The 2015 City Energy Efficiency Scorecard

David Ribeiro, Virginia Hewitt, Eric Mackres, Rachel Cluett,
Lauren M. Ross, Shruti Vaidyanathan, and Sarah Zerbonne

May 2015

Report U1502

529 14th Street NW, Suite 600, Washington, DC 20045
Phone: (202) 507-4000 • Twitter: @ACEEEDC
Facebook.com/myACEEE • aceee.org

Contents

About the Authors

David Ribeiro joined ACEEE in the spring of 2013. He conducts research on energy efficiency implementation at the local level, including lead-by-example strategies and the interconnection between efficiency and community resilience.

Virginia Hewitt worked on multidisciplinary policy research and reporting on actions at the local and state levels from 2013 to 2015. She also helped with local technical assistance across ACEEE.

Eric Mackres worked on local and community energy efficiency initiatives with the Policy Program from 2010 to 2015. He provided technical assistance to communities that were beginning or expanding energy efficiency efforts. He also managed ACEEE research related to local implementation of energy efficiency.

Rachel Cluett joined ACEEE in November 2012. Her work focuses on residential-sector energy efficiency, including labeling and energy use transparency, efficiency program design, and product standards and labeling.

Lauren Ross concentrates on affordable housing and energy efficiency at the local level. She leads ACEEE's work to expand utility programs to improve the energy efficiency of multifamily housing. As part of the local policy and community strategies team, she also contributes to ACEEE research on the local implementation of energy efficiency. She joined ACEEE in 2014.

Shruti Vaidyanathan is the principal analyst for ACEEE's *Green Book Online*, a comprehensive environmental ranking of consumer vehicles. Her recent work has also focused on transportation policy at the state and regional levels, including an analysis of policy options for New Mexico and North Carolina. She joined ACEEE in 2007.

Sarah Zerbonne interned for the Utilities, State, and Local Policy team at ACEEE in 2014. She focused on compiling and analyzing city energy performance data to identify trends in city energy use.

Acknowledgements

The authors are grateful to all the individuals and organizations who contributed to the development of this second edition of the *City Energy Efficiency Scorecard*. We have benefited from the time and insights of more than 200 individuals over the course of nearly a year, only some of whom we are able to list here.

We appreciate the financial support from the Kresge Foundation and the Surdna Foundation that made this project possible.

We are particularly grateful to the energy and sustainability staff members of the cities scored in the *City Scorecard* as well as respondents affiliated with the energy utilities that serve these cities. Appendix B lists the individuals who facilitated responses to our data requests.

Thanks also to the numerous ACEEE staff members who acted as project advisors and reviewed and commented on drafts: Steven Nadel, Neal Elliott, Maggie Molina, Therese Langer, Jennifer Amann, Annie Gilleo, and Jim Barrett. Thanks to Tyler Bailey for his assistance in compiling comments from *Scorecard* reviewers. Thanks to Michael Jarrett for his help in formatting the report and organizing the references. Thanks to ACEEE staff who supported the production of the report and the related communications, especially Patrick Kiker, Eric Schwass, Maxine Chikumbo, and Glee Murray. Thanks to our production partners at the Hastings Group and Resource Media for help with the release of the report. Special thanks to Fred Grossberg for managing the editorial process and to Nancy Elgin and Roxanna Usher for copyediting.

In addition to the individuals listed in Appendix B, we are also grateful to the many experts and stakeholders who reviewed our methodology and the draft report, or who in other ways contributed their expertise. In alphabetical order by organization, we would like to thank: Daniel Tait (Alabama Center for Sustainable Energy), Tim Arndt (Arndt Group), Mariella Puerto (Barr Foundation), Jim McMahon (Better Climate Research & Policy Analysis), Amy Morsch (Center for Climate and Energy Solutions), Julie Peacock (Clean Cities and Oregon Department of Energy), Steve Morgan (Clean Energy Solutions), Satya Rhodes-Conway (Center on Wisconsin Strategy), Jacob Corvidae (Eco Works Detroit), Skip Laitner (Economic and Human Dimensions Research Associates), Diana McCarthy-Bercury (Eversource), Peter Garforth (Garforth International), Kurt Shickman (Global Cool Cities Alliance), Aurora Sharrad (Green Building Alliance), Jackie Dadakis (Green Coast Enterprises), Celia Glassman and Alan Mosley (Jacksonville Chamber of Commerce), Stacey Paradis (Midwest Energy Efficiency Alliance), Naomi Mermin (Naomi Mermin Consulting), Don Francis (Partnership for Clean Transportation, Inc.), Lindsay Baxter (Pennsylvania Environmental Council), Susan Freedman (San Diego Association of Governments), Andrea Johnson (San Francisco Chamber of Commerce), Dotti Monroe (Servidyne, LLC), Cindy Dyballa (Sligo Creek Resources), Jim Meyers and Lauren Smith (Southwest Energy Efficiency Project), Adam Hinge (Sustainable Energy Partnerships), Beth Osborne (Transportation for America), Alice Dasek, Johanna Zetterberg, and Sarah Zaleski (US Department of Energy), and Denny Andrea and Emma Zinsmeister (US Environmental Protection Agency).

ACEEE is solely responsible for the content of this report.

Executive Summary

Energy efficiency is one of the least expensive, most abundant, and most underused resources for local economic and community development. Saving energy can make communities more resilient while protecting human health and the environment. Energy efficiency investments also save money for households and businesses, catalyze local reinvestment, and create jobs in the community.

Many local governments around the United States are committed to efficiency. Cities can influence energy use in their communities in many ways: through land use and zoning, building codes, public finance, transportation investment, economic and workforce development, and in many cases, the provision of water and energy. Local and metropolitan energy efficiency initiatives provide visible benefits for residents, directly improving the communities where they live and work.

The *2015 City Energy Efficiency Scorecard* compiles information on policies and local actions to advance energy efficiency, comparing cities across five policy areas. This second edition of the *City Scorecard* ranks the cities included in the first edition and adds a new group of large cities, for a total of 51.[1] To reflect the current and near future policy environment, the *City Scorecard* considers both policies that have already been implemented and ones that been adopted but not yet put into practice. We identify cities that are excelling and those that have room for improvement. Throughout the report we give examples of best practices used by leading cities. Our goal is to provide a roadmap for local governments aiming to improve their cities' energy efficiency.

KEY FINDINGS

The *2015 City Energy Efficiency Scorecard* compares cities across five policy areas:

- Local government operations
- Community-wide initiatives
- Buildings policies
- Energy and water utilities
- Transportation policies

Figure ES1 shows how cities ranked overall.

[1] Eric Mackres, Kate Johnson, Annie Downs, Rachel Cluett, Shruti Vaidyanathan, and Kaye Schultz, *The 2013 City Energy Efficiency Scorecard* (Washington, DC: American Council for an Energy-Efficient Economy, 2013). http://aceee.org/research-report/e13g.

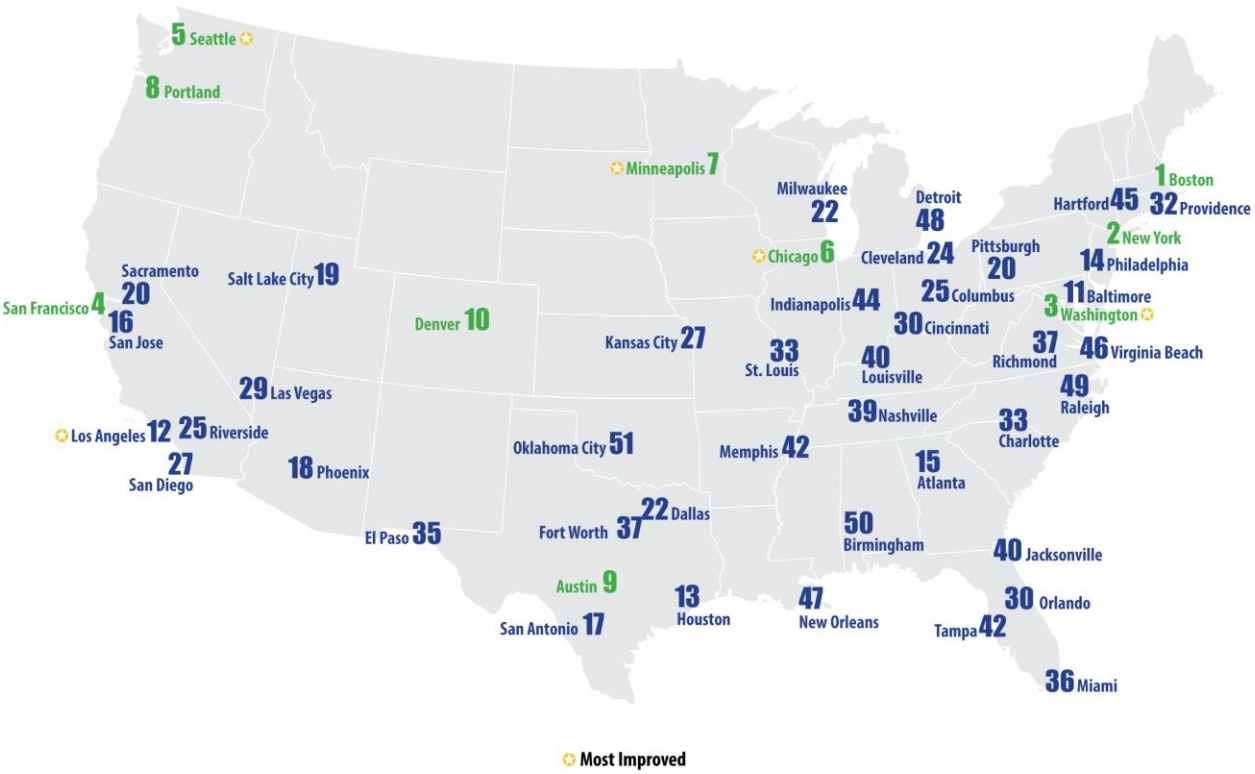

Figure ES1. *City Scorecard* rankings

As in the last edition, **Boston** earned the top spot in the *2015 City Scorecard*. It received 82 out of a possible 100 points, an improvement of more than 5 points from its 2013 score. Boston scored well across all policy areas, and it excelled in both buildings and in energy and water utilities. Boston has expanded its incentives and financing opportunities for energy-efficient buildings and implemented energy benchmarking requirements. The city continues to have strong utility partnerships, including the Renew Boston Initiative.

Joining Boston in the top five are **New York City, Washington, San Francisco, and Seattle**. All have wide-ranging efficiency policies and programs and a history of implementing efficiency initiatives. They all have closed the gap with top scoring Boston by scoring at least 75 points. The top five cities were separated by 11.5 points in the 2013 *Scorecard*. This year they are separated by 7 points.

Rounding out the top ten are **Chicago, Minneapolis, Portland, Austin, and Denver**. With another top-ten showing, Chicago, Minneapolis, Portland, and Austin continue to demonstrate their commitment to efficiency. Denver entered the top ten for the first time.

Washington, Los Angeles, Chicago, Minneapolis, and Seattle were the most-improved cities compared to the last edition, with many showing double-digit scoring improvements. The increased availability of their policy data accounted for some of their improvement, but these cities also have made real strides in efficiency. Chicago, for example, enacted a new commercial benchmarking ordinance. Los Angeles is another good example. Whereas California requires municipal utilities to achieve 10% of their supply through energy efficiency by 2023, Los Angeles' municipal utility adopted a more stringent target of 15% by 2020.

Other cities have also improved their scores since the last edition, including two in the southeast. **Charlotte** made a strong showing, earning new points for local government operations, energy and water utilities, and transportation policies. **Jacksonville**, the lowest scoring city in the 2013 edition, saw a 50% increase in its score.

Leaders in efficiency in **local government operations** are **Denver, New York City, and Phoenix,** all of which have set policies to increase efficiency in city government, procurement, and asset management.

The top-scoring cities in **community-wide initiatives** are **New York City and Boston**. They both have systems to track progress toward efficiency-related goals for the whole community and strategies to mitigate urban heat islands. They also have efficient distributed-energy systems, such as district energy and combined heat and power, and policies or programs to plan for future ones.

Leading cities in **buildings policies** include **Boston, New York City, and Washington**. These cities have adopted or advocated for stringent building energy codes, devoted resources to building code compliance, established requirements and incentives for efficient buildings, and increased the availability of information on energy use in buildings. Residents and business owners can also access programs that take a systemic, building-wide approach to retrofits and upgrades.

The leading cities in the **energy utilities** area are **Boston, San Francisco, Portland, Minneapolis, and Chicago**. Their energy efficiency programs offer high levels of savings. These cities also have productive relationships with their utilities in program implementation and access to energy data. **Boston, San Francisco, Seattle, New York City, Los Angeles, Austin, Atlanta, Fort Worth, and El Paso** are the leading cities in tackling efficiency in their water systems.

Finally, cities with the top **transportation policy** scores include **Portland, Washington, Boston, and Seattle**. Their initiatives include location-efficiency strategies, shifts to efficient modes of transportation, transit investments, efficient vehicles and vehicle infrastructure, and energy-efficient freight transport.

All cities, even the highest scorers, have significant room for improvement. Boston was the only city to earn over 80 points, and only 13 cities earned more than half of the possible points. All 51 cities can improve their efficiency initiatives to increase their scores.

This year, as in 2013, we found that cities' **energy use data are inconsistent, sporadic, and infrequent**. Due to the limitations of self-reported data, we had difficulty identifying trends in energy consumption and gauging the relationship between cities' scores and actual energy performance.

Table ES1 presents city scores in the five policy areas, their total scores, and the change in their scores from 2013.

Table ES1. Summary of city scores

Rank	City	State	Local government operations (15 pts.)	Community-wide initiatives (10 pts.)	Buildings policies (29 pts.)	Energy and water utility policies (18 pts.)	Transportation policies (28 pts.)	TOTAL SCORE (100 pts.)	Change in score from 2013
1	Boston	MA	9	9	27	17.5	19.5	82	5.25
2	New York City	NY	11.5	9.5	26	13.5	17.5	78	8.25
3	Washington	DC	11	8	25	12.5	20	76.5	20.5
4	San Francisco	CA	10.5	8	22.5	15.5	19	75.5	5.75
5	Seattle	WA	11	7	23	14.5	19.5	75	9.75
6	Chicago	IL	9.5	5.5	22.5	15	17	69.5	14.75
7	Minneapolis	MN	10	8	16.5	15	17.5	67	11.75
8	Portland	OR	10.5	6	14.5	15	20.5	66.5	-3.5
9	Austin	TX	10.5	8	21.5	10	12.5	62.5	0.5
10	Denver	CO	11.5	5.5	9.5	13.5	18.5	58.5	5.75
11	Baltimore	MD	7.5	6	12	10.5	16	52	5.5
12	Los Angeles	CA	7	8	12	13	11.5	51.5	20
13	Houston	TX	10	3.5	12	10	15.5	51	5.75
14	Philadelphia	PA	7.5	5.5	10.5	9.5	17	50	-5
15	Atlanta	GA	8	4.5	7.5	9	18.5	47.5	5
16	San Jose	CA	6	4.5	10	12.5	12.5	45.5	8.25
17	San Antonio	TX	8	6.5	7.5	9.5	13.5	45	2.5
18	Phoenix	AZ	11.5	3	11	9.5	9	44	0.5
19	Salt Lake City*	UT	6.5	4	7	9.5	15.5	42.5	---
20	Pittsburgh	PA	8	6	8	8	11	41	6.75
20	Sacramento	CA	5.5	6	9.5	12	8	41	0.25
22	Milwaukee*	WI	6.5	3.5	9.5	9.5	11	40	---
22	Dallas	TX	8.5	2.5	8.5	8	12.5	40	-4.25
24	Cleveland*	OH	8.5	3.5	6.5	10	10.5	39	---
25	Riverside	CA	2.5	6.5	9	11	9.5	38.5	1.25
25	Columbus	OH	7	2	6.5	9.5	13.5	38.5	0
27	Kansas City*	MO	4	3	9.5	5	13.5	35	---
27	San Diego	CA	5.5	2.5	7	10.5	9.5	35	-3.25
29	Las Vegas*	NV	8.5	3	5.5	10.5	7	34.5	---
30	Cincinnati*	OH	3	4.5	6	8.5	11.5	33.5	---
30	Orlando*	FL	8	5.5	4	5.5	10.5	33.5	---
32	Providence*	RI	3.5	2.5	7.5	10	8.5	32	---
33	Charlotte	NC	8.5	2.5	2.5	7	11	31.5	7.75
33	St. Louis	MO	3.5	4	6	5	13	31.5	-4.75
35	El Paso	TX	7.5	0.5	3.5	8	10	29.5	-6.75
36	Miami	FL	4	3	6	3.5	12	28.5	-3.5
37	Richmond*	VA	4.5	2.5	7.5	2.5	11	28	---
37	Fort Worth	TX	7	2.5	3.5	8.5	6.5	28	-4.75
39	Nashville*	TN	6	3.5	4.5	3.5	9.5	27	---
40	Louisville*	KY	2.5	2.5	6.5	2	12.5	26	---
40	Jacksonville	FL	3	3	4	6	10	26	8.75
42	Memphis	TN	1.5	1.5	4.5	5	12.5	25	1.5
42	Tampa	FL	3.5	1	7.5	5.5	7.5	25	-1.75
44	Indianapolis	IN	3	1.5	4	8.5	7.5	24.5	-3.75
45	Hartford*	CT	2.5	1.5	5.5	7	6.5	23	---
46	Virginia Beach*	VA	4.5	1	5.5	6	5.5	22.5	---
47	New Orleans*	LA	2	2.5	5	1.5	9	20	---
48	Detroit	MI	0.5	1	5	4.5	6.5	17.5	-1.5
49	Raleigh*	NC	0	1	3	2.5	8.5	15	---
50	Birmingham*	AL	0	1	4.5	0.5	8.5	14.5	---
51	Oklahoma City*	OK	3	1.5	1.5	2.5	3.5	12	---
	Median		7	3.5	7.5	9.5	11.5	38.5	2

* New cities in the *2015 City Energy Efficiency Scorecard*

STRATEGIES FOR IMPROVING EFFICIENCY

Every city we analyzed has considerable room for improvement. We offer the following recommendations for cities that want to improve their energy efficiency and their ranking in the *City Scorecard.*

Lead by example by improving efficiency in local government operations and facilities. Integrate energy efficiency into the day-to-day activities of local government. Adopt policies and programs to save energy in public-sector buildings and fleets. Encourage changes in employee behavior and in standard practices such as procurement. Adopt guidelines and policies to direct investment toward more energy-efficient infrastructure (Chapter 2).

Adopt energy savings targets. Have community and political leaders endorse and codify energy efficiency goals for public- and private-sector energy savings. Goals in areas like community-wide and government operations energy use can lay the foundation for further policy activity (Chapters 2, 3, 4, and 5).

Actively manage, track, and communicate energy performance, and enable broader access to energy use information. Track and report progress toward goals. This will reveal opportunities for improving energy plans, such as revising timelines, targets, or program strategies. Dedicate particular staff members to energy management. Work with utilities to improve local government access to energy use data to better manage progress toward goals. Help increase energy data available to residents and businesses to encourage them to take their own efficiency actions (Chapters 2, 3, 4, and 5).

Adopt policies to improve efficiency in new and existing buildings. To improve the efficiency of new buildings, ensure that building energy code enforcement and compliance activities are effective and well funded. If the city has authority under state law, adopt more-stringent building energy codes; if not, advocate for the state to do so. To improve energy efficiency in existing buildings, encourage better integration of energy information into local real estate markets through energy benchmarking, rating, or transparency. Provide incentives for efficient buildings, require energy audits, and implement energy performance requirements for certain building types (Chapter 4).

Partner with energy and water utilities to promote and expand energy efficiency programs. Because utilities are the primary funders and administrators of customer efficiency programs in most places, cities should partner with them to promote efficiency programs to residents. Make your voice heard in state utility regulation, and encourage the expansion of efficiency programs run by investor-owned utilities (Chapter 5).

Implement policies and programs to decrease transportation energy use through location-efficient development and improved access to additional travel mode choices. Use location-efficient zoning and policies that integrate transportation and land use planning to ensure that residents can use energy-efficient transportation to access major destinations. Expand residents' transportation choices. Use transportation demand management and car- and bicycle-sharing programs to encourage a switch from driving to other modes of transportation. Create neighborhoods that support safe, automobile-independent activities. (Chapter 6).

Introduction

Energy efficiency is one of the least expensive, most abundant, and most underused resources for local economic and community development. Saving energy can make communities more resilient while also protecting human health and the environment. Energy efficiency investments also save money for households and businesses, catalyze local reinvestment, and create local jobs.

Many local governments around the United States are committed to efficiency. They can influence energy use in their communities in many ways: land use and zoning, building codes, public finance, transportation investment, economic and workforce development, and, in many cases, the provision of water and energy. Local and metropolitan energy efficiency initiatives give visible benefits to residents, directly improving the communities where they live and work.

The *2015 City Energy Efficiency Scorecard* compiles information on policies and local actions to advance energy efficiency, comparing cities across five policy areas. This second edition of the *City Scorecard* ranks the cities included in the first edition of the *City Scorecard* (Mackres et al. 2013) and adds a new group of large cities, for a total of 51 cities. To reflect the current and near future policy environment, the *City Scorecard* considers implemented policies and those that have been adopted but are just beginning to be implemented. The resulting scores identify cities that are excelling and those that have room for improvement. We provide examples throughout the report of best practices used by leading cities. As a result, the *Scorecard* serves as a roadmap for local governments aiming to improve their cities' energy efficiency.

TRENDS IN CITY ENERGY EFFICIENCY

Worldwide, 3.5 billion people live in cities. The United Nations predicts that by 2050, that figure will double (Lederer 2014). Two-thirds of global energy consumption and 80% of the United States' energy consumption occur in cities (World Bank 2010; IEA 2008). Similarly, about 75% of the world's global-warming greenhouse gases (GHG), the majority of which are energy related, are generated in urban areas (UNEP 2013). Cities' large shares of energy consumption and greenhouse gas emissions mean that energy efficiency actions in urban areas and by local governments are critical in addressing the nation's and the world's energy and environmental challenges.

Local governments and residents can use energy efficiency actions to advance related priorities that vary by city. The economies and development patterns of cities themselves can enable more efficient energy use, particularly in the areas of transportation and buildings. For many cities, energy efficiency can create new economic opportunity. Investments in efficiency can drive cost savings for city residents, businesses, and the government itself while also creating new industries and jobs. These and other opportunities for saving energy are available in all cities. Still, the considerable variation in energy use among cities means that while further improvements through concerted action are possible everywhere, the biggest opportunities may vary depending on the city (Newman and Kenworthy 1999; Brown et al. 2008; IEA 2008; Glaeser and Kahn 2008). Fortunately, despite their large share of overall consumption, US cities already have lower per capita energy use than the national average (IEA 2008).

Cities recognize these opportunities and are leveraging their resources accordingly. A sample of 110 global cities reported that combined, they are saving or plan to save $40 million each year from efficiency improvements in government operations alone (Riffle 2013). Philadelphia's

Greenworks, which established the City Energy Efficiency Fund, has to date seen annual savings reaching $480,000 (Dews, Freeh, and Wu 2014).

Many cities see energy efficiency as central to their expanding initiatives to improve the sustainability and resilience of their communities. These efforts aim to improve economic, social, and environmental well-being while developing the city's and residents' capacity to respond to change. Specifically, a growing concern about climate change motivates many cities to improve their energy efficiency. Many are making plans to use energy efficiency to adapt to a changing climate and shifting energy portfolios. Forty-seven of the 51 cities in the *City Scorecard* are signatories to the US Conference of Mayors Climate Protection Agreement, pledging to meet or beat the Kyoto Protocol greenhouse gas reduction targets in their communities (US Conference of Mayors 2013). Twelve cities in the *Scorecard* have also joined the C40 Cities Climate Leadership Group, created in 2005 to reduce emissions and increase energy efficiency in large cities across the world (C40 2011).

In the last six years, the 2009 federally funded American Recovery and Reinvestment Act (ARRA) led to an increase in local government energy efficiency policy and program activity. Though many programs existed previously, the legislation funneled federal dollars to them. Cities developed many of the initiatives in this edition of the *City Scorecard* in part due to funding made available through ARRA. However, since the initial block grants, the program has not received additional funding.

BENCHMARKING CITY EFFORTS AND SHARING BEST PRACTICES

We update the *City Scorecard* biennially to regularly benchmark the status of energy efficiency efforts in cities. In addition, we designed the *Scorecard* to be a tool that can help cites develop effective, sustainable approaches for cost effectively improving energy efficiency by learning from other cities' experiences. Finally, this report highlights innovative local policies for policymakers at all levels of government to consider. We focus on large US cities, but many of the policies and practices in the *Scorecard* are relevant to other cities, smaller localities, and other levels of government.

The report is organized into eight chapters. Chapter 1 describes our methodology, the results of this edition's analysis, overall findings, and key energy efficiency strategies. Chapter 2 scores cities' actions to improve the energy efficiency of their own local government operations. Chapter 3 focuses on community-wide initiatives and policies. Chapters 4, 5, and 6 take a closer look at policies associated with three major energy-related sectors in cities: buildings, energy and water utilities, and transportation. Chapter 7 presents some cities' actual energy consumption data to identify trends in energy use and gauge the relationship between city energy consumption and *Scorecard* scores. The concluding chapter discusses the value of the *Scorecard* to communities not scored here and areas where future research is planned.

In lieu of extensive appendices to this report, we present the complete policy and program information used to score and rank the included cities in the ACEEE State and Local Policy Database.[2] This database is organized by city, and then by topic areas corresponding to the chapters in this report, with the policy information for each city presented in the same order as in the *Scorecard*. Additionally, the complete policy information for each metric for all the cities

[2] The ACEEE State and Local Policy Database can be accessed at http://database.aceee.org.

may be viewed in a *list all* format. This database is publicly available and will be updated with each edition of the *City Scorecard*, as new cities are scored, and as major policy developments occur.

Chapter 1. Methodology and Results

Authors: David Ribeiro, Virginia Hewitt, and Eric Mackres

The thousands of local governments in the United States vary in size and authority, and they have diverse priorities. As a result, they have taken different energy efficiency actions. We document this variation in the *Scorecard* by focusing on the activities of 51 large US cities across 5 policy areas. Our metrics are based on common policy categories and are broadly applicable to local governments in the United States, even those not in the *Scorecard*.

GOAL AND APPROACH

Energy efficiency is important to policymakers, city residents, and businesses. It can make cities more livable, competitive, and resilient, and can spur economic growth. We attempt to capture these diverse interests in our metrics. While this is primarily a scorecard that evaluates policies—including the adoption and implementation of local initiatives, practices, and programs—it also documents local leadership and the availability of energy efficiency services in each city.

The *Scorecard* describes and compares actions cities can take to enable or improve energy efficiency in their cities. Our metrics are based on policy actions local governments can implement or influence and attempt to reflect the policy activities cities are taking. Whenever possible, we collect data to score cities at the scale of the city's jurisdiction. For example, most of our metrics measure whether cities have implemented particular policies or programs within their own borders. Sometimes, though, the data for a metric are not available at the city level, only for the metropolitan area, county, or state. In those cases, we scaled the raw data to the appropriate level for the city, usually by normalizing by population. For example, freight transportation traffic data are available only at the metropolitan level, so we normalized that data using each city's population.

All local governments have some influence over the policy areas in the *Scorecard*, but the amount of city influence, or "capacity to act," varies due to differing local policy environments, state laws, and local control over utilities (Hammer 2009). These factors impact the policy mechanisms cities can use to influence energy-related outcomes (Arup and C40 Cities Climate Leadership Group 2011; Hinge et al. 2013). To account for this, some of our metrics score cities differently based on their capacities to act. For example, we scored cities with municipal energy utilities differently than those with investor-owned utilities to ensure a fair comparison.

In some cases, we also account for actions taken by local actors beyond the city government. In other cases, the actions of other authorities or private entities are the basis of scores. For example, if the water utility serving a city is not municipally owned, we still collected that utility's data for our water-related metrics. In the transportation sector, we developed scores using data on regional transit agencies scaled to the city level. We also captured some actions by private entities, such as efficiency investments by investor-owned utilities and the development and operations of district energy and combined heat and power systems.

If we scored actions lying outside of the direct influence of the city government, we did so for three reasons. First, the *City Scorecard* is meant to be an educational resource to inform policymakers and interested citizens. We would present only a partial picture of a city's energy efficiency policy environment if we focused on the city government exclusively. Second, city actions on energy efficiency take place in a specific local, regional, and state policy environment.

Each of these entities needs to place a greater emphasis on energy efficiency in its policies, planning, and decision making. Local leadership should encourage learning and greater adoption of energy efficiency initiatives among other authorities. Third, if a city does not manage these entities, there are still ways city governments can influence them. They can do this through a combination of soft power options (e.g., using the bully pulpit and establishing city practices that become de facto regional standards) and hard power options (e.g., funding and votes on governing boards).

SELECTION OF CITIES

There are nearly 90,000 local governments in the United States, including over 3,000 counties, more than 35,000 municipalities or towns, and over 50,000 special purpose districts such as school districts, transit agencies, and public utilities (Census 2013b). For the purposes of the *Scorecard*, we define a city as the area within the political borders where a local government has direct policy authority (e.g., the city of Detroit rather than the Detroit–Livonia–Dearborn metropolitan statistical area).

We focus exclusively on cities and their governments because of their significant role as centers of economic and cultural activity. The largest city in a metropolitan region can wield influence beyond its population numbers due to its ability to informally veto or fast-track regional decisions. Often, other jurisdictions in the region then adopt similar policies. Central cities influence travel behavior and hold a large share of the region's commercial and industrial buildings. Additionally, the leaders of cities with large populations can influence the policy of other local governments, states, and the federal government.

We include 51 cities in this edition of the *Scorecard*, the original 34 included in the first edition and 17 additional cities. To determine the cities for the *2013 Scorecard*, we compiled lists of the 25 most populous cities both in terms of city-proper population and US metropolitan statistical area (MSA) population and combined them to arrive at our 34-city sample. For the 2015 edition, we focused on the central cities of the 50 most populous MSAs (Census 2014).[3] Our final list included 51 cities, those in the 50 most populous MSAs and one additional city.[4] These cities all have large resident populations within their borders (a median population of 622,104, with 125,017 in the smallest city) and are a central city in an MSA with a large population (a median of 2,272,698, and none smaller than 830,000). These cities alone include 14.8% of the population of the United States, and the metropolitan areas in which they are located contain 56.9% (Census 2014). Table 2, below, lists the selected cities.

[3] Despite the limitations on the number of cities included in this report, the methodology can be used to assess energy efficiency actions in any local jurisdiction. The upcoming update of the *Local Energy Efficiency Self-Scoring Tool* will apply the same methodology to help localities that were not scored in this report assess their communities. In addition to allowing for comparison to the 51 cities in the main report, the tool allows users to compare their scores to those of peer communities of various sizes and types. Additionally, the State and Local Policy Database houses the efficiency policies and actions of localities in this *Scorecard* and of those that have formally submitted their self-scoring results.

[4] This includes El Paso, a large city included in the first edition of the *Scorecard*, which is not located in one of the 50 largest metropolitan areas. All other cities from the previous *Scorecard* are located in one of the 50 largest metropolitan areas.

POLICY AREAS AND METRICS

Our scoring is based on metrics that reflect the adoption and implementation of specific government policies, actions, or public services that can improve energy efficiency. Although the policy environments in cities vary considerably, our metrics capture a broad range of city actions. They measure policies and programs that achieve one or more of the following:

- Directly reduce end-use energy consumption
- Accelerate the adoption of the most energy-efficient technologies
- Provide funding for energy efficiency programs
- Set long-term commitments to energy efficiency
- Establish or enforce mandatory or voluntary performance codes or standards
- Reduce market, regulatory, and information barriers to energy efficiency

All policy metrics analyzed are related to one of five policy areas, each having a chapter in this report:

- Local government operations
- Community-wide initiatives
- Buildings policies
- Energy and water utilities
- Transportation policies

SCORING METHOD

The maximum number of total points a city can earn across all policy areas is 100. The distribution of points among policy areas remains the same as it was in the previous *Scorecard* edition. We chose this distribution based on studies of relative local energy savings opportunities, analyses of city energy consumption patterns, and assessment by ACEEE and external experts of the potential impacts of local government policies on improving energy efficiency (Eldridge et al. 2010; Geller et al. 2012; Laitner et al. 2012; Mackres, Laitner, and Neubauer 2011; Mackres and Molina 2013; Neubauer et al. 2011; López Moreno et al. 2008; IEA 2008).

The policy areas, metrics, and maximum points available in each are included in table 1 and in more detail in table A1 in Appendix A.

Table 1. Scoring by policy area

Policy area and subcategories	Maximum score
Local government operations	15
Local government energy efficiency goals	4
Performance management	2.5
Procurement and construction policies	3.5
Asset management	5
Community-wide initiatives	10
Community-wide energy efficiency goals	4
Performance management	2
District energy and combined heat and power	2.5
Urban heat island mitigation	1.5
Buildings policies	29
Building energy code stringency	6
Building energy code compliance	6
Requirements and incentives for efficient buildings	9
Benchmarking, rating, and transparency	6
Comprehensive efficiency services	2
Energy and water utilities	18
Electric efficiency spending	4
Natural gas efficiency spending	2
Electric savings	2
Natural gas savings	1
Energy efficiency targets and requirements	2
Energy data provision	2
Efficiency efforts in water services	5
Transportation policies	28
Location efficiency	8
Mode shift	8
Transit	6
Efficient vehicles and vehicle behavior	3
Freight	3
Maximum total score	100

Figure 1 shows the distribution of these points across the five policy areas.

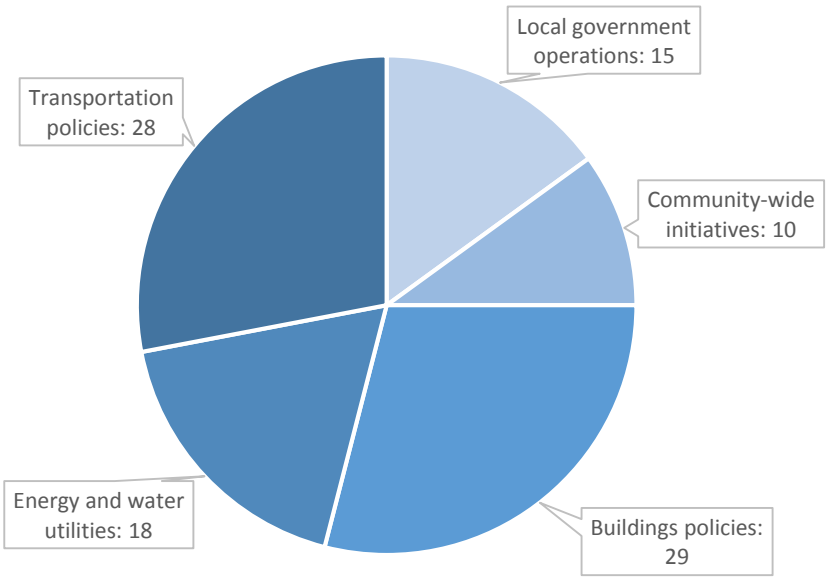

Figure 1. Distribution of points by policy area

We allocated 15 points to policies and actions that increase efficiency in local government operations to reflect the importance of these activities as building blocks for broader community efforts. We allocated 10 points to community-wide efforts that reached across multiple energy-using sectors. We awarded three-quarters of all points in three sector-specific policy areas: buildings, energy and water utilities, and transportation. We allocated 29 points to policies and programs related to efficiency in buildings and 18 points to investments by and programs of energy and water utilities. Combined, we allocate 63% of end-use sector-specific points to these two policy areas. Similarly, we allocated 28 points to transportation policies to approximate the sector's energy-use share in large cities.

Within each policy area, we developed a scoring method for each policy metric, which is described in detail in the subsequent chapters. Generally, we allocated points based on that metric's relative impact on energy savings. Metrics reflecting local government leadership are weighted more heavily than their energy-saving potential alone would suggest. We have made several methodology improvements to the *Scorecard* and have documented them in Appendix A. As new research and data on local policy implementation and energy savings from efficiency become available, we will refine the methodology, metrics, and scoring for future editions of the *City Scorecard.* Our goal is to collect and present the most relevant information regarding local efforts to achieve energy savings.

The information contained in the *Scorecard* reflects existing policies as of the end of 2014. In lieu of extensive appendices to this report, we present the complete policy and programmatic information for each city in the State and Local Policy Database.

DATA COLLECTION AND REVIEW

Our data collection process consisted of multistep outreach to local stakeholders in the cities we scored and energy efficiency experts nationwide. The steps included:

1. *Methodology revie*w. We evaluated the methodology used in compiling the first edition of the *Scorecard* with a focus on data availability, distribution of earned points, and advancements in the literature. We discuss changes in point allocation in table A1 in Appendix A and where applicable throughout the *Scorecard*.

2. *Data requests to cities and utilities and secondary data collection.* We asked local government staff (primarily sustainability directors and energy managers) or other knowledgeable city stakeholders to complete a data request and provide updates to the policy information listed in our Local Policy Database. Respondents in 43 of the 51 cities returned completed data requests to us. We also reached out to staff at electric and natural gas utilities. Of the 82 data requests sent to utility contacts, 66 were returned to us. The city and utility staff members that completed and returned data requests are included in table B1 of Appendix B. Where relevant, we also used publicly available sources to supplement data request responses.

3. *Review and revision.* We applied the scoring methodology to the data we collected and wrote up the results presented in the *City Scorecard*. Before finalizing it, ACEEE staff reviewed the document. The document also went through an extensive external review process where we asked experts and stakeholders to review and comment on the scores, the data we collected, and the methodology. Our external reviewers were experts in energy efficiency and urban sustainability, the local government and energy utility staff whom we had contacted to complete our data requests, and other stakeholders identified during our research. Other stakeholders typically included staff at metropolitan planning organizations or councils of governments, efficiency managers at water utilities, and staff at local nongovernmental organizations focused on energy, environment, consumer advocacy, or economic development. We attempted to engage a range of stakeholders in each city, in most cases soliciting comments from five or more contacts per city. In total, we were grateful to receive and incorporate over 575 comments from more than 85 individuals and organizations.

BEST PRACTICE POLICY METRICS

The *City Scorecard* contains best practice metrics to quantitatively score cities based on nuanced, qualitative policy information. These metrics reward cities that are implementing policies and programs that will likely lead to more efficient outcomes. We scored cities on actions, policies, and implementation, rather than on explicit outcomes—such as energy performance or savings—whose exact relationship to policy actions can be difficult to gauge. Where we could, we went beyond policy *adoption* to score cities based on information regarding policy *implementation*, capturing actual energy-saving activities in a city.

While we do not include energy consumption outcomes in our scoring, we present and analyze energy use trends in Chapter 7. These energy performance data describe a city's energy-related characteristics, which may be the result of historical legacy, the makeup of the local economy, or factors that local policies cannot affect quickly. The limitations of our analysis also highlight one of the reasons we score cities based on their policymaking and adoption rather than specific energy-related outcomes.

Our focus on policy metrics is in keeping with our goal of providing actionable information to residents, businesses, and policymakers. Policymakers need to know what they can do to improve their city's energy use based on their current situation. Residents and businesses most

need information on what services, policies, and incentives are available to help them improve their efficiency. They also need access to resources about the policies they might want their policymakers to support.

DATA LIMITATIONS

Comparing cities remains challenging. Most notably, city-level reporting protocols and national datasets are not standardized. For example, the US Department of Energy (DOE) Energy Information Administration (EIA) does not compile data on energy supply and consumption at the county, metro, or city level. There are also broad differences in how cities track and report their data. The varied data sources required for this project presented another challenge. We had to use over 100 primary and secondary sources for data. While literature capturing city practices is growing, this information alone was not enough to permit scoring cities on every metric. We needed to directly engage city staff and energy utility staff to fill in the gaps. The response rate to our data request was high, but we were unable to independently verify all of the information collected for the cities and utilities that did not respond (table B1, Appendix B). In these cases, we used the most recent publicly available information.[5]

The timeliness of the data we received was another challenge. In our requests, we asked for the most recent available data, but when we turned to available datasets or annual reporting, the most recent results available were often a year or more old.

2015 RESULTS

We present the results of the 2015 *City Energy Efficiency Scorecard* in figure 2 and more fully in table 2 and figure 3. In the sections that follow, we discuss the leading cities, trends in scoring, and most-improved cities and recommend strategies for improving efficiency in cities.

[5] If no information on a metric surfaced after exhausting our known avenues of information collection, we gave the city zero points.

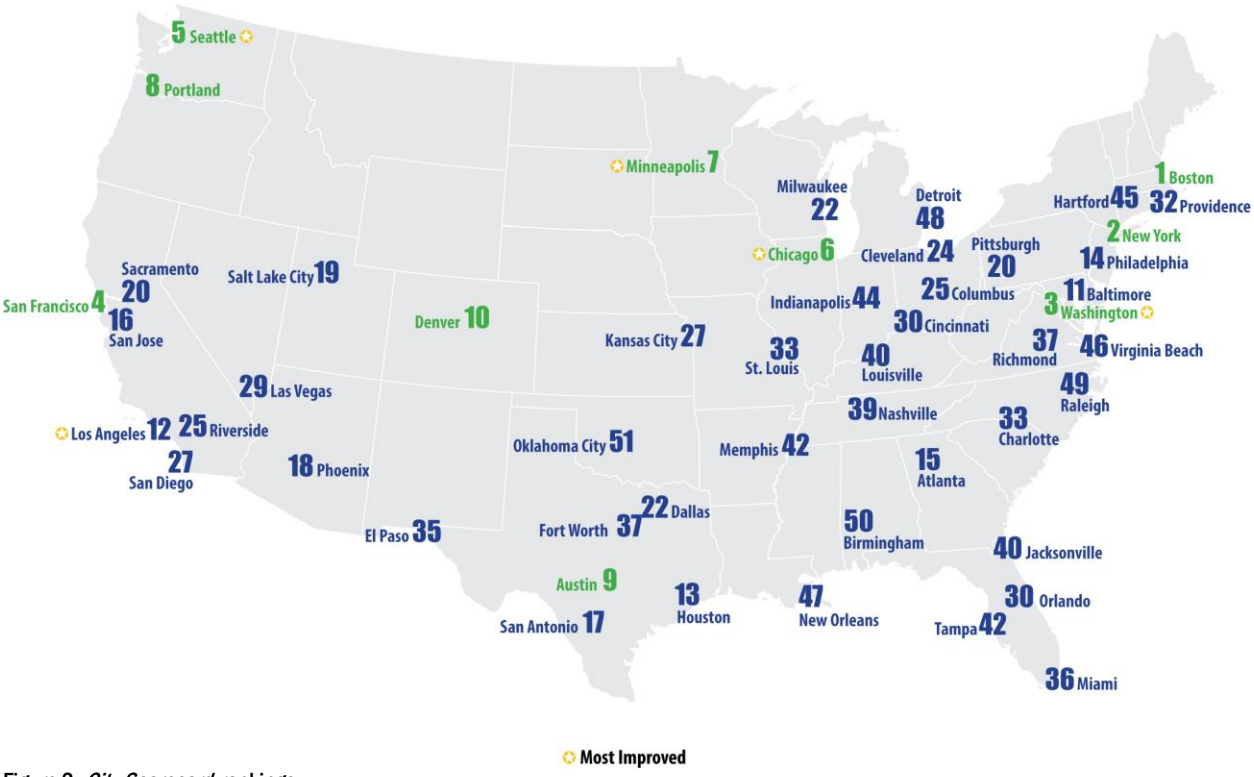

Figure 2. *City Scorecard* rankings

Table 2. Summary of city scores (* Signifies new city in 2015 edition)

Rank	City	State	Local government operations (15 pts.)	Community-wide initiatives (10 pts.)	Buildings policies (29 pts.)	Energy and water utility policies (18 pts.)	Transportation policies (28 pts.)	TOTAL SCORE (100 pts.)	Change in score from 2013
1	Boston	MA	9	9	27	17.5	19.5	82	5.25
2	New York City	NY	11.5	9.5	26	13.5	17.5	78	8.25
3	Washington	DC	11	8	25	12.5	20	76.5	20.5
4	San Francisco	CA	10.5	8	22.5	15.5	19	75.5	5.75
5	Seattle	WA	11	7	23	14.5	19.5	75	9.75
6	Chicago	IL	9.5	5.5	22.5	15	17	69.5	14.75
7	Minneapolis	MN	10	8	16.5	15	17.5	67	11.75
8	Portland	OR	10.5	6	14.5	15	20.5	66.5	-3.5
9	Austin	TX	10.5	8	21.5	10	12.5	62.5	0.5
10	Denver	CO	11.5	5.5	9.5	13.5	18.5	58.5	5.75
11	Baltimore	MD	7.5	6	12	10.5	16	52	5.5
12	Los Angeles	CA	7	8	12	13	11.5	51.5	20
13	Houston	TX	10	3.5	12	10	15.5	51	5.75
14	Philadelphia	PA	7.5	5.5	10.5	9.5	17	50	-5
15	Atlanta	GA	8	4.5	7.5	9	18.5	47.5	5
16	San Jose	CA	6	4.5	10	12.5	12.5	45.5	8.25
17	San Antonio	TX	8	6.5	7.5	9.5	13.5	45	2.5
18	Phoenix	AZ	11.5	3	11	9.5	9	44	0.5
19	Salt Lake City*	UT	6.5	4	7	9.5	15.5	42.5	---
20	Pittsburgh	PA	8	6	8	8	11	41	6.75
20	Sacramento	CA	5.5	6	9.5	12	8	41	0.25
22	Milwaukee*	WI	6.5	3.5	9.5	9.5	11	40	---
22	Dallas	TX	8.5	2.5	8.5	8	12.5	40	-4.25
24	Cleveland*	OH	8.5	3.5	6.5	10	10.5	39	---
25	Riverside	CA	2.5	6.5	9	11	9.5	38.5	1.25
25	Columbus	OH	7	2	6.5	9.5	13.5	38.5	0
27	Kansas City*	MO	4	3	9.5	5	13.5	35	---

Rank	City	State	Local government operations (15 pts.)	Community-wide initiatives (10 pts.)	Buildings policies (29 pts.)	Energy and water utility policies (18 pts.)	Transportation policies (28 pts.)	TOTAL SCORE (100 pts.)	Change in score from 2013
27	San Diego	CA	5.5	2.5	7	10.5	9.5	35	-3.25
29	Las Vegas*	NV	8.5	3	5.5	10.5	7	34.5	---
30	Cincinnati*	OH	3	4.5	6	8.5	11.5	33.5	---
30	Orlando*	FL	8	5.5	4	5.5	10.5	33.5	---
32	Providence*	RI	3.5	2.5	7.5	10	8.5	32	---
33	Charlotte	NC	8.5	2.5	2.5	7	11	31.5	7.75
33	St. Louis	MO	3.5	4	6	5	13	31.5	-4.75
35	El Paso	TX	7.5	0.5	3.5	8	10	29.5	-6.75
36	Miami	FL	4	3	6	3.5	12	28.5	-3.5
37	Richmond*	VA	4.5	2.5	7.5	2.5	11	28	---
37	Fort Worth	TX	7	2.5	3.5	8.5	6.5	28	-4.75
39	Nashville*	TN	6	3.5	4.5	3.5	9.5	27	---
40	Louisville*	KY	2.5	2.5	6.5	2	12.5	26	---
40	Jacksonville	FL	3	3	4	6	10	26	8.75
42	Memphis	TN	1.5	1.5	4.5	5	12.5	25	1.5
42	Tampa	FL	3.5	1	7.5	5.5	7.5	25	-1.75
44	Indianapolis	IN	3	1.5	4	8.5	7.5	24.5	-3.75
45	Hartford*	CT	2.5	1.5	5.5	7	6.5	23	---
46	Virginia Beach*	VA	4.5	1	5.5	6	5.5	22.5	---
47	New Orleans*	LA	2	2.5	5	1.5	9	20	---
48	Detroit	MI	0.5	1	5	4.5	6.5	17.5	-1.5
49	Raleigh*	NC	0	1	3	2.5	8.5	15	---
50	Birmingham*	AL	0	1	4.5	0.5	8.5	14.5	---
51	Oklahoma City*	OK	3	1.5	1.5	2.5	3.5	12	---
	Median		**7**	**3.5**	**7.5**	**9.5**	**11.5**	**38.5**	**2**

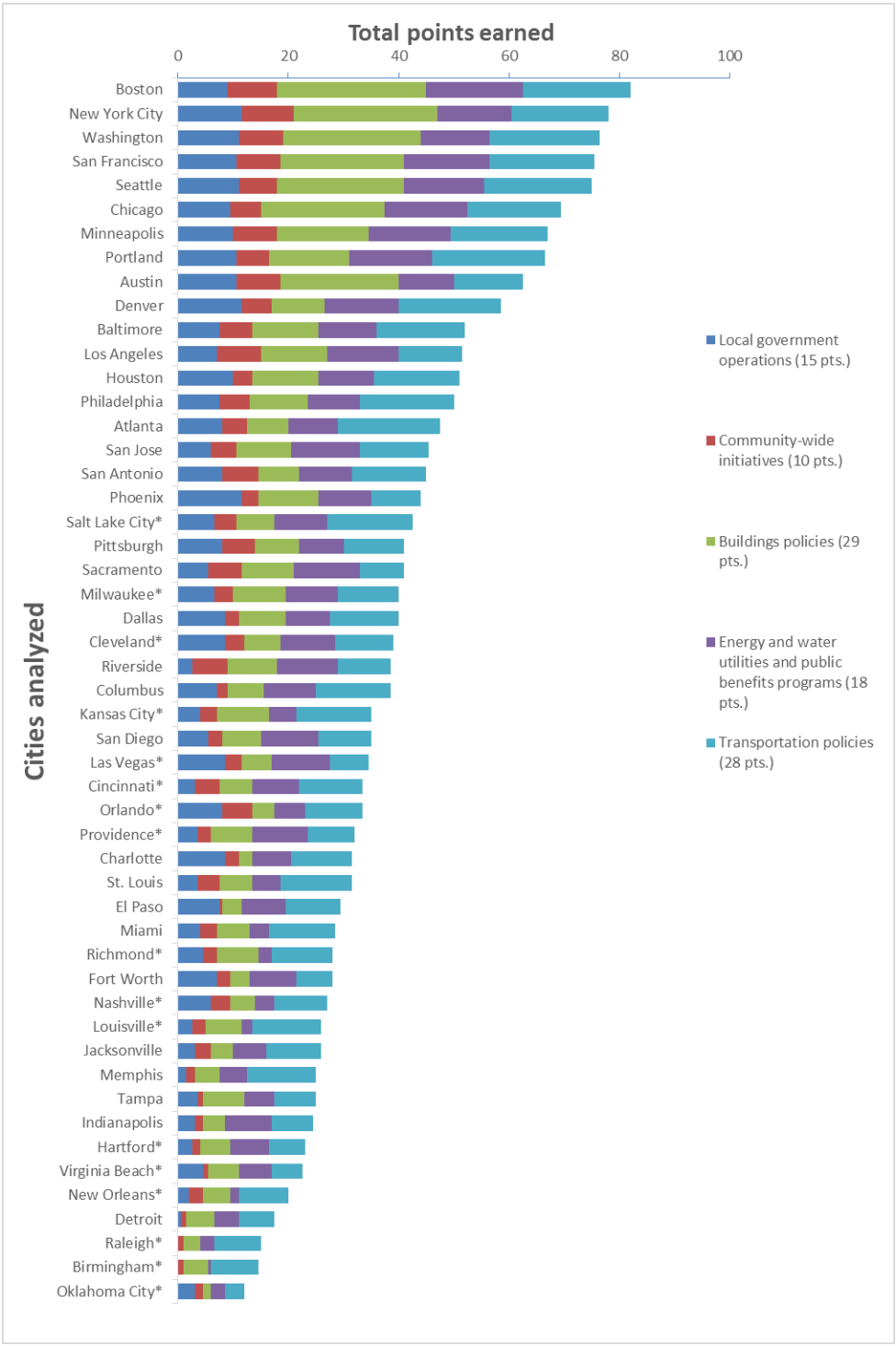

Figure 3. City scores by policy area

How to Interpret the Results

Table 2 presents the scores and rankings for all cities, but it is often helpful to look at city scores in tiers of 10 when considering differences in policy developments. The cities in each tier have different scores in each policy area, but they are generally at similar levels in terms of developing their energy efficiency actions. The differences between individual cities, and

particularly the few points that separate many of them, are less important than the differences between these tiers.

