ACEEE
American Council for an Energy-Efficient Economy

The 2019 City Clean Energy Scorecard

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Table of Contents

Table of Contents

Table of Contents

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ACEEE is solely responsible for the content of this report.

Executive Summary

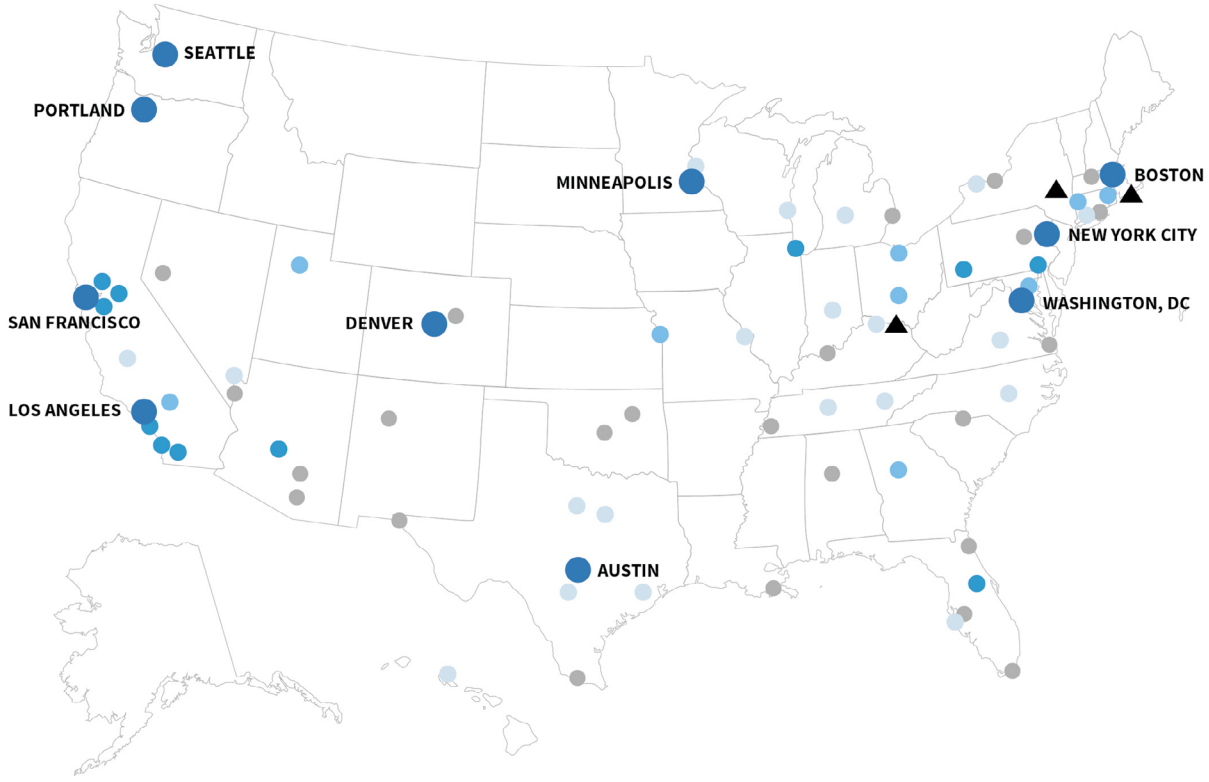
KEY FINDINGS

This report scores **75 US cities** on their efforts to achieve a clean energy future by improving energy efficiency and scaling up renewable energy.

- First place goes to **Boston,** which retained its position atop the rankings.
- Rounding out the top 10 are **San Francisco** and **Seattle** at #2 and #3 respectively, followed by **Minneapolis, Washington, New York, Los Angeles, Denver, Austin,** and **Portland.**
- **Cincinnati, Hartford,** and **Providence** are ***cities to watch.*** Although outside the top 10, they have aggressively adopted policies and initiated programs since early 2017. Their policy activity has helped each of them move up in the rankings.
- Between January 2017 and April 2019, local governments across all cities took **more than 265 actions**—new initiatives or expansions of past ones—**to advance clean energy.** Actions range from modest (e.g., adopting telecommuting policies for public employees) to cutting-edge (e.g., setting performance standards for existing buildings).
- Forty-nine cities have community-wide climate goals. However, based on available data, we found that only **11 cities are on track to achieve their goals** to reduce community-wide greenhouse gas (GHG) emissions.
- **Cities continue to expand their focus on energy savings in buildings.** Since the last edition, cities have adopted or advocated for more stringent building energy codes and have adopted myriad requirements for existing buildings including benchmarking ordinances, labeling requirements, and performance standards.
- Although they are increasingly pursuing initiatives to reduce GHG emissions from the transportation sector, **cities will have to accelerate their efforts there.** At least 13 cities earned more than 55% of the available points in every other policy area, but only 7 cities' transportation scores broke the 55% threshold.
- **Emerging efforts exist** to increase engagement and clean energy investments in low-income communities and communities of color, but cities have **substantial room to ramp up** their efforts. Cities can leverage emerging planning models—used in Minneapolis, Providence, and Seattle—to jump-start their activities.
- **Cities could do better at tracking progress toward their goals.** Only nine cities with vehicle miles traveled reduction goals or similar targets reported data allowing us to assess progress toward goals. Similarly, of the 49 cities with community-wide GHG goals, only 27 cities had such data.

Executive Summary

FIGURE ES1. CITY RANKINGS



Top 10 Cities

1. Boston
2. San Francisco
3. Seattle
4. Minneapolis
5. Washington
6. New York City
7. Los Angeles
8. Denver
9. Austin
10. Portland

11-20

11. San José
12. Oakland
13. San Diego
14. Chicago
15. Orlando
16. Philadelphia
17. Phoenix
18. Long Beach
19. Pittsburgh
20. Sacramento
20. Chula Vista, CA

21-30

22. Atlanta
23. Kansas City
24. Hartford
25. Providence
25. Columbus
27. Cleveland
27. Riverside, CA
29. Baltimore
30. Salt Lake City

31-50

31. St. Paul
32. San Antonio
32. Las Vegas
34. Cincinnati
35. Houston
36. St. Louis
37. Dallas
38. Grand Rapids
39. St. Petersburg
40. Richmond
40. Buffalo
42. Bridgeport, CT
42. Knoxville
44. Milwaukee
44. Raleigh
44. Fort Worth
47. Nashville
47. Honolulu
49. Bakersfield
50. Indianapolis

51-75

51. New Haven
52. New Orleans
52. Tucson
52. Albuquerque
55. Louisville
55. Miami
55. Worcester
58. Rochester
59. Tampa
60. El Paso
61. Reno
61. Memphis
63. Virginia Beach
63. Aurora
63. Detroit
66. Jacksonville
66. Mesa
68. Charlotte
69. Omaha
70. Newark
71. Henderson, NV
72. Birmingham
73. McAllen, TX
74. Tulsa
75. Oklahoma City

▲ Cities to watch: Hartford, Providence, Cincinnati

Local governments around the United States have a variety of options to address their own energy use and to influence energy use in their communities, including land use and zoning laws, adoption and implementation of building codes, public finance, transportation investment, workforce development, and sometimes the provision of water and energy.

Executive Summary

The 2019 City Clean Energy Scorecard compiles information on local policies and actions to advance clean energy, comparing cities across five policy areas. This fourth edition of the *City Scorecard* ranks 75 large US cities, 24 more than our previous edition.[i] In adding cities, we continued to focus on the central cities of the largest metro areas but added a secondary city from those areas if a city's population exceeded 250,000. This year's cities include the 25 participating in the Bloomberg American Cities Climate Challenge. The information we use to score cities reflects existing policies as of April 1, 2019. The scores identify cities that are excelling and those that have room for improvement. Our focus on policies and programs also makes the *Scorecard* a road map for local governments aiming to scale up their pursuit of clean energy.

We have improved the *City Scorecard* to assess a broader array of city activities that reduce GHG emissions and to better capture the impact of those city activities. For the first time, the *Scorecard* assesses policies, codes, and activities to encourage renewable energy in addition to energy efficiency, as part of an overall portfolio of local clean energy efforts. We also expand our analysis of the extent to which policies are delivering results. Simultaneously, we have expanded metrics that capture the extent to which city actions are incorporating input from and reaching low-income communities and communities of color. This *Scorecard* better tracks cities' progress in delivering clean energy initiatives in a way that supports all residents.

POLICY AREAS

As shown in table ES1, the *Scorecard* compares cities across five policy areas:

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

TABLE ES1. HIGHEST-SCORING CITIES BY POLICY AREA

AREA	CITIES	ACHIEVEMENTS
LOCAL GOVERNMENT OPERATIONS	**AUSTIN, BOSTON, ORLANDO, PORTLAND,** and **SAN FRANCISCO**	All have set policies to increase efficiency in city government, procurement, and asset management.
COMMUNITY-WIDE INITIATIVES	**WASHINGTON** and **SEATTLE (CLEVELAND, DENVER, MINNEAPOLIS, ORLANDO,** and **PHOENIX** tied for next-highest score)	Washington and Seattle have GHG reduction goals for the community and strategies to mitigate urban heat islands. They also have policies or programs to plan for distributed energy systems, like onsite renewables or district energy.
BUILDINGS POLICIES	**BOSTON, NEW YORK, SAN JOSÉ, SEATTLE, LOS ANGELES,** and **SAN FRANCISCO**	These cities have adopted or advocated for stringent building energy codes, devoted resources to building code compliance, and used incentives or requirements to address energy consumption in existing buildings.

i D. Ribeiro, T. Bailey, A. Drehobl, J. King, S. Samarripas, M. Shoemaker, S. Vaidyanathan, W. Berg, and F. Castro-Alvarez, *The 2017 City Energy Efficiency Scorecard* (Washington, DC: ACEEE, 2017). aceee.org/research-report/u17505.

Executive Summary

AREA	CITIES	ACHIEVEMENTS
ENERGY AND WATER UTILITIES	**SAN DIEGO, LOS ANGELES, BOSTON, CHULA VISTA (CA), MINNEAPOLIS,** and **SAN FRANCISCO**	The energy efficiency programs of the utilities serving these cities offer high levels of savings. Utilities and cities are working to increase their supply of and use of renewable energy. Ratepayers of water utilities have access to efficiency programs designed to save water and energy simultaneously.
TRANSPORTATION POLICIES	**SAN FRANCISCO, WASHINGTON, BOSTON, PORTLAND,** and **SEATTLE**	These cities' initiatives include location efficiency strategies, shifts to efficient modes of transportation, transit investments, efficient vehicles and vehicle infrastructure, freight system efficiency, and clean transportation for low-income communities.

SCORES

Table ES2 presents city scores in the five policy areas and their total scores.

TABLE ES2. SUMMARY OF SCORES

RANK	CITY	STATE	LOCAL GOVERNMENT OPERATIONS (9 PTS)	COMMUNITY-WIDE INITIATIVES (16 PTS)	BUILDINGS POLICIES (30 PTS)	ENERGY & WATER UTILITIES (15 PTS)	TRANSPORTATION POLICIES (30 PTS)	TOTAL (100 PTS)
1	**BOSTON**	**MA**	**7.5**	**9.5**	**25.5**	**12.5**	**22.5**	**77.5**
2	**SAN FRANCISCO**	**CA**	**7**	**7.5**	**21.5**	**12**	**23.5**	**71.5**
3	**SEATTLE**	**WA**	**6**	**11**	**22**	**10**	**21**	**70**
4	**MINNEAPOLIS**	**MN**	**6.5**	**10.5**	**20**	**12**	**20**	**69**
5	**WASHINGTON**	**DC**	**6.5**	**11.5**	**18.5**	**8.5**	**23**	**68**
6	**NEW YORK CITY**	**NY**	**6.5**	**6**	**25**	**9.5**	**20**	**67**
7	**LOS ANGELES**	**CA**	**6.5**	**10**	**21.5**	**13**	**14.5**	**65.5**
8	**DENVER**	**CO**	**6.5**	**10.5**	**20**	**11.5**	**16**	**64.5**
9	**AUSTIN**	**TX**	**7.5**	**10**	**21**	**9.5**	**15**	**63**
10	**PORTLAND**	**OR**	**7**	**7.5**	**15**	**11.5**	**21.5**	**62.5**
11	SAN JOSÉ	CA	3.5	9	23	11.5	15	62
12	OAKLAND	CA	6	9	19	10	15.5	59.5
13	SAN DIEGO	CA	6	7.5	19	13.5	12.5	58.5
14	CHICAGO	IL	3	9	20.5	9	15	56.5
15	ORLANDO	FL	7.5	10.5	14	5.5	14	51.5
16	PHILADELPHIA	PA	6.5	7.5	13.5	7.5	16	51

Executive Summary

RANK	CITY	STATE	LOCAL GOVERNMENT OPERATIONS (9 PTS)	COMMUNITY-WIDE INITIATIVES (16 PTS)	BUILDINGS POLICIES (30 PTS)	ENERGY & WATER UTILITIES (15 PTS)	TRANSPORTATION POLICIES (30 PTS)	TOTAL (100 PTS)
17	PHOENIX	AZ	6.5	10.5	13	7.5	13	50.5
18	LONG BEACH	CA	6	5.5	17.5	6.5	13.5	49
19	PITTSBURGH	PA	5.5	7	12.5	5	16	46
20	CHULA VISTA	CA	4.5	4	17	12.5	7.5	45.5
20	SACRAMENTO	CA	3.5	5.5	17.5	8.5	10.5	45.5
22	ATLANTA	GA	5	8.5	11	5	15.5	45
23	KANSAS CITY	MO	4.5	7	19	5.5	8.5	44.5
24	HARTFORD	CT	2	5	13	8.5	15	43.5
25	COLUMBUS	OH	4	7	9	8.5	13	41.5
25	PROVIDENCE	RI	6	8	5.5	11	11	41.5
27	CLEVELAND	OH	5	10.5	8	6	11	40.5
27	RIVERSIDE	CA	3	4.5	15.5	10	7.5	40.5
29	BALTIMORE	MD	3.5	6.5	9.5	6.5	13.5	39.5
30	SALT LAKE CITY	UT	6	6	9	6.5	8	35.5
31	ST. PAUL	MN	3	3.5	8	8.5	12	35
32	LAS VEGAS	NV	6.5	3.5	10	4.5	9.5	34
32	SAN ANTONIO	TX	4.5	5.5	11	4	9	34
34	CINCINNATI	OH	2	8.5	9	4	9.5	33
35	HOUSTON	TX	5	3.5	10	4.5	8.5	31.5
36	ST. LOUIS	MO	2.5	5.5	13	3.5	6.5	31
37	DALLAS	TX	3.5	2.5	13	5	5.5	29.5
38	GRAND RAPIDS	MI	4	2	6	8.5	8.5	29
39	ST. PETERSBURG	FL	3.5	8.5	6	2.5	8	28.5
40	BUFFALO	NY	3	2	5.5	6.5	11	28
40	RICHMOND	VA	3	3.5	7	4	10.5	28
42	BRIDGEPORT	CT	3	5	7	5	7	27
42	KNOXVILLE	TN	3.5	2.5	7.5	3.5	10	27
44	FORT WORTH	TX	1.5	1.5	9	7.5	7	26.5
44	MILWAUKEE	WI	3	3	4	8	8.5	26.5

Executive Summary

RANK	CITY	STATE	LOCAL GOVERNMENT OPERATIONS (9 PTS)	COMMUNITY-WIDE INITIATIVES (16 PTS)	BUILDINGS POLICIES (30 PTS)	ENERGY & WATER UTILITIES (15 PTS)	TRANSPORTATION POLICIES (30 PTS)	TOTAL (100 PTS)
44	RALEIGH	NC	5	2	8	3.5	8	26.5
47	HONOLULU	HI	3.5	2	2	7	11.5	26
47	NASHVILLE	TN	4	8.5	4.5	2.5	6.5	26
49	BAKERSFIELD	CA	1	1	12	8	2.5	24.5
50	INDIANAPOLIS	IN	3.5	6	3	5	6.5	24
51	NEW HAVEN	CT	1	5	5	4.5	8	23.5
52	ALBUQUERQUE	NM	3	0.5	5	6.5	8	23
52	NEW ORLEANS	LA	3.5	4.5	5.5	2	7.5	23
52	TUCSON	AZ	2.5	2	10	3	5.5	23
55	LOUISVILLE	KY	3	4.5	4.5	1.5	9	22.5
55	MIAMI	FL	2	3.5	8	1	8	22.5
55	WORCESTER	MA	4	1.5	6	7	4	22.5
58	ROCHESTER	NY	1	0.5	8	3.5	9	22
59	TAMPA	FL	1.5	3	6	3.5	7	21
60	EL PASO	TX	2	1.5	8.5	4	4.5	20.5
61	MEMPHIS	TN	1	0.5	7	4	6	18.5
61	RENO	NV	1	1	13	1.5	2	18.5
63	AURORA	CO	0.5	1	6.5	5.5	4.5	18
63	DETROIT	MI	1	0	6	5	6	18
63	VIRGINIA BEACH	VA	4	2	5	2.5	4.5	18
66	JACKSONVILLE	FL	1	1.5	4.5	3.5	6	16.5
66	MESA	AZ	0	1.5	7	4	4	16.5
68	CHARLOTTE	NC	3.5	3	1	5	3.5	16
69	OMAHA	NE	0	2.5	4	2	7	15.5
70	NEWARK	NJ	0.5	0	3	3.5	7.5	14.5
71	HENDERSON	NV	0	1	6	2.5	2	11.5
72	BIRMINGHAM	AL	1.5	0.5	5	1	3	11
73	MCALLEN	TX	0	0	8	1	1	10
74	TULSA	OK	0.5	0.5	0	3.5	2	6.5

Executive Summary

RANK	CITY	STATE	LOCAL GOVERNMENT OPERATIONS (9 PTS)	COMMUNITY-WIDE INITIATIVES (16 PTS)	BUILDINGS POLICIES (30 PTS)	ENERGY & WATER UTILITIES (15 PTS)	TRANSPORTATION POLICIES (30 PTS)	TOTAL (100 PTS)
75	OKLAHOMA CITY	OK	0.5	0	1.5	3.5	0	5.5
	MEDIAN		**3.5**	**4.5**	**9.0**	**5.5**	**8.5**	**29.0**

STRATEGIES FOR ADVANCING CLEAN ENERGY

All cities have considerable room for improvement, even those ranked in the top tier. Below are high-level recommendations for cities wanting to advance their clean energy efforts.

Cities ranked in the lowest one-third of the rankings (#51 through #75) can consider key policy steps:

- **Lead by example in local government operations and facilities.** Adopt policies and programs to save energy in public-sector buildings and fleets and in standard practices such as procurement.
- **Adopt GHG reduction, energy savings, and renewable energy targets.** Develop and codify goals for the public and private sectors to lay the foundation for further policy activity.
- **Partner with energy and water utilities** to develop and administer energy-saving plans and spur the greater adoption of renewable energy. Work with them to design programs to reach low-income and multifamily households.

Cities in the middle rankings (#26 through #50) can build on past successes and prioritize new sectors they have not yet addressed:

- **Engage low-income communities and communities of color as part of clean energy planning processes.** Structure public engagement strategies to increase feedback from marginalized groups.
- **Manage, track, and communicate energy performance, and enable broader access to energy use information.** Employ energy use data to improve energy plans. Work with utilities to improve local government's and residents' access to data.
- **Adopt clean energy policies for new buildings.** Ensure that energy code enforcement and compliance for new buildings 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.
- **Decrease transportation energy use through sustainable transportation planning and policy implementation.** Create sustainable transportation plans that include goals for reducing vehicle miles traveled (VMT) or GHG emissions from transportation and for increasing the trips taken using non-automobile modes of transportation. Use location-efficient

zoning and integrate transportation and land use planning so residents can access major destinations via multiple transportation modes.

Top cities (#1 through #25) can consider more advanced or cutting-edge policies:

- **Create clean energy requirements for existing buildings.** If cities have authority under state law, create energy action mandates like retrocomissioning requirements or building energy performance standards; if not, run voluntary programs addressing energy use in existing buildings.
- **Pursue innovative strategies in the transportation sector and track results.** Adopt strategies that currently do not have much uptake in cities, including increasing freight system efficiency. Track progress toward transportation-related goals to ensure continued efforts to achieve them.

Introduction

Cities have been leading the way on climate action and clean energy policy over the past several years. While the federal government has recently tried to reverse some climate change and clean energy policies, local leaders have continued to forge ahead. Past editions of the *City Energy Efficiency Scorecard* have documented cities' increasing commitment to energy efficiency. Each edition has shown city improvements; our 2017 *City Scorecard* was no exception (Ribeiro et al. 2017). More than half the communities assessed that year took steps in the right direction.

Increasingly, mayors and lawmakers in large cities are considering ways to reduce greenhouse gas emissions (GHG), cut energy costs for residents and businesses, and make their communities more resilient. Municipalities have pledged to do more to achieve climate goals, with actions ranging from committing to the We're Still In campaign to joining the US Climate Mayors coalition to signing the Chicago Climate Charter. Twenty-five finalist cities in the American Cities Climate Challenge are working to drive down their future GHG emissions through a range of energy efficiency and renewable energy initiatives. While city pledges are encouraging, actual progress in saving energy and reducing emissions can be challenging to measure. This year's expanded *City Clean Energy Scorecard*—previously the *City Energy Efficiency Scorecard*—begins to capture the extent to which pledges and commitments are leading to action in large US cities.

Cities' sense of urgency about climate change is one of the reasons we have expanded the scope of the *City Scorecard.* To do justice to their efforts, this year's report assesses a broader array of city actions and policies and aims to better capture their impact. It is clear that cities' efforts to save energy and their increasing commitment to renewable energy are inextricably connected. So, for the first time, the *Scorecard* assesses policies, codes, and activities to encourage renewable energy in addition to energy efficiency, as part of an overall portfolio of local clean energy efforts.

To better capture the outcomes of these efforts, we have also expanded our assessment of policy performance, measuring the extent to which policies like vehicle miles traveled (VMT) goals and outdoor lighting programs are delivering results. Simultaneously, we have placed more emphasis on equity, expanding metrics that capture the extent to which city actions are informed by input from the community and are designed to serve all residents.

The 2019 City Clean Energy Scorecard compiles information on policies and local actions to advance energy efficiency and renewable energy, comparing 75 cities across five policy areas. The increase in the number of cities assessed—from 51 in 2017 to 75 in 2019—and the increased frequency of the report—annual rather than biennial—provide a more timely and deeper analysis of the local clean energy landscape across the country. The scores we report identify cities that are excelling and those that have room for improvement. Our focus on policies and programs also makes the *Scorecard* a road map for local governments aiming to scale up their pursuit of clean energy initiatives and climate change mitigation goals.

Chapter 1: Methodology and Results

Lead Author: David Ribeiro

Cities around the globe account for two-thirds of the world's energy demand and 70% of energy-related carbon dioxide emissions (IEA 2016). That is why 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 around the United States have a variety of options to address their own energy use and to influence energy use in their communities. These options include land use and zoning laws, adoption and implementation of building codes, public finance, transportation investment, workforce development, and sometimes the provision of water and energy.

The thousands of local governments in the United States vary in size and authority and have diverse priorities, and as a result they have pursued different clean energy pathways. We document this variety in the *Scorecard* by focusing on the activities of 75 large US cities across five policy areas. Our metrics are based on common policy categories and actions local governments can carry out or influence; most of them measure policies and programs that cities have implemented within their own borders. They are broadly applicable to local governments throughout the United States, not just those in the *Scorecard*.

Chapter 1: Methodology and Results

GOALS AND APPROACH

The *Scorecard* describes and compares actions cities can take to enable or improve their energy efficiency and scale up renewable energy. Our analysis has several aims: First, by scoring cities' energy efficiency and renewable energy policies and activities, we identify the clean energy leaders as well as those with the most room for improvement. Second, by recognizing leaders and profiling success stories, we provide practical examples from which other communities can learn. The report's focus on policies and programs also makes it a road map for local governments aiming to scale up their pursuit of clean energy. This can be valuable for all cities but is especially so for those with the most room for improvement. Finally, by looking at progress over time, we can gauge cities' increasing achievements in prioritizing clean energy. Sustained success and improvement will allow cities to reach their ambitious goals.

In some cases, we have also considered steps taken by local actors other than the city government, such as investor-owned utilities, transportation authorities, and state governments. For example, each score accounts for utilities' energy efficiency investments, even if those utilities are investor-owned. Each score also reflects the stringency of the building energy code in the city, even if those codes are set at the state level. We scored actions lying outside the direct influence of the city government for several reasons. First, these outside actors can influence the progress cities make toward their clean energy goals. For cities to achieve their goals in some cases, regional and state policymakers also need to emphasize energy efficiency and renewable energy in their policies, planning, and decision making. Second, even if city governments do not manage energy-consuming entities, they can still influence them. They can do this through a variety of approaches, for example by establishing city practices that become de facto regional standards or engaging in the design and implementation of regional, state, and federal policy initiatives. Third, the *City Scorecard* is an educational resource to inform policymakers and interested citizens. We would present only a partial picture of a city's clean policy environment if we focused solely on city actions.

SELECTION OF CITIES

We focus on cities and their governments because of the important role cities play as centers of economic activity.[1] Central cities—the most populous cities in metropolitan regions—influence travel behavior and hold a large share of their region's commercial and industrial buildings. The largest city in a metro region can also have influence beyond its borders due to its ability to fast-track or derail regional decisions. Even outside of their regions, leaders of large cities can influence the policy of states and the federal government.

We include 75 cities in this edition of the *Scorecard*, an increase from the 51 cities included in the *2017 Scorecard*. We continue to focus primarily on the central cities of the largest metropolitan statistical areas (MSA) but have added some secondary cities and excluded some MSAs.[2]

1 For the purposes of the *Scorecard*, we define a city as the area within whose political borders a local government has direct policy authority (e.g., the city of Detroit rather than the Detroit–Livonia–Dearborn metropolitan statistical area).

2 As we have in past city scorecards, we excluded San Juan, Puerto Rico, and grandfathered in El Paso, Texas. We included El Paso in the first *City Scorecard*; it fit the city selection criterion we used at the time. Since then we have revised the criterion and the city no longer fits it. However we continue to include El Paso to be consistent.

Chapter 1: Methodology and Results

To maximize geographic diversity, past editions of the *Scorecard* assessed one city per MSA. This resulted in our omitting some populous and influential cities in larger MSAs. In this edition, we loosened our restrictions and included the second-most populous city in the MSA if its population exceeded 250,000. We allowed only one additional city per MSA to maintain geographic diversity and avoid overrepresenting certain metros.[3] This new methodology added nine cities: Aurora, Colorado; Chula Vista, California; Henderson, Nevada; Mesa, Arizona; Long Beach; Newark; Oakland; St. Paul; and St. Petersburg.

After accounting for the new secondary cities, we added the central cities of the next-largest MSAs until we reached 75 overall.[4] We added an MSA's central city if that city's population exceeded 100,000.[5] This threshold was meant to exclude smaller cities that function more as large suburbs than as major urbanized areas. Smaller cities could have been disadvantaged by metrics geared toward larger cities, especially those in transportation policies related to public transit and smart growth.

We also added Reno, Nevada, to the report even though it did not fit the above methodology. The *City Scorecard* will be a mechanism by which to gauge the progress of finalist cities in the American Cities Climate Challenge over the next several years. Therefore we sought to include all finalists of the Climate Challenge in the *Scorecard* so we could assess their clean energy activities.[6] While Reno was not ultimately selected for the Climate Challenge, it was a potential finalist city, and the only one not already included in the report at the time of our data collection.

Taken together, the included cities have large populations (the median is 469,450, with 110,040 in the smallest city), and each is a major city in an MSA with a large population (a median of 2,058,844, and none smaller than 464,593). These cities alone make up 17.2% of the population of the United States, and the metropolitan areas in which they are located contain 59.4% (Census Bureau 2018a, 2018b).

METRICS AND POLICY AREAS

The *City Scorecard* uses best-practice metrics to quantitatively score cities on the basis of nuanced, qualitative policy information. The metrics measure the adoption and implementation of specific government policies, actions, or public services that will likely lead to more energy-efficient outcomes or higher use of renewable energy. The information contained in the *Scorecard*, and upon which we score the 75 cities, reflects existing policies as of April 1, 2019.

Our focus on policy is in keeping with our goal of providing actionable information to policymakers, residents, and businesses. Policymakers need to know what they can do to improve their city's energy use based on their current situation. Residents and businesses need information on what services, policies, and incentives are available. They also need access to resources about the policies they may want their local government to support.

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3 Even with a 250,000 population threshold for adding cities, we would have over-weighted the New York–Newark–Jersey City MSA, the Dallas–Fort Worth–Arlington MSA, and the Los Angeles–Long Beach–Anaheim MSA if we did not include a cap on the number of cities per MSA. For example, in the latter metro area we would have had to include five cities (Los Angeles, Long Beach, Anaheim, Santa Ana, and Irvine).

4 Fresno, California, was one of the cities we planned to add to the *Scorecard* using this methodology. City staff informed us they would not be able to provide data in time for this edition and asked to wait until 2020, when we expand the report to cover 100 cities.

5 This criterion disqualified Greenville, South Carolina, and Albany, New York.

6 The Bloomberg American Cities Climate Challenge is a two-year acceleration program through which 25 cities are being given extensive resources and expert guidance to help them achieve or surpass carbon reduction goals. Through the Climate Challenge, cities are working to ramp up energy efficiency in buildings, increase the use of renewable energy, create more-sustainable transportation networks, or achieve a combination thereof.

Chapter 1: Methodology and Results

Metrics in past scorecards focused on policy adoption and implementation; only a few metrics assessed the performance of policies. For this edition, we attempted to go a step further and include more performance-based metrics, such as the number of public buildings retrofitted and the amount of public outdoor lighting converted to LEDs. We did not score outcomes—such as changes in energy use—whose exact relationship to policy actions is difficult to gauge.[7]

Although the policy environments in cities vary considerably, our metrics capture a broad range of municipal actions. They measure policies and programs that achieve one or more of the following:

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

We grouped all our metrics into five policy areas, each with its own chapter:

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

Each chapter presents, for its particular policy area, the metrics we used to score the cities. We offer some additional policy and program information in the appendixes, and we include the complete body of policy and program information along with city rankings in the ACEEE State and Local Policy Database.[8] We update this readily available online resource with each edition of the *City Scorecard* and as major policy developments occur. Local policymakers and other stakeholders can use the database to learn about innovative policies and programs being implemented in other cities.

7 Although not part of the scoring, past city scorecards included a chapter that analyzed energy use trends in those cities with available data. We omitted this chapter from the *2019 Scorecard*; we felt the city scores and rankings overshadowed the chapter findings since the energy use trends did not factor into scoring. However we will perform a similar type of analysis, but with a broader research scope, and aim to release it as a stand-alone report in early 2020.

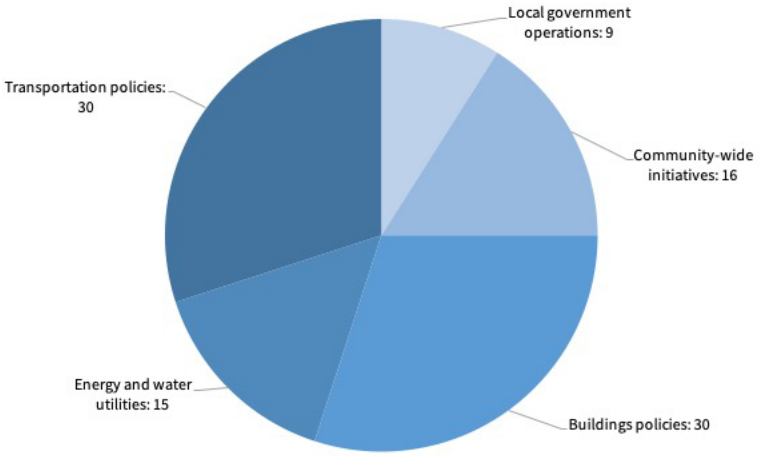
8 The ACEEE State and Local Policy Database can be accessed at **database.aceee.org.**

Chapter 1: Methodology and Results

SCORING METHOD

The maximum number of points a city can earn across all policy areas is 100. Figure 1 shows the point allocations across the five policy areas.

FIGURE 1. DISTRIBUTION OF POINTS BY POLICY AREA



We conducted an extensive methodology review prior to establishing the methodology for the *2019 Scorecard*, including reevaluating the distribution of points among the chapters. For past scorecards, we established our point distribution based on analyses of city energy consumption patterns and assessment by ACEEE and external experts of the potential impacts of city policies on improving energy efficiency. In this edition, we refined the point distribution among policy areas based on an analysis of local energy consumption as well as stakeholder and expert feedback. We removed 5 points from Energy and Water Utilities and 1 point from Local Government Operations and reassigned those points to Community-Wide Initiatives and Buildings Policies.

We made several other methodology improvements as well. Most notably, as mentioned earlier, we added metrics evaluating renewable energy efforts, expanded our assessment of policy performance, and took more steps to capture local government efforts to increase equity in planning and program delivery. We summarize these improvements in the sections below.

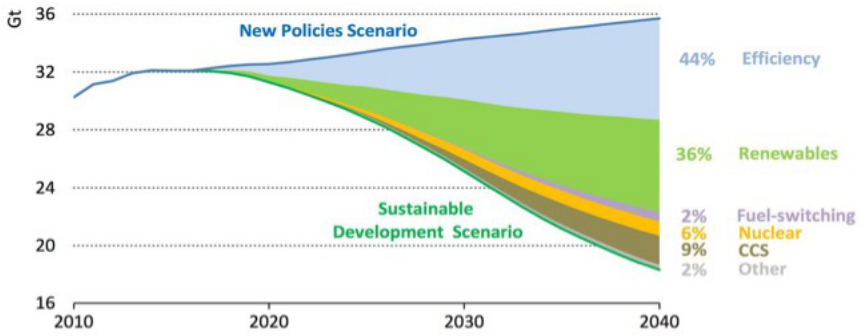
See Appendix A for a more detailed discussion of changes to the methodology, including point reallocations among policy areas and descriptions of both new metrics and metrics we removed.

Renewable Energy

For the first time, this year's *Scorecard* assesses policies, codes, and activities to encourage renewable energy. Both energy efficiency and renewable energy are essential to a clean energy future. The International Energy Agency (IEA) shows this in the "Sustainable Development Scenario" it created for meeting Paris Agreement goals. As shown in figure 2, energy efficiency and renewable energy are the largest drivers of global carbon dioxide emissions reductions in the low-carbon energy system IEA envisions in this scenario (IEA 2018).

Chapter 1: Methodology and Results

FIGURE 2. DRIVERS OF CARBON DIOXIDE EMISSIONS REDUCTIONS IN IEA'S SUSTAINABLE DEVELOPMENT SCENARIO. SOURCE: IEA 2018.



In adding metrics, we sought to focus on the most common and effective city strategies to increase renewable energy use. To identify them, we conducted a literature review and engaged stakeholders with expertise in renewable energy.[9] Based on our research, we decided to focus on the following activities:

- Setting renewable electricity goals
- Supporting the creation of local distributed energy systems, including onsite renewable energy systems and community solar
- Supporting programs for the renewable energy workforce
- Adopting solar readiness codes for buildings
- Providing renewable energy incentives
- Offering incentives for the installation of public or private EV charging infrastructure powered by renewable energy
- Influencing the renewable generation efforts of local energy utilities

Across the report, we allocated 16.5 points to metrics assessing renewable energy. These metrics either were dedicated to renewable energy or assessed a suite of clean energy activities including renewable energy. As we continue to integrate renewable energy into the *Scorecard*, we may revise the activities we assess as well as the overall points allocated to renewable energy.

Policy Performance

Past scorecards included metrics assessing (1) city progress toward climate and energy goals, (2) savings achieved by utility-administered energy efficiency programs, and (3) levels of funding allocated to transit systems. Beyond these three, we had few metrics assessing policy performance because the data to support such evaluation were scarce. We revisited the issue for this edition and were able to include more metrics (worth 25.5 points) assessing the performance of policies. These metrics assess either policy performance alone or a combination of policy adoption and performance. Examples of new metrics include the percentage of outdoor lighting converted to LEDs, bikeshare bikes per capita, and progress toward VMT goals and mode shift targets. Although data limitations continue to make the scoring challenging, the new metrics enable a fuller evaluation of city policies and programs and their results.

9 Research we reviewed included Borlick Associates (2016); Bradford and Fanshaw (2018); Rigter, Saygin, and Kieffer (2016); and Sierra Club (2017).

Chapter 1: Methodology and Results

Equity in Planning and Program Delivery

The *2017 City Scorecard* included our first attempt to evaluate efforts to bring energy efficiency to underserved markets, particularly low-income and multifamily households. The *2019 City Scorecard* places additional emphasis on equity, expanding metrics that capture the extent to which city actions are based on community input and are designed to serve all residents. Augmenting our previous metrics, the new metrics are equitable climate and energy planning, inclusivity in workforce development programs, and renewable energy incentives for low-income households. We also expanded our metric assessing clean, efficient transportation for low-income communities. Across the report, metrics worth a total of 12 points address equity. These metrics either are dedicated to equity considerations or assess a suite of activities that may include programs for marginalized communities.

See Appendix B for a detailed categorization of each metric in the *City Scorecard*. It shows which metrics assess renewable energy, policy performance, and equity in planning and program delivery and which metrics are new to the *Scorecard*.

Detailed Scoring

Table 1 presents the policy areas, metrics, and maximum points available.

TABLE 1. SCORING BY POLICY AREA

POLICY AREA AND SUBCATEGORIES	MAXIMUM SCORE
LOCAL GOVERNMENT OPERATIONS	**9**
Local government goals	4
Procurement and construction policies	2.5
Asset management	2.5
COMMUNITY-WIDE INITIATIVES	**16**
Community-wide goals	9
Equity-driven approaches to clean energy planning	1.5
Local clean distributed energy systems	4
Urban heat island mitigation	1.5
BUILDINGS POLICIES	**30**
Building energy code stringency	8
Building energy code compliance	5
Benchmarking and transparency	5
Incentives and financing	3
Required energy actions	7
Workforce development	2

Chapter 1: Methodology and Results

POLICY AREA AND SUBCATEGORIES	MAXIMUM SCORE
ENERGY AND WATER UTILITIES	**15**
Utility efficiency saving	4.5
Targeted energy efficiency programs	2.5
Energy data provision	1
Renewable energy incentives and efforts	3
Efficiency efforts in water services	4
TRANSPORTATION POLICIES	**30**
Sustainable transportation strategies	4
Location efficiency	6
Mode shift	7
Public transit	4
Efficient vehicles policies	4
Freight	2
Efficient transportation for low-income communities	3
MAXIMUM SCORE	**100**

Subsequent chapters describe in detail the scoring method for each policy metric. All local governments have some influence over the policies we cover in the *Scorecard*, but the degree 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 affect the policy mechanisms cities can use to influence energy-related outcomes (C40 and Arup 2015; Hinge et al. 2013). Some of our metrics have alternate scoring tracks to account for these differing capacities to act. For example, to ensure a fair comparison, our scoring for cities with municipal energy utilities is different from our scoring for those with investor-owned utilities.

DATA COLLECTION AND REVIEW

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

- **Methodology review.** We evaluated our previous methodology with a focus on data availability, distribution of points, and advancements documented in the literature. We also conducted new research on common practices in renewable energy to inform our new renewable energy metrics. We engaged external experts and sustainability staff for their feedback. As part of our engagement with cities, we held a webinar with interested local government staff to get their opinions on the metrics and the increased scope of the *City Scorecard.* Twenty-nine staff representing 27 cities attended.

Chapter 1: Methodology and Results

- **Baseline research for cities new to the *City Scorecard.*** We had policy information for the 51 cities we assessed in past scorecards, but we did not have data for the 24 new ones. To collect baseline data for these new cities, we engaged local government staff to gather key data sources detailing their energy efficiency and renewable energy activities. We reviewed these documents and used them to pre-populate the data requests to cities.
- **Data requests to cities and utilities and secondary data collection.** We asked local government staff (primarily sustainability staff) to complete a data request. Each request contained pre-populated policy data from our Local Policy Database or from the research described above. We asked local government staff to review and update the information as appropriate and provide new data for any new metrics. Respondents in 63 of the 75 cities returned completed data requests. We also asked staff at electric and natural gas utilities to complete data requests. Of the 89 data requests sent to utility contacts, 76 were returned to us. The city and utility staff members who completed and returned data requests are included in table C1 of Appendix C. Where relevant, we also used publicly available sources to supplement data request responses.
- **Review and revision.** We applied the scoring methodology to the data we collected and wrote up the results presented in the *City Scorecard.* The document went through an extensive external review process during which experts and stakeholders reviewed and commented on the data, the scores, and the methodology. We invited local government staff from all 75 cities assessed, energy utility staff from all pertinent energy utilities, and other experts to review the report. We were grateful to receive more than 900 comments from 130 individuals.

DATA LIMITATIONS

Comparing cities remains challenging due to broad differences in how cities track and report their data. We directly engaged city staff and energy utility staff for most of the information we used in our assessments. Eighty-four percent of cities responded to our requests, and 85% of utilities responded. When a city or utility did not complete a request, ACEEE researchers independently collected data using the most recent publicly available information, including climate action plans, sustainability plans, demand-side management plans, and city and utility web pages. In these cases, our reliance on independently collected data may mean that some activities in select cities were overlooked.[10] This could especially be the case for newly included cities that did not report data. In future scorecards, we will try again to collect data from these cities. In our experience, many cities that do not actively participate the first year they are included do participate in later years.

We also found it challenging to validate data cities submitted on the performance of their policies. We required that they include backup information allowing us to confirm the answers they provided in data requests; however we found it easier to confirm the existence of policies than to validate their performance. For example, we could confirm whether cities had established strategies to convert their outdoor public lighting to LEDs; we could not confirm statistics they provided on the number of outdoor lights upgraded to LEDs. For this edition, we accepted city performance claims, even where they could not be validated.

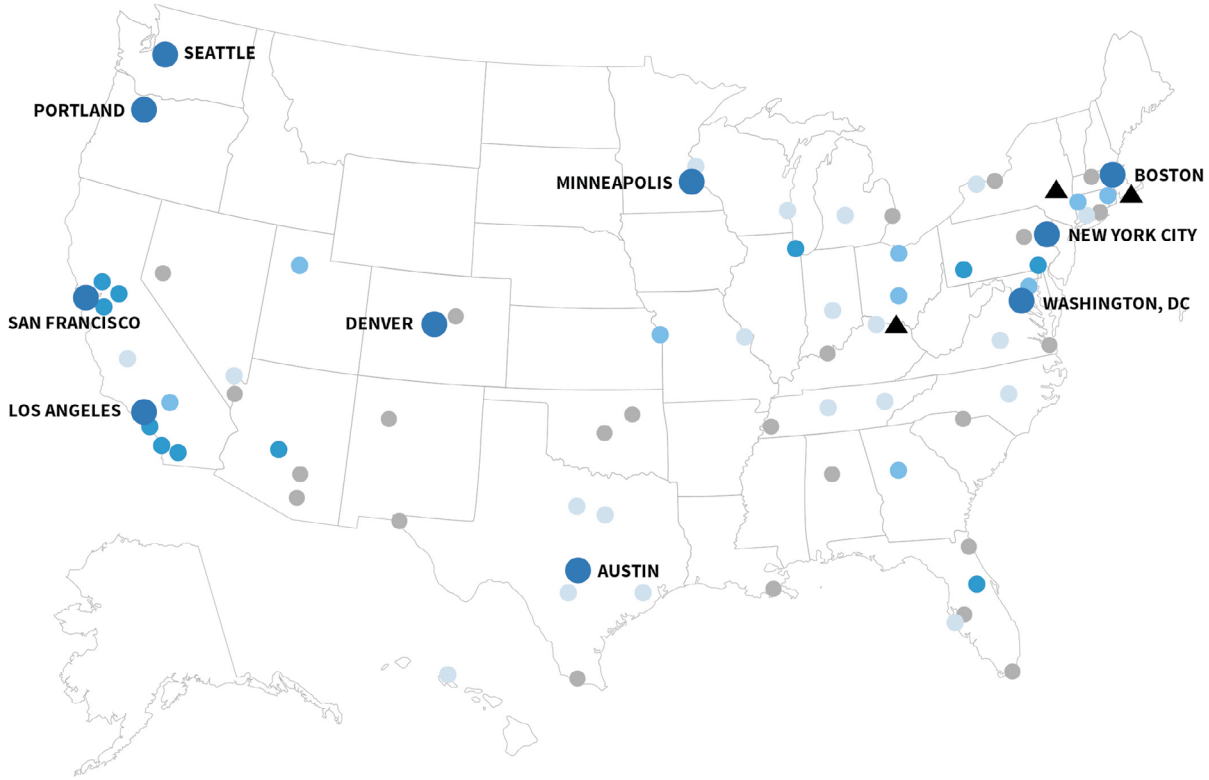
10 We gave a city 0 points if we could not find information for a particular metric despite extensive research.

Chapter 1: Methodology and Results

2019 RESULTS

We present the results of *The 2019 City Clean Energy Scorecard* in figure 3 and more fully in table 2. In the sections that follow, we discuss the leading cities, cities to watch, analysis of overall results, policy trends, top-scoring cities by crosscutting factors, and the performance of cities in the Bloomberg American Cities Climate Challenge.

FIGURE 3. *CITY SCORECARD* RANKINGS



Top 10 Cities	11-20	21-30	31-50		51-75	
1. Boston	11. San José	22. Atlanta	31. St. Paul	42. Bridgeport, CT	51. New Haven	63. Virginia Beach
2. San Francisco	12. Oakland	23. Kansas City	32. San Antonio	42. Knoxville	52. New Orleans	63. Aurora
3. Seattle	13. San Diego	24. Hartford	32. Las Vegas	44. Milwaukee	52. Tucson	63. Detroit
4. Minneapolis	14. Chicago	25. Providence	34. Cincinnati	44. Raleigh	52. Albuquerque	66. Jacksonville
5. Washington	15. Orlando	25. Columbus	35. Houston	44. Fort Worth	55. Louisville	66. Mesa
6. New York City	16. Philadelphia	27. Cleveland	36. St. Louis	47. Nashville	55. Miami	68. Charlotte
7. Los Angeles	17. Phoenix	27. Riverside, CA	37. Dallas	47. Honolulu	55. Worcester	69. Omaha
8. Denver	18. Long Beach	29. Baltimore	38. Grand Rapids	49. Bakersfield	58. Rochester	70. Newark
9. Austin	19. Pittsburgh	30. Salt Lake City	39. St. Petersburg	50. Indianapolis	59. Tampa	71. Henderson, NV
10. Portland	20. Sacramento		40. Richmond		60. El Paso	72. Birmingham
	20. Chula Vista, CA		40. Buffalo		61. Reno	73. McAllen, TX
					61. Memphis	74. Tulsa
						75. Oklahoma City

▲ Cities to watch: Hartford, Providence, Cincinnati

Chapter 1: Methodology and Results

The last column in table 2 lists the change in rank from the *2017 City Scorecard*. We have adjusted these values to compensate for this year's addition of 24 new cities. At the same time we caution against drawing conclusions about city progress based only on change in rank. Because of extensive methodology changes, simple comparisons with past scores and ranks could yield inaccurate impressions of city achievement. Results should be seen as setting new baselines for city scores and making for more straightforward comparisons in future scorecards.

TABLE 2. SUMMARY OF SCORES

RANK	CITY	STATE	LOCAL GOVERNMENT OPERATIONS (9 PTS)	COMMUNITY-WIDE INITIATIVES (16 PTS)	BUILDINGS POLICIES (30 PTS)	ENERGY & WATER UTILITIES (15 PTS)	TRANS-PORTATION POLICIES (30 PTS)	TOTAL (100 PTS)	CHANGE IN RANK FROM 2017
1	BOSTON	MA	7.5	9.5	25.5	12.5	22.5	77.5	0
2	SAN FRANCISCO	CA	7	7.5	21.5	12	23.5	71.5	7
3	SEATTLE	WA	6	11	22	10	21	70	0
4	MINNEAPOLIS	MN	6.5	10.5	20	12	20	69	7
5	WASHINGTON	DC	6.5	11.5	18.5	8.5	23	68	3
6	NEW YORK CITY	NY	6.5	6	25	9.5	20	67	-4
7	LOS ANGELES	CA	6.5	10	21.5	13	14.5	65.5	-3
8	DENVER	CO	6.5	10.5	20	11.5	16	64.5	1
9	AUSTIN	TX	7.5	10	21	9.5	15	63	-3
10	PORTLAND	OR	7	7.5	15	11.5	21.5	62.5	-6
11	SAN JOSÉ	CA	3.5	9	23	11.5	15	62	5
12	OAKLAND	CA	6	9	19	10	15.5	59.5	N/A
13	SAN DIEGO	CA	6	7.5	19	13.5	12.5	58.5	1
14	CHICAGO	IL	3	9	20.5	9	15	56.5	-6
15	ORLANDO	FL	7.5	10.5	14	5.5	14	51.5	6
16	PHILADELPHIA	PA	6.5	7.5	13.5	7.5	16	51	-3
17	PHOENIX	AZ	6.5	10.5	13	7.5	13	50.5	-2
18	LONG BEACH	CA	6	5.5	17.5	6.5	13.5	49	N/A
19	PITTSBURGH	PA	5.5	7	12.5	5	16	46	0
20	CHULA VISTA	CA	4.5	4	17	12.5	7.5	45.5	N/A
20	SACRAMENTO	CA	3.5	5.5	17.5	8.5	10.5	45.5	6
22	ATLANTA	GA	5	8.5	11	5	15.5	45	-1
23	KANSAS CITY	MO	4.5	7	19	5.5	8.5	44.5	-1

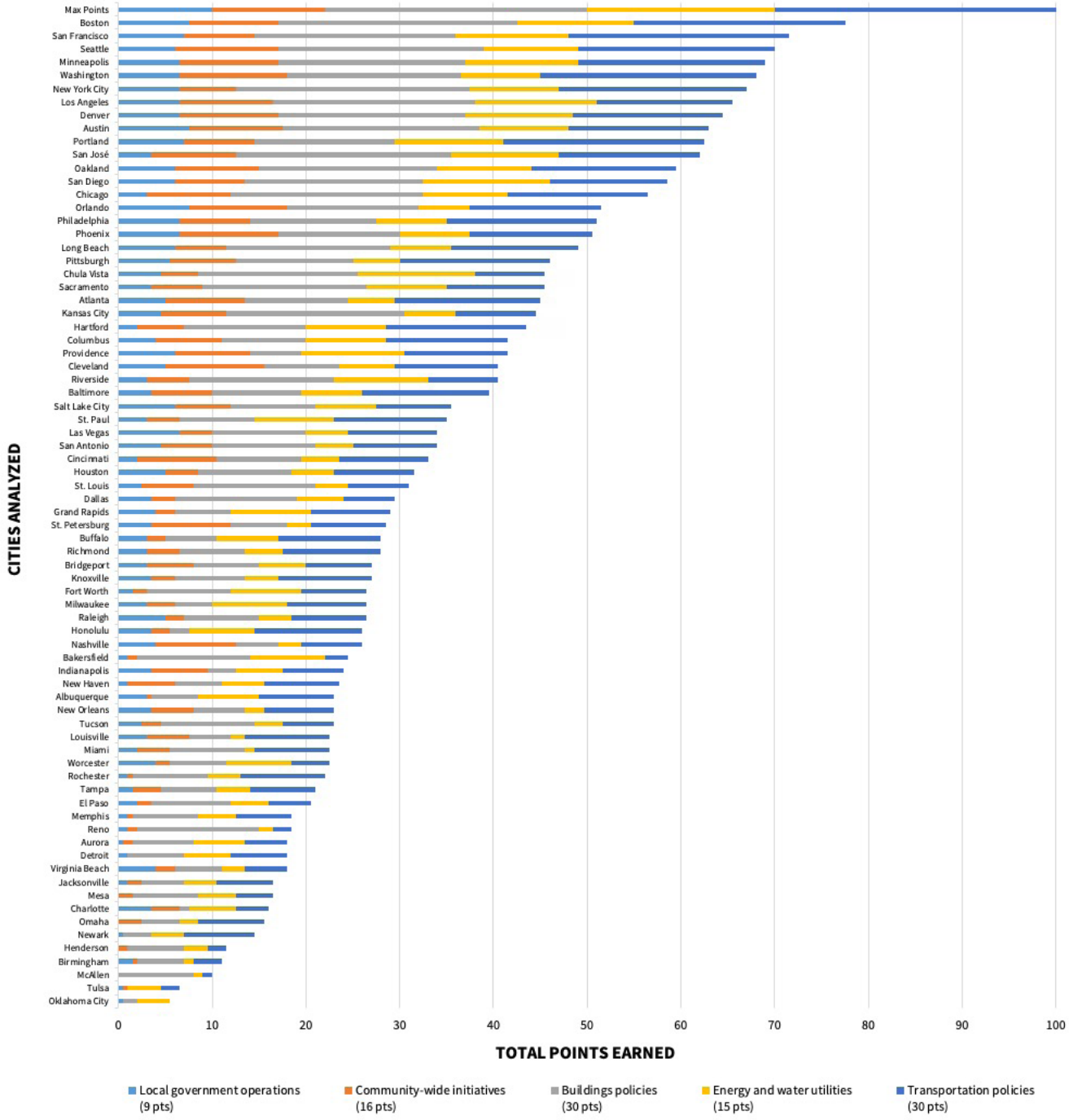
RANK	CITY	STATE	LOCAL GOVERNMENT OPERATIONS (9 PTS)	COMMUNITY-WIDE INITIATIVES (16 PTS)	BUILDINGS POLICIES (30 PTS)	ENERGY & WATER UTILITIES (15 PTS)	TRANS-PORTATION POLICIES (30 PTS)	TOTAL (100 PTS)	CHANGE IN RANK FROM 2017
24	HARTFORD	CT	2	5	13	8.5	15	43.5	26
25	COLUMBUS	OH	4	7	9	8.5	13	41.5	-1
25	PROVIDENCE	RI	6	8	5.5	11	11	41.5	9
27	CLEVELAND	OH	5	10.5	8	6	11	40.5	2
27	RIVERSIDE	CA	3	4.5	15.5	10	7.5	40.5	-2
29	BALTIMORE	MD	3.5	6.5	9.5	6.5	13.5	39.5	-11
30	SALT LAKE CITY	UT	6	6	9	6.5	8	35.5	-4
31	ST. PAUL	MN	3	3.5	8	8.5	12	35	N/A
32	LAS VEGAS	NV	6.5	3.5	10	4.5	9.5	34	4
32	SAN ANTONIO	TX	4.5	5.5	11	4	9	34	-2
34	CINCINNATI	OH	2	8.5	9	4	9.5	33	65
35	HOUSTON	TX	5	3.5	10	4.5	8.5	31.5	-6
36	ST. LOUIS	MO	2.5	5.5	13	3.5	6.5	31	5
37	DALLAS	TX	3.5	2.5	13	5	5.5	29.5	-4
38	GRAND RAPIDS	MI	4	2	6	8.5	8.5	29	N/A
39	ST. PETERSBURG	FL	3.5	8.5	6	2.5	8	28.5	N/A
40	BUFFALO	NY	3	2	5.5	6.5	11	28	N/A
40	RICHMOND	VA	3	3.5	7	4	10.5	28	-6
42	BRIDGEPORT	CT	3	5	7	5	7	27	N/A
42	KNOXVILLE	TN	3.5	2.5	7.5	3.5	10	27	N/A
44	FORT WORTH	TX	1.5	1.5	9	7.5	7	26.5	3
44	MILWAUKEE	WI	3	3	4	8	8.5	26.5	-6
44	RALEIGH	NC	5	2	8	3.5	8	26.5	8
47	HONOLULU	HI	3.5	2	2	7	11.5	26	N/A
47	NASHVILLE	TN	4	8.5	4.5	2.5	6.5	26	0
49	BAKERSFIELD	CA	1	1	12	8	2.5	24.5	N/A
50	INDIANAPOLIS	IN	3.5	6	3	5	6.5	24	3
51	NEW HAVEN	CT	1	5	5	4.5	8	23.5	N/A
52	ALBUQUERQUE	NM	3	0.5	5	6.5	8	23	N/A

RANK	CITY	STATE	LOCAL GOVERNMENT OPERATIONS (9 PTS)	COMMUNITY-WIDE INITIATIVES (16 PTS)	BUILDINGS POLICIES (30 PTS)	ENERGY & WATER UTILITIES (15 PTS)	TRANS-PORTATION POLICIES (30 PTS)	TOTAL (100 PTS)	CHANGE IN RANK FROM 2017
52	NEW ORLEANS	LA	3.5	4.5	5.5	2	7.5	23	0
52	TUCSON	AZ	2.5	2	10	3	5.5	23	N/A
55	LOUISVILLE	KY	3	4.5	4.5	1.5	9	22.5	-9
55	MIAMI	FL	2	3.5	8	1	8	22.5	5
55	WORCESTER	MA	4	1.5	6	7	4	22.5	N/A
58	ROCHESTER	NY	1	0.5	8	3.5	9	22	N/A
59	TAMPA	FL	1.5	3	6	3.5	7	21	-11
60	EL PASO	TX	2	1.5	8.5	4	4.5	20.5	0
61	MEMPHIS	TN	1	0.5	7	4	6	18.5	3
61	RENO	NV	1	1	13	1.5	2	18.5	N/A
63	AURORA	CO	0.5	1	6.5	5.5	4.5	18	N/A
63	DETROIT	MI	1	0	6	5	6	18	3
63	VIRGINIA BEACH	VA	4	2	5	2.5	4.5	18	-10
66	JACKSONVILLE	FL	1	1.5	4.5	3.5	6	16.5	-7
66	MESA	AZ	0	1.5	7	4	4	16.5	N/A
68	CHARLOTTE	NC	3.5	3	1	5	3.5	16	-4
69	OMAHA	NE	0	2.5	4	2	7	15.5	N/A
70	NEWARK	NJ	0.5	0	3	3.5	7.5	14.5	N/A
71	HENDERSON	NV	0	1	6	2.5	2	11.5	N/A
72	BIRMINGHAM	AL	1.5	0.5	5	1	3	11	1
73	MCALLEN	TX	0	0	8	1	1	10	N/A
74	TULSA	OK	0.5	0.5	0	3.5	2	6.5	N/A
75	OKLAHOMA CITY	OK	0.5	0	1.5	3.5	0	5.5	-1
	MEDIAN		**3.5**	**4.5**	**9.0**	**5.5**	**8.5**	**29.0**	

Figure 4 graphically displays city scores. It shows that cities have room to improve their performance across the *Scorecard*. Most of them received less than 50% of the available points, and even the leading city was nearly 25% short.

Chapter 1: Methodology and Results

FIGURE 4. SCORES BY POLICY AREA



Chapter 1: Methodology and Results

Leading Cities

Boston retained its position at the top of the *City Scorecard* rankings, continuing to be the only city to hold the top spot. The city performed well across the report but excelled in building policies and energy and water utilities. Boston earned the highest score for buildings policies due to its stringent building energy code—the Massachusetts Stretch Energy Code—and its benchmarking and energy action requirements established by the Building Energy Reporting and Disclosure Ordinance. As it has in the past, Boston received a perfect score for the efficiency efforts of the energy utilities serving the city due to substantial investments in electricity and natural gas efficiency programs and comprehensive low-income and multifamily program offerings. The city also earned points for its efforts to spur a greater penetration of renewable energy in the grid mix.

San Francisco took the second position in the *2019 City Scorecard* rankings. Driving its strong performance was its nation-leading score for transportation policies. San Francisco has a goal to reduce GHG emissions from its transportation sector and is one of only six cities to report measurable progress toward its goal. The city also led on mode shift efforts by progressing toward its modal share goal, having a strong complete streets policy, enacting a policy to encourage car sharing, and having a large number of bikeshare bikers per capita. The city also tied for the second-highest score for local government operations.

Seattle earned the third overall spot in the *City Scorecard,* performing well with its community-wide initiatives, building policies, and transportation policies. Seattle scored high marks for the Seattle Energy Code, its enforcement of the code, and its efforts to make its existing building stock more energy efficient. For example, it is the only city in the nation whose benchmarking ordinance has a 99% compliance rate, and its Tune-Up Policy requires building audits and tune-ups in large commercial buildings. Seattle earned high marks in community-wide initiatives due to its GHG reduction goal and energy efficiency goal, as well as its intention to maintain Seattle City Light's status as a carbon-neutral utility. The city also scored well for its efforts to engage and include low-income communities and communities of color in its environmental planning.

Minneapolis took the fourth spot in the *City Scorecard,* its highest rank to date. The city propelled itself higher in the rankings partially due to a suite of new policies addressing energy in existing buildings. In 2019 the city expanded its Commercial Building Energy Benchmarking and Transparency Ordinance and established policies requiring residential energy disclosures at the time of sale and time of rent. Minneapolis also excelled for its community-wide initiatives, due to efforts including the Green Zones Initiative.

Washington, DC, took over the fifth rank in the *2019 City Scorecard.* The District's strong performance was driven partially by the recently enacted Clean Energy DC Omnibus Amendment Act of 2018. The ordinance has several components, including a provision setting energy performance standards for large buildings. The District also earned the second-highest score for transportation policies. Washington is dedicated to reducing transportation energy use through a number of mechanisms, including sustainable transportation planning; freight system efficiency; and clean, efficient transportation for low-income communities. Like San Francisco, the District is also one of only six cities with measurable progress toward a sustainable transportation goal, namely its VMT reduction goal in MoveDC.

New York, Los Angeles, Denver, Austin, and Portland round out the top 10. The top-scoring cities among all four editions of the *City Scorecard* have been remarkably consistent. As table 3 shows, only 12 cities have appeared in the top 10 of any edition, and only 8 have appeared in the top 5.

TABLE 3. TALLY OF LEADING CITIES IN ALL *CITY SCORECARD* EDITIONS

CITY	APPEARANCES IN TOP 5	APPEARANCES IN TOP 10
BOSTON	4	4
SEATTLE	4	4
NEW YORK	3	4
SAN FRANCISCO	3	4
PORTLAND	2	4
WASHINGTON	2	4
MINNEAPOLIS	1	3
LOS ANGELES	1	2
AUSTIN	0	4
CHICAGO	0	3
DENVER	0	3
PHILADELPHIA	0	1

While the top-scoring cities have been consistent, at least one city has usually broken into the top ranks in each edition. While that did not happen this year, San José came very close, sitting 0.5 points behind 10th place Portland due to efforts like its Energy and Water Building Performance Ordinance.[11] The continued emergence of new cities in each edition shows that strong leadership on clean energy is continuing to emerge among cities. However the general consistency among top scorers also shows that most local decision makers in the highest-ranking cities continue to advance clean energy policies to maintain their position atop the *City Scorecard* rankings.

Cities to Watch

Past editions of the scorecard recognized a selection of most-improved cities. We removed the most-improved designation from the 2019 *Scorecard* because the extensive methodology improvements made comparisons with the 2017 *Scorecard* difficult. However we still wanted to recognize cities that made substantial policy progress since the last report. To do so, we created the "Cities to Watch" category. These are cities that have aggressively adopted or expanded a suite of clean energy policies and are poised to move up the rankings in future scorecards should they continue their pursuit of clean energy.

11 The Energy and Water Building Performance Ordinance requires all privately owned buildings of more than 20,000 square feet to benchmark energy usage. It also requires owners of inefficient buildings to conduct an energy audit or to perform retrofits or retrocommissioning.

Chapter 1: Methodology and Results

To determine the cities to watch, we identified cities outside the top 10 that had improved their rank relative to 2017 and, compared to most of their peers, had adopted more policies or started more new programs or other new initiatives since January 2017.[12] The cities to watch are Hartford, Cincinnati, and Providence. Table 4 gives information about these cities' ranks and policy improvements.

TABLE 4. CITIES TO WATCH

CITY	2019 RANK	POLICY AND PROGRAM PROGRESS
CINCINNATI	33	Adoption of GHG emissions reduction goal, renewable energy goal, and energy efficiency goal; removal of minimum parking requirements in select neighborhoods; advocacy for more stringent state-wide building energy codes
HARTFORD	24	Creation of energy improvement district, start of LED streetlight program, advocacy to state for community solar, removal of minimum parking requirements, revised zoning regulations (2016)
PROVIDENCE	25	C-PACE authorization, workforce development programs, RePowerPVD program, formation of Racial and Environmental Justice Committee

Cincinnati adopted the Green Cincinnati Plan in May 2018, committing itself to a suite of clean energy goals including a goal to reduce GHG emissions by 80% by 2050. The city also has goals to reduce energy consumption 2% annually and to use 100% renewable energy by 2035. Cincinnati also took steps to increase location efficiency by voting to remove mandatory parking requirements for housing developments and commercial properties in three neighborhoods in the downtown area.

Hartford improved its performance across several areas, most notably transportation policies. In 2017 Hartford worked to improve location efficiency by eliminating all minimum parking requirements across every zoning use. In 2016 the city adopted a complete streets policy and passed updated zoning regulations for the first time in 50 years.[13] The updated regulations promote the installation of onsite solar and wind, establish requirements and incentives to mitigate the urban heat island effect, and mandate EV charging stations for some development types. In 2017 the city formally created an energy improvement district, which now allows it to enter into agreements to create distributed energy resources. The city's score also benefited from improved data collection. Beyond awarding points for the updated zoning regulations, we recognized building code compliance efforts in this report that were not reported for the 2017 *Scorecard*.

Providence has taken several steps to advance its clean energy agenda. The city approved an agreement allowing building owners to use C-PACE to finance energy efficiency upgrades. In 2017 the city partnered with National Grid and the Northwest Energy Efficiency Council to offer a Building Operator Certification class, and in 2018 it partnered with the Urban Green Council to offer Green Professional Building Skills Training. Providence has also shown a commitment to engage low-income communities and communities of color in its environmental planning processes. The city helped create the Racial

12 Denver, Minneapolis, San José, and Washington are cities in the top 10 that have made substantial progress since the last *Scorecard*. Their achievements are discussed in the Leading Cities section above.

13 Although these achievements occurred prior to January 2017, we recognize them in this edition of the *Scorecard* because they were not reported during data collection for the 2017 edition.

and Environmental Justice Committee, which was formed in late 2016 and early 2017. The group has helped the city better incorporate equity into its work, and is leading the city's engagement process for its climate action plan.

Top-Scoring Cities by Crosscutting Factors

In prior years, the *City Scorecard* focused exclusively on energy efficiency. The new expansions to the *Scorecard* make it easier to holistically understand cities' level of ambition for their clean energy agendas. However it may be more difficult to understand city performance on topics and factors that cut across chapters, like energy efficiency or equity considerations. We understand that some may be interested in how cities scored on these crosscutting factors.

Table 5 lists the leading cities for energy efficiency metrics and equity metrics across the report. Table 5 also lists three cities for renewable energy policy. Since this was the first *City Scorecard* to assess renewable energy policy, our approach was to incorporate a limited number of metrics on best-practice policies and reevaluate those metrics over time. Our scoring was meant to be a starting point rather than a comprehensive assessment of renewable energy policy in cities. The below cities should be interpreted as those with notable practices to share, as opposed to a definitive list of leading cities for renewable energy policy.

In the sections that follow, we discuss the top-scoring cities across these factors. When multiple cities are tied, we only describe the activities of one city in further detail. In Appendix D we provide lists of all city scores for each of these factors.

TABLE 5. TOP-SCORING CITIES BY CROSSCUTTING FACTORS

	ENERGY EFFICIENCY POLICY	EQUITY-DRIVEN CLEAN ENERGY PLANNING AND POLICY	RENEWABLE ENERGY POLICY
HIGHEST-SCORING CITY	BOSTON	MINNEAPOLIS	AUSTIN
SECOND-HIGHEST SCORING CITY	NEW YORK	SEATTLE	SEATTLE
THIRD-HIGHEST SCORING CITY	SAN FRANCISCO	BOSTON, PHILADELPHIA, PROVIDENCE, WASHINGTON (tie)	LOS ANGELES, SAN FRANCISCO, SAN DIEGO (tie)

Energy Efficiency Policy

Energy efficiency accounts for the majority of points in the *Scorecard*, so it is unsurprising to see Boston, New York, and San Francisco as the highest-scoring cities for energy efficiency. All three have comprehensive approaches to reducing energy use in buildings and the transportation system. Further details on Boston's and San Francisco's cutting-edge policies are included in the "Leading Cities" section.

Equity-Driven Clean Energy Planning and Policy

Minneapolis. Minneapolis earned points for each equity-driven metric. The city has created Northern and Southside Green Zones that are community driven. Members of these communities sit on task forces that serve as an advisory board to the City Council and mayor on the implementation and evaluation of climate action work plans. The city and Green Zone Task

Forces use indicators to track the outcomes of sustainability initiatives that serve the zones. The energy utilities serving the city, Xcel Energy and CenterPoint Energy, offer a variety of programs for low-income customers. Minneapolis also performed well for its efforts to provide clean, efficient transportation for low-income communities. The Affordable Housing Trust Fund and Low Income Housing Tax Credit encourage transit-oriented development, and NiceRide, the bike sharing program, offers discounted annual memberships to qualifying residents, including low-income households.

Seattle. Seattle scored well for several metrics on this topic, such as having an equity-driven approach to clean energy planning and offering energy efficiency programs targeting low-income and multifamily customers. The city formed the Environmental Justice Committee in 2017. It allows residents most affected by environmental inequities to influence implementation of the Equity and Environment Agenda, the city's strategy for ensuring a just and equitable approach to environmental planning. The city's electric utility, Seattle City Light, provides funding to a low-income weatherization program administered by the city of Seattle's Office of Housing, and it also offers a comprehensive multifamily program.

Washington. Like Seattle, the District earned several points for its equity-driven approach to clean energy planning and its targeted energy efficiency programs. Washington, in partnership with the Georgetown Climate Center, created the Equity Advisory Group, consisting of residents and leaders of neighborhoods most at risk of experiencing the negative effects of climate change. The DC Sustainable Energy Utility (DCSEU) administers utility customer–funded energy efficiency programs in the city and has a portfolio of programs focusing on different sectors of low-income customers, including residents of affordable multifamily buildings. Through Solar Works DC, the city also provides low-income residents with solar installation job training.

Renewable Energy Policy

Austin. Austin Energy produced 36% of its total generation from renewable sources in 2017. Its Resource, Generation and Climate Protection Plan established goals to procure at least 55% of customer consumption from renewable energy resources by 2025 and 65% by the end of 2027. The city has ordinances supporting local onsite solar, including a requirement that all new residential and commercial buildings be solar ready, and initiatives to expand access to low-income customers. Austin has two community solar projects, more than 50 onsite solar projects on municipal buildings, and more than 8,000 onsite solar projects on private buildings.

Seattle. In 2017, Seattle City Light produced 93% of its electricity generation from renewable sources including hydro power. The city does not have a renewable energy goal, but the Seattle Climate Action Plan states the intention to maintain Seattle City Light's status as a carbon-neutral utility. Seattle City Light has developed five community solar projects with cumulative generating capacity of 170 kW. The utility supports renewable energy deployment through its Green Up program, which awards grants to schools, affordable housing complexes, parks, and hospitals to install onsite solar.

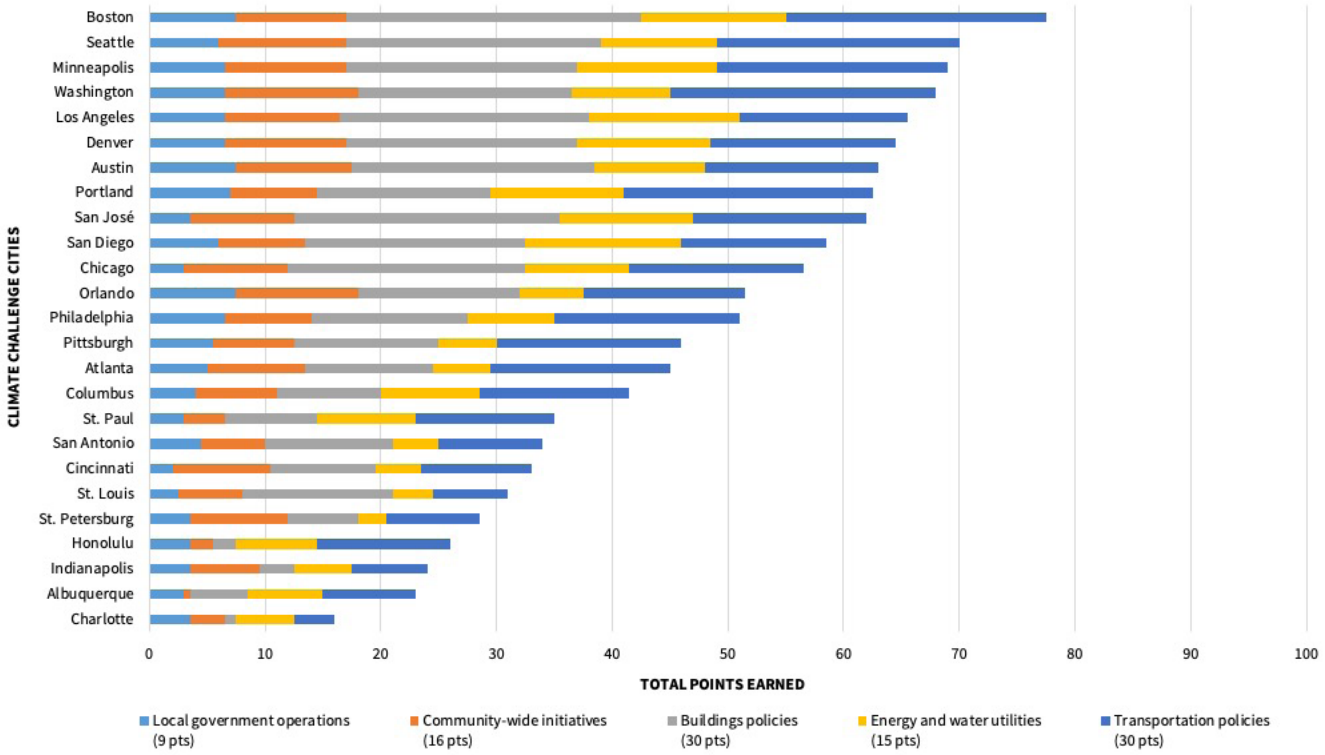
San Diego. San Diego's Climate Action Plan includes a goal to generate 100% of its community-wide energy from renewable sources by 2035. In 2017 San Diego Gas & Electric provided $655,500 in incentives for the installation of 218.5 kW of new distributed solar systems, equating to $3,000/kW installed. These incentives were paid via the Single-Family Affordable Solar Homes (SASH) Program, which provides an upfront capacity-base incentive to qualified low-income homeowners for the installation of solar systems. The city has also streamlined its solar PV permitting process.

Chapter 1: Methodology and Results

Bloomberg American Cities Climate Challenge

Cities in the Bloomberg American Cities Climate Challenge have committed themselves to aggressive actions to reduce GHG emissions. The next three editions of the *City Scorecard* will assess their progress.[14] Each Climate Challenge city's score in the 2019 *Scorecard* will serve as a baseline against which we measure progress in subsequent editions of the report. Figure 5 shows the scores for all Climate Challenge cities.

FIGURE 5. RESULTS FOR CLIMATE CHALLENGE CITIES



As figure 5 shows, many Climate Challenge cities are already top-scoring cities in the *Scorecard*. Finalist cities occupy four of the top five spots in the report. However only Boston and Seattle scored 70 or more points, so each still has much room to improve. Climate Challenge cities range in rank from 1st to 68th. Some of the lower-performing cities have a good deal of low-hanging fruit available to them as they pursue their clean energy agendas. They could rise quickly through the rankings in subsequent years as they adopt and implement new policies.

14 The Climate Challenge will conclude by the end of 2020. By assessing the activities of Climate Challenge cities over the next three editions, the *City Scorecard* will be able to gauge policy progress over the lifetime of the initiative.

Chapter 1: Methodology and Results

Beyond assessing overall progress over the next three years, we will home in on cities' results in the buildings policies and transportation policies sections of the report. The Climate Challenge seeks to support cities in ramping up energy efficiency in buildings, increasing the use of renewable energy, creating more-sustainable transportation systems, or a combination thereof. To achieve their aims, cities will develop and pursue different clean energy strategies that may include (but are not limited to) adopting benchmarking and transparency policies, accelerating the transition to EVs, and powering municipal operations through solar energy. While metrics capturing these efforts are scattered throughout this report, they are most concentrated in the buildings policies and transportation policies sections.

Table 6 below details the *City Scorecard* scores of Climate Challenge cities.

TABLE 6. CLIMATE CHALLENGE CITIES SCORES

CITY	LOCAL GOVERNMENT OPERATIONS (9 PTS)	COMMUNITY-WIDE INITIATIVES (16 PTS)	BUILDINGS POLICIES (30 PTS)	ENERGY & WATER UTILITIES (15 PTS)	TRANSPORTATION POLICIES (30 PTS)	TOTAL (100 PTS)	*CITY SCORECARD* RANK
BOSTON	7.5	9.5	25.5	12.5	22.5	77.5	1
SEATTLE	6	11	22	10	21	70	3
MINNEAPOLIS	6.5	10.5	20	12	20	69	4
WASHINGTON	6.5	11.5	18.5	8.5	23	68	5
LOS ANGELES	6.5	10	21.5	13	14.5	65.5	7
DENVER	6.5	10.5	20	11.5	16	64.5	8
AUSTIN	7.5	10	21	9.5	15	63	9
PORTLAND	7	7.5	15	11.5	21.5	62.5	10
SAN JOSÉ	3.5	9	23	11.5	15	62	11
SAN DIEGO	6	7.5	19	13.5	12.5	58.5	13
CHICAGO	3	9	20.5	9	15	56.5	14
ORLANDO	7.5	10.5	14	5.5	14	51.5	15
PHILADELPHIA	6.5	7.5	13.5	7.5	16	51	16
PITTSBURGH	5.5	7	12.5	5	16	46	19
ATLANTA	5	8.5	11	5	15.5	45	22
COLUMBUS	4	7	9	8.5	13	41.5	25
ST. PAUL	3	3.5	8	8.5	12	35	31
SAN ANTONIO	4.5	5.5	11	4	9	34	32
CINCINNATI	2	8.5	9	4	9.5	33	33
ST. LOUIS	2.5	5.5	13	3.5	6.5	31	36

Chapter 1: Methodology and Results

CITY	LOCAL GOVERNMENT OPERATIONS (9 PTS)	COMMUNITY-WIDE INITIATIVES (16 PTS)	BUILDINGS POLICIES (30 PTS)	ENERGY & WATER UTILITIES (15 PTS)	TRANSPORTATION POLICIES (30 PTS)	TOTAL (100 PTS)	*CITY SCORECARD* RANK
ST. PETERSBURG	3.5	8.5	6	2.5	8	28.5	39
HONOLULU	3.5	2	2	7	11.5	26	47
INDIANAPOLIS	3.5	6	3	5	6.5	24	50
ALBUQUERQUE	3	0.5	5	6.5	8	23	52
CHARLOTTE	3.5	3	1	5	3.5	16	68
MEDIAN OF CLIMATE CHALLENGE CITIES	**5**	**8.5**	**13.5**	**8.5**	**14.5**	**51**	
MEDIAN OF ALL *CITY SCORECARD* CITIES	**3.5**	**4.5**	**9.0**	**5.5**	**8.5**	**29.0**	

As table 6 shows, the median score for Climate Challenge cities in the buildings and transportation sections are 13.5 and 14.5, respectively. The medians do not exceed half the number of points available in each sector, but they do exceed the median scores in these areas across all *City Scorecard* cities. This shows that Climate Challenge cities are more advanced than most, but they still have room for improvement. As Climate Challenge cities adopt policies to make their building more efficient, their transportation systems more sustainable, and their energy generation more renewable, we expect to see scores rise in these areas for individual cities as well as Climate Challenge cities as a whole.

Interpreting Results across Policy Areas for All Cities

Score Variation Among Tiers

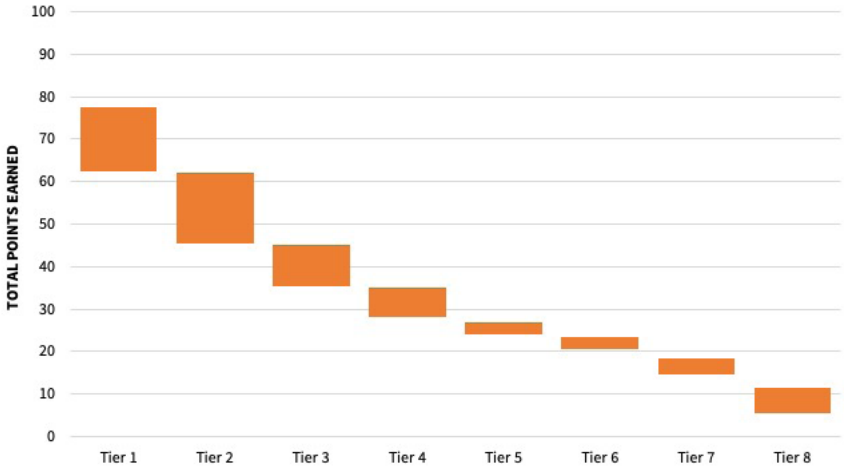
It is often helpful to look at city scores in groups or tiers of 10 when attempting to contextualize results. In many cases, cities in the same tier exhibit similar levels of leadership on clean energy policy. The few points that separate individual cities from each other can be less indicative of a city's clean energy ambition than the tier in which each is grouped. For example, any city in the top tier is a national leader, regardless of small differences in the points they have earned. Divergent city priorities may lead to the difference in points, but each tier 1 city has lessons to offer others. Conversely, those cities in tiers 7 and 8 all have substantial room to improve.

Figure 6 shows the point ranges in city scores among the eight tiers in the *2019 City Scorecard*.[15]

15 We use shading in table 2 to indicate the tiers. See table 3 for more information on the cities contained in each tier.

Chapter 1: Methodology and Results

FIGURE 6. RANGE OF TOTAL POINTS EARNED PER CITY TIER



Tiers 1 and 2 have the widest ranges of scores among the city tiers in the report. The wider score distributions indicate that clean energy leaders have emerged and distinguished themselves not only from cities in other tiers but also from others within their own tier. While cities like Denver, Los Angeles, and San José have shown it is possible to make sizable jumps in the rankings and gain ground on top-scoring cities, they have also shown it takes concerted policy progress to do so.

The point variations begin to narrow in tier 3 but are especially narrow in tiers 4 through 7. Twenty ranks separate the lowest-scoring city in tier 4 and the lowest-scoring city in tier 6, yet these two cities are within just 7.5 points of each other. The closely clustered scores, especially in tiers 5 and 6, mean that small improvements in scoring will likely help cities move up in the rankings. Conversely, those that do not make improvements will fall in the rankings.

The score variations in the bottom two tiers are also narrow. Some of these cities have consistently ranked in the bottom tier throughout the four *Scorecard* editions.[16] Eight of the cities in these tiers are new to the *Scorecard*, though, so it is also possible we did not fully capture their policy activity. Cities are in these tiers because they are relatively new to clean energy activities, are just beginning comprehensive efficiency initiatives, or simply have not prioritized energy efficiency and renewable energy. Any one of them could quickly gain ground in future rankings if it began pursuing clean energy policies.

A comparison of the bottom tiers with the top tiers also shows the gulf between the leading cities and those at the bottom of the rankings. Tier 1 is separated from tier 8 by more than 50 points, showing that bottom-tier cities have substantial room to improve.

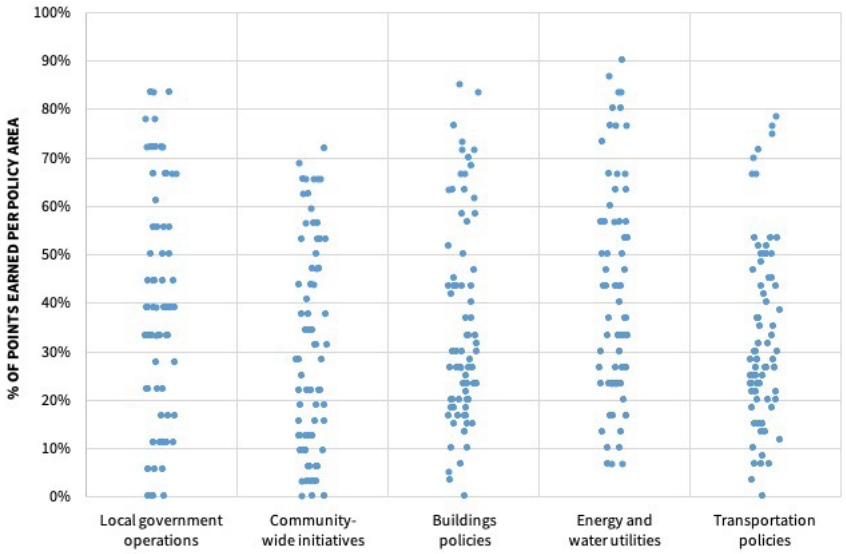
Policy Area Scoring Distributions

Figure 7 displays the distribution of city scores by policy area. It indicates how cities are prioritizing particular categories and shows whether clear leaders exist within policy areas.

16 In past editions, the bottom tier represented those cities ranked from 41st to 51st.

Chapter 1: Methodology and Results

FIGURE 7. POINT DISTRIBUTION BY POLICY AREA



The scores are generally evenly scattered across the distributions for local government operations, community-wide initiatives, buildings policies, and energy and water utilities. In transportation policies, scores are more clustered. There, most scores are scattered between 0% and 55%. The distribution of scores also sits lower than the concentrations of city scores in the four other policy areas. Only 7 transportation scores break the 55% threshold; every other policy area has at least 13 cities that exceed the same threshold.

The lagging city performance for transportation policies is consistent with the results from past scorecards. This may mean that transportation has been less of a priority for cities relative to other policy areas, or it may point to the complexity of transportation policy decisions, since many are made in coordination with regional actors. Regardless, it shows that few cities are excelling on transportation policies and all cities can invest more in strengthening their policies.

Policy Trends

Cities continue to ramp up their commitments to reduce GHG emissions by adopting new policies, creating new programs, and strengthening already-existing efforts. Between January 31, 2017, and April 1, 2019, across all 75 cities, local governments took more than 265 new actions or improved past initiatives to advance their clean energy efforts. City actions range from modest (e.g., creating telecommuting policies for local government employees, allowing them to reduce commutes) to cutting-edge (e.g., setting performance standards for existing buildings). This finding is consistent with past scorecards that showed increasing commitments to a core clean energy strategy—namely, energy efficiency.

A minority of cities appear to be on track to achieve their GHG emissions goals. Although cities are continuing to set goals to reduce their GHG emissions, documented progress toward those goals is uneven. Of the 49 cities with goals to reduce GHG emissions community-wide, we projected that just 11 are on track to meet them. Similarly, of the 39 cities with goals for local government operations, we projected only 17 to be on track.

Chapter 1: Methodology and Results

Cities continue to expand their efforts to reduce energy use in private buildings. Since the *2017 City Scorecard,* cities have increased their focus on reducing energy consumption in both new buildings and existing ones. Nine cities adopted more stringent building energy codes, while several states including California adopted more stringent energy codes that apply in cities across the state. Eight cities have also adopted energy requirements including residential energy disclosure policies (Minneapolis), benchmarking and transparency ordinances (San José and Salt Lake City), building labeling requirements (Chicago and New York), and energy performance standards (Washington).[17]

Cities are increasing their efforts to reduce GHG emissions from transportation, but they can do more. Since January 2017, cities have pursued more initiatives to reduce GHGs from the transportation sector. Four cities have codified new VMT/GHG emissions reduction goals for transportation, eight have taken steps to decrease or eliminate minimum parking requirements, three have adopted complete streets policies, and nine have created new bike sharing programs. While this progress is encouraging, cities still need to intensify their focus on transportation. As figure 7 shows, only seven cities earned more than 55% of their points from their efforts in transportation, while at least 13 cities reached that threshold in every other policy area.

Emerging efforts exist to increase engagement of and clean energy investments for low-income communities and communities of color, but cities have substantial room to ramp up their efforts. Few cities scored well on metrics assessing efforts to achieve equitable outcomes for all communities. However cities that have not scored well can leverage the emerging models and practices to shorten the learning curve and jump-start activities in their own communities. For example, only Minneapolis, Providence, and Seattle had robust approaches to equity-driven climate action or energy planning. Their approaches to equitable community engagement, decision making, and accountability are models other cities can use in their planning processes. Similarly, those utilities not offering strong low-income and multifamily energy efficiency programs can learn from the activities of leading utilities.

Cities unevenly track progress on the performance of their policies. While cities are adopting new clean energy policies and kicking off initiatives, many do not appear to be tracking or reporting data on progress toward their goals. For example, only nine cities with vehicle miles traveled reduction goals or similar transportation-related goals reported data allowing us to assess progress. Similarly, of the 49 cities with community-wide GHG goals, only 27 had data that we could use to assess their progress toward goals.

State policy propels cities forward or inhibit their performance. While the *City Scorecard* focuses on city government actions, variations in jurisdictional authority mean that state policy can affect city scores. Cities in states with strong clean energy policies may benefit, while others may be limited in their ability to adopt certain policies. For example, California cities performed well for buildings codes due to strong energy efficiency provisions in the California Building Energy Efficiency Standards (BEES). Cities in Ohio, Oklahoma, and North Carolina lost the opportunity to earn up to 5 points because their states require them to adhere to less stringent statewide standards, even though they advocate for stronger codes.[18] Similarly, cities in Arizona (Mesa, Phoenix, and Tucson), Minnesota (Minneapolis and St. Paul), Virginia (Richmond and Virginia Beach), and Wisconsin (Milwaukee) could not earn full points in some categories. Either a lack of enabling state

17 New York adopted performance standards for existing buildings after our April 1, 2019 cutoff for policy activity.

18 The residential energy code was recently updated in Ohio, so Ohio cities will fare better in the next *City Scorecard.*

legislation or an override prevents them from pursuing certain requirements for buildings owners to reduce energy use. Also, utilities in states without energy efficiency resource standards likely earned fewer points for metrics assessing energy efficiency savings, which would also adversely affect city scores (Nowak et al. 2011).[19]

STRATEGIES FOR ADVANCING CLEAN ENERGY

All cities have considerable room for improvement, even those ranked in the top tier. Below are high-level recommendations and example policies for cities wanting to advance their clean energy efforts.

Cities in the lower one-third of the rankings (#51 through #75) can consider foundational policy steps:

- **Lead by example in local government operations and facilities.** Adopt policies and programs to save energy in public-sector buildings and fleets and in standard practices such as procurement (Chapter 2). Boston has a carbon-neutrality goal, requires municipal departments to purchase high-efficiency vehicles, and benchmarks energy use in 100% of its municipal buildings.
- **Adopt GHG reduction, energy savings, and renewable energy targets.** Develop and codify goals for the public and private sectors to lay the foundation for further policy activity (Chapters 2 and 3). Washington adopted ambitious goals to reduce greenhouse gas emissions, lower energy use, and ramp up the use of renewable electricity by 2032.
- **Partner with energy and water utilities** to develop and administer energy-saving plans and spur the greater adoption of renewable energy. Work with the utilities to design programs to reach low-income and multifamily households as part of a partnership (Chapter 5). The Clean Energy Partnership between Minneapolis and the city's two largest utilities formalizes a role for the utilities in the city's efforts to achieve its energy goals.

Cities in the middle rankings (#26 through #50) can build on past successes and prioritize new sectors they have not yet addressed:

- **Engage low-income communities and communities of color in clean energy planning processes** (Chapter 2). Seattle formed the Environmental Justice Committee in 2017. It allows residents most affected by environmental inequities to influence implementation of the Equity and Environment Agenda.
- **Manage, track, and communicate energy performance, and enable broader access to energy use information.** Use energy use data to improve energy plans. Work with utilities to improve local government's and residents' access to data (Chapters 2, 3, and 5). Austin Energy's annual corporate reports include community-wide energy consumption information.
- **Adopt clean energy policies for new buildings.** Ensure that energy code enforcement and compliance for new buildings are effective and well funded. If the city has authority under state law, adopt more stringent building energy codes; if

19 Energy efficiency resource standards establish targets for energy savings that utilities or nonutility program administrators must meet through their energy efficiency programs.

not, advocate for the state to do so (Chapter 4). Philadelphia adopted the 2018 International Energy Conservation (IECC) codes for commercial construction after the passage of state legislation in 2017 (HB 409) gave the city authority to do so.

- **Decrease transportation energy use through sustainable transportation planning and policy implementation.** Create sustainable transportation plans that include goals for reducing vehicle miles traveled (VMT) or GHG emissions from transportation and for increasing the trips taken using non-automobile modes of transportation. Use location-efficient zoning and integrate transportation and land use planning so residents can access major destinations via multiple transportation modes (Chapter 6). Portland's 2035 Transportation System Plan includes sustainable transportation policies to reduce carbon emissions, air pollution, water pollution, and reliance on vehicles.

Top cities (#1 through #25) can consider more advanced or cutting-edge policies:

- **Create clean energy requirements for existing buildings.** If cities have authority under state law, create energy action mandates like retrocommissioning requirements or building energy performance requirements; if not, run voluntary programs addressing energy use in existing buildings (Chapter 4). The Clean Energy DC Omnibus Amendment Act of 2018 sets energy performance standards for large buildings.
- **Pursue innovative strategies in the transportation sector and track results.** Develop strategies that currently do not have much uptake in cities, including increasing freight system efficiency. Track progress toward transportation-related goals to ensure continued gains (Chapter 7). The Freight NYC plan highlights strategies for greening the freight supply chain through logistics consolidation, carbon-neutral shipping, and clean vehicle use.

Chapter 2. Local Government Operations

Lead Authors: Kate Tanabe, Mary Shoemaker, and Stefen Samarripas.

Local governments can lead by example on climate action by addressing energy use in their own operations. A growing commitment to mitigating climate change drives many local government operations initiatives. To set a clean energy path for government operations, cities can adopt GHG emissions reduction goals, energy savings targets, or renewable energy goals to guide policies and programs. Local governments can achieve these objectives by incorporating energy efficiency and renewable energy considerations into procurement and construction policies and programs and by focusing on energy management in its assets. The adoption of new strategies and technologies in standard practices will enhance clean energy use throughout local government operations.

Local government efforts to improve energy efficiency and increase the use of renewable energy can demonstrate the city's commitment to reducing GHG emissions. Although energy use in city operations typically accounts for a small percentage of community-wide energy consumption, local government actions can drive broader community efforts and activities (Ribeiro et al. 2017, 5). Local government clean energy initiatives can be elements of sustainability plans, climate action plans, or energy-specific strategies to address long-term community priorities. Through a comprehensive approach, local governments can often lower the cost of meeting emissions reduction goals by coordinating energy efficiency programs with climate efforts (Hayes et al. 2014). Not only will successful efforts save energy and money, but they may also attract private-sector investment by demonstrating the feasibility of clean energy technologies and practices.

Energy efficiency and renewable energy investments can provide a number of added benefits for local governments. When local governments pursue energy efficiency upgrades, they lead by example while reducing energy waste and improving operational efficiency and economic performance. With energy use accounting for as much as 10% of a local government's annual operating budget, energy efficiency can make sense financially, reducing costs and exposure to volatile energy prices (EPA 2011a). Local governments can take advantage of the falling cost of renewable energy to reach their climate change mitigation goals.

Chapter 2. Local Government Operations

SCORING

Cities could earn a maximum of 9 points for local government operations:

- **Local government climate and energy goals** (4 points)
- **Procurement and construction policies** (2.5 points)
- **Integration of energy efficiency into asset management strategies** (2.5 points)

Local government operations make up 9% of the total possible points for the *2019 Scorecard*. In this year's edition we shifted points away from this area to more accurately reflect the proportion of a city's total energy use that is consumed by local government operations.

Many of the policies related to government operations included in this chapter have equivalents in the private sector (e.g., requiring the benchmarking of energy use in private buildings). We discuss these community-wide efforts in the chapters that follow.

Unless otherwise noted, we relied on data supplied by municipal sustainability officers and publicly available energy and sustainability reports to collect information.

RESULTS

Austin, Boston, and Orlando received the highest scores for local government operations. No city received a perfect score across all metrics, but several earned full points in individual categories. Among the top-scoring cities, Austin and Orlando earned full points for their climate and energy goals and Boston earned a perfect mark for procurement and construction policies.

Table 7 presents the overall scores for local government operations. We discuss the point allocation for individual metrics within these categories in the tables that follow.

TABLE 7. LOCAL GOVERNMENT OPERATIONS SCORES

CITY	CLIMATE AND ENERGY GOALS (4 PTS)	PROCUREMENT AND CONSTRUCTION POLICIES (2.5 PTS)	ASSET MANAGEMENT (2.5 PTS)	TOTAL (9 PTS)
AUSTIN	4	2	1.5	7.5
BOSTON	3	2.5	2	7.5
ORLANDO	4	2	1.5	7.5
PORTLAND	3	2.5	1.5	7
SAN FRANCISCO	2	2.5	2.5	7
DENVER	3	1.5	2	6.5
LAS VEGAS	2.5	2	2	6.5
LOS ANGELES	2.5	2.5	1.5	6.5

Chapter 2. Local Government Operations

CITY	CLIMATE AND ENERGY GOALS (4 PTS)	PROCUREMENT AND CONSTRUCTION POLICIES (2.5 PTS)	ASSET MANAGEMENT (2.5 PTS)	TOTAL (9 PTS)
MINNEAPOLIS	2	2	2.5	6.5
NEW YORK	2	2.5	2	6.5
PHILADELPHIA	3.5	1	2	6.5
PHOENIX	2	2	2.5	6.5
WASHINGTON	3.5	1	2	6.5
LONG BEACH	1.5	2.5	2	6
OAKLAND	2	2.5	1.5	6
PROVIDENCE	2	2	2	6
SALT LAKE CITY	2	2	2	6
SAN DIEGO	2.5	2	1.5	6
SEATTLE	2	2	2	6
PITTSBURGH	2	1.5	2	5.5
ATLANTA	2	1.5	1.5	5
CLEVELAND	2.5	0.5	2	5
HOUSTON	1	2	2	5
RALEIGH	0.5	2.5	2	5
CHULA VISTA	1	2	1.5	4.5
KANSAS CITY	2.5	1	1	4.5
SAN ANTONIO	0	2.5	2	4.5
COLUMBUS	2	1.5	0.5	4
GRAND RAPIDS	1	1.5	1.5	4
NASHVILLE	2	1.5	0.5	4
VIRGINIA BEACH	0.5	1.5	2	4
WORCESTER	1	1.5	1.5	4
BALTIMORE	1	1	1.5	3.5
CHARLOTTE	0.5	0.5	2.5	3.5
DALLAS	0	1	2.5	3.5
HONOLULU	0.5	2	1	3.5
INDIANAPOLIS	1	2	0.5	3.5
KNOXVILLE	1	1	1.5	3.5

Chapter 2. Local Government Operations

CITY	CLIMATE AND ENERGY GOALS (4 PTS)	PROCUREMENT AND CONSTRUCTION POLICIES (2.5 PTS)	ASSET MANAGEMENT (2.5 PTS)	TOTAL (9 PTS)
NEW ORLEANS	0.5	1	2	3.5
SACRAMENTO	1.5	1	1	3.5
SAN JOSÉ	0.5	2	1	3.5
ST. PETERSBURG	1.5	1	1	3.5
ALBUQUERQUE	1	1.5	0.5	3
BRIDGEPORT	0	1.5	1.5	3
BUFFALO	1	0	2	3
CHICAGO	0.5	1.5	1	3
LOUISVILLE	1	0	2	3
MILWAUKEE	1	0	2	3
RICHMOND	0.5	0.5	2	3
RIVERSIDE	0	1.5	1.5	3
ST. PAUL	0.5	1	1.5	3
ST. LOUIS	0.5	1	1	2.5
TUCSON	0	2	0.5	2.5
MIAMI	0	1	1	2
CINCINNATI	0.5	1	0.5	2
EL PASO	0	2	0	2
HARTFORD	0	1	1	2
BIRMINGHAM	0	1	0.5	1.5
FORT WORTH	0	0.5	1	1.5
TAMPA	0.5	0.5	0.5	1.5
BAKERSFIELD	0	1	0	1
DETROIT	0	1	0	1
JACKSONVILLE	0	1	0	1
MEMPHIS	0	0	1	1
NEW HAVEN	1	0	0	1
RENO	1	0	0	1
ROCHESTER	1	0	0	1
AURORA	0	0.5	0	0.5

Chapter 2. Local Government Operations

CITY	CLIMATE AND ENERGY GOALS (4 PTS)	PROCUREMENT AND CONSTRUCTION POLICIES (2.5 PTS)	ASSET MANAGEMENT (2.5 PTS)	TOTAL (9 PTS)
NEWARK	0	0	0.5	0.5
OKLAHOMA CITY	0	0.5	0	0.5
TULSA	0	0.5	0	0.5
HENDERSON	0	0	0	0
MCALLEN	0	0	0	0
MESA	0	0	0	0
OMAHA	0	0	0	0
MEDIAN	**1**	**1**	**1.5**	**3.5**

Cities performed well in some areas but did not fare as well in others. They scored well for their procurement and construction policies and their asset management strategies. In procurement and construction, many cities have adopted above-code green building requirements for local government buildings. In asset management, cities performed well in benchmarking due to the fact that many of them benchmark all local government buildings over 5,000 square feet. Cities did not perform as well for their climate change mitigation, energy savings, and renewable electricity goals. While many cities have set these goals, few earned full points because their goals were not overly stringent and their progress toward achieving them was uneven. While goal setting is an important first step to increase clean energy use within government operations, cities can set more ambitious goals and make more progress toward achieving them.

Beyond the cities that earned the top overall scores, others had high scores in specific categories. For example, Portland, San Francisco, and others earned a perfect score in procurement and construction policies due to their efforts to integrate more efficient vehicles into the municipal fleet and to upgrade public lighting. Minneapolis, Phoenix, and others achieved perfect scores for asset management by working to reduce energy use in city facilities and offering telecommuting or flex-schedule options for city employees. The diversity in leading cities' scores across policy categories reflects the different paths they are taking to increase clean energy throughout their operations.

LOCAL GOVERNMENT CLIMATE CHANGE MITIGATION AND ENERGY GOALS

Many local governments have adopted goals for their operations that focus on reducing energy use, increasing the share of electricity generated from renewable sources, and decreasing GHG emissions. These targets help to coordinate and focus sustainability efforts across departments. By making a clear and specific commitment, cities have a point of reference against which to measure progress.

Climate change mitigation goals and energy goals in government operations are often intertwined with community-wide efforts to reduce GHG emissions, decrease energy use, or increase the share of electricity generated from renewable sources. Some municipalities begin with government operations goals as a first step before establishing a citywide target. Others adopt goals for government operations to mirror citywide goals. And some cities adopt energy saving targets for municipal operations to lower operating costs even in the absence of goals for the private sector.

Chapter 2. Local Government Operations

In this category we scored cities on

- **Stringency of climate change mitigation goal** (1 point)
- **Progress toward climate change mitigation goal** (1 point)
- **Existence of energy efficiency and renewable energy goals** (1 point)
- **Stringency of energy efficiency goal** (1 point)
- **Stringency of renewable energy goal** (1 bonus point)

While past editions of the *City Scorecard* scored cities on the existence of goals to reduce municipal greenhouse gas emissions, we no longer award points solely on that basis, because these goals have become increasingly common. Now we focus on the stringency of goals and city progress toward them.

Climate Change Mitigation Goal Stringency

Many cities have multiple GHG emissions goals with different time horizons for both local government operations and the larger community; commonly there is one goal to achieve savings by 2020 and another to achieve a deeper level of savings by 2050. In assessing municipal goals in this chapter and community-wide goals in the following chapter, we evaluate cities based on the average annual percentage reductions required to meet their nearest-term goal rather than measuring annual reductions for a city's interim and final goals. This metric recognizes those city governments that are striving to set ambitious climate goals relative to others. We have calculated targeted annual reductions for each city, as most cities do not set goals along the same timelines.

Factors such as changes in population or in gross domestic product (GDP) can contribute to increases or decreases in a city's GHGs and energy use. While local-level GDP data are typically unavailable, we have been able to control for population change over time by evaluating goals in terms of per capita GHG emissions. This allows us to better assess the effect of initiatives that reduce GHGs or energy use.

We calculated the average annual per capita GHG emissions reductions that would be required to meet a near-term target, relative to a city's per capita GHG emissions in the year closest to a goal's adoption. Each city's near-term per capita target was determined by dividing the target year's anticipated GHG emissions (relative to a goal's baseline GHG emissions) by a forecasted target year population. Target year populations were provided by city staff or regional planning commissions or were forecasted on the basis of city population growth rates from 2011 to 2017, using a Microsoft Excel straight linear regression function. Except for forecasts provided by a city or regional planning commission, all population numbers used in the *City Scorecard* are from the US Census Bureau (2019) 2010 Census and American Community Survey one-year population estimates.

Cities could earn up to 1 point in this metric, as shown in table 8. Table E4 in Appendix E details the stringency of each city's nearest-term local government goal.

Chapter 2. Local Government Operations

Progress toward Climate Change Mitigation Goals

Cities could earn up to 1 point for progress toward their climate change mitigation goals (table 8). To receive credit for this metric, a city had to report at least two years of quantitative GHG emissions—a baseline year of emissions and a year of emissions data after the adoption of a goal.

To be considered on track, cities had to demonstrate past average annual percentage reductions in per capita GHG emissions that, assuming such reductions continue for all future years until the near-term goal year, would result in GHG emissions at or below the near-term goal. To forecast progress, we first calculated the past average annual change in per capita GHG emissions between the year with reported emissions data closest to the time of a goal's adoption and 2019, using all available interim data.[20] This was calculated with a Microsoft Excel straight linear regression function. The average annual rate of change was calculated by dividing average annual changes in per capita emissions by per capita emissions in the year of a goal adoption (or closest year with available data). We then calculated a city's future progress toward its goal by assuming this rate of change would remain constant in future years until the near-term target year. Table E4 in Appendix E details each city's nearest-term local government goal and our forecasts for overall emissions reductions from local government operations.

Energy Savings and Generation Goals

Cities could earn up to 1 point for formally adopting municipal energy savings and renewable electricity goals. We gave points for goals that aimed for specific quantitative reductions in energy consumption or energy intensity and increases in the share of electricity generated from renewable sources. Cities also had to commit to a specific target year or a specific annual change in energy use or generation. Finally, municipal energy savings goals had to be applied across a local government's entire portfolio of buildings to receive points.[21]

Energy Savings Goal Stringency

To recognize cities that set ambitious energy savings goals for future years, we assessed goals based on the average annual per capita energy reductions required to meet them. We used our approach for calculating climate change mitigation goal stringency to calculate energy savings goal stringency, substituting energy use values for GHG emissions. Cities could earn up to 1 point in this metric, as shown in table 8. Table E4 in Appendix E details the stringency of each city's nearest-term local government goal.

Renewable Electricity Goal Stringency

Very few cities provided us with data that would allow us to score the stringency of their municipal renewable electricity targets. To score for stringency, we calculated the anticipated average annual change in the share of electricity generated by renewable sources between a baseline year and a target year. These calculations required that cities provide data on the share

20 In cases where insufficient data existed to calculate progress toward the most recently adopted goal, we considered annual changes prior to the most recent goal's adoption date if the city already had a goal in place when adopting the most recent goal.

21 In considering cities for points for the adoption of a renewable electricity goal, we also awarded points for carbon-neutral or broader renewable energy goals. Cities reporting that at least 90% of their municipal electricity was generated by non-carbon energy sources received 0.5 points in lieu of credit for an adopted local government renewable electricity target.

of municipally consumed electricity that was generated by renewable sources in a baseline year. Only four cities provided us with these data. We awarded up to 1 bonus point to these four cities. Cities could earn 1 point for setting a goal with an average annual increase in renewable generation of at least 2%. Failing that, they could earn 0.5 points for providing the data necessary for calculating stringency. However no city could earn more than a total of 4 points in this policy area.

Table 8 summarizes the scoring and table 9 lists the scores for local government climate and energy goals.

TABLE 8. SCORING FOR LOCAL GOVERNMENT CLIMATE CHANGE MITIGATION AND ENERGY GOALS

CLIMATE CHANGE MITIGATION GOAL STRINGENCY	SCORE
Average annual greenhouse gas emissions reductions per capita are greater than or equal to 3.5%.	1
Average annual greenhouse gas emissions reductions per capita are less than 3.5% but greater than 2%.	0.5
PROGRESS TOWARD CLIMATE CHANGE MITIGATION GOAL	
City is on track to meet its nearest-term goal.	1
City is not on track to meet nearest-term goal but is projected to achieve savings within 25% of stated goal.	0.5
EXISTENCE OF ENERGY SAVINGS AND GENERATION GOALS	
City has committed to both an energy savings and a renewable electricity target.	1
City has committed to an energy savings target ***OR*** city has committed to a renewable electricity target.	0.5
ENERGY SAVINGS GOAL STRINGENCY	
Average annual energy savings per capita are greater than or equal to 3.5%.	1
Average annual energy savings per capita is less than 3.5% but greater than 2%.	0.5
RENEWABLE ELECTRICITY GOAL STRINGENCY	**BONUS**
Average renewable electricity increase is greater than or equal to 2%.	1
City provided data necessary for calculating goal stringency.	0.5

TABLE 9. LOCAL GOVERNMENT CLIMATE CHANGE MITIGATION AND ENERGY GOALS SCORES

CITY	CLIMATE GOAL STRINGENCY (1 PT)	CLIMATE GOAL PROGRESS (1 PT)	EXISTENCE OF ENERGY SAVINGS AND GENERATION GOALS (1 PT)	ENERGY SAVINGS GOAL STRINGENCY (1 PT)	RENEWABLE ELECTRICITY GOAL STRINGENCY (1 PT BONUS)	TOTAL (4 PTS)
AUSTIN	1	1	1	1	0	4
ORLANDO	1	1	1	0.5	0.5*	4
PHILADELPHIA	0.5	1	1	0	1	3.5
WASHINGTON	0.5	1	1	1	0	3.5
BOSTON	1	1	0.5	0.5	0	3

Chapter 2. Local Government Operations

CITY	CLIMATE GOAL STRINGENCY (1 PT)	CLIMATE GOAL PROGRESS (1 PT)	EXISTENCE OF ENERGY SAVINGS AND GENERATION GOALS (1 PT)	ENERGY SAVINGS GOAL STRINGENCY (1 PT)	RENEWABLE ELECTRICITY GOAL STRINGENCY (1 PT BONUS)	TOTAL (4 PTS)
DENVER	0	1	1	1	0	3
PORTLAND	0.5	1	1	0.5	0	3
CLEVELAND	0.5	1	1	0	0	2.5
KANSAS CITY	0.5	1	1	0	0	2.5
LAS VEGAS	0.5	1	1	0	0	2.5
LOS ANGELES	1	1	0.5	0	0	2.5
SAN DIEGO	0	0	1	1	0.5	2.5
ATLANTA	1	0	1	0	0	2
COLUMBUS	0	0	1	0	1	2
MINNEAPOLIS	0.5	1	0.5	0	0	2
NEW YORK	0.5	1	0.5	0	0	2
NASHVILLE	1	0	1	0	0	2
OAKLAND	0.5	1	0.5	0	0	2
PHOENIX	1	0	1	0	0	2
PITTSBURGH	0	1	1	0	0	2
PROVIDENCE	0.5	0	1	0.5	0	2
SALT LAKE CITY	1	0	1	0	0	2
SAN FRANCISCO	0.5	1	0.5	0	0	2
SEATTLE	0.5	0	1	0.5	0	2
LONG BEACH	0	0	1	0.5	0	1.5
SACRAMENTO	0	1	0.5	0	0	1.5
ST. PETERSBURG	1	0	0.5	0	0	1.5
ALBUQUERQUE	0	0	1	0	0	1
BALTIMORE	0	0	1	0	0	1
BUFFALO	0	0	0.5	0.5	0	1
CHULA VISTA	0	0	1	0	0	1
GRAND RAPIDS	0.5	0	0.5	0	0	1
HOUSTON	0	0	0.5	0.5	0	1
INDIANAPOLIS	0.5	0	0.5	0	0	1

CITY	CLIMATE GOAL STRINGENCY (1 PT)	CLIMATE GOAL PROGRESS (1 PT)	EXISTENCE OF ENERGY SAVINGS AND GENERATION GOALS (1 PT)	ENERGY SAVINGS GOAL STRINGENCY (1 PT)	RENEWABLE ELECTRICITY GOAL STRINGENCY (1 PT BONUS)	TOTAL (4 PTS)
KNOXVILLE	0.5	0	0.5	0	0	1
LOUISVILLE	0	0	1	0	0	1
MILWAUKEE	0	0	1	0	0	1
NEW HAVEN	0.5	0	0.5	0	0	1
RENO	0	0	0.5	0.5	0	1
ROCHESTER	0.5	0	0.5	0	0	1
WORCESTER	0	0	0.5	0.5	0	1
CHARLOTTE	0	0	0.5	0	0	0.5
CHICAGO	0	0	0.5	0	0	0.5
CINCINNATI	0	0	0.5	0	0	0.5
HONOLULU	0	0	0.5	0	0	0.5
NEW ORLEANS	0	0	0.5	0	0	0.5
RALEIGH	0	0	0.5	0	0	0.5
RICHMOND	0	0	0.5	0	0	0.5
SAN JOSÉ	0	0	0.5	0	0	0.5
ST. LOUIS	0	0	0.5	0	0	0.5
ST. PAUL	0	0	0.5	0	0	0.5
TAMPA	0	0	0.5	0	0	0.5
VIRGINIA BEACH	0	0	0.5	0	0	0.5
AURORA	0	0	0	0	0	0
BAKERSFIELD	0	0	0	0	0	0
BIRMINGHAM	0	0	0	0	0	0
BRIDGEPORT	0	0	0	0	0	0
DALLAS	0	0	0	0	0	0
DETROIT	0	0	0	0	0	0
EL PASO	0	0	0	0	0	0
FORT WORTH	0	0	0	0	0	0
HARTFORD	0	0	0	0	0	0
HENDERSON	0	0	0	0	0	0

Chapter 2. Local Government Operations

CITY	CLIMATE GOAL STRINGENCY (1 PT)	CLIMATE GOAL PROGRESS (1 PT)	EXISTENCE OF ENERGY SAVINGS AND GENERATION GOALS (1 PT)	ENERGY SAVINGS GOAL STRINGENCY (1 PT)	RENEWABLE ELECTRICITY GOAL STRINGENCY (1 PT BONUS)	TOTAL (4 PTS)
JACKSONVILLE	0	0	0	0	0	0
MCALLEN	0	0	0	0	0	0
MEMPHIS	0	0	0	0	0	0
MESA	0	0	0	0	0	0
MIAMI	0	0	0	0	0	0
NEWARK	0	0	0	0	0	0
OKLAHOMA CITY	0	0	0	0	0	0
OMAHA	0	0	0	0	0	0
RIVERSIDE	0	0	0	0	0	0
SAN ANTONIO	0	0	0	0	0	0
TUCSON	0	0	0	0	0	0
TULSA	0	0	0	0	0	0

**Orlando's renewable electricity goal calls for an increase of renewable electricity generation of more than 2% per year; however the city was already earning 3.5 out of 4 available points, so it received only 0.5 bonus points.*

PROCUREMENT AND CONSTRUCTION POLICIES

All local governments need purchasing and construction policies. Integrating energy-saving and clean energy requirements into these policies helps institutionalize sustainability across all departments. This section assesses whether cities factor energy efficiency into everyday decision-making processes. Cities also have opportunities to advance renewable energy use through procurement and construction, but here we primarily assess policies related to energy efficiency.

Typically, cities have made the greatest efforts to incorporate efficiency into investments in vehicle fleets, public lighting, and government buildings. Cities could receive up to 2.5 points for their procurement and construction activities in these three areas.

In this category we scored cities on

- **Fleet procurement policies** (0.5 points)
- **Fleet composition** (0.5 points)
- **Efficient public lighting** (1 point)
- **Green building requirements for new buildings** (0.5 points)

Chapter 2. Local Government Operations

Fleet Procurement Policies

Many city sustainability efforts have focused on municipal vehicle fleet policies because they are effective in reducing carbon emissions and fuel expenditures. Using advanced-technology fuel-efficient vehicles in the municipal fleet can also help familiarize the public with these types of vehicles.

We awarded 0.5 points to cities with a fuel efficiency requirement for public fleet vehicles. Alternatively, we awarded 0.5 points if cities did not have a fuel efficiency requirement but had requirements for fuel-efficient vehicle types such as hybrid or all electric.

We did not award points to cities with alternative-fuel (e.g., ethanol or compressed natural gas) vehicle requirements, since alternative fuels are not inherently energy saving (DOE 2016a). Some alternative-fuel vehicles may reduce emissions, including carbon emissions, but flexible-fuel vehicles do not consistently run on alternative fuels, and recent research on full-fuel-cycle emissions of natural gas vehicles indicates substantial complexity and uncertainty regarding their net carbon impacts (Camuzeaux et al. 2015). Therefore, we consider only vehicles that save energy in this metric.

Fleet Composition

We went a step beyond assessing cities on vehicle procurement policies to also score them on the composition of their municipal fleets. Doing so allowed us to begin recognizing the effect of fleet procurement policies. We awarded 0.5 points to cities if hybrid, plug-in hybrid, battery electric and/or fuel cell vehicles composed at least 6.5% of their fleet.[22] As with fleet procurement policies, we did not give points for alternative-fuel vehicles since their climate benefits are not as clear.[23]

Figure 8 depicts municipal fleet composition data submitted by cities. Table E1 in Appendix E details municipal fleet composition by city.

MUNICIPAL VEHICLE FLEET PROGRAMS

Many cities have joined programs like the Climate Mayors Electric Vehicle Purchasing Collaborative or been recognized by efforts like the Green Fleet Awards. At this time, we do not credit cities explicitly for their participation in or recognition by these programs.

The Climate Mayors Electric Vehicle Purchasing Collaborative leverages cities' collective buying power to further municipal fleet conversion. The collaborative offers access to electric vehicle and infrastructure purchasing and financing as well as policy resources and guidance. Chula Vista, Cleveland, and Rochester reported procuring electric vehicles through the collaborative.

The Green Fleet Awards recognize exemplary clean government fleets, evaluating them on the basis of fleet composition, fuel and emissions, policies, and education. The 2018 Green Fleet Awards ranked 50 local governments, including 15 *City Scorecard* cities.

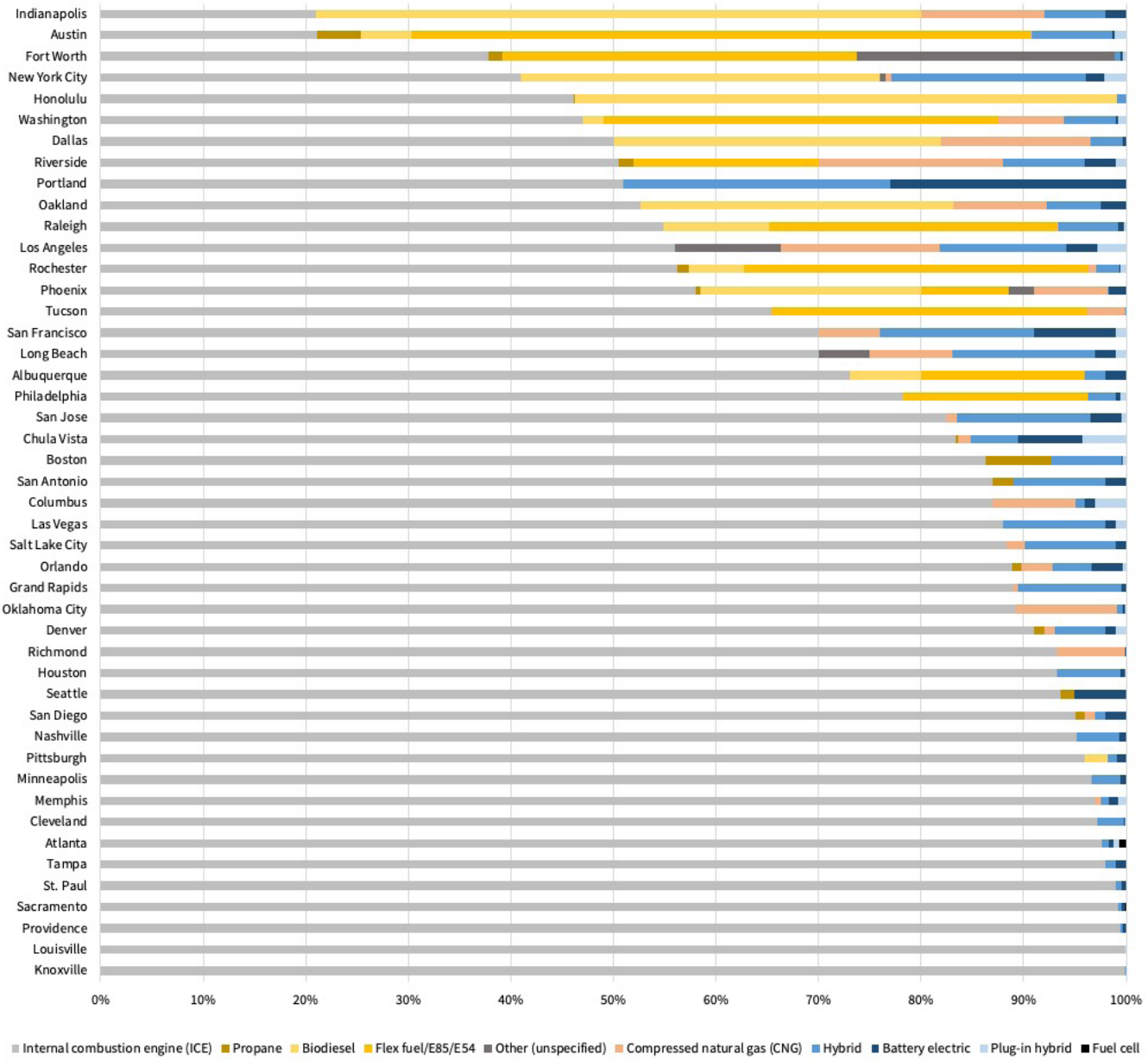
22 Data from cities informed our 6.5% threshold. Of those cities that reported data, the average percentage of fleets that were composed of fuel-efficient vehicles was 6.5%.

23 We excluded the following municipal vehicle types: compressed natural gas (CNG), propane, biodiesel, flex-fuel (e.g. E85 or E54), and other alternative fuels.

Chapter 2. Local Government Operations

FIGURE 8. MUNICIPAL FLEET COMPOSITION BY VEHICLE TYPE.

CITIES ASSESSED IN THE *SCORECARD* THAT ARE NOT DISPLAYED BELOW EITHER DID NOT REPORT DATA OR DID NOT REPORT COMPLETE DATA.



Chapter 2. Local Government Operations

Efficient Public Lighting

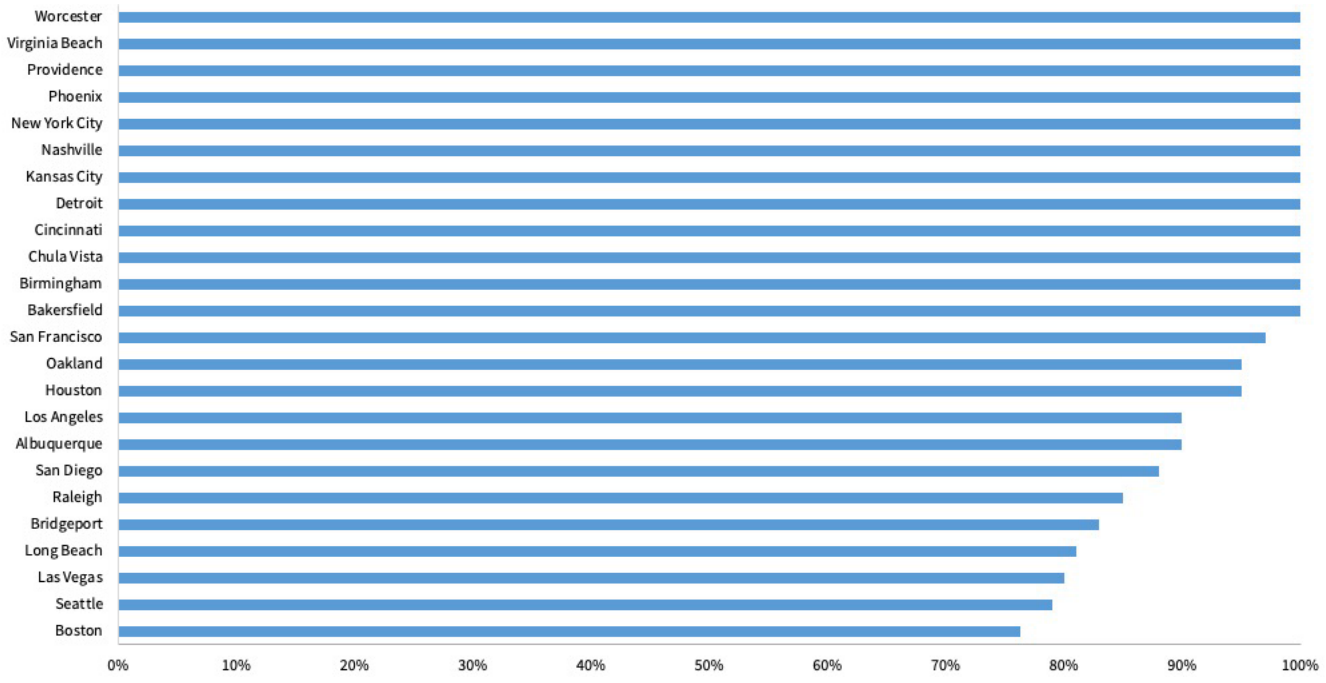
Cities can make some of their simplest energy efficiency improvements by upgrading public lighting. LED technologies can offer savings of 70% relative to traditional light sources (DOE 2016b). LEDs also have longer lifetimes than traditional outdoor fixtures, meaning that they require less maintenance. Scheduling lighting to turn on only during the hours when it is needed can also extend lamp lifetimes and save energy.

Cities could earn up to 1 point for efficient public lighting. We revised the metric this year to score cities on the extent to which they have worked to convert their street lighting to LEDs. We awarded 1 point to cities that have upgraded at least 50% of street lighting to LEDs. Cities have two ways to earn 0.5 points. We awarded 0.5 points to cities that have upgraded at least 25% of their street lighting to LEDs or have adopted provisions of the Illuminating Engineering Society and International Dark-Sky Association's Model Lighting Ordinance (IES and IDA 2011). Cities that have adopted their own lighting policy with a lighting controls provision that prohibits the use of lighting when sufficient daylight is available also earned 0.5 points. We did not credit policies or actions targeting traffic signal efficiency because the U.S. Energy Policy Act of 2005 already requires them to have LED-equivalent efficiency.[24]

Figure 9 depicts public lighting data submitted by cities. Table E2 in Appendix E lists percentages of LED street lights by city.

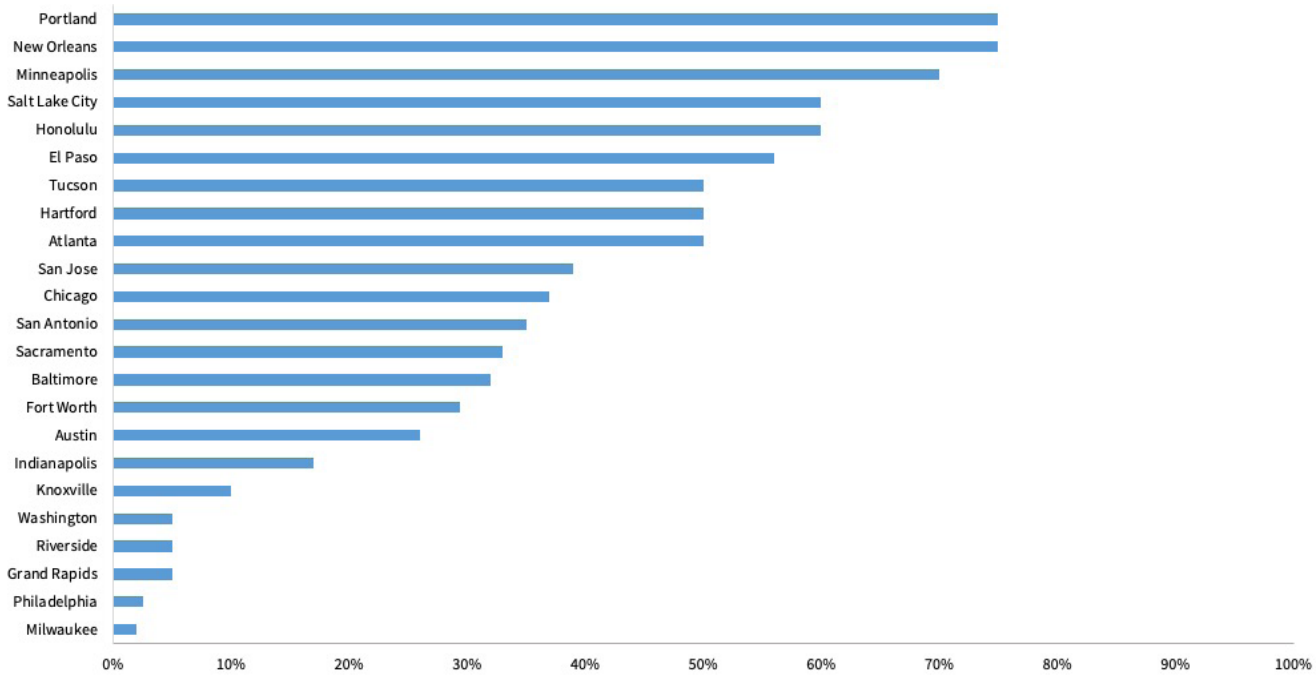
FIGURE 9. PERCENTAGE OF PUBLIC OUTDOOR LIGHTING CONVERTED TO LEDS.

CITIES ASSESSED IN THE *SCORECARD* THAT ARE NOT DISPLAYED BELOW EITHER DID NOT REPORT DATA OR DID NOT REPORT COMPLETE DATA.



24 To learn more about federal standards for traffic signals, see appliance-standards.org/product/traffic-signals.

Chapter 2. Local Government Operations



Green Building Requirements for New Buildings

Cities could earn up to 0.5 points for green building requirements encouraging energy efficiency and renewable energy use in new public buildings. For example, we awarded credit if a city requires municipal buildings to exceed the citywide energy code or meet a criterion like Leadership in Energy and Environmental Design (LEED) or ENERGY STAR® certification.[25] In Chapter 4, we score cities based on above-code low-energy-use requirements, including LEED requirements, for residential and commercial buildings.

Table 10 summarizes scoring and table 11 lists scores for procurement and construction policies.

TABLE 10. SCORING FOR PROCUREMENT AND CONSTRUCTION POLICIES

FLEET PROCUREMENT POLICIES	SCORE
City has fuel efficiency requirements for public fleet vehicles ***OR*** city has requirements for fuel-efficient vehicle types such as hybrid or all-electric.	0.5

25 Previously, we reserved credit for municipal LEED requirements that emphasized energy efficiency. A recent study shows that LEED-certified buildings consume less energy than their traditional counterparts (Winters, Sigmon, and Burt 2014). In addition, the US Green Building Council recently updated LEED (v4) to emphasize ongoing building operations and hold buildings to increasingly stringent minimum energy performance requirements. As a result, we broadened our treatment of LEED by crediting cities with LEED Silver, LEED Gold, and LEED Platinum requirements.

FLEET COMPOSITION	
City's fleet is composed of at least 6.5% efficient vehicle types (hybrid, plug-in hybrid, battery electric, fuel cell vehicles).	0.5
EFFICIENT PUBLIC LIGHTING	
City has converted more than 50% of public lighting to LED.	1
City has converted 25% of outdoor lighting to LED or has adopted Model Lighting Ordinance or similar policy.	0.5
GREEN BUILDING REQUIREMENTS FOR NEW BUILDINGS	
City has green building requirements for new public buildings	0.5

TABLE 11. PROCUREMENT AND CONSTRUCTION POLICIES SCORES

CITY	FLEET PROCUREMENT POLICIES (0.5 PTS)	FLEET COMPOSITION (0.5 PTS)	EFFICIENT PUBLIC LIGHTING (1 PT)	GREEN BUILDING REQUIREMENTS FOR NEW BUILDINGS (0.5 PTS)	TOTAL (2.5 PTS)
BOSTON	0.5	0.5	1	0.5	2.5
LONG BEACH	0.5	0.5	1	0.5	2.5
LOS ANGELES	0.5	0.5	1	0.5	2.5
NEW YORK	0.5	0.5	1	0.5	2.5
OAKLAND	0.5	0.5	1	0.5	2.5
PORTLAND	0.5	0.5	1	0.5	2.5
RALEIGH	0.5	0.5	1	0.5	2.5
SAN ANTONIO	0.5	0.5	1	0.5	2.5
SAN FRANCISCO	0.5	0.5	1	0.5	2.5
AUSTIN	0.5	0.5	0.5	0.5	2
CHULA VISTA	0.5	0.5	1	0	2
EL PASO	0.5	0	1	0.5	2
HONOLULU	0.5	0	1	0.5	2
HOUSTON	0	0.5	1	0.5	2
INDIANAPOLIS	0.5	0.5	0.5	0.5	2
LAS VEGAS	0	0.5	1	0.5	2
MINNEAPOLIS	0.5	0	1	0.5	2
ORLANDO	0.5	0.5	0.5	0.5	2
PHOENIX	0.5	0	1	0.5	2
PROVIDENCE	0.5	0	1	0.5	2

CITY	FLEET PROCUREMENT POLICIES (0.5 PTS)	FLEET COMPOSITION (0.5 PTS)	EFFICIENT PUBLIC LIGHTING (1 PT)	GREEN BUILDING REQUIREMENTS FOR NEW BUILDINGS (0.5 PTS)	TOTAL (2.5 PTS)
SALT LAKE CITY	0	0.5	1	0.5	2
SAN DIEGO	0.5	0	1	0.5	2
SAN JOSÉ	0.5	0.5	0.5	0.5	2
SEATTLE	0.5	0	1	0.5	2
TUCSON	0.5	0	1	0.5	2
ALBUQUERQUE	0	0	1	0.5	1.5
ATLANTA	0.5	0	0.5	0.5	1.5
BRIDGEPORT	0.5	0	1	0	1.5
CHICAGO	0.5	0	0.5	0.5	1.5
COLUMBUS	0.5	0.5	0	0.5	1.5
DENVER	0.5	0.5	0	0.5	1.5
GRAND RAPIDS	0	0.5	0.5	0.5	1.5
NASHVILLE	0	0	1	0.5	1.5
PITTSBURGH	0.5	0	0.5	0.5	1.5
RIVERSIDE	0.5	0.5	0.5	0	1.5
VIRGINIA BEACH	0	0	1	0.5	1.5
WORCESTER	0.5	0	1	0	1.5
BAKERSFIELD	0	0	1	0	1
BALTIMORE	0.5	0	0	0.5	1
BIRMINGHAM	0	0	1	0	1
CINCINNATI	0	0	1	0	1
DALLAS	0.5	0	0	0.5	1
DETROIT	0	0	1	0	1
HARTFORD	0	0	1	0	1
JACKSONVILLE	0.5	0	0	0.5	1
KANSAS CITY	0.5	0	0	0.5	1
KNOXVILLE	0	0	1	0	1
MIAMI	0.5	0	0	0.5	1
NEW ORLEANS	0	0	1	0	1

CITY	FLEET PROCUREMENT POLICIES (0.5 PTS)	FLEET COMPOSITION (0.5 PTS)	EFFICIENT PUBLIC LIGHTING (1 PT)	GREEN BUILDING REQUIREMENTS FOR NEW BUILDINGS (0.5 PTS)	TOTAL (2.5 PTS)
PHILADELPHIA	0.5	0	0	0.5	1
SACRAMENTO	0.5	0	0.5	0	1
ST. LOUIS	0	0	0.5	0.5	1
ST. PAUL	0	0	0.5	0.5	1
ST. PETERSBURG	0	0	0.5	0.5	1
WASHINGTON	0.5	0	0	0.5	1
AURORA	0	0	0	0.5	0.5
CHARLOTTE	0.5	0	0	0	0.5
CLEVELAND	0	0	0	0.5	0.5
FORT WORTH	0	0	0.5	0	0.5
OKLAHOMA CITY	0.5	0	0	0	0.5
RICHMOND	0	0	0	0.5	0.5
TAMPA	0	0	0	0.5	0.5
TULSA	0.5	0	0	0	0.5
BUFFALO	0	0	0	0	0
HENDERSON	0	0	0	0	0
LOUISVILLE	0	0	0	0	0
MCALLEN	0	0	0	0	0
MEMPHIS	0	0	0	0	0
MESA	0	0	0	0	0
MILWAUKEE	0	0	0	0	0
NEW HAVEN	0	0	0	0	0
NEWARK	0	0	0	0	0
OMAHA	0	0	0	0	0
RENO	0	0	0	0	0
ROCHESTER	0	0	0	0	0

Chapter 2. Local Government Operations

ASSET MANAGEMENT

Local governments can save energy, reach clean energy targets, and save money by managing their existing assets more efficiently. These assets—including their employees and buildings—require large-scale, long-term investments. It is not feasible to reconstruct a building to save energy or to mandate employees to make energy-efficient decisions. But cities can help save energy by systematically managing energy use and encouraging changes in employee behavior.

This subcategory covers three topics: energy benchmarking, retrofit strategies, and employee energy use. Cities could earn up to 2.5 points here.

In this category we scored cities on:

- **Building energy benchmarking** (1 point)
- **Building energy efficiency retrofit strategies** (1 point)
- **Public workforce commuting** (0.5 points)

Building Energy Benchmarking

Buildings account for a large portion of city energy use, and rising energy costs are an increasing portion of cities' operating budgets. Local governments use a variety of strategies to manage and reduce their energy use in existing buildings (DOE 2014). One such strategy is building benchmarking, which is a crucial step in understanding energy performance. By consistently tracking energy use, building managers can identify energy efficiency investment opportunities and track energy savings.

We awarded up to 1 point based on the percentage of municipal building floor area that cities currently have benchmarked, as outlined in table 12. Cities that have benchmarked 100% of municipal buildings larger than 5,000 square feet earned a full point. We awarded half a point to cities that benchmark at least 75% of buildings larger than 5,000 square feet or 100% of municipal buildings greater than 10,000 square feet.

Retrofit Strategies

Many cities implement comprehensive retrofit policies. Cities can use benchmarking results and additional assessments, including building audits, to help develop an energy-saving retrofit plan tailored to individual buildings and prioritize future capital investments. The efficiency opportunities cities uncover through benchmarking and realize through retrofitting can help lower energy costs.

We awarded up to 1 point based on the rigor of a city's retrofit requirements or activities, described in table 12. We gave a full point to local governments that evaluate buildings to determine and prioritize energy efficiency retrofit opportunities and have completed retrofits within the past five years. These strategies must incorporate both capital improvements (e.g., equipment replacement and building shell upgrades) and operational improvements (e.g., active energy management, audits, and retrocommissioning). To earn the full point, cities had to provide data on results of their completed retrofit projects (e.g., number of buildings that have undergone retrofits, cost or energy savings). We used the data as an indication that

retrofit strategies were driving actual retrofit projects. If cities reported having retrofit strategies but could not provide data indicating that retrofit projects had occurred, they earned 0.5 points. (The retrofit project data we collected are presented in table E3 of Appendix E.) Cities without formal retrofit strategies that have made building efficiency investments through an energy services company (ESCO) could also earn the 0.5 points.

Public Workforce Commuting

Employee behavior is a major factor in municipal energy consumption. Public employees can reduce stress on a city's transportation infrastructure and can save energy in municipal operations by reducing the frequency with which they commute to work (Laitner, Partridge, and Vittore 2012). Cities could earn 0.5 points for having telecommuting or flex-schedule policies or otherwise minimizing the frequency of employee commutes.

Table 12 summarizes the scoring and table 13 lists the scores for asset management.

TABLE 12. SCORING FOR ASSET MANAGEMENT

BUILDING ENERGY BENCHMARKING	SCORE
City benchmarks 100% of public buildings over 5,000 square feet.	1
City benchmarks 75% of public buildings over 5,000 square feet ***OR*** city benchmarks 100% of buildings over 10,000 square feet.	0.5
MUNICIPAL BUILDING ENERGY RETROFIT STRATEGY	
City evaluates public buildings to determine and prioritize energy efficiency retrofit opportunities, has completed projects in the past five years, and provides data on results of retrofit projects.	1
City uses ESCO partnership to conduct energy efficiency retrofits in public buildings ***OR*** city evaluates public buildings to determine and prioritize energy efficiency retrofit opportunities and has completed projects in the past five years, but does not provide data on results.	0.5
PUBLIC WORKFORCE COMMUTING	
City has telecommute or flex-schedule policy.	0.5

TABLE 13. ASSET MANAGEMENT SCORES

CITY	BUILDING ENERGY BENCHMARKING (1 PT)	COMPREHENSIVE RETROFIT STRATEGY (1 PT)	PUBLIC WORKFORCE COMMUTING (0.5 PTS)	TOTAL (2.5 PTS)
CHARLOTTE	1	1	0.5	2.5
DALLAS	1	1	0.5	2.5
MINNEAPOLIS	1	1	0.5	2.5
PHOENIX	1	1	0.5	2.5
SAN FRANCISCO	1	1	0.5	2.5
BOSTON	1	1	0	2
BUFFALO	1	1	0	2

Chapter 2. Local Government Operations

CITY	BUILDING ENERGY BENCHMARKING (1 PT)	COMPREHENSIVE RETROFIT STRATEGY (1 PT)	PUBLIC WORKFORCE COMMUTING (0.5 PTS)	TOTAL (2.5 PTS)
CLEVELAND	0.5	1	0.5	2
DENVER	1	0.5	0.5	2
HOUSTON	1	0.5	0.5	2
LAS VEGAS	1	0.5	0.5	2
LONG BEACH	1	0.5	0.5	2
LOUISVILLE	1	0.5	0.5	2
MILWAUKEE	1	0.5	0.5	2
NEW ORLEANS	1	1	0	2
NEW YORK	0.5	1	0.5	2
PHILADELPHIA	1	1	0	2
PITTSBURGH	1	0.5	0.5	2
PROVIDENCE	1	1	0	2
RALEIGH	0.5	1	0.5	2
RICHMOND	1	0.5	0.5	2
SALT LAKE CITY	1	0.5	0.5	2
SAN ANTONIO	0.5	1	0.5	2
SEATTLE	0.5	1	0.5	2
VIRGINIA BEACH	1	0.5	0.5	2
WASHINGTON	0.5	1	0.5	2
ATLANTA	0.5	0.5	0.5	1.5
AUSTIN	0.5	0.5	0.5	1.5
BALTIMORE	0	1	0.5	1.5
BRIDGEPORT	1	0.5	0	1.5
CHULA VISTA	1	0	0.5	1.5
GRAND RAPIDS	1	0.5	0	1.5
KNOXVILLE	1	0.5	0	1.5
LOS ANGELES	0.5	0.5	0.5	1.5
OAKLAND	1	0.5	0	1.5
ORLANDO	0.5	1	0	1.5
PORTLAND	0	1	0.5	1.5

CITY	BUILDING ENERGY BENCHMARKING (1 PT)	COMPREHENSIVE RETROFIT STRATEGY (1 PT)	PUBLIC WORKFORCE COMMUTING (0.5 PTS)	TOTAL (2.5 PTS)
RIVERSIDE	0.5	0.5	0.5	1.5
SAN DIEGO	0.5	0.5	0.5	1.5
ST. PAUL	0.5	0.5	0.5	1.5
WORCESTER	1	0.5	0	1.5
CHICAGO	0.5	0.5	0	1
FORT WORTH	0	0.5	0.5	1
HARTFORD	0.5	0.5	0	1
HONOLULU	0	0.5	0.5	1
KANSAS CITY	0.5	0	0.5	1
MEMPHIS	1	0	0	1
MIAMI	0.5	0	0.5	1
SACRAMENTO	0	1	0	1
SAN JOSÉ	0	0.5	0.5	1
ST. LOUIS	0.5	0.5	0	1
ST. PETERSBURG	0	0.5	0.5	1
ALBUQUERQUE	0	0.5	0	0.5
BIRMINGHAM	0	0.5	0	0.5
CINCINNATI	0	0.5	0	0.5
COLUMBUS	0.5	0	0	0.5
INDIANAPOLIS	0.5	0	0	0.5
NASHVILLE	0	0.5	0	0.5
NEWARK	0	0.5	0	0.5
TAMPA	0	0	0.5	0.5
TUCSON	0	0	0.5	0.5
AURORA	0	0	0	0
BAKERSFIELD	0	0	0	0
DETROIT	0	0	0	0
EL PASO	0	0	0	0
HENDERSON	0	0	0	0
JACKSONVILLE	0	0	0	0

Chapter 2. Local Government Operations

CITY	BUILDING ENERGY BENCHMARKING (1 PT)	COMPREHENSIVE RETROFIT STRATEGY (1 PT)	PUBLIC WORKFORCE COMMUTING (0.5 PTS)	TOTAL (2.5 PTS)
MCALLEN	0	0	0	0
MESA	0	0	0	0
NEW HAVEN	0	0	0	0
OKLAHOMA CITY	0	0	0	0
OMAHA	0	0	0	0
RENO	0	0	0	0
ROCHESTER	0	0	0	0
TULSA	0	0	0	0

LEADING CITIES: LOCAL GOVERNMENT OPERATIONS

Portland. The city's Climate Action Plan includes climate and energy actions for the municipal government. The plan established a goal to reduce GHG emissions by 53% below 2006 levels by 2030, which Portland is currently on track to meet. Additionally, Portland achieved its goal of powering 100% of municipal operations with renewable energy for the fiscal year 2016–17. The city aims to fulfill this goal annually. Portland requires all new public buildings to achieve the LEED Gold standard, while existing buildings are required to reach LEED Silver certification. Through a vehicle purchasing policy, Portland requires the most efficient vehicles that meet work requirements to be purchased. The city aims to convert 20% of its fleet to electric vehicles by 2030.

Long Beach. The city's recently passed Battery Electric Vehicle and Infrastructure Policy states that all conventionally fueled light-duty vehicles will be replaced by battery electric vehicles when needed. Efficient vehicles compose 17% of its fleet. Long Beach's Green Building Policy for Municipal Buildings, adopted in 2003, requires all new government buildings to achieve LEED certification. The city benchmarks all municipal buildings through ENERGY STAR Portfolio Manager. Long Beach has participated in Southern California Edison's Energy Leader Partnership. The partnership helps to identify and address energy efficiency and demand response opportunities in municipal facilities, develop long-term energy plans, and increase community awareness.

Orlando. Through its Municipal Operations Sustainability Plan, Orlando established a goal for the local government to be greenhouse gas-neutral by 2030. The plan also includes a goal to reduce municipal energy consumption 50% by 2030. Additionally, Orlando plans to use renewable energy to power 100% of municipal operations by 2030. The plan also states that all new municipal buildings must achieve LEED Gold certification. Since 2010, Orlando has conducted ASHRAE Level II audits and retrocommissioning of all city facilities to designate more than 55 buildings for energy retrofits. Currently, the investments are tracking at $1.1 million in savings, with an average 31% reduction in energy use from the baseline in 2010.

Chapter 3. Community-Wide Initiatives

Lead Authors: Stefen Samarripas and Alexander Jarrah

Cities are working to mitigate and adapt to climate change by reducing their energy consumption and increasing their reliance on energy generated from renewable sources. City climate action, sustainability, and resilience plans often involve policies that address energy sources as well as energy use. For many cities, focusing on energy efficiency and renewable energy is part of broader, community-wide planning to address long-term priorities such as economic development, transportation, water supply issues, and public health.[26]

Cities implement a wide array of community-facing clean energy initiatives directed at buildings, neighborhoods, transportation systems, and city landscapes. Including community members and other private-sector stakeholders in these efforts allows cities to expand beyond their lead-by-example initiatives, discussed in Chapter 2. Publicly available sustainability, energy, climate, or resilience plans allow governments to develop a unifying vision for community energy use and generation that leverages outside resources—funding, staff, volunteers, knowledge—to reduce energy use and GHG emissions. For example, Pittsburgh has committed to cutting both carbon emissions and energy use 50% by 2030, but to reach this goal, it will need substantial support from the community. The city is therefore working with downtown businesses and other community partners as part of the Green Building Alliance's Pittsburgh 2030 District (2030 Districts Network 2019). Through this place-based initiative, downtown businesses receive peer-to-peer education, training, and benchmarking resources to reduce their energy use, water consumption, and transportation emissions.

26 For some cities, these initiatives are part of energy-specific plans developed for utility resource planning.

Chapter 3. Community-Wide Initiatives

SCORING

This chapter focuses on actions municipalities commonly take to reduce energy consumption, increase the share of energy generated from renewable sources, and decrease GHG emissions throughout their cities. These actions involve establishing community-wide goals and specific interventions that cross multiple sectors. We allocated 16 points to community-wide initiatives across four categories:

- **Community-wide GHG emissions, energy efficiency, and renewable electricity goals and progress toward their achievement** (9 points)
- **Equity-driven approaches to clean energy planning, implementation, and evaluation** (1.5 points)
- **City policies supporting local clean distributed energy systems (district energy, combined heat and power, onsite renewable, and community solar systems)** (4 points)
- **Community-wide goals, policies, and programs that mitigate the urban heat island effect** (1.5 points)

We do not consider individual, sector-specific elements (buildings, utilities, and transportation) of community-wide initiatives here; they will be taken up in the following chapters. Nor do we consider (either here or elsewhere in the *Scorecard*) formula-allocated grants, such as those available through the Weatherization Assistance Program, that federal or state governments provide to local agencies. Rather, we concentrate on the role that cities themselves play in leading, funding, and implementing community-wide climate and energy initiatives. We have relied on responses from city sustainability staff data requests along with city sustainability reports and websites for information on community-wide initiatives.

RESULTS

Washington and Seattle were the highest-scoring cities for community-wide initiatives, scoring 11.5 and 11 points, respectively, out of a possible 16. Washington scored 7 out of 9 points for community-wide goals and 2 out of 4 points in the distributed energy systems metric. The District was also one of seven cities to score 1 point or more for our new equity-driven planning metric. Seattle scored 3 out of 4 points in the distributed energy systems metric for policies that support the creation of district energy systems, onsite renewables, and community solar facilities. Seattle earned maximum points for urban heat island mitigation initiatives and was one of three cities to score full points for equity-driven planning.

Following Washington and Seattle, several cities were bunched at the top. Cleveland, Denver, Minneapolis, Orlando, and Phoenix all tied for the third-highest point total with 10.5 points. And only 2 points separated Washington from the city with the 10th-highest score, Boston.

Table 14 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.

Chapter 3. Community-Wide Initiatives

TABLE 14. SCORES FOR COMMUNITY-WIDE INITIATIVES

CITY	COMMUNITY-WIDE GOALS (9 PTS)	EQUITY-DRIVEN PLANNING (1.5 PTS)	DISTRIBUTED ENERGY SYSTEMS (4 PTS)	URBAN HEAT ISLAND MITIGATION (1.5 PTS)	TOTAL (16 PTS)
WASHINGTON	7	1	2	1.5	11.5
SEATTLE	5	1.5	3	1.5	11
CLEVELAND	6.5	0.5	2	1.5	10.5
DENVER	7	0	2	1.5	10.5
MINNEAPOLIS	7	1.5	1	1	10.5
ORLANDO	5	1	3	1.5	10.5
PHOENIX	7	0	2	1.5	10.5
AUSTIN	5	0	4	1	10
LOS ANGELES	6	0.5	2	1.5	10
BOSTON	5	0.5	3	1	9.5
CHICAGO	5	0.5	2	1.5	9
OAKLAND	5.5	0.5	2	1	9
SAN JOSÉ	6	0.5	1	1.5	9
ATLANTA	5.5	0.5	1	1.5	8.5
CINCINNATI	5.5	1	1	1	8.5
NASHVILLE	4.5	0.5	2	1.5	8.5
ST. PETERSBURG	5	0	2	1.5	8.5
PROVIDENCE	3	1.5	2	1.5	8
PHILADELPHIA	4.5	0.5	1	1.5	7.5
PORTLAND	5.5	0.5	0	1.5	7.5
SAN DIEGO	6	0	1	0.5	7.5
SAN FRANCISCO	5.5	0	1	1	7.5
COLUMBUS	6	0	0	1	7
KANSAS CITY	5	0	1	1	7
PITTSBURGH	4.5	0.5	1	1	7
BALTIMORE	3	0.5	2	1	6.5
INDIANAPOLIS	4	0.5	0	1.5	6
NEW YORK	3	0.5	1	1.5	6
SALT LAKE CITY	4.5	0	0	1.5	6

CITY	COMMUNITY-WIDE GOALS (9 PTS)	EQUITY-DRIVEN PLANNING (1.5 PTS)	DISTRIBUTED ENERGY SYSTEMS (4 PTS)	URBAN HEAT ISLAND MITIGATION (1.5 PTS)	TOTAL (16 PTS)
LONG BEACH	2.5	0.5	1	1.5	5.5
SACRAMENTO	2	0	2	1.5	5.5
SAN ANTONIO	3	1	0	1.5	5.5
ST. LOUIS	4	0	1	0.5	5.5
BRIDGEPORT	1.5	0	3	0.5	5
HARTFORD	0.5	0	3	1.5	5
NEW HAVEN	4	0	1	0	5
LOUISVILLE	3	0	0	1.5	4.5
NEW ORLEANS	3.5	0	0	1	4.5
RIVERSIDE	3	0	1	0.5	4.5
CHULA VISTA	2.5	0	1	0.5	4
HOUSTON	1.5	0	1	1	3.5
LAS VEGAS	1.5	0	1	1	3.5
MIAMI	1	0	1	1.5	3.5
RICHMOND	3	0	0	0.5	3.5
ST. PAUL	0.5	0.5	2	0.5	3.5
CHARLOTTE	1	0	1	1	3
MILWAUKEE	1	0	1	1	3
TAMPA	1.5	0	0	1.5	3
DALLAS	1	0.5	0	1	2.5
KNOXVILLE	1	0	1	0.5	2.5
OMAHA	2	0	0	0.5	2.5
BUFFALO	0	0	1	1	2
GRAND RAPIDS	0.5	0	0	1.5	2
HONOLULU	0.5	0	1	0.5	2
RALEIGH	1	0	0	1	2
TUCSON	0.5	0	1	0.5	2
VIRGINIA BEACH	1	0	0	1	2
EL PASO	0	0	1	0.5	1.5
FORT WORTH	1	0	0	0.5	1.5

Chapter 3. Community-Wide Initiatives

CITY	COMMUNITY-WIDE GOALS (9 PTS)	EQUITY-DRIVEN PLANNING (1.5 PTS)	DISTRIBUTED ENERGY SYSTEMS (4 PTS)	URBAN HEAT ISLAND MITIGATION (1.5 PTS)	TOTAL (16 PTS)
JACKSONVILLE	0	0	1	0.5	1.5
MESA	0.5	0	1	0	1.5
WORCESTER	0.5	0	1	0	1.5
AURORA	0	0	1	0	1
BAKERSFIELD	0	0	1	0	1
HENDERSON	0	0	1	0	1
RENO	1	0	0	0	1
ALBUQUERQUE	0	0	0	0.5	0.5
BIRMINGHAM	0	0	0	0.5	0.5
MEMPHIS	0.5	0	0	0	0.5
ROCHESTER	0.5	0	0	0	0.5
TULSA	0	0	0	0.5	0.5
DETROIT	0	0	0	0	0
MCALLEN	0	0	0	0	0
NEWARK	0	0	0	0	0
OKLAHOMA CITY	0	0	0	0	0
MEDIAN	**2.5**	**0**	**1**	**1**	**4.5**

Cities performed the best for urban heat island mitigation initiatives. Many cities had urban heat island mitigation goals as well as policies or programs to make progress toward those goals, such as cool roof policies and tree protection ordinances. We found several areas where there is room for improvement, though. Cities had a median score of 2.5 points out of a possible 9 for community-wide goals. A lack of comprehensive energy and greenhouse gas emissions data—particularly for goals' baseline years—continues to prevent cities from scoring well for goal stringency and progress. Cities scored a median of 1 point out of 4 for policies promoting distributed energy systems, with Austin being the only one to score full points in this metric. Our results indicate that cities are pursuing renewable energy systems more than energy efficiency systems. Policies that promote the installation of onsite renewables and community solar outnumber policies supporting district energy and CHP by more than 2 to 1.

Cities also did not fare well for equity-driven planning, with a median score of 0 out of 1.5 points. Just 24 cities earned any points for this metric, suggesting that more than two-thirds of the cities we assess do not address equity outcomes as it pertains to clean energy and climate planning. Only Minneapolis, Providence, and Seattle achieved maximum points for this metric. Going forward, cities can better imbed equity objectives within their energy and climate planning processes.

Chapter 3. Community-Wide Initiatives

COMMUNITY-WIDE CLIMATE MITIGATION AND ENERGY GOALS

Cities can coordinate several programs under a unifying policy by establishing community-wide goals to reduce GHG emissions, curtail energy consumption, or increase the share of electricity generated from renewable sources. Goals such as these provide a vision to guide the long-term sustainability of programs. Goals with specific timetables and target dates allow cities to establish transparent objectives and enable regular monitoring. Cities often develop community-wide goals after a long-term planning process and outreach to diverse stakeholders, including local citizens, utilities, nonprofits, advocates, and businesses.

In this category we scored cities on:

- **Stringency and progress of climate change mitigation goals** (4 points)
- **Adoption and stringency of energy savings and renewable generation goals** (4 points)
- **Comprehensive energy data** (1 point)

Climate Change Mitigation Goals

As with our approach to scoring municipal greenhouse gas emissions reduction goals, we chose to score cities only on the stringency of their community-wide climate mitigation goals and their progress toward them. We did not score cities for the adoption of a climate mitigation goal since these have become increasingly common.

Stringency of Goals

Cities were assessed based on the average annual per capita percentage reduction in GHG emissions required to meet their nearest-term community-wide climate change mitigation goal. This metric recognizes those cities that are striving to set ambitious climate goals relative to other communities. We used the same approach to score the stringency of community-wide goals as we did to score municipal goals. Chapter 2 contains a detailed description of this approach.

Cities could earn up to 2 points in this metric, as shown in table 15. Table 16 contains the scores for this metric, and table E5 in Appendix E details the stringency of each city's nearest-term community-wide goal.

Progress Toward Goals

Cities were assessed based on their progress toward achieving their nearest-term community-wide mitigation goal. To be considered on track, cities had to demonstrate past average annual percentage reductions in GHG emissions that, assuming such reductions continue for all future years until the near-term goal year, would result in GHG emissions at or below the goal in the near-term target year.

To evaluate progress toward community-wide goals, we used the same approach that we used to assess progress toward local government goals. Chapter 2 contains a detailed description of this approach. Cities could earn up to 2 points in this metric, as shown in table 15. Table 16 contains the scores for this metric, and table E5 in Appendix E details each city's nearest-term community-wide goal and our projections for overall city reductions.

Chapter 3. Community-Wide Initiatives

Energy Savings and Renewable Generation Goals

Adoption of Goals

Cities were scored for formally adopting community-wide energy savings and renewable electricity goals. We gave points for goals that aimed for specific quantitative reductions in energy consumption or energy intensity and increases in the share of electricity generated from renewable sources.[27] We did not give points for peak demand energy savings goals because these focus only on decreasing daily peaks. While such decreases can be achieved through overall increases in renewable electricity generation or decreases in total energy use, this is not always the case. Demand energy savings can also come from policies or programs that focus on reducing energy use during peak periods, with little consideration for energy use at other times.

Cities could earn up to 2 points in this metric, as shown in table 15. Table 16 contains the scores for this metric, and table E5 in Appendix E details each city's nearest-term community-wide goal and our projections for overall city reductions.

Stringency of Goals

As with climate change mitigation goals, cities were also eligible to earn points based on the stringency of their energy-specific goals. Stringency was assessed in two ways. We evaluated cities' energy savings goals by calculating the annual energy per capita reduction needed to meet their nearest-term goal. Our calculations for this followed the approach outlined for goal stringency metrics in Chapter 2. We evaluated cities' renewable electricity goals by assessing the annual renewable electricity increase required to meet their nearest-term goal.[28] As with mitigation goal stringency, we calculated targeted annual energy savings and renewable electricity share increases for each city, as most cities do not set goals along the same timelines.[29] We did not assess city progress on their energy goals due to a lack of needed data.

Cities could earn up to 2 points in this metric, as shown in table 15. Table 16 contains the scores for this metric, and table E5 in Appendix E details each city's nearest-term community-wide goal and our projections for overall city reductions.

Comprehensive Energy Data

Improved access to data has helped cities measure, monitor, and manage energy use in ways they could

PERFORMANCE MANAGEMENT STRATEGIES FOR COMMUNITY-WIDE GOALS

In addition to regular monitoring of community-wide energy use, cities may employ several performance management strategies to systematically pursue, measure, and confirm success.

Independent EM&V. An outside party systematically evaluates, monitors, and verifies city progress toward community-wide goals. This helps cities identify ways to improve their plans to meet goals by revising timelines or program strategies.

27 In considering cities for points for the adoption of a renewable electricity goal, we also provided points for carbon-neutral or broader renewable energy goals. Cities whose primary electric utility reported that at least 90% of its electricity was generated by no-carbon energy sources received 1 point in lieu of credit for an adopted community-wide renewable electricity target.

28 Renewable electricity goals are typically expressed as a specified share of electricity to be generated by renewables. In order to determine a baseline fuel mix for a city's electric grid, we calculated the share of electricity derived from renewable sources for each city's primary electric utility. We relied on fuel mixes reported by the utility for this calculation.

29 Cities whose primary electric utility reported that at least 90% of its electricity was generated by no-carbon energy sources received 1 point in lieu of credit for the stringency of a community-wide renewable electricity target.

not several years ago. Community-wide energy and GHG inventories along with regular tracking of related metrics allow cities to set a benchmark for energy usage and target specific areas where savings can be quickly achieved. This is made possible through city programs and policies that encourage government agencies, utility companies, universities, community-based organizations, and others to collaborate in tracking energy use across a community.[30]

Taking a systematic approach to monitoring helps cities identify ways to improve their plans and meet goals by revising timelines or program strategies (Mackres and Kazerooni 2012). For example, cities that combine energy data with other community-wide data (e.g., information on buildings or demographics) can administer more-targeted programs for specific neighborhoods or property types. More targeted policies and programs can lead to greater energy savings and higher levels of participation (ACEEE 2014).

Dedicated staff. Full-time staff administer community-wide energy efficiency and renewable energy initiatives. This can help coordinate efforts across city programs and departments to ensure goals are met.

Dedicated funding. A dedicated funding source is allocated to community-wide energy efficiency and renewable energy initiatives. To ensure consistent funding levels, funding for these initiatives should not be dependent on general funds.

More information on these strategies can be found in Ribeiro et al. 2015.

In past editions of the *City Scorecard*, we found that few cities track community-wide energy data. Therefore, we have added a metric to recognize those that do. Cities that collect comprehensive energy data covering at least one of the past five years could receive up to 1 point in this category. Table 15 summarizes the scoring and table 16 lists city scores for our community-wide climate and energy goal metrics.

TABLE 15. SCORING FOR COMMUNITY-WIDE CLIMATE MITIGATION AND ENERGY GOAL METRICS

CLIMATE CHANGE MITIGATION GOAL STRINGENCY	SCORE
Average annual per capita GHG reductions are equal to or greater than 3%.	2
Average annual per capita GHG reductions are at least 2% but less than 3%.	1
CLIMATE CHANGE MITIGATION GOAL PROGRESS	
City is on track to meet or exceed its community-wide climate mitigation goal.	2
City is not on track to achieve its community-wide climate mitigation goal, but it is projected to be within 25% of the goal.	1
EXISTENCE OF ENERGY SAVINGS GOALS	
City has committed to a community-wide energy reduction target.	1

30 Several cities have adopted policies that encourage or require building owners to report their buildings' energy use. Several utility companies now also provide customers with aggregate whole-building energy data. These policies and programs are analyzed further in Chapters 4 and 5.

City has committed to an energy reduction target for a neighborhood, district, or sector.	0.5
EXISTENCE OF RENEWABLE ELECTRICITY GOALS	
City has committed to a community-wide renewable electricity target.	1
City has committed to a renewable energy generation target for a neighborhood, district, or sector.	0.5
STRINGENCY OF ENERGY SAVINGS GOALS	
Average annual energy savings per capita are greater than or equal to 3%.	1
Average annual energy savings per capita are at least 2% but less than 3%.	0.5
STRINGENCY OF RENEWABLE ELECTRICITY GOALS	
Average renewable electricity increase is greater than or equal to 5%.	1
Average annual renewable electricity increase is at least 2% but less than 5%.	0.5
COMPREHENSIVE ENERGY DATA	
City collects complete energy data covering all community sectors (public buildings and infrastructure, private buildings, and transportation) from at least one of the past five years.	1
City collects complete energy data covering at least one community sector (public buildings and infrastructure, private buildings, or transportation) from at least one of the past five years.	0.5

TABLE 16. COMMUNITY-WIDE CLIMATE MITIGATION AND ENERGY GOALS SCORES

CITY	CLIMATE GOAL STRINGENCY (2 PTS)	CLIMATE GOAL PROGRESS (2 PTS)	EXISTENCE OF ENERGY SAVINGS OR GENERATION GOALS (2 PTS)	ENERGY SAVINGS OR GENERATION GOAL STRINGENCY (2 PTS)	ENERGY DATA (1 PT)	TOTAL (9 PTS)
DENVER	2	1	2	1	1	7
MINNEAPOLIS	1	2	1.5	1.5	1	7
PHOENIX	2	2	2	0.5	0.5	7
WASHINGTON	1	1	2	2	1	7
CLEVELAND	2	2	2	0	0.5	6.5
COLUMBUS	2	1	2	1	0	6
LOS ANGELES	2	2	1	0	1	6
SAN DIEGO	2	0	1.5	1.5	1	6
SAN JOSÉ	1	2	2	1	0	6
ATLANTA	2	0	1.5	1	1	5.5
CINCINNATI	0	1	2	1.5	1	5.5
OAKLAND	2	0	2	0.5	1	5.5
PORTLAND	1	1	2	0.5	1	5.5

CITY	CLIMATE GOAL STRINGENCY (2 PTS)	CLIMATE GOAL PROGRESS (2 PTS)	EXISTENCE OF ENERGY SAVINGS OR GENERATION GOALS (2 PTS)	ENERGY SAVINGS OR GENERATION GOAL STRINGENCY (2 PTS)	ENERGY DATA (1 PT)	TOTAL (9 PTS)
SAN FRANCISCO	1	2	1	1	0.5	5.5
AUSTIN	2	1	1	0.5	0.5	5
BOSTON	2	1	1	0	1	5
CHICAGO	0	2	1.5	1	0.5	5
KANSAS CITY	1	1	2	0	1	5
ORLANDO	2	0	2	0.5	0.5	5
SEATTLE	2	0	1.5	1	0.5	5
ST. PETERSBURG	2	0	1	1	1	5
NASHVILLE	2	0	1.5	0	1	4.5
PHILADELPHIA	0	2	1	0.5	1	4.5
PITTSBURGH	1	0	2	1.5	0	4.5
SALT LAKE CITY	2	0	1	1	0.5	4.5
INDIANAPOLIS	2	0	1	0.5	0.5	4
NEW HAVEN	1	2	0	0	1	4
ST. LOUIS	1	0	1	1	1	4
NEW ORLEANS	0	0	2	1	0.5	3.5
BALTIMORE	0	2	0.5	0	0.5	3
LOUISVILLE	1	0	1	0.5	0.5	3
NEW YORK	0	0	1	1	1	3
PROVIDENCE	1	0	1	0.5	0.5	3
RICHMOND	1	2	0	0	0	3
RIVERSIDE	1	0	2	0	0	3
SAN ANTONIO	0	0	2	0	1	3
CHULA VISTA	0	0	1	0.5	1	2.5
LONG BEACH	0	0	2	0	0.5	2.5
OMAHA	0	0	2	0	0	2
SACRAMENTO	1	0	0.5	0	0.5	2
BRIDGEPORT	1	0	0	0	0.5	1.5
HOUSTON	0	0	0.5	0	1	1.5

CITY	CLIMATE GOAL STRINGENCY (2 PTS)	CLIMATE GOAL PROGRESS (2 PTS)	EXISTENCE OF ENERGY SAVINGS OR GENERATION GOALS (2 PTS)	ENERGY SAVINGS OR GENERATION GOAL STRINGENCY (2 PTS)	ENERGY DATA (1 PT)	TOTAL (9 PTS)
LAS VEGAS	0	0	0.5	0	1	1.5
TAMPA	1	0	0.5	0	0	1.5
CHARLOTTE	1	0	0	0	0	1
DALLAS	0	0	0.5	0	0.5	1
FORT WORTH	0	0	0.5	0	0.5	1
KNOXVILLE	0	0	0	0	1	1
MIAMI	1	0	0	0	0	1
MILWAUKEE	0	0	0.5	0.5	0	1
RALEIGH	0	0	0	0	1	1
RENO	0	0	0.5	0	0.5	1
VIRGINIA BEACH	0	0	1	0	0	1
GRAND RAPIDS	0	0	0.5	0	0	0.5
HARTFORD	0	0	0	0	0.5	0.5
HONOLULU	0	0	0	0	0.5	0.5
MEMPHIS	0	0	0	0	0.5	0.5
MESA	0	0	0	0	0.5	0.5
ROCHESTER	0	0	0	0	0.5	0.5
ST. PAUL	0	0	0	0	0.5	0.5
TUCSON	0	0	0.5	0	0	0.5
WORCESTER	0	0	0	0	0.5	0.5
ALBUQUERQUE	0	0	0	0	0	0
AURORA	0	0	0	0	0	0
BAKERSFIELD	0	0	0	0	0	0
BIRMINGHAM	0	0	0	0	0	0
BUFFALO	0	0	0	0	0	0
DETROIT	0	0	0	0	0	0
EL PASO	0	0	0	0	0	0
HENDERSON	0	0	0	0	0	0

CITY	CLIMATE GOAL STRINGENCY (2 PTS)	CLIMATE GOAL PROGRESS (2 PTS)	EXISTENCE OF ENERGY SAVINGS OR GENERATION GOALS (2 PTS)	ENERGY SAVINGS OR GENERATION GOAL STRINGENCY (2 PTS)	ENERGY DATA (1 PT)	TOTAL (9 PTS)
JACKSONVILLE	0	0	0	0	0	0
MCALLEN	0	0	0	0	0	0
NEWARK	0	0	0	0	0	0
OKLAHOMA CITY	0	0	0	0	0	0
TULSA	0	0	0	0	0	0

EQUITY-DRIVEN APPROACHES TO CLEAN ENERGY PLANNING, IMPLEMENTATION, AND EVALUATION

As the planet warms, urban low-income communities and communities of color are likely to experience the harshest effects of climate change (IPCC 2008; Dodman and Satterthwaite 2008; Hoerner and Robinson 2008). These individuals and families are at risk because they often live in neighborhoods with greater exposure to natural hazards. These places also typically lack the infrastructure needed to mitigate or adapt to climate change's worst outcomes. In some cases, such infrastructure may exist but may be at risk of failure due to poor maintenance. Historically, people of color and those with low incomes have been denied access to the resources that would allow them to address these vulnerabilities or move to less vulnerable locations. These households can find it difficult to obtain high-paying jobs, reliable transportation, home insurance, or government assistance.

They also encounter barriers to participating in energy efficiency and renewable energy programs that can reduce their energy costs (Drehobl and Ross 2016; Garren et al. 2017). Low-income households' energy bills consume a larger proportion of their incomes compared with more affluent households, adding to the struggles that many face in paying for other necessities. Compared with white households, Hispanic households spend roughly one-third more of their income on energy bills, and black households pay roughly two-thirds more (Drehobl and Ross 2016).

Cities can address disparities such as these through their climate action, energy efficiency, and renewable energy initiatives. According to Park (2014, 4), sustainability staff in several cities are working to identify the constituencies that are "most impacted by community decision-making and whose life outcomes are disproportionately affected by structures in society."[31] Increasingly, staff are working alongside these populations to address equity in four areas:

- **Procedural equity.** Cities offer inclusive, accessible, authentic engagement and representation in processes to develop or implement sustainability programs and policies.
- **Distributional equity.** Sustainability programs and policies result in fair distribution of benefits and burdens across all segments of a community, prioritizing those with highest need.

31 These constituencies could include people of color, poor and low-income residents, youth, the elderly, "new Americans" or recently arrived immigrants, individuals with limited English proficiency, people with disabilities, and the homeless (Park 2014).

- **Structural equity.** Sustainability decision makers institutionalize accountability; decisions are made with a recognition of the historical, cultural, and institutional dynamics and structures that have routinely advantaged privileged groups in society and resulted in chronic, cumulative disadvantage for subordinated groups.
- **Transgenerational equity.** Sustainability decisions consider generational impacts and avoid placing unfair burdens on future generations (Park 2014).

Chapters 4 and 5 include metrics that assess cities on their approach to achieving distributional equity. In this chapter we assess cities on their approach to achieving procedural and structural equity outcomes through the planning, implementation, and evaluation of their climate action, energy, sustainability, or resilience initiatives.

Some cities are pursuing procedural equity outcomes by structuring their public engagement strategies in ways that increase feedback from marginalized groups. Their outreach offers residents an opportunity to engage in a direct dialogue with permanent city staff and provide their feedback regarding an entire plan or multiple initiatives. Examples of this outreach include conducting community forums in languages other than English, organizing community meetings in low-income communities or communities of color, or involving community-based organizations in leading these outreach efforts.

Cities may also give marginalized community residents or local organizations representing them a formal role (e.g., appointments to city boards, working groups, or committees) in decision making that affects the creation or implementation of a local energy, sustainability, or climate action plan. These decision-making bodies are focused on environmental justice or social equity outcomes.

Finally, cities may establish structural equity measures that hold city government accountable for actions that will specifically benefit these constituencies. These include goals, metrics, and protocols to track how energy, sustainability, and climate action initiatives are affecting local marginalized groups.

A city's approach to equitable clean energy planning must align with the above descriptions of procedural and distributional equity to receive points. Cities must apply equity-driven approaches to the creation of an entire sustainability-related plan or the implementation of multiple initiatives. Community engagement must allow residents to engage in a direct dialogue with permanent city staff, and formal decision-making groups must focus on environmental justice or social equity outcomes.

Table 17 outlines the scoring for equity in climate action or energy planning and implementation. Table 18 presents the scores for these metrics. Table E6 in Appendix E provides detailed descriptions of city efforts that earned credit.

TABLE 17. SCORING FOR EQUITY-DRIVEN CLEAN ENERGY INITIATIVE PLANNING, IMPLEMENTATION, AND EVALUATION

EQUITY-DRIVEN COMMUNITY ENGAGEMENT	SCORE
City has structured its public engagement strategies to increase feedback from marginalized groups.	0.5
EQUITY-DRIVEN DECISION MAKING	
City has given marginalized residents a formal role in decision-making processes for sustainability initiatives.	0.5

ACCOUNTABILITY FOR SOCIAL EQUITY	
City has adopted structural equity procedures.	0.5

TABLE 18. EQUITY-DRIVEN CLIMATE ACTION AND ENERGY PLANNING, IMPLEMENTATION, AND EVALUATION SCORES

CITY	EQUITY-DRIVEN COMMUNITY ENGAGEMENT (0.5 PTS)	EQUITABLE DECISION MAKING (0.5 PTS)	ACCOUNTABILITY FOR EQUITY (0.5 PTS)	TOTAL (1.5 PTS)
MINNEAPOLIS	0.5	0.5	0.5	1.5
PROVIDENCE	0.5	0.5	0.5	1.5
SEATTLE	0.5	0.5	0.5	1.5
CINCINNATI	0.5	0	0.5	1
ORLANDO	0.5	0	0.5	1
SAN ANTONIO	0	0.5	0.5	1
WASHINGTON	0.5	0.5	0	1
ATLANTA	0	0	0.5	0.5
BALTIMORE	0	0	0.5	0.5
BOSTON	0	0	0.5	0.5
CHICAGO	0	0	0.5	0.5
CLEVELAND	0	0	0.5	0.5
DALLAS	0	0	0.5	0.5
INDIANAPOLIS	0.5	0	0	0.5
LONG BEACH	0.5	0	0	0.5
LOS ANGELES	0	0.5	0	0.5
NASHVILLE	0	0	0.5	0.5
NEW YORK	0	0	0.5	0.5
OAKLAND	0	0	0.5	0.5
PHILADELPHIA	0	0	0.5	0.5
PITTSBURGH	0	0	0.5	0.5
PORTLAND	0	0.5	0	0.5
SAN JOSÉ	0.5	0	0	0.5
ST. PAUL	0	0	0.5	0.5
ALBUQUERQUE	0	0	0	0
AURORA	0	0	0	0

CITY	EQUITY-DRIVEN COMMUNITY ENGAGEMENT (0.5 PTS)	EQUITABLE DECISION MAKING (0.5 PTS)	ACCOUNTABILITY FOR EQUITY (0.5 PTS)	TOTAL (1.5 PTS)
AUSTIN	0	0	0	0
BAKERSFIELD	0	0	0	0
BIRMINGHAM	0	0	0	0
BRIDGEPORT	0	0	0	0
BUFFALO	0	0	0	0
CHARLOTTE	0	0	0	0
CHULA VISTA	0	0	0	0
COLUMBUS	0	0	0	0
DENVER	0	0	0	0
DETROIT	0	0	0	0
EL PASO	0	0	0	0
FORT WORTH	0	0	0	0
GRAND RAPIDS	0	0	0	0
HARTFORD	0	0	0	0
HENDERSON	0	0	0	0
HONOLULU	0	0	0	0
HOUSTON	0	0	0	0
JACKSONVILLE	0	0	0	0
KANSAS CITY	0	0	0	0
KNOXVILLE	0	0	0	0
LAS VEGAS	0	0	0	0
LOUISVILLE	0	0	0	0
MCALLEN	0	0	0	0
MEMPHIS	0	0	0	0
MESA	0	0	0	0
MIAMI	0	0	0	0
MILWAUKEE	0	0	0	0
NEW HAVEN	0	0	0	0
NEW ORLEANS	0	0	0	0
NEWARK	0	0	0	0

CITY	EQUITY-DRIVEN COMMUNITY ENGAGEMENT (0.5 PTS)	EQUITABLE DECISION MAKING (0.5 PTS)	ACCOUNTABILITY FOR EQUITY (0.5 PTS)	TOTAL (1.5 PTS)
OKLAHOMA CITY	0	0	0	0
OMAHA	0	0	0	0
PHOENIX	0	0	0	0
RALEIGH	0	0	0	0
RENO	0	0	0	0
RICHMOND	0	0	0	0
RIVERSIDE	0	0	0	0
ROCHESTER	0	0	0	0
SACRAMENTO	0	0	0	0
SALT LAKE CITY	0	0	0	0
SAN DIEGO	0	0	0	0
SAN FRANCISCO	0	0	0	0
ST. LOUIS	0	0	0	0
ST. PETERSBURG	0	0	0	0
TAMPA	0	0	0	0
TUCSON	0	0	0	0
TULSA	0	0	0	0
VIRGINIA BEACH	0	0	0	0
WORCESTER	0	0	0	0

CLEAN DISTRIBUTED ENERGY RESOURCES

Distributed energy resources (DERs) are "decentralized, locally sited equipment to generate, store, or use electricity" (Sivaram 2018, 284). DERs range in size from small rooftop solar systems to large district energy systems that can power multiple buildings or entire neighborhoods. If these resources are deployed strategically, operators may use them to reduce demand in places facing distribution or transmission capacity constraints (Baatz, Relf, and Nowak 2018). We awarded points to cities that have adopted formal policies, rules, or agreements to support the creation or expansion of district energy systems or microgrids, combined heat and power, onsite renewable energy systems (such as solar and wind), and community solar.[32]

32 We did not score direct financial incentive programs for distributed energy systems in this chapter; these programs are scored in Chapters 4 and 5.

Chapter 3. Community-Wide Initiatives

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. Furthermore, buildings connected to district energy systems can use energy sources often unavailable to individual buildings. Well-designed and -operated district energy systems can convey efficiency benefits to users including reduced energy use, lower energy costs, and reliability in the face of disasters (Chittum 2012a). Because one-third of US energy consumption goes to industrial processes and the heating and cooling of buildings, district energy systems can drastically decrease energy use in these sectors (Chittum 2012b).

Whereas district energy systems take a local approach to heating and cooling generation and distribution, *microgrids* are a localized approach to the generation and distribution of electricity. A microgrid "connects selected buildings and facilities to distributed energy supplies. They are usually connected to the grid but can disconnect from the grid and supply power independently when the grid is incapacitated, enhancing resilience" (Majdi 2018). Microgrids are inherently efficient systems because their proximity to end users reduces line losses by 4% to 5% compared with the main grid's transmission and distribution system; this also means generation resources may produce less electricity to meet the same demand, achieving additional energy savings of 30% to 40% relative to a traditional generation system (Moran and Lorentzen 2016). While energy efficiency is integral to any microgrid, renewable energy often serves an auxiliary role in these systems. Because cities often create microgrids for their resilience value, they install a diverse portfolio of generation resources within them, so most microgrids house both renewable energy and fossil fuel resources (Bakke 2016, 202). For these reasons, we considered formal policies, rules, or agreements that support the creation of microgrids to be in the same vein as those supporting district energy systems.

When paired with *combined heat and power (CHP)*, also known as cogeneration, district energy systems and microgrids waste much less energy than traditional power plants. US fossil-fueled power plants typically waste 67% of their fuel in the form of heat, but CHP turns most of that waste heat into useful energy for heating and cooling with as little as 20% of generated energy lost as waste heat (EPA 2014). District energy systems or microgrids paired with CHP also offer a source of energy that is highly reliable. In 2017 Texas Medical Center in Houston, the largest medical complex in the world, was able to continue operating its campus systems in the aftermath of Hurricane Harvey thanks to a 48 MW CHP system. Similarly, a CHP system at the University of Texas Medical Center in Galveston islanded itself from the main grid when two utility feeders flooded during Hurricane Harvey (DOE 2018). In both cases, CHP allowed the medical centers to operate without issue, even while the main grid faltered.

Motivated by climate mitigation goals, many cities are taking steps to ensure that CHP, district energy, and microgrid systems are achieving a net reduction in GHG emissions. To that end, cities are working to support the inclusion of renewable energy resources in these systems and across the entire community. Many also recognize that renewable energy projects specifically benefiting low-income households will ensure that all residents have access to the benefits of renewable energy.

Onsite renewable energy systems are renewable energy resources placed at or near the end user. The 2018 International Green Construction Code defines onsite renewable energy systems as "photovoltaic, solar thermal, geothermal energy, and wind systems used to generate energy and located on the building project" (ICC 2018). Many cities are adopting policies and

ramping up programs that increase the deployment of onsite renewable energy systems because of the wide-ranging benefits they bring to communities. Besides reducing greenhouse gas emissions, greater use of onsite renewable energy can mitigate the negative health impacts associated with fossil fuel generation and can create long-term local jobs (Union of Concerned Scientists 2017).

Community solar programs are beneficial for low-income households that do not have the financial resources or roof space to install their own home solar system. Garren et al. (2017) defines shared or community solar programs as those that "allow multiple energy customers to subscribe or otherwise participate in a solar energy project located somewhere else in their community. Participants receive a credit on their utility bill for their portion of the clean energy produced." Community solar projects remove some of the barriers associated with private solar system installation. While community solar provides low-income residents and renters with a renewable energy opportunity to lower their energy costs that they might not otherwise have, many other city residents and businesses can also enjoy its benefits.

Cities can use several policy approaches to support the creation of clean DER systems. Examples of these approaches include:

- Mandating that new developments conduct a distributed energy system feasibility study (EPA 2015a)
- Streamlining permitting, zoning, and inspections for these systems (EPA 2015a; Bradford and Fanshaw 2018; Figel 2018)
- Agreeing to formal public–private partnerships such as power purchase agreements (PPAs) or consenting to act as a financial backstop or intermediary purchaser (EPA 2015a; Bradford and Fanshaw 2018; Crowe et al. 2018; Figel 2018)
- Implementing solar access ordinances to protect property owners' right to generate solar energy on their property (Bradford and Fanshaw 2018)

Cities could earn up to 4 points for supporting the creation of clean, efficient distributed energy systems. We awarded 1 point for each system type (district energy systems or microgrids, combined heat and power, onsite renewable energy systems, and community solar) that the city supports with a formal policy, rule, or agreement. Table 19 shows the scoring for this metric, and table 20 presents city scores. Table E7 in Appendix E provides detailed descriptions of city activities that earned credit.

TABLE 19. SCORING FOR CLEAN DISTRIBUTED ENERGY SYSTEMS SUPPORT

SUPPORT FOR CLEAN DISTRIBUTED ENERGY SYSTEMS	SCORE
City has adopted a formal policy, rule, or agreement that supports the creation of one or more local distributed energy systems that reduce a community's GHG emissions: • **District energy systems or microgrids** • **CHP** • **Onsite renewable energy systems** • **Community solar**	1 POINT PER SYSTEM TYPE

TABLE 20. CITY SUPPORT FOR DISTRIBUTED ENERGY SYSTEMS SCORES

CITY	DISTRICT ENERGY OR MICROGRIDS	CHP	ONSITE RENEWABLES	COMMUNITY SOLAR	TOTAL (4 PTS)
AUSTIN	1	1	1	1	4
BOSTON	1	1	1	0	3
BRIDGEPORT	1	1	1	0	3
HARTFORD	1	1	1	0	3
ORLANDO	1	0	1	1	3
SEATTLE	1	0	1	1	3
BALTIMORE	0	1	1	0	2
CHICAGO	0	0	1	1	2
CLEVELAND	1	0	1	0	2
DENVER	1	0	0	1	2
LOS ANGELES	0	0	1	1	2
NASHVILLE	0	0	1	1	2
OAKLAND	1	0	1	0	2
PHOENIX	1	0	1	0	2
PROVIDENCE	0	1	1	0	2
SACRAMENTO	0	0	1	1	2
ST. PAUL	1	0	1	0	2
ST. PETERSBURG	0	1	1	0	2
WASHINGTON	0	0	1	1	2
ATLANTA	0	0	1	0	1
AURORA	0	0	1	0	1
BAKERSFIELD	0	0	1	0	1
BUFFALO	1	0	0	0	1
CHARLOTTE	0	1	0	0	1
CHULA VISTA	0	0	1	0	1
CINCINNATI	0	0	1	0	1
EL PASO	0	0	1	0	1
HENDERSON	0	0	1	0	1
HONOLULU	0	0	1	0	1

CITY	DISTRICT ENERGY OR MICROGRIDS	CHP	ONSITE RENEWABLES	COMMUNITY SOLAR	TOTAL (4 PTS)
HOUSTON	0	0	1	0	1
JACKSONVILLE	1	0	0	0	1
KANSAS CITY	0	0	1	0	1
KNOXVILLE	0	0	1	0	1
LAS VEGAS	0	0	1	0	1
LONG BEACH	0	0	1	0	1
MESA	0	0	1	0	1
MIAMI	0	0	1	0	1
MILWAUKEE	0	0	1	0	1
MINNEAPOLIS	0	0	0	1	1
NEW HAVEN	0	0	1	0	1
NEW YORK	1	0	0	0	1
PHILADELPHIA	0	0	1	0	1
PITTSBURGH	1	0	0	0	1
RIVERSIDE	0	0	1	0	1
SAN DIEGO	0	0	1	0	1
SAN FRANCISCO	0	0	1	0	1
SAN JOSÉ	0	0	1	0	1
ST. LOUIS	0	0	0	1	1
TUCSON	0	0	1	0	1
WORCESTER	0	0	1	0	1
ALBUQUERQUE	0	0	0	0	0
BIRMINGHAM	0	0	0	0	0
COLUMBUS	0	0	0	0	0
DALLAS	0	0	0	0	0
DETROIT	0	0	0	0	0
FORT WORTH	0	0	0	0	0
GRAND RAPIDS	0	0	0	0	0
INDIANAPOLIS	0	0	0	0	0
LOUISVILLE	0	0	0	0	0

CITY	DISTRICT ENERGY OR MICROGRIDS	CHP	ONSITE RENEWABLES	COMMUNITY SOLAR	TOTAL (4 PTS)
MCALLEN	0	0	0	0	0
MEMPHIS	0	0	0	0	0
NEW ORLEANS	0	0	0	0	0
NEWARK	0	0	0	0	0
OKLAHOMA CITY	0	0	0	0	0
OMAHA	0	0	0	0	0
PORTLAND	0	0	0	0	0
RALEIGH	0	0	0	0	0
RENO	0	0	0	0	0
RICHMOND	0	0	0	0	0
ROCHESTER	0	0	0	0	0
SALT LAKE CITY	0	0	0	0	0
SAN ANTONIO	0	0	0	0	0
TAMPA	0	0	0	0	0
TULSA	0	0	0	0	0
VIRGINIA BEACH	0	0	0	0	0

MITIGATION OF URBAN HEAT ISLANDS

Unvegetated, impermeable, and dark surfaces in cities are substantial contributors to the urban heat island effect. A city's buildings, parking lots, and streets absorb more heat than do rural areas where moist vegetated surfaces release water vapor and provide shade to cool the surrounding air. Consequently, 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 2019a). These temperature increases will add to the warming that cities are experiencing from climate change. Kenward and Adams-Smith (2014) project that daytime temperatures in US cities will increase by 7 to 10 °F on average by the end of the 21st century. Urban heat islands increase the demand for electric cooling, resulting in increased power plant–related GHG emissions, air pollution, and waste heat. To minimize this effect and mitigate extreme heat events, cities are establishing goals for urban heat island reduction and implementing a variety of programs and policies.

Cities with land development policies that increase or preserve vegetated land, reduce stormwater runoff, and protect wetlands can reduce the amount of energy needed to cool surrounding buildings and run wastewater treatment plants (Stone 2012). Cities can also require or incentivize the installation of cool roofs and pavements that use highly reflective coatings

to reflect solar energy rather than absorb it. These measures also reduce a building's energy use and a city's peak energy demand (EPA 2016).

Cities could earn up to 1.5 points for efforts to reduce their urban heat island effect.[33] Cities that have a quantitative goal to mitigate this effect earned 0.5 points. The goal may aim at reductions in temperature or impermeable surface, increases in the tree canopy, the deployment of cool or green roofs, or the expansion of wetlands. Goals must be included in formal city plans or ordinances and must specify a future target date or annual commitment.

Cities could also receive 0.5 points, up to a total of 1 point, for each policy or program that incorporates requirements or incentives to mitigate the urban heat island effect. These include:

- **Green infrastructure policies** such as municipal or private-sector requirements or incentives for low-impact-development green infrastructure, cool roof/pavement policies, and green roof policies.
- **Private tree protection ordinances** that require a permit to remove existing trees on private property.
- **Private tree planting programs** that provide trees for private planting at low cost or no cost. Procedures must be in place to account for energy savings from tree plantings.
- **Private land conservation policies** such as conservation subdivision ordinances, cluster house zoning, transfer of development rights policies, and incentives for natural land conservation or restoration.[34]

Table 21 shows the scoring for these metrics, and table 22 provides the scores.

TABLE 21. SCORING FOR URBAN HEAT ISLAND MITIGATION GOALS AND INITIATIVES

MITIGATION GOAL	SCORE
City has quantitative urban heat island mitigation goal.	0.5
MITIGATION GOAL	**SCORE**
City has one or more of these: • **Green infrastructure policy** • **Private tree protection ordinance** • **Private tree planting program** • **Private land conservation policy**	0.5 EACH, UP TO 1 POINT

33 Cities did not receive credit here for green building codes or programs; these are scored in Chapter 4.

34 While the mitigation measures listed here have been shown to reduce land surface temperature in cities, the resulting temperature reductions can vary based on several locational factors. Additionally, while the temperature reduction potential of certain low-impact development and land conservation measures has been the subject of multiple studies, others have been studied only sparingly.

TABLE 22. URBAN HEAT ISLAND MITIGATION GOALS AND INITIATIVES SCORES

CITY	URBAN HEAT ISLAND GOALS (0.5 PTS)	URBAN HEAT ISLAND INITIATIVES (1 PT)	TOTAL (1.5 PTS)
ATLANTA	0.5	1	1.5
CHICAGO	0.5	1	1.5
CLEVELAND	0.5	1	1.5
DENVER	0.5	1	1.5
GRAND RAPIDS	0.5	1	1.5
HARTFORD	0.5	1	1.5
INDIANAPOLIS	0.5	1	1.5
LONG BEACH	0.5	1	1.5
LOS ANGELES	0.5	1	1.5
LOUISVILLE	0.5	1	1.5
MIAMI	0.5	1	1.5
NASHVILLE	0.5	1	1.5
NEW YORK	0.5	1	1.5
ORLANDO	0.5	1	1.5
PHILADELPHIA	0.5	1	1.5
PHOENIX	0.5	1	1.5
PORTLAND	0.5	1	1.5
PROVIDENCE	0.5	1	1.5
SACRAMENTO	0.5	1	1.5
SALT LAKE CITY	0.5	1	1.5
SAN ANTONIO	0.5	1	1.5
SAN JOSÉ	0.5	1	1.5
SEATTLE	0.5	1	1.5
ST. PETERSBURG	0.5	1	1.5
TAMPA	0.5	1	1.5
WASHINGTON	0.5	1	1.5
AUSTIN	0	1	1
BALTIMORE	0.5	0.5	1
BOSTON	0.5	0.5	1

CITY	URBAN HEAT ISLAND GOALS (0.5 PTS)	URBAN HEAT ISLAND INITIATIVES (1 PT)	TOTAL (1.5 PTS)
BUFFALO	0	1	1
CHARLOTTE	0.5	0.5	1
CINCINNATI	0	1	1
COLUMBUS	0.5	0.5	1
DALLAS	0	1	1
HOUSTON	0	1	1
KANSAS CITY	0.5	0.5	1
LAS VEGAS	0.5	0.5	1
MILWAUKEE	0.5	0.5	1
MINNEAPOLIS	0	1	1
NEW ORLEANS	0	1	1
OAKLAND	0	1	1
PITTSBURGH	0.5	0.5	1
RALEIGH	0	1	1
SAN FRANCISCO	0.5	0.5	1
VIRGINIA BEACH	0.5	0.5	1
ALBUQUERQUE	0	0.5	0.5
BIRMINGHAM	0	0.5	0.5
BRIDGEPORT	0.5	0	0.5
CHULA VISTA	0.5	0	0.5
EL PASO	0	0.5	0.5
FORT WORTH	0	0.5	0.5
HONOLULU	0.5	0	0.5
JACKSONVILLE	0	0.5	0.5
KNOXVILLE	0	0.5	0.5
OMAHA	0	0.5	0.5
RICHMOND	0	0.5	0.5
RIVERSIDE	0.5	0	0.5
SAN DIEGO	0.5	0	0.5
ST. LOUIS	0	0.5	0.5

CITY	URBAN HEAT ISLAND GOALS (0.5 PTS)	URBAN HEAT ISLAND INITIATIVES (1 PT)	TOTAL (1.5 PTS)
ST. PAUL	0.5	0	0.5
TUCSON	0	0.5	0.5
TULSA	0.5	0	0.5
AURORA	0	0	0
BAKERSFIELD	0	0	0
DETROIT	0	0	0
HENDERSON	0	0	0
MCALLEN	0	0	0
MEMPHIS	0	0	0
MESA	0	0	0
NEWARK	0	0	0
OKLAHOMA CITY	0	0	0
NEW HAVEN	0	0	0
RENO	0	0	0
ROCHESTER	0	0	0
WORCESTER	0	0	0

LEADING CITIES: COMMUNITY-WIDE INITIATIVES

Washington. Washington has adopted ambitious complementary goals of reducing greenhouse gas emissions and energy use 50% by 2032 while increasing the share of electricity generated by renewable sources to 100% by the same year. To engage marginalized residents in planning and implementing initiatives to support these goals, city staff have partnered with community organizations to restructure neighborhood meeting formats to be more casual and accessible and to hold meetings in familiar venues near public transit to attract participants. The city also gives a formal climate action decision-making role to the community leaders and residents of neighborhoods facing disproportionately high climate-related risks. DC also has adopted policies supporting the deployment of renewable energy systems that benefit low-income households and uses multiple strategies to mitigate the urban heat island effect.

Cleveland. Cleveland is one of only three cities that are on track to achieve an average annual GHG emissions reduction target greater than 3%. The city is set to meet its near-term goal of reducing GHG emissions 16% below 2010 levels by 2020, in part because it has adopted complementary goals to reduce building energy use

while increasing its share of electricity generated from renewables. The city has a long history of supporting clean distributed district and wind energy systems. Looking to the future, city staff are using a Racial Equity Tool to evaluate how provisions of its climate action plan could affect marginalized groups and to develop equity metrics for the plan's implementation.

Orlando. Orlando has adopted ambitious GHG emissions, energy efficiency, and renewable energy generation goals. Many of the city's initiatives have focused on increasing community reliance on clean distributed energy systems. The city has supported the construction of a downtown district cooling system, initiated a bulk solar purchase program, and provided community solar subscriptions for residents. Orlando is committed to increasing its tree canopy to 40% of the community by 2040. It also provides density bonuses to projects that install green roofs.

Chapter 4. Buildings Policies

Lead Authors: Hannah Bastian, David Ribeiro, and Alexander Jarrah

Buildings are big energy users in cities, so they are clear targets for energy savings and GHG emissions reductions. In fact, their energy performance figures to some degree in all chapters of the *City Scorecard*. Local governments establish and enforce many energy-related buildings policies. While states determine some policies that affect buildings, many cities have gone above and beyond state requirements to meet their own objectives for reducing energy use and GHG emissions.

The buildings sector is especially important to target in large cities because it accounts for the greatest share of energy consumption. This is because large cities typically have more buildings, less industrial activity, and well-developed alternatives to car transportation. In many large cities, buildings account for 50–75% of overall energy consumption, making them a major source of GHG emissions (Ribeiro et al. 2017).

Cities will need to improve the performance of buildings to meet their energy and emissions reduction goals. They can also generate more energy from renewable sources, for example by encouraging building owners to install solar arrays. This year's *Scorecard* incorporates a number of metrics to reward cities that have implemented policies and programs to increase onsite renewable generation.

Many cities start by adopting policies for municipal buildings and then, after demonstrating energy improvements in local government operations, extend the policies to private buildings. Chapter 2 assessed clean energy policies and goals that local governments have established for their own operations, including buildings. In Chapter 3 we evaluated comprehensive, community-wide targets that frequently incorporate private building performance. In this chapter we focus on policies applying to residential and commercial buildings in the private sector.

Chapter 4. Buildings Policies

SCORING

We scored cities on clean energy policies for private buildings that local governments can directly establish or influence. We allocated 30 points to buildings policies across six categories:

- **Adoption of building energy codes** (8 points)
- **Energy code compliance and enforcement** (5 points)
- **Benchmarking, rating, and energy use transparency** (5 points)
- **Incentives and financing** (3 points)
- **Required energy actions to improve building performance** (7 points)
- **City energy efficiency and renewable energy workforce development initiatives** (2 points)

We discuss the scoring methodology and data sources for each metric following the presentation of results.

RESULTS

Boston, New York, San José, Seattle, Los Angeles, and San Francisco received the highest scores for buildings policies. Boston topped the list with 25.5 out of 30 points, besting New York by only a half point. Boston edged out the other leading cities by receiving full points for energy code stringency and workforce development while performing well across all other metrics. New York was the only city to earn full points for required energy actions, an updated metric recognizing cities for ordinances and regulations mandating increased levels of energy efficiency in existing buildings.

Table 23 summarizes the scores across all buildings policies categories.

TABLE 23. BUILDINGS POLICIES SCORES

CITY	BUILDING ENERGY CODE STRINGENCY (8 PTS)	ENERGY CODE COMPLIANCE AND ENFORCEMENT (5 PTS)	INCENTIVES AND FINANCING (3 PTS)	BENCHMARKING, RATING, AND TRANSPARENCY POLICIES (5 PTS)	REQUIRED ENERGY ACTIONS (7 PTS)	ENERGY WORKFORCE DEVELOPMENT (2 PTS)	TOTAL (30 PTS)
BOSTON	8	4	3	4.5	4	2	25.5
NEW YORK	7	5	1	4.5	7	0.5	25
SAN JOSÉ	7	4	3	4	4	1	23
SEATTLE	7	5	3	4.5	1.5	1	22
LOS ANGELES	7	4	3	3.5	3	1	21.5
SAN FRANCISCO	7	5	3	2	4	0.5	21.5
AUSTIN	5	4	3	3	4	2	21
CHICAGO	4	4	2	5	4	1.5	20.5
DENVER	6	4	3	4.5	2	0.5	20

Chapter 4. Buildings Policies

CITY	BUILDING ENERGY CODE STRINGENCY (8 PTS)	ENERGY CODE COMPLIANCE AND ENFORCEMENT (5 PTS)	INCENTIVES AND FINANCING (3 PTS)	BENCHMARKING, RATING, AND TRANSPARENCY POLICIES (5 PTS)	REQUIRED ENERGY ACTIONS (7 PTS)	ENERGY WORKFORCE DEVELOPMENT (2 PTS)	TOTAL (30 PTS)
MINNEAPOLIS	4	4	3	5	3	1	20
KANSAS CITY	6	5	2	4	1	1	19
OAKLAND	7	4	3	2.5	2	0.5	19
SAN DIEGO	7	5	3	3.5	0	0.5	19
WASHINGTON	1	5	3	4.5	4	1	18.5
LONG BEACH	7	5	3	2.5	0	0	17.5
SACRAMENTO	7	4	3	3.5	0	0	17.5
CHULA VISTA	7	4	3	3	0	0	17
RIVERSIDE	7	2	3	3	0	0.5	15.5
PORTLAND	4	3	1	3.5	2.5	1	15
ORLANDO	2	2	3	3.5	2	1.5	14
PHILADELPHIA	5	1	2	4	0	1.5	13.5
DALLAS	3	5	3	0	2	0	13
HARTFORD	7	3	3	0	0	0	13
PHOENIX	5	4	1	0	2	1	13
RENO	6	1	0	4	2	0	13
ST. LOUIS	6	0	3	4	0	0	13
PITTSBURGH	5	4	2	1.5	0	0	12.5
BAKERSFIELD	7	2	0	3	0	0	12
ATLANTA	1	2	3	4	1	0	11
SAN ANTONIO	5	4	2	0	0	0	11
HOUSTON	3	4	3	0	0	0	10
LAS VEGAS	6	3	1	0	0	0	10
TUCSON	6	4	0	0	0	0	10
BALTIMORE	3	1	3	0	2	0.5	9.5
CINCINNATI	1	4	3	0	0	1	9
COLUMBUS	1	4	3	0	1	0	9
FORT WORTH	3	4	2	0	0	0	9

Chapter 4. Buildings Policies

CITY	BUILDING ENERGY CODE STRINGENCY (8 PTS)	ENERGY CODE COMPLIANCE AND ENFORCEMENT (5 PTS)	INCENTIVES AND FINANCING (3 PTS)	BENCHMARKING, RATING, AND TRANSPARENCY POLICIES (5 PTS)	REQUIRED ENERGY ACTIONS (7 PTS)	ENERGY WORKFORCE DEVELOPMENT (2 PTS)	TOTAL (30 PTS)
SALT LAKE CITY	2	1	3	2	1	0	9
EL PASO	5	1	2	0	0	0.5	8.5
CLEVELAND	1	2	3	0	0	2	8
MCALLEN	4	2	2	0	0	0	8
MIAMI	2	1	3	0	2	0	8
RALEIGH	1	4	1	0	0	2	8
ROCHESTER	4	2	1	0	0	1	8
ST. PAUL	4	2	2	0	0	0	8
KNOXVILLE	3	2	2	0	0	0.5	7.5
BRIDGEPORT	5	0	1	0	0	1	7
MEMPHIS	4	1	2	0	0	0	7
MESA	5	2	0	0	0	0	7
RICHMOND	2	4	1	0	0	0	7
AURORA	5	1	0	0	0	0.5	6.5
DETROIT	4	0	2	0	0	0	6
GRAND RAPIDS	4	0	2	0	0	0	6
HENDERSON	6	0	0	0	0	0	6
ST. PETERSBURG	2	2	2	0	0	0	6
TAMPA	2	2	2	0	0	0	6
WORCESTER	5	0	0	0	0	1	6
BUFFALO	4	0	0	0	0	1.5	5.5
NEW ORLEANS	0	2	2	0	0	1.5	5.5
PROVIDENCE	0	1	3	0	0	1.5	5.5
ALBUQUERQUE	0	3	2	0	0	0	5
BIRMINGHAM	2	2	0	0	0	1	5
NEW HAVEN	5	0	0	0	0	0	5
VIRGINIA BEACH	2	2	1	0	0	0	5
JACKSONVILLE	2	1	1	0	0	0.5	4.5

Chapter 4. Buildings Policies

CITY	BUILDING ENERGY CODE STRINGENCY (8 PTS)	ENERGY CODE COMPLIANCE AND ENFORCEMENT (5 PTS)	INCENTIVES AND FINANCING (3 PTS)	BENCHMARKING, RATING, AND TRANSPARENCY POLICIES (5 PTS)	REQUIRED ENERGY ACTIONS (7 PTS)	ENERGY WORKFORCE DEVELOPMENT (2 PTS)	TOTAL (30 PTS)
LOUISVILLE	0	3	1	0	0	0.5	4.5
NASHVILLE	0	2	2	0	0	0.5	4.5
MILWAUKEE	1	0	2	0	0	1	4
OMAHA	0	3	1	0	0	0	4
INDIANAPOLIS	0	1	2	0	0	0	3
NEWARK	3	0	0	0	0	0	3
HONOLULU	0	1	1	0	0	0	2
OKLAHOMA CITY	0.5	0	1	0	0	0	1.5
CHARLOTTE	1	0	0	0	0	0	1
TULSA	0	0	0	0	0	0	0
MEDIAN	**4**	**2**	**2**	**0**	**0**	**0**	**9**

As shown in table 23, 10 cities earned 20 or more points. Only 5.5 points separated the top-scoring city from the 10th-place city. Scoring well above the median score of 9 points, these cities can serve as models for others that want to implement clean energy policies for their buildings. Considering that no city scored the full 30 points, though, all cities can improve and advance their policies going forward.

San José made the most notable improvements in its building policies, jumping into the top five from 20th place in this category in 2017. Since the last *Scorecard*, the city has implemented a benchmarking policy that sets disclosure requirements for multifamily and commercial buildings greater than 20,000 square feet. The city also has improved its energy code compliance strategies by offering upfront support to help builders and contractors meet energy codes. Like all California cities, San José enforces the 2016 California Building Energy Efficiency Standards, which include provisions requiring that new construction be solar-ready and EV-ready. These policies placed San José among the top-scoring cities in our code stringency metric.

Cities performed better in some categories than in others. Scores were best for energy code compliance and incentives. Although cities are making more efforts to address energy use in existing buildings, they generally performed poorly in building benchmarking, rating, and transparency; required energy actions; and workforce development. Zero was the median score in each of these categories. While many cities have adopted benchmarking policies since our first *City Scorecard*, most cities we assess still have not adopted any. Similarly, most cities do not have energy action requirements or robust workforce development programs.

Chapter 4. Buildings Policies

BUILDING ENERGY CODE ADOPTION

Building energy codes require new and renovated buildings to meet efficiency standards that can substantially reduce the amount of energy they use over their lifetime. These codes have made substantial advances over the past 40 years. For example, a home built to the 2012 energy code uses half the energy of a home constructed in the 1970s (Urbanek 2016). Energy codes continue to be a critical tool for improving building performance.

While the federal government does not mandate energy codes, it participates in developing model codes that various jurisdictions can adopt. The national model code for residential buildings is the International Energy Conservation Code (IECC), developed by the International Code Council (ICC). For commercial buildings, it is the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 90.1, developed jointly by ASHRAE and the Illuminating Engineering Society[35]. Model energy codes are expected to save more than 12.82 quads of primary energy between 2010 and 2040, the equivalent of taking 177 million cars off the road or 245 coal plants off the grid (DOE 2019). Cities can influence model codes by joining the ICC, participating in public hearings, and voting for changes to the next versions of codes.

In the end, however, most state governments assume responsibility for adopting and amending model energy codes. State laws dictate whether cities have the authority to adopt local regulations and therefore set their own building energy codes. Those that grant this authority are home-rule states, but this distinction is not always clear-cut when it comes to energy code authority. For example, Ohio is a home-rule state but bars cities from adopting building energy codes at the municipal level. Conversely, some states that are not home-rule allow their localities to adopt stretch codes to make the state code more stringent; these include California and New York. A few home-rule states set no statewide energy codes, thereby granting cities full authority to adopt their own.

In this category we scored cities on

- **Code stringency** (6 points)
- **Solar and EV policies** (2 points)

Code Stringency

Cities could earn up to 6 points for residential and commercial code stringency. We used two separate scoring methodologies, depending on whether a city has authority to adopt energy codes. Those without this authority have less control over code stringency and cannot easily improve their scores. To account for cities without authority to adopt their own codes, we shifted 1 point from code stringency to code advocacy; these cities could earn a maximum of 5 points for code stringency and 1 point for actively lobbying the state for more-stringent building energy codes.

We awarded points for residential and commercial codes separately. For this edition of the *Scorecard*, we used the New Buildings Initiative's (NBI) Zero Energy Performance Index (zEPI) Jurisdictional Score to measure the stringency of a city's

35 The current model energy codes, as approved by the US Department of Energy (DOE), are the 2015 IECC and the ASHRAE 90.1-2016 standards. Code stringency increases more in some code cycles than others. Between 1992 and 2012, the energy codes accounted for 4.2 quads of energy savings. By 2040, increased stringency and adoption of the energy codes could save an additional 41.6 quads of energy and 6.2 billion tons of CO2 (Livingston et al. 2014).

codes (NBI 2019). Cities with low zEPI scores have more stringent energy codes; a zEPI score of 0 indicates net zero energy[36]. For residential and commercial codes, we divided all cities into quartiles based on their zEPI scores and assigned points accordingly. For cities that have energy code authority, we awarded 3 points to those in the fourth quartile, 2 to those in the third quartile, and 1 to those in the second quartile. For cities without code authority, we awarded 2.5 points to those in the fourth quartile, 1.5 to those in the third quartile, and 0.5 to those in the second quartile. Table 24 outlines the score ranges for both residential and commercial zEPI scores. Table E8 in Appendix E lists zEPI scores for each city.

Solar And Electric Vehicle (EV Policies)

Increasingly, cities are requiring new buildings to support solar installation and/or EV charging. Mandating solar and EV readiness encourages more owners to invest in these technologies. It often costs little to incorporate designs that enable solar and EVs in new construction, whereas retrofitting existing buildings to include these features can be cost prohibitive for some owners.

Some model energy codes include EV-ready or solar-ready requirements that cities have the option of adopting. The 2015 International Residential Code (IRC) Appendix U and IECC Appendix RB offer optional solar-ready requirements for buildings, and the International Green Commercial Code includes EV-ready requirements. While a few cities have adopted these optional appendices, most pass their own local ordinances or other legislation to add solar- and EV-ready provisions to their building codes. We awarded 1 point to cities with solar-ready requirements, and 1 point for EV.

Table 24 shows the scoring for these metrics, and table 25 presents the scores.

TABLE 24. SCORING FOR BUILDING ENERGY CODE ADOPTION

RESIDENTIAL CODE STRINGENCY		
zEPI SCORE	**CITIES WITH AUTHORITY**	**CITIES WITHOUT AUTHORITY**
<55.5	3	2.5
55.5–59.6	2	1.5
59.7–64.5	1	0.5
COMMERCIAL CODE STRINGENCY		
zEPI SCORE	**CITIES WITH AUTHORITY**	**CITIES WITHOUT AUTHORITY**
<51.8	3	2.5
51.8–53.7	2	1.5
53.8–57.9	1	0.5
ADVOCACY	**CITIES WITH AUTHORITY**	**CITIES WITHOUT AUTHORITY**
City lobbies state for more-stringent codes.	N/A	1

36 To learn more about NBI's zEPI Jurisdictional Score, visit https://newbuildings.org/code_policy/zepi/.

SOLAR READY	
City has solar-ready requirements for residential or commercial new construction.	1
EV READY	
City has EV-ready requirements for residential or commercial new construction.	1

TABLE 25. BUILDING ENERGY CODE ADOPTION SCORES

CITY	CODE AUTHORITY	RESIDENTIAL CODE STRINGENCY (2.5-3 PTS)	COMMERCIAL CODE STRINGENCY (2.5-3 PTS)	ADVOCACY (1 PT)	SOLAR-READY (1 PT)	EV-READY (1 PT)	TOTAL (8 PTS)
BOSTON	STATE	2.5	2.5	1	1	1	8
BAKERSFIELD	LOCAL	2	3	N/A	1	1	7
CHULA VISTA	LOCAL	2	3	N/A	1	1	7
HARTFORD	STATE	2.5	2.5	0	1	1	7
LONG BEACH	LOCAL	2	3	N/A	1	1	7
LOS ANGELES	LOCAL	2	3	N/A	1	1	7
NEW YORK	LOCAL	3	2	N/A	1	1	7
OAKLAND	LOCAL	2	3	N/A	1	1	7
RIVERSIDE	LOCAL	2	3	N/A	1	1	7
SACRAMENTO	LOCAL	2	3	N/A	1	1	7
SAN DIEGO	LOCAL	2	3	N/A	1	1	7
SAN FRANCISCO	LOCAL	2	3	N/A	1	1	7
SAN JOSÉ	LOCAL	2	3	N/A	1	1	7
SEATTLE*	STATE	2.5	2.5	1	1	0	7
DENVER	LOCAL	3	2	N/A	0	1	6
HENDERSON	LOCAL	3	3	N/A	0	0	6
KANSAS CITY	LOCAL	3	3	N/A	0	0	6
LAS VEGAS	LOCAL	3	3	N/A	0	0	6
RENO	LOCAL	3	3	N/A	0	0	6
ST. LOUIS	LOCAL	3	3	N/A	0	0	6
TUCSON	LOCAL	2	3	N/A	1	0	6
AURORA	LOCAL	3	2	N/A	0	0	5
AUSTIN	LOCAL	2	2	N/A	1	0	5

Chapter 4. Buildings Policies

CITY	CODE AUTHORITY	RESIDENTIAL CODE STRINGENCY (2.5-3 PTS)	COMMERCIAL CODE STRINGENCY (2.5-3 PTS)	ADVOCACY (1 PT)	SOLAR-READY (1 PT)	EV-READY (1 PT)	TOTAL (8 PTS)
BRIDGEPORT	STATE	2.5	2.5	0	0	0	5
EL PASO	LOCAL	2	2	N/A	1	0	5
MESA	LOCAL	2	3	N/A	0	0	5
NEW HAVEN	STATE	2.5	2.5	0	0	0	5
PHILADELPHIA	LOCAL	2	3	N/A	0	0	5
PHOENIX	LOCAL	2	3	N/A	0	0	5
PITTSBURGH	STATE	1.5	2.5	1	0	0	5
SAN ANTONIO	LOCAL	2	3	N/A	0	0	5
WORCESTER	STATE	2.5	2.5	0	0	0	5
BUFFALO	LOCAL	3	1	N/A	0	0	4
CHICAGO	LOCAL	2	2	N/A	0	0	4
DETROIT	STATE	1.5	2.5	0	0	0	4
GRAND RAPIDS	STATE	1.5	2.5	0	0	0	4
MCALLEN	LOCAL	2	2	N/A	0	0	4
MEMPHIS	LOCAL	2	2	N/A	0	0	4
MINNEAPOLIS	STATE	2.5	0.5	1	0	0	4
PORTLAND	LOCAL	3	0	N/A	0	1	4
ROCHESTER	LOCAL	3	1	N/A	0	0	4
ST. PAUL	STATE	2.5	0.5	1	0	0	4
BALTIMORE	LOCAL	2	1	N/A	0	0	3
DALLAS	LOCAL	1	2	N/A	0	0	3
FORT WORTH	LOCAL	1	2	N/A	0	0	3
HOUSTON	LOCAL	1	2	N/A	0	0	3
KNOXVILLE	LOCAL	0	3	N/A	0	0	3
NEWARK	LOCAL	1	2	N/A	0	0	3
BIRMINGHAM	LOCAL	1	1	N/A	0	0	2
JACKSONVILLE	STATE	0.5	1.5	0	0	0	2
MIAMI	STATE	0.5	1.5	0	0	0	2
ORLANDO	STATE	0.5	1.5	0	0	0	2

Chapter 4. Buildings Policies

CITY	CODE AUTHORITY	RESIDENTIAL CODE STRINGENCY (2.5-3 PTS)	COMMERCIAL CODE STRINGENCY (2.5-3 PTS)	ADVOCACY (1 PT)	SOLAR-READY (1 PT)	EV-READY (1 PT)	TOTAL (8 PTS)
RICHMOND	STATE	0.5	0.5	1	0	0	2
SALT LAKE CITY	LOCAL	0	1	N/A	0	1	2
ST. PETERSBURG	STATE	0.5	1.5	0	0	0	2
TAMPA	STATE	0.5	1.5	0	0	0	2
VIRGINIA BEACH	STATE	0.5	0.5	1	0	0	2
ATLANTA	LOCAL	0	0	N/A	0	1	1
CHARLOTTE	STATE	0.5	0.5	0	0	0	1
CINCINNATI	STATE	0	0	1	0	0	1
CLEVELAND	STATE	0	0	1	0	0	1
COLUMBUS	STATE	0	0	1	0	0	1
MILWAUKEE	STATE	0.5	0.5	0	0	0	1
RALEIGH	STATE	0.5	0.5	0	0	0	1
WASHINGTON	LOCAL	1	0	N/A	0	0	1
OKLAHOMA CITY	STATE	0	0.5	0	0	0	0.5
ALBUQUERQUE	LOCAL	0	0	N/A	0	0	0
HONOLULU	LOCAL	0	0	N/A	0	0	0
INDIANAPOLIS	LOCAL	0	0	N/A	0	0	0
LOUISVILLE	STATE	0	0	0	0	0	0
NASHVILLE	STATE	0	0	0	0	0	0
NEW ORLEANS	LOCAL	0	0	N/A	0	0	0
OMAHA	STATE	0	0	0	0	0	0
PROVIDENCE	STATE	0	0	0	0	0	0
TULSA	STATE	0	0	0	0	0	0

**NBI was unable to produce a zEPI score for Seattle because there are no available analyses comparing the city's code to model energy codes. NBI reviewed the city's energy codes and determined they should receive full points for residential and commercial code stringency.*

BUILDING ENERGY CODE COMPLIANCE AND ENFORCEMENT

State and local agencies are usually responsible for energy code compliance, enforcement, and training. Even when the code is set at the state level, states typically delegate to local agencies the authority to review plans and inspect construction.

Chapter 4. Buildings Policies

State offices often support local officials by overseeing their enforcement practices and providing technical and educational assistance.

Most enforcement centers on the permitting process. In jurisdictions without strict enforcement, engineers or architects for a building construction project simply must certify that their plans are code compliant. In jurisdictions with stricter enforcement, builders submit plans to code officials for review. Some jurisdictions also require onsite inspections of construction work and building performance testing upon completion.

Permit fees and municipal taxes fund local government enforcement. State energy offices and utilities may fund training and provide technical assistance not only to code officials but also to builders, contractors, and architects. The DOE Building Energy Codes Program provides a variety of technical assistance resources to support state and local code implementation, like software tools and training for code officials.[37]

Local governments often cite a lack of funding or resources as a reason for not enforcing building energy codes. If resources are limited, energy code enforcement is often the first to be cut. Cities may also view energy codes as nonessential compared with building codes that protect people against immediate hazards like fire and structural failure.

Noncompliance with energy codes results in lost energy savings over the life of the building (Rosenberg et al. 2016). Comparing compliance rates across states and cities is often difficult because each locality uses different methods for collecting and evaluating compliance data. Additionally, most compliance studies report only on new construction since data are harder to obtain for retrofit projects (Athalye et al. 2016). Because few reports exist for city-level compliance rates, we use several proxies in the *City Scorecard* to evaluate code compliance and enforcement efforts.

A city could earn up to 5 points for building energy code enforcement and compliance:

- **Staff dedicated to energy code enforcement** (1 point)
- **City-administered mandatory code compliance strategies** (2 points)
- **Up-front support for developers and builders for energy code compliance, which may include education prior to permit issuance or application review** (2 points)

City Staffing For Building Energy Code Compliance

In most cities, code officials are responsible for enforcing all building codes, not just energy codes. Some cities have full-time employees who are responsible only for energy code compliance. Staff who specialize in these codes can perform higher-quality plan reviews and inspections, track code infractions, and raise awareness and compliance (NRDC and IMT 2018; DOE 2013). Cities received 1 point for having at least one full-time employee dedicated to energy code compliance.[38]

37 More information is available at **www.energycodes.gov.**

38 We plan to refine this metric for future scorecards. We are exploring improvements that capture how cities dedicate staff and resources to strengthen energy code enforcement.

Chapter 4. Buildings Policies

Energy Code Compliance Strategies

Cities can enforce codes by requiring builders to demonstrate compliance throughout the construction process. Most require plan reviews and field inspections. Some cities engage third parties to conduct reviews in order to improve their quality and timeliness while reducing demands on building department staff (Meres 2012).

Beyond plan reviews and site inspections, cities can require builders to conduct performance tests to prove their buildings are functioning at required levels. More recent energy codes often require these tests. For example, the 2012, 2015, and 2018 IECCs mandate duct and building envelope testing in new residential construction. Cities with these requirements must have enough contractors to make testing services available and affordable (Barcik 2013).

Cities could receive up to 2 points for compliance strategies: 1 point for plan reviews and field inspections and 1 point for performance testing. This year we did not give points for requiring third-party plan reviews and inspections. While these programs are valuable, further research is necessary to prove that third-party testing leads to real improvements in compliance relative to in-house compliance efforts.

Up-Front Support For Building Energy Code Compliance

Cities can help the design and construction community comply with energy codes by providing support throughout the building process (DOE 2015). Support prior to plan review is especially important to ensure that builders consider energy codes from the beginning. Many cities provide free training to builders, developers, and owners to teach them about their energy codes. They may also give builders free plan reviews and one-on-one consultations before they submit permit applications. We award 2 points to cities that provide any upfront support to help the construction community understand and navigate code compliance.

Table 26 summarizes the scoring for these metrics, and table 27 lists the scores.

TABLE 26. TABLE 26. SCORING FOR CODE COMPLIANCE

CITY STAFFING	SCORE
City has at least one full-time employee dedicated to energy code compliance.	1
COMPLIANCE STRATEGIES	
City requires performance testing ***AND*** requires plan review and site visits.	2
City requires performance testing ***OR*** requires plan review and site visits.	1
UP-FRONT SUPPORT	
City provides upfront support.	2

Chapter 4. Buildings Policies

TABLE 27. CODE COMPLIANCE SCORES

CITY	CITY STAFFING (1 PT)	COMPLIANCE STRATEGIES (2 PTS)	UP-FRONT SUPPORT (2 PTS)	TOTAL (5 PTS)
DALLAS	1	2	2	5
KANSAS CITY	1	2	2	5
LONG BEACH	1	2	2	5
NEW YORK	1	2	2	5
SAN DIEGO	1	2	2	5
SAN FRANCISCO	1	2	2	5
SEATTLE	1	2	2	5
WASHINGTON	1	2	2	5
AUSTIN	0	2	2	4
BOSTON	0	2	2	4
CHICAGO	0	2	2	4
CHULA VISTA	0	2	2	4
CINCINNATI	0	2	2	4
COLUMBUS	0	2	2	4
DENVER	0	2	2	4
FORT WORTH	0	2	2	4
HOUSTON	0	2	2	4
LOS ANGELES	0	2	2	4
MINNEAPOLIS	0	2	2	4
OAKLAND	0	2	2	4
PHOENIX	0	2	2	4
PITTSBURGH	1	1	2	4
RALEIGH	0	2	2	4
RICHMOND	0	2	2	4
SACRAMENTO	0	2	2	4
SAN ANTONIO	0	2	2	4
SAN JOSÉ	0	2	2	4
TUCSON	0	2	2	4
ALBUQUERQUE	0	1	2	3

CITY	CITY STAFFING (1 PT)	COMPLIANCE STRATEGIES (2 PTS)	UP-FRONT SUPPORT (2 PTS)	TOTAL (5 PTS)
HARTFORD	0	1	2	3
LAS VEGAS	0	1	2	3
LOUISVILLE	0	1	2	3
OMAHA	0	1	2	3
PORTLAND	0	1	2	3
ATLANTA	0	2	0	2
BAKERSFIELD	0	2	0	2
BIRMINