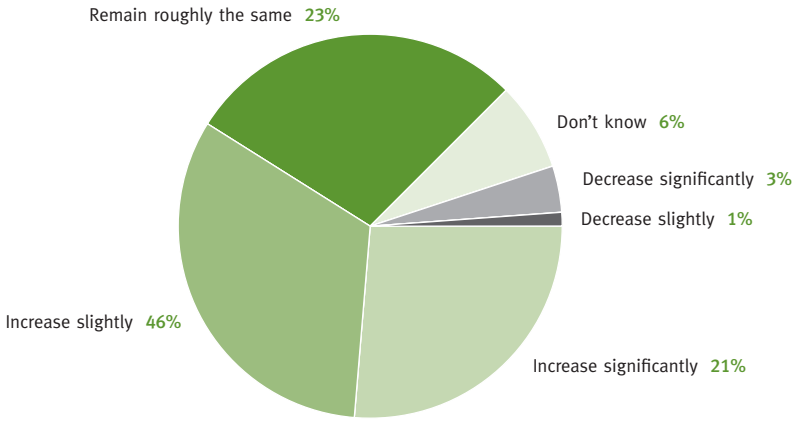
After city resources, private sector offerings are cited most often: private utility financing (14%), energy performance contracting (23%) and other public-private partnerships (26%). Slightly more than one in five cities identify state funding (22%) as a source of support for their priorities, and one in five cities expect federal funding (20%). Notably, these results and others throughout this report show dramatic shifts in expectations of the Federal government's role in supporting cities with technology deployment as well as other energy initiatives.

Many mayors anticipate further growth in the deployment of new energy technologies in cities. Two-thirds (67%) of the 288 cities participating in this survey expect the use of new energy technologies to increase over the next five years, with more than one in five cities (21%) in this survey expecting the increase to be "significant."

Nearly one in four mayors (23%) predicts commitments by cities to new energy technologies will remain about the same. Only four percent of the respondents expect these commitments to decline during this period.

Deployments of New Energy Technologies are Expected to ...

(percentage of cities)

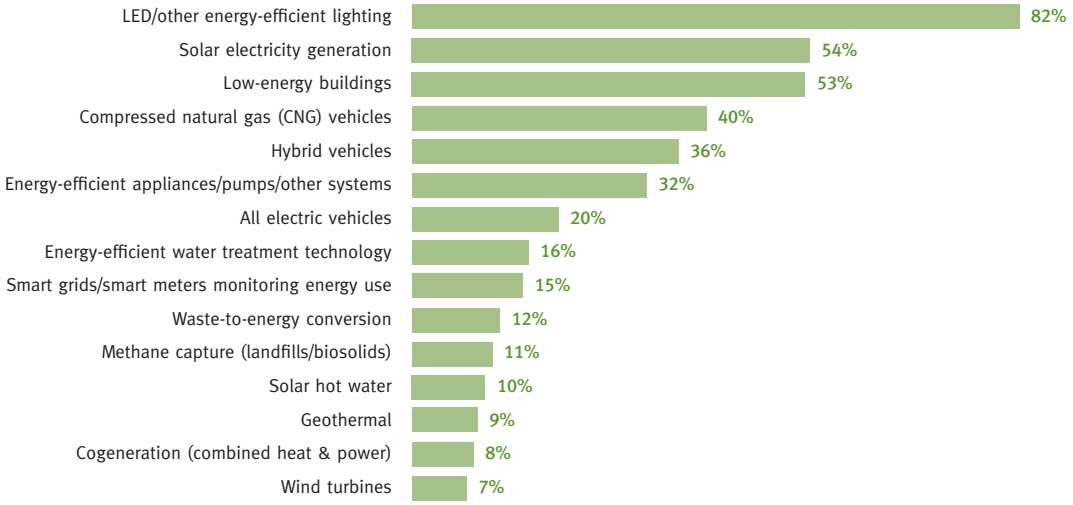


Notably, mayors are less optimistic today about the growth rate of technology deployment in their cities, as compared to the Conference's June 2011 survey, (*Clean Energy Solutions for America's Cities)*. On this question, the prior survey found that three in four mayors (75%) expected technology deployments to increase, with more than one in four cities (27%) expecting deployments to increase significantly. Since that survey was conducted nearly three years ago, the cities' dominant partner on energy technology investment – the Federal government – has substantially reduced its funding commitments to cities.

LED/efficient lighting was overwhelmingly rated as the "most promising" technology for reducing city energy use and carbon emissions. Cities again made LED/other energy-efficient lighting their top choice for most promising technology, with more than four in five cities (82%) making this selection, more than the 2011 level when about three-quarters (76%) of all cities cited efficient lighting technologies.

Most Promising Technologies for Reducing Energy Use and Carbon Emissions

(percentage of cities)

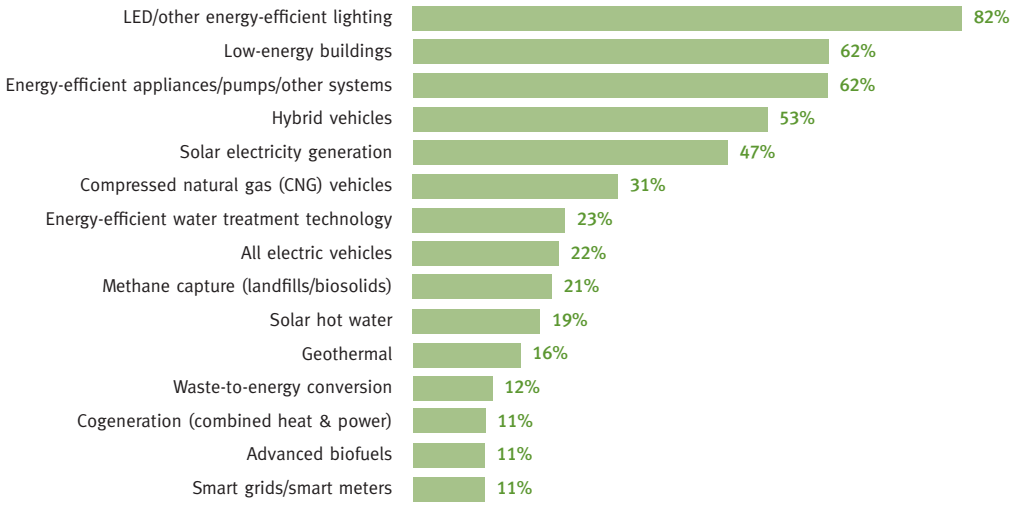


In addition to lighting, there are notable changes in the views of cities on other technologies. Compressed natural gas (CNG) vehicles – identified by more than four in ten cities (40%) – doubled its selection rate (20%) from the prior survey. Solar electricity generation is now the cities' second choice (54%), edging out low-energy buildings, which dropped significantly (from 68% to 53%). Energy-efficient appliances/pumps/other systems, likewise, is also viewed less favorably (32% compared to 44% in 2011), falling from fourth to sixth place among 20 technology categories.

The prominence of the top selection appears based upon direct experience, with an identical share of respondents (82%) indicating prior deployment of LED/other energy-lighting technologies, as shown below. More than six in ten cities indentify low-energy buildings (62%) and energy-efficient appliances, pumps and other systems (62%). More than half of the cities have used hybrid vehicles (53%), and almost half have deployed solar technologies to generate electricity (47%).

Technologies Already Deployed by Cities

(percentage of cities)



Notably, cities deploying all-electric vehicles increased to nearly one in four cities (23%), up considerably from the 2011 level of 13 percent.

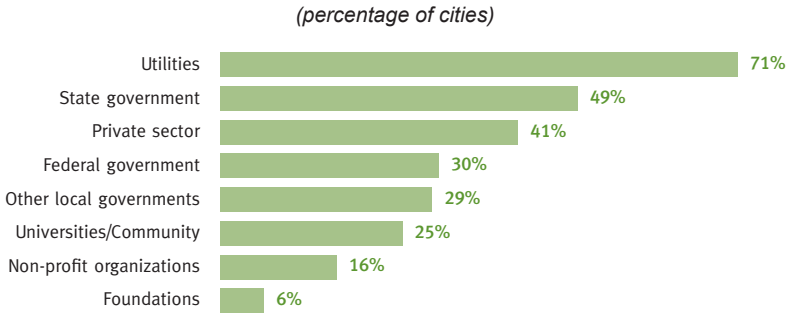
More than seven in ten cities used city funding or federal funding as the top sources in financing previously-deployed energy technologies. City funding (73%) and federal funding (71%) were used most often for deploying energy technologies previously in cities, with about one in three using local utility funding (35%) and more than one in four utilizing city energy savings (27%).

In the questionnaire, current revenues, bond funds and enterprise funds were listed as examples of city funding, EECBG grants as the example of federal funding, and performance contracting as the example for city energy savings.

More than seven in ten mayors believe utilities are now the cities' most important partner in deploying new energy technologies. Mayors rank utilities (71%) as their top partner in advancing new technologies, followed by state governments (49%) and the private sector (41%).

The Federal government, previously the top choice in the Conference's 2011 survey, falls to the fourth position among potential partners in this survey. This unprecedented decline – 71 percent to 30 percent – is certain to have been the result of the changed federal/local partnership; the Federal government did not renew its funding commitment to local energy block grants. (The "ARRA" law in 2009 provided one-time funding to the EECBG program, which allocated funds by formula directly to cities and counties.)

Most Important Partners in Deploying New Energy Technologies

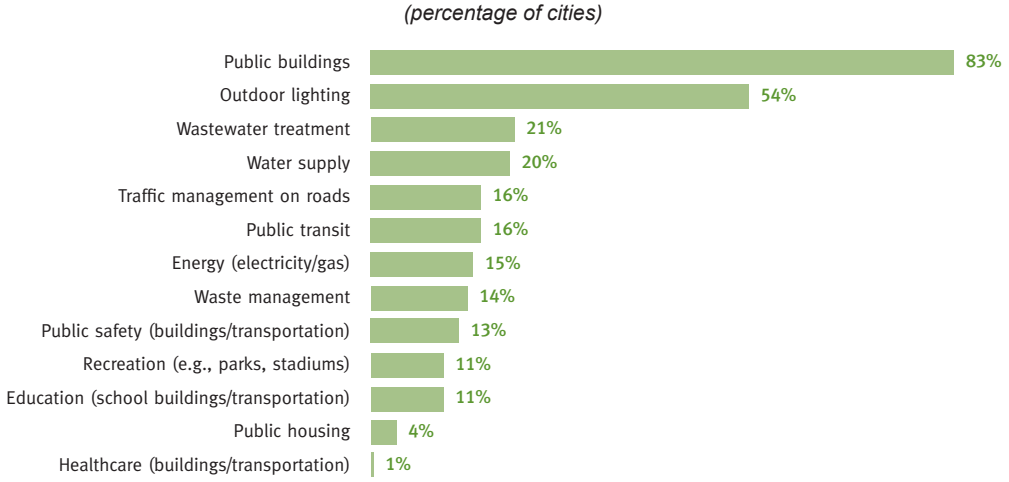


NOTE: Includes up to three responses per city.

Public buildings and outdoor lighting are the two top priorities for cities in improving the energy efficiency of city infrastructure. A significant majority of cities (83%) are directing their energy efficiency efforts to public buildings, with more than half of the cities (54%) prioritizing outdoor lighting for improvements. More than one in five cities is targeting wastewater treatment (21%) as well as water supply (20%) for energy efficiency upgrades. As found in the Conference of Mayors' 2011 survey, public buildings, outdoor lighting and wastewater treatment were again ranked the top three priorities for cities, with water supply overtaking traffic management of roads as the fourth priority.

In addition to these areas, cities are also working to improve energy efficiency in other infrastructure sectors, as shown below.

Areas Currently Targeted by Cities for Energy Efficiency



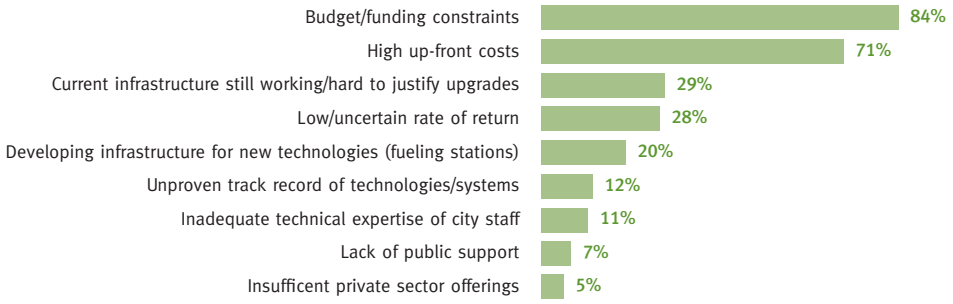
NOTE: Includes up to three responses per city.

While public buildings remained the top choice of cities, declining only slightly in this survey as compared to 2011, other categories increased in priority, with outdoor lighting at 54 percent (up from 44 percent) and water supply at 20 percent (up from 15 percent).

Cities identified the "most significant" challenges before them in advancing energy efficiency and conservation in these targeted areas, overwhelmingly citing financial concerns – budget/fiscal constraints (84%) and high up-front costs (71%) – as the top two challenges.

Most Significant Challenges in Advancing Energy Efficiency and Conservation

(percentage of cities)

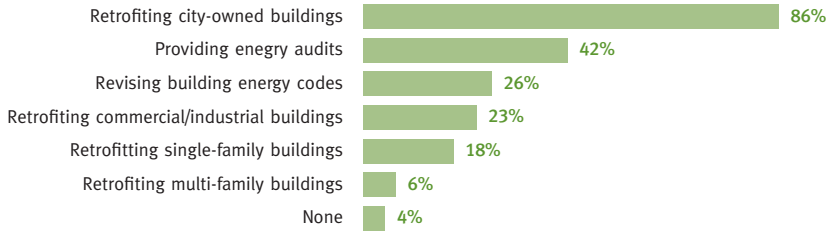


NOTE: Includes up to three responses per city.

A substantial majority of mayors are making the retrofitting of city-owned buildings their highest priority for improving the energy efficiency of their city's building stock. In improving the energy efficiency of buildings in their cities, mayors are overwhelmingly targeting city-owned buildings for energy retrofits (86%), with more than two in five cities (42%) providing energy audits for all building types, both public and private structures. More than one-quarter of cities (26%) are revising building energy codes, with nearly one in four cities making the retrofitting of commercial and industrial buildings a priority.

Priorities for Improving the Energy Efficiency of Buildings in Cities

(percentage of cities)



This emphasis on retrofitting public buildings is consistent with the earlier finding on mayoral priorities for energy efficiency and reductions in energy use among public infrastructure sectors, where mayors ranked public buildings as their top priority.

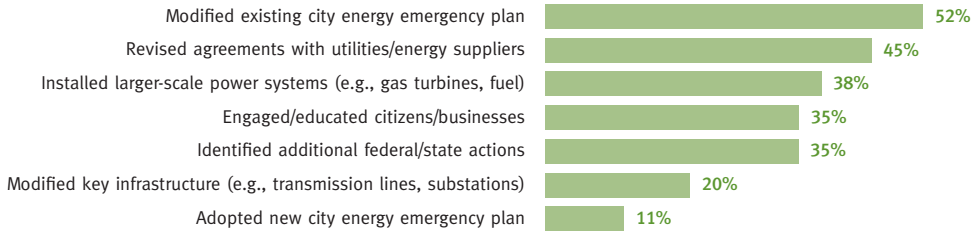
Three-quarters of cities have developed an energy emergency response plan that maintains key municipal services during power outages. Three in four cities (76%) have plans in place to sustain key municipal functions during power outages.

For those cities without an energy emergency response plan, one-half expect to have such a plan developed within three years, raising the share of cities to nearly nine in ten (88%).

In a related query, cities were asked if they had been affected by a power outage(s) within the past five years due to a severe climate event (e.g., major hurricane, tornado, significant snow or ice storm, major flooding). More than four in ten (41%) cities responded affirmatively, providing details on follow-up actions that were taken to respond to future events, as shown below.

Power Outages and Local Energy Emergency Response Plan Changes

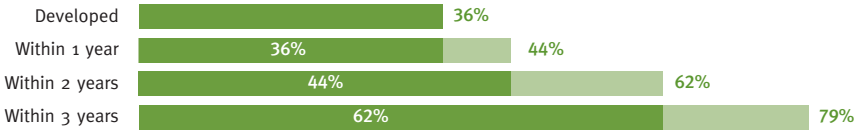
(percentage of cities)



While slightly more than one-third of survey respondents have developed a broad-based energy plan, the share of cities with such plans is expected to more than double in three years. Today, 36 percent of cities already have "comprehensive" energy plans; this share will change dramatically over the next three years. Nearly four in five cities (79%) are expected to have developed plans by 2016.

Cities with Comprehensive Energy Plans

(percentage of cities)



In separate queries of the 103 cities with plans in place, a substantial majority (83%) include energy reduction targets for city operations and citywide energy use. Six in 10 (60%) cities include specific targets in these plans for the use of renewable energy in city operations or by the broader community.

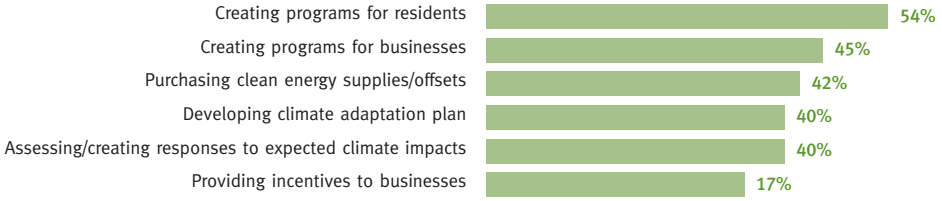
Selecting among additional city energy priorities, a majority of all cities identified community outreach and engagement on energy efficiency and energy technologies as the top activity. Expanding community outreach and engagement was the top choice (54%) among other potential priorities, with nearly one-third (31%) citing helping citizens and businesses finance needed energy improvements.

A majority of mayors are creating programs to engage local residents in reducing greenhouse gas emissions (GHGs) as their priority among other community-wide engagement initiatives. Asked to choose among six climate-related community engagement activities, the first choice of mayors are programs that engage local residents in reducing emissions (54%).

After working with residents, mayors turn to their business community (45%) to support city efforts to reduce emissions. Four in ten cities are developing a climate adaptation plan for the city (40%), and the same percentage is undertaking assessments and/or creating community-wide responses to predicted climate impacts (40%).

Engaging the Local Community on Climate Activities

(percentage of cities)



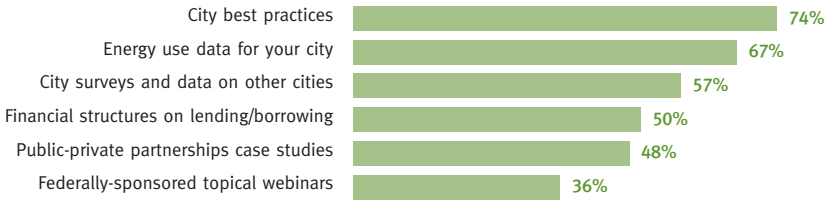
NOTE: Seven in ten cities (203 out of 288 cities) participating in the survey provided responses to this question.

City best practices top the list of non-financial resources that are most helpful to mayors in advancing their city energy and climate goals. Nearly three in four cities (74%) rank city best practices as the most useful resource among other offerings in achieving their local goals.

Two-thirds of cities want energy use data for their city (67%), followed by city surveys and data on what other cities are doing (57%). Nearly every participant in the survey (279 of 288 cities) provided responses to this query on "most helpful resources."

Resources for Advancing Energy and Climate Goals

(percentage of cities)



Participating Cities

Fairbanks, AK
Juneau, AK
Montgomery, AL
Fort Smith, AR
Little Rock, AR
Avondale, AZ
Casa Grande, AZ
Goodyear, AZ
Lake Havasu City, AZ
Mesa, AZ
Oro Valley, AZ
Phoenix, AZ
Queen Creek, AZ
Surprise, AZ
Tempe, AZ
Tucson, AZ
Alameda, CA
Alhambra, CA
Anaheim, CA
Beverly Hills, CA
Cathedral City, CA
Chula Vista, CA
Compton, CA
Costa Mesa, CA
Culver City, CA
Dublin, CA
Fontana, CA
Fresno, CA
Gardena, CA
Hemet, CA
Huntington Beach, CA
Irvine, CA
La Habra, CA
Long Beach, CA
Los Angeles, CA
Manhattan Beach, CA
Monrovia, CA
Newark, CA
Newport Beach, CA
Novato, CA
Ontario, CA
Palm Desert, CA
Palmdale, CA
Pasadena, CA
Paso Robles, CA
Pleasant Hill, CA
Pleasanton, CA
Porterville, CA
Redding, CA
Redondo Beach, CA
Rialto, CA
Sacramento, CA
San Clemente, CA
San Diego, CA
San Jose, CA
San Leandro, CA
San Rafael, CA
Santa Ana, CA
Santa Barbara, CA
Santa Cruz, CA
Santa Monica, CA
Santee, CA
South San Francisco, CA
Stanton, CA
Tulare, CA
Turlock, CA
Vallejo, CA
Ventura, CA
Westminster, CA
Woodland, CA
Aurora, CO
Denver, CO
Englewood, CO
Westminster, CO
Bridgeport, CT
Danbury, CT
East Hartford, CT
Fairfield, CT
Milford, CT
Norwich, CT
Stamford, CT
Torrington, CT
Trumbull, CT
Vernon, CT
Waterbury, CT
West Haven, CT
Washington, DC
Wilmington, DE
Boynton Beach, FL
Cape Coral, FL
Cooper City, FL
Coral Springs, FL
Davie, FL
Deerfield Beach, FL
Doral, FL
Fort Myers, FL
Greenacres, FL
Hallandale Beach, FL
Jacksonville, FL
Lakeland, FL
Largo, FL
Lauderhill, FL
Miramar, FL
North Lauderdale, FL
North Miami, FL
Orlando, FL
Palm Bay, FL
Panama City, FL
Pembroke Pines, FL
Pinellas Park, FL
Pompano Beach, FL
Port St. Lucie, FL
Tallahassee, FL
West Palm Beach, FL
Athens-Clarke County, GA
Atlanta, GA
Columbus, GA
Fairburn, GA
LaGrange, GA
Macon, GA
Savannah, GA
Maui, HI
Davenport, IA
Des Moines, IA
Dubuque, IA
Urbandale, IA
Boise, ID
Idaho Falls, ID
Alton, IL
Aurora, IL
Elk Grove, IL
Evanston, IL
Glendale Heights, IL
Hanover Park, IL
Hoffman Estates, IL
Lake Barrington, IL
Lombard, IL
Moline, IL

Normal, IL
North Chicago, IL
Orland Park, IL
Schaumburg, IL
Carmel, IN
Indianapolis, IN
Noblesville, IN
Richmond, IN
Olathe, KS
Shawnee, KS
Lexington, KY
Louisville, KY
Baton Rouge, LA
New Orleans, LA
Ville Platte, LA
Boston, MA
New Bedford, MA
Newton, MA
Revere, MA
Springfield, MA
Weymouth, MA
Baltimore, MD
District Heights, MD
Frederick, MD
Laurel, MD
Portland, ME
Dearborn, MI
Detroit, MI
East Lansing, MI
Eastpointe, MI
Farmington Hills, MI
Grand Rapids, MI
Grosse Pointe Woods, MI
Jackson, MI
Rochester Hills, MI
Southfield, MI
Troy, MI
Westland, MI
Burnsville, MN
Eagan, MN
Edina, MN
Minneapolis, MN
Minnetonka, MN
Rochester, MN
Columbia, MO
Kansas City, MO
St. Louis, MO
University City, MO
Natchez, MS
Butte, MT
Burlington, NC
Charlotte, NC
Fayetteville, NC
Gastonia, NC
Greenville, NC
Salisbury, NC
Winston-Salem, NC
Grand Forks, ND
Lincoln, NE
Nashua, NH
Brick Township, NJ
Clifton, NJ
Elizabeth, NJ
Ewing, NJ
Kearny, NJ
Linden, NJ
Piscataway, NJ
Albuquerque, NM
Clovis, NM
Santa Fe, NM
Carson City, NV
Henderson, NV
Las Vegas, NV
North Las Vegas, NV
Reno, NV
Albany, NY
Clarence, NY
Schenectady, NY
Syracuse, NY
Akron, OH
Cleveland, OH
Columbus, OH
Cuyahoga Falls, OH
Dayton, OH
Lancaster, OH
Lima, OH
North Ridgeville, OH
Trotwood, OH
Warrensville Heights, OH
Tulsa, OK
Beaverton, OR
Bend, OR
Gresham, OR
Hillsboro, OR
Lake Oswego, OR
Portland, OR
Tigard, OR
Lancaster, PA
Philadelphia, PA
Pittsburgh, PA
Wilkes-Barre, PA
York, PA
Caguas, PR
Providence, RI
Charleston, SC
Summerville, SC
Sioux Falls, SD
Chattanooga, TN
Hendersonville, TN
Johnson City, TN
Knoxville, TN
Memphis, TN
Morristown, TN
Abilene, TX
Corpus Christi, TX
Dallas, TX
Denton, TX
Fort Worth, TX
Frisco, TX
Garland, TX
Houston, TX
Irving, TX
Kyle, TX
Mesquite, TX
Pharr, TX
Plano, TX
San Antonio, TX
Sugar Land, TX
Lehi City, UT
Salt Lake City, UT
Sandy, UT
South Jordan, UT
Taylorsville, UT
Alexandria, VA
Norfolk, VA
Roanoke, VA
Burlington, VT
Duvall, WA
Everett, WA
Pullman, WA
Redmond, WA
Seattle, WA
Tacoma, WA
Vancouver, WA
Brookfield, WI
Green Bay, WI
Madison, WI
Milwaukee, WI
Huntington, WV
Gillette, WY

About the Survey

This report was prepared by The U.S. Conference of Mayors and sponsored by Philips. From November 25, 2013 through January 14, 2014, cities could complete the survey electronically, with 288 responses received by the deadline. By email, the Conference contacted nearly 1,400 mayors, most representing cities with a population of 30,000 or more requesting mayors to compete the survey. More than one in five mayors participated in the survey for a 21 percent response rate. We would like to thank all those who participated in the survey for their efforts and timely responses.

THE UNITED STATES CONFERENCE OF MAYORS

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