The difference between the total scores of each tier's highest- and lowest-scoring city varies among these tiers, but is moderately smaller in the middle tiers than in the top or bottom tier: 11 points separate the top and bottom cities in the second tier, 6.5 in the third, and 6 in the fourth. Several of the cities in these tiers have seen a point change of 5 or more since the first edition of the *Scorecard*, meaning that continual improvements will likely help cities move up in the rankings. Conversely, those who do not make similar improvements will fall in future rankings.

The first tier had the largest variation between total scores, 23.5 points. This is nearly twice as large as the variation within any other tier except the last. However, within the subtier containing the top five cities, the difference in total points falls to 7. This is smaller than the gap from the *2013 Scorecard*, indicating increasing competition at the top of the rankings. All the top-tier cities in the *2013 Scorecard* returned to that tier in this edition with the exception of Philadelphia, which fell slightly. Denver is making its first appearance in the top tier. In fact, 9 of the 10 tier-1 cities increased their score totals this year. Portland was the lone exception, but it is still the leading city in transportation policies. The high scores of all of these cities may indicate that they have been dedicated to energy efficiency for a longer time than others. Continuous dedication to efficiency allows cities to ramp up policies or funding for programs. The cities in the top tier have all made significant long-term commitments to energy efficiency, although the policy areas emphasized and the contexts in which they operate vary considerably.

The bottom tier of cities has scores varying from 25 to 12, for the next-largest variation in points after the top tier. This point distribution may indicate that many cities are either relatively new to energy efficiency activities or just beginning comprehensive efficiency initiatives. We congratulate these cities for taking the first steps toward making their cities more energy efficient. Often the first steps are the most difficult to achieve. We encourage cities that missed earning a high score this year to continue learning and developing locality-specific best practices. However, we must also acknowledge that six of the cities new to the *Scorecard* fall into this bottom tier. As we continue to engage these newcomers in the future, we may improve our data collection and learn of established policies that we were unaware of. Of the 10 cities in the tier, Memphis, Tampa, Indianapolis, and Detroit are those returning from the last *Scorecard*.

2015 Leading Cities

Boston retained its position at the top of the *City Scorecard* rankings by earning more than 80% of available points and improving its overall score from the last *Scorecard*. Boston scored well across all policy areas due to its broad set of efficiency policies, and it is the leading city for buildings policies. Through Renew Boston, the city works with its electric and gas utilities to support energy efficiency, offering owners of homes and small businesses no-cost energy assessments and incentives for upgrades. Also, the Boston City Council adopted the Building Energy Reporting and Disclosure Ordinance in 2013 to bring more transparency to energy and water use in commercial and large residential buildings. As it did in the *2013 Scorecard*, the city also scored the highest for its energy utilities because of large utility investments in electricity and natural gas programs, and good access to utility energy data.

Boston has also emerged as a strong voice for efficiency at the state level in Massachusetts, the highest-scoring state in the *2014 State Energy Efficiency Scorecard* (Gilleo et al. 2014). The city has

been an advocate for the state's high levels of utility spending on electricity and natural gas efficiency programs.

New York City rose from the third rank to the second in this edition, earning 8.25 more points than on the *2013 Scorecard*. New York City remains a leader in buildings policies. The city's Greener, Greater Buildings Plan and related policies require building rating and transparency for commercial and multifamily buildings and require actions to improve efficiency in its largest buildings. New York City is the leading city for community-wide initiatives, due to its planning for future distributed energy systems, urban heat island mitigation strategies, and progress toward its achieving its community-wide greenhouse gas emissions reduction goal. New York also earned full marks in water-related efficiency activities, continuing its well-known tradition of excellence in water service.

Washington, DC jumped into the top five this year with a substantial score increase. The District is one of the leading cities for its transportation policies, and it particularly excels with its mode-shift policies. Washington aims to achieve a 75% increase in commuter trips by transit, biking, and walking by 2032. To do so, it has invested in public transit facilities and hosts several car-share programs in addition to one of the most successful bike-share programs implemented recently, Capital Bikeshare. Washington is also one of the leading cities for buildings policies.

San Francisco earned more points in the *2015 Scorecard* than in the 2013 edition, but fell one spot in the rankings to fourth place. The drop in rank is not an indication of a lagging commitment to efficiency, but rather the result of the scoring increases many top cities achieved since the last edition. San Francisco is not the top scorer in any of the policy areas, but is in the top five across all of them, demonstrating its comprehensive approach to efficiency. The city is climbing the buildings policies ranks due to improved building energy code stringency and enforcement.

Seattle maintained its fifth-place ranking with a score increase of nearly 10 points. It is one of the leading cities for transportation policies, due to its location efficiency efforts and initiatives to encourage modes of transportation other than driving single-occupancy vehicles.

This edition of the *Scorecard* again shows that cities around the country are dedicated to energy efficiency. The five top-scoring cities come from the Pacific Coast, New England, and the Mid-Atlantic. The cities that round out the top 10—Chicago (6th), Minneapolis (7th), Portland (8th), Austin (9th), and Denver (10th) include another representative from the Pacific Coast and cities in the Midwest, Mountain West, and South-Central United States. These cities have embraced energy efficiency for a variety of reasons in differing physical and political environments.

Policy Trends

Before discussing scoring trends, it is important to keep in mind that our city sample size increased from 34 in the *2013 Scorecard* to 51 in the *2015 Scorecard*. Because of this, comparing changes in rankings between the two editions would be unfair to those cities that have made improvements, but nevertheless dropped in the rankings due to the new cities' inclusion. We use changes in score totals as the barometer for determining city improvement since the last edition. We do not consider rankings when looking at trends between the two *Scorecards* or identifying the most-improved cities. The only exception to this is when we discuss ranking changes in the Leading Cities section because the new cities did not impact the rankings of the top 15 cities. Future editions of the *Scorecard* will include a comparison of rankings because we will not add any new cities in the future. However it is worth noting that changes in cities'

scores are due to a combination of increased energy efficiency activities, scoring methodology improvements, and improved data collection.

With this second edition of the *Scorecard*, we can compare results to the *2013 Scorecard* to identify overall scoring trends, and we can compare individual cities' performance to their 2013 scores. Many cities gained points in buildings policies, energy and water utilities, and transportation policies because of increased energy efficiency efforts in these policy areas. Of these improvements, some align with national best practice strategies while others are specific to particular localities. This indicates that innovative policies and industry-altering advancements can come from both local innovations and evolution on the national scale.

In the buildings sector, cities—and states in some cases—have made improvements in residential energy code stringency and commercial and residential energy use benchmarking. Thanks to the adoption of the 2013 California Energy Code, every California city earned new points in residential and commercial code stringency. Washington also adopted a more-stringent energy code. Since 2013, four new cities earned full marks for commercial benchmarking, bringing the total of perfect scorers up to seven. On the residential side, 15 cities showed improvements in benchmarking policies, yet only 4 cities have full marks.

The most notable trends in transportation-sector improvement are seen in parking requirements, vehicle-miles-traveled goals or modal share targets, and transportation demand management programs. Since 2013, 20 cities have made improvements in their parking requirements, bringing the total of cities that have eliminated a parking minimum to 4. Eleven cities made improvements to their vehicle-miles-traveled goals, bringing the total of perfect scorers to four. Seventeen cities made improvements to transportation demand management programs, bringing the number with full marks to 18. Many cities made improvements in their water-related goals as well. Since 2013, five of the cities in the *Scorecard* have added new water savings targets and five have added new energy efficiency targets for their water systems.

The only policy areas where cities generally lost points were in local government operations and community-wide initiatives. These decreases should not be seen as a sign that cities are backsliding in their efforts to make their government operations and communities more efficient. Several point changes are due to methodology improvements. For example, cities only received credit for being on track for their energy efficiency–related goals if they had quantitative data indicating that. The methodology change meant that cities not only had to be on track for goals, but also needed to better track their progress. In addition, we had strict data requirements for cities to receive points. If a city was unable to document a goal, program, policy, or improvement, we did not award it points.

Most-Improved Cities

Twenty-two cities improved upon their 2013 scores. Many had sizable increases, with the median increase being 5.75 points. We commend all cities for their improvements, but there were some with particularly notable point increases. When selecting the most-improved cities, we considered only cities' new scores compared to their totals in the *2013 Scorecard*, because a comparison of rank would have been skewed by the increased number of cities evaluated in the *2015 Scorecard*. The most-improved cities were those with the largest increases in score from the *2013 Scorecard*.

This edition's most-improved cities are Washington, Los Angeles, Chicago, Minneapolis, and Seattle. Table 3 shows these cities' changes in scores.

Table 3. Most-improved cities compared to *2013 Scorecard*

City	2015 rank	2015 score	Change in score
Washington	3	76.5	+20.5
Los Angeles	12	51.5	+20
Chicago	6	69.5	+14.75
Minneapolis	7	67	+11.75
Seattle	5	75	+9.75

Washington earns double accolades in the *2015 City Scorecard* for being ranked third and for being the most-improved city. The Leading Cities section above focused on Washington's transportation efforts, but it also improved across all policy areas. The city's utilities increased their electric and natural gas efficiency program spending and related savings, and improved support for access to energy data. Washington has also taken steps to plan for future distributed energy systems. The city's score also benefited from improved data collection, especially for some of its community-wide efforts, including making progress toward its greenhouse gas emissions goal and dedicating staff to community-wide initiatives.

Following closely behind Washington, Los Angeles earned 20 more points than in 2013. A strong new energy savings goal and high marks in energy and water utilities helped Los Angeles move up. The Los Angeles Department of Water and Power commissioners recently adopted a policy requiring the utility to achieve 15% energy savings through energy efficiency measures by 2020. The city also saw improvements in electric efficiency spending and citywide data provision. As with Washington, Los Angeles benefited from improved data collection. The city did not return a data request for the *2013 Scorecard*, but worked closely with us to compile data for the 2015 edition.

Chicago's score bump stemmed largely from new efficiency initiatives in its buildings sector. The city increased its score by adopting and implementing a benchmarking requirement for large buildings.

Minneapolis earned most of its new points for buildings policies due to increased offerings of incentives and financing programs for efficient buildings and its code compliance efforts. Seattle earned most of its new points in transportation policies, due its location efficiency and mode-shift efforts, as discussed in the Leading Cities section.

Other cities' improvements also deserve recognition, including two cities in the Southeast. Charlotte offered a strong showing, earning new points for local government operations, energy and water utilities, and transportation policies. In 2014, the city released its Internal Environmental Operations Plan, which includes a new goal to reduce energy use in existing city-owned facilities. Jacksonville, the lowest-scoring city in the 2013 edition, saw a 50% point increase over its previous score. The majority of the improvement is attributable to new data provided on transportation policies and new points awarded in the energy and water utilities chapter.

STRATEGIES FOR IMPROVING EFFICIENCY

Only Boston earned more than 80% of the points available in the *City Scorecard*. This means that all cities have considerable room for improvement, even those ranked at the top. For cities wanting to improve their energy efficiency, and by doing so improve their scores in the *City Scorecard*, we summarize several high-level recommendations here and give examples of cities whose policies are leaders in the corresponding areas. All relevant policy information may be found in our State and Local Policy Database.

Lead by example by improving efficiency in local government operations and facilities. City governments can systematically adopt policies and programs to save energy in public-sector buildings and fleets. They can encourage changes in employee behavior and in standard practices. Guidelines and policies can direct investment toward more energy-efficient infrastructure. Efficiency initiatives focused on city operations are often a stepping stone to improving efficiency throughout the community.

Examples: Cleveland and Atlanta (more efficient management of buildings, infrastructure, and human resources), San Diego and Portland (procurement and construction policies)

Adopt energy savings targets. Energy efficiency-related goals, which are endorsed and codified by leaders, are essential for focusing public- and private-sector resources to achieve energy savings. Goals can be set for the entire community, or for specific energy-using sectors of the economy, such as buildings or transportation. Some communities have goals for building energy use, such as those participating in DOE's Better Buildings Challenge. Some cities have the authority to set goals related to their utilities or target levels of efficiency investments.

Examples: San Jose and Baltimore (community-wide energy target), Denver and Pittsburgh (local government energy target), Austin (municipal energy utility target and buildings energy savings target), El Paso (water savings and local government energy targets)

Actively manage energy performance, track and communicate progress toward goals, and enable broader access to energy use information. Systematic strategy implementation, including regular tracking and reporting of progress toward goals, helps cities identify opportunities for improving their energy plans. Timelines, targets, or strategies can be revised. Staff members exclusively tasked with energy management may be needed to implement energy-related tasks. Performance management requires data. Cities can work to improve access to energy use data for their own purposes, and can help make energy data available to residents and businesses. A core strategy for improving access to energy data is to work with utilities to improve the availability and use of utility energy consumption data.

Examples: New York City (tracking progress and reporting on local government goals), Los Angeles (tracking progress and reporting on community-wide goals), Philadelphia (access to utility energy data)

Adopt policies to improve efficiency in new and existing buildings. City governments often have considerable influence over buildings in their communities. To improve the efficiency of new buildings, cities can make sure that their efforts in compliance and enforcement of building energy codes are effective and well funded. If a city has the authority under state law, it can adopt more stringent building energy codes. If not, it can advocate for the state to do so. To improve energy efficiency in existing buildings, cities can encourage better integration of

energy information into their local real estate markets with policies requiring energy benchmarking, rating, or transparency for existing buildings. Cities can also provide incentives for efficient buildings, require energy audits, or implement energy performance requirements for certain building types.

Examples: Austin, Houston, and Seattle (local energy code adoption), Seattle (third-party energy code enforcement), Boston (energy reporting disclosure ordinance), Chicago (residential energy use transparency requirement), San Francisco (residential energy conservation ordinance, commercial building benchmarking and transparency requirement), New York City (Greener, Greater Buildings Plan, which includes requirements for building benchmarking, energy audits, and tune-ups)

Partner with energy and water utilities to promote and expand energy efficiency programs. Utilities are the primary funders and administrators of customer efficiency programs in most places around the country. Cities can partner with utilities to promote efficiency programs to their residents. Cities can also be important voices in state utility regulation to encourage the expansion and improvement of efficiency programs run by investor-owned utilities.

Examples: San Francisco (SF Energy Watch utility partnership), Boston (Renew Boston utility partnership), Austin (joint programs targeting water and energy savings), Minneapolis (Clean Energy Partnership with utilities)

Implement policies and programs to decrease transportation energy use through location-efficient development and improved access to additional travel-mode choices. Local governments take the lead in shaping land use because they have jurisdiction over zoning laws and regulations. Likewise, central cities and other job centers can influence commuting behaviors of residents in their region. Cities can ensure that major destinations are accessible by more energy-efficient transportation modes through location-efficient zoning and policies that integrate transportation and land use planning. Local governments can expand residents' transportation choices and create neighborhoods that support safe, automobile-independent activities. Cities can implement policies that encourage a switch from driving to other modes of transportation (e.g., public transit, bicycling, walking) through the use of transportation demand-management programs and car- and bicycle-sharing efforts.

Examples: Jacksonville (goal to reduce vehicle miles traveled), New York City (funding for and access to public transit), Indianapolis (complete-streets ordinance), Cincinnati (location-efficient zoning and parking policies), Portland and Memphis (location-efficient zoning)

Chapter 2. Local Government Operations

Lead Author: David Ribeiro

INTRODUCTION

Local governments can see multiple benefits from investments in energy efficiency. Such investments can improve the operational efficiency and economic performance of the city's assets, while at the same time demonstrating the city's commitment to energy efficiency. Some local governments pursue energy-saving initiatives because of cost considerations, using energy efficiency as a cost-saving mechanism, and to reduce their vulnerability to volatile energy prices. Energy use can account for as much as 10% of a local government's annual operating budget, and that proportion may increase as energy prices rise (EPA 2011a). As cities begin to consider life-cycle costs of purchases and capital investments, improving energy efficiency often makes strong financial sense. As an example, energy-efficient buildings can produce lifetime cost savings in the millions of dollars over conventional buildings (EPA 2011a).

City governments have great opportunities to lead by example. While many cities are also taking citywide action, they often begin lead-by-example implementation with their own government operations. Cities can advance energy-efficient technologies and practices by adopting policies and programs to save energy in public-sector buildings and fleets. Efficiency initiatives focused on city operations are often stepping stones to efforts to improve efficiency throughout the community. The demonstration of efficiency technologies and strategies can help speed their adoption in the broader local market and spur private-sector investment.

City governments vary considerably in the size and scope of their authority. Some city governments directly control their energy utilities, water and wastewater systems (examined in Chapter 5), and school systems. In other places, these functions are administered by independent authorities. All cities can take some actions, including those discussed in this chapter, either independently or in cooperation with other stakeholders to demonstrate leadership in their communities.

Strategies in this section are often the result of mayoral goals, executive orders, or city council resolutions. These mandates can spur immediate action by clearly articulating goals, establishing time frames, and engaging key personnel. A further driver of local government operations initiatives in some communities is a growing commitment to climate change mitigation. Coordinating energy efficiency goals with climate policies often lowers the cost of meeting emissions reduction targets.

SCORING

Cities could earn a maximum of 15 points for local government operations scored as follows:

- Local government energy efficiency–related goals and progress toward achievement (4 points)
- Management of local government energy strategies, including devoting staff, funding, and resources to implement, monitor, report on, and evaluate programs (2.5 points)
- Energy-efficient procurement and construction policies for operations (3.5 points)
- Integration of energy efficiency into asset management and maintenance strategies (5 points)

The points related to local government operations make up 15% of the total possible points for the *Scorecard*. This figure does not reflect the typical proportion of a city's energy use that is attributable to the local government. On the contrary, local government energy use as a percentage of total community energy use is most often in the single digits. Nevertheless, we allocated a large number of possible points to local government operations because of their role in catalyzing policy development and voluntary action related to private-sector energy efficiency. We allocated points to the individual metrics using a similar logic: the approximate energy savings impact of the metric combined with the leadership it shows.

Most of the points in this category are allocated to recognizing adopted policies that save energy. However we also captured information on the impact of policy implementation to the extent the data were available. For example, we gave points for performance management strategies to cities that showed progress toward their goals in public reporting. Unless otherwise noted, we relied primarily on cities' publicly available energy or sustainability reports and websites for the data presented in the following sections. We supplemented publicly available data with a data request to municipal sustainability officers. No single data source, other than this report, aggregates comprehensive information on city energy efficiency policies across the United States. Many cities are in the process of formalizing policies that relate to energy-efficient operations. We did not award points for draft policies. Finally, many of the policies related to government operations included in this chapter have equivalent policies related to private sector actions (e.g., requiring that energy use in private buildings be benchmarked). Equivalent private-sector policies are not included in this chapter but are accounted for in the chapters that follow.

RESULTS

Denver, New York City, and Phoenix tied for the top overall score for local government operations. New York City scored well across all categories, but excelled in the government energy efficiency goals and performance management strategies categories, where it earned perfect scores. Similarly, Denver performed well throughout and earned full credit in the energy efficiency goals category for being on track to achieve its local government operations greenhouse gas emissions goal for 2020. Phoenix earned most of its points from its robust asset management policies; the city currently benchmarks energy use in approximately 75% of its public buildings—with plans in place to expand to 100% of city buildings—and has sustainable infrastructure policies.

Table 4 presents the overall results of scoring on local government operations. We discuss the point allocation on individual metrics within these categories in the tables that follow in this chapter and in table A1 in Appendix A.

Table 4. Local government operations scores

City	State	Gov. energy efficiency goals (4 pts)	Performance management strategies (2.5 pts)	Procurement & construction policies (3.5 pts)	Asset management (5 pts)	Total score (15 pts)
Denver	CO	4	2	2.5	3	11.5
New York City	NY	4	2.5	2.5	2.5	11.5
Phoenix	AZ	3.5	1.5	2	4.5	11.5
Seattle	WA	1.5	1.5	3	5	11
Washington	DC	3	2.5	3	2.5	11
Austin	TX	3	1.5	3	3	10.5
Portland	OR	2	1.5	3	4	10.5
San Francisco	CA	2	2.5	2	4	10.5
Houston	TX	3	1.5	1.5	4	10
Minneapolis	MN	3.5	1	3	2.5	10
Chicago	IL	1	2	2.5	4	9.5
Boston	MA	4	2	1	2	9
Charlotte	NC	0	1	2.5	5	8.5
Cleveland	OH	1	1.5	1.5	4.5	8.5
Dallas	TX	4	1	2	1.5	8.5
Las Vegas	NV	3.5	2	1	2	8.5
Atlanta	GA	1	2	1	4	8
Orlando	FL	1.5	2	2	2.5	8
Pittsburgh	PA	2	2.5	2	1.5	8
San Antonio	TX	0	1	2	5	8
Baltimore	MD	1.5	2	2	2	7.5
El Paso	TX	3.5	1	1	2	7.5
Philadelphia	PA	1	2	2.5	2	7.5
Columbus	OH	1	1.5	2	2.5	7
Fort Worth	TX	0	1.5	1.5	4	7
Los Angeles	CA	0.5	1.5	2.5	2.5	7
Milwaukee	WI	0	2.5	1.5	2.5	6.5
Salt Lake City	UT	3	1	1.5	1	6.5
Nashville	TN	1.5	1	2	1.5	6
San Jose	CA	1.5	1	2	1.5	6
Sacramento	CA	1.5	0.5	2.5	1	5.5
San Diego	CA	0	0.5	3.5	1.5	5.5
Richmond	VA	2	1	0	1.5	4.5
Virginia Beach	VA	1	0.5	1	2	4.5
Kansas City	MO	1.5	1.5	0.5	0.5	4
Miami	FL	1.5	0.5	2	0	4

City	State	Gov. energy efficiency goals (4 pts)	Performance management strategies (2.5 pts)	Procurement & construction policies (3.5 pts)	Asset management (5 pts)	Total score (15 pts)
Providence	RI	0	0.5	1	2	3.5
St. Louis	MO	0	1	0.5	2	3.5
Tampa	FL	0	0.5	0.5	2.5	3.5
Cincinnati	OH	1.5	0.5	0.5	0.5	3
Indianapolis	IN	0	0.5	1.5	1	3
Jacksonville	FL	0	0.5	1.5	1	3
Oklahoma City	OK	0	0.5	0.5	2	3
Hartford	CT	0.5	0	0	2	2.5
Louisville	KY	0	1	0	1.5	2.5
Riverside	CA	0	0.5	1	1	2.5
New Orleans	LA	0	1	0	1	2
Memphis	TN	0	0.5	0	1	1.5
Detroit	MI	0	0	0.5	0	0.5
Birmingham	AL	0	0	0	0	0
Raleigh	NC	0	0	0	0	0
Median		**1**	**1**	**1.5**	**2**	**7**

Even though Denver, New York City, and Phoenix earned the top overall scores, other cities had higher scores in both the procurement and construction policies and asset management categories. Charlotte, San Antonio, and Seattle earned perfect scores in the asset management category, and San Diego was the only city to earn a perfect score in the procurement and construction policies category. The diversity among the leading scorers throughout the policy area reflects the different paths cities are taking to make their operations more energy efficient and may also indicate the effectiveness of pursuing a broad strategy to improve operational efficiency.

Overall, most cities received fewer points than they did in the last *City Scorecard*. The median score fell from approximately 8.5 in the last edition to 7 in this one. This was not necessarily due to program and policy rollbacks, but rather to methodology improvements and our requiring more documentation from cities to verify details of their programs and policies before awarding them points.

LOCAL GOVERNMENT ENERGY EFFICIENCY GOALS

Many local governments have adopted energy policies and goals that aim for portfolio-wide reductions in the energy used for their operations. These targets help to coordinate and focus efficiency efforts across departments. Also, by making a clear and specific commitment, cities have a point of reference against which to measure progress.

Efficiency goals in government operations are often intertwined with larger, community-wide efforts to improve efficiency or achieve other energy-related goals. For some municipalities, government goals are the first step in establishing citywide targets. For others, they may mirror citywide goals, showing their commitment to community efforts. Cities use these targets to link

their efforts to improve municipal operations efficiency to larger community-wide sustainability initiatives. Finally, some cities do not have plans to take on citywide goals, but may choose to adopt targets for municipal operations for other reasons; for example, they may want to lower energy bills and streamline efficiency investments across departments.

Cities earned up to 2 points for having local government operations goals that included energy efficiency or energy use targets. They also earned points for goals that are commonly accomplished through energy efficiency actions, such as reductions in greenhouse gas emissions or reductions in energy intensity. Cities did not earn points if their goal applied only to the energy use or greenhouse gas emissions of a specific set of municipal assets, such as municipal buildings or the vehicle fleet. We scaled points based on a city's progress toward setting a goal, as described in table 5. To earn the full 2 points, cities had to have identified, formally adopted, and mainstreamed a goal across municipal operations through department-specific energy-saving commitments or similar actions. If a city did not identify or was not in the process of developing an energy efficiency–related goal, it did not receive points.

Table 5 summarizes this scoring methodology. Table C1 in Appendix C presents scores for energy efficiency targets and the details of those targets.

Table 5. Scoring methodology for energy efficiency goals in local government operations

Energy-related goals for local government operations	Score (2 pts)
The local government has a formal energy efficiency target (or a related target such as a greenhouse gas reduction goal) for municipal operations that has been adopted through an executive order or city resolution and mainstreamed across government operations	2
The local government has a formally adopted municipal operations energy efficiency target or a related target, but has not integrated the target across municipal operations.	1.5
The local government has identified an energy efficiency target or related target for municipal operations, but it has not been formally adopted.	1
The local government has engaged a formal agency stakeholder group to set energy efficiency goals or related goals, although no targets have yet been identified.	0.5

Progress toward Goals

Cities could earn up to 2 points based on progress toward their energy-related goals. Many cities have multiple energy goals with different time horizons; in many cases, one is set to achieve a stated level of savings by 2020 and another is set to achieve a deeper level of savings by 2050. Rather than measuring city progress against all of their goals, we chose to evaluate cities based on their progress toward the future goal that is nearest in time. Cities may earn up to 2 points in this metric, as shown in table 6.

Table 6. Scoring for progress toward goals

Progress toward goals	Score (2 pts)
Reports quantitative energy savings or greenhouse gas emissions reductions and is on track to meet its nearest-term goal	2
Not on track to meet near-term goal, but is projected to achieve savings within 25% of stated goal	1
Does not have a goal, is not projected to achieve savings within 25% of stated goal, or does not have quantitative savings proving it is on track	0

Cities that were on track to meet their goals received the full two points. Cities that were not on track but were projected to come within 25% of their goal received 1 point. To be considered to be on track, cities had to have demonstrated past energy savings or greenhouse gas emissions reductions that, assuming an equal average annual savings rate for all future years until the goal year, would result in energy use at or below the goal level in the goal year. To get credit, cities had to have two or more inventories, which enabled us to determine this trend. We used the level of savings reported in a city's most recent inventory to calculate its annual level of savings between its baseline and update years. We then estimated the city's future overall savings by projecting this annual percentage savings out till the city's future target year.[6] To ensure that we reflected recent energy use or greenhouse gas levels in our savings projections, cities had to have published an updated inventory within the last five years (2010–2014) to earn points. Cities that did not have two years of quantitative performance data or only had inventories older than five years did not receive points. Table C1 in Appendix C details each city's nearest-term local government goal and our projections for overall savings from local government operations.

PERFORMANCE MANAGEMENT STRATEGIES

Local governments must have ways to monitor, track, and report their energy savings progress to verify that efficiency programs are effective and that targets are being met. Often, this requires dedicated funding and staff members to identify, implement, monitor, and evaluate energy efficiency projects and strategies. Governments can find more potential efficiency projects and encourage energy-efficient behavior by designing incentives to encourage departmental action.

Strategy implementation is often closely related to funding. It is difficult to collect information about efficiency spending or budgets that is comparable across cities due to the cross-departmental nature of energy efficiency efforts. But, many of the policies scored here reflect local government investment decisions (e.g., maintaining full-time staff for energy efficiency projects), so to some extent, we picked up the budgeting choices in these metrics.

We allocated 2.5 points to this category as follows.

[6] For more information on the methodology used to project future energy savings or GHG reductions, see Ribeiro et al. 2014.

Dedicated Funding

In this metric area, cities could earn 0.5 points for having (1) a dedicated funding source for efficiency investments, (2) another mechanism regularly funding efficiency investments outside the budget process (such as a special purpose entity), or (3) a mechanism for prioritizing efficiency investments in the capital planning and budgeting process.

Performance Management Reporting

A city could earn 1 point for performance management reporting by local governments. We awarded 0.5 points to a city if it annually reported its progress toward goals in a public report. Alternatively, we awarded the 0.5 points if cities did not publish a formal report, but did report progress to their city council or local government staff and made their updates available to the public. In addition, we awarded 0.5 points if cities used an independent firm for evaluation, monitoring, and verification (EM&V) of progress toward their goals.

Personnel: Staffing and Departmental Incentives

Finally, a city could earn a total of 1 point by allocating staff to municipal efficiency efforts and developing departmental incentives to help achieve its energy efficiency goals. Sustainability staff that devote time to institutionalizing energy management into government operations often are important to a city's progress toward its energy goals (Parzen 2013). We awarded 0.5 points to cities with one or more dedicated staff members (e.g., an energy manager) that oversee operational energy management and coordinate efficiency efforts across municipal departments. We score cities separately on their staffing for community-wide focused energy initiatives in Chapter 3. We also awarded 0.5 points to cities that offered incentives, either financial or otherwise, to city employees or departments for taking energy efficiency actions. For example, we gave points to cities that allowed departments to keep cost savings resulting from their efficiency upgrades and those with employee recognition programs.

Scores

Table 7 lists each city's scores.

Table 7. Scores for performance management strategies

		Dedicated funding	Performance management reporting		Personnel		
City	State	Dedicated funding or in capital planning (0.5 pts)	Annual public reporting (0.5 pts)	Independent EM&V (0.5 pts)	Dedicated staff (0.5 pts)	Staff/dept. incentives (0.5 pts)	Total score (2.5 pts)
Milwaukee	WI	0.5	0.5	0.5	0.5	0.5	2.5
New York City	NY	0.5	0.5	0.5	0.5	0.5	2.5
Pittsburgh	PA	0.5	0.5	0.5	0.5	0.5	2.5
San Francisco	CA	0.5	0.5	0.5	0.5	0.5	2.5
Washington	DC	0.5	0.5	0.5	0.5	0.5	2.5
Atlanta	GA	0	0.5	0.5	0.5	0.5	2
Baltimore	MD	0	0.5	0.5	0.5	0.5	2
Boston	MA	0.5	0.5	0	0.5	0.5	2
Chicago	IL	0.5	0.5	0.5	0.5	0	2

City	State	Dedicated funding	Performance management reporting		Personnel		Total score (2.5 pts)
		Dedicated funding or in capital planning (0.5 pts)	Annual public reporting (0.5 pts)	Independent EM&V (0.5 pts)	Dedicated staff (0.5 pts)	Staff/dept. incentives (0.5 pts)	
Denver	CO	0.5	0.5	0	0.5	0.5	2
Las Vegas	NV	0.5	0.5	0	0.5	0.5	2
Orlando	FL	0.5	0	0.5	0.5	0.5	2
Philadelphia	PA	0	0.5	0.5	0.5	0.5	2
Austin	TX	0	0.5	0.5	0.5	0	1.5
Cleveland	OH	0.5	0.5	0	0.5	0	1.5
Columbus	OH	0	0.5	0	0.5	0.5	1.5
Fort Worth	TX	0.5	0	0.5	0.5	0	1.5
Houston	TX	0	0.5	0.5	0.5	0	1.5
Kansas City	MO	0	0.5	0	0.5	0.5	1.5
Los Angeles	CA	0.5	0.5	0	0.5	0	1.5
Phoenix	AZ	0	0.5	0.5	0.5	0	1.5
Portland	OR	0	0.5	0	0.5	0.5	1.5
Seattle	WA	0.5	0.5	0	0.5	0	1.5
Charlotte	NC	0	0	0	0.5	0.5	1
Dallas	TX	0	0.5	0	0.5	0	1
El Paso	TX	0	0	0	0.5	0.5	1
Louisville	KY	0	0.5	0	0.5	0	1
Minneapolis	MN	0	0.5	0	0.5	0	1
Nashville	TN	0	0	0.5	0.5	0	1
New Orleans	LA	0	0.5	0	0.5	0	1
Richmond	VA	0	0	0	0.5	0.5	1
Salt Lake City	UT	0	0.5	0	0.5	0	1
San Antonio	TX	0.5	0	0	0.5	0	1
San Jose	CA	0	0.5	0	0.5	0	1
St. Louis	MO	0	0.5	0	0.5	0	1
Cincinnati	OH	0	0	0	0.5	0	0.5
Indianapolis	IN	0	0	0	0.5	0	0.5
Jacksonville	FL	0	0	0	0.5	0	0.5
Memphis	TN	0	0.5	0	0	0	0.5
Miami	FL	0	0	0	0.5	0	0.5
Oklahoma City	OK	0	0	0	0.5	0	0.5
Providence	RI	0	0	0	0.5	0	0.5
Riverside	CA	0	0	0	0.5	0	0.5
Sacramento	CA	0	0.5	0	0	0	0.5

City	State	Dedicated funding	Performance management reporting		Personnel		
		Dedicated funding or in capital planning (0.5 pts)	Annual public reporting (0.5 pts)	Independent EM&V (0.5 pts)	Dedicated staff (0.5 pts)	Staff/dept. incentives (0.5 pts)	Total score (2.5 pts)
San Diego	CA	0	0	0	0.5	0	0.5
Tampa	FL	0	0.5	0	0	0	0.5
Virginia Beach	VA	0	0	0	0.5	0	0.5
Birmingham	AL	0	0	0	0	0	0
Detroit	MI	0	0	0	0	0	0
Hartford	CT	0	0	0	0	0	0
Raleigh	NC	0	0	0	0	0	0

PROCUREMENT AND CONSTRUCTION POLICIES

All local governments need purchasing and construction policies for their operations, and this section assesses whether cities factored energy efficiency into these everyday decision-making processes. The policies covered in this subcategory of the *Scorecard* are varied, but help cities make investments in energy-efficient ways. Procurement and construction policies with energy efficiency requirements help institutionalize energy efficiency across all local government departments. Because we assessed policies related specifically to energy efficiency, we did not consider actions related to energy supply, such as green power purchasing, in our scoring.

Typically, cities have made the greatest efforts to incorporate efficiency into investments in three general areas: vehicle fleets, public lighting, and new government buildings and equipment. Cities could receive up to 3.5 points for their procurement and construction policies, subdivided into these three metric areas.

Fleet Efficiency and Vehicle Infrastructure

We allocated 1.5 points in total to vehicle fleet efficiency policies. Many city sustainability efforts have focused on municipal vehicle fleet policies because they are effective in reducing carbon emissions and fuel expenditures. Cities have adopted policies calling for the purchase of the most fuel-efficient vehicle needed for a particular task and/or high-efficiency vehicles, such as hybrid or all-electric vehicles. Some cities also right size their fleets, encourage alternatives to the use of city vehicles for certain tasks, or discourage vehicle idling.

We awarded 1 point to cities that had a fuel efficiency requirement for public fleet vehicles. We also awarded a point if a fuel efficiency requirement was not in place but a city had requirements for fuel-efficient vehicle types such as hybrid or all-electric vehicles. We did not award points to cities with alternative fuel vehicle (e.g., compressed natural gas) requirements, since alternative fuels are not inherently energy saving. We also considered the size, makeup, and operations of a city's fleet in this metric area. A city could also earn 0.5 points if it had right-sizing policies or culling requirements to ensure that its fleet was not too large or specialized for current applications. Alternatively, a city could earn these 0.5 points if it had anti-idling policies or other programs or policies to encourage efficient use behavior for its government vehicle fleet (e.g., through motor pools). In the *2013 City Scorecard*, we included a metric in this chapter that gave points to cities if local governments made electric-vehicle-charging stations available

to private or public vehicles. For this edition, we moved this metric to Chapter 6, Transportation Policies, and expanded its scope so that cities can also earn credit if they have implemented an incentive program to support the installation of electric-vehicle-charging infrastructure.

Public Lighting

We also considered efficient public outdoor lighting, such as streetlights, in this subcategory, and allocated it a total of 1 point. Cities can make some of their simplest energy efficiency improvements by upgrading public lighting. Light-emitting diode (LED) technologies can offer savings of 50% or greater compared to traditional light sources (Arnold et al. 2012). LED lights often have longer lifetimes than traditional outdoor fixtures, meaning that they require significantly less maintenance. Scheduling lighting that turns on only during the hours when it is needed can also extend lamp lifetimes and save energy. Cities received 1 point for adopting the provisions of the Illuminating Engineering Society and International Dark-Sky Association's Model Lighting Ordinance (IES 2011) for their public outdoor lighting or a similar policy requiring efficient lighting. To receive full credit, the city needed to adopt the lighting controls provision, which prohibits the use of lighting when sufficient daylight is available. We awarded 0.5 points to cities that have begun significant outdoor lighting replacement and upgrade programs, but do not have an efficiency requirement in place. Alternatively, cities could earn 0.5 by participating in DOE's High Performance Outdoor Lighting Accelerator. We did not give credit to policies or actions related to traffic lights because new traffic lights are now required by federal law to be of LED-equivalent efficiency.

New Buildings and Equipment

Cities could earn up to 1 point for policies encouraging energy efficiency in building construction and in procurement of equipment and supplies. We awarded 0.5 points to cities with energy efficiency requirements for new public buildings, such as ENERGY STAR® certification. The achievement of Leadership in Energy and Environmental Design (LEED) certification can also result in energy-efficient buildings, but the program is only partially focused on energy savings and is not focused primarily on active energy management. The result is that some LEED buildings do not have energy performance that matches their design intentions (Turner and Frankel 2008). As a result, we only award cities with points for above-code LEED requirements for public buildings if the requirements specifically emphasized completion of the energy efficiency elements of the certification.

We also considered procurement policies in this metric area. Local governments that install energy-efficient products in their facilities can reduce building energy use by as much as 5–10% (EPA 2011b). Local governments may also see other benefits, including reduced maintenance costs from longer product lifetimes. Preexisting policy frameworks for this topic have been helpful to many cities. For example, the Environmental Protection Agency (EPA) Environmentally Preferable Purchasing (EPP) guidelines were originally created for the federal government, but now serve as the basis for many local government procurement policies. Local governments that adopt the EPP guidelines can see a variety of changes across local government operations, including energy efficiency being considered during purchases of desktop electronics, vehicles, and equipment. We awarded cities 0.5 points for having an energy efficiency or life-cycle cost consideration in their procurement policy. For example, a city that had ENERGY STAR requirements for appliance and electronics purchases received 0.5 points.

Scores

Table 8 presents scores for each city's procurement and construction policies.

Table 8. Scores for procurement and construction policies

City	State	Fleet efficiency and vehicle infrastructure		Public lighting	New buildings and equipment		Total score (3.5 pts)
		Fuel efficiency requirement (1 pt)	Right-sizing and anti-idling policies (0.5 pt)	Outdoor lighting standard (1 pt)	Above-code requirements for public buildings (0.5 pt)	Energy efficient procurement policy (0.5 pt)	
San Diego	CA	1	0.5	1	0.5	0.5	3.5
Austin	TX	1	0.5	0.5	0.5	0.5	3
Minneapolis	MN	1	0.5	0.5	0.5	0.5	3
Portland	OR	1	0.5	0.5	0.5	0.5	3
Seattle	WA	1	0.5	0.5	0.5	0.5	3
Washington	DC	1	0.5	0.5	0.5	0.5	3
Charlotte	NC	1	0.5	0.5	0	0.5	2.5
Chicago	IL	1	0.5	0.5	0	0.5	2.5
Denver	CO	1	0.5	0.5	0	0.5	2.5
Los Angeles	CA	1	0.5	0.5	0	0.5	2.5
New York City	NY	1	0.5	0.5	0	0.5	2.5
Philadelphia	PA	1	0.5	0	0.5	0.5	2.5
Sacramento	CA	1	0.5	0	0.5	0.5	2.5
Baltimore	MD	1	0.5	0.5	0	0	2
Columbus	OH	1	0.5	0.5	0	0	2
Dallas	TX	1	0	0	0.5	0.5	2
Miami	FL	1	0.5	0	0	0.5	2
Nashville	TN	1	0.5	0.5	0	0	2
Orlando	FL	1	0	1	0	0	2
Phoenix	AZ	0	0.5	0.5	0.5	0.5	2
Pittsburgh	PA	0	0.5	1	0	0.5	2
San Antonio	TX	1	0	0.5	0	0.5	2
San Francisco	CA	0	0.5	0.5	0.5	0.5	2
San Jose	CA	0	0.5	1	0	0.5	2
Cleveland	OH	0	0.5	0	0.5	0.5	1.5
Fort Worth	TX	0	0.5	1	0	0	1.5
Houston	TX	0	0.5	0.5	0	0.5	1.5
Indianapolis	IN	1	0.5	0	0	0	1.5
Jacksonville	FL	0	0.5	0	0.5	0.5	1.5
Milwaukee	WI	0	0.5	0.5	0	0.5	1.5
Salt Lake City	UT	0	0	0.5	0.5	0.5	1.5
Atlanta	GA	0	0.5	0.5	0	0	1

City	State	Fleet efficiency and vehicle infrastructure		Public lighting	New buildings and equipment		Total score (3.5 pts)
		Fuel efficiency requirement (1 pt)	Right-sizing and anti-idling policies (0.5 pt)	Outdoor lighting standard (1 pt)	Above-code requirements for public buildings (0.5 pt)	Energy efficient procurement policy (0.5 pt)	
Boston	MA	0	0.5	0.5	0	0	1
El Paso	TX	0	0.5	0.5	0	0	1
Las Vegas	NV	0	0	0.5	0	0.5	1
Providence	RI	1	0	0	0	0	1
Riverside	CA	0	0.5	0	0	0.5	1
Virginia Beach	VA	0	0.5	0	0	0.5	1
Cincinnati	OH	0	0	0.5	0	0	0.5
Detroit	MI	0	0	0.5	0	0	0.5
Kansas City	MO	0	0.5	0	0	0	0.5
Oklahoma City	OK	0	0	0	0	0.5	0.5
St. Louis	MO	0	0.5	0	0	0	0.5
Tampa	FL	0	0	0.5	0	0	0.5
Birmingham	AL	0	0	0	0	0	0
Hartford	CT	0	0	0	0	0	0
Louisville	KY	0	0	0	0	0	0
Memphis	TN	0	0	0	0	0	0
New Orleans	LA	0	0	0	0	0	0
Raleigh	NC	0	0	0	0	0	0
Richmond	VA	0	0	0	0	0	0

ASSET MANAGEMENT

In addition to the many efficiency opportunities that exist during the planning process for new capital investments, there are also opportunities to save energy as cities manage their existing assets. Local governments make many large-scale, long-term investments, and they have a portfolio of assets that will last a long time—employees, buildings, and other infrastructure. They can save energy and money by systematically managing energy use, considering the life-cycle energy costs of their investments, and encouraging changes in employee behaviors.

This subcategory covers three topics: benchmarking and energy retrofitting in public buildings, sustainable infrastructure policies and strategies, and managing employee energy use. A total of 5 points is possible here.

Building Energy Benchmarking and Retrofitting

Buildings account for a large portion of city energy use, and rising energy costs are an increasing portion of cities' operating budgets. Local governments can use a variety of strategies to manage their own energy use (DOE 2014b). Two of the most important steps a city can take are building energy benchmarking and developing a comprehensive building retrofit strategy. Many cities begin their efforts by benchmarking energy use in their buildings and other facilities. Benchmarking gives them a holistic understanding of their energy use, which helps

inform prudent, cost-effective changes to buildings operations. Cities can use benchmarking results, and additional assessments like building audits, to help develop an energy-saving retrofit plan tailored to individual buildings and to prioritize future capital investments. The efficiency opportunities cities uncover through benchmarking and achieve through retrofitting can help bring down energy costs.

Cities could score a total of 2 points for benchmarking policies and energy management of public buildings. We awarded up to 1 point on the percentage of municipal building floor area cities currently had benchmarked, described in table 10. Many cities could not provide data on the percentage of square feet benchmarked, so we included some flexibility in our scoring; we awarded 0.5 points to cities that reported benchmarking the majority of their buildings.

Cities could also earn up to 1 point for comprehensive retrofit strategies. Local governments with a portfolio-wide energy performance strategy received a full point. These strategies must incorporate both capital improvements (e.g., equipment replacement, building shell improvements) and operational improvements (e.g., active energy management, audits and retrocommissioning) customized to specific buildings. Cities that joined DOE's Better Buildings Challenge as municipal or community partners and included municipal buildings as a commitment in the challenge also received a full point. Cities that had made some significant building efficiency investments (through an energy service company or otherwise) received half credit (0.5 points). Table 9 further explains our scoring for retrofit strategies.

The data we used came from city sustainability plans and sustainability staff responses to our data request. We also relied on the Institute for Market Transformation's BuildingRating.org for the data used for the benchmarking metric and DOE's information on participants in the Better Buildings Challenge (DOE 2014a).

Tables 9 and 10 summarize our scoring methodologies for building energy benchmarking and retrofitting.

Table 9. Scoring methodology for municipal building benchmarking energy retrofit strategies

Building energy retrofit strategy	Score (1 pt)
City has a comprehensive retrofit strategy covering all municipal buildings that includes building-specific operational and capital improvement actions	1
City has made significant energy efficiency investments, but does not have a comprehensive strategy	0.5
City has not made significant recent investments in energy efficiency in municipal buildings	0

Table 10. Scoring methodology: percentage of building square footage benchmarked

% of building square footage benchmarked	Score (1 pt)
At least 75%	1
50–74.9%	0.5
0–49.9%	0

Sustainable Infrastructure Policies

Sustainable infrastructure polices are those that require cities to consider the life-cycle costs of investments (including operational energy costs) or to "fix it first" before making new infrastructure investments. These policies encourage cities to consider the long-term impacts of

current capital investments. If cities use alternatives with lower life-cycle costs than traditional infrastructure, they can save a significant amount of energy over the long term; examples include improving transit instead of expanding highways, locating new developments near existing infrastructure rather than in greenfields, and constructing green stormwater infrastructure instead of new or expanded underground stormwater systems.

Cities earned 2 points for having sustainable infrastructure policies, such as life-cycle cost-analysis requirements, a fix-it-first policy, or development impacts fees, for all potential city infrastructure projects throughout a city. Cities instead earned 1 point if these policies applied only to specific capital investment types or specific city agencies. Alternatively, we gave cities 0.5 points if they did not have a codified policy, but had demonstrated the use of life-cycle costing methods in capital planning. In the *2013 City Scorecard*, we also awarded cities points based on the percentage of their capital budgets devoted to the maintenance of existing assets or distributed infrastructure as opposed to new infrastructure or major expansions. We did not score cities on the same metric this year because of the difficulty in collecting consistent budget data across all the cities in the *Scorecard*.

Public Workforce

Employee behavior is a major factor in municipal energy consumption. We allocated 1 point to this topic. Public employees can reduce stress on the city's transportation infrastructure and can save energy in municipal buildings when they take public transit or telework instead of commuting (Laitner, Partridge, and Vittore 2012). Cities could earn 0.5 points for having teleworking or flex-schedule policies or otherwise minimizing the number of commutes by employees. We also awarded 0.5 points to cities if they offered benefits to encourage employee carpooling or public transit use. We did not give points to cities that only offered federal pretax benefits for transit, but we did give 0.5 points for any city investment in transit subsidies.

Scores

Table 11 shows the details of city scoring for asset management.

Table 11. Asset management scores

City	State	Benchmarking (1 pt)	Comprehensive retrofit strategy (1 pt)	Sustainable infrastructure policies (2 pts)	Teleworking or flex schedules (0.5 pt)	Transit benefits (0.5 pt)	Total score (5 pts)
Charlotte	NC	1	1	2	0.5	0.5	5
San Antonio	TX	1	1	2	0.5	0.5	5
Seattle	WA	1	1	2	0.5	0.5	5
Cleveland	OH	1	1	2	0.5	0	4.5
Phoenix	AZ	1	0.5	2	0.5	0.5	4.5
Atlanta	GA	0	1	2	0.5	0.5	4
Chicago	IL	0.5	1	2	0	0.5	4
Fort Worth	TX	0.5	1	2	0	0.5	4
Houston	TX	1	1	1	0.5	0.5	4
Portland	OR	0	1	2	0.5	0.5	4
San Francisco	CA	1	0.5	2	0.5	0	4

City	State	Benchmarking (1 pt)	Comprehensive retrofit strategy (1 pt)	Sustainable infrastructure policies (2 pts)	Teleworking or flex schedules (0.5 pt)	Transit benefits (0.5 pt)	Total score (5 pts)
Austin	TX	1	1	0	0.5	0.5	3
Denver	CO	0.5	1	0.5	0.5	0.5	3
Columbus	OH	1	0.5	0.5	0	0.5	2.5
Los Angeles	CA	1	1	0	0	0.5	2.5
Milwaukee	WI	1	1	0	0	0.5	2.5
Minneapolis	MN	1	0.5	0	0.5	0.5	2.5
New York City	NY	0.5	1	0.5	0.5	0	2.5
Orlando	FL	1	1	0	0	0.5	2.5
Tampa	FL	0	0	2	0.5	0	2.5
Washington	DC	1	1	0	0.5	0	2.5
Baltimore	MD	1	1	0	0	0	2
Boston	MA	1	1	0	0	0	2
El Paso	TX	0	1	0	0.5	0.5	2
Hartford	CT	1	1	0	0	0	2
Las Vegas	NV	0	1	0.5	0.5	0	2
Oklahoma City	OK	0	0	2	0	0	2
Philadelphia	PA	1	1	0	0	0	2
Providence	RI	1	0.5	0	0	0.5	2
St. Louis	MO	1	0	1	0	0	2
Virginia Beach	VA	1	0.5	0	0.5	0	2
Dallas	TX	0.5	0.5	0	0	0.5	1.5
Louisville	KY	0	0.5	0	0.5	0.5	1.5
Nashville	TN	0	1	0	0	0.5	1.5
Pittsburgh	PA	0	1	0	0.5	0	1.5
Richmond	VA	1	0.5	0	0	0	1.5
San Diego	CA	0	1	0	0.5	0	1.5
San Jose	CA	0	0.5	0	0.5	0.5	1.5
Indianapolis	IN	0	0.5	0	0	0.5	1
Jacksonville	FL	0	0.5	0.5	0	0	1
Memphis	TN	1	0	0	0	0	1
New Orleans	LA	1	0	0	0	0	1
Riverside	CA	0	0	0	0.5	0.5	1
Sacramento	CA	0	1	0	0	0	1
Salt Lake City	UT	0	0	0	0.5	0.5	1
Cincinnati	OH	0	0.5	0	0	0	0.5
Kansas City	MO	0	0	0	0	0.5	0.5
Birmingham	AL	0	0	0	0	0	0

City	State	Benchmarking (1 pt)	Comprehensive retrofit strategy (1 pt)	Sustainable infrastructure policies (2 pts)	Teleworking or flex schedules (0.5 pt)	Transit benefits (0.5 pt)	Total score (5 pts)
Detroit	MI	0	0	0	0	0	0
Miami	FL	0	0	0	0	0	0
Raleigh	NC	0	0	0	0	0	0

Leading Cities: Local Government Operations

Denver. Denver's 2020 goals include targets to reduce energy consumed in city-operated buildings and vehicles by 20% compared to a 2012 baseline and to reduce greenhouse gas emissions from local government operations. Denver will benchmark energy use in approximately 70% of its municipal buildings as part of its participation in the DOE Better Buildings Challenge. The city has also audited and retro-commissioned over 65 of its city buildings. To reduce energy from vehicles, Executive Order 123 established a green fleet policy requiring light-duty vehicles to be replaced by the most fuel-efficient and least polluting vehicles possible. The executive order also calls for the use of GPS tracking in city vehicles to reduce vehicle miles traveled.

Washington, DC. Washington's Climate Action Plan established a goal to reduce greenhouse gas emissions from local government operations by 30% by 2020. As of 2013, the district is on its way to surpassing the goal. Washington has implemented several best practices for performance management, including releasing annual progress reports on Sustainable DC and dedicating staff to manage the city's energy use. The district has also implemented asset management policies, such as mandating that new fleet vehicles be efficient.

Charlotte. Since 2013, Charlotte has made strides in improving its energy efficiency policies for government operations. In 2014, the city released its Internal Environmental Operations Plan, which includes their new goal to reduce energy use in existing city-owned facilities. As part of efforts to help achieve this goal, the city benchmarks the energy use in all its municipal buildings and uses that data to strategically audit buildings and pursue retrofits. The city's commitment to sustainable buildings is also clear from its Community Investment Plan, which identifies maintenance and retrofits to existing infrastructure as the first priority when evaluating any capital projects.

Phoenix. Phoenix has set goals that affect local government operations, including a target to reduce greenhouse gas emissions from city operations to 5% below 2005 levels by 2015. The city achieved its 5% goal and then set another goal calling for greater emissions reductions. Phoenix implemented energy efficiency measures to help meet its initial goal, including building retrofits and more stringent energy standards for new construction. As part of the retrofit program, the city currently benchmarks about 75% of its municipal building square footage, with plans to expand benchmarking to 100% of the city's footprint. Phoenix partners with Arizona State University for monitoring of municipal goals.

Chapter 3. Community-Wide Initiatives

Lead Author: David Ribeiro

INTRODUCTION

Energy efficiency may address a variety of a city's needs, including climate change mitigation and adaptation, energy security, and economic development. For many cities, energy-saving initiatives are components of broad community-wide sustainability plans addressing long-term community priorities, such as economic development, transportation, water supply issues, and public health. For other cities, these initiatives are part of energy-specific plans developed for utility resource planning or economic development purposes. Others are developed as part of or in addition to complementary climate action plans. Cities often choose to include several aspects of energy in their plans, creating policies that address energy sources as well as energy use.

Cities implement a wide array of community-facing initiatives to address energy use in buildings, neighborhoods, transportation systems, and city landscapes. If community members and the private sector are included in these efforts, they have the potential to have large-scale impact and allow cities to expand beyond their lead-by-example initiatives, as discussed in Chapter 2. Developing a unifying vision for community energy usage through publicly available sustainability or energy plans allows governments to leverage outside resources—funding, staff, volunteers, knowledge—to improve energy efficiency throughout the community. For example, Washington has committed to cutting citywide energy use by 50%, but in order to reach this goal, it will need significant support from the community. The city has therefore set a complementary goal to ensure that 100% of District residents are informed about their community-wide sustainability initiative, Sustainable DC, in order to maximize results and ensure accountability and transparency.

Improved access to data has helped cities measure, monitor, and manage energy use in ways they could not several years ago. Community-wide energy and greenhouse gas inventories and regular tracking and reporting of related metrics, for example, allow cities to set a benchmark for energy usage and target specific areas where savings can be achieved most readily. In part, the expanded use of community-wide energy metrics is enabled by ever-improving access to sector-specific data, such as through building benchmarking requirements and working with utilities to offer customers access to their energy use information, as highlighted in Chapters 4 and 5 of the *Scorecard*, respectively.

SCORING

This chapter focuses on actions municipalities commonly take to encourage energy efficiency throughout their cities: community-wide goals, strategies for energy management, and specific interventions that cross multiple sectors. We score cities on four community-wide metrics:

- Citywide energy efficiency-related goals and progress toward their achievement (4 points)
- Management of citywide energy strategies, including devoting staff, funding, and other resources to implement, monitor, report on, and evaluate programs (2 points)
- Existing distributed energy systems (district energy and combined heat and power) and city planning for future systems (2.5 points)
- Strategies and policies to mitigate the urban heat island effect (1.5 points)

Individual sector-specific elements (buildings, utilities, and transportation) of community-wide initiatives are not considered here but in the following chapters. Nor do we consider formula-allocated grants such as the Weatherization Assistance Program that the federal government provides to local agencies—either here or elsewhere in the *Scorecard*. Rather, we concentrate on the role that cities themselves play in leading, funding, implementing, and promoting community-wide energy initiatives. We relied primarily on city sustainability reports and websites for information on community-wide initiatives. We supplemented the publicly available data with responses to our data requests by city sustainability staff.

RESULTS

New York City received the highest overall score for community-wide initiatives, earning a nearly perfect score. It has robust initiatives, including an adopted community-wide goal that it is on track to meet, strategies to plan for future district energy systems, and urban heat island mitigation strategies. The only category in which it did not receive a perfect score was performance management. Boston received the second-highest score for community-wide initiatives. It scored well across all metrics and was one of two cities to earn a perfect score in efficient distributed energy systems. Austin, Los Angeles, Minneapolis, San Francisco, and Washington tied for the third-highest score.

Table 12 presents the scores for community-wide initiatives. We show the point allocation for individual metrics within these categories in the tables that follow in this chapter and in table A1 in Appendix A.

Table 12. Scores for community-wide initiatives

City	State	Community-wide goals (4 pts)	Performance management (2 pts)	District energy & CHP (2.5 pts)	Urban heat island mitigation (1.5 pts)	Total score (10 pts)
New York City	NY	4	1.5	2.5	1.5	9.5
Boston	MA	3.5	1.5	2.5	1.5	9
Austin	TX	3.5	1.5	1.5	1.5	8
Los Angeles	CA	4	0.5	2.0	1.5	8
Minneapolis	MN	3.5	1	2.0	1.5	8
San Francisco	CA	4	2	1.0	1	8
Washington	DC	3	2	1.5	1.5	8
Seattle	WA	4	1	1.0	1	7
Riverside	CA	4	1	0.5	1	6.5
San Antonio	TX	4	1	0.0	1.5	6.5
Baltimore	MD	1.5	2	1.0	1.5	6
Pittsburgh	PA	2	2	1.0	1	6
Portland	OR	2	1.5	1.0	1.5	6
Sacramento	CA	4	0	1.0	1	6
Chicago	IL	1	2	1.0	1.5	5.5
Denver	CO	1.5	1	2.0	1	5.5

City	State	Community-wide goals (4 pts)	Performance management (2 pts)	District energy & CHP (2.5 pts)	Urban heat island mitigation (1.5 pts)	Total score (10 pts)
Orlando	FL	1.5	0.5	2.0	1.5	5.5
Philadelphia	PA	1	1	2.0	1.5	5.5
Atlanta	GA	2	1.5	0.5	0.5	4.5
Cincinnati	OH	1.5	0.5	1.0	1.5	4.5
San Jose	CA	2	1	0.5	1	4.5
Salt Lake City	UT	1	1	1.0	1	4
St. Louis	MO	1	0.5	1.5	1	4
Cleveland	OH	1	1	1.0	0.5	3.5
Houston	TX	0.5	0.5	1.0	1.5	3.5
Milwaukee	WI	0	1	1.5	1	3.5
Nashville	TN	1.5	1	0.0	1	3.5
Jacksonville	FL	0	0.5	2.0	0.5	3
Kansas City	MO	1.5	1	0.5	0	3
Las Vegas	NV	0	1.5	1.0	0.5	3
Miami	FL	1.5	0	0.0	1.5	3
Phoenix	AZ	0	1.5	0.0	1.5	3
Charlotte	NC	0.5	1	0.0	1	2.5
Dallas	TX	1	0.5	0.0	1	2.5
Fort Worth	TX	0	1	0.0	1.5	2.5
Louisville	KY	1	0.5	0.0	1	2.5
New Orleans	LA	0	0.5	1.5	0.5	2.5
Providence	RI	0.5	0	0.5	1.5	2.5
Richmond	VA	0.5	0.5	1.0	0.5	2.5
San Diego	CA	1	0	1.5	0	2.5
Columbus	OH	0.5	1	0.0	0.5	2
Hartford	CT	0	0	1.5	0	1.5
Indianapolis	IN	0	0.5	1.0	0	1.5
Memphis	TN	0	0.5	0.5	0.5	1.5
Oklahoma City	OK	0	0	1.5	0	1.5
Birmingham	AL	0	0	1.0	0	1
Detroit	MI	0	0	1.0	0	1
Raleigh	NC	0	0	0.0	1	1
Tampa	FL	0	1	0.0	0	1
Virginia Beach	VA	0	0	0.0	1	1
El Paso	TX	0	0.5	0.0	0	0.5
Median		**1**	**1**	**1**	**1**	**3.5**

Aside from Boston, New York, and the cities tied for the third spot atop the rankings, most cities received fewer points than in the last *City Scorecard*. The median total score fell from 6 to 3.5. This was not necessarily due to program and policy rollbacks, but rather methodology improvements and requiring more documentation from cities to verify details of their programs and policies before awarding them points. Methodology changes particularly impacted scores in the community-wide goals and efficient distributed energy systems categories.

All the cities in the *Scorecard*, including the top scorers, have room for improvement in adopting and implementing community-wide initiatives. Some cities have community-wide energy efficiency–related goals and have made progress toward them, but many are struggling to achieve them. Several other cities have not yet set such goals. As in the 2013 *City Scorecard*, the median score in the performance management category was low, demonstrating that cities can do more to monitor and track programs. Baltimore, Pittsburgh, Chicago, San Francisco, and Washington were the only cities to earn perfect scores in the category. However many cities fared well in the urban heat island mitigation category. Cities achieved the same overall median score, even though fewer points were available for the category. Many of the cities we added to the *Scorecard* this year earned points for tree-planting programs, including Raleigh, Nashville, and Louisville.

COMMUNITY-WIDE ENERGY EFFICIENCY GOALS

Cities can coordinate several programs under a unifying policy by establishing community-wide energy efficiency goals. Goals provide a foundation for the long-term sustainability of programs and help cities mobilize funding for efficiency programs. Goals with specific timetables and target dates allow cities to establish visible energy-related objectives and enable regular monitoring. Cities often develop community-wide goals after a long-term planning process and outreach to diverse stakeholders, including utilities, nonprofits, the business sector, and local citizens' groups.

Existence of Goals

Cities could earn up to 2 points for community-wide energy or climate goals. We gave points for goals that encompassed multiple energy-using sectors and that aimed for specific quantitative improvements in energy efficiency, energy consumption, energy intensity, or greenhouse gas emissions. We did not give points for renewable energy goals because they exclusively address energy generation rather than end-use efficiency.

We scaled points based on the city's progress toward setting and implementing a comprehensive goal. We gave 0.5 points to cities that had engaged a community stakeholder group, but had not yet publicized an energy-related goal. We gave 1 point to cities that identified a goal but had not yet formally adopted it in an executive order, city resolution, or similar process. The city received 1.5 points if it had identified and formally adopted the goal but neither integrated it into the city's comprehensive plan nor mainstreamed it across city activities. The city received 2 points if it had formally adopted a target and integrated it along with enabling guidelines into the general plan, or otherwise mainstreamed it across community-wide policies and programs. Table 13 summarizes our scoring methodology for community-wide energy targets.

Table 13. Scoring methodology for community-wide energy efficiency targets

Community-wide energy-related target	Score (2 pts)
The city has formally adopted a long-term community-wide energy efficiency target or a related target and has integrated the target and enabling guidelines into the city's general plan or has mainstreamed the target across community activities by some other means.	2
The city has formally adopted a long-term community-wide energy efficiency target or related target, but has not integrated the target across community activities.	1.5
The city has identified an energy target in a proposal or draft action plan, but has not formally adopted the target.	1
The city has engaged a stakeholder group to set goals for a community-wide target, but has not yet identified a target; or the city has identified a multisector goal for a specific neighborhood.	0.5

If a city did not have goals for the entire community but had identified multisector goals for a specific neighborhood or area within the city, it received 0.5 points. For example, cities that had established a 2030 District® and set goals for the district that included energy use beyond buildings alone (e.g., transportation, water) received partial credit.

Progress Toward Goals

Cities could earn an additional 2 points based on their progress toward achieving their energy-related goals. Many cities have multiple energy goals with different time horizons, commonly one goal to achieve savings by 2020 and another to achieve a deeper level of savings by 2050. Rather than measuring city progress against all their long-term goals, we chose to evaluate cities based on progress toward their nearest-term goal. If a city could show quantitative evidence of progress toward community-wide energy goals and was on track to meet them, it received 2 points. Cities received 1 point if they were not on track for their nearest-term goal, but were projected to achieve savings within 25% of their stated goal. To be considered on track, cities had to have demonstrated past energy savings that, assuming the same annual additional savings for all future years until the goal year, would result in energy use at or below the goal level in the goal year. For cities with multiple inventories, we used the level of savings reported in their most recently updated inventory to calculate the city's annual level of savings between their baseline and update years. We then estimated the city's future overall savings by projecting this annual percentage of savings out to the city's target year.[7] To ensure that we reflected recent energy use or greenhouse gas levels in our savings projections, cities had to have published an updated inventory within the last five years (2010–2014) to earn points. Cities that did not have quantitative data or had only aged inventories did not receive points. Also, cities did not earn points if their goal applied only to the energy use or greenhouse gas emissions of one specific set of community assets, such as citywide buildings or vehicles. Table C2 in Appendix C details each city's nearest-term community-wide goal and our projections for overall city savings.

[7] For more information on the methodology we used to project energy savings or GHG reductions, see Ribeiro et al. 2014.

PERFORMANCE MANAGEMENT STRATEGIES

If cities use community-wide goals to mobilize their efforts toward energy efficiency, they use performance management strategies to systematically pursue, measure, and confirm success. Regular monitoring and verification hold local governments and community members accountable. Taking a systematic approach to monitoring and verification helps cities identify ways to improve their plans to meet goals by revising timelines or program strategies (Mackres and Kazerooni 2012). Increasingly, cities are finding that it is necessary to dedicate staff members to implement their array of energy-related community goals.

The performance management subcategory is worth a total of 2 points. Cities that publicly released progress reports on their energy or climate efforts at least annually received 0.5 points. Cities could earn an additional 0.5 points for using a third party to evaluate, monitor, and verify their progress toward the goals. Cities that employed at least one full-time staff member dedicated to implementing community-wide energy or climate goals received 0.5 points. Finally, we awarded 0.5 points to cities having a dedicated funding source for community-wide initiatives that was not dependent on general funds. Cities with separate funding for energy efficiency or climate programs outside of the general budget are able to eliminate budget uncertainty from year to year, ensuring the sustainability of their programs. City scores on each of these metrics are included in table 14.

Table 14. Scores for citywide performance management

City	State	Annual reporting (0.5 pts)	Independent EM&V (0.5 pts)	Dedicated staff (0.5 pts)	Dedicated funding (0.5 pts)	Score (2 pts)
Baltimore	MD	0.5	0.5	0.5	0.5	2
Chicago	IL	0.5	0.5	0.5	0.5	2
Pittsburgh	PA	0.5	0.5	0.5	0.5	2
San Francisco	CA	0.5	0.5	0.5	0.5	2
Washington	DC	0.5	0.5	0.5	0.5	2
Atlanta	GA	0.5	0.5	0.5	0	1.5
Austin	TX	0.5	0.5	0.5	0	1.5
Boston	MA	0.5	0.5	0.5	0	1.5
Las Vegas	NV	0.5	0	0.5	0.5	1.5
New York City	NY	0.5	0	0.5	0.5	1.5
Phoenix	AZ	0.5	0.5	0.5	0	1.5
Portland	OR	0.5	0	0.5	0.5	1.5
Charlotte	NC	0.5	0	0.5	0	1
Cleveland	OH	0.5	0	0.5	0	1
Columbus	OH	0.5	0	0.5	0	1
Denver	CO	0	0.5	0.5	0	1
Fort Worth	TX	0	0	0.5	0.5	1
Kansas City	MO	0.5	0	0.5	0	1
Milwaukee	WI	0.5	0	0.5	0	1

City	State	Annual reporting (0.5 pts)	Independent EM&V (0.5 pts)	Dedicated staff (0.5 pts)	Dedicated funding (0.5 pts)	Score (2 pts)
Minneapolis	MN	0.5	0	0.5	0	1
Nashville	TN	0	0.5	0.5	0	1
Philadelphia	PA	0.5	0	0.5	0	1
Riverside	CA	0	0.5	0.5	0	1
Salt Lake City	UT	0.5	0	0.5	0	1
San Antonio	TX	0	0.5	0.5	0	1
San Jose	CA	0.5	0	0.5	0	1
Seattle	WA	0.5	0	0.5	0	1
Tampa	FL	0.5	0	0.5	0	1
Cincinnati	OH	0	0	0.5	0	0.5
Dallas	TX	0	0	0.5	0	0.5
El Paso	TX	0	0	0.5	0	0.5
Houston	TX	0	0	0.5	0	0.5
Indianapolis	IN	0	0	0.5	0	0.5
Jacksonville	FL	0	0	0.5	0	0.5
Los Angeles	CA	0	0	0.5	0	0.5
Louisville	KY	0.5	0	0	0	0.5
Memphis	TN	0	0	0.5	0	0.5
New Orleans	LA	0	0	0.5	0	0.5
Orlando	FL	0	0	0.5	0	0.5
Richmond	VA	0	0	0.5	0	0.5
St. Louis	MO	0	0	0.5	0	0.5
Birmingham	AL	0	0	0	0	0
Detroit	MI	0	0	0	0	0
Hartford	CT	0	0	0	0	0
Miami	FL	0	0	0	0	0
Oklahoma City	OK	0	0	0	0	0
Providence	RI	0	0	0	0	0
Raleigh	NC	0	0	0	0	0
Sacramento	CA	0	0	0	0	0
San Diego	CA	0	0	0	0	0
Virginia Beach	VA	0	0	0	0	0

EFFICIENT DISTRIBUTED ENERGY SYSTEMS: DISTRICT ENERGY AND COMBINED HEAT AND POWER

District energy systems produce steam, hot water, or chilled water at a central plant. Buildings served by district energy systems often do not need their own heating and cooling equipment. Instead, they rely on efficient generation serving larger populations. Furthermore, buildings

connected to district energy systems can use energy sources often unavailable to individual buildings, including steam. Well-designed and -operated district energy systems can convey significant efficiency benefits to users. Because one-third of US energy consumption goes to industrial processes and the heating and cooling of buildings, district energy systems can drastically decrease community-wide energy use in large buildings (Chittum 2012).

District energy systems provide the infrastructure needed to bring clean energy and improved efficiency to many sites, but their efficiency varies based on system type. When paired with combined heat and power (CHP), also known as cogeneration, district energy systems waste much less energy than traditional power plants. The average US power plant wastes about 60% of its fuel in the form of heat, but district energy systems with CHP turn the majority of that "waste" heat into useful energy for heating and cooling (IDEA 2013; EPA 2008a). District energy with CHP also offers a source of energy that is highly reliable—a benefit that was made clear in the aftermath of Hurricane Sandy in October 2012. More than eight million utility customers lost power in the storm, but businesses, universities, and hospitals with CHP kept occupants comfortable and the lights on by operating independently of the electric grid (CHP Association 2012).

Many of the systems in the cities we examined are the result of energy choices made decades ago, before communities considered climate and energy efficiency in their decision-making processes the way they do today. But there are still major opportunities for cities to develop new district energy systems or expand existing ones. While many district energy and CHP systems are privately owned, cities can help incentivize the construction of more. Cities can proactively identify opportunities, conduct planning and feasibility studies, encourage compatibility with district energy in new buildings, and facilitate district energy and CHP through zoning and permitting (PSI 2013). For example, Portland has committed to establishing at least one new district system by 2030 by making investment funds available to help finance distributed generation. Cities can tie district energy incentives into climate and energy plans, but many cities are not yet doing so.

Cities could earn 2.5 points between two metrics for efficient distributed energy systems. We awarded up to 1.5 points to cities based on their existing CHP and district energy system capacity. District energy and CHP both convey energy efficiency benefits alone; these are maximized when they are combined into a single system. Therefore we considered both stand-alone CHP systems and combined district energy–CHP systems in our scoring. With a new metric in this edition of the *Scorecard*, cities could additionally earn up to 1 point for programs and policies laying plans for future district energy and CHP systems. They received 0.5 points for each program and policy implemented. The scoring methodology for these metrics is described in more detail in table 15.

Table 15. Scoring methodology for distributed energy systems

Existing combined heat and power (CHP)	Score (1 pt)
The city has CHP capacity of 10 megawatts (MW) or greater per 100,000 residents.	1
The city has CHP capacity of 5 MW or greater per 100,000 residents.	0.5
Existing district energy systems	**Score (0.5 pt)**
The city has at least one district energy system that integrates CHP.	0.5
Planning for future district energy and CHP (activities eligible for points)	**Score (1 pt total)**
The city has dedicated city staff to district energy planning and development.	0.5 each
The city has identified high-priority areas for potential new district energy systems.	
The city has developed at least one integrated energy master plan for a high-priority area.	
The city has developed recommended standards for designing building heating, ventilation, and air-conditioning systems to ensure compatibility with future district energy systems.	
The city has developed an ecodistrict or a similar district with an energy focus.	
The city has developed a program or policy within one or more city agencies (e.g., planning, housing, or development authority) to integrate CHP and/or district energy into future developments.	

Table 16 presents city scores for efficient distributed energy. It also includes data on the number of district energy systems and the total CHP capacity within each city. We awarded points based on only the CHP capacity in the city and the presence of one or more integrated CHP and district energy systems, not on the number or size of district energy systems. Ideally, our scoring would incorporate data on system efficiency, but those data are not widely available at the city level.

Table 16. Scoring for efficient distributed energy systems

City	State	Total CHP capacity in city (kW)	CHP capacity per 100,000 in population (MW)	Existing CHP score (1 pt)	District energy systems in city	At least one DE system integrated with CHP	Existing district energy score (0.5 pts)	Planning for future DE systems	Planning for future DE systems score (1 pt)	Total score (2.5 pts)
Boston	MA	111,592	17.3	1	5	•	0.5	•	1	2.5
New York City	NY	1,734,000	20.6	1	19	•	0.5	•	1	2.5
Denver	CO	114,167	17.6	1	3	•	0.5	•	0.5	2
Jacksonville	FL	363,400	43.1	1	3		0	•	1	2
Los Angeles	CA	392,547	10.1	1	4	•	0.5	•	0.5	2
Minneapolis	MN	52,228	13.1	1	1	•	0.5	•	0.5	2
Orlando	FL	120,500	47.2	1	1		0	•	1	2
Philadelphia	PA	235,136	15.1	1	9	•	0.5	•	0.5	2

City	State	Total CHP capacity in city (kW)	CHP capacity per 100,000 in population (MW)	Existing CHP score (1 pt)	District energy systems in city	At least one DE system integrated with CHP	Existing district energy score (0.5 pts)	Planning for future DE systems	Planning for future DE systems score (1 pt)	Total score (2.5 pts)
Austin	TX	95,100	10.7	1	7	•	0.5		0	1.5
Hartford	CT	72,930	58.3	1	5	•	0.5		0	1.5
Milwaukee	WI	311,060	51.9	1	5	•	0.5		0	1.5
New Orleans	LA	44,500	11.8	1	2	•	0.5		0	1.5
Oklahoma City	OK	119,100	19.5	1	2	•	0.5		0	1.5
San Diego	CA	282,327	20.8	1	12	•	0.5		0	1.5
St. Louis	MO	77,850	24.4	1	4	•	0.5		0	1.5
Washington	DC	14,475	2.2	0	8	•	0.5	•	1	1.5
Baltimore	MD	119,502	19.2	1	5		0		0	1
Birmingham	AL	25,000	11.8	1	1		0		0	1
Chicago	IL	88,135	3.2	0	14	•	0.5	•	0.5	1
Cincinnati	OH	62,275	20.9	1	2		0		0	1
Cleveland	OH	48,015	12.3	1	4		0		0	1
Detroit	MI	85,255	12.4	1	2		0		0	1
Houston	TX	638,620	29.1	1	16		0		0	1
Indianapolis	IN	84,000	10.0	0.5	3	•	0.5		0	1
Las Vegas	NV	257,409	42.7	1	3		0		0	1
Pittsburgh	PA	131,270	42.9	1	7		0		0	1
Portland	OR	2,065	0.3	0	7		0	•	1	1
Richmond	VA	276,864	129.3	1	3		0		0	1
Sacramento	CA	465,285	97.0	1	2		0		0	1
Salt Lake City	UT	26,600	13.9	1	3		0		0	1
San Francisco	CA	77,239	9.2	0.5	5		0	•	0.5	1
Seattle	WA	15,100	2.3	0	4		0	•	1	1
Atlanta	GA	21,400	4.8	0	4	•	0.5		0	0.5
Kansas City	MO	11,100	2.4	0	2	•	0.5		0	0.5
Memphis	TN	35,513	5.4	0.5	4		0		0	0.5
Providence	RI	15,257	8.6	0.5	5		0		0	0.5
Riverside	CA	3,492	1.1	0	2	•	0.5		0	0.5
San Jose	CA	57,722	5.8	0.5	3		0		0	0.5
Charlotte	NC	-	-	0	0		0		0	0
Columbus	OH	100	0.0	0	1		0		0	0
Dallas	TX	13,800	1.1	0	5		0		0	0
El Paso	TX	24,200	3.6	0	3		0		0	0
Fort Worth	TX	18,650	2.4	0	0		0		0	0
Louisville	KY	-	-	0	2		0		0	0
Miami	FL	15,310	3.7	0	5		0		0	0

City	State	Total CHP capacity in city (kW)	CHP capacity per 100,000 in population (MW)	Existing CHP score (1 pt)	District energy systems in city	At least one DE system integrated with CHP	Existing district energy score (0.5 pts)	Planning for future DE systems	Planning for future DE systems score (1 pt)	Total score (2.5 pts)
Nashville	TN	26,600	4.2	0	3		0		0	0
Phoenix	AZ	100	0.0	0	6		0		0	0
Raleigh	NC	11,205	2.6	0	1		0		0	0
San Antonio	TX	13,900	1.0	0	6		0		0	0
Tampa	FL	7,500	2.1	0	2		0		0	0
Virginia Beach	VA	-	-	0	1		0		0	0

Sources: IDEA 2014; ICF International 2014; data requests

MITIGATION OF URBAN HEAT ISLANDS

The clustering of unvegetated, impermeable surfaces in cities leads to the urban heat island effect. Roofs, parking lots, and streets absorb more heat than would be absorbed by moist, shaded surfaces. The annual mean air temperature of a city with at least one million people can be 1.8 to 5.4°F warmer than surrounding rural areas (EPA 2013c). Urban heat islands also increase the demand for electric cooling, resulting in increased power plant–related air pollution. To minimize this effect, cities are establishing urban heat island reduction–related goals and implementing a variety of programs and policies, including incentives for cool surfaces like reflective roofs and enacting tree-planting ordinances (Hewitt et al. 2014). More tree-canopy cover, green roofs, and ground surfaces can reduce energy requirements for building heating and cooling, improve stormwater management, and reduce energy use at some wastewater treatment plants. Cool roofs reduce a roof's heat absorption. This reduces a building's energy use and a city's peak energy demand. Cool pavement—porous and reflective—also mitigates heat islands. Porous pavements absorb and filter stormwater and reflective pavements reflect heat, keeping the ambient temperature cooler (EPA 2013a).

Cities could earn up to 1.5 points for this metric. Cities that formally adopted a quantitative goal to mitigate the urban heat island effect, such as urban-canopy or temperature-reduction goals, earned 0.5 points. Cities could also earn 0.5 points for each mandatory or voluntary strategy taken to mitigate the urban heat island effect, up to a total of 1 point. Strategies that received points include shade tree–planting initiatives, reflective- or vegetated-roof requirements, and expedited permitting for cool-roof construction projects. Cities did not receive credit for green building codes that do not explicitly require the inclusion of a green or reflective roof. Scoring is presented in table 17.

Table 17. Scores for mitigation of urban heat islands

City	State	Urban heat island goals (0.5 pts)	Urban heat island strategies (1 pt)	Total score (1.5 pts)
Austin	TX	0.5	1	1.5
Baltimore	MD	0.5	1	1.5
Boston	MA	0.5	1	1.5
Chicago	IL	0.5	1	1.5
Cincinnati	OH	0.5	1	1.5

City	State	Urban heat island goals (0.5 pts)	Urban heat island strategies (1 pt)	Total score (1.5 pts)
Fort Worth	TX	0.5	1	1.5
Houston	TX	0.5	1	1.5
Los Angeles	CA	0.5	1	1.5
Miami	FL	0.5	1	1.5
Minneapolis	MN	0.5	1	1.5
New York City	NY	0.5	1	1.5
Orlando	FL	0.5	1	1.5
Philadelphia	PA	0.5	1	1.5
Phoenix	AZ	0.5	1	1.5
Portland	OR	0.5	1	1.5
Providence	RI	0.5	1	1.5
San Antonio	TX	0.5	1	1.5
Washington	DC	0.5	1	1.5
Charlotte	NC	0.5	0.5	1
Dallas	TX	0	1	1
Denver	CO	0.5	0.5	1
Louisville	KY	0.5	0.5	1
Milwaukee	WI	0.5	0.5	1
Nashville	TN	0.5	0.5	1
Pittsburgh	PA	0.5	0.5	1
Raleigh	NC	0	1	1
Riverside	CA	0.5	0.5	1
Sacramento	CA	0.5	0.5	1
Salt Lake City	UT	0.5	0.5	1
San Francisco	CA	0.5	0.5	1
San Jose	CA	0.5	0.5	1
Seattle	WA	0.5	0.5	1
St. Louis	MO	0.5	0.5	1
Virginia Beach	VA	0.5	0.5	1
Atlanta	GA	0.5	0	0.5
Cleveland	OH	0	0.5	0.5
Columbus	OH	0.5	0	0.5
Jacksonville	FL	0	0.5	0.5
Las Vegas	NV	0.5	0	0.5
Memphis	TN	0.5	0	0.5
New Orleans	LA	0.5	0	0.5
Richmond	VA	0	0.5	0.5

City	State	Urban heat island goals (0.5 pts)	Urban heat island strategies (1 pt)	Total score (1.5 pts)
Birmingham	AL	0	0	0
Detroit	MI	0	0	0
El Paso	TX	0	0	0
Hartford	CT	0	0	0
Indianapolis	IN	0	0	0
Kansas City	MO	0	0	0
Oklahoma City	OK	0	0	0
San Diego	CA	0	0	0
Tampa	FL	0	0	0

Leading Cities: Community-Wide Initiatives

New York. New York City has firmly entrenched energy efficiency-related goals in its comprehensive sustainable development plan, PlaNYC. The plan outlines a variety of targets, including an ambitious strategy for heat island mitigation. MillionTreesNYC, one of the 132 PlaNYC initiatives, is a citywide, public-private program committed to planting and caring for one million new trees across the city's five boroughs. New York has also made it a mandatory requirement that all new buildings citywide have cool roofs.

Washington, DC. Washington's long-term sustainability plan, Sustainable DC, established goals to reduce community-wide energy use and greenhouse gas emissions by 2032. It has made significant progress toward achieving these goals and is currently on pace to surpass its 50% greenhouse gas reduction goal. Washington was one of a handful of cities to take active steps in planning for future district energy systems. It has conducted a feasibility analysis for some of the DC Housing Authority's properties and has three ecodistrict projects that will include district scale energy. In 2015, Washington will issue a grant for a district energy and microgrid potential study for the city.

Boston. Boston has set a specific target to reduce electricity demand throughout the city by 200 megawatts by 2017 through energy efficiency and alternative energy installations. The city also has a greenhouse gas emissions reduction goal and has begun a public campaign to engage community members. Boston has devoted city staff to its campaign, with about 30 full-time employees working on the Greenovate Boston campaign.

San Francisco. The San Francisco Board of Supervisors passed ordinance 81-08 in 2008 to establish multiple near- and long-term greenhouse gas emissions goals for the city. The city has implemented several strategies to help achieve its goal, including dedicating four full-time employees to its energy efficiency-related goals and biannually publishing inventories to report on its progress. San Francisco has also taken actions to mitigate the urban heat island effect by establishing a tree-planting goal for the city and creating a program to give out free trees to city residents.

Chapter 4. Buildings Policies

Lead Author: Rachel Cluett

INTRODUCTION

Buildings are high energy users in cities, and clear targets for achieving energy savings. Establishment and enforcement of policies that relate to land use and buildings are two of the core authorities of local governments. Therefore they control many energy-related buildings policies. Some policies that affect buildings are determined at the state level, but many cities have gone above and beyond state requirements to meet city-determined objectives for reducing energy use and greenhouse gas emissions.

Energy use and greenhouse gas emissions from buildings are a particularly important target in large, dense cities. In these cities, relatively low levels of industrial activity and sizable shares for non-car transportation often result in lower than average energy use in those sectors. As a result, buildings account for a disproportionate share of the emissions, energy use, and energy savings opportunities in large cities, as compared to states and the nation as a whole. Whereas the proportion of buildings' carbon dioxide emissions in the United States overall is 40%, the share for buildings in the country's largest cities is 50–75% (EIA 2014b; L. Kerr, senior policy analyst, Natural Resources Defense Council, pers. comm., 2013).

Even though the physical characteristics of American cities vary, all have buildings they can target as they adopt energy and emissions reduction goals to improve the energy performance of their communities. In this chapter we focus on policies applying to private buildings, which in some cases relate to more comprehensive community-wide energy initiatives. Many cities adopt policies for municipal buildings and then, after demonstrating energy improvements in city government operations, extend efficiency policies to private buildings. The energy efficiency policies and goals that local governments have established for their own operations, including buildings, are assessed in Chapter 2, Local Government Operations. Other buildings-related metrics are included in Chapter 3 (district energy and cool roofs) and Chapter 5 (utility policies and programs related to energy and water use in buildings). Considering these additional metrics, buildings-related metrics account for more than 50% of total possible points in the *City Scorecard*. In the sector-specific chapters (Chapters 4, 5, and 6), buildings-related metrics account for 63% of points.

SCORING

We scored cities on energy efficiency policies for private buildings that they can directly establish or influence. We allocated 29 points in the buildings policy area across these five policy categories:

- *Stringency of residential and commercial building codes* if the city has the authority to set its own or, if not, the effort it has made to advocate for more stringent state codes (6 points)
- *Residential and commercial energy code compliance efforts* based on the city's spending on code compliance and enforcement, third-party energy code enforcement efforts, energy code training for buildings officials, and up-front energy code support for builders (6 points)
- *Energy saving targets, incentives, and financing for efficient buildings, above-code green building requirements, and energy audit and retrofit requirements* for all or some portion of the building stock (9 points)

- *Requirements for commercial and residential building benchmarking, rating, and/or energy use transparency*, including policy design and implementation to improve the availability of building energy performance information in the real estate market (6 points)
- *Availability of comprehensive efficiency service programs and providers* for commercial and residential buildings (2 points)

We discuss the scoring methodology and data sources used for each metric in the following sections.

RESULTS

A number of cities are paving the way with smart policies that address the high energy consumption in buildings. Boston, New York City, and Washington, DC top the rankings, with a difference of 1 point between first and second place and a difference of 2 points between first and third. These three cities have been active in their commitments to reduce energy consumption in pursuit of city-adopted energy and emissions reductions goals. More broadly, the top seven cities all scored more than 20 points, and are well ahead of the next highest-scoring city, Minneapolis, which received 16.5 points. While the top cities can serve as great models for lower-ranking cities, *all* cities have room for improvement, with the top-ranked city (Boston) earning 27 of 29 possible points. The average total score for buildings policies was 9.5 points, with the lowest-scoring cities—Oklahoma City, Charlotte, and Raleigh—each scoring 3 points or less.

This year, we have two new top scorers—Boston and New York City—who jumped ahead of the last edition's top-ranked city, Seattle. Boston gained 5.5 points for improvements that included offering more incentives and financing opportunities, and for the benchmarking requirements the city has implemented. San Francisco is also continuing to climb in the ranks, gaining 5.5 points this year for improvements in code stringency and enforcement. Chicago is the most-improved city, gaining 10.5 points by adopting and implementing a benchmarking requirement for large buildings.

Cities scored best in the comprehensive efficiency services category, earning an average 1.3 of 2 possible points. Cities also scored fairly well in the code stringency category, earning an average 2.9 of 6 possible points. They scored lowest in the benchmarking and energy use transparency category, earning an average 1.3 points out of 6, only 22% of the total possible points, likely because these policies have still only been adopted by a small number of cities. Cities also have room to significantly improve their energy code compliance efforts, earning an average 1.6 out of 6 points, or 27% of the possible points.

A summary of scores across all categories is presented in table 18.

Table 18. Buildings policies scores

City	State	Code stringency (6 pts)	Code compliance (6 pts)	Goals, incentives, & requirements (9 pts)	Benchmarking, rating, & transparency (6 pts)	Comprehensive efficiency services (2 pts)	Total (29 pts)
Boston	MA	6	4	9	6	2	27
New York City	NY	5	5.5	7.5	6	2	26
Washington	DC	6	6	5	6	2	25
Seattle	WA	6	5.5	4.5	5	2	23
San Francisco	CA	6	4.5	6.5	3.5	2	22.5
Chicago	IL	6	4	4.5	6	2	22.5
Austin	TX	6	3	6.5	4	2	21.5
Minneapolis	MN	4.5	3	3.5	3.5	2	16.5
Portland	OR	5	2.5	4	1	2	14.5
Baltimore	MD	3	1.5	5	0.5	2	12
Houston	TX	4.5	2.5	3	1	1	12
Los Angeles	CA	6	2	1	1	2	12
Phoenix	AZ	6	1.5	1	0.5	2	11
Philadelphia	PA	1	1.5	2.5	3.5	2	10.5
San Jose	CA	3	1.5	3	0.5	2	10
Denver	CO	2	1.5	3	1	2	9.5
Kansas City	MO	6	0.5	1.5	0.5	1	9.5
Sacramento	CA	3	2	2	0.5	2	9.5
Milwaukee	WI	2.5	2	2.5	0.5	2	9.5
Riverside	CA	3	2	2.5	0.5	1	9
Dallas	TX	4	1	3	0.5	0	8.5
Pittsburgh	PA	1	2	2.5	0.5	2	8
Tampa	FL	2	1.5	1.5	0.5	2	7.5
Atlanta	GA	2	0.5	2.5	0.5	2	7.5
Richmond	VA	3	1.5	0.5	0.5	2	7.5
Providence	RI	3	2	0	0.5	2	7.5
San Diego	CA	3	0.5	2	0.5	1	7
Salt Lake City	UT	2	0	1.5	1.5	2	7
Columbus	OH	1	1.5	2.5	0.5	1	6.5
San Antonio	TX	2	2.5	2.5	0.5	0	7.5
Cleveland	OH	1	2	2	0.5	1	6.5
Louisville	KY	3	1.5	0	0	2	6.5
St. Louis	MO	2	2	1	1	0	6
Cincinnati	OH	1	2	1.5	0.5	1	6
Miami	FL	2	1	2.5	0.5	0	6
Hartford	CT	1	2	0	0.5	2	5.5
Las Vegas	NV	2	2	0	0.5	1	5.5
Virginia Beach	VA	3	0.5	1	1	0	5.5
New Orleans	LA	1	2.5	0	0.5	1	5
Detroit	MI	1	2	1	0	1	5
Memphis	TN	2	0.5	1.5	0.5	0	4.5
Birmingham	AL	1	2	0	0.5	1	4.5
Nashville	TN	0	0.5	2.5	0.5	1	4.5
Orlando	FL	2	0.5	0	0.5	1	4
Indianapolis	IN	1	2	0.5	0.5	0	4
Jacksonville	FL	2	0.5	0	0.5	1	4
Fort Worth	TX	1	1	1	0.5	0	3.5
El Paso	TX	1	0	1	0.5	1	3.5
Raleigh	NC	2	0.5	0	0.5	0	3
Charlotte	NC	2	0	0	0.5	0	2.5
Oklahoma City	OK	1	0	0	0.5	0	1.5
Median		2	2	2	0.5	1	7.5

Source: Data from independent research and city data requests

STRINGENCY OF BUILDING ENERGY CODES

New buildings are a critical target for energy savings in the buildings sector. A building's energy efficiency can be addressed more cost effectively when the building is being constructed than by retrofitting it with efficiency measures later on. Mandatory building energy codes are one mechanism for improving the efficiency of new buildings and those undergoing major renovation. The United States does not have a uniform national building energy code, but the federal government has taken an active role in developing national model energy codes. The national model code for residential buildings is the International Energy Conservation Code (IECC), developed by the International Code Council (ICC). The national model code for commercial buildings is the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 90.1, developed jointly by ASHRAE and the Illuminating Engineering Society.[8] The federal government encourages state governments to adopt and implement codes and to provide training, education, and tools to assist state and local agencies and contractors in meeting code requirements (Levine et al. 2012).

Local jurisdictions can take active roles in developing national model energy codes through the ICC. City code officials can advocate for and vote on changes to the model code. A recent change in the ICC code development process now allows stakeholders to vote on code-change proposals remotely, instead of requiring in-person voting at code hearings. This levels the playing field for participation by eliminating time and cost barriers that have limited code officials' participation in the past (Rhee 2014).

Code Adoption

Cities can earn a maximum of 3 points for residential code stringency and 3 points for commercial code stringency. In this year's *City Scorecard*, all cities have commercial and residential energy codes, but their stringency varies significantly. Codes are adopted in one of three ways: legislative action, regulatory action by administrative agencies, or action by code adoption boards at either the state or local level. The relationship between state and local governments for code adoption authority varies from state to state. In scoring code stringency, we took this relationship into account because it affects how much flexibility cities have to adopt their own energy codes.

We developed three scoring paths based on code adoption authority, with slight variations for residential and commercial stringency, as outlined in table 19. Track 1 scoring is for cities that do not have the authority to adopt their own codes and must follow the code set by the state. Cities in this track can receive points for actively advocating for code improvements at the state level. We determined this activity based on city official participation in technical advisory groups for building code development, public comments submitted in support of code upgrades during the state code-change rulemaking process, and/or active advocacy or lobbying efforts.

Track 2 scoring is for cities where a code is set at the state level but local adoption of more stringent codes is permitted, usually as amendments specific to the city and/or a more stringent stretch code. If a city had the authority to adopt codes and used it, we awarded points based on

[8] The current model codes set by the US Department of Energy are the 2012 IECC and the ASHRAE 90.1-2010 standards. Code stringency increases more significantly in some years than in others within each code cycle. A building constructed under the current model codes uses half or less of the amount of energy a typical building constructed in the mid-1980s does.

the stringency of the city's code (track 2A). If a city that had the authority did not use it, we awarded a reduced number of points based on the stringency of the state code (track 2B).

Track 3 scoring is for cities in states that do not have a statewide code but where municipalities can adopt their own energy codes. In these cases, cities can serve as leaders in code adoption. This is common in growing metropolitan areas, where a majority of the construction in states occurs.

In addition, cities in any scoring track can receive an additional half point if they are an active participant in the ICC model energy code development process.

Table 19. Scoring on code stringency

Track	Authority	Residential scoring	Commercial scoring
Track 1	IF CODE CAN BE SET ONLY BY THE STATE: Points are awarded based on the state-adopted codes that are applicable in the city.	> or equal to 2012 IECC = 1.5 points > 2009 IECC = 1 point 2009 IECC = 0.5 points < 2009 IECC, no mandatory code, or state does not set codes = 0 points	> or equal to 2012 IECC or ASHRAE 2010 = 1.5 points > 2009 IECC or ASHRAE 2007 = 1 point 2009 IECC or ASHRAE 2007 = 0.5 point < 2009 IECC or ASHRAE 2007, no mandatory code, or state does not set codes = 0 points
	PLUS: Additional points are available to a city in a state with code authority when the city is an active advocate for energy code improvements.	Documented state energy code advocacy by city = 1.5 points	Documented state energy code advocacy by city = 1.5 points
Track 2	*(A)* IF LOCAL AUTHORITY IS PERMITTED AND USED: If stretch codes (either city- or state-designed) were adopted by a city or the city energy codes otherwise varied from the state codes, points are awarded based on the stringency of the locally adopted code.	> or equal to 2012 IECC = 3 points > 2009 IECC = 2 points 2009 IECC = 1 point > 2009 IECC or less stringent than state code = 0 points	> or equal to 2012 IECC or ASHRAE 2010 = 3 points > 2009 IECC or ASHRAE 2007 = 2 points 2009 IECC or ASHRAE 2007 = 1 point < 2009 IECC or ASHRAE 2007 or less stringent than state code = 0 points
	(B) IF LOCAL AUTHORITY IS NOT USED: If the city is permitted to amend its codes but has not used this authority, reduced points are awarded based on the stringency of the state code.	> or equal to 2012 IECC = 1.5 points > 2009 IECC = 1 point 2009 IECC = 0.5 points < 2009 IECC or no mandatory code = 0 points	> or equal to 2012 IECC or ASHRAE 2010 = 1.5 points > 2009 IECC or ASHRAE 2007 = 1 point 2009 IECC or ASHRAE 2007 = 0.5 points < 2009 IECC or ASHRAE 2007, or no mandatory code = 0 points

Track	Authority	Residential scoring	Commercial scoring
Track 3	IF LOCAL CODE AUTHORITY ONLY: For cities located in states with no statewide codes, points are awarded based on the codes adopted by the city.	> or equal to 2012 IECC = 3 points > 2009 IECC = 2 points 2009 IECC = 1 point < 2009 IECC or no mandatory code = 0 points	> or equal to 2012 IECC or ASHRAE 2010 = 3 points > 2009 IECC or ASHRAE 2007 = 2 points 2009 IECC or ASHRAE 2007 = 1 point < 2009 IECC or ASHRAE 2007, or no mandatory code = 0 points
Applies to all	FOR ALL CITIES: All cities are eligible to receive credit for participating in the ICC model energy code development process.	0.5 points for active participation, which includes documented advocacy or a voting record	

We gathered data on code stringency and related activities from a variety of sources, including state code stringency data from the 2014 ACEEE *State Energy Efficiency Scorecard*, data requests sent to local government officials in each city, the Database of State Incentives for Renewables and Efficiency, and independent city-by-city research. Scores for each city's code stringency are included in table 21, after the section on enforcement and compliance.

BUILDING ENERGY CODE ENFORCEMENT AND COMPLIANCE

State and local agencies usually implement energy codes, including plan review and field inspections. These agencies are responsible for code compliance, enforcement, and training. States that have building codes often have state agencies that support local code officials with technical and educational assistance and that oversee the enforcement practices of local agencies. Even when the code is set at the state level, authority to enforce it is typically delegated to local agencies that review plans and inspect construction. Compliance requirements vary by city agency. Most of the enforcement in local jurisdictions is centered on the permitting process. In jurisdictions without strict enforcement, engineers or architects for a building construction project must certify that their plans are code compliant. In jurisdictions with stricter enforcement, plans are submitted to code officials for review. Some jurisdictions also require onsite inspections of construction work. Permit fees and municipal taxes fund local government enforcement. Some additional support for building energy code enforcement comes from DOE for training and development of software tools for code officials.

To date, few comprehensive studies to assess code compliance have been carried out, but it has been estimated that code compliance in finished buildings is between 50 and 60% (Levine et al. 2012). A lack of funding or resources is commonly cited as a local government's reason for not enforcing building energy codes. Enforcement of energy codes is often the first thing to be left out of building code enforcement when resources are limited. Energy codes are sometimes viewed as nonessential compared to building codes that protect people against more immediate hazards, such as fire and lack of structural soundness.

A city could earn up to 6 points for building energy code enforcement and compliance:

- City spending on building code enforcement functions, including plan review and construction inspections (2 points)

- Alternative code compliance strategies such as third-party code compliance in the form of a testing requirement or plan review (2 points)
- Required training for building code officials for energy code plan review and inspection (1 point)
- Up-front support for developers and builders for building energy code compliance, which may include education prior to permit issuance or application reviews focused on energy code compliance (1 point)

The methodology used to score cities on each of these four metrics follows and is outlined in table 20.

City Spending on Building Code Compliance

To assess city spending on building code department functions, we collected data on city budget spending for the department that carries out building code plan review and construction inspection. Buildings department budgets rarely itemize spending on energy code enforcement separately from general building code enforcement, so we relied on budget data for enforcing all building codes, including codes for structural issues, fire, and so on. We used these budget data as a proxy to measure the level of energy code enforcement.

We compared code compliance spending to the total residential construction spending in the city for 2013, as reported by the US Census (Census 2013a).[9] We based scores on the ratio of a city's spending on building code enforcement to residential construction spending in its jurisdiction in the same year.

Third-Party Code Compliance Strategies

We acknowledge that some compliance efforts are not captured in the budget metric, so we also recognize specific efforts supporting more stringent energy code enforcement. Cities can receive up to 2 points for additional code compliance efforts that are reflected in alternate code compliance strategies, such as programs that offer an option for third-party plan review, field inspection, or performance testing to verify and bolster compliance with energy codes. Third-party compliance programs have produced higher energy code compliance rates in jurisdictions where it has been enacted, such as Austin (Dwyer and Johnson 2011).

The third-party compliance model can reduce the costs incurred by a city's buildings department while improving quality and timeliness (Meres 2012). These programs are administered by the city, but can lessen its burden to keep up with changing training and staffing needs that result from fluctuations in construction activity. Third-party performance testing is becoming more prevalent in building energy codes. For example, the 2012 IECC requires performance testing of new construction for duct and building envelope air tightness. A city receives 1 point if a third-party compliance program is set up as an option but is not required for all new construction. It receives 2 points if third-party plan review, field inspection,

[9] We chose not to rely on a comparison of the city budget for code compliance with the number of building permits issued. While this may seem like a logical metric for normalization, the way that jurisdictions issue permits is inconsistent. Some issue permits for every trade that is working on the building, whereas others issue one permit per building. Permit fees are typically based on the cost of construction; therefore, a more accurate normalizing metric is construction spending overall (R. Meres, senior code compliance specialist, Institute for Market Transformation, pers. comm., May 13, 2013).

or performance testing is required as part of the residential or commercial energy code compliance process.

Energy Code Training Requirements for Building Code Officials

Cities also receive points for code compliance if training on energy code plan review and inspection is required for city code officials. Cities can receive 1 point for offering mandatory educational training that better prepares code officials to properly enforce the energy code. Cities can also earn a point in this category if they have staff dedicated solely to energy code enforcement.

Up-Front Support for Building Energy Code Compliance

To account for additional efforts that cities use to promote compliance with building energy codes, we allocate 1 point to cities that provide developers, builders, or owners with up-front support on building energy code compliance, which could include education prior to application reviews and permit issuance.

Table 20 summarizes the scoring methodology for the four metrics described above.

Table 20. Scoring methodology for building energy code enforcement and compliance

Building energy code enforcement and compliance	Scoring
City spending on building code compliance: building code budget per $1,000 of residential construction spending	$60 or more = 2 points $30 to $59.99 = 1.5 points $20 to $29.99 = 1 point $10 to $19.99 = 0.5 points Less than $10 = 0 points
Third-party compliance programs	Required participation in third-party plan review or performance testing program = 2 points Optional third-party compliance program = 1 point
Energy code training for building code officials	Required training = 1 point
Up-front support for building energy code compliance	Up-front support available = 1 point

Table 21 lists the scores for code stringency and compliance.

Table 21. Scores for code stringency and compliance

City	State	Authority to set code[1]	Code stringency (6 pts)	Code compliance and enforcement (6 pts)	Total (12 pts)
Washington	DC	Local	6	6	12
Seattle	WA	Other[2]	6	5.5	11.5
New York City	NY	Local	5	5.5	10.5
San Francisco	CA	Local	6	4.5	10.5
Boston	MA	State	6	4	10
Chicago	IL	Local	6	4	10
Austin	TX	Local	6	3	9
Los Angeles	CA	Local	6	2	8
Phoenix	AZ	Local	6	1.5	7.5
Minneapolis	MN	State	4.5	3	7.5
Portland	OR	State	5	2.5	7.5
Kansas City	MO	Local	6	0.5	6.5
Houston	TX	Local	4.5	2.5	7
Dallas	TX	Local	4	1	5
Sacramento	CA	Local	3	2	5
Riverside	CA	Local	3	2	5
Providence	RI	State	3	2	5
Baltimore	MD	Local	3	1.5	4.5
Milwaukee	WI	State	2.5	2	4.5
Louisville	KY	State	3	1.5	4.5
Richmond	VA	State	3	1.5	4.5
San Antonio	TX	Local	2	2.5	4.5
San Jose	CA	Local	3	1.5	4.5
Las Vegas	NV	Local	2	2	4
St. Louis	MO	Local	2	2	4
Denver	CO	Local	2	1.5	3.5
New Orleans	LA	Local	1	2.5	3.5
San Diego	CA	Local	3	0.5	3.5
Tampa	FL	State	2	1.5	3.5
Virginia Beach	VA	State	3	0.5	3.5
Birmingham	AL	Local	1	2	3
Cleveland	OH	State	1	2	3
Pittsburgh	PA	State	1	2	3
Cincinnati	OH	State	1	2	3
Hartford	CT	State	1	2	3
Indianapolis	IN	State	1	2	3
Detroit	MI	State	1	2	3
Miami	FL	State	2	1	3
Atlanta	GA	Local	2	0.5	2.5
Columbus	OH	State	1	1.5	2.5
Jacksonville	FL	State	2	0.5	2.5
Orlando	FL	State	2	0.5	2.5
Philadelphia	PA	State	1	1.5	2.5
Raleigh	NC	State	2	0.5	2.5
Charlotte	NC	State	2	0	2
Fort Worth	TX	Local	1	1	2
Salt Lake City	UT	State	2	0	2
Memphis	TN	Local	2	0.5	2.5
El Paso	TX	Local	1	0	1
Oklahoma City	OK	State	1	0	1
Nashville	TN	Local	0	0.5	0.5

[1] Authority applies to setting residential and commercial codes unless otherwise noted.
[2] In Seattle, authority to set residential codes rests with the state, while commercial codes can be set locally.

TARGETS, INCENTIVES, AND REQUIREMENTS FOR EFFICIENT BUILDINGS

A number of cities use targets, incentives, and/or requirements to promote efficiency in their new and existing buildings. Cities have many policy options to consider (SEE Action 2013). In this category we scored cities on (1) community-wide building energy savings targets, (2) incentives or financing for efficient buildings or efficiency improvements, (3) policies requiring construction of efficient, above-code buildings, and (4) energy efficiency retrofitting or energy audit requirements for existing buildings. A city could earn up to 9 points from these metrics.

Building Energy Savings Targets

Some cities have set energy reduction targets for the private building stock in the city in order to motivate and encourage increased energy efficiency in buildings specifically. Some of these energy savings targets are components of broader goals aiming for reductions in the energy consumed in all sectors. Others are stand-alone goals for the buildings sector. Many cities that have adopted stand-alone goals for buildings' energy use have done so as community partners in DOE's Better Buildings Challenge (DOE 2014b).

In this metric, cities that adopted energy savings targets that are specific to the buildings sector were recognized with 1 point.

Incentives and Financing for Efficient Buildings

A number of programs that offer incentives for efficient new buildings and retrofits have been established at the city level. Some cities encourage developers and builders to construct green and efficient buildings by providing nonfinancial incentives that speed up the permitting process or allowing the construction of larger and/or higher structures. For example, with little to no financial investment, jurisdictions can provide a significant incentive to a builder by moving the building up in the permitting and plan review process, which can sometimes take up to 18 months (USGBC 2014). Density bonuses reward green builders with increases in the maximum allowable development on a property that would otherwise be restricted under zoning and land use designations. Financial incentives can also be used to encourage green building, including tax credits, permit fee reductions or waivers, grants, or property tax abatements. Financing mechanisms enabled by city policy and made available for use with properties making efficiency improvements can also encourage energy efficiency improvements in buildings. Examples include property assessed clean energy financing (PACE), tax increment financing (TIF), and revolving loan funds.

Any city-provided incentives or financing mechanisms for efficient buildings that are not run through a utility program are captured in this metric. A city earned up to 3 points for this metric, receiving 0.5 points for each incentive or program provided by the city, and 1 point if the incentive or program applies to both commercial and residential buildings.

Green Building Requirements

Cities have adopted a variety of above-code green building requirements. Some go into effect if public funding is used for a project. Other requirements are in place for specific classes or sizes of buildings. Some cities include green building requirements in the stretch code requirements for new construction. We awarded points in the code stringency metrics to cities whose building codes included green building requirements that applied to the entirety of the residential or commercial building stocks. In this metric we recognized additional efforts a city made to extend more stringent, above-code requirements to specific categories of buildings. For

a green building requirement to receive points for this metric, energy efficiency had to be explicitly noted in the policy or in the building standard referenced by the policy.[10]

A city can earn up to 2 points for this metric. Policies applying to certain classes of both commercial and residential buildings received 2 points. Policies applying to certain classes of commercial or residential buildings but not both received 1 point. Policies applying to only to buildings using public funds received 0.5 points.

Energy Audit and Retrofit Requirements

Some cities have energy management requirements for existing buildings. For example, Austin requires all homes 10 years and older to have an energy audit performed at the time of sale, with the results disclosed to buyers or prospective buyers (Austin Energy 2013). Other cities' policies also leverage the transaction period surrounding the time of sale of a building, requiring energy efficiency upgrades to be performed before a home is sold. Residential energy conservation ordinances (RECOs), such as the one in San Francisco, require all homes that are sold or substantially renovated to meet certain requirements for energy and water efficiency. These policies offer a way for cities to address energy use in the existing residential building stock, a segment of buildings with traditionally low rates of energy efficiency upgrade activity. Some cities also have similar retrofit requirements for commercial buildings. In New York City, Local Law 87 requires buildings over 50,000 square feet to undergo periodic energy audit and retrocommissioning measures on a scheduled basis every 10 years (New York 2009). In Boston, both residential and commercial buildings are required to improve efficiency if they are not ENERGY STAR certified or showing improvement in energy use savings (B. Swing, director of energy policy and programs, City of Boston, pers. comm., 2014).

A city could earn up to 2 points for retrofit requirements and up to 1 point for energy audit requirements. Full points were awarded if the retrofit or audit policy applied to both commercial and residential buildings. If the policy applied to either commercial or residential buildings, half credit was awarded.

Table 22 outlines the scoring methodology for these metrics.

Table 22. Scoring methodology for targets, incentives, and requirements for efficient buildings

Goals, incentives, or requirements for efficient buildings, retrofits, or audits	Score (9 points)
The city has a building energy savings target for private buildings.	1 point if a buildings-specific target has been established
The city provides incentives or financing programs for energy-efficient new construction or building improvements.	0.5 points per incentive or program, or 1 point if it applies to both residential and commercial (3 points maximum)

[10] Green building requirements do not necessarily focus solely on energy efficiency improvements, since often these requirements also address how a building impacts the surrounding environment and ecosystem through consideration of some or all of the following features: site selection; water conservation; stormwater management; material use reduction, recycling, composting, and use of green building materials; indoor air quality; and reduction of the urban heat island effect (EPA 2013b).

Goals, incentives, or requirements for efficient buildings, retrofits, or audits	Score (9 points)
The city has above-code green building requirements, which include energy efficiency standards, for certain categories of private buildings, or for buildings using public funds.	2 points if required for some private residential AND commercial buildings 1 point if required for some private residential OR commercial buildings 0.5 points if required for buildings using public funds
The city has building energy audit requirements.	1 point if required for BOTH residential and commercial buildings 0.5 points if required for EITHER residential or commercial buildings
The city has building retrofit or retrocommissioning requirements.	2 points if required for BOTH residential and commercial buildings 1 point if required for EITHER residential or commercial buildings

Table 23 lists the scores for each city. Table C3 in Appendix C presents policy details for targets, incentives, and requirements for efficient buildings.

Table 23. Scores for targets, incentives, and requirements for efficient buildings

City	State	Building energy savings target for private buildings (1 pt)	Incentives or financing programs (3 pts)	Above-code green building req. (2 pts)	Audit req. (1 pt)	Retrofit req. (2 pts)	Total (9 pts)
Boston	MA	1	3	2	1	2	9
New York City	NY	1	3	0.5	1	2	7.5
Austin	TX	1	2	2	0.5	1	6.5
San Francisco	CA	0	3	2	0.5	1	6.5
Baltimore	MD	1	2	2	0	0	5
Washington	DC	1	2	2	0	0	5
Chicago	IL	1	1.5	2	0	0	4.5
Seattle	WA	1	3	0.5	0	0	4.5
Portland	OR	1	2.5	0.5	0	0	4
Minneapolis	MN	1	2.5	0	0	0	3.5
Dallas	TX	0	1	2	0	0	3
Denver	CO	1	2	0	0	0	3
Houston	TX	1	1.5	0.5	0	0	3
San Jose	CA	0	1	2	0	0	3
Atlanta	GA	1	1	0.5	0	0	2.5
Columbus	OH	1	1	0.5	0	0	2.5
Miami	FL	0	0.5	2	0	0	2.5
Milwaukee	WI	1	1.5	0	0	0	2.5
Nashville	TN	1	1.5	0	0	0	2.5
Philadelphia	PA	1	1.5	0	0	0	2.5
Pittsburgh	PA	0	2	0.5	0	0	2.5
Riverside	CA	0	2.5	0	0	0	2.5
San Antonio	TX	1	1	0.5	0	0	2.5
Cleveland	OH	1	1	0	0	0	2
Sacramento	CA	1	1	0	0	0	2
San Diego	CA	1	1	0	0	0	2
Cincinnati	OH	0	1.5	0	0	0	1.5
Kansas City	MO	0	1	0.5	0	0	1.5
Memphis	TN	0	1.5	0	0	0	1.5
Salt Lake City	UT	0	1.5	0	0	0	1.5
Tampa	FL	0	1.5	0	0	0	1.5

City	State	Building energy savings target for private buildings (1 pt)	Incentives or financing programs (3 pts)	Above-code green building req. (2 pts)	Audit req. (1 pt)	Retrofit req. (2 pts)	Total (9 pts)
Detroit	MI	0	1	0	0	0	1
El Paso	TX	0	1	0	0	0	1
Fort Worth	TX	1	0	0	0	0	1
Los Angeles	CA	1	0	0	0	0	1
Phoenix	AZ	0	1	0	0	0	1
St. Louis	MO	0	1	0	0	0	1
Virginia Beach	VA	0	1	0	0	0	1
Indianapolis	IN	0	0.5	0	0	0	0.5
Richmond	VA	0	0	0.5	0	0	0.5
Birmingham	AL	0	0	0	0	0	0
Charlotte	NC	0	0	0	0	0	0
Hartford	CT	0	0	0	0	0	0
Jacksonville	FL	0	0	0	0	0	0
Las Vegas	NV	0	0	0	0	0	0
Louisville	KY	0	0	0	0	0	0
New Orleans	LA	0	0	0	0	0	0
Oklahoma City	OK	0	0	0	0	0	0
Orlando	FL	0	0	0	0	0	0
Providence	RI	0	0	0	0	0	0
Raleigh	NC	0	0	0	0	0	0

BUILDING BENCHMARKING, RATING, AND ENERGY USE TRANSPARENCY

Building benchmarking, rating, and energy use transparency policies have gained traction at the city level in recent years. While these policies do not directly require upgrades or changes in behavior, such information is critical for quantifying and evaluating building energy use patterns in order to save energy in a city's building stock. Benchmarking and energy use transparency can increase investment in energy efficiency improvements by providing information about their impact. In addition, the process of benchmarking itself can reduce energy use. In an analysis by the Environmental Protection Agency, energy consumption decreased by 7% over three years in a pool of 35,000 benchmarked buildings (ENERGY STAR 2012).

Cities can earn a maximum of 6 points in this section. Points are awarded for mandatory benchmarking, rating, and transparency policies that apply to commercial and residential buildings. An additional point is given for voluntary benchmarking programs.

Some cities have gone a step beyond requiring benchmarking of a building's energy use by requiring them to undertake an energy audit or make improvements. These requirements are captured in the Targets, Incentives, and Requirements for Efficient Buildings section earlier in this chapter.

Mandatory Policies

Benchmarking and energy use transparency help cities identify high-energy-consuming buildings and building types. This information can be used to determine opportunities for targeted energy savings programs to meet carbon or energy use reduction goals. In jurisdictions with commercial benchmarking requirements, buildings must benchmark their energy use using the ENERGY STAR Portfolio Manager® tool. However policies differ with regard to enforcement strategies, education, support for building owners, disclosure of data to the public

or only to parties involved in a transaction for the building, and the timing of disclosure (Levine et al. 2012).

Commercial building benchmarking and energy use transparency policies were allocated 3 points. Points are awarded based on whether a policy has been passed, the details of the policy, and its implementation status. The best practices from which this scoring was based were adapted from Institute for Market Transformation reports on best practices for commercial and multifamily benchmarking (Burr et al. 2011; Krukowski and Burr 2012).

At the residential level, energy use transparency policies can (1) show the value of energy-efficient homes when a home is sold, (2) encourage energy efficiency upgrades, and (3) generate information for better valuation of energy efficiency improvements for appraisals and mortgage underwriting. Current residential policies take four different forms:

- Access to utility bills at the time of sale
- Access to energy efficiency features at the time of sale
- Energy audit requirements and access to audit report results at the time of sale
- Annual benchmarking (Cluett and Amann 2013)

Benchmarking requirements are most commonly applied to commercial buildings, but sometimes include multifamily buildings as well. The real estate industry is improving access to information on energy efficiency characteristics and/or energy use at the time a home is listed for sale by including that information in multiple listing services (MLSs).

Voluntary Benchmarking

Cities can also receive a point if they are actively running a program that encourages buildings to benchmark energy use through ENERGY STAR Portfolio Manager. To receive credit, the program must (1) have been active between 2013 and 2015, (2) target some portion or all of the city's private building stock, and (3) have methods in place to measure participation.

These scoring criteria for benchmarking and transparency policies are summarized in table 24. Cities can earn a maximum of 3 points for commercial policies and 3 points for residential policies.

Table 24. Scoring methodology for commercial and residential benchmarking and transparency policies

	Criterion	Commercial (3 pts)	Residential (3 pts)
Mandatory	Benchmarking requirement has been passed.	0.5	0.5
	Benchmarking/energy transparency requirement has been implemented.	0.5	0.5
	Training and guidance. The city has a benchmarking hotline, trains building owners, provides worksheets for facilitating utility data disclosure, and/or provides energy use data to local real estate MLS.	0.5	0.5
	Enforcement strategy. Fines or other mechanisms are in place for noncompliance enforcement.	0.5	0.5
	Reporting. The city releases a report or database providing compliance data and/or analysis of building energy use data.	0.5	N/A

	Criterion	Commercial (3 pts)	Residential (3 pts)
	Public disclosure of energy use data. Building owners are required to publicly disclose energy use.	0.5	0.5
Voluntary	*Green MLS features.* The local MLS's format includes a field for energy efficiency features (specifically, documentation of Home Energy Rating System, LEED, other green ratings).	N/A	0.5
	Voluntary benchmarking program. The city is actively running a program that encourages buildings to benchmark energy use through ENERGY STAR Portfolio Manager.	0.5	0.5

Table 25 presents scores and details on commercial and residential building benchmarking and energy use transparency policies.

Table 25. Scores for commercial and residential benchmarking and transparency policies

City	State	Benchmarking score (6 pts)	Policy details
Boston	MA	6	Mandatory res policy (2.5). Mandatory comm policy (3). Green MLS (0.5). Voluntary benchmarking (0.5)
New York City	NY	6	Mandatory res policy (2.5). Mandatory comm policy (3). Green MLS (0.5)
Chicago	IL	6	Mandatory res policy (2.5). Mandatory comm policy (3). Green MLS (0.5)
Washington	DC	6	Mandatory res policy (2.5). Mandatory comm policy (3). Green MLS (0.5)
Seattle	WA	5	Mandatory res policy (2). Mandatory comm policy (2.5). Green MLS (0.5)
Austin	TX	4	Mandatory res policy (2). Mandatory comm policy (2). Green MLS (0.5)
Minneapolis	MN	3.5	Mandatory res policy (0). Mandatory comm policy (3). Green MLS (0.5)
Philadelphia	PA	3.5	Mandatory res policy (0). Mandatory comm policy (3). Green MLS (0.5)
San Francisco	CA	3.5	Mandatory res policy (0). Mandatory comm policy (3). Green MLS (0.5)
Salt Lake City	UT	1.5	Green MLS (0.5). Voluntary (1)
Portland	OR	1	Green MLS (0.5). Voluntary (0.5)
Denver	CO	1	Green MLS (0.5). Voluntary (0.5)
Houston	TX	1	Green MLS (0.5). Voluntary (0.5)
St. Louis	MO	1	Green MLS (0.5). Voluntary (0.5)
Los Angeles	CA	1	Green MLS (0.5). Voluntary (0.5)
Virginia Beach	VA	1	Green MLS (0.5). Voluntary (0.5)
Atlanta	GA	0.5	Green MLS (0.5)
Baltimore	MD	0.5	Green MLS (0.5)
Milwaukee	WI	0.5	Green MLS (0.5)
San Diego	CA	0.5	Green MLS (0.5)
Birmingham	AL	0.5	Green MLS (0.5)
Sacramento	CA	0.5	Green MLS (0.5)
Nashville	TN	0.5	Green MLS (0.5)
Phoenix	AZ	0.5	Green MLS (0.5)
New Orleans	LA	0.5	Green MLS (0.5)
Cincinnati	OH	0.5	Green MLS (0.5)
Oklahoma City	OK	0.5	Green MLS (0.5)
Orlando	FL	0.5	Green MLS (0.5)
San Antonio	TX	0.5	Green MLS (0.5)
Indianapolis	IN	0.5	Green MLS (0.5)
Charlotte	NC	0.5	Green MLS (0.5)
Fort Worth	TX	0.5	Green MLS (0.5)
Cleveland	OH	0.5	Green MLS (0.5)
Pittsburgh	PA	0.5	Voluntary (0.5)
San Jose	CA	0.5	Green MLS (0.5)
Columbus	OH	0.5	Voluntary (0.5)

City	State	Benchmarking score (6 pts)	Policy details
Dallas	TX	0.5	Green MLS (0.5)
Providence	RI	0.5	Green MLS (0.5)
Raleigh	NC	0.5	Green MLS (0.5)
El Paso	TX	0.5	Green MLS (0.5)
Hartford	CT	0.5	Green MLS (0.5)
Richmond	VA	0.5	Green MLS (0.5)
Jacksonville	FL	0.5	Green MLS (0.5)
Kansas City	MO	0.5	Green MLS (0.5)
Tampa	FL	0.5	Green MLS (0.5)
Riverside	CA	0.5	Green MLS (0.5)
Las Vegas	NV	0.5	Green MLS (0.5)
Memphis	TN	0.5	Green MLS (0.5)
Miami	FL	0.5	Green MLS (0.5)
Detroit	MI	0	N/A
Louisville	KY	0	N/A

COMPREHENSIVE EFFICIENCY SERVICES

Existing buildings that need energy efficiency improvements are widespread in every city, and for the most part access to incentives for specific prescriptive efficiency measures exists. However it is not as common to find professionals or programs that take a comprehensive approach to building energy efficiency by identifying opportunities to improve the whole building as a system. A comprehensive whole-building approach goes beyond simple equipment upgrades to identify opportunities in system design, equipment design, and building operation and maintenance to achieve savings (Kwatra 2014). This strategy can result in identification of the most cost-effective improvements and fewest missed savings opportunities.

In this metric, we assess the availability of comprehensive energy efficiency services in a city, based on the availability of energy efficiency programs, including performance-based whole-home energy improvement programs and commercial retrofit programs that address whole-building energy use.

A city was awarded 1 point if homeowners in the city have access to a Home Performance with ENERGY STAR or equivalent whole-home program.[11] A city was awarded 1 point if building owners have access to a comprehensive commercial retrofit program.[12] The programs do not need to be administered by the city government to qualify for points in this metric. Instead, this metric serves as a proxy for assessing the capacity of the regional economy to effectively provide energy efficiency retrofit services. Scores are listed in table 26.

[11] The Home Performance with ENERGY STAR program is a national program for residential buildings administered by DOE and EPA that combines diagnostic assessment of homes with a pathway to completing recommended energy efficiency measures. The program focuses on a comprehensive "whole house" approach to improvements to increase the efficiency of a home, rather than targeting specific products or equipment.

[12] Comprehensive commercial retrofit programs are designed to address whole-building performance. In contrast to typical programs that set incentives for undertaking specific prescriptive measures, this approach maximizes energy savings by going beyond simple equipment upgrades to identify opportunities in system design, equipment design, and building operation and maintenance to achieve savings (Kwatra and Essig 2014).

Table 26. Scores for comprehensive efficiency services

City	State	Score (2 pts)	Program sector
Atlanta	GA	2	Commercial and residential
Austin	TX	2	Commercial and residential
Baltimore	MD	2	Commercial and residential
Boston	MA	2	Commercial and residential
Chicago	IL	2	Commercial and residential
Denver	CO	2	Commercial and residential
Hartford	CT	2	Commercial and residential
Los Angeles	CA	2	Commercial and residential
Louisville	KY	2	Commercial and residential
Milwaukee	WI	2	Commercial and residential
Minneapolis	MN	2	Commercial and residential
New York City	NY	2	Commercial and residential
Philadelphia	PA	2	Commercial and residential
Phoenix	AZ	2	Commercial and residential
Pittsburgh	PA	2	Commercial and residential
Portland	OR	2	Commercial and residential
Providence	RI	2	Commercial and residential
Richmond	VA	2	Commercial and residential
Sacramento	CA	2	Commercial and residential
Salt Lake City	UT	2	Commercial and residential
San Francisco	CA	2	Commercial and residential
San Jose	CA	2	Commercial and residential
Seattle	WA	2	Commercial and residential
Tampa	FL	2	Commercial and residential
Washington	DC	2	Commercial and residential
Birmingham	AL	1	Residential
Cincinnati	OH	1	Residential
Cleveland	OH	1	Residential
Columbus	OH	1	Residential
Detroit	MI	1	Residential
El Paso	TX	1	Residential
Houston	TX	1	Residential
Jacksonville	FL	1	Residential
Kansas City	MO	1	Residential
Las Vegas	NV	1	Residential
Nashville	TN	1	Residential
New Orleans	LA	1	Residential
Orlando	FL	1	Residential
Riverside	CA	1	Residential
San Diego	CA	1	Residential
Charlotte	NC	0	None
Dallas	TX	0	None
Fort Worth	TX	0	None
Indianapolis	IN	0	None
Memphis	TN	0	None
Miami	FL	0	None
Oklahoma City	OK	0	None
Raleigh	NC	0	None
San Antonio	TX	0	None
St. Louis	MO	0	None
Virginia Beach	VA	0	None

Leading Cities: Building Policies

Seattle. Seattle has long relied on energy codes to advance energy efficiency in the city. Compliance with the energy code has been taken seriously since its adoption in 1980. The city focuses on mitigating potential issues up front during the building design phase by requiring a predesign meeting for all major projects. It also offers a voluntary pre-submittal energy code interpretation meeting for the project design team for smaller jobs. Unlike some cities that allow self-certification of plans by architects and engineers, plans must be reviewed by city staff. Plans are reviewed by dedicated energy plan reviewers, and the design team must make changes to the plans based on reviewer comments before receiving a construction permit (Carey and Plunkett 2009).

Seattle has developed its own energy code submittal forms that compile everything needed to demonstrate energy code compliance in one document, which has helped improve communication between plan submitters and reviewers (R. Meres, senior code Compliance specialist, Institute for Market Transformation, pers. comm., November 10, 2014). Seattle designed this process to mitigate issues during the early phases of a project when issues can be most cost effectively addressed.

Staff that engage in energy code plan review and inspection regularly attend in-house energy code courses that are taught by Seattle's Energy Code Advisor. Third-party experts are also relied on as a part of the energy code compliance process. To comply with the energy code, project owners must engage third-party firms to perform required performance tests, including air barrier testing, commissioning, and system balancing. Post-construction testing of the building shell and energy systems not only ensures code compliance for the City of Seattle, but also confirms for the building owner that the building and its systems are operating as they were designed to.

Chicago. Chicago is making strides to require transparency of energy use in many building types. After updating an ordinance that requires access to energy use at the time of listing a home or apartment for sale or rent in early 2013, Chicago passed a benchmarking ordinance in September 2013. The benchmarking ordinance applies to existing municipal, commercial, and residential buildings larger than 50,000 square feet to track whole-building energy use, report it to the city annually, and verify data accuracy every three years (Chicago 2014).

Chicago's time-of-listing requirement allows home buyers and renters access to energy use information when they are searching for housing. In conjunction with local stakeholders, the city helped make energy use data easy to access for realtors when listing it on the multiple listing service (MLS). Using the existing MyHomeEQ system developed by Elevate Energy, realtors can enter utility account information for a home and sync energy use information to the MLS. This provides a reporting method for energy use information that is standardized, automatic, and easy to understand. Existing relationships between Midwest Real Estate Data (MRED), owner of the local Chicago MLS, and Elevate Energy from earlier efforts to green the MLS proved important to developing a successful implementation strategy to meet the requirements of the amendments to the existing ordinance (C. Wheat, deputy director, City of Chicago, pers. comm., April 9, 2013).

Chapter 5. Energy and Water Utilities

Lead Author: Lauren M. Ross

INTRODUCTION

Utilities can be valuable partners to cities in delivering energy efficiency programs. In nearly every state, customers of energy utilities fund energy efficiency programs through their utility bills. These programs are implemented by the electric and gas utilities or through statewide independent program administrators. They have a long record of delivering energy savings to residential, commercial, and industrial customers (York et al. 2012; Nowak et al. 2013). Investments in energy efficiency programs have increased steadily over the past decade, reaching $7.7 billion annually in 2013 (Gilleo et al. 2014).

In cities with investor-owned utilities (IOUs), state policy is usually the primary driver of energy efficiency programs. However the policies that shape these programs and the level of program investments are often subject to review, and cities can intervene in these processes to advocate for expanded programs that serve their citizens.

While cities generally cannot directly regulate IOUs, they can partner with them to promote their programs, help them reach their savings targets, and leverage utility resources for city-funded programs. By partnering with utilities as programs are developed, cities can help to align the incentives offered by the utility with local policy goals. Furthermore, cities are particularly well suited to helping with program outreach and coordination, especially when it involves groups that they reach through other city programs, such as services for small businesses or low-income residents (VEIC 2013). In some cases, cities can also require their utilities to invest in energy efficiency through franchise and other procurement agreements. In states with deregulated utilities and where municipal aggregation is allowed by state law, cities can require energy efficiency commitments as part of their contracts with their chosen energy suppliers.

Cities with municipally owned energy utilities have direct influence over the level of investment and the types of efficiency programs they offer, and many of these cities have been leaders in delivering energy savings (Nowak et al. 2013). Municipal utility efficiency programs are often tied to local policies and sustainability and/or climate plans. For example, Austin Energy, that city's municipally owned utility, has goals for energy savings, reductions in greenhouse gas emissions, and renewable energy generation that are consistent with Austin's Climate Protection Plan (Austin Energy 2010).

Partnerships with energy utilities can also give local governments, building owners, and consumers access to data on energy use. Community-level data are important for local energy planning. For example, aggregated building data can enable building owners with multiple tenants to better manage and operate their buildings. Building owners also need data to comply with mandatory rating and transparency policies in cities that have them.

Water utilities are also important for influencing energy efficiency, and they often implement programs to improve energy and water efficiency throughout the water treatment and delivery system. Water usage involves significant energy consumption, because electricity and natural gas are used to source, treat, and transport potable water and to collect, transport, treat, and discharge wastewater. As a result, improving the water efficiency in municipal systems can also result in reduced energy consumption (NRDC 2009; Young and Mackres 2013; Young 2014). In

California, the state with the most complete data, sourcing, moving, treating, heating, collecting, and disposing of water are estimated to account for 19% of the state's electricity use and 30% of its natural gas consumption (Klein 2005). For many local governments, the cost of the energy required throughout the water process is even higher, typically 35% of the energy budgets of municipal governments (Pirne 2008; ENERGY STAR 2013b).

City governments often directly control their water utilities. In other cases, the utilities are independent agencies serving a region. A single city may have multiple utilities providing drinking-water supply and distribution, wastewater management and treatment, and stormwater management. Local governments can take advantage of the opportunities for water and energy efficiency by partnering with the water utilities that serve them.

SCORING

We scored cities based on the efficiency efforts of their primary electric, gas, and water utilities and the extent to which cities partner with them to enable utility-sector efficiency programs. Cities could earn up to 18 points in this area, with 13 points for energy utilities and 5 points for water utilities. We scored the following metrics based on the actions of each city or its primary electric and natural gas utilities:

- Spending on electricity energy efficiency programs (4 points)
- Spending on natural gas energy efficiency programs (2 points)
- Electricity efficiency program energy savings (2 points)
- Gas efficiency program energy savings (1 point)[13]
- Policies requiring utilities to invest in energy efficiency at the local level, advocacy for state energy efficiency savings targets, and other state-level requirements for energy efficiency (2 points)
- Utilities' provision of energy usage data to customers, multitenant building owners, and local governments (2 points)

We also scored cities based on the following metrics related to efficiency efforts by drinking-water, wastewater, and stormwater utilities:

- Funding for water efficiency programs (1 point)
- Water savings targets (1 point)
- Water-related energy efficiency targets or strategies (1 point)
- Self-generation of energy by wastewater utilities (1 point)
- Policies, rates, or incentives that encourage private developers to incorporate low-impact development or green infrastructure into projects to manage stormwater (0.5 points)
- Funding for green stormwater infrastructure projects on public property, such as streets, schools, and parks (0.5 points)

RESULTS

Overall, results indicate increasing local government and utility engagement on energy efficiency initiatives, policies, and programs. Boston remained the top-scoring city in the utilities policy area, having shared the spot with San Francisco in 2013. Boston continues to score the highest for its energy utilities because of high investments in electricity and natural

[13] This metric is new to this edition of the *City Scorecard*.

gas programs, partnerships with its utilities, state advocacy, and good access to utility energy data. San Francisco came in second this year, continuing to score high for the efficiency efforts of its energy utilities and its water utilities' policies and programs. Chicago, Minneapolis, and Portland tied for third place, scoring high on gas and electric efficiency spending and either setting or advocating for savings targets or agreements for the utilities that serve them. Of the top-ranking cities, San Francisco and Boston also received the maximum score for water utilities due to their comprehensive water-related energy efficiency initiatives, water-saving policies and programs, and efforts to manage stormwater. The median total score for efficiency efforts by energy and water utilities was approximately 9.5 points (a half point down from 2013), with the lowest score, 0.5 points, given to Birmingham.

Table 27 lists the scores for energy and water utilities.

Table 27. Scores for energy and water utilities

City	State	Energy utilities (13 pts)	Water utilities (5 pts)	Total (18 pts)
Boston	MA	12.5	5	17.5
San Francisco	CA	10.5	5	15.5
Chicago	IL	10.5	4.5	15
Minneapolis	MN	11	4	15
Portland	OR	11	4	15
Seattle	WA	9.5	5	14.5
Denver	CO	9.5	4	13.5
New York City	NY	8.5	5	13.5
Los Angeles	CA	8	5	13
San Jose	CA	9	3.5	12.5
Washington	DC	9	3.5	12.5
Sacramento	CA	8.5	3.5	12
Riverside	CA	7	4	11
Baltimore	MD	6.5	4	10.5
Las Vegas	NV	6	4.5	10.5
San Diego	CA	7.5	3	10.5
Austin	TX	5	5	10
Cleveland	OH	6	4	10
Houston	TX	7	3	10
Providence	RI	7.5	2.5	10
Columbus	OH	6.5	3	9.5
Milwaukee	WI	6.5	3	9.5
Philadelphia	PA	5.5	4	9.5
Phoenix	AZ	7	2.5	9.5
Salt Lake City	UT	6	3.5	9.5
San Antonio	TX	5.5	4	9.5
Atlanta	GA	4	5	9
Cincinnati	OH	6	2.5	8.5
Fort Worth	TX	3.5	5	8.5
Indianapolis	IN	7	1.5	8.5
Dallas	TX	5	3	8
El Paso	TX	3	5	8
Pittsburgh	PA	4	4	8
Charlotte	NC	3	4	7
Hartford	CT	6.5	0.5	7
Jacksonville	FL	2.5	3.5	6
Virginia Beach	VA	4	2	6
Orlando	FL	4	1.5	5.5
Tampa	FL	3	2.5	5.5

City	State	Energy utilities (13 pts)	Water utilities (5 pts)	Total (18 pts)
Kansas City	MO	3.5	1.5	5
Memphis	TN	2	3	5
St. Louis	MO	4.5	0.5	5
Detroit	MI	4	0.5	4.5
Miami	FL	1	2.5	3.5
Nashville	TN	1.5	2	3.5
Oklahoma City	OK	1	1.5	2.5
Raleigh	NC	1	1.5	2.5
Richmond	VA	1.5	1	2.5
Louisville	KY	1	1	2
New Orleans	LA	1.5	0	1.5
Birmingham	AL	0.5	0	0.5
Median		**6**	**3.5**	**9.5**

The most-improved cities in this edition were Washington, Los Angeles, Atlanta, and Charlotte, whose scores improved by 3.75, 3, 2.75, and 2.5 points, respectively. Washington's improvement can be attributed to higher electric and gas efficiency program spending and related savings and better initiatives supporting access to energy data. Los Angeles, Atlanta, and Charlotte saw improvements in electric efficiency spending and citywide data provision. Most notably, the bulk of these cities' improvements came from water-related energy-saving programs and targets and stormwater policies. For example, Los Angeles earned 2 more points in this category partly due to the Los Angeles Department of Water and Power Board of Commissioners' adoption of a policy requiring the utility to achieve 15% energy savings through energy efficiency by 2020.

Cities scored strongest across this sector for electric efficiency spending and savings, data provision, and water-service efficiency. Portland and Boston are the only two cities that received the maximum number of points for electricity efficiency spending and savings. However many cities are partnering with their gas and electric utilities to promote energy efficiency services to local residents and businesses. A handful of cities also received maximum points for data provision, water-related energy-saving programs and targets, and stormwater policies, a notable change from the last edition.

Of the 51 cities studied, 12 had a municipally owned electric or gas utility, or both.[14] Five cities with municipal utilities—Austin, Los Angeles, Riverside, Seattle, and Sacramento—ranked among the top 10 cities. However, on the whole, cities with municipal utilities did not appear to score better than IOUs. The high overall rankings of cities with IOUs shows that, despite utility regulation at the state level, cities can effectively influence the level of energy efficiency provided by their energy utilities by copromoting utility programs, leveraging utility incentives for their own local energy efficiency programs, and advocating for improved policy at the state level.

There remains considerable room for improvement in this area, in particular on energy efficiency savings targets for both municipally owned and investor-owned utilities. Only four cities with IOUs, Chicago, Denver, Virginia Beach, and Cincinnati, have established utility franchise or municipal aggregation agreements requiring investment in energy efficiency. In

[14] We treat Entergy New Orleans as a municipal utility because it is an investor-owned utility regulated by the New Orleans City Council.

addition, we have seen only slight growth in the number of cities that have entered into voluntary agreements with their utilities to provide funding to locally administered energy efficiency programs. As for municipally owned utilities, New Orleans, Memphis, Nashville, and Jacksonville have yet to establish electric savings targets for their utilities.

Another area in need of improvement is the provision of aggregated energy data for multitenant buildings. While the majority of cities have a utility providing customers with consumption data using an easy-to-read, standardized format, only one-third of the cities have utilities that provide multi-tenant building owners with automated whole-building data to enable benchmarking. Interest in utilities providing this type of data is growing at the city level, as indicated by the number of benchmarking and transparency policies and increasing advocacy. Since the last *City Scorecard*, several cities have joined the City Energy Project or the Department of Energy's Better Buildings Energy Data Accelerator to improve the energy efficiency of buildings by accelerating utility data access for benchmarking.

EFFICIENCY EFFORTS OF ENERGY UTILITIES

Table 28 lists the scores for all energy utility metrics.

Table 28. Scores for energy utility efficiency efforts

City	State	Electric efficiency spending (4 pts)	Electric savings (2 pts)	Gas efficiency spending (2 pts)	Gas savings (1 pt)	EE targets & requirements (2 pts)	Data provision (2 pts)	Overall energy utility score (13 pts)
Boston	MA	4	2	2	1	1.5	2	12.5
Minneapolis	MN	3.5	1.5	1.5	1	2	1.5	11
Portland	OR	4	2	2	0.5	1	1.5	11
Chicago	IL	3.5	1	1.5	0.5	2	2	10.5
San Francisco	CA	3.5	1	1.5	1	1.5	2	10.5
Denver	CO	3	1	1.5	0.5	2	1.5	9.5
Seattle	WA	4	1	1	0.5	1	2	9.5
San Jose	CA	3.5	1	1.5	1	0.5	1.5	9
Washington	DC	3	0.5	1	0.5	2	2	9
New York City	NY	3	0.5	1.5	0	1.5	2	8.5
Sacramento	CA	2.5	1.5	0.5	1	2	1	8.5
Los Angeles	CA	2.5	1	1	0.5	1.5	1.5	8
Providence	RI	2	2	1	1	0	1.5	7.5
San Diego	CA	2.5	1.5	1.5	0	0.5	1.5	7.5
Houston	TX	3	0.5	0.5	0	1.5	1.5	7
Indianapolis	IN	3	1	1	0	1.5	0.5	7
Phoenix	AZ	3	1.5	0.5	0	1	1	7
Riverside	CA	1.5	1	1	0.5	1.5	1.5	7
Baltimore	MD	4	0.5	1	0	0	1	6.5
Columbus	OH	2	1	1	0	1	1.5	6.5
Hartford	CT	3	0.5	1.5	0.5	0	1	6.5
Milwaukee	WI	3	0.5	1.5	1	0	0.5	6.5
Cincinnati	OH	2.5	0.5	0	0	2	1	6
Cleveland	OH	2	1	1	0	1	1	6
Las Vegas	NV	2.5	0.5	1	0	1	1	6
Salt Lake City	UT	2	1	1	0.5	0	1.5	6
Philadelphia	PA	2.5	0.5	1	0	0	1.5	5.5
San Antonio	TX	3.5	1	0	0	1	0	5.5
Austin	TX	1.5	0.5	0.5	0	1	1.5	5
Dallas	TX	3	0.5	0.5	0	0	1	5
St. Louis	MO	2	1	0.5	0	0	1	4.5
Atlanta	GA	1.5	0.5	0.5	0	0	1.5	4
Detroit	MI	1	1	0.5	1	0	0.5	4

City	State	Electric efficiency spending (4 pts)	Electric savings (2 pts)	Gas efficiency spending (2 pts)	Gas savings (1 pt)	EE targets & requirements (2 pts)	Data provision (2 pts)	Overall energy utility score (13 pts)
Orlando	FL	1	0.5	0.5	0	1	1	4
Pittsburgh	PA	2.5	1	0.5	0	0	0	4
Virginia Beach	VA	0.5	0	0.5	0	2	1	4
Fort Worth	TX	2	0.5	0.5	0	0	0.5	3.5
Kansas City	MO	1.5	0.5	0	0	0	1.5	3.5
Charlotte	NC	1.5	0.5	0	0	0	1	3
El Paso	TX	2.5	0.5	0	0	0	0	3
Tampa	FL	1	0.5	0.5	0	0	1	3
Jacksonville	FL	0.5	0.5	0.5	0	0	1	2.5
Memphis	TN	1	0.5	0	0	0	0.5	2
Nashville	TN	1	0.5	0	0	0	0	1.5
New Orleans	LA	1	0.5	0	0	0	0	1.5
Richmond	VA	0	0	0	0	0	1.5	1.5
Louisville	KY	0.5	0.5	0	0	0	0	1
Miami	FL	1	0	0	0	0	0	1
Oklahoma City	OK	0.5	0.5	0	0	0	0	1
Raleigh	NC	0.5	0.5	0	0	0	0	1
Birmingham	AL	0	0	0	0	0	0.5	0.5
Median		**2.5**	**0.5**	**0.5**	**0**	**0**	**1**	**6**

Electricity Efficiency Program Spending

Cities' ability to influence program investments and to require energy utilities to invest in energy efficiency depends largely on whether utilities are municipally owned or investor owned. As a result, we awarded points differently depending on the type of utility serving each city, as described in each section below. Studies suggest that electricity programs achieve significantly more energy savings than natural gas programs (Eldridge et al. 2009; Geller et al. 2007). Therefore we allocated twice the number of points to electricity programs (based on annual spending and savings) as to natural gas programs.

We scored cities on the spending for annual electricity energy efficiency programs that was reported by the primary electric utility serving the city. Utility customers fund these programs through charges on their bills or charges included directly in utility rates. We did not include Weatherization Assistance Program funding, which is awarded by the federal government to state and local program implementers on a formula basis. In cities where customer-funded programs are administered by independent statewide program administrators, we scored the spending attributable to the local utility.[15]

The scoring methodology varied depending on whether the primary electric utility was privately (investor) owned or publicly (municipally) owned. For municipally owned utilities, the scores were based on their energy efficiency program spending as a percentage of total revenue, as shown in table 29.[16] We scored spending in the entire utility service territory, which

[15] For example, Energy Trust of Oregon (ETO) administers utility-customer-funded energy efficiency programs. For Portland, we scored the spending that ETO attributed to Portland General Electric, the local utility. In states where the independent program administrator does not attribute the total program spending to individual utilities, we based the score on statewide spending, utility revenues, and number of customers. Details on whether customer-funded programs are administered by independent statewide program administrators can be found in the State and Local Policy Database.

[16] As a reference, in 2010 the national average for spending on electricity energy efficiency programs was 1.1% of total electric utility retail revenues (Barbose et al. 2013, 18).

typically encompasses more than just the city itself. The intention was to evaluate the average level of spending on the efficiency programs available in each city.

Since cities have less direct control over the level of spending of investor-owned utilities, we awarded half of the available points based on spending, and the city could earn additional points for promoting utility programs or advocating for increased spending on energy efficiency or policy. The scoring methodology for investor-owned utilities is presented in table 29.

Table 29. Scoring methodology for electricity program spending

Spending as a percentage of annual revenue	Municipally owned utilities	Investor-owned utilities
	Score (4 pts)	Score (2 pts)
4% or greater	4 points	2 points
3.5–3.99%	3.5 points	1.5 points
3–3.49%	3 points	
2.5–2.99%	2.5 points	
2–2.49%	2 points	1 point
1–1.99%	1.5 points	
0.40–0.99%	1 point	0.5 points
Less than 0.40%	0 points	0 points
Additional metrics for investor-owned utilities		Score (2 pts)
City actively promotes or helps implement utility programs		1 point
City is an active advocate for additional energy efficiency spending or policy		1 point

For cities with a municipally owned utility, the score is based solely on spending; for those with an investor-owned utility, the score is based on spending and influence of local government.

Unless otherwise noted, we retrieved data on 2013 electric efficiency program spending and total revenue from utility data requests. Figures include direct and incentive costs for all energy efficiency programs.[17] We collected data on the extent to which cities promote or advocate for efficiency programs and spending through data requests to utility and city staff, unless otherwise noted. Table 30 lists scores for electricity program spending.

[17] For a list of all city staff and utility data request respondents, see table B1 in Appendix B.

Table 30. Scoring on electricity efficiency program spending

City	Electric utility or energy efficiency program administrator	2013 spending ($1,000)	% of utility revenue	Score for utility spending (4 pts for municipal, 2 pts for IOUs)	City promotes programs (IOUs only, 1 pt)	City advocates for additional spending (IOUs only, 1 pt)	Score (4 pts)
Boston [b]	Nstar	167,177	7.54%	2	1	1	4
Seattle	Seattle City Light *	39,097	5.60%	4	0	0	4
Portland [b]	Portland General Electric Co.	83,192	5.02%	2	1	1	4
Baltimore [b]	Baltimore Gas and Electric	90,971	4.49%	2	1	1	4
San Antonio [b]	CPS Energy (City of San Antonio) *	64,029	3.68%	3.5	0	0	3.5
San Francisco [b]	PG&E	413,400	3.49%	1.5	1	1	3.5
San Jose [b]	PG&E	413,400	3.49%	1.5	1	1	3.5
Chicago	Commonwealth Edison [f]	141,511	3.01%	1.5	1	1	3.5
Minneapolis [b]	Xcel (Northern States Power)	73,489	2.62%	1.5	1	1	3.5
Hartford [b]	NU (Connecticut Light and Power)	100,957	4.76%	2	1	0	3
Denver [b]	Xcel (Public Service Co. of Colorado)	63,485	2.44%	1	1	1	3
Indianapolis [b]	Indianapolis Power & Light	26,116	2.23%	1	1	1	3
Washington [b]	PEPCO	12,901	1.98%	1	1	1	3
Phoenix [a]	Arizona Public Service	59,816	1.96%	1	1	1	3
New York City [f]	ConEdison/NYSERDA	156,995	1.93%	1	1	1	3
Dallas	ONCOR	58,194	1.64%	1	1	1	3
Houston	CenterPoint Energy	38,283	1.51%	1	1	1	3
Milwaukee [d]	We Energies	38,080	1.34%	1	1	1	3
San Diego [a]	San Diego Gas & Electric	99,507	3.73%	1.5	1	0	2.5
Sacramento [a]	SMUD *	34,089	2.74%	2.5	0	0	2.5
Pittsburgh [a]	Duquesne Light Co.	20,328	2.64%	1.5	1	0	2.5
Los Angeles [b]	LADWP *	78,000	2.59%	2.5	0	0	2.5
Philadelphia	Exelon (PECO)	59,010	2.58%	1.5	1	0	2.5
Cincinnati [b]	Duke Energy Ohio	28,944	2.52%	1.5	0	1	2.5

City	Electric utility or energy efficiency program administrator	2013 spending ($1,000)	% of utility revenue	Score for utility spending (4 pts for municipal, 2 pts for IOUs)	City promotes programs (IOUs only, 1 pt)	City advocates for additional spending (IOUs only, 1 pt)	Score (4 pts)
Las Vegas [a]	NV Energy (Nevada Power Co.)	19,752	0.93%	0.5	1	1	2.5
El Paso [b]	El Paso Electric	3,992	0.71%	0.5	1	1	2.5
Providence [e]	National Grid RI (Narragansett Electric)	66,305	8.47%	2	0	0	2
Salt Lake City [b]	Rocky Mountain Power (PacifiCorp)	44,142	2.37%	1	1	0	2
Columbus	American Electric Power (Ohio Power)	78,276	2.34%	1	1	0	2
Cleveland [b]	First Energy (Cleveland Electric Illuminating)	15,130	1.81%	1	1	0	2
Fort Worth	ONCOR	58,194	1.64%	1	1	0	2
St. Louis [b]	AmerenUE (Union Electric)	34,432	1.21%	1	1	0	2
Austin [a]	Austin Energy *	20,483	1.87%	1.5	0	0	1.5
Riverside	City of Riverside Public Service *	4,155	1.16%	1.5	0	0	1.5
Kansas City [a]	KCP&L	6,035	0.79%	0.5	1	0	1.5
Charlotte	Duke Energy Carolinas	54,517	0.69%	0.5	0	1	1.5
Atlanta	Georgia Power	30,260	0.40%	0.5	1	0	1.5
Detroit [b]	DTE Energy	74,915	1.44%	1	0	0	1
Miami [a]	Florida Power & Light Co.	111,933	1.15%	1	0	0	1
Tampa	Tampa Electric Co	21,374	1.10%	1	0	0	1
New Orleans [b]	Entergy New Orleans *	3,803	0.88%	1	0	0	1
Orlando	Orlando Utilities Commission *	4,799	0.83%	1	0	0	1
Memphis [c]	Memphis Light, Gas, & Water *	39,752	0.58%	1	0	0	1
Nashville [c]	Nashville Electric Service *	39,752	0.58%	1	0	0	1
Jacksonville [a]	JEA *	10,662	0.83%	0.5	0	0	0.5
Oklahoma City [a]	Oklahoma Gas & Electric	14,628	0.81%	0.5	0	0	0.5

City	Electric utility or energy efficiency program administrator	2013 spending ($1,000)	% of utility revenue	Score for utility spending (4 pts for municipal, 2 pts for IOUs)	City promotes programs (IOUs only, 1 pt)	City advocates for additional spending (IOUs only, 1 pt)	Score (4 pts)
Louisville [a]	Louisville Gas & Electric	7,597	0.79%	0.5	0	0	0.5
Raleigh	Duke Energy Carolinas	54,517	0.69%	0.5	0	0	0.5
Virginia Beach	Dominion Virginia Power (Virginia Electric P&L)	9,974	0.15%	0	0.5	0	0.5
Richmond	Dominion Virginia Power (Virginia Electric P&L)	9,974	0.15%	0	0	0	0
Birmingham [a]	Alabama Power	817	0.02%	0	0	0	0

* Municipally owned utilities, including Entergy New Orleans, because, although it is investor owned, it is regulated by the New Orleans City Council. Spending and revenue data are as reported by utility staff for 2013 except where noted. The following cities rely on 2012 spending data, the most recent year available: Austin, Birmingham, Cincinnati, Jacksonville, Kansas City, Louisville, Las Vegas, Memphis, Miami, Milwaukee, Nashville, Oklahoma City, Phoenix, Pittsburgh, Richmond, Sacramento, San Diego, and Virginia Beach. [a] Spending and revenue data are as reported in EIA 2013, the most recent year available. [b] Only revenue data are as reported in EIA 2013. [c] Only spending data from EIA 2013. [d] Cadmus Group 2013. [e] National Grid 2013. [f] Includes spending from NYSERDA, the statewide agency that administers programs in New York, and Consolidated Edison. NYSERDA spending attributed to ConEd's service territory is approximately 41.5% of total spending according to NYSERDA's 2011 annual report (NYSERDA 2012).

Natural Gas Efficiency Program Spending

Cities could also earn up to 2 points for spending on natural gas energy efficiency programs by the primary gas utility serving each city. We gathered the data on 2013 program spending and customers from utility data requests, unless otherwise noted. We normalized spending on natural gas programs by the number of residential gas customers served by each utility for 2013. As with electricity program spending, the natural gas program spending per residential customer represents the entire service territory, which may be larger or smaller than the city itself.

As with electricity program spending, scoring accounted for the ownership of the local gas utility, as shown in table 31.

Table 31. Scoring methodology for natural gas program spending

	Municipally owned utilities	Investor-owned utilities
Spending per residential customer	Score (2 pts)	Score (1 pt)
$35 or greater	2 points	1 point
$21–34.99	1.5 points	0.5 points
$7–20.99	1 point	
$5–6.99	0.5 points	
Less than $5	0 points	0 points

Additional metrics for investor-owned utilities	Score (1 pt)
City actively promotes or helps implement utility programs	0.5 points
City is active advocate for additional energy efficiency spending or policy	0.5 points

For cities with a municipally owned utility, the score is based solely on spending; for those with an investor-owned utility, the score is based on spending and influence of local government.

Table 32 lists scores for each city.

Table 32. Scores for natural gas efficiency program spending

City	Gas utility	2013 spending ($1,000)	$ per residential customer	Score for utility spending (2 pts for municipal, 1 pt for IOUs)	City promotes programs (IOUs only, 0.5 pt)	City advocates for additional spending (IOUs only, 0.5 pt)	Score (2 pts)
Boston	National Grid (Boston Gas Co.)	85,856	105.92	1	0.5	0.5	2
Portland [a]	NW Natural	24,202	43.31	1	0.5	0.5	2
Hartford	Connecticut Natural Gas	8,450	55.79	1	0.5	0	1.5
San Francisco [a]	PG&E	135,087	32.33	0.5	0.5	0.5	1.5
San Jose [a]	PG&E	135,087	32.33	0.5	0.5	0.5	1.5
Minneapolis	CenterPoint Energy	22,830	30.49	0.5	0.5	0.5	1.5
Chicago	Peoples Gas	19,005	25.36	0.5	0.5	0.5	1.5
Milwaukee	We Energies (Wisconsin Energy)	9,520	22.10	0.5	0.5	0.5	1.5
New York City [g]	National Grid/ NYSERDA	28,096	12.84	0.5	0.5	0.5	1.5
San Diego [f]	San Diego Gas & Electric	10,559	12.69	0.5	0.5	0.5	1.5
Denver	Xcel (Public Service Co. of Colorado)	13,643	11.10	0.5	0.5	0.5	1.5
Providence	National Grid RI (Narragansett)	19,500	75.58	1	0	0	1
Salt Lake City [e]	Questar Gas	22,791	26.97	0.5	0.5	0	1
Philadelphia	Philadelphia Gas Works *	9,702	20.43	1	0	0	1
Washington [a]	Washington Gas	2,900	19.77	0.5	0.5	0	1

City	Gas utility	2013 spending ($1,000)	$ per residential customer	Score for utility spending (2 pts for municipal, 1 pt for IOUs)	City promotes programs (IOUs only, 0.5 pt)	City advocates for additional spending (IOUs only, 0.5 pt)	Score (2 pts)
Columbus	Nisource (Columbia Gas of Ohio)	24,993	19.33	0.5	0.5	0	1
Seattle	Puget Sound Energy	11,920	16.54	0.5	0.5	0	1
Los Angeles [d]	Sempra (SoCalGas)	52,360	9.70	0.5	0.5	0	1
Riverside [d]	Sempra (SoCalGas)	52,360	9.70	0.5	0.5	0	1
Cleveland	Dominion East Ohio	10,700	9.68	0.5	0.5	0	1
Las Vegas	Southwest Gas	2,697	4.09	0	0.5	0.5	1
Indianapolis	Citizens Energy Group	0	0.00	0	0.5	0.5	1
Baltimore	Baltimore Gas and Electric	0	0.00	0	0.5	0.5	1
Sacramento [a]	PG&E	135,087	32.33	0.5	0	0	0.5
Jacksonville	Sempra (SoCalGas)	9,432	27.15	0.5	0	0	0.5
Orlando	TECO People's Gas	9,432	27.15	0.5	0	0	0.5
Tampa	TECO People's Gas	9,432	27.15	0.5	0	0	0.5
Detroit	DTE Energy (MichCon Gas)	25,654	24.06	0.5	0	0	0.5
Phoenix	Southwest Gas	4,663	4.78	0	0.5	0	0.5
Austin [b]	Texas Gas Service	2,353	3.94	0	0.5	0	0.5
St. Louis	Laclede Gas	2,220	3.69	0	0.5	0	0.5
Pittsburgh	People's Natural Gas	1,150	3.48	0	0.5	0	0.5
Virginia Beach	AGL Resources (Virginia Natural Gas)	277	1.06	0	0.5	0	0.5
Dallas [c]	Atmos Energy	248	0.14	0	0.5	0	0.5
Fort Worth [c]	Atmos Energy	248	0.14	0	0.5	0	0.5
Atlanta	Atlanta Gas Light	0	0.00	0	0.5	0	0.5
Houston	CenterPoint Energy	0	0.00	0	0	0.5	0.5

City	Gas utility	2013 spending ($1,000)	$ per residential customer	Score for utility spending (2 pts for municipal, 1 pt for IOUs)	City promotes programs (IOUs only, 0.5 pt)	City advocates for additional spending (IOUs only, 0.5 pt)	Score (2 pts)
Kansas City	Missouri Gas	2,112	4.27	0	0	0	0
El Paso [b]	Texas Gas Service	2,353	3.94	0	0	0	0
Birmingham	Alagasco	0	0.00	0	0	0	0
Charlotte	Piedmont Natural Gas	0	0.00	0	0	0	0
Cincinnati	Duke Energy Ohio	0	0.00	0	0	0	0
Louisville	Louisville Gas & Electric	0	0.00	0	0	0	0
Memphis	Memphis Light, Gas & Water *	0	0.00	0	0	0	0
Miami	Florida City Gas	0	0.00	0	0	0	0
Nashville	Piedmont Natural Gas	0	0.00	0	0	0	0
New Orleans	Entergy New Orleans *	0	0.00	0	0	0	0
Oklahoma City	Oklahoma Natural Gas Co.	0	0.00	0	0	0	0
Raleigh	PSNC Energy	0	0.00	0	0	0	0
Richmond	Richmond Department of Public Utilities *	0	0.00	0	0	0	0
San Antonio	CPS Energy (San Antonio PSB) *	0	0.00	0	0	0	0

*** Municipally owned utilities, including Entergy New Orleans, because, although it is investor owned, it is regulated by the New Orleans City Council. Spending on gas efficiency programs and number of residential gas customers is as reported by utility staff for 2013 except where noted. [a] Spending on gas efficiency programs from utility data requests; number of residential gas customers from EIA 2014a. [b] Texas Gas Service 2013. [c] Spending data from Atmos Energy Corp. 2013; number of residential gas customers from EIA 2014a. [d] Spending data from SoCal Gas 2014; number of residential gas customers from EIA 2014a. [e] Spending data from Questar Gas 2013; number of residential gas customers from EIA 2014a. [f] Spending data from SDGE 2014; number of residential gas customers from EIA 2014a. [g] Includes spending from National Grid and NYSERDA, the statewide agency that administers programs in New York. We used NYSERDA's 2013 spending that was attributed to National Grid's service territory.**

Savings from Electricity Energy Efficiency Programs

We used the level of energy savings achieved by utility programs as a key metric to measure the performance of energy efficiency programs available to each city. We scored the net annual incremental electric savings from efficiency programs as a percentage of total electricity sales for the primary electric utility serving the city, allocating points as shown in table 34.[18]

[18] Net incremental savings refer to new savings from energy efficiency programs implemented in a given year that have been adjusted to account for free-rider and spillover effects.

Table 34. Scoring for savings from electricity efficiency programs

Savings as a percentage of sales	Score (2 pts)
2% or greater	2 points
1.5–1.99%	1.5 points
1–1.49%	1 point
0.2–0.99%	0.5 points
Less than 0.2%	0 points

Table 35 includes the scores related to electricity savings, as well as the level of savings in megawatt-hours (MWh) and as a percentage of retail sales. Unless otherwise noted, we collected data on 2013 electric efficiency program savings and total retail sales from utility data requests.

Table 35. Scores for incremental savings from electric utilities

City	Electric utility or energy efficiency program administrator	2013 net incremental savings (MWh)	% of retail sales	Score (2 pts)
Portland [a]	Portland General Electric Co.	463,024	2.41%	2
Boston [b]	Nstar	487,398	2.22%	2
Providence [b]	National Grid RI (Narragansett Electric)	159,035	2.08%	2
Phoenix [d]	Arizona Public Service	485,791	1.73%	1.5
San Diego [a]	San Diego Gas & Electric	335,413	1.67%	1.5
Minneapolis [b]	Xcel (Northern States Power)	460,438	1.59%	1.5
Sacramento [a]	SMUD *	164,100	1.57%	1.5
Seattle [b]	Seattle City Light *	138,160	1.46%	1
Detroit [b]	DTE Energy	613,527	1.28%	1
Columbus	American Electric Power (Ohio Power)	593,700	1.27%	1
Denver [b]	Xcel (Public Service Co. of Colorado)	357,245	1.24%	1
Chicago	Commonwealth Edison	1,047,764	1.18%	1
San Francisco [b]	PG&E	995,913	1.15%	1
San Jose [b]	PG&E	995,913	1.15%	1
Pittsburgh [a]	Duquesne Light Co.	158,438	1.12%	1
Riverside	City of Riverside Public Service *	23,773	1.08%	1
Los Angeles [b]	LADWP *	252,000	1.07%	1
Cleveland	First Energy (Cleveland Electric Illuminating)	198,146	1.05%	1
Salt Lake City [b]	Rocky Mountain Power (PacifiCorp)	243,434	1.02%	1
Indianapolis [b]	Indianapolis Power& Light	142,175	1.01%	1
St. Louis [b]	AmerenUE (Union Electric)	369,500	1.01%	1
San Antonio	CPS Energy (City of San Antonio) *	208,710	1.00%	1
Hartford [b]	NU (Connecticut Light and Power)	218,305	0.99%	0.5
Cincinnati [b]	Duke Energy Ohio	188,615	0.95%	0.5
Philadelphia	Exelon (PECO)	347,369	0.92%	0.5
Milwaukee [b]	We Energies	222,067	0.91%	0.5
Baltimore [b]	Baltimore Gas and Electric	259,200	0.84%	0.5
Austin [a]	Austin Energy *	117,172	0.80%	0.5
Charlotte	Duke Energy Carolinas	683,255	0.74%	0.5
Raleigh	Duke Energy Carolinas	683,255	0.74%	0.5
Las Vegas [a]	NV Energy (Nevada Power Co.)	147,366	0.67%	0.5
Jacksonville [a]	JEA *	76,845	0.66%	0.5
Louisville [a]	Louisville Gas & Electric	64,472	0.54%	0.5
New York City [e]	ConEdison/NYSERDA	265,596	0.47%	0.5
Washington [b]	PEPCO	50,371	0.45%	0.5

City	Electric utility or energy efficiency program administrator	2013 net incremental savings (MWh)	% of retail sales	Score (2 pts)
Orlando	Orlando Utilities Commission *	25,649	0.43%	0.5
Kansas City [a]	KCP&L	33,943	0.42%	0.5
Atlanta	Georgia Power	320,157	0.39%	0.5
El Paso [b]	El Paso Electric	23,394	0.39%	0.5
New Orleans [b]	Entergy New Orleans *	19,361	0.39%	0.5
Nashville [c]	Nashville Electric Service *	34,739	0.30%	0.5
Memphis [c]	Memphis Light, Gas & Water *	36,561	0.26%	0.5
Tampa	Tampa Electric Co	42,287	0.23%	0.5
Oklahoma City [a]	Oklahoma Gas & Electric	49,294	0.20%	0.5
Houston	CenterPoint Energy	160,497	0.20%	0.5
Dallas	ONCOR	224,666	0.20%	0.5
Fort Worth	ONCOR	224,666	0.20%	0.5
Miami [a]	Florida Power & Light Co.	197,473	0.19%	0
Richmond	Dominion Virginia Power (Virginia Electric P&L)	23,696	0.03%	0
Virginia Beach	Dominion Virginia Power (Virginia Electric P&L)	23,696	0.03%	0
Birmingham [a]	Alabama Power	15,541	0.03%	0

*** Municipally owned utilities, including Entergy New Orleans, because, although it is investor owned, it is regulated by the New Orleans City Council. Savings and sales data are as reported by utility staff for 2013 except where noted. The following cities rely on 2012 savings data, the most recent year available: Austin, Birmingham, Jacksonville, Kansas City, Louisville, Las Vegas, Miami, Milwaukee, Oklahoma City, Portland, Pittsburg, Richmond, San Diego, Sacramento, and Virginia Beach. [a] Savings and sales data are as reported in EIA 2013, the most recent year available. [b] Only sales data are as reported in EIA 2013. [c] TVA 2014. [d] APS 2014. [e] Includes savings reported by NYSERDA and Consolidated Edison normalized using ConEd's 2013 sales. NYSERDA savings attributable to the ConEd service territory are estimated at 38% of total reported savings using average of savings attribution reported in both SBC and EEPS programs (NYSERDA 2012).**

Savings from Natural Gas Efficiency Programs

We include a new metric on savings from natural gas efficiency programs in this edition of the *City Scorecard*. The number of utilities offering natural gas efficiency and the budgets for existing programs have risen considerably in recent years (York et al. 2012). Further, trends suggest that investments in natural gas efficiency will continue to grow as utilities strive to reach higher savings goals. We scored the net annual incremental natural gas savings from efficiency programs as a percentage of natural gas residential and commercial sales for the primary natural gas utility serving the city, allocating points as shown in table 36.

Table 36. Scoring methodology for savings from gas efficiency programs

Savings as a percentage of sales	Score (1 pt)
1% or greater	1 point
0.25–0.99%	0.5 points
Less than 0.25%	0 points

Table 37 includes the scores related to natural gas savings, as well as the level of savings in million therms (MMtherms) and as a percentage of retail sales. Unless otherwise noted, we retrieved data on natural gas savings and sales from utility data requests.

Table 37. Scoring on incremental savings from gas utilities

City	Gas utility	2013 net incremental savings (MMtherms)	% of retail sales	Score (1 pt)
Boston	National Grid (Boston Gas Co)	14.20	1.55%	1
Milwaukee [a]	We Energies (Wisconsin Energy)	9.35	1.30%	1
Providence	National Grid RI (Narragansett)	3.10	1.23%	1
Detroit	DTE Energy (MichCon Gas)	15.40	1.18%	1
Minneapolis	CenterPoint Energy	15.80	1.14%	1
Sacramento [a]	PG&E	23.00	1.03%	1
San Francisco [a]	PG&E	23.00	1.03%	1
San Jose [a]	PG&E	23.00	1.03%	1
Portland [a]	NW Natural	5.31	0.86%	0.5
Los Angeles [b]	Sempra (SoCalGas)	25.44	0.82%	0.5
Riverside [b]	Sempra (SoCalGas)	25.44	0.82%	0.5
Seattle [a]	Puget Sound Energy	6.40	0.72%	0.5
Chicago	Peoples Gas	7.77	0.71%	0.5
Salt Lake City [c]	Questar Gas	6.37	0.60%	0.5
Hartford	Connecticut Natural Gas	1.54	0.42%	0.5
Denver	Xcel (Public Service Co. of Colorado)	5.70	0.41%	0.5
Washington [a]	Washington Gas	0.54	0.40%	0.5
New York City [e]	National Grid/NYSERDA	7.84	0.23%	0
Columbus	Nisource (Columbia Gas of Ohio)	4.20	0.23%	0
Las Vegas	Southwest Gas	0.90	0.22%	0
Philadelphia	Philadelphia Gas Works *	0.90	0.20%	0
San Diego [d]	San Diego Gas & Electric	0.38	0.08%	0
Pittsburgh [a]	People's Natural Gas	0.10	0.03%	0
Atlanta	Atlanta Gas Light	0.00	0.00%	0
Austin	Texas Gas Service	0.00	0.00%	0
Baltimore	Baltimore Gas and Electric	0.00	0.00%	0
Birmingham	Alagasco	0.00	0.00%	0
Charlotte	Piedmont Natural Gas	0.00	0.00%	0
Cincinnati	Duke Energy Ohio	0.00	0.00%	0
Cleveland	Dominion East Ohio	0.00	0.00%	0
Dallas	Atmos Energy	0.00	0.00%	0
El Paso	Texas Gas Service	0.00	0.00%	0
Fort Worth	Atmos Energy	0.00	0.00%	0
Houston	CenterPoint Energy	0.00	0.00%	0
Indianapolis	Citizens Energy Group	0.00	0.00%	0
Jacksonville	Sempra (SoCalGas)	0.00	0.00%	0
Kansas City	Missouri Gas	0.00	0.00%	0
Louisville	Louisville Gas & Electric	0.00	0.00%	0
Memphis	Memphis Light, Gas & Water *	0.00	0.00%	0
Miami	Florida City Gas	0.00	0.00%	0
Nashville	Piedmont Natural Gas	0.00	0.00%	0
New Orleans	Entergy New Orleans *	0.00	0.00%	0
Oklahoma City	Oklahoma Natural Gas Co.	0.00	0.00%	0
Orlando	TECO People's Gas	0.00	0.00%	0
Phoenix	Southwest Gas	0.00	0.00%	0
Raleigh	PSNC Energy	0.00	0.00%	0
Richmond	Richmond Department of Public Utilities *	0.00	0.00%	0
San Antonio	CPS Energy (San Antonio PSB) *	0.00	0.00%	0
St. Louis	Laclede Gas	0.00	0.00%	0
Tampa	TECO People's Gas	0.00	0.00%	0
Virginia Beach	AGL Resources (Virginia Natural Gas)	0.00	0.00%	0

* Municipally owned utilities, including Entergy New Orleans as it is regulated by the New Orleans City Council. Savings and sales data are as reported by utility staff for 2013 except where noted. Pittsburgh relies on 2012 savings data, most recent year available. [a] Savings as reported by utility staff. Commercial and residential sales from EIA 2014a. [b] Savings data from SoCal Gas 2014; commercial and residential sales from EIA 2014a. [c] Savings data from Questar Gas 2014; commercial and residential sales from EIA 2014a. [d] Savings data from SDGE 2013; commercial and residential sales from EIA 2014a. [e] Includes savings from National Grid and NYSERDA, the statewide agency that administers programs in New York. We used NYSERDA's 2013 savings that were attributed to National Grid's service territory.

Energy Efficiency Savings Targets and Local Utility Funding Agreements

Mandatory savings targets for utilities, often called energy efficiency resource standards (EERSs) at the state level, can be a highly effective driver of energy efficiency investment. Cities with municipally owned utilities, which may or may not be required to comply with state EERS policies, can enact similar savings requirements of their own. Cities without municipally owned utilities can often still require their utilities to invest in energy efficiency or meet specific savings levels as part of their franchise agreements, through municipal aggregation agreements, or via other mechanisms. Local governments can also enter into voluntary agreements with their local utilities to set efficiency targets or establish funding for efficiency efforts, independent of any state policies.

Cities can use franchise agreements as a tool to require their investor-owned energy utilities to invest in energy efficiency or renewable energy. Alternatively, cities can invest in energy efficiency using the proceeds from fees paid by one or more utilities as part of their franchise agreement. Cities negotiate franchise agreements with investor-owned energy utilities to allow the utilities to use public rights of way to provide energy services to residences and businesses. Utilities typically pay a fee for the use of the public space. Fee structures vary from flat fees to those based on utility revenues. In lieu of paying fees, some utilities may agree to provide cities with free electricity or gas for municipal operations (TechLaw 2009; Johnson, K., S. Johnson Phillips, and S. Bergan 2012).

In the case where franchise agreements do not require investments in energy efficiency, they may be used to foster greater collaboration on efficiency between the city and its utilities. For example, the city of Minneapolis just entered a unique partnership with Xcel Energy and CenterPoint Energy, the city's electric and natural gas utilities. The memorandum of understanding, referred to as the Clean Energy Partnership, is an agreement between the city and its utilities to work together to improve the delivery of energy efficiency to city residents and to reach its energy goals. This agreement follows the City's adoption of its Climate Action Plan, which seeks to reduce greenhouse gas emissions by 15% by 2015, 30% by 2025, and 80% by 2050 (Minneapolis and Xcel Energy 2014). While the activities and terms of the agreement are still being established, Minneapolis's Clean Energy Partnership is a leading example of how municipal and utility efforts can be aligned to achieve greater investments in energy efficiency.

Municipal aggregation (also known as community choice aggregation) is allowed in six states that have deregulated their electric and/or gas utilities (Massachusetts, New Jersey, Illinois, Ohio, California, and Rhode Island). Under this policy, local governments arrange for the bulk purchase of electricity or gas through a competitively selected supplier. The bulk purchase allows for the local government to negotiate rates, often lower than existing rates, for all customers within the city. In addition to often saving local customers money, municipal aggregation can allow local governments to negotiate how much of the electricity supplied is generated by renewable energy or how much the supplier invests in energy efficiency (Local Energy Aggregation Network 2014).

For example, the Northeast Ohio Public Energy Council (NOPEC), one of the largest public aggregation organizations in the country and representing 10 Ohio counties, secured $16 million in funding for energy conservation and renewable energy project grants to local communities as part of its supply agreement with First Energy Solutions (NOPEC 2012). Additionally, in 2012, Chicago signed a municipal aggregation agreement with Integrys Energy that includes funding for energy efficiency programs and requires Integrys to obtain energy

supplied to Chicago customers from sources other than coal-fired generation (Chicago and Integrys 2012a).

Cities could earn up to 2 points in this category. As with program spending, we scored this metric differently depending on whether a city had a municipal utility and could therefore establish a requirement directly or whether it had an investor-owned utility subject to a state policy. We scored cities served primarily by municipal electric utilities based on the stringency of the targets established for their utilities. Cities that included natural gas as well as electricity in the target were given a bonus and those that had cost caps on the amount of spending to achieve targets were penalized. Table 38 presents our scoring methodology for municipally owned utilities.

We awarded 1 point for cities served primarily by an investor-owned electric utility that had a binding agreement with its utility or other energy service provider to invest in energy efficiency through a franchise agreement, municipal aggregation contract, or some other arrangement, such as a negotiated contract or a settlement in a utility commission proceeding. We awarded 0.5 points if the city had a voluntary agreement with its utility to fund efficiency programs or to achieve an efficiency savings target.[19] We awarded an additional point to cities served by investor-owned utilities if the city advocated for energy efficiency requirements at the state level. Table 39 presents our scoring methodology for investor-owned utilities.

Table 38. Scoring methodology for energy efficiency savings targets and requirements: municipally owned utilities

Percentage annual savings target	Score (2 pts)
1.5% or greater	2 points
1–1.49%	1.5 points
0.5–0.99%	1 point
0.1–0.49%	0.5 points
Less than 0.1%	0 points
Cost cap in place	– 0.5 points
Natural gas included	0.5 points

Table 39. Scoring methodology for energy efficiency savings targets and requirements: investor-owned utilities

Category	Score (2 pts)
Energy efficiency required or funded through franchise agreement, municipal aggregation contract, or other agreement with utility	1 point (0.5 points if a voluntary agreement)
City is active advocate for additional energy efficiency requirements	1 point

Table 40 presents scores, including stringency levels, for cities with municipal utilities. Table 41 presents scores, including city advocacy, for savings requirements in cities with IOUs. Unless otherwise noted, we retrieved data on energy efficiency savings targets and requirements and related city advocacy from data requests to utility and city staff.

[19] Voluntary agreements are noted as "other" in table 38 and additional details on each partnership or agreement can be found in the State and Local Policy Database.

Table 40. Scoring on savings requirements in cities with municipal utilities

City	Annual electric savings target (percentage of annual sales)	Stringency	Score (2 pts)
Sacramento	1.5	Binding	2
Los Angeles	1.3	Binding	1.5
Riverside	1	Binding	1.5
Austin	1	Cost cap	1
Seattle	0.9	Binding	1
Orlando	0.58	Binding	1
San Antonio	0.57	Binding	1
New Orleans	None		0
Jacksonville	None		0
Memphis	None		0
Nashville	None		0

While California requires municipal utilities to achieve 10% of their supply through energy efficiency by 2023, LADWP has adopted a more stringent target of 15% by 2020, the most stringent energy efficiency standard of any municipal utility.

Table 41. Scoring on savings requirements in cities with investor-owned utilities

City	Franchise agreement, municipal aggregation, or other requirement (1 pt)	City is active advocate for state energy efficiency requirements (1 pt)	Score (2 pts)
Chicago	Aggregation	1	2
Cincinnati	Aggregation	1	2
Denver	Franchise	1	2
Minneapolis	Other	1	2
Virginia Beach	Franchise	1	2
Washington	Other	1	2
Boston	Voluntary	1	1.5
Houston	Voluntary	1	1.5
Indianapolis	Voluntary	1	1.5
New York City	Voluntary	1	1.5
San Francisco	Voluntary	1	1.5
Cleveland	0	1	1
Columbus	0	1	1
Las Vegas	0	1	1
Phoenix	0	1	1
Portland	0	1	1
San Diego	Voluntary	0	0.5
San Jose	Voluntary	0	0.5
Atlanta	0	0	0

City	Franchise agreement, municipal aggregation, or other requirement (1 pt)	City is active advocate for state energy efficiency requirements (1 pt)	Score (2 pts)
Baltimore	0	0	0
Birmingham	0	0	0
Charlotte	0	0	0
Dallas	0	0	0
Detroit	0	0	0
El Paso	0	0	0
Fort Worth	0	0	0
Hartford	0	0	0
Kansas City	0	0	0
Louisville	0	0	0
Miami	0	0	0
Milwaukee	0	0	0
Oklahoma City	0	0	0
Philadelphia	0	0	0
Pittsburgh	0	0	0
Providence	0	0	0
Raleigh	0	0	0
Richmond	0	0	0
Salt Lake City	0	0	0
St. Louis	0	0	0
Tampa	0	0	0

Provision of Energy Data by Utilities

Information about energy consumption enables better energy management in homes, large buildings, and entire communities. Household, whole-building, and community-wide utility data can also be used to better target efficiency programs and to carry out evaluations. Utilities are critical partners in providing customers, building owners, and local planners with energy usage data in a usable format via an appropriate delivery mechanism depending on the user's needs.

In this section, cities could earn up to 2 points across four metrics for the accessibility of energy usage data from their electric and gas utilities, as shown in table 42.[20]

[20] The Green Button is a utility-industry-led effort in response to a call to action from President Barack Obama's White House to give utility customers access to information about their energy consumption in an easy, downloadable format. Green Button Download My Data allows customers to download their own energy consumption data directly to their computer. Green Button Connect My Data is a new capability that allows utility customers to automate the secure transfer of their energy usage data to authorized third parties. We gave points to utilities that offered both services. With access to this information, customers can use a wide variety of software and smartphone applications to better manage their personal energy consumption. More information on the Green Button initiative is available at www.greenbuttondata.org.

Table 42. Scoring methodology for the provision of energy data by utilities

Data type	Score (2 pts)
Customer data. Utility has implemented the Green Button or a similar online service to provide customers with energy-consumption data in a common electronic format.	0.5 points
Aggregated building data. Utility provides automated benchmarking services through ENERGY STAR Portfolio Manager for multi-tenant commercial and/or multifamily buildings. *	0.5 points
Community-wide data. Energy usage information is available at the aggregate level for community planning and evaluation purposes.	0.5 points
Advocacy. The city actively advocates for policy improvements in data provision by utilities or has established data-sharing agreements with its utilities.	0.5 points

* ENERGY STAR's automated benchmarking system allows utilities and other third parties to send electronic data on energy use and building characteristics directly to Portfolio Manager. This information is then automatically updated each month and is visible to the building owner (ENERGY STAR 2013a). This service is available in many cities that require the benchmarking of commercial buildings. We awarded points for benchmarking requirements in Buildings Policies (Chapter 4).

Cities' scores for these metrics are displayed in table 43. Unless otherwise noted, we retrieved data on energy data provision from data requests completed by utility and city staff.

Table 43. Scores for the provision of energy data by utilities

City	State	Green Button online data access or equivalent (0.5 pt)	Automated benchmarking (0.5 pt)	Community-level data (0.5 pt)	Advocacy (0.5 pt)	Score (2 pts)
Boston	MA	0.5	0.5	0.5	0.5	2
Chicago	IL	0.5	0.5	0.5	0.5	2
New York City	NY	0.5	0.5	0.5	0.5	2
San Francisco	CA	0.5	0.5	0.5	0.5	2
Seattle	WA	0.5	0.5	0.5	0.5	2
Washington	DC	0.5	0.5	0.5	0.5	2
Atlanta	GA	0.5	0.5	0	0.5	1.5
Austin	TX	0.5	0.5	0	0.5	1.5
Columbus	OH	0.5	0	0.5	0.5	1.5
Denver	CO	0.5	0	0.5	0.5	1.5
Houston	TX	0.5	0	0.5	0.5	1.5
Kansas City	MO	0.5	0	0.5	0.5	1.5
Los Angeles	CA	0	0.5	0.5	0.5	1.5
Minneapolis	MN	0.5	0	0.5	0.5	1.5
Philadelphia	PA	0	0.5	0.5	0.5	1.5
Portland	OR	0.5	0	0.5	0.5	1.5
Providence	RI	0.5	0	0.5	0.5	1.5
Richmond	VA	0.5	0	0.5	0.5	1.5
Riverside	CA	0.5	0.5	0.5	0	1.5
Salt Lake City	UT	0.5	0	0.5	0.5	1.5
San Diego	CA	0.5	0.5	0	0.5	1.5
San Jose	CA	0.5	0.5	0.5	0	1.5
Baltimore	MD	0.5	0	0.5	0	1
Charlotte	NC	0.5	0	0.5	0	1
Cincinnati	OH	0.5	0	0.5	0	1
Cleveland	OH	0	0	0.5	0.5	1
Dallas	TX	0.5	0	0.5	0	1

City	State	Green Button online data access or equivalent (0.5 pt)	Automated benchmarking (0.5 pt)	Community-level data (0.5 pt)	Advocacy (0.5 pt)	Score (2 pts)
Hartford	CT	0.5	0	0.5	0	1
Jacksonville	FL	0.5	0	0.5	0	1
Las Vegas	NV	0.5	0	0.5	0	1
Orlando	FL	0	0	0.5	0.5	1
Phoenix	AZ	0	0	0.5	0.5	1
Sacramento	CA	0.5	0.5	0	0	1
St. Louis	MO	0.5	0	0.5	0	1
Tampa	FL	0	0.5	0.5	0	1
Virginia Beach	VA	0.5	0	0	0.5	1
Birmingham	AL	0	0.5	0	0	0.5
Detroit	MI	0.5	0	0	0	0.5
Fort Worth	TX	0.5	0	0	0	0.5
Indianapolis	IN	0.5	0	0	0	0.5
Memphis	TN	0.5	0	0	0	0.5
Milwaukee	WI	0	0	0	0.5	0.5
El Paso	TX	0	0	0	0	0
Louisville	KY	0	0	0	0	0
Miami	FL	0	0	0	0	0
Nashville	TN	0	0	0	0	0
New Orleans	LA	0	0	0	0	0
Oklahoma City	OK	0	0	0	0	0
Pittsburgh	PA	0	0	0	0	0
Raleigh	NC	0	0	0	0	0
San Antonio	TX	0	0	0	0	0

Leading Cities with Municipally Owned Utilities

Seattle City Light. Seattle City Light exceeds its 0.9% annual savings target established by the city council. In partnership with Seattle City Light and the investor-owned utility, Puget Sound Energy, the city facilitates a local energy efficiency retrofit program, Community Power Works, funded by a Better Buildings Neighborhood Program grant. Community Power Works delivers energy efficiency services and leverages the utilities' existing rebate programs for residential, commercial, multifamily, and public buildings. When federal funding stops, Community Power Works will continue delivering one-stop-shop services to customers living in single-family and up to four-unit buildings heated with oil or electricity. Seattle and its utilities partner to aid building owners in complying with the city's building energy benchmarking law. All of the local utilities (Puget Sound Energy, Seattle City Light, and Seattle Steam) offer automated benchmarking data to building owners.

Los Angeles Department of Water and Power (LADWP). In 2014, LADWP adopted a new energy savings target –15% by 2020. While California requires municipal utilities to achieve 10% of their supply through energy efficiency by 2023, LADWP has adopted this more stringent target. LADWP also partners with a number of city departments to reduce energy use in municipal facilities and to promote efficiency among residents and businesses. The Gateway to Green is a program of the Housing and Community Investment Department (HCID). HCID now includes an efficiency opportunity survey in its code enforcement inspections of all multifamily residential rental buildings (700,000+ units) and works with LADWP to provide energy efficiency information to property owners and tenants and targets efficiency programs. LADWP also provides building owners with automated access to aggregated data on the energy usage in their buildings and is in the process of implementing the Green Button.

Leading Cities with Investor-Owned Utilities

Boston. Through Renew Boston, the city works closely with its electric and gas utilities to support a focused effort on energy efficiency, offering home and small business owners no-cost energy assessments and incentives for upgrades. Renew Boston leverages utility incentives and city funding, offering deep incentives to small businesses, renters, and middle-income homeowners—groups with historic low-participation rates. In 2013, Renew Boston's efficiency programs expanded to include buildings with two to four units. The city is also a leading advocate for energy efficiency at the state level as a representative on the Energy Efficiency Advisory Committee, and has supported legislation that now requires utility companies to provide automated, aggregated building-level energy use data to enable benchmarking.

San Francisco. The City of San Francisco has partnered with its investor-owned gas and electric utility, Pacific Gas and Electric (PG&E) as well as with other local governments in the Bay Area to implement energy efficiency programs. SF Energy Watch is a partnership between the city and PG&E. The program is funded by the city's utility customers and administered by PG&E in collaboration with the city, which implements the program. Additionally, the city is a partner in the new Bay Area Regional Energy Network (BayREN) created by nine counties in the Association of Bay Area Governments. BayREN receives funding from the utilities to continue local and regional energy efficiency programs. On the state level, San Francisco is a founding member of Green Cities California and helped form the Local Government Sustainable Energy Coalition. The city works with those organizations and independently advocates at the state level for policies that promote greater reach and depth of energy efficiency programs and additional spending requirements for energy efficiency projects for all of its utilities.

Chicago. Chicago is one of the few cities using group purchasing power through municipal aggregation. More than 200 communities have signed the aggregation contract to realize lower rates for all members. In recent years, the city launched a comprehensive energy efficiency strategy, Retrofit Chicago, aimed at commercial, residential, and municipal buildings. Under Retrofit Chicago, the city widely promotes electric and gas utility incentives and hosts neighborhood competitions to encourage lower energy usage. The City of Chicago also partners with ComEd and Peoples Natural Gas to provide access to automated, multitenant building data and energy usage data by census block and neighborhood for households, businesses, and industries.

EFFICIENCY EFFORTS IN WATER SERVICES

The actions of water utilities play an important role in the efficiency of a city. They can save energy by improving pumps and motors, and generate energy for use onsite through the processing of wastewater. Water utilities can also reduce energy demand by investing in reducing water demand. This close relationship means that improvements in water efficiency result in energy savings (Young 2014).

Regardless of climate, water services use a great deal of energy at a significant cost to local governments and citizens. According to the Environmental Protection Agency's (EPA) ENERGY STAR program, upgrading municipal water supply and wastewater systems to minimize leaks and improve the efficiency of pumps and motors can readily achieve 10% energy savings, resulting in collective savings of about $400 million and 5 billion kilowatt-hours (kWh) annually (EPA 2008b).

In this category, we highlight how cities are tackling efficiency within their water systems. Cities could earn 5 points in the water services category across six metrics. We examined policies targeted at both energy efficiency and water efficiency. In some cases, cities had autonomous or regional water utilities and, therefore, did not have direct control over the utilities' internal operational policies. However we awarded points regardless of the operating entity of the water utility or utilities serving the city. Table 44 shows the breakdown of cities' scores for water services.

Water Efficiency

We allocated 2 points for water efficiency. Cities could earn 1 point if the local or regional drinking water utility had funded water efficiency programs. In the absence of a municipal water utility, we awarded points to cities if they, or their regional water authorities, funded end-use programs with the aim of water conservation. We also awarded 1 point to cities that had a water savings target or a long-term strategy for water savings set by the local water utility or formalized by the local government.

Energy Efficiency in Water Services

We allocated 2 points for policies that encourage energy efficiency in drinking, wastewater, or stormwater services. Cities could earn 1 point if one or more water or wastewater utilities had a specific energy efficiency target or comprehensive energy efficiency strategy. We awarded partial credit (0.5 points) to cities that did not have water-related energy-saving targets or energy plans but have pursued some energy efficiency initiatives at their local or regional water utilities. Cities also earned 1 point if the wastewater utility self-generated energy through methane capture or another means, such as combined heat and power. We awarded partial credit (0.5 points) to cities that captured energy resources at their wastewater facilities but did not use them onsite.

Green Stormwater Infrastructure

The final point in the water services category is for stormwater management policies. Investments in distributed stormwater systems that integrate vegetation and permeable surfaces, commonly known as green infrastructure or low-impact development, reduce energy consumption required for water treatment (CNT 2010). Cities could earn 0.5 points for policies, water rates, or incentives that encouraged developers and property owners to incorporate green infrastructure to manage stormwater on private properties. We awarded an additional 0.5

points if the city had funding in place for green stormwater infrastructure projects on public property, such as streets, schools, and parks.

Table 44 lists cities' scores on water utility efficiency efforts.

Table 44. Scores for water utilities' efficiency efforts

City	State	Funded water efficiency programs (1 pt)	Water savings target (1 pt)	Energy efficiency programs (1 pt)	Self-generation (1 pt)	Stormwater policy (0.5 pt)	Green infrastructure funding (0.5 pt)	Total score (5 pts)
Atlanta	GA	1	1	1	1	0.5	0.5	5
Austin	TX	1	1	1	1	0.5	0.5	5
Boston	MA	1	1	1	1	0.5	0.5	5
El Paso	TX	1	1	1	1	0.5	0.5	5
Fort Worth	TX	1	1	1	1	0.5	0.5	5
Los Angeles	CA	1	1	1	1	0.5	0.5	5
New York City	NY	1	1	1	1	0.5	0.5	5
San Francisco	CA	1	1	1	1	0.5	0.5	5
Seattle	WA	1	1	1	1	0.5	0.5	5
Chicago	IL	1	1	0.5	1	0.5	0.5	4.5
Las Vegas	NV	1	1	0.5	1	0.5	0.5	4.5
Baltimore	MD	1	1	0	1	0.5	0.5	4
Charlotte	NC	1	1	1	0	0.5	0.5	4
Cleveland	OH	0	1	1	1	0.5	0.5	4
Denver	CO	1	1	0.5	1	0.5	0	4
Minneapolis	MN	1	0	1	1	0.5	0.5	4
Philadelphia	PA	1	0	1	1	0.5	0.5	4
Pittsburgh	PA	1	0	1	1	0.5	0.5	4
Portland	OR	1	0	1	1	0.5	0.5	4
Riverside	CA	1	1	0	1	0.5	0.5	4
San Antonio	TX	1	1	1	0.5	0	0.5	4
Jacksonville	FL	1	0	0.5	1	0.5	0.5	3.5
Sacramento	CA	1	1	0	1	0.5	0	3.5
Salt Lake City	UT	1	1	0	1	0.5	0	3.5
San Jose	CA	1	1	0	1	0.5	0	3.5
Washington	DC	1	1	0.5	0	0.5	0.5	3.5
Columbus	OH	1	0	0	1	0.5	0.5	3
Dallas	TX	1	1	0	1	0	0	3
Houston	TX	1	1	0	0	0.5	0.5	3
Memphis	TN	0	0	1	1	0.5	0.5	3
Milwaukee	WI	0	1	0	1	0.5	0.5	3
San Diego	CA	1	0	0	1	0.5	0.5	3
Cincinnati	OH	0	0	1	1	0	0.5	2.5
Miami	FL	1	1	0	0	0.5	0	2.5
Phoenix	AZ	1	0	1	0	0.5	0	2.5
Providence	RI	1	1	0	0	0.5	0	2.5
Tampa	FL	1	0	0	1	0.5	0	2.5
Nashville	TN	0	0	0	1	0.5	0.5	2
Virginia Beach	VA	1	0	0	0	0.5	0.5	2
Indianapolis	IN	0	0	0.5	0	0.5	0.5	1.5
Kansas City	MO	0	0	0.5	0	0.5	0.5	1.5
Oklahoma City	OK	1	0	0	0	0.5	0	1.5
Orlando	FL	1	0	0	0	0.5	0	1.5
Raleigh	NC	1	0	0	0	0.5	0	1.5
Louisville	KY	0	0	0	0	0.5	0.5	1
Richmond	VA	0	0	1	0	0	0	1
Detroit	MI	0	0	0	0	0.5	0	0.5
Hartford	CT	0	0	0	0	0.5	0	0.5
St. Louis	MO	0	0	0	0	0	0.5	0.5

City	State	Funded water efficiency programs (1 pt)	Water savings target (1 pt)	Energy efficiency programs (1 pt)	Self-generation (1 pt)	Stormwater policy (0.5 pt)	Green infrastructure funding (0.5 pt)	Total score (5 pts)
Birmingham	AL	0	0	0	0	0	0	0
New Orleans	LA	0	0	0	0	0	0	0
Median		**1**	**1**	**0.5**	**1**	**0.5**	**0.5**	**3.5**

Cities with Leading Water Utilities

Austin. Austin Water, the city-owned water utility, has reduced its total gallons per capita per day water use by 22% since 2006 through successful conservation efforts. Austin Water offers rebates for residential and commercial customers such as WaterWise landscaping, rainwater harvesting, free showerheads, and other products and actions. Austin Water also tracks its energy efficiency at the facility, process, and system levels with a goal of 3% reduction in kWh/MG per year until 2020. Austin has additionally undertaken a multipronged initiative to encourage the use of low-impact development (LID) practices and green stormwater infrastructure (GSI) in new public and private (re)development. In efforts to encourage the use of LID practices and GSI, Austin leads by example by implementing demonstration projects at public facilities and with the installation of GSI controls on city street projects. The city is also investigating the degree to which green infrastructure can mitigate localized flooding in urbanized areas that is caused by inadequate storm drain capacity.

Atlanta. Water conservation and stormwater management are central components of Atlanta's Power to Change Initiative, its sustainability plan. Under this initiative, all city facilities, including the Department of Watershed Management, are striving to meet a 20% energy reduction by 2020. At this point, every city water and wastewater treatment plant has undergone energy efficiency upgrades, including the R. M. Clayton Water Reclamation Center (WRC) where a combined heat and power system eliminates open-air gas flaring and produces up to 20% of the plant's electricity needs, saving the city more than $1 million annually. Atlanta also encourages the implementation of green infrastructure. City ordinances allow and regulate rainwater harvesting and promote green infrastructure and runoff reduction practices. The city also adopted an ordinance to allow for the installation of water submeters for new multifamily and mixed-use, multi-tenant buildings.

Chapter 6. Transportation Policies

Lead Author: Shruti Vaidyanathan

INTRODUCTION

A comprehensive approach to transportation energy efficiency at the federal, state, or local level must address the efficiency of both individual vehicles and the transportation system as a whole, including its interrelationship with land use policies. Transportation energy use accounts for approximately 28% of overall energy use in the United States (Davis, Diegel, and Boundy 2014). Similarly, transportation accounts for between 25% and 38% of energy use in most cities in industrialized countries (López Moreno et al. 2008). For the 14 cities for which we were able to gather detailed energy-consumption data (see Chapter 7), transportation accounted for an average of 32% of energy use.

While the federal government and states have made strides in recent years toward achieving energy savings in the transportation sector, local governments and metropolitan regions play a critical role in maximizing this sector's energy efficiency potential. Municipalities, for instance, must take the lead in shaping land use, because they have jurisdiction over zoning laws and regulations. Likewise, central cities and other job centers influence regional commuting behavior and choices, which are major factors in transportation energy use.

Transportation efficiency policies at the local level must respond to the changing landscape of transportation energy use. Americans have seen drastically fluctuating gasoline prices over the last six years, leading many to look toward efficient and advanced technology vehicles as buffers against high costs during peak price periods. Cities can provide tax incentives for the purchase of efficient vehicles while also investing in appropriate charging infrastructure for the new wave of plug-in hybrid and battery electric vehicles. This makes buying an advanced-technology vehicle much more feasible for their residents. Likewise, cities can influence and respond to changes in the average American's travel behavior. More and more people are choosing to take public transit, bike, and walk (DeGood 2012, Alliance for Biking and Walking 2014). To accommodate the growing demand for alternatives to driving, local governments must take the lead in giving residents transportation choices and creating communities that support safe automobile-independent ways of getting around.

SCORING

We allocated 28 points to transportation policies, which include vehicle fuel efficiency and transportation system efficiency. We scored cities based on five categories of transportation metrics with energy savings potential.

- Location efficiency policies (8 points)
- Mode-shift strategies (8 points)
- Public transit policies (6 points)
- Efficient vehicle policies (3 points)
- Freight transportation policies (3 points)

Metrics selected for this chapter are, in most cases, policies that city policymakers can influence in the short run. While it is important to note that city-level policies are most effective when they interact with or build upon policies from encompassing jurisdictions, all of the metrics in this chapter focus on local government action. State policies and programs can foster local

progress by creating compact communities or funding the expansion of state and regional transit systems. Regional policies and agencies such as metropolitan planning organizations (MPOs) are important to the transportation planning and implementation process, bringing to the table both funding and analytical expertise.

RESULTS

In general, while a number of cities are making great strides on transportation efficiency, they could all do more to take advantage of their efficiency potential. Portland, Washington, Boston, and Seattle topped the transportation rankings. These four cities are dedicated to reducing transportation energy use through a number of mechanisms. San Francisco followed very closely behind, in the fifth spot. Nevertheless, there is room for improvement for all cities, with the top-scoring city, Portland, managing to earn only 20.5 points out of a possible 28 and not achieving a perfect score in any category (though it came very close for its location efficiency and mode-shift policies). The median total score for the transportation sector was 11.5 points (up 2 points from 2013), with the lowest score, 3.5 points, given to Oklahoma City.

Table 45 lists the transportation scores for 2015 by policy category. For scoring details on individual metrics within these categories, see the tables in the appropriate sections below.

Table 45. Transportation scores

City	State	Location efficiency (8 pts)	Mode shift (8 pts)	Transit (6 pts)	Efficient vehicles (3 pts)	Freight (3 pts)	Total (28 pts)
Portland	OR	7.5	7.5	2.5	2	1	20.5
Washington	DC	3.5	7	4	2.5	3	20
Boston	MA	4	7	6	2	0.5	19.5
Seattle	WA	5	8	3.5	2	1	19.5
San Francisco	CA	4	7	6	1.5	0.5	19
Atlanta	GA	3	4.5	5.5	2.5	3	18.5
Denver	CO	5	7	3.5	2	1	18.5
Minneapolis	MN	2.5	8	4	2	1	17.5
New York City	NY	4.5	4	6	2.5	0.5	17.5
Chicago	IL	2.5	6	5	2.5	1	17
Philadelphia	PA	4	4.5	6	1.5	1	17
Baltimore	MD	4.5	3.5	3.5	1.5	3	16
Houston	TX	4	5	4	2	0.5	15.5
Salt Lake City	UT	2.5	7	3.5	2	0.5	15.5
Columbus	OH	3.5	4	2.5	1.5	2	13.5
Kansas City	MO	3	4	2	1.5	3	13.5
San Antonio	TX	4	4	3.5	1.5	0.5	13.5
St. Louis	MO	2.5	1.5	4.5	1.5	3	13
Austin	TX	4	3.5	3	1.5	0.5	12.5
Dallas	TX	2.5	3.5	5	1	0.5	12.5
Louisville	KY	1	6	2.5	1	2	12.5
Memphis	TN	4	2.5	3.5	0.5	2	12.5
San Jose	CA	0	5	5	2	0.5	12.5
Miami	FL	2.5	3	4.5	1	1	12
Cincinnati	OH	3.5	2	2	1	3	11.5
Los Angeles	CA	2.5	3	3.5	2	0.5	11.5
Charlotte	NC	1	3	3.5	1.5	2	11
Milwaukee	WI	3	4	2.5	1	0.5	11
Pittsburgh	PA	1	1.5	6	1.5	1	11
Richmond	VA	3.5	2.5	1	1	3	11
Cleveland	OH	2.5	0.5	4.5	1	2	10.5
Orlando	FL	3	3	1.5	1	2	10.5
El Paso	TX	2.5	4.5	2	0.5	0.5	10

City	State	Location efficiency (8 pts)	Mode shift (8 pts)	Transit (6 pts)	Efficient vehicles (3 pts)	Freight (3 pts)	Total (28 pts)
Jacksonville	FL	2	5	1.5	0.5	1	10
Nashville	TN	4.5	2	1	1.5	0.5	9.5
Riverside	CA	2.5	3.5	1	2	0.5	9.5
San Diego	CA	2	3	2.5	1.5	0.5	9.5
New Orleans	LA	2.5	1.5	3.5	1	0.5	9
Phoenix	AZ	4	1	2	1.5	0.5	9
Birmingham	AL	3.5	1	1	1	2	8.5
Providence	RI	1	1.5	5	1	0	8.5
Raleigh	NC	1.5	2.5	2.5	1.5	0.5	8.5
Sacramento	CA	1.5	2.5	1.5	2	0.5	8
Indianapolis	IN	2	2	1	1.5	1	7.5
Tampa	FL	2	2	1.5	1	1	7.5
Las Vegas	NV	2	1.5	1.5	1.5	0.5	7
Detroit	MI	0	1.5	2.5	1.5	1	6.5
Fort Worth	TX	1.5	2	1.5	1	0.5	6.5
Hartford	CT	0.5	1.5	2	1.5	1	6.5
Virginia Beach	VA	2.5	1	1	1	0	5.5
Oklahoma City	OK	0	1	1	1	0.5	3.5
Median		**2.5**	**3**	**3**	**1.5**	**1**	**11.5**

The most-improved cities for this edition were Seattle, Chicago, and Jacksonville, whose scores improved by 8.25, 6.5, and 6.25 points, respectively. The bulk of Seattle's improvement came from the full 8 points it earned in the mode-shift category, compared to its 2013 score of 4.5, as a result of *Scorecard* methodology changes. Chicago, too, earned more points in the mode-shift category this year. Jacksonville's improved score came from our recognition in this edition of its thorough 2030 Mobility Plan, which we overlooked in 2013. This long-range mobility plan identifies the city's vehicle miles traveled (VMT) per capita reduction target of 10% by 2030 as well as a comprehensive package of policies to reduce transportation energy use. The only two cities to lose transportation points in this edition were Dallas, whose score fell by 0.5 points, and Indianapolis, whose score fell by 1.5 points due a scoring error we made in 2013.

Cities scored fairly well in the transit category, with five cities earning the full six points: Boston, San Francisco, New York, Philadelphia, and Pittsburgh. However many cities performed poorly in the location efficiency category, where the median score was 2.5 points out of a possible 8. Portland earned the highest score, 7.5 points, in the location efficiency category, with Seattle and Denver coming in second and third at 5 points each. Houston and Memphis were among the most improved in this category.

Cities' performance in the mode-shift category was equally poor. The median score for this category was 3 points, with four cities scoring 1 point out of a possible 8, and one scoring just 0.5 points. Seattle and Minneapolis scored the highest, with 8 points. One positive development to take note of is the rapid increase in the number of cities with bike-sharing programs. In 2013, we reported that bike sharing was fully implemented in 26% of our study cities. In this edition, 53% of our study cities have a program in place.

Our analysis suggests that cities across the United States must make more of an effort to reduce their transportation-related energy consumption, particularly by emphasizing policies that target the efficiency of the transportation system as a whole in addition to the efficiency of vehicles.

LOCATION EFFICIENCY

Where we choose to live and develop our neighborhoods has a huge impact on overall energy use. Households can reduce their transportation-related energy use by locating in compact, mixed-use communities that are well connected and near transit facilities (EPA 2011c). Policies that encourage this location reduce the need to drive in the long run (Vaidyanathan and Mackres 2012). Location efficiency strategies are largely a local government responsibility and are, therefore, highly indicative of a government's leadership in transportation policies generally.

In this category we scored cities on:

- The presence of location-efficient zoning codes (2 points)
- The removal or reduction of minimum parking requirements (2 points)
- The presence of a citywide complete-streets policy (2 points)
- Incentives to residents and developers to encourage the creation of mixed-use, compact communities (2 points)

Zoning and Parking Policies for Location-Efficient Development

Well-crafted zoning codes promote the creation of walkable, mixed-use communities. Post–World War II zoning practices have traditionally segregated industrial and residential uses of land, and some codes further divide land for commercial, institutional, and recreational purposes. In combination with highway-focused transportation investment, this has worked against the creation of walkable, mixed-use communities that moderate overall VMT and energy use. These more location-efficient communities with increased transportation choices can reduce driving by 7% to 36% (Ewing et al. 2008; Calthorpe 2010).

Changes to municipal zoning regulations can direct investment and development toward high-density, mixed-use construction near existing transit facilities. Form-based zoning codes are particularly useful for the planning of these communities, as they allow for easier creation of mixed-use developments. Form-based codes focus on the relationships between building facades and the public, the forms and masses of buildings in relation to one another, and the scale and types of streets and blocks. Additionally, form-based zoning recognizes that walkability and architectural design help create attractive communities and location-efficient development projects (Reconnecting America 2010).

Other approaches to zoning for location-efficient communities include the use of overlays that add transit-related and density requirements to existing codes. These code modifications are useful in areas that already have a certain amount of development and are located near existing transit infrastructure. Incentive-based zoning is another option, an approach that incorporates incentives for developers such as density bonuses to encourage high-density, mixed-use development around transit nodes (LGC 2003).

Zoning regulations that support location efficiency should:

- Require mixed-use zones
- Recalibrate zoning standards to allow for compact development
- Increase building density in city centers and around transit nodes
- Modernize street standards or enact new standards to foster walkable communities
- Minimize the number of parking spaces required for new developments

- Designate preferred growth areas (Nelson 2009)

A city earned a maximum of 4 points for location-efficient zoning policies. We awarded 2 points to cities with location-efficient zoning codes that applied to the whole city, or 1 point if the code applied only to certain areas or neighborhoods. Codes must be designed to increase density, require mixed zones, or allow for compact, walkable communities.

We awarded another 2 points to cities with sound residential parking policies. Conventional zoning codes often have minimum parking requirements: one or more onsite parking spaces per housing unit for all occupied units, and multiple spaces for commercial and institution buildings. Such parking requirements claim significant surface area and drive up development costs, which prevent denser, more-compact development from flourishing and perpetuates automobile-oriented neighborhoods. To enable the growth of compact developments, developers need to set aside less land for parking. Table 46 outlines the scoring methodology.

Table 46. Scoring methodology for parking requirements

Parking requirements	Score (2 pts)
No minimum parking requirements in place for new developments anywhere in the city.	2
At least one zone, neighborhood, or district has no minimum parking requirements, or the whole city has a requirement of 0.5 spaces or fewer per unit.	1.5
At least one zone, neighborhood, or district has a requirement of 0.5 or fewer spaces per unit, or the whole city has a requirement of one space or fewer per unit.	1
At least one neighborhood has one or fewer spaces per unit.	0.5

Complete Streets

Complete-streets policies focus on the interconnectivity of streets to provide safe, easy access to roads for pedestrians, bicyclists, motorists, and public transportation users. Complete streets create a network of streets, sidewalks, and bicycle lanes that connect to transit facilities, making people less likely to drive. Therefore they can lower a community's fuel consumption and promote economic development as nonvehicle transportation proliferates.

According to the National Complete Streets Coalition (NCSC), 30% of all trips in metropolitan areas are of one mile or less and can be made by walking or using other forms of non-automobile transport. Using these alternatives minimizes the need to drive and reduces the need to own or fuel a car. Households located in neighborhoods near transit hubs, with well-connected street networks drive, on average, 16 fewer miles per day than those located in traditional suburbs (NCSC 2011). Many states and municipalities have made an effort to incorporate complete-streets policies into their land use planning tools. Thirty states have adopted complete-streets policies, while more than 712 jurisdictions have incorporated complete-streets language in their planning guidance (NCSC 2015).

ACEEE's scoring of complete-streets policies in this report leverages the NCSC complete-streets policy scores, which range from 0 to 100 according to the quality of the adopted policy (NCSC 2015). NCSC separates its rankings by policy types (resolution, city ordinance, and so on). A city

that scored 75 or above on the NCSC complete-streets policy score earned 2 points, one that scored between 50 and 75 earned 1.5 points, one that scored between 25 and 50 earned 1 point, and one that scored up to 25 earned 0.5 points. Table 47 below highlights cities that had a complete-streets policy and the points they earned. Table C4 in Appendix C lists complete-streets policy by city.

Location Efficiency Incentives and Information Disclosure

Cities may use a number of incentives ranging from tax credits to expedited permitting to encourage compact growth and mixed-use projects. Such financial and nonmonetary policy levers can make these projects deeply attractive to developers. Financial incentives help promote transit-oriented development or other community land use priorities in that they bring down the overall cost of construction in areas for which denser development is a priority. Commonly used measures include low-interest loans and property tax abatement programs. Combined land use projects become more financially attractive if developers can borrow at below-market interest rates. Likewise, property tax abatement programs lower overall costs, increasing the attractiveness of investing in projects that combine land uses and provide greater transportation options.

Commonly used nonfinancial measures such as density bonuses and expedited permitting similarly provide incentives for compact, mixed-use development. Expedited permitting speeds up development by fast-tracking the approval process for projects that meet certain location efficiency requirements. Density bonuses may be provided to projects meeting specific sustainability benchmarks and industry standards in their construction, and thus attract developers to the area. They authorize construction of a building with greater floor area than would otherwise be allowed. Developers can construct more market-rate housing units than would typically be allowed in exchange for each unit of affordable housing they build near transit nodes or in mixed-used communities (Shoemaker 2006).

Information and incentives for potential residents can also increase demand for communities that have better transportation choices. To attract potential residents to transit-oriented development and mixed-use communities, cities may require disclosure of information on the location efficiency of buildings to potential buyers or tenants as a part of a real estate transaction or rental listing. Walk Score, for example, rates neighborhoods from 0 to 100 based on how walkable they are.

We awarded cities with a financial or non–financial incentive program for location-efficient development or with a disclosure policy 0.5 points for each incentive or policy in place, up to a maximum of 2 points. The scores related to each of the location efficiency metrics for each city are included in table 47.

Table 47. Location efficiency scores

City	State	Location-efficient zoning[1] (2 pts)	Parking requirements[1] (2 pts)	Complete streets[2] (2 pts)	Location efficiency incentives and information[1] (2 pts)	Total score (8 pts)
Portland	OR	2	2	2	1.5	7.5
Denver	CO	2	1.5	1.5	0	5
Seattle	WA	1	1.5	1.5	1	5
Baltimore	MD	2	1	1.5	0	4.5
Nashville	TN	1	1.5	1.5	0.5	4.5
New York City	NY	1	1.5	1	1	4.5
Austin	TX	1	0	2	1	4
Boston	MA	1	1.5	1	0.5	4
Houston	TX	0	1	1.5	1.5	4
Memphis	TN	2	0.5	1.5	0	4
Philadelphia	PA	1	2	1	0	4
Phoenix	AZ	1	0.5	1.5	1	4
San Antonio	TX	1	0.5	1	1.5	4
San Francisco	CA	0	2	1	1	4
Birmingham	AL	1	0.5	2	0	3.5
Cincinnati	OH	2	1.5	0	0	3.5
Columbus	OH	1	0.5	1	1	3.5
Richmond	VA	1	0.5	2	0	3.5
Washington	DC	1	1	1.5	0	3.5
Atlanta	GA	2	0.5	0	0.5	3
Kansas City	MO	2	1	0	0	3
Milwaukee	WI	1	2	0	0	3
Orlando	FL	2	0	0	1	3
Chicago	IL	0	0.5	1	1	2.5
Cleveland	OH	0	1	1.5	0	2.5
Dallas	TX	1	0.5	1	0	2.5
El Paso	TX	2	0.5	0	0	2.5
Los Angeles	CA	1	1	0	0.5	2.5
Miami	FL	2	0	0.5	0	2.5
Minneapolis	MN	0	1.5	0	1	2.5
New Orleans	LA	0	1	1.5	0	2.5
Riverside	CA	1	0.5	0	1	2.5
Salt Lake City	UT	1	0.5	1	0	2.5
St. Louis	MO	1	0.5	1	0	2.5
Virginia Beach	VA	1	0	1.5	0	2.5
Indianapolis	IN	0	0	2	0	2
Jacksonville	FL	2	0	0	0	2
Las Vegas	NV	1	0.5	0.5	0	2
San Diego	CA	1	0.5	0	0.5	2
Tampa	FL	1	0	1	0	2
Fort Worth	TX	1	0.5	0	0	1.5
Raleigh	NC	1	0.5	0	0	1.5
Sacramento	CA	0	1	0	0.5	1.5
Charlotte	NC	1	0	0	0	1
Louisville	KY	0	1	0	0	1
Pittsburgh	PA	0	1	0	0	1
Providence	RI	0	0.5	0.5	0	1
Hartford	CT	0	0.5	0	0	0.5
Detroit	MI	0	0	0	0	0
Oklahoma City	OK	0	0	0	0	0
San Jose	CA	0	0	0	0	0

[1] From ACEEE web research and city data requests. [2] NCSC 2015.

MODE SHIFT

Seventy-five percent of all trips are made by single-occupant vehicles (EPA 2011d). To improve the efficiency of a transportation system, cities must make efforts to implement policies that encourage other modes of transportation (e.g., public transit, ridesharing, bicycles, walking). This can be achieved through transportation demand management programs, vehicle sharing efforts, and, more holistically, by ensuring that cities integrate land use and transportation planning.

Travel Mode Targets and Strategy Implementation

Cities can use a number of policy levers to shift travel from personal vehicles to more-efficient modes of transport, including VMT targets and modal share targets. VMT targets give cities specific benchmarks for reducing driving and can encourage the development of transit-oriented communities and the use of nonmotorized transportation options. Modal share targets aim to increase the percentage of trips taken on non-automobile modes of transportation. Cities that commit to concrete, long-run modal share targets can change the travel behavior of their communities in favor of modes of transportation that consume less energy. However cities still need action plans to achieve those targets by changing development patterns and travel behavior. Therefore we also collected data on the implementation actions related to these policies.

Cities with a sustainable transportation plan in place to reduce VMT could earn 2 points. We awarded an additional 2 points to cities with codified VMT reduction targets or modal share targets. We awarded only 1 point if these targets were part of a general sustainability plan but not codified through formal adoption. Table 48 lists the cities that received points for this metric and table C5 in Appendix C includes an explanation of each of these targets.

Car and Bicycle Sharing

Car-sharing services give drivers access to shared vehicles on a time-limited basis as an alternative or supplement to vehicle ownership while still providing convenient access when a car is desired. The emergence of companies such as Zipcar, Car2Go, and other services in recent years indicates that these services are becoming more popular with metropolitan residents who do not want the cost and maintenance burden of owning underutilized personal vehicles. Car sharing enables households to give up owning a first, second, or third vehicle and to rely on other modes of transportation for most travel. According to the Transportation Research Board, each shared car replaces at least five private vehicles (Millard-Ball et al. 2005).

Likewise, bicycle-sharing programs present commuters and city residents with another alternative to owning or driving a personal vehicle. Bike-sharing systems provide publicly accessible shared-use bicycles that are available for trips of short to medium distance. Bike sharing increases the ease of urban mobility, increases the use of public transit, and reduces overall energy use within a metropolitan area (Shaheen, Cohen, and Martin 2012).

A city that operated car-sharing programs or supported private market programs through permitting or incentives earned 1 point, while a city with a program in the planning stages earned 0.5 points. A city with a bike-sharing program earned 1 point if the program was operational and 0.5 points if it was under development.

Transportation Demand Management Programs

Transportation demand management (TDM) programs reduce the frequency of single-occupancy trips and shift automobile trips out of peak traffic periods (SDOT 2008). TDM strategies that cities can support through policies and programs include:

- Telecommuting
- Flexible work schedules
- Subsidized transit passes
- Parking cash-out programs
- Ridesharing (carpooling, high-occupancy-vehicle lanes, and so on)

TDM programs can be implemented by private employers, municipalities, or other agencies. Employers may receive incentives to encourage their employees to change their travel behavior. TDM programs work best in collaboration with other initiatives such as transit improvements and parking pricing to discourage driving during peak hours (VTPI 2012).

Cities that run TDM programs or support them through funding or financial incentives for employers earned up to 2 points. A city served by a TDM program run by an entity other than the city government and without the city government named as an implementing partner scored 1 point. Table 48 lists the scores for each mode-shift metric.

Table 48. Mode-shift scores

City	State	Integration of transportation and land use planning (4 pts)	Demand management program (2 pts)	Car-sharing program (1 pt)	Bike-sharing program (1 pt)	Total (8 pts)
Minneapolis	MN	4	2	1	1	8
Seattle	WA	4	2	1	1	8
Portland	OR	4	2	1	0.5	7.5
Boston	MA	3	2	1	1	7
Denver	CO	3	2	1	1	7
Salt Lake City	UT	3	2	1	1	7
San Francisco	CA	3	2	1	1	7
Washington	DC	3	2	1	1	7
Chicago	IL	2	2	1	1	6
Louisville	KY	3	1	1	1	6
Houston	TX	1	2	1	1	5
Jacksonville	FL	4	1	0	0	5
San Jose	CA	3	0	1	1	5
Atlanta	GA	1	2	1	0.5	4.5
El Paso	TX	2	2	0	0.5	4.5
Philadelphia	PA	3	0	1	0.5	4.5
Columbus	OH	0	2	1	1	4
Kansas City	MO	2	1	0	1	4
Milwaukee	WI	1	1	1	1	4
New York City	NY	2	0	1	1	4
San Antonio	TX	2	0	1	1	4
Austin	TX	0	2	1	0.5	3.5
Baltimore	MD	0	2	1	0.5	3.5
Dallas	TX	1	1	1	0.5	3.5
Riverside	CA	3	0	0	0.5	3.5
Charlotte	NC	0	2	0	1	3
Los Angeles	CA	0	2	1	0	3
Miami	FL	0	1	1	1	3
Orlando	FL	0	1	1	1	3

City	State	Integration of transportation and land use planning (4 pts)	Demand management program (2 pts)	Car-sharing program (1 pt)	Bike-sharing program (1 pt)	Total (8 pts)
San Diego	CA	0	1	1	1	3
Memphis	TN	0	1	1	0.5	2.5
Raleigh	NC	0	2	0	0.5	2.5
Richmond	VA	0	1	1	0.5	2.5
Sacramento	CA	0	1	1	0.5	2.5
Cincinnati	OH	0	0	1	1	2
Fort Worth	TX	1	0	0	1	2
Indianapolis	IN	0	0	1	1	2
Nashville	TN	0	0	1	1	2
Tampa	FL	0	0	1	1	2
Detroit	MI	0	0	1	0.5	1.5
Hartford	CT	0	1	0	0.5	1.5
Las Vegas	NV	0	1	0	0.5	1.5
New Orleans	LA	0	1	0	0.5	1.5
Pittsburgh	PA	0	0	1	0.5	1.5
Providence	RI	0	0	1	0.5	1.5
St. Louis	MO	0	0	1	0.5	1.5
Birmingham	AL	0	1	0	0	1
Oklahoma City	OK	0	0	0	1	1
Phoenix	AZ	0	0	0	1	1
Virginia Beach	VA	0	1	0	0	1
Cleveland	OH	0	0	0	0.5	0.5

Source: ACEEE web research and city data requests

TRANSIT

Well-connected public transit networks reduce residents' need to drive and therefore the number of vehicle miles traveled in metropolitan areas. Demand for public transportation in the United States is higher today than it has been in the last 50 years (DeGood 2012). A number of factors have contributed to this increase. Fluctuations in gasoline prices combined with the aging of the nation's population and the increasing preference of millennials for living in well-connected communities mean that more people are abandoning the personal automobile as their primary mode of transport (DeGood 2012). A number of cities have put significant effort into financing and expanding their transit infrastructure as a result.

Transportation Funding

Federal, state, and local transportation funding continues to favor road and highway maintenance over transit expansion. However a number of municipalities across the United States have come up with inventive funding mechanisms to foster transit development. Local funding for transportation is generated in a variety of ways and can make up a significant portion of expenditures on transit expansion. Common strategies for funding transit include sales and property taxes, user fees, revenues from road and parking pricing schemes, and transit fares. The city of Charlotte generated $148 million in local funding from a ½-cent sales tax approved by voter referendum (AASHTO 2012). The sales tax was expected to generate between $75 million and $77 million in FY2009, some of it earmarked for the development of the Lynx light rail system and bus line and bus service expansion (Parker 2008).

We scored cities based on the ratio of regional transit funding per capita (as reported in the National Transit Database, FTA 2014) to city funding of highways and parking per capita (as reported in Lincoln Institute of Land Policy 2014). Table 49 outlines the scoring criteria.

While we recognize that comparing regional and local government data is not ideal, we want to enable local government representatives to understand how their investments in infrastructure for automobile travel compare to their transit investments. Transit investments are tabulated primarily at the regional level even though much of the funding comes in some form from local governments.

Table 49. Scoring methodology for transportation funding

Transit-to-road funding ratio	Score (4 pts)
≥ 3:1	4
2:1–2.99:1	3
1:1–1.99:1	2
0.5:1–0.99:1	1
≤ 0.49:1	0.5

Access to Transit Service

The number of people who use some form of public transportation increased by 20% between 2000 and 2014 (APTA 2014). The development of quality transit services, including adequate service frequency, is essential for public transit to be a viable option in a city. Efficient transit systems within metropolitan areas designed in connection with land use planning can make public transportation a viable substitute for automobile trips. To improve transit ridership and overall access to transit, local agencies can use the following key strategies:

1. *Increase in service*, in which cities focus on improving the frequency of service across multiple modes
2. *Service coordination*, in which cities ensure that the coordination between different modes and routes (e.g., bus and rail services, services of different agencies) is in place so that the transit system is efficient, usable, and attractive to potential customers (TranSystems 2007)

Other strategies to improve transit ridership include price reductions and educational initiatives that highlight the benefits of using public transit.

We scored cities on their transit service using the Center for Neighborhood Technology's Transit Connectivity Index, which measures the availability of transit service by estimating the number of rides available per week on transit within walking distance of the average household (CNT 2014). A city earned up to 2 points. Table 50 outlines the scoring criteria for this metric, and table 51 lists scores for the two transit-related metrics.

Table 50. Scoring methodology for access to transit service

Transit Connectivity Index of city (rides per week available on transit)	Score (2 pts)
≥ 50,000	2
20,000–49,999	1.5
10,000–19,999	1
> 0–9,999	0.5
0	0

Source: CNT 2014

Table 51. Transit scores

City	State	Transportation funding distribution[1] (4 pts)	Access to transit[2] (2 pts)	Total score (6 pts)
Boston	MA	4	2	6
New York City	NY	4	2	6
Philadelphia	PA	4	2	6
Pittsburgh	PA	4	2	6
San Francisco	CA	4	2	6
Atlanta	GA	4	1.5	5.5
Chicago	IL	3	2	5
Dallas	TX	4	1	5
Providence	RI	3	2	5
San Jose	CA	4	1	5
Cleveland	OH	3	1.5	4.5
Miami	FL	3	1.5	4.5
St. Louis	MO	3	1.5	4.5
Houston	TX	3	1	4
Minneapolis	MN	2	2	4
Washington	DC	2	2	4
Baltimore	MD	2	1.5	3.5
Charlotte	NC	2	1.5	3.5
Denver	CO	2	1.5	3.5
Los Angeles	CA	2	1.5	3.5
Memphis	TN	3	0.5	3.5
New Orleans	LA	2	1.5	3.5
Salt Lake City	UT	2	1.5	3.5
San Antonio	TX	2	1.5	3.5
Seattle	WA	2	1.5	3.5
Austin	TX	2	1	3
Columbus	OH	2	0.5	2.5
Detroit	MI	1	1.5	2.5
Louisville	KY	0.5	2	2.5
Milwaukee	WI	1	1.5	2.5
Portland	OR	1	1.5	2.5
Raleigh	NC	2	0.5	2.5
San Diego	CA	2	0.5	2.5
Cincinnati	OH	0.5	1.5	2
El Paso	TX	2	0	2
Hartford	CT	0	2	2
Kansas City	MO	0.5	1.5	2
Phoenix	AZ	1	1	2

City	State	Transportation funding distribution[1] (4 pts)	Access to transit[2] (2 pts)	Total score (6 pts)
Fort Worth	TX	1	0.5	1.5
Jacksonville	FL	1	0.5	1.5
Las Vegas	NV	1	0.5	1.5
Orlando	FL	0.5	1	1.5
Sacramento	CA	0.5	1	1.5
Tampa	FL	0.5	1	1.5
Birmingham	AL	0.5	0.5	1
Indianapolis	IN	1	0	1
Nashville	TN	1	0	1
Oklahoma City	OK	0.5	0.5	1
Richmond	VA	1	0	1
Riverside	CA	0.5	0.5	1
Virginia Beach	VA	0.5	0.5	1

[1] FTA 2014. [2] CNT 2014.

EFFICIENT VEHICLES AND DRIVING BEHAVIOR

The US vehicle market has seen an increase in high-efficiency options for consumers in recent years. Manufacturers are maximizing the efficiency of conventional internal-combustion-powered vehicles, and many more conventional hybrids, plug-in hybrids, and electric vehicles are now available for sale in dealerships across the country. While these vehicle types provide significant energy-saving opportunities, plug-in electric vehicles that require charging stations also present infrastructure challenges.

Beyond vehicle purchase and infrastructure, maximizing the efficiency of a vehicle depends on the driver's behavior. Driving the speed limit, keeping tires properly inflated, grouping trips together, and avoiding idling all reduce a vehicle's overall fuel consumption.

In this section, we evaluated cities based on their efficient-vehicle purchase policies, electric vehicle (EV) readiness policies, policies to encourage more efficient driver behavior, and participation in regional initiatives to improve vehicle efficiency and otherwise reduce petroleum usage. Government vehicle fleet procurement and behavior policies are not included in this chapter, but in Chapter 2, Local Government Operations.

Incentives for and Investment in Energy-Efficient Vehicles and Vehicle-Charging Infrastructure

A key barrier to entry in the market for technologically advanced, fuel-efficient vehicles is high cost. To encourage consumers to purchase these vehicles, financial incentives, including tax credits, rebates, and sales tax exemptions are important policy levers. Currently, these incentives are provided largely at the state level. However a few cities across the country further subsidize the cost of these vehicles with supplemental incentives. Additionally, the arrival of a variety of new electric and plug-in hybrid electric models such as the Nissan LEAF® and Chevrolet Volt to the American vehicle market has increased the need for a comprehensive network of electric charging stations. As a result, a number of cities have begun evaluating their EV readiness with tools such as the DOE Plug-In Electric Vehicle Readiness Scorecard (DOE 2013). They have also begun developing policies to enable the installation and availability of charging sites.

We awarded a city 0.5 points if it provided purchase incentives for hybrid, plug-in hybrid, or electric vehicles—all vehicle types that typically have high fuel efficiency—or for conventional

vehicles with high fuel efficiency. While alternative-fuel vehicles—vehicles that use diesel, ethanol, hydrogen, or compressed natural gas—can provide substantial environmental benefits by reducing pollution, they do not generally improve vehicle fuel efficiency. Therefore policies to promote the purchase of alternative-fuel vehicles, but not the purchase of high-efficiency vehicles, did not receive a point. Additionally, we do not give credit for incentives such as the use of high-occupancy-vehicle lanes and preferred parking programs for high-efficiency and electric vehicles, as they promote increased automobile use and consequently have questionable net energy benefit. A city earned another 0.5 points if it had an incentive program to support the implementation of electric-vehicle-charging infrastructure. An additional 0.5 points were also available to cities that invested in charging stations accessible to private vehicles.

Anti-Idling and Other Vehicle Behavior Policies

Vehicle idling, leaving a vehicle running while not in motion, wastes fuel and generates pollution. Anti-idling measures help reduce fuel waste while also curbing vehicle emissions. Likewise, efficient driving techniques can improve the fuel economy of the average vehicle by up to 10% (Greenercars.org 2014). Stop-start and aggressive driving, driving over the speed limit, and neglecting regular vehicle maintenance all contribute to inefficient fuel use.

We awarded 0.5 points to a city with one or more policy in place to address driving behavior that applies to all vehicles, including anti-idling policies.

Transportation Partnerships

Transportation partnerships and coalitions can be an important planning and organizing tool for cities interested in reducing their transportation-related energy use. These partnerships focus relevant stakeholders to find solutions to transportation challenges within a city's boundaries and throughout the region. Relevant stakeholders include staff from city transportation departments, metropolitan planning organizations, and nongovernmental organizations.

For the purpose of the *City Scorecard*, we focused on DOE's Clean Cities Program. Clean Cities coalitions work to reduce petroleum use in communities by facilitating the adoption of new transportation technologies. They have the overall goal of stimulating the local economy and creating sustainable communities (DOE 2014c). A city with a Clean Cities coalition in its region or state and with city staff are actively engaged in the coalition (acting as a coordinator or regular contributor to efforts) earned 1 point for this metric. Table 52 lists scores related to the four vehicle efficiency metrics for each city.

Table 52. Efficient vehicles and driver behavior scores

City	State	Vehicle purchase incentives[1] (0.5 pt)	Vehicle infrastructure incentives[1] (0.5 pt)	EVSE charging locations[2] (0.5 pt)	Anti-idling policies[1] (0.5 pt)	Transportation partnerships[3] (1 pt)	Total (3 pts)
Atlanta	GA	0	0.5	0.5	0.5	1	2.5
Chicago	IL	0.5	0.5	0.5	0	1	2.5
New York City	NY	0	0.5	0.5	0.5	1	2.5
Washington	DC	0.5	0	0.5	0.5	1	2.5
Boston	MA	0	0.5	0	0.5	1	2
Denver	CO	0	0	0.5	0.5	1	2
Houston	TX	0	0.5	0.5	0	1	2
Los Angeles	CA	0	0.5	0.5	0	1	2
Minneapolis	MN	0	0	0.5	0.5	1	2
Portland	OR	0	0.5	0.5	0	1	2
Riverside	CA	0.5	0	0.5	0	1	2
Sacramento	CA	0	0	0.5	0.5	1	2
Salt Lake City	UT	0	0	0.5	0.5	1	2
San Jose	CA	0	0.5	0.5	0	1	2
Seattle	WA	0	0.5	0.5	0	1	2
Austin	TX	0	0.5	0	0	1	1.5
Baltimore	MD	0	0	0.5	0	1	1.5
Charlotte	NC	0	0	0.5	0	1	1.5
Columbus	OH	0	0	0.5	0	1	1.5
Detroit	MI	0	0	0	0.5	1	1.5
Hartford	CT	0	0	0.5	0	1	1.5
Indianapolis	IN	0	0	0.5	0	1	1.5
Kansas City	MO	0	0	0	0.5	1	1.5
Las Vegas	NV	0	0	0.5	0	1	1.5
Nashville	TN	0	0	0.5	0	1	1.5
Philadelphia	PA	0	0	0.5	0	1	1.5
Phoenix	AZ	0	0	0.5	0	1	1.5
Pittsburgh	PA	0	0	0.5	0	1	1.5
Raleigh	NC	0	0	0.5	0	1	1.5
San Antonio	TX	0	0	0.5	0	1	1.5
San Diego	CA	0	0	0.5	0	1	1.5
San Francisco	CA	0	0.5	0	0	1	1.5
St. Louis	MO	0	0	0	0.5	1	1.5
Birmingham	AL	0	0	0	0	1	1
Cincinnati	OH	0	0	0	0	1	1
Cleveland	OH	0	0	0	0	1	1
Dallas	TX	0	0	0	0	1	1
Fort Worth	TX	0	0	0	0	1	1
Louisville	KY	0	0	0	0	1	1
Miami	FL	0	0	0	0	1	1
Milwaukee	WI	0	0	0	0	1	1
New Orleans	LA	0	0	0	0	1	1
Oklahoma City	OK	0	0	0	0	1	1
Orlando	FL	0	0	0	0	1	1
Providence	RI	0	0	0	0	1	1
Richmond	VA	0	0	0	0	1	1
Tampa	FL	0	0	0	0	1	1
Virginia Beach	VA	0	0	0	0	1	1
El Paso	TX	0	0	0.5	0	0	0.5
Jacksonville	FL	0.5	0	0	0	0	0.5
Memphis	TN	0	0	0.5	0	0	0.5

[1] From ACEEE web research and city data requests. [2] DOE 2014a and city data requests. [3] DOE 2014c.

FREIGHT

Freight movement accounts for 18% of oil consumption in the United States (Foster and Langer 2013) and offers solid opportunities for energy efficiency gains. In 2011, the Environmental Protection Agency and the Department of Transportation adopted fuel efficiency and greenhouse gas standards for medium- and heavy-duty vehicles, starting with the 2014 model year. While approximately 530 million barrels of oil will be saved by these federal standards for vehicles (EPA and DOT 2011), additional steps can be taken to improve the overall efficiency of the freight system.

Because the majority of Americans live in cities, urban areas are major sources and destinations for freight. Policies and infrastructure for the movement of freight in cities and their metropolitan areas can facilitate improvements in efficiency. Strategies that reduce the fuel used in the movement of goods, such as shifting to more efficient modes of transport (e.g., rail and barge) and streamlining logistics, are particularly useful for improving the overall efficiency of the freight system.

Intermodal Freight Facilities

"Intermodal freight" is the transportation of goods via multiple modes along a given journey. For example, companies may use rail or ship for the majority of the journey and then transfer goods to a truck for final delivery. Intermodal freight movement enables the use of more efficient modes more often and decreases energy consumption. The ability to move goods effectively between modes requires intermodal facilities, those specifically designed to allow the transfer of freight from one mode to another. While the potential of mode shifting to reduce energy use is difficult to determine exactly, shifting freight from trucks to more efficient modes such as rail and water is generally estimated to reduce freight energy consumption by up to 66%, with much of these savings coming from increased use of intermodal shipping methods (Foster and Langer 2013).

We awarded a city up to 3 points based on the number of efficient intermodal facilities, defined as rail- or port-capable facilities, within its municipal boundaries per thousand ton-miles of regional freight, scaled by the city's portion of the regional population, as shown in table 53. Table 45 at the beginning of this chapter includes the freight scores for each city.

Table 53. Scoring methodology for intermodal freight facilities

Efficient intermodal facilities per thousand ton-miles of city freight traffic	Score (3 pts)
2 or more	3 points
1–1.999	2 points
0.50–0.999	1 point
> 0–0.499	0.5 points
0	0 points

Efficient intermodal facilities are defined as those that are rail- or port-capable. We estimate a city's freight traffic by normalizing total metropolitan freight traffic by the city's share of total metropolitan population. *Sources*: Data on intermodal facilities, 2012 National Transportation Atlas Database (BTS 2013). Data on metropolitan freight traffic from Freight Analysis Framework Data Tabulation Tool, 2011 preliminary (CTA 2014).

Leading Cities: Transportation Policies

Portland. The 2009 Portland Climate Action Plan, adopted by the city council, includes the goal to reduce per capita VMT by 30% from 2008 levels by 2030. Additionally, Portland set a goal to achieve 70% of commutes by transit, carpool, biking, or walking by 2030. This commute mode goal places heavy emphasis on the use of public transit and bicycle commuting in the future, aiming to increase their travel share to 25% each. The city has begun making changes to the Bicycle Master Plan, Streetcar System Plan, and overall Transportation System Plan to achieve these goals by 2030. The City of Portland zoning code encourages mixed-use and infill development along nearly all portions of the city's main commercial streets and throughout most of the central city. The zoning map also identifies specific mixed-use centers, which is consistent with the regional growth plan, Metro 2040. With these efforts, in combination with regional growth boundary legislation and the state-run complete-streets policy (which also applies to municipal streets), the city has made strides toward improving the overall efficiency of its transportation system.

Washington. Washington has made moves to improve the overall efficiency of its transportation system and particularly excels in the mode-shift category. Washington aims to achieve a 75% increase in commuter trips by transit, biking, and walking by 2032. To achieve this goal, the city has invested significantly in public transit facilities and hosts several car-share programs in addition to one of the most successful bike-share programs implemented recently, Capital Bikeshare. Washington's Transit Connectivity Index value is 84,736. The index measures the number transit rides available per week within walking distance of the average household. Washington's zoning code encourages mixed-use, transit-oriented, and infill development, and the city adopted a complete-streets policy in 2010 through Departmental Order 06-2010 to ensure that roads are accessible to all modes of transport.

Boston. Like Washington, Boston also excels in providing residents with alternatives to driving. With a VMT reduction target of 7.5% by 2020, Boston has been making an active effort to reduce driving overall within its city limits. The regional transit provider spends approximately $4.93 on transit per dollar spent on highways and parking, and more than 244,000 transit trips are available on a weekly basis within walking distance of the average household (CNT 2014). Boston has attracted a number of car-sharing services to the area. The city's bike-share program, Hubway, has also become very popular among residents and visitors and will soon be expanding to 92 stations across the city. Approximately 675,000 trips have been taken using Hubway bikes between 2011 and 2013 (J. Glickel, chief of staff, City of Boston, pers. comm., 2013). Boston has also invested significant time and money in providing commuters with incentives to use driving alternatives in the form of transit pass subsidies and shared shuttle services.

Jacksonville. As one of the most-improved cities in the transportation section in this edition, Jacksonville's score improved by 6.25 points for 2015. This improvement is tied to ACEEE's recognition of the city's 2030 Mobility Plan, which was adopted in 2011 under Ordinance 2010-879. The Mobility Plan includes a VMT per capita reduction target of 10% by 2030 along with a comprehensive multimodal plan to achieve that VMT reduction. Strategies in the plan range from increasing the density, mix, and connectivity of urban developments to investing in public transit, bicycle, and pedestrian facilities. Jacksonville also has a citywide smart growth zoning code in place that uses form-based codes.

Chapter 7. City Energy Performance: Examining Energy Consumption Data

Lead Authors: David Ribeiro and Sarah Zerbonne

INTRODUCTION

The majority of metrics we used to score cities in this report measured policies or other actions taken or supported by cities to promote energy efficiency. In contrast, the metrics in this chapter focus on a city's actual energy consumption and energy performance both citywide and in its local government operations. By energy performance we mean annual energy consumption levels that are normalized based on city population and compared against the city's previous energy consumption levels. We have not factored these metrics into city scoring in the *Scorecard*. They are included here, though, because an understanding of energy performance and how energy is used in a given city is critical for its strategic energy planning and evaluating the impact of its energy-related policies.

Our analysis is an early attempt to compare city energy performance across a selection of cities based on imperfect and incomplete energy consumption data. Generally, the analysis is limited due to self-reported data provided by cities in varying and nonstandardized formats. We see two major limitations to the data. First, the energy context and performance of any city is shaped not just by its policies, but also by the characteristics of its built environment, economy, regional energy supply, and climate, and how these factors change over time. Cities rarely account for the impact of these factors on their energy consumption when they publicly report their energy data.

Second, the availability and consistency of city energy data were limited. Cities are gaining a better understanding of their greenhouse gas (GHG) emissions, but it is still difficult to compare energy consumption across cities. Standards for developing city emissions and energy inventories are emerging, most notably the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC), but the adoption of these standards is still in its infancy and methodologies differ.[21] The energy data that cities self-report in GHG inventories, and which we rely on, are also difficult to validate. However these data remain the best sources, because EIA does not compile data on energy supply and consumption at the county, metro, or city level.

Perhaps the most comprehensive collection of city-level energy-related data is compiled by CDP (formerly the Carbon Disclosure Project) through their data requests completed by municipalities from around the world (CDP 2014). This dataset allows comparisons of GHG emissions among the largest cities, many of which are scored here in the *City Scorecard*. Disappointingly, though, few cities report the underlying energy consumption information used to estimate their greenhouse gas emissions in their inventories or in their reporting to organizations like CDP.

As a result of these data limitations, we cannot present a full comparative picture of energy consumption in all of the cities we assessed. However, where data were available from greenhouse gas inventories or CDP, we attempt to show the energy consumed within each city and identify trends in energy consumption. We also try to gauge the relationship between

[21] The GPC is an international accounting system that governments and businesses can use to calculate and manage their GHG emissions.

energy performance and *City Scorecard* scores. We conclude by making recommendations on ways cities could improve their energy data reporting going forward.

METHODOLOGY, LIMITATIONS, AND INTERPRETING RESULTS

For our analysis, we relied on energy consumption data reported in local government operations and citywide GHG inventories. None of the cities we assessed published standalone energy inventories for their energy consumption separate from their greenhouse gas inventories.[22] We also retrieved energy consumption data from the CDP Cities Database if cities did not publish energy consumption data in their own publications, but did report it to CDP.[23]

Using the energy consumption data available from inventories and US Census Bureau data on historic city populations (Census 2014), we calculated total citywide and local government operations energy use per capita and energy use per capita in specific end uses (including buildings and transportation). Energy consumption is often presented in terms of energy productivity or energy intensity, defined as energy consumption per unit of economic output. There was not an easily accessible measure of cities' gross domestic product for all of the years for which we have consumption data, so we chose to use population to normalize energy consumption. We display energy consumption levels for citywide and local government operations in figures 5 and 7 later in this chapter. We also include energy consumption per capita in the most recent year available for all cities with available data in table C6 in Appendix C.

There are two major limitations with our calculations due to data inconsistencies in the energy consumption data cities self-report. First, cities used different energy units to measure their consumption across similar sectors. For example, Boston reports its energy consumption by on-road vehicles in VMT, but Minneapolis reports its consumption by vehicles in gallons of diesel and gasoline consumed. We found similar issues in energy data reported for the buildings sector. We converted all energy units to a common unit, million British thermal units (MMBtus), so we could present energy consumption using a consistent measure.[24]

Second, different cities included different sectors in their inventories. To account for these differences, we included sectors in our calculations only if energy consumption in those sectors was widely reported by other cities. For citywide consumption, this meant we excluded energy used for waste management, air travel and airports, marine transportation, and transit system electricity use. For local government operations, we excluded energy used for airport operations, water delivery and wastewater treatment, streetlights, and employee commutes to work.

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[22] In response to our *City Scorecard* data request, city staff in Portland provided data on the city's energy consumption even though the data were not formally published.

[23] Some cities we evaluated have passed building benchmarking and transparency laws in recent years and have begun publishing energy consumption data from government buildings and large private buildings in compliance with those laws. However we did not use data from these reports because they capture only a selection of buildings and may not be representative of citywide building energy consumption. As these reports expand to include more buildings and other portions of the building stock, they may be a valuable resource we can use in future analyses.

[24] VMT were converted to Btus using the national average for passenger cars (5,342 Btus per VMT) and transit buses (35,953 Btus per VMT) as reported in the 2012 *Transportation Energy Data Book* (Davis et al. 2012, table 2.12). Population numbers used for per capita calculation are from the corresponding year in the US Census population estimates, accessed through American FactFinder or Census 2014.

For cities with multiple years of energy consumption data, we also calculated the average percentage change in energy consumption per capita. Cities should be primarily measured against trends in their own energy use because a variety of factors could skew comparisons across cities. Differences in each city's local context, such as the makeup of the existing building stock, the energy intensity of the local economy, and weather patterns, impact energy consumption patterns. Also, cities whose populations and economic activity increase over time may see higher energy consumption than do cities with stagnant growth. The data we use are taken from inventories that generally do not normalize for these factors, nor do we normalize the data to account for these changes.

Furthermore, data accuracy may vary. Some cities, including Boston and New York City, have released annual greenhouse gas inventories for several years. This familiarity with processes used in inventorying and publishing energy consumption could yield more accurate results due to a refined methodology, increased frequency of reporting, and improved data collection methods. Other cities have published a single report that inventories multiple years. As with any data-driven project undertaken for the first time, there is a larger chance of data quality issues and missteps in execution. Cities that rely on backcasting to establish a baseline energy consumption level are subject to further uncertainty. Finally, another major limitation is that the actual baseline year for each city's inventory differed substantially, from 1990 in one case to 2006 in another.

For these reasons, we caution against comparing the results on percentage change over time across cities. Instead, we recommend examining the results for each city against its results in other years. For ease of presenting the results, however, we display data from multiple cities in figures in the Results section. We display the results for citywide, transportation sector, and local government operations energy consumption in figures 8, 9, and 10 as the percentage change from the cities' first inventories (i.e., baseline year). We do not include figures on the percentage changes in energy consumption for private buildings, public buildings, and transportation related to local government operations.

RESULTS

Citywide Energy Consumption

Total citywide energy use (generally consisting of data from the transportation and building sectors) for at least 1 year was available from 14 cities—the same ones for which data were available for the *2013 Scorecard* plus Portland. As with the policies identified in the *City Scorecard*, we analyzed energy performance measures for multiple energy-using sectors. As shown in figure 4, the predominant energy end uses vary from city to city. Figure 4 shows the share of total energy consumption by the residential, commercial and industrial, and transportation sectors for the most recent year available from the 14 cities reporting energy data on each sector. The most recent year available generally ranged from 2005 to 2013 (see figure 5 for actual year of data). However San Diego was an outlier, with 1990 as the most recent year of available data.

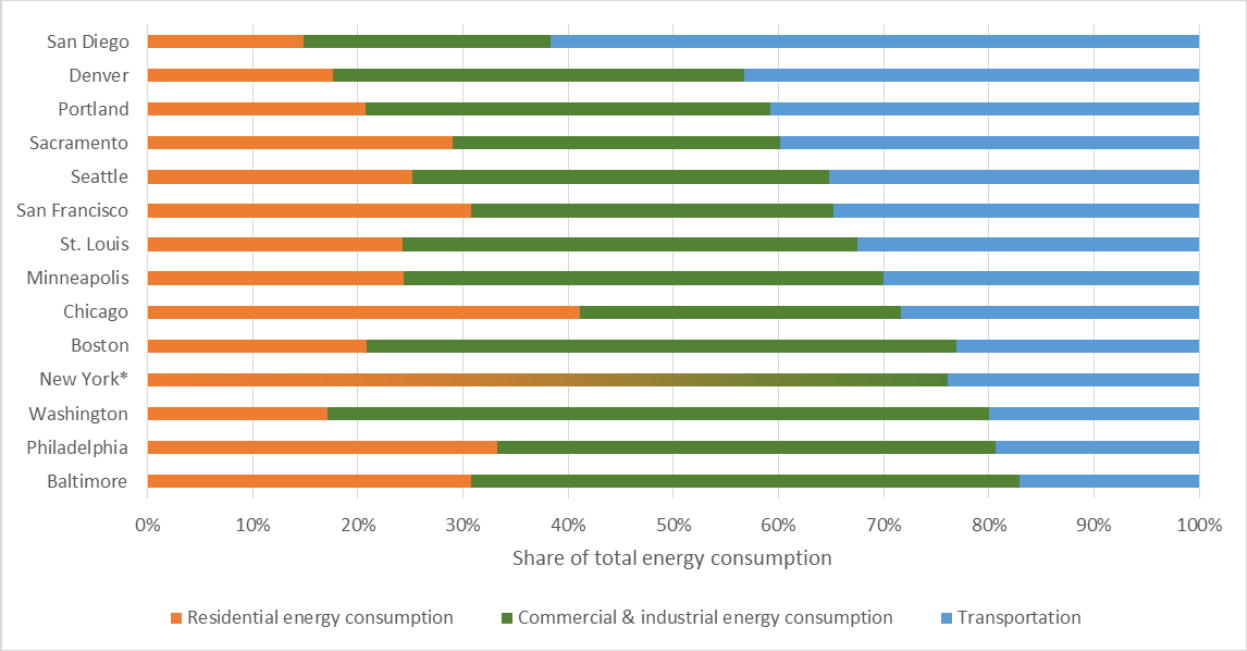

Figure 4. Share of citywide energy consumption by sector. Data shown are from the most recent year available from city greenhouse gas inventories. Differences in how individual cities classified sectors could lead to variations in which end uses are included in each of the different sectors. Several cities (including Boston and Philadelphia) do not report commercial and industrial (C&I) energy consumption separately, only combined C&I energy consumption. For this reason, we present only combined C&I for all cities even if they reported it separately in inventories. * New York building energy consumption is not available by sector; this is combined residential and C&I energy consumption. *Sources:* We gathered data on energy use levels in cities from the following greenhouse gas inventories and sustainability plans: San Diego 2005; Ramaswami et al. 2007; M. Armstrong, Portland Bureau of Planning and Sustainability, pers. comm., November 3, 2014; ICF Jones and Stokes 2009; Erickson and Tempest 2014; San Francisco 2010; St. Louis 2012; Minneapolis 2012; ICF International 2012; Boston 2013; Pasion, Amar, and Delaney 2014; District of Columbia 2010b; Dews and Wu 2012; Baltimore 2013b.

Residential and commercial/industrial buildings accounted for more than half of energy use in all the cities except San Diego. The commercial and industrial (C&I) sector contributed more to energy consumption than residential buildings in all of the cities except Chicago and possibly New York City.[25] On average, across these 13 cities, transportation accounted for 32% of total energy consumption while buildings accounted for 68%. To further break down the buildings sector, on average residential buildings account for 26% of total energy use and the C&I sector accounts for 42%.

Of the 14 cities whose total energy use data were available, only 6 released new reports with updated data since the last *Scorecard*. This indicates not only how sparse comprehensive citywide energy use data is, but also the difficulty in assessing current energy performance trends. None of the 17 new cities in the 2015 *City Scorecard* made their total citywide energy use from 1 or more years available in public reports. We do not know if the 17 new cities internally track their track their energy use and decided not to publish their data or simply do not track it. This is an area for further research. Several cities with GHG inventories reported emissions by sector, but did not provide the underlying energy use and therefore are not shown here. Nine additional cities reported energy use for one or more individual sectors, but not for the entire community.

[25] New York City does not differentiate between residential building energy consumption and commercial and industrial building consumption.

For the 14 cities with available data, we present their citywide energy consumption per capita from their most recent year inventoried in figure 5. The most recent inventoried year varies among the cities. For example, of all cities, New York City and Portland have the most recent year (2013) of published energy data, while San Diego was an outlier with its last reported data from 1990. As discussed earlier, this difference in reporting year is a limiting factor when comparing energy consumption across cities.

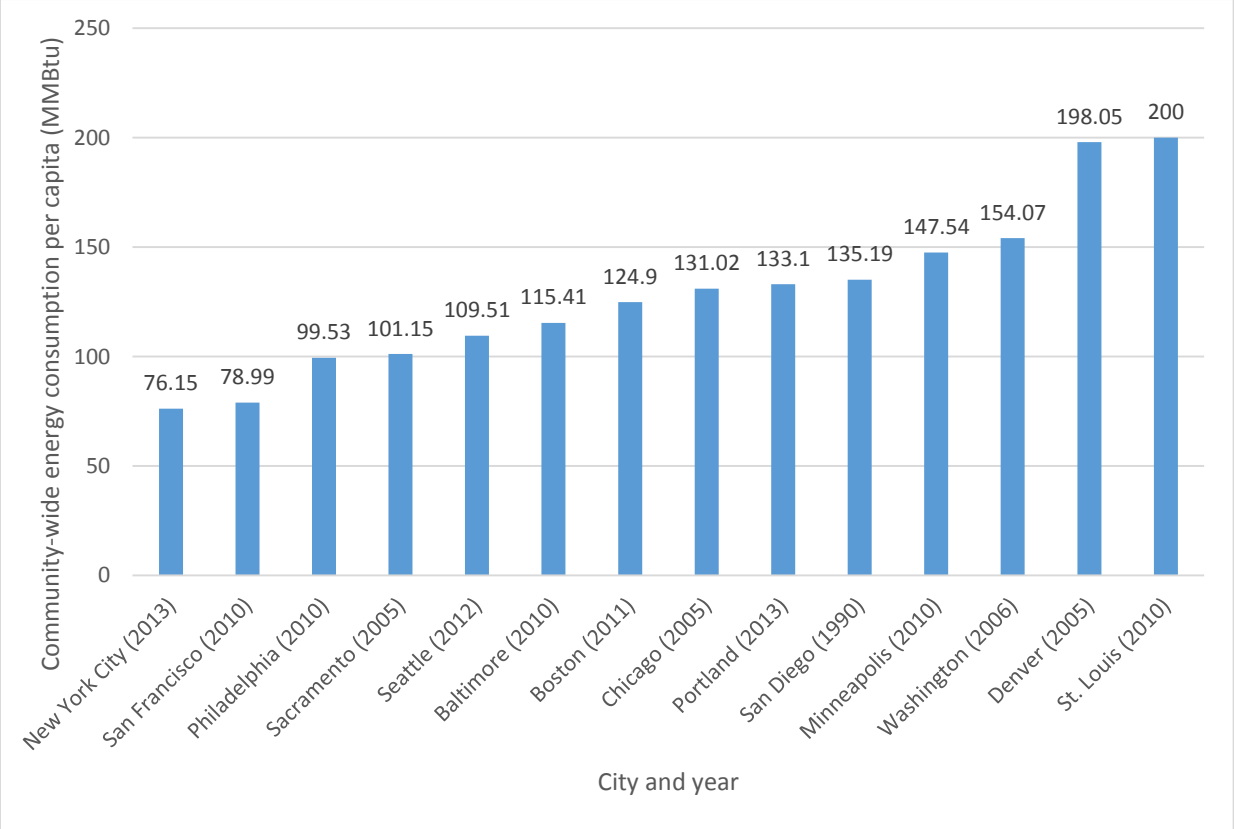

Figure 5. Citywide energy consumption per capita in most recent year available. See the Methodology section for the assumptions we used in the calculations and the limitations of the data. *Sources:* We gathered data on energy use levels in cities from the following greenhouse gas inventories and sustainability plans: Pasion, Amar, and Delaney 2014; San Francisco 2010; Dews and Wu 2012; ICF Jones and Stokes 2009; Erickson and Tempest 2014; Baltimore 2013b; Boston 2013; ICF International 2012; M. Armstrong, Portland Bureau of Planning and Sustainability, pers. comm., November 3, 2014; San Diego 2005; Minneapolis 2012; District of Columbia 2010b; Ramaswami et al. 2007; St. Louis 2012.

Of the 14 cities in figure 5, St. Louis and Denver reported the highest per capita energy consumption, while New York reported the lowest. It is noteworthy that the two cities with the lowest energy consumption per capita have some notable differences. Using the DOE's Building America program's climate zone delineations, New York and San Francisco are very different weather-wise; New York has a mixed-humid climate while San Francisco is in a marine climate (PNNL 2010). Marine climates generally have more moderate weather and require less heating in the winter and cooling in the summer than mixed-humid climates. The city with the lowest energy consumption per capita in a cold climate is Boston, whose energy consumption per capita exceeds that of New York by more than 50%. However, based on 2010 Census data, New York City and San Francisco had the highest population densities, whereas Denver and St. Louis had 2 of the 5 lowest population densities among the 14 cities (Census 2010). Denver and St. Louis are likely more sprawling and automobile dependent, whereas New York and San Francisco are more transit oriented. However it is clear that factors other than climate and

population also bear on energy consumption. Without a more robust analysis of these exogenous factors, we cannot pinpoint causes for different energy levels.

Transportation Energy Consumption

The energy consumption per capita for transportation varies widely among the 16 cities for which data were available. Raleigh consumes more than six times as much energy per capita than the cities with the lowest consumption: New York, Philadelphia, and Baltimore. Because transportation energy consumption is tied to location efficiency, it is not altogether surprising to see that Philadelphia's population density is larger than Raleigh's population density by a factor of 4 and New York City's is larger than Raleigh's by a factor of 9. Boston and San Francisco, which received the second- and third-highest transportation policy scores, respectively, also had among the lowest consumption. For the 16 cities with available data, figure 6 displays the transportation energy consumption per capita from their most recent year inventoried.

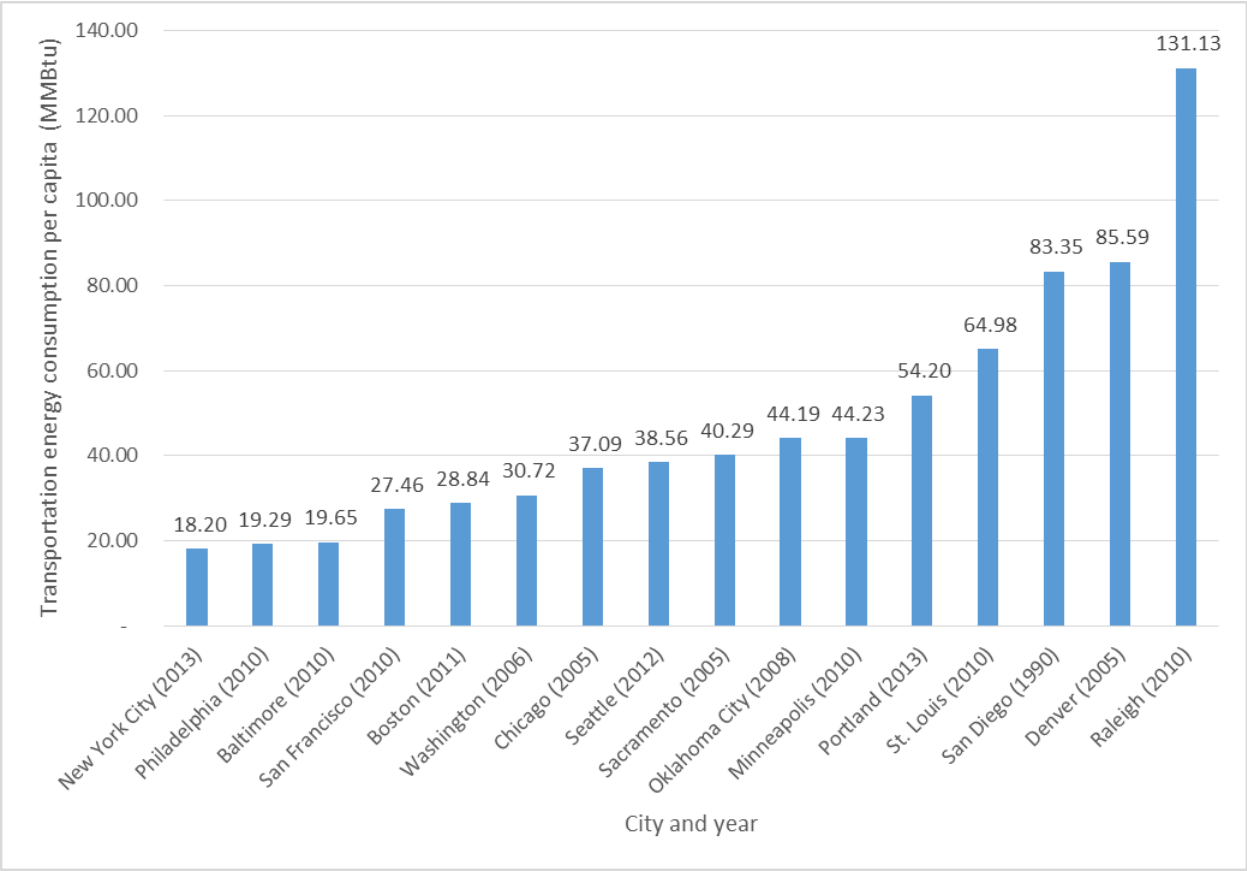

Figure 6. Citywide transportation energy consumption per capita in most recent year available. See the Methodology section for the assumptions we used in calculations and the limitations of the data. *Sources:* We gathered data on energy use levels in cities from the following greenhouse gas inventories and sustainability plans: Pasion, Amar, and Delaney 2014; Dews and Wu 2012; Baltimore 2013b; San Francisco 2010; Boston 2013; District of Columbia 2010b; ICF International 2012; Erickson and Tempest 2014; ICF Jones and Stokes 2009; First Environment 2010; Minneapolis 2012; M. Armstrong, Portland Bureau of Planning and Sustainability, pers. comm., November 3, 2014; St. Louis 2012; San Diego 2005; Ramaswami et al. 2007; CH2M 2012.

Local Government Operations Energy Use

Total local government operations energy use for at least one year was available from 13 cities. Several more cities with greenhouse gas inventories reported emissions by sector, but did not provide the underlying energy use and are therefore not shown here. Ten additional cities

reported energy use for one or more individual sectors, but not the entire local government. Ideally, we would normalize this data by a government-specific indicator, such as government employees or municipal floor space, but this was not widely reported in inventories. To normalize the data, we relied on citywide population. While it is an imperfect indicator, governments' sizes are somewhat proportional in size to the population of the constituency they serve and the year-to-year change in the ratio between these two variables for specific cities is small in most cases, so it is a suitable factor by which to normalize given the data limitations. The per capita total energy consumption figures we present include energy used for government buildings and public fleets.

Of the 13 cities for which at least one year of data was available, Louisville and Washington had the highest local government energy consumption per capita and Denver and Las Vegas had the lowest. As with the citywide energy consumption data, comparisons across cities may be skewed because the most recent inventoried year varies among the cities. For example, Washington's inventory is from 2006 and would not reflect recent improvements the city has made.

Figure 7 displays the local government operations energy consumption per capita from the most recent year inventoried for the 13 cities with available data.

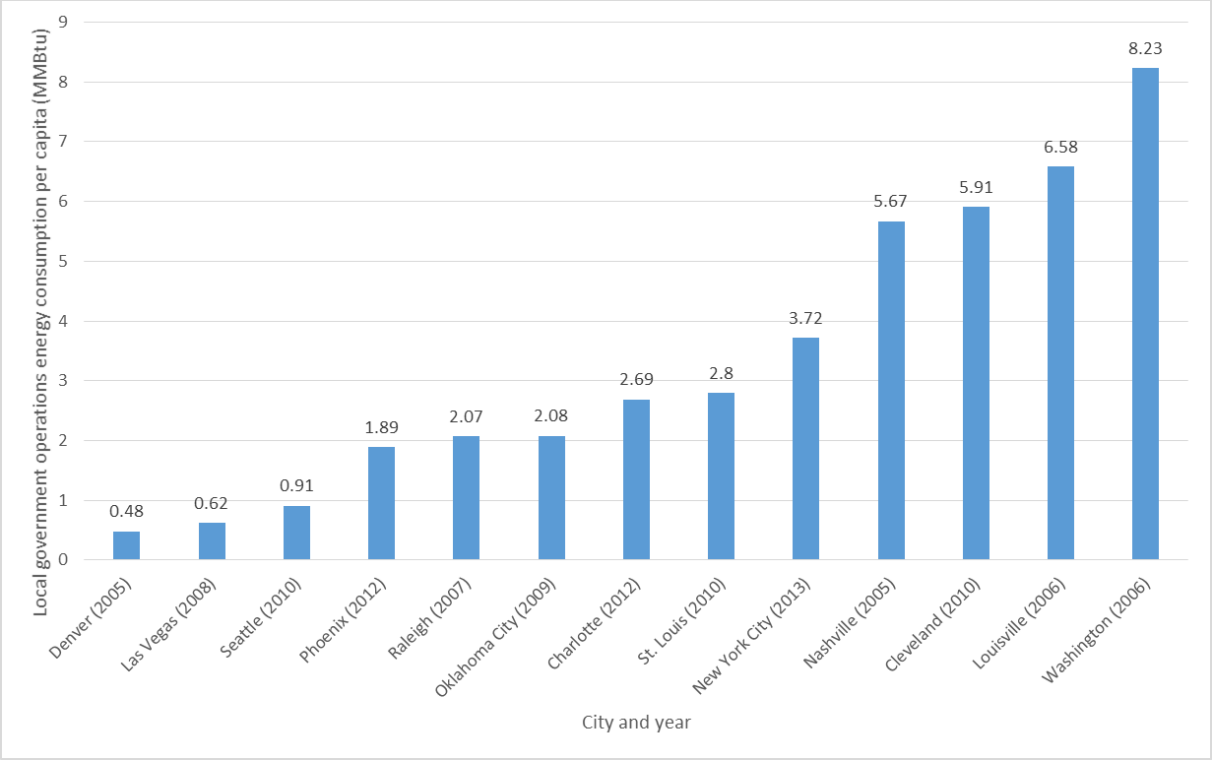

Figure 7. Local government operations energy consumption per capita in most recent year available. See the Methodology section for the assumptions we used in calculations and the limitations of the data. *Sources:* We gathered data on energy use levels in cities from the following greenhouse gas inventories and sustainability plans: Ramaswami et al. 2007, Las Vegas 2009, Seattle 2011, Walton Sustainability Solutions Initiatives 2013, CH2M 2012, First Environment 2010, Charlotte 2014, St. Louis 2012, Pasion, Amar, and Delaney 2014, Nashville 2009b, Cleveland 2013b, Trinity 2008, District of Columbia 2010b.

Consumption Trends over Time

While few cities had data for overall citywide energy consumption, fewer still had data for multiple years. Nine cities inventoried multiple years of energy consumption data. Figure 8

shows the percentage change in total energy consumption per capita from each city's baseline.[26] Figure 9 shows the percentage change in transportation energy consumption per capita for the 10 cities with available data and figure 10 shows the percentage change in local government operations energy consumption for the 6 cities with available data. As discussed earlier, there are many limitations and caveats to these data on trends over time. We present them here as initial results for further exploration, and make some initial observations.

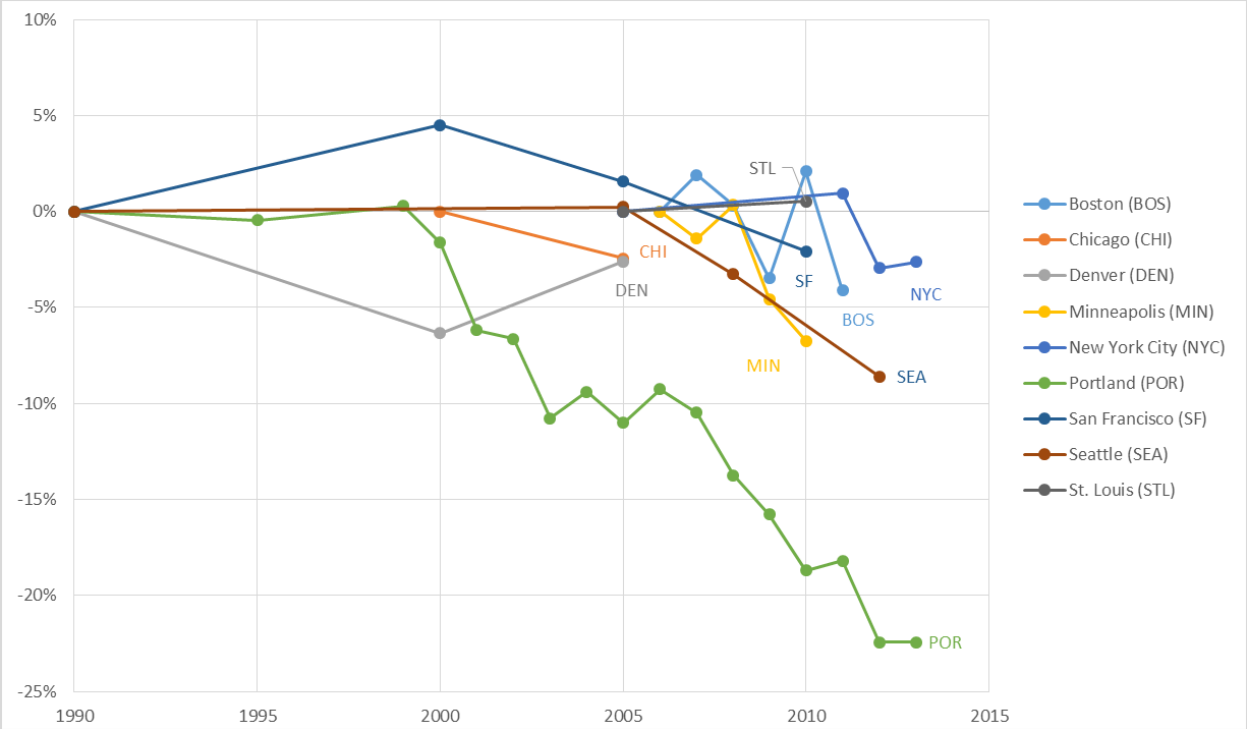

Figure 8. Percentage change in total citywide energy consumption per capita. Data shown are changes in total energy consumption as calculated from data reported in city greenhouse gas inventories excluding energy used for waste management, air transportation, marine transportation, and transit system electricity use. We calculated all percentage changes from levels in the baseline year. For those cities with more than two years' data, we calculated the percentage changes associated with the third and any subsequent data points from the baseline year rather than the preceding data point. *Sources:* We calculated the percentage change in citywide energy consumption per capita using data from the following sources: Boston 2013; ICF International 2012; Ramaswami et al. 2007; Minneapolis 2012; Pasion, Amar, and Delaney 2014; M. Armstrong, Portland Bureau of Planning and Sustainability, pers. comm., November 3, 2014; San Francisco 2010; Seattle 2012; St. Louis 2012.

Minneapolis, Seattle, and Portland experienced the largest percentage declines in energy consumption per capita. Minneapolis reduced citywide per capita energy consumption by an annual average of 1.69% over 4 years while Seattle reduced its energy use by an annual average of 0.39% over 22 years. However Seattle's energy consumption increased slightly between 1990 and 2005, until its consumption fell off sharply thereafter. Between 2005 and 2012, the city reduced its energy consumption per capita by 1.3% annually. Portland experienced the greatest overall reduction in citywide energy use with a steady, gradual annual average reduction of 0.98% over 23 years.

[26] National energy consumption is often presented in terms of energy productivity or energy intensity, defined as energy consumption per unit of economic output. Without an easily accessible measure of cities' gross domestic product for all of the years for which we have consumption data, we have chosen to use population to normalize energy consumption throughout this section.

Figure 8 shows the potential impact of exogenous factors on energy consumption. For example, cities that reported data during the low points of the Great Recession, between 2007 and 2009, namely Minneapolis, Boston, and Portland, saw reductions in their energy use. Other cities whose data bookends the depths of the recession may have also experienced reductions, although they were not captured in the reported data. Other exogenous economic and population trends also likely have an impact on the trends shown in figure 8.

For the cities for which data were available, we present trends in their transportation energy use per capita in figure 9. While San Francisco had among the lowest energy use per capita, they also had the third largest average annual increase in transportation energy use per capita (0.15%) among the 10 cities with available data. Overall, transportation energy increased in 4 of the 10 cities for which data were available. This is noteworthy given that demand for public transit is higher than it has been for the last 50 years. St. Louis and Minneapolis had the largest reductions in average annual transportation energy use per capita, 1.61% and 1.71% respectively. Overall, along with Portland, they were the only cities to decrease their energy use per capita by over 5% since their baseline years. Portland's transportation energy consumption per capita decreased by nearly 22% between 1990 and 2013.

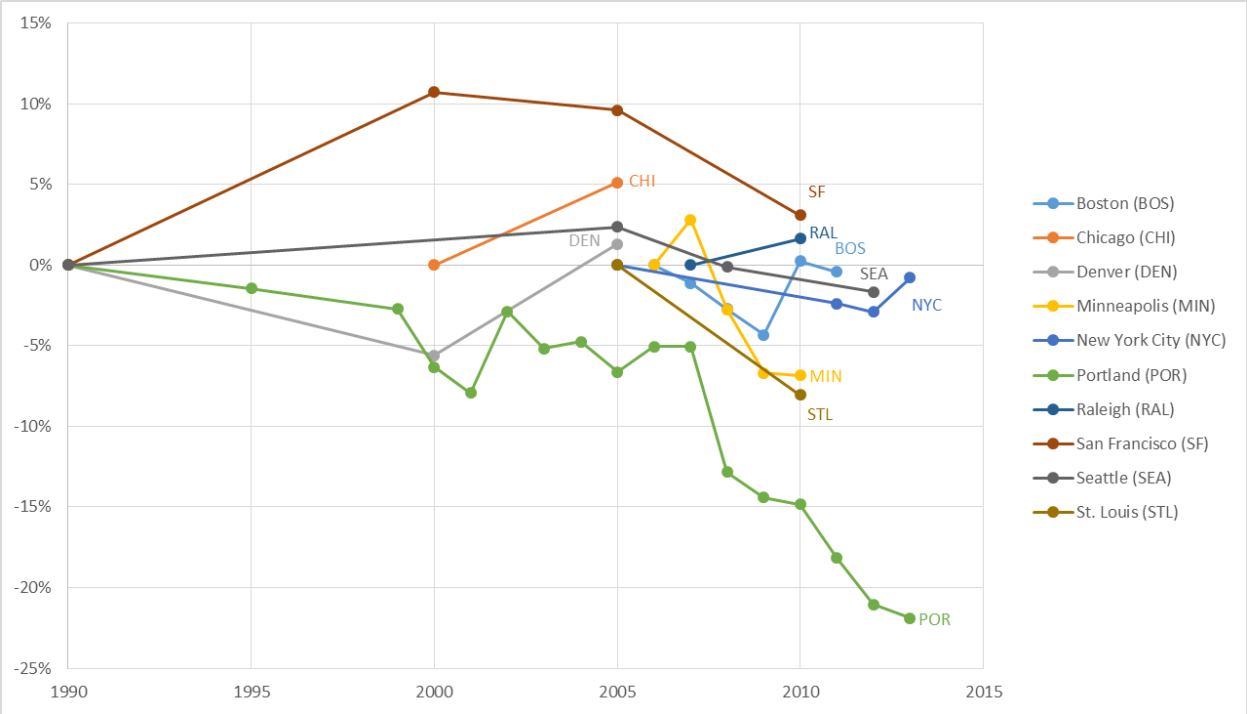

Figure 9. Percentage change in transportation energy consumption per capita. Data shown are changes in transportation-related energy consumption including both vehicle (on-road) and transit (off-road) transportation. Air travel and marine transport are not included. We calculated all percent changes from levels in the baseline year. For those cities with more than two years' data, we calculated the percentage changes associated with the third and any subsequent data points from the baseline year rather than the preceding data point. *Sources:* We calculated the percentage change in energy consumption per capita using data from the following sources: Boston 2013; ICF International 2012; Ramaswami et al. 2007; Minneapolis 2012; Pasion, Amar, and Delaney 2014; M. Armstrong, Portland Bureau of Planning and Sustainability, pers. comm., November 3, 2014; CH2M 2012; San Francisco 2010; Erickson and Tempest 2014; St. Louis 2012.

Figure 10 displays trends in energy consumption per capita in local government operations for the six cities with inventories from multiple years. Local government energy consumption per capita is trending in opposing directions for the six cities; three saw decreases from their baselines and the other three saw increases.

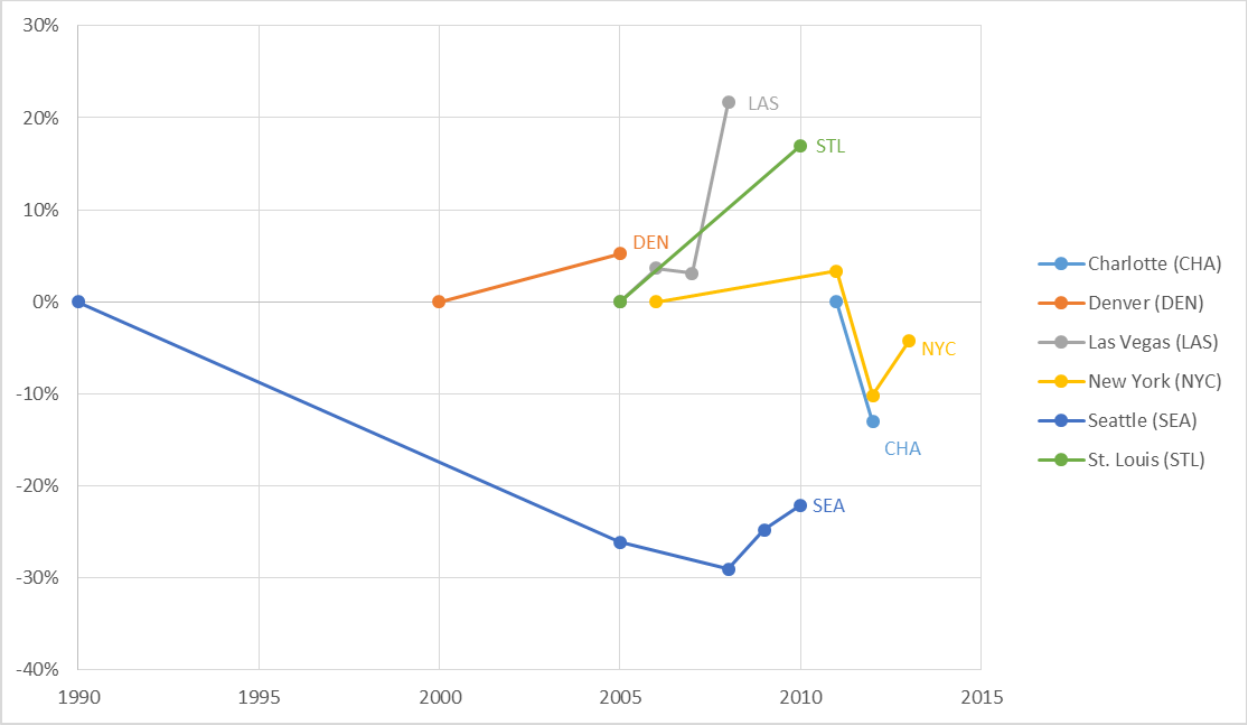

Figure 10. Percentage change in total local government energy consumption per capita. Data shown are changes in total local government operations energy consumption as calculated from data reported in city greenhouse gas inventories excluding energy used for airport operations, water delivery and wastewater treatment, streetlights, and employee commutes to work. We calculated all percentage changes from levels in the baseline year. For those cities with more than two years' data, we calculated the percentage changes associated with the third and any subsequent data points from the baseline year rather than the preceding data point. *Sources:* We calculated the percentage change in energy consumption per capita using data from the following sources: Charlotte 2014, Ramaswami et al. 2007, Las Vegas 2009, Pasion, Amar, and Delaney 2014, Papendick 2011, St. Louis 2012.

Most notably, Seattle, ranked fifth for its local government operations, reduced its local government energy use per capita by an average of 1% per year over 20 years. Las Vegas, ranked ninth for its local government operations, had the sharpest increase in average annual local government energy use per capita since its baseline, 7.23%. It is possible that Las Vegas's local government may have been expanding to keep pace with the city's and region's economic growth throughout the early 2000s, the magnitude of which was exemplified by the city's housing boom.

RELATIONSHIP BETWEEN SCORECARD RESULTS AND CITY ENERGY PERFORMANCE

Beyond looking at energy performance to ascertain trends in energy consumption, we also undertook a preliminary exploration to gauge whether relationships exist between energy performance and the policies captured in the *Scorecard*. Myriad data limitations, including data inconsistency, unavailability, and, potentially, lack of accuracy, make a more complete assessment difficult.

We compared energy consumption per capita metrics against *City Scorecard* scores either overall or for specific chapters to visually identify potential trends in and relationships between scores and performance metrics. We graphed available city data on the average annual change in energy consumption per capita and the most recent energy consumption per capita for transportation, local government operations, and buildings against their related *City Scorecard* scores. While we found some interesting results for the transportation sector, discussed next, we did not find any clear relationships between the other scores and energy performance metrics.

As discussed throughout this chapter, cities' energy performance data are nonstandardized, inconsistent, and sparse. Using these data to identify relationships between scores and energy performance could lead to varying results. Beyond data limitations, there are also pragmatic reasons that performance and scores may not be correlated. For example, cities that have enacted new policies may not have seen the expected savings from these policies yet, or their reporting is not recent enough to identify whether those savings have materialized. These uncertainties and questions indicate a need to continue exploring this relationship between energy performance and policymaking. As cities improve their data collection methods and make more data available, it will be worthwhile to revisit this analysis.

Transportation Sector

We present the results for the transportation sector in figure 11, which compares each city's recent transportation energy use per capita level against its *Scorecard* transportation scores.

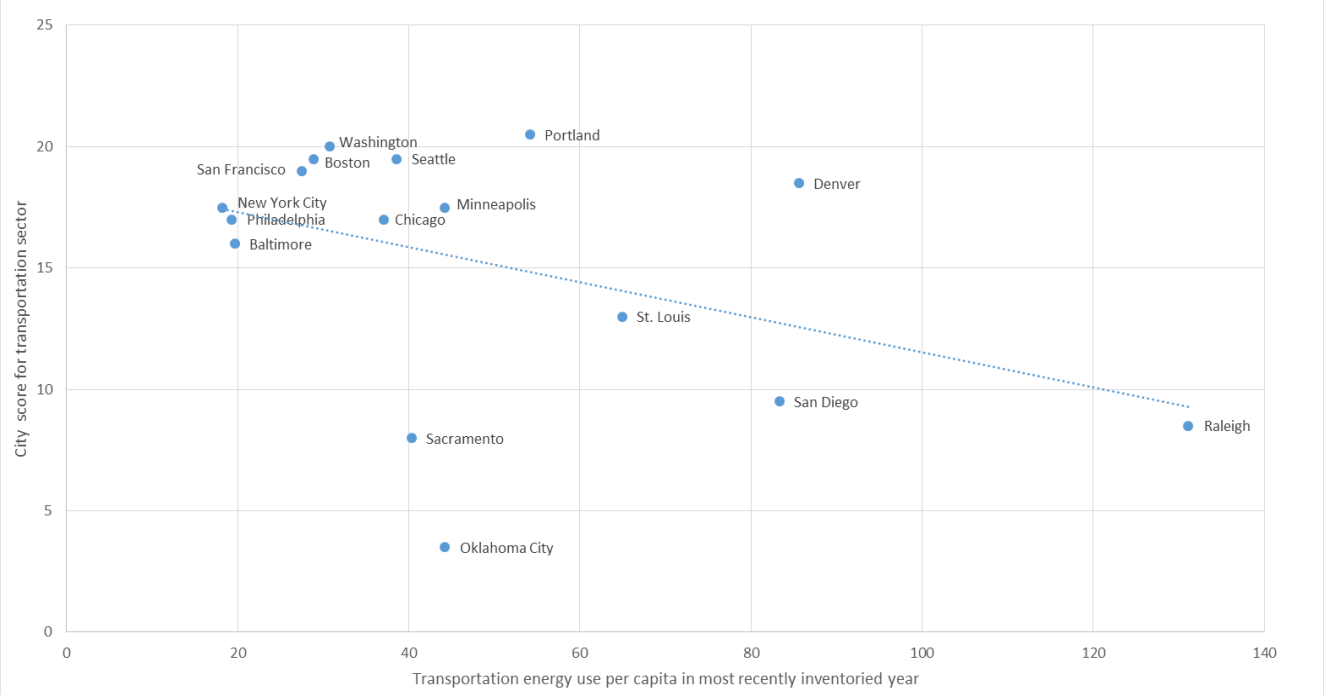

Figure 11. Transportation score and transportation energy consumption per capita in most recent inventoried year

The trend in the data is suggestive of a potential inverse relationship between the factors (i.e., many states with higher scores have lower per capita transportation energy usage). In the *2013 Scorecard*, we similarly found that various performance metrics related to the share of commuters using various modes of transportation were correlated with overall transportation scores. However the time lag between the score year and consumption data differs, and in some cases is quite lengthy. More important is that the time lag is highly variable among cities. For example, Chicago's, Denver's, and Sacramento's most recent energy consumption data are from 2005, but Portland and New York City provided data for 2013. The trend line is shown for expository purposes, but does not show cause and effect because many data points are showing different relationships between score and consumption.

Most cities with higher scores and lower transportation energy consumption per capita in figure 11, such as Philadelphia, Baltimore, and New York City, have more accessible transit systems than do cities with lower scores and higher consumption per capita, such as Raleigh. In those

higher-scoring cities, the average household has within walking distance more than 20,000 transit options available to them within a given week, while households in Raleigh have fewer than 10,000 rides available (CNT and American Rivers 2010). The higher-scoring cities also allocate a larger percentage of their regional transit funding per capita to public transit than to roads or highways, which was one of several policy metrics earning points in our scoring. Taken together, this means that higher-scoring cities may already have had expansive existing public transit systems due to historical investments and policy decisions and/or they are actively taking steps to prioritize investments in public transit. Similarly, higher-scoring cities tend to have more progressive parking policies and VMT-reduction or modal share targets to discourage overreliance on automobiles and encourage more diversity in mode options; these measures also earned cities points. Higher-scoring and relatively lower-energy-consuming cities on the Pacific coast, notably Portland and Seattle, have focused on location efficiency policies more than lower-scoring cities have.

The most prominent outlier from this trend is Oklahoma City, which received a low transportation sector score but also reported lower transportation energy consumption per capita relative to other cities with low scores. However, according to city staff, the energy data reported in their inventory was incomplete. This may mean that the city actually has higher transportation energy consumption per capita than is reflected in figure 11. Denver is another outlier from the trend. It received a high score but reported higher transportation energy consumption per capita relative to other cities with high scores. However its most recently inventoried year was 2005, which is a longer time span than that for most other cities reporting transportation energy consumption. Its transportation score represents the state of the city's current policy landscape, which may have changed since 2005.

RECOMMENDATIONS FOR IMPROVED DATA QUALITY

The issues we encountered in this analysis illustrate why we score cities based on their energy efficiency policymaking and adoption rather than on specific energy-related outcomes. The data quality is simply not mature enough to evaluate cities' efforts based on outcomes. Action on the following recommendations would allow us to provide a more robust analysis in the future:

- Cities that are not doing so already should begin to track their energy consumption for both the community at large and their local government operations. Monitoring energy consumption is the first step toward increased understanding of energy consumption patterns, and this knowledge can be leveraged to inform the policymaking process. Consistent annual tracking of energy consumption is preferable, but biennial or triennial tracking may also be sufficient.
- Cities should publish energy consumption inventories and break down the results by economic sector and end use, particularly for local government energy consumption. Many cities prioritize improved energy management in their own operations before initiating citywide efforts, which suggests that they also prioritize data collection.
- Cities that already conduct greenhouse gas inventories should publish the underlying energy consumption data that they used to estimate emissions.
- Data protocols for tracking and reporting community-level energy consumption metrics in a standardized format should be established. The protocols should stipulate the energy units in which to report energy consumption data and the common sector breakdowns for which cities should report usage.

Chapter 8. Conclusion

Cities around the country continue to show leadership on energy efficiency in transportation, buildings, energy and water utilities, local government operations, and community-wide initiatives. In the process, they are saving households and businesses money, creating jobs, and making their communities more resilient. Boston is at the forefront of cities that are pushing the envelope with strong energy efficiency policies, and others like New York and San Francisco are closing the gap.

Leading cities also face competition from several cities who have advanced in their energy efficiency efforts since we published the 2013 *Scorecard*. Washington DC made a substantial jump and moved into the top five. Los Angeles and Chicago also were among the most improved. Los Angeles established a strong energy savings goal and earned high marks in energy and water utilities, while Chicago adopted and implemented a benchmarking requirement for large buildings. Some cities in the bottom-scoring tiers of the 2013 *City Scorecard*, most notably Charlotte and Jacksonville, also improved their scores. These cities are poised to move up the rankings if they continue to make improvements.

Energy efficiency is an abundant resource in every city. Despite their considerable achievements, all cities—even the top five—have room to expand their efficiency efforts. In addition, there is a wide gap between the cities at the top of the *Scorecard* rankings and those near the bottom. Lower-scoring cities can improve in many areas. The challenge going forward for many communities is to prioritize efficiency activities that will have the greatest impact. We provide general recommendations for improving scores in Chapter 1 (pp. 17–19). Each city will need to develop or refine its own plan for advancing efficiency based on its own needs and priorities.

FUTURE EDITIONS

Future editions of the *City Energy Efficiency Scorecard* will again describe policy activity and note scores for individual cities and the sample group as a whole. In the next edition, we will be able to track changes in score and rank for all 51 cities included in this year's *Scorecard*, not merely the 34 we analyzed in the first edition. We will also continue to highlight the most-improved cities.

As we did for this edition, we will review and refine our scoring methodology based on expert and stakeholder comments and new developments in energy efficiency policy and technology. We plan to revisit our metrics for cities' energy efficiency goals and may evaluate their stringency in the chapters on local government operations and community-wide initiatives. We will also continue to refine our building code compliance metrics in the Buildings Policies chapter. Additionally, we will consider adding new metrics that recognize city and utility efforts to reach underserved segments (e.g., energy efficiency programs that target low-income households and affordable multifamily buildings).

This year's analysis of city energy performance in Chapter 7 was limited due to incomplete data from cities. We hope that reporting improves and becomes more accessible based on our recommendations for improving energy performance reporting.

APPLYING THE SCORECARD TO OTHER COMMUNITIES

Although the *City Scorecard* analyzes and scores efficiency activities only in the largest U.S. cities, it can be valuable to all local governments. Communities of all sizes can adopt or modify the policies we describe in the *Scorecard*, particularly the best practices. They can also go to our Local Policy Database for more policy information.

Our detailed scoring methodology can also be applied to all communities and every kind of local government. To help communities use our policy assessment methodology, ACEEE has developed the *Local Energy Efficiency Self-Scoring Tool* (Ribeiro and Mackres 2013). Policymakers and other local stakeholders can use this spreadsheet-based tool to evaluate their own communities' energy efficiency efforts. They can generate scores based on the metrics we use in the *Scorecard*, and they can compare their community's performance to that of similar communities. To date, 18 local governments have used the *Self-Scoring Tool.* We will be updating it over the next few months to match the scoring methodology used in this edition of the *Scorecard*.

Together with the other organizations cited in the *Scorecard*, ACEEE is committed to supporting communities' actions to improve efficiency. We will go on providing technical assistance in efficiency policy and programming, based in part on the results of the *Scorecard* and the *Self-Scoring Tool.* We will also continue to pursue research on best practices and new ways to bring energy efficiency to the forefront of local policy action.

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Appendix A. Scoring Overview and Summary of Methodology Improvements

METHODOLOGY IMPROVEMENTS

We reviewed the methodology we used in 2013 as we prepared for the *2015 Scorecard.* We made several improvements based on comments from the 2013 reviewers and the lessons we learned in publishing the first edition. Table A1 presents point changes to metric categories. We describe specific metric improvements in the paragraphs that follow the table.

Table A1. Scoring by policy areas and their subcategories with changes in scoring methodology

Policy area and subcategories	Maximum score	Difference in score from 2013
Local government operations	15	
Local government energy efficiency (EE) goals	4	
Development and implementation of EE goals	2	
On track to meet goals	2	+2
Performance management	2.5	–1.5
Dedicated funding or integrated into capital planning	0.5	
Annual public reporting	0.5	
Third-party EM&V	0.5	
Dedicated staff	0.5	
Departmental/staff incentives	0.5	
Procurement and construction policies	3.5	–0.5
Fuel efficiency requirement	1	
Right-sizing and anti-idling policies	0.5	
Outdoor lighting standards	1	
Above-code requirements for public buildings	0.5	
Energy-efficient procurement policy	0.5	
Asset management	5	–1
Building benchmarking	1	
Comprehensive retrofit strategy	1	
Fix-it-first or life-cycle cost policy	2	+1
Teleworking or flex schedules for employees	0.5	
Transit benefits for employees	0.5	
Community-wide initiatives	10	
Community-wide energy efficiency goals	4	
Development and implementation of EE goals	2	
On track to meet goals	2	+2
Performance management	2	–1
Annual reporting	0.5	
Independent EM&V	0.5	
Dedicated funding	0.5	
Dedicated staff	0.5	
Efficient distributed energy systems	2.5	
CHP and district energy	1.5	–1.5
Planning for future district energy	1	+1
Urban heat island mitigation strategy	1.5	–0.5

Policy area and subcategories	Maximum score	Difference in score from 2013
Buildings policies	29	
Building energy code stringency	6	
Commercial	3	
Residential	3	
Building energy code compliance	6	
Spending on compliance	2	
Code inspector training	1	+1
Up-front code support	1	–1
Third-party compliance programs	2	
Requirements and incentives for efficient buildings	9	
Building energy savings target for private buildings	1	
Above-code green building requirements	2	
Retrofit requirements	2	
Energy audit requirements	1	
Incentives or finance programs	3	
Benchmarking, rating, and transparency	6	
Commercial	3	
Residential	3	
Comprehensive efficiency services	2	
Energy and water utilities	18	
Electric efficiency spending	4	
Natural gas efficiency spending	2	–1
Electric savings	2	
Natural gas savings	1	+1
EE targets and funding agreements	2	
Energy data provision	2	
Customer data access	0.5	
Aggregated building data access	0.5	
Community-wide data access	0.5	
Advocacy efforts related to utility energy data	0.5	
Efficiency efforts in water services	5	
Water efficiency	2	
Energy efficiency in water services	2	
Green stormwater infrastructure	1	
Transportation policies	28	
Location efficiency	8	
Location-efficient zoning	2	
Parking requirements	2	
Complete streets	2	
Incentives and information	2	
Mode shift	8	
Travel modal targets and strategy implementation	4	
Transportation demand management programs	2	
Car sharing	1	
Bicycle sharing	1	
Transit	6	
Transportation funding	4	
Access to transit services	2	
Efficient vehicles and vehicle behavior	3	

Policy area and subcategories	Maximum score	Difference in score from 2013
Vehicle purchase incentives	0.5	–0.5
Vehicle infrastructure incentives	0.5	
EVSE charging locations	0.5	+0.5
Anti-idling policies	0.5	
Transportation partnerships	1	
Intermodal freight facilities	3	
Maximum total score	**100**	

In the **Local Government Operations** chapter, we score cities based on their progress toward their energy efficiency goals for their local government operations. In this edition, we allocated an addition point to the "on track to meet goals" metric and shifted it from the Performance Management category to the Local Government Energy Efficiency Goals category. Also, in the last edition, we allowed qualitative assessments from city staff to serve as the basis of our scoring for the metric. In the 2015 edition, cities needed to provide quantitative data on their progress so we could independently forecast whether they were on track for their goals. In the Performance Management category, we consolidated the "public outreach" and "annual public reporting" metrics because we were using similar criteria to score cities on these metrics. Similarly, we had two separate metrics evaluating outdoor lighting standards in the *2013 Scorecard*, but we consolidated them into one "outdoor lighting standards" metric that required efficient lighting and lighting control provisions for full points. Also, in the *2013 City Scorecard*, we awarded cities points based on the percentage of their capital budgets devoted to the maintenance of existing assets or distributed infrastructure, as opposed to new infrastructure or major expansions. We did not score cities on the same metric this year because of the difficulty in collecting consistent budget data across all the cities in the *Scorecard*, so we put more emphasis on our sustainable infrastructure policy metric by giving it one more point. Lastly, in the *2013 City Scorecard*, we included a metric that gave points to cities if local governments made electric-vehicle-charging stations available to private or public vehicles. For this edition, we shifted the metric to Chapter 6, Transportation Policies.

As in the Local Government Operations chapter, we put more emphasis on city progress toward community-wide energy efficiency–related goals in the **Community-Wide Initiatives** chapter by giving the "on track to meet goals" metric one more point. We also shifted it from the Performance Management category to the Community-Wide Energy Efficiency Goals category. In the past edition, we measured cities based only on their existing CHP and district energy capacities. In this edition, we created a new set of metrics evaluating cities on their efforts to plan for future distributed energy systems. To make room for the new metric, we removed 0.5 points from the existing "CHP and district energy" and the "urban heat island metric mitigation strategy" metrics. We also updated the urban heat island metric to evaluate cities based on their urban heat island goals and strategies rather than only on their policies and programs.

In the **Buildings Policies** chapter, the Building Energy Code Compliance category retains the same number of possible points, but includes a new metric on "code inspector training" in this edition. In the Building Energy Code Stringency category, we provide a bonus point to cities for participating in the International Code Council model energy code development process. We also updated the comprehensive efficiency services metric to evaluate services in both the

residential sector and the commercial sector rather than only in the commercial sector, as we did in the last edition.

In the **Energy and Water Utilities** chapter, we now offer 1 point based on the amount of energy saved through natural gas utility ratepayer efficiency programs, having shifted this point from the "natural gas efficiency spending" metric. We also updated the scoring tiers in the "electric efficiency spending," "natural gas efficiency spending," and "electric savings" metrics to award higher levels of spending and savings. For example, in the *2013 Scorecard*, cities earned full points if their utilities' spending as a percentage of their annual revenue was 2.5% or higher, but in this edition, they needed to achieve 4% or higher for full points. Our thresholds match those used for similar metrics in the *2014 State Energy Efficiency Scorecard*.

The **Transportation Policies** chapter saw two changes in scoring. The "electric vehicle charging locations" metric was moved to this chapter from the Local Government Operations chapter and expanded in scope so cities could earn credit if they had implemented an incentive program to support the installation of electric-vehicle-charging infrastructure. To accommodate the newly moved metric, the "vehicle purchase incentives" metric was reduced by 0.5 points. We also adjusted the "travel modes targets and strategy implementation" metric. In the last edition, cities could earn points for this metric only if they first established travel mode targets and then developed plans to achieve the targets. In this edition, cities could earn points for having a plan to reduce VMT even if they had not yet established and adopted specific travel mode targets.

Appendix B. Data Request Respondents

Table B1. Cities' data request respondents

City	State	Primary local government data request respondent	Electric utility data request respondent	Natural gas utility data request respondent
Atlanta	GA	Jairo H. Garcia, Sustainability Management Analyst, Mayor's Office of Sustainability	Michele Wagner, Energy Efficiency, Georgia Power	—
Austin	TX	Jenell Moffett, Senior Business Systems Analyst, Office of Sustainability	—	—
Baltimore	MD	Alice Kennedy, Sustainability Coordinator, Office of Sustainability	Ruth Kiselewich, Director of Demand Side Management Programs, Baltimore Gas and Electric	BGE also provides natural gas service to Baltimore
Birmingham	AL	—	Hal Wadsworth, Marketing Birmingham Division, Alabama Power	—
Boston	MA	Jacob Glickel, Chief of Staff, Environment, Energy and Open Space	James Cater, Renew Boston Utility Program Liaison, Northeast Utilities	Marie Abdou, Policy and Evaluation—Massachusetts Strategy, National Grid
Charlotte	NC	Darcy Everett, Energy and Sustainability Fellow, Neighborhood and Business Services	Cassandra Springer, Customer Planning and Analytics, Program Performance, Duke Energy	—
Chicago	IL	Aaron Joseph, Deputy Sustainability Officer, Office of the Mayor	George Malek, Director, ComEd Energy Efficiency	Patrick Michalkiewicz, Manager, Energy Efficiency and Major Accounts, Peoples Gas and North Shore Gas
Cincinnati	OH	Jeremy Faust, Strategic Business Development Director, Greater Cincinnati Energy Alliance	Cassandra Springer, Customer Planning and Analytics, Program Performance, Duke Energy	—
Cleveland	OH	Anand Natarajan, Energy Manager, Mayor's Office of Sustainability	Eren Demiray, Manager, Energy Efficiency Reporting, First Energy	Vicki Friscic, Director, Regulatory and Pricing, Dominion East Ohio
Columbus	OH	Erin Miller, Environmental Steward, Mayor's Office	Sherry Hubbard Research and Development Coordinator, Energy Efficiency/Demand Response, AEP Ohio	Sarah Poe, Team Leader, Evaluation Demand Side Management, Columbia Gas of Ohio
Dallas	TX	Kevin Lefebvre, Senior Environmental Coordinator, EMS and	Bruce Blackburn, Senior Program Manager, Oncor	—

City	State	Primary local government data request respondent	Electric utility data request respondent	Natural gas utility data request respondent
		Sustainability, Office of Environmental Quality		
Denver	CO	Sonrisa Lucero, Sustainability Strategist, Office of Mayor Michael B. Hancock	Peter Narog, Manager, DSM Policy and Strategy Marketing and Corporate Communications, Xcel Energy	Xcel also provides natural gas service to Denver
Detroit	MI	Paul Max, Environmental Affairs, Buildings, Safety Engineering and Environmental Department	Jason Kupser, Principal Supervisor, Marketing, DTE Energy	DTE also provides Detroit with natural gas service
El Paso	TX	Lauren Baldwin, Sustainability Program Specialist, General Services	Susanne Stone, Manager, Energy Efficiency, El Paso Electric	—
Fort Worth	TX	Samuel Gunderson, Conservation Specialist, Transportation and Public Works	Bruce Blackburn, Senior Program Manager, Oncor	—
Hartford	CT	—	Geoff Embree, Research Analyst, Energy Efficiency, Northeast Utilities	Alfred Mascola, Principal Analyst, Business Services, Connecticut Natural Gas
Houston	TX	Lisa Lin, Sustainability Manager, Office of the Mayor	Calvin Burnham, Staff Consulting Engineer, Energy Efficiency Programs, Centerpoint	CenterPoint also provides Houston with natural gas service
Indianapolis	IN	David Hirschle, Project Manager, Office of Sustainability	Jake Allen, DSM Program Development Manager, Indianapolis Power and Light	—
Jacksonville	FL	Nicholas Zelaya, Finance Coordinator Public Works Department	Virginia Perez, Business Client Relationships, JEA	Roxanne Gilmore, Rate Analyst Electric and Gas DSM, Regulatory Affairs, TECO
Kansas City	MO	Jerry Shechter, Sustainability Coordinator, Office of the City Manager, Office of Environmental Quality	—	Bob Painter, Energy Efficiency Programs, Missouri Gas Energy
Las Vegas	NV	Marco N. Velotta, Office of the City Manager, Administration Office of Sustainability	—	Brooks Congdon, Manager, Research/Conservation/DSM, Southwest Gas
Los Angeles	CA	Hilary Firestone, Senior Project Manager,	Gretchen Hardison, Efficiency Solutions, LADWP	—

City	State	Primary local government data request respondent	Electric utility data request respondent	Natural gas utility data request respondent
		Energy Efficiency, Budget and Innovation Team, Office of the Mayor		
Louisville	KY	Andrea M. Webster, Project Coordinator, Office of Sustainability	Rick Lovekamp, Manager, Regulatory Affairs, Louisville Gas and Electric	LGE also provides Louisville with natural gas service
Memphis	TN	------	Robert Johnston, Supervisor, Residential Services, Memphis Light, Gas, and Water Division	MLGW also provides Memphis with natural gas service
Miami	FL	Glen Hadwen, Environmental Programs Manager, Office of Sustainable Initiatives	—	—
Milwaukee	WI	Erick Shambarger, Deputy Director, Office of Environmental Sustainability	Brian C. Lambert, Director of Utility and Customer Services, Project Manager, Energy Programs, Environmental and Infrastructure, Focus on Energy	Focus on Energy also administers natural gas efficiency programs to Milwaukee
Minneapolis	MN	Brendon Slotterback, Sustainability Program Coordinator	Peter Narog, Manager, DSM Policy and Strategy Marketing and Corporate Communications, Xcel Energy	Nick Mark, Manager, Conservation and Renewable Energy Policy, CenterPoint Energy
Nashville	TN	Laurel Creech, Chief Service Officer, Mayor's Office of Environment and Sustainability	—	—
New Orleans	LA	Charles E. Allen III, Coastal and Environmental Affairs	Derek Mills, Entergy New Orleans	Entergy also provides New Orleans with natural gas service
New York City	NY	Leanne Enecio, Buildings and Energy Efficiency Intern, Mayor's Office of Long-Term Planning and Sustainability	Michael Harrington, Section Manager, Market Research and Analytics, Energy Efficiency and Demand Management, Consolidated Edison	Christopher Yee, Associate Analyst, Program Strategy—New York, National Grid; Ruth Horton, Senior Advisor for Strategic Initiatives, New York State Energy Research and Development Authority (NYSERDA)
Oklahoma City	OK	T. O. Bowman, Office of Sustainability	------	------
Orlando	FL	Chris Castro, Community Energy Program Manager,	Luz B. Aviles, Director, Sustainability, Orlando Utilities Commission	Roxanne Gilmore, Rate Analyst, Electric and Gas DSM, Regulatory Affairs, TECO

City	State	Primary local government data request respondent	Electric utility data request respondent	Natural gas utility data request respondent
		Senior City Adviser, City Energy Project, Office of Sustainability and Energy		
Philadelphia	PA	Alex Dews, Policy and Program Manager, Mayor's Office of Sustainability	Marina Geneles, Energy and Marketing Services, EM&V, Exelon PECO	Elliott Gold, Philadelphia Gas Works
Phoenix	AZ	Tina Imig, Energy Billing Analyst, Public Works Facilities Management Division	—	Brooks Congdon, Manager, Research/Conservation/DSM, Southwest Gas
Pittsburgh	PA	Aftyn Giles, Sustainability Coordinator, Office of the Mayor	—	Rita F. Urbaniak, Manager, Customer Relations, Peoples Natural Gas Company
Portland	OR	Michael Armstrong, Senior Sustainability Manager, Bureau of Planning and Sustainability	Fred Gordon, Director of Planning and Evaluation, Energy Trust of Oregon	Energy Trust of Oregon also administers natural gas efficiency programs to Portland
Providence	RI	Dino Larson, Energy Manager, Office of Sustainability	Jeremy Newberger, Manager, Energy Efficiency Policy and Evaluation, National Grid	—
Raleigh	NC	—	Cassandra Springer, Customer Planning and Analytics—Program Performance, Duke Energy	—
Richmond	VA	Amy George, Sustainability Management Analyst II	Bill Byrd, Director, Corporate Public Policy, Dominion Resources	—
Riverside	CA	Ryan Bullard, Sustainability Officer and Principal Account Manager, Riverside Public Utilities	R. Bullard also completed the electric response on behalf of Riverside PUC	—
Sacramento	CA	—	—	—
Salt Lake City	UT	Peter Nelson, Sustainability Coordinator, Division of Sustainability and the Environment	Michael S. Snow, Manager, Regulatory Projects, Demand-Side Management, PacifiCorp	—
San Antonio	TX	Liza C. Meyer, Office of Sustainability	John Durland, Program Manager, Residential Energy Efficiency, CPS Energy	CPS also provides San Antonio with natural gas service
San Diego	CA	—	—	—
San Francisco	CA	Cal Broomhead, Climate and Energy Programs Manager,	Amy Dao, Community Energy Manager, Sustainable Communities,	PG&E also provides San Francisco with natural gas service

City	State	Primary local government data request respondent	Electric utility data request respondent	Natural gas utility data request respondent
		Department of the Environment	Pacific Gas and Electric Company	
San Jose	CA	Michael Foster, Supervisor, Energy and Solar Programs	Sapna Dixit, Community Energy Manager, Sustainable Communities, Pacific Gas and Electric Company	PG&E also provides San Jose with natural gas service
Seattle	WA	Christie Baumel, Energy Policy Advisor, Office of Sustainability and Environment	Brendan O'Donnell, Energy Planning Analyst, Conservation Resources Division, Seattle City Light	Syd France, Manager, EE Programs Support, Energy Efficiency Services, Customer Energy Management, Puget Sound Energy
St. Louis	MO	—	Dan Laurent, Director, Energy Efficiency and Renewables, Ameren Missouri	Jim Travis, Energy Efficiency Program Specialist, Laclede Gas Company
Tampa	FL	—	Mark Roche, TECO	TECO also provides Tampa with natural gas service
Virginia Beach	VA	Lori J. Herrick, Energy Management Administrator	Bill Byrd, Director, Corporate Public Policy, Dominion Resources	Rachelle Whitacre, Director, Regulatory Affairs, Virginia Natural Gas
Washington	DC	Taresa Lawrence, Deputy Director, District Department of the Environment, Energy Administration	Wayne A. Hudders, Manager, Program Design and Evaluation, Pepco Holdings, Inc.; Robert Stephenson, Technical Energy Analyst Evaluation, Measurement and Verification Services, Vermont Energy Investment Corporation, for District of Columbia Sustainable Energy Utility	DC SEU also administers natural gas efficiency programs to Washington

Appendix C. Additional Tables on Policies, Results, and Energy Performance

Table C1. City scoring on energy-related goals for local government operations

City	State	Nearest-term local government operations goal	Formally adopted	Main-streamed	Goal score (2 pts)	Projected reduction in target year [a]	Progress score (2 pts)	Total score (4 pts)
Boston[1]	MA	25% GHG emissions reduction by 2020 from 2005 baseline	•	•	2	50%	2	4
Dallas[2]	TX	39% carbon emissions reduction community-wide by 2017 from 1990 baseline (including government operations)	•	•	2	93% [b]	2	4
Denver[3]	CO	6% GHG emissions reduction by 2020 from 2011 levels and 20% energy use reduction by 2020 from 2012 baseline [c]	•	•	2	25% and data not available to evaluate	2	4
New York City[4]	NY	30% GHG emissions reduction by 2017 from 2005 baseline	•	•	2	35%	2	4
El Paso[5]	TX	30% energy use reduction by 2014 from 2008 levels	•		1.5	37%	2	3.5
Las Vegas[6]	NV	20% GHG emissions reduction by 2020 from 2008 baseline and 20% energy use reduction by FY2016 from 2008 baseline	•		1.5	78% and data not available to evaluate	2	3.5
Minneapolis[7]	MN	1.5% annual GHG emissions reduction	•		1.5	18% [d]	2	3.5
Phoenix[8]	AZ	5% GHG emissions reduction by 2015 from 2005 baseline [e]	•		1.5	10%	2	3.5
Austin[9]	TX	100% GHG emissions reduction by 2020 from 2007 baseline	•	•	2	79%	1	3
Houston[10]	TX	36% GHG emissions reduction by 2016 from 2007 baseline			1	64%	2	3
Salt Lake City[11]	UT	13% energy use reduction by 2015 from 2008 levels	•	•	2	10%	1	3

City	State	Nearest-term local government operations goal	Formally adopted	Main-streamed	Goal score (2 pts)	Projected reduction in target year [a]	Progress score (2 pts)	Total score (4 pts)
Washington[12]	DC	30% GHG emissions reduction goal by 2020 from 2006 baseline			1	65%	2	3
Pittsburgh[13]	PA	20% GHG emissions reduction community-wide by 2023 from 2003 baseline (including government operations)	•	•	2	Data not available to evaluate	0	2
Portland[14]	OR	50% GHG emissions reduction by 2030 from 1990 baseline	•	•	2	Data not available to evaluate	0	2
Richmond[15]	VA	1% annual energy use reduction (starting in 2008)	•	•	2	Data not available to evaluate	0	2
San Francisco[16]	CA	25% GHG emissions reduction by 2017 from 1990 baseline	•	•	2	Data not available to evaluate	0	2
Baltimore[17]	MD	30% energy use reduction by 2022 from 2006 baseline and 15% GHG emissions reduction by 2020 from 2007 baseline	•		1.5	–6% and data not available to evaluate	0	1.5
Cincinnati[18]	OH	2% annual GHG emissions reduction	•		1.5	Data not available to evaluate	0	1.5
Kansas City[19]	MO	30% GHG emissions reduction by 2020 from 2000 baseline	•		1.5	Data not available to evaluate	0	1.5
Miami[20]	FL	25% GHG emissions reduction by 2015 from 2007 baseline	•		1.5	Data not available to evaluate	0	1.5
Nashville[21]	TN	20% GHG emissions reduction by 2020 from 2005 baseline	•		1.5	Data not available to evaluate	0	1.5

City	State	Nearest-term local government operations goal	Formally adopted	Main-streamed	Goal score (2 pts)	Projected reduction in target year [a]	Progress score (2 pts)	Total score (4 pts)
Orlando[22]	FL	10% energy use reduction by 2017 from 2010 baseline	•		1.5	Data not available to evaluate	0	1.5
Sacramento[23]	CA	15% GHG emissions reduction by 2020 from 2005 levels	•		1.5	Data not available to evaluate	0	1.5
San Jose[24]	CA	15% energy use reduction by 2015 from 2008 baseline	•		1.5	Data not available to evaluate	0	1.5
Seattle[25]	WA	30% GHG emissions reduction by 2020 from 2008 baseline	•		1.5	Data not available to evaluate	0	1.5
Atlanta[26]	GA	15% energy use reduction by 2015			1	Data not available to evaluate	0	1
Chicago[27]	IL	5% increase in citywide energy efficiency by 2015 (including government operations)			1	Data not available to evaluate	0	1
Cleveland[28]	OH	10% GHG emissions reduction by 2016 from 2010 baseline			1	6%	0	1
Columbus[29]	OH	10% GHG emissions reduction by 2015 from 2005 baseline			1	7%	0	1
Philadelphia[30]	PA	20% GHG emissions reduction by 2015 from 1990 baseline and 30% energy use reduction by 2015 from 2008 baseline			1	14% and –3%	0	1
Virginia Beach[31]	VA	15% energy use reduction by 2025			1	Data not available to evaluate	0	1

City	State	Nearest-term local government operations goal	Formally adopted	Main-streamed	Goal score (2 pts)	Projected reduction in target year [a]	Progress score (2 pts)	Total score (4 pts)
Hartford[32]	CT	City's Clean Energy Task Force is developing an energy reduction plan that will include local government goals			0.5	N/A	0	0.5
Los Angeles[33]	CA	Mayor's Office is working with city departments to develop a sustainability plan that will include local government goals			0.5	N/A	0	0.5
Birmingham	AL	None			0	N/A	0	0
Charlotte	NC	None			0	N/A	0	0
Detroit	MI	None			0	N/A	0	0
Fort Worth	TX	None			0	N/A	0	0
Indianapolis	IN	None			0	N/A	0	0
Jacksonville	FL	None			0	N/A	0	0
Louisville	KY	None			0	N/A	0	0
Memphis	TN	None			0	N/A	0	0
Milwaukee	WI	None			0	N/A	0	0
New Orleans	LA	None			0	N/A	0	0
Oklahoma City	OK	None			0	N/A	0	0
Providence	RI	None			0	N/A	0	0
Raleigh	NC	None			0	N/A	0	0
Riverside	CA	None			0	N/A	0	0
San Antonio	TX	None			0	N/A	0	0
San Diego	CA	None			0	N/A	0	0
St. Louis	MO	None			0	N/A	0	0
Tampa	FL	None			0	N/A	0	0

[a] We calculated a city's projected energy use or greenhouse gas (GHG) emissions from data in the sources below. We converted the difference between a city's energy use or emissions levels in its initial inventory and its most recent inventory into an average annual percentage energy savings or emissions reduction. Then we forecasted the impact of continuing the achieved rate of annual energy or emissions savings until the

goal's target year to quantify the projected savings. A city could receive partial credit for being on track for its goal if it was projected to achieve a level of savings within 25% of its stated goal. We measured this as a 25% variation from a city's stated goal. For example, if a city aimed to reduce emissions by 40% and was projected to achieve a 30% reduction, it earned points because it was within 25% of its stated target. [b] Dallas does not have a specific tier within its community-wide goal for local government operations, but activities from local government operations are included within the community-wide goal. This is the city's projected reduction in its local government–related GHG emissions, not community-wide emissions. Dallas provides updates on GHG reductions from local government operations in public reports, but not for community-wide GHG reductions. [c] Denver's goal for GHG emissions is to reduce them to less than 354,000 MTCO2e by 2020. This level of reduction translates to a 6% reduction from its 2011 level. [d] Minneapolis set this goal in 2008 and has tracked annual progress toward the goal since that time. Minneapolis did not achieve its goal in 2012 if calculating year-over-year from 2011, but its average annual GHG reduction between 2008 and 2012 is larger than 1.5%. Its cumulative GHG reduction between 2008 and 2012 is 18%. [e] Since achieving its original 2015 energy reduction goal, Phoenix has reset it to a 15% energy reduction goal by 2015. *Sources:* We gathered local government operations goals and data to project energy savings or GHG emissions reduction levels in targets years from the following sustainability plans, climate action plans, local ordinances, greenhouse gas inventories, and other city-provided documentation. [1] Boston 2011; Boston 2014b. [2] K. Lefebvre, City of Dallas, pers. comm., October 30, 2014; Dallas 2012b. [3] Denver 2014; S. Lucero, City of Denver, pers. comm., January 2014. [4] New York 2007; Dickinson, Kahn, and Amar 2013. [5] El Paso 2009; L. Baldwin, City of El Paso, pers. comm., November 6, 2014. [6] Las Vegas 2008; Las Vegas 2013; CDP 2014. [7] Minneapolis 2014a; Minneapolis 2014b. [8] Phoenix 2010; Walton Sustainability Solutions Initiatives 2013. [9] Austin City Council 2007; Austin 2011. [10] Houston 2014; CDP 2014. [11] Salt Lake City 2015; Salt Lake City Corporation 2014. [12] District of Columbia 2010a; District of Columbia 2012a. [13] Pittsburgh Climate Initiative 2012. [14] Portland 2009. [15] Richmond n.d. [16] San Francisco Environment Code. [17] Baltimore 2014; Baltimore 2013a. [18] Cincinnati 2013. [19] Kansas City 2008. [20] Miami 2008. [21] Nashville 2009a. [22] Orlando 2012. [23] Sacramento 2007. [24] M. Foster, City of San Jose, pers. comm., Jan. 22, 2015. [25] Seattle 2011. [26] Atlanta 2014. [27] Chicago 2012b. [28] Cleveland 2013b; CDP 2014. [29] Columbus 2010; CDP 2014. [30] Dews, Freeh, and Wu 2014. [31] Virginia Beach 2010. [32] Hartford Clean Energy Task Force 2014. [33] Data request.

Table C2. City scoring on community-wide energy-related goals

City	State	Nearest-term community-wide goal	Formally adopted	Included in general plan	Goal score (2 pts)	Projected reduction in goal year [a]	Progress score (2 pts)	Total score (4 pts)
Los Angeles[1]	CA	35% GHG emissions reduction by 2030 below 1990 baseline and 1.3% annual electric savings target	•	•	2	57% and 1.07% [b]	2	4
New York City[2]	NY	Greater than 30% GHG emissions reduction by 2030 from 2005 baseline	•	•	2	59%	2	4
Riverside[3]	CA	1% annual electric savings target and 10% overall reduction in city's peak electric load demand	•	•	2	1.08% electric savings and data not available to evaluate [b]	2	4
Sacramento[4]	CA	1.5% annual electric savings target and 15% GHG emissions reduction by 2020 from 2005 baseline	•	•	2	1.57% and data not available to evaluate [b]	2	4
San Antonio[5]	TX	0.57% annual electric savings target and 1% annual energy use per household reduction	•	•	2	1% and data not available to evaluate [b]	2	4

City	State	Nearest-term community-wide goal	Formally adopted	Included in general plan	Goal score (2 pts)	Projected reduction in goal year [a]	Progress score (2 pts)	Total score (4 pts)
San Francisco[6]	CA	25% GHG emissions reduction by 2017 from 1990 baseline	•	•	2	29%	2	4
Seattle[7]	WA	0.9% annual electric savings target and 100% GHG emissions reduction by 2050	•	•	2	1.46% and 4% [b]	2	4
Austin[8]	TX	Offset 800 MW of peak electric demand by 2020	•		1.5	> 100%	2	3.5
Boston[9]	MA	25% GHG emissions reduction by 2020 from 2005 baseline	•		1.5	35%	2	3.5
Minneapolis[10]	MN	15% GHG emissions reduction by 2015 from 2006 baseline	•		1.5	26%	2	3.5
Washington[11]	DC	50% GHG emissions reduction and 50% energy use reduction by 2032 from 2006 baseline			1	65% and data not available to evaluate	2	3
Atlanta[12]	GA	20% energy use reduction and 25% GHG emissions reductions by 2020			1	22% and data not available to evaluate [c]	1	2
Pittsburgh[13]	PA	20% GHG emissions reduction by 2023	•	•	2	Data not available to evaluate	0	2
Portland[14]	OR	80% GHG emissions reduction by 2050 from 1990 baseline	•	•	2	28%	0	2
San Jose[15]	CA	50% energy use per capita reduction by 2022 from 2008 baseline	•	•	2	Data not available to evaluate	0	2
Baltimore[16]	MD	15% energy use reduction by 2015 from 2010 baseline	•		1.5	Data not available to evaluate	0	1.5
Cincinnati[17]	OH	2% annual energy use reduction between 2013 and 2020	•		1.5	Data not available to evaluate	0	1.5
Denver[18]	CO	Reduce CO2-equivalent emissions	•		1.5	Data not available	0	1.5

City	State	Nearest-term community-wide goal	Formally adopted	Included in general plan	Goal score (2 pts)	Projected reduction in goal year [a]	Progress score (2 pts)	Total score (4 pts)
		to below 1990 emissions levels (< 11.8 million MTCO2e)				to evaluate		
Kansas City[19]	MO	30% GHG emissions reduction by 2020 from 2000 baseline	•		1.5	Data not available to evaluate	0	1.5
Miami[20]	FL	25% GHG emissions reduction by 2020 from 2006 baseline	•		1.5	N/A	0	1.5
Nashville[21]	TN	20% GHG emissions reduction by 2020 from 2005 baseline	•		1.5	Data not available to evaluate	0	1.5
Orlando[22]	FL	0.58% annual electric savings target, 5% energy use reduction by 2018 from 2010 baseline, and 25% emissions reduction by 2018 from 2007 baseline	•		1.5	0.43% and data not available to evaluate [b]	0	1.5
Chicago[23]	IL	25% GHG emissions reduction by 2020 from 1990 baseline and increase citywide energy efficiency by 5% by 2015			1	8% and data not available to evaluate [d]	0	1
Cleveland[24]	OH	16% GHG emissions reduction by 2020 from 2010 baseline			1	Data not available to evaluate	0	1
Dallas[25]	TX	39% carbon emissions reduction by 2017 from 1990 baseline			1	N/A	0	1
Louisville[26]	KY	25% energy use per capita reduction by 2025 from 1990 baseline			1	Data not available to evaluate	0	1
Philadelphia[27]	PA	20% GHG emissions reduction by 2015 from 1990 baseline			1	–1%	0	1
Salt Lake City[28]	UT	10% GHG emissions reduction by 2015 from 2009 baseline			1	Data not available to evaluate	0	1
San Diego[29]	CA	15% GHG emissions reduction by 2020			1	Data not available	0	1

City	State	Nearest-term community-wide goal	Formally adopted	Included in general plan	Goal score (2 pts)	Projected reduction in goal year [a]	Progress score (2 pts)	Total score (4 pts)
						to evaluate		
St. Louis[30]	MO	25% GHG emissions reduction by 2020			1	Data not available to evaluate	0	1
Charlotte[31]	NC	Charlotte's Energy Future sustainability plan calls for community-wide GHG emissions reduction target			0.5	N/A	0	0.5
Columbus[32]	OH	Community-wide goal to be released in 2015			0.5	N/A	0	0.5
Houston[33]	TX	Mayor launched Mayor's National Climate Action Agenda, which calls for GHG reduction targets			0.5	N/A	0	0.5
Providence[34]	RI	Goal to reduce energy use and increase efficiency, but no quantitative goal			0.5	N/A	0	0.5
Richmond[35]	VA	Draft legislation with annual energy use reduction goal, but no formal targets			0.5	N/A	0	0.5
Birmingham	AL	None			0	N/A	0	0
Detroit	MI	None			0	N/A	0	0
El Paso	TX	None			0	N/A	0	0
Fort Worth	TX	None			0	N/A	0	0
Hartford	CT	None			0	N/A	0	0
Indianapolis	IN	None			0	N/A	0	0
Jacksonville	FL	None			0	N/A	0	0
Las Vegas	NV	None			0	N/A	0	0
Memphis	TN	None			0	N/A	0	0
Milwaukee	WI	None			0	N/A	0	0
New Orleans	LA	None			0	N/A	0	0
Oklahoma City	OK	None			0	N/A	0	0
Phoenix	AZ	None			0	N/A	0	0
Raleigh	NC	None			0	N/A	0	0
Tampa	FL	None			0	N/A	0	0

City	State	Nearest-term community-wide goal	Formally adopted	Included in general plan	Goal score (2 pts)	Projected reduction in goal year [a]	Progress score (2 pts)	Total score (4 pts)
Virginia Beach	VA	None			0	N/A	0	0

[a] We calculated a city's projected energy use or greenhouse gas emissions from data in the below sources. Unless otherwise noted, we converted the difference between a city's energy use or emissions levels in its initial inventory and its most recent inventory into an average annual percentage energy savings or emissions reduction. Then we forecasted the impact of continuing the achieved rate of annual energy or emissions savings until the goal's target year to quantify the projected savings. We gave a city partial credit for being on track for its goal if it was projected to achieve a level of savings within 25% of its stated goal. We measured this as a 25% variation from a city's stated goal. For example, if a city aimed to reduce emissions by 40% and was projected to achieve a 30% reduction, it earned points because it was within 25% of its stated target. [b] To evaluate annual electric savings goals, we compared the reported 2013 electric savings from each city's municipal utility as listed in table 35 in the Energy and Water Utilities chapter to the community-wide annual savings goal to determine if the city achieved its goal in 2013. The percentage listed here is not a projection; it is the actual level of savings due to end-use energy efficiency programs in 2013. [c] Atlanta provided GHG emissions levels only from its buildings, so this projection accounts only for buildings-related GHG emissions. We cannot account for transportation-related GHG emissions. [d] For our projection, we used 2000 as the city's baseline GHG levels rather than 1990. According to city staff, the reported 1990 levels are subject to more uncertainty because they were backcasted from 2000 levels. Projecting GHG emissions reductions from 2000 provides a more accurate representation of the city's progress in reducing GHGs. *Sources*: We gathered community-wide goals and data to project energy savings or GHG emissions reduction levels in target years from the following sustainability plans, climate action plans, greenhouse gas inventories, and other city-provided documentation. [1] Los Angeles 2007; data request; CDP 2014. [2] New York 2011; Pasion, Amar, and Delaney 2014. [3] Riverside 2012; data request. [4] Sacramento 2012; data request. [5] San Antonio 2011; data request. [6] San Francisco Environment Code; ICF International 2015. [7] GGLO 2013; data request; Erickson and Tempest 2014. [8] Austin Energy 2014. [9] Boston 2011; Boston 2014a. [10] Minneapolis 2014c; Minneapolis 2014d. [11] District of Columbia 2012b; District of Columbia 2012a. [12] Atlanta 2014; J. Garcia, City of Atlanta, pers. comm., 2014. [13] Pittsburgh Climate Initiative 2012. [14] Portland 2009. [15] San Jose 2007. [16] Baltimore 2013a. [17] Cincinnati 2013. [18] Denver 2014. [19] Kansas City 2008. [20] Miami 2008. [21] Nashville 2009a. [22] Orlando 2013; data request. [23] Hayhoe and Wuebbles 2008; Chicago 2012b; ICF International 2012. [24] Cleveland 2013a. [25] K. Lefebvre, City of Dallas, pers. comm., October 30, 2014. [26] Louisville 2013. [27] Dews, Freeh, and Wu 2014. [28] Salt Lake City 2015. [29] San Diego 2014. [30] St. Louis 2014. [31] Charlotte and CDM 2010. [32] Data request. [33] Data request. [34] Providence 2014. [35] Data request.

Table C3. Policy details for requirements, incentives, and goals for efficient buildings

City	State	Total score (9 pts.)	Policy details
Boston	MA	9	Building energy savings target. Incentives: height bonus (comm), reduced permitting fees (comm), program rebates (res, comm), direct install program (comm), free energy assessments (res). Above-code green building req for res and comm buildings. Retrofit and audit req for res and comm buildings.
New York City	NY	7.5	Building energy savings target. Incentives: tax abatements (res, comm), loans, financing, energy service agreements (comm). Above-code green building req for buildings using public funds. Retrofit and audit req for res and comm buildings.
Austin	TX	6.5	Building energy savings target. Incentives: density bonus (res, comm), weatherization (res), energy audits for small businesses (comm). Above-code green building req for res and comm buildings. Retrofit req for mf buildings. Audit req for res buildings.
San Francisco	CA	6.5	Incentives: expedited permitting (res, comm), PACE financing (mf res, comm), rebates (mf res, comm). Above-code green building req for res and comm buildings. Retrofit req for residential buildings. Audit req for comm buildings.
Baltimore	MD	5	Building energy savings target. Incentives: loans (res, comm), weatherization (res), tax credit (res).
Washington	DC	5	Building energy savings target. Incentives: PACE financing (comm), rebates (res, comm), weatherization assistance (res). Above-code green building req for res and comm buildings.

City	State	Total score (9 pts.)	Policy details
Chicago	IL	4.5	Building energy savings target. Incentives: rebates (res), expedited permitting (res, comm). Above-code green building req for res and comm buildings.
Seattle	WA	4.5	Building energy savings target. Incentives: expedited permitting, density bonuses, land use departures (res, comm). Above-code green building req for buildings using public funds.
Portland	OR	4	Building energy savings target. Incentives: plan review assistance (comm), PACE financing (comm), reduced permit fees, loans and grants, on-bill financing (res). Above-code green building req for buildings using public funds.
Minneapolis	MN	3.5	Building energy savings target. Incentives: PACE (comm), loan programs (comm), density bonus (res, comm).
Dallas	TX	3	Incentives: expedited permitting (res, comm). Above-code green building req for res and comm buildings.
Denver	CO	3	Building energy savings target. Incentives: loan program (res, comm), energy efficiency programs for nonprofits.
Houston	TX	3	Building energy savings target. Incentives: tax abatements (comm), expedited plan review (comm), weatherization measures (res). Above-code green building req for buildings using public funds.
San Jose	CA	3	Incentives: PACE (res, comm). Above-code green building req for res and comm buildings.
Atlanta	GA	2.5	Building energy savings target. Incentives: PACE (res, comm). Above-code green building req for buildings using public funds.
Columbus	OH	2.5	Building energy savings target. Incentives: rebates (res, comm). Above-code green building req for buildings using public funds.
Miami	FL	2.5	Incentives: PACE financing (comm). Above-code green building req for res and comm buildings.
Milwaukee	WI	2.5	Building energy savings target. Incentives: PACE (comm), targeted Investment Neighborhood program loans (comm), rebates (res).
Nashville	TN	2.5	Building energy savings target. Incentives: loans (res), zoning incentive (comm), low-income energy upgrades (res).
Philadelphia	PA	2.5	Building energy savings target. Incentives: density bonus (comm), loans (comm), rebates (comm).
Pittsburgh	PA	2.5	Incentives: density bonus (comm), loans (res, comm), grants for energy audits (comm). Above-code green building req for buildings using public funds.
Riverside	CA	2.5	Incentives: PACE (res, comm), expedited permitting (comm), rebates (res, comm). Above-code green building req for buildings using public funds.
San Antonio	TX	2.5	Building energy savings target. Incentives: tax abatement (res, comm). Above-code green building req for buildings using public funds.
Cleveland	OH	2	Building energy savings target. Incentives: tax abatement (res), PACE (comm).
Sacramento	CA	2	Building energy savings target. Incentive: financing (res, comm).

City	State	Total score (9 pts.)	Policy details
San Diego	CA	2	Building energy savings target. Incentive: expedited permitting (res, comm).
Cincinnati	OH	1.5	Incentives: tax abatement (res, comm), rebates (res)
Kansas City	MO	1.5	Incentive: loans (res, comm). Above-code green building req for buildings using public funds.
Memphis	TN	1.5	Incentives: tax abatements (res, comm), loans (comm)
Salt Lake City	UT	1.5	Incentives: loans (comm), expedited permitting (res, comm)
Tampa	FL	1.5	Incentives: expedited plan review (comm), rebate (res, comm)
Detroit	MI	1	Incentives: grants (res, comm), loans (res, comm)
El Paso	TX	1	Incentive: grants (res, comm)
Fort Worth	TX	1	Building energy savings target
Los Angeles	CA	1	Building energy savings target
Phoenix	AZ	1	Incentive: loans (res, comm)
St. Louis	MO	1	Incentive: PACE financing (res, comm)
Virginia Beach	VA	1	Incentive: tax abatement (res, comm)
Indianapolis	IN	0.5	Incentive: reduced permitting fees (res)
Richmond	VA	0.5	Above-code green building req for buildings using public funds
Birmingham	AL	0	None
Charlotte	NC	0	None
Hartford	CT	0	None
Jacksonville	FL	0	None
Las Vegas	NV	0	None
Louisville	KY	0	None
New Orleans	LA	0	None
Oklahoma City	OK	0	None
Orlando	FL	0	None
Providence	RI	0	None
Raleigh	NC	0	None

Res = residential. Comm = commercial. Mf = multifamily. Req = required.

Table C4. Complete-streets policies by city

City	Complete-streets policy	Year of adoption	NCSC score (out of 100)	ACEEE *Scorecard* score (2 pts)
Indianapolis, IN	Chapter 431, Article VIII	2012	92.8	2
Austin, TX	Council Resolution No. 20131212-080	2014	88.8	2
Richmond, VA	Resolution No. 2014-R172-170	2014	82.4	2
Birmingham, AL	Resolution	2011	79.2	2
Portland, OR[1]	Oregon State Complete Streets Legislation	1971	—	2
New Orleans, LA	Ordinance No. 24706	2011	70.8	1.5
Washington, DC	Departmental Order 06-2010 (DDOT Complete Streets Policy)	2010	66.4	1.5
Virginia Beach, VA	Complete Streets Administrative Directive	2014	62.4	1.5
Baltimore, MD	Council Bill 09-0433	2010	58.0	1.5
Memphis, TN	Executive Order 01-2013	2013	57.6	1.5
Phoenix, AZ	Ordinance S-41094 and Ordinance G-5937	2014	54.0	1.5
Cleveland, OH	Ordinance No. 798-11	2011	53.2	1.5
Seattle, WA	Ordinance No. 122386	2007	52.8	1.5
Denver, CO	Complete Streets Policy	2011	52.4	1.5
Houston, TX	City Executive Order 1-15	2013	51.6	1.5
Nashville, TN	Executive Order No. 40	2010	50.0	1.5
St. Louis, MO	Board Bill No. 7	2010	49.6	1
Philadelphia, PA	Bill No. 12053201	2012	46.4	1
Salt Lake City, UT	Ordinance No. 4-10	2010	44.0	1
San Antonio, TX	Complete Streets Policy	2011	40.8	1
Chicago, IL	Safe Streets for Chicago	2006	39.6	1
San Francisco, CA	Public Works Code 2.4.13 (Ordinance No. 209-05)	2008	37.2	1
Tampa, FL	Resolution No. 2814	2012	35.6	1
Columbus, OH	Resolution	2008	29.2	1
Boston, MA[2]	Complete Streets Guidelines	2009	—	1
Dallas, TX	Complete Streets Initiative	2011	—	1
New York City, NY	Sustainable Streets Strategic Plan	2008	—	1
Miami, FL	Resolution No. 09-00274	2009	24.4	0.5
Providence, RI	Resolution	2012	21.2	0.5
Las Vegas, NV[3]	Regional Transportation Commission (RTC) of Southern Nevada Complete Streets policy	2012	—	0.5

Sources: NCSC 2015, ACEEE web research, data requests. [1] Oregon's complete-streets policy is the only state policy to cover municipal roads in addition to state-owned roads, and the city has made significant efforts to incorporate complete-streets language in a range of supporting transportation and land use policies. [2] While Boston does not have a codified complete-streets policy, the city has made every effort to include complete-streets principles in all road creation and retrofit projects. [3] Las Vegas does not have its own complete-streets policy but has incorporated the RTC complete-streets policy into Title 19.04 of its municipal code.

Table C5. Summary of scoring on land use and transportation targets and implementation

City	Land use and transportation integration policy
Atlanta	The Connect Atlanta Plan includes a goal to increase the bicycle-commute-to-work share to 2.2% by 2016.[1] (1 point)
Boston	Boston's Climate Action Plan includes a VMT-reduction goal of 7.5% below 2010 levels by 2020. Targeted policies that will be used to achieve this goal include the implementation of complete-streets policies, expanding and maintaining public transit facilities, mode shift, and parking freezes.[2] (3 points)
Chicago	The Sustainable Chicago 2015 Action Agenda includes a goal to make Chicago the most bike- and pedestrian-friendly city in the country, with specific actions to increase bicycling and walking, such as adding up to 100 miles of new bicycle lanes, introducing bicycle sharing, and developing a pedestrian master plan. Another goal is to increase transit ridership.[3] (2 points)
Dallas	Dallas adopted an annual VMT reduction target of 10% as part of the ISO 14001:2004–certified Environmental Management System. The city has made concerted efforts to encourage workers to telecommute, carpool, and use flex schedules and mass transit to reduce overall VMT.[4] (1 point)
Denver	The 2020 Sustainability Community Mobility Goal is to "provide mobility options (transit, carpooling, biking, walking) that reduce commuting travel in Denver done in single-occupant vehicles to no more than 60% of all trips." The Blueprint Denver plan is the city's primary integrated land use and transportation plan. In addition, in 2014 the city adopted the Transit Oriented Denver Strategic Plan update, which goes one step further to identify development capacity and needs at all fixed rail stations as density increases.[5] (3 points)
El Paso	Plan El Paso offers a comprehensive approach toward reducing VMT by using land use patterns that support walkability, livability, and sustainability in the long run. The city has not adopted a VMT target.[6] (2 points)
Fort Worth	Fort Worth has adopted individual goals for biking and walking. The city aims to increase bicycle mode share from 0.2% to 0.6% by 2020 and increase pedestrian mode share from 1.2% in 2012 to 3.2% by 2025.[7] (1 point)
Houston	The Houston Planning Commission has established several committees to examine a range of development and growth issues. One of the committees, the General Plan committee, established mobility as a top priority and recommended a programmatic framework to address these issues. City Mobility Planning (CMP) will be the framework for evaluating transportation issues in the city.[8] (1 point)
Jacksonville	The city of Jacksonville's Planning and Development Department 2030 Mobility Plan includes a VMT per capita reduction target of 10% by 2030 along with a comprehensive multimodal plan in place to achieve that VMT reduction.[9] (4 points)
Kansas City	Kansas City's Climate Protection Plan, adopted in 2013, has a goal to reduce citywide VMTs to 20% below 2000 levels by 2020 and 30% below 2000 levels by 2030. However the city is not actively implementing a plan to achieve its target.[10] (2 points)

City	Land use and transportation integration policy
Louisville	Through Mayor Greg Fischer's release of Sustain Louisville, the city's sustainability plan, Louisville Metro Government set a goal in 2012 to reduce VMT by 20% by 2025. Strategies include launching a bike-share program, implementing a car-share program, promoting bus ridership, and improving bicycle facilities and support for bicycle commuting.[11] (3 points)
Milwaukee	The ReFresh Milwaukee plan includes a number of transportation-related strategies and qualitative goals to improve the overall efficiency of the city's transportation system.[12] (1 point)
Minneapolis	Minneapolis's Climate Action Plan, adopted in June 2013, includes a detailed plan to hold VMT flat and has a specific target for a bicycle mode share of 7% by 2014.[13] (4 points)
New York City	PlaNYC and Sustainable Streets show that the city is moving toward creating a multimodal and sustainable transportation system with improved use of public transit, complete-streets strategies, and additional bike and pedestrian infrastructure.[14] (2 points)
Philadelphia	Philadelphia's Greenworks plan aims to reduce VMT in the city by 10% below 2005 levels by 2015. While the goal is not legally codified, the city has made considerable progress toward achieving it. As of 2013, the city has seen an overall reduction in miles of 7.4% below 2005 levels.[15] (3 points)
Portland	The 2009 Portland Climate Action Plan, adopted by the city council (Resolution 36748), includes a goal to reduce per capita daily VMT by 30% from 2008 levels by 2030. Additionally, Portland has a goal to achieve a 70% transit and active transportation mode share by 2030.[16] (4 points)
Riverside	Riverside's Green Action Plan looks to decrease VMT by 15% by 2015 based on a 2009 baseline year. Specific strategies include encouraging the use of bicycles by increasing the number of bike trails, promoting alternative modes of transportation by implementing benefit programs for city employees and local businesses, and expanding public transit within city limits.[17] (3 points)
Salt Lake City	Salt Lake City has a goal to reduce VMT in the city by 6.5% by 2015. Several comprehensive strategies discussed in the Sustainable Salt Lake plan aim to reduce VMT.[18] (3 points)
San Antonio	The SA2020 city plan includes a loose, noncodified VMT reduction goal of 10% per capita by 2020.[19] (2 points)
San Francisco	The San Francisco Municipal Transportation Agency has adopted a 50% mode-shift target for sustainable mode share by 2018.[20] (3 points)
San Jose	The Envision San Jose 2040 General Plan aims to reduce automobile mode share by 40% by 2040. The focus of the general plan is to concentrate new development along mass transit lines.[21] (3 points)
Seattle	Seattle adopted Resolution 31312 in October 2011 calling for a 14% reduction in passenger VMT by 2020 and a 20% reduction in VMT by 2030 from 2008 levels.[22] (4 points)
Washington, DC	Washington aims to achieve a 75% increase in commuter trips by transit, biking, and walking by 2032.[23] (3 points)

[1] Atlanta 2013. [2] Boston 2011. [3] Chicago 2012b. [4] Dallas 2012a. [5] Data request. [6] El Paso 2012. [7] Data request. [8] Houston 2015. [9] Jacksonville 2011. [10] Kansas City 2008. [11] Louisville 2013. [12] Milwaukee 2015. [13] Minneapolis 2013. [14] New York City 2011. [15] Dews and Wu 2012. [16] Portland 2009. [17] Riverside 2012. [18] Salt Lake City 2015. [19] San Antonio 2011. [20] Papandreou et al. 2013. [21] San Jose 2011b. [22] Data request. [23] District of Columbia 2012b.

Table C6. City energy consumption per capita in most recent year available (MMBtu)

City	Year	Residential	Commercial and industrial	Transportation	Total citywide	Municipal building	Municipal fleet	Total municipal
Atlanta	2007	—	—	—	—	3.54	—	—
Baltimore	2010	35.50	60.26	19.65	115.41	—	—	—
Boston	2011	26.07	69.98	28.84	124.90	—	—	—
Charlotte	2012	—	—	—	—	1.73	0.96	2.69
Chicago	2010	45.40	46.63	37.09 [b]	—	—	—	—
Cleveland	2010	—	—	—	—	5.10	0.81	5.91
Denver	2005	34.97	77.49	85.59	198.05	0.27	0.22	0.48
Detroit	2012	37.92	31.95	—	—	—	1.14	—
El Paso	2013	—	—	—	—	0.48	—	—
Las Vegas	2008	—	—	—	—	0.44	0.18	0.62
Louisville [a]	2006	44.88	46.26	—	—	6.32	0.27	6.58
Minneapolis	2010	35.96	67.34	44.23	147.54	—	—	—
Nashville [a]	2005	40.37	59.69	—	—	3.68	1.99	5.67
New York City	2013	58 [c]	58 [c]	18.20	76.15	3.26	0.46	3.72
Oklahoma City	2009	38.69	58.40	—	—	1.25	0.82	2.08
Philadelphia	2010	33.11	47.13	19.29	99.53	—	—	—
Phoenix	2012	—	—	—	—	0.89	1.00	1.89
Portland [a]	2013	27.68	51.19	54.21	133.09	—	—	—
Raleigh	2010	53.58	—	131.13	—	1.29 [d]	0.77 [d]	2.07 [d]
Richmond	2008	37.43	—	—	—	—	1.52	—
Riverside	2007	20.64	27.20	—	—	—	—	—
Sacramento	2005	29.41	31.45	40.29	101.15	1.04	0.60 [e]	—
San Diego	1990	20.13	31.71	83.35	135.19	—	—	—
San Francisco	2010	24.33	27.20	27.46	78.99	6.41	—	—
San Jose	2008	19.90	19.84	—	—	0.91	—	—
Seattle	2012	27.63	43.32	38.56	109.51	0.38 [f]	0.53 [f]	0.91 [f]
St. Louis	2010	48.58	86.44	64.98	200.00	1.91	0.89	2.80
Washington	2006	26.41	96.94	30.72	154.07	7.12	1.11	8.23

We independently calculated a city's energy use per capita using energy use data and population data found in the below sources. Blank cells indicate that energy use data were not available for the given sector, so we could not calculate the energy use per capita for the sector. All energy use per capita figures are from each city's most recently inventoried year. [a] Energy consumption data are normalized by population at the county level. [b] Data from 2005; Chicago did not report transportation-related energy use for 2010. [c] Combined residential, commercial, and industrial building energy use. New York City does not differentiate between residential building energy consumption and commercial and industrial building consumption in its public reporting. [d] Data from 2007; Raleigh did not report local government energy use data from 2010. [e] Data from 2006; Sacramento reported 2005 energy consumption for all other sectors. [f] Data from 2010; Seattle did not report 2012 energy consumption data for its local government operations. *Sources:* Borin, Wang, and Thomas 2009; Baltimore 2013b; Boston 2013; Charlotte 2014; ICF International 2012; Cleveland 2013b; Ramaswami et al. 2007; Carlson 2014; L. Baldwin, City of El Paso, pers. comm., November 6, 2014; Las Vegas 2009; Trinity 2008; Minneapolis 2014d; Nashville 2009b; Pasion, Amar, and Delaney 2014; First Environment 2010; Dews and Wu 2012; Walton Sustainability Solutions Initiatives 2013; M. Armstrong, Portland Bureau of Planning and Sustainability, pers. comm., November 3, 2014; CH2M 2012; ICLEI 2010; Riverside 2010; ICF Jones and Stokes 2009; San Diego 2005; San Francisco 2010; San Jose 2011a; Erickson and Tempest 2014; Seattle 2010; St. Louis 2012; District of Columbia 2010b; Census 2014; Census 2013b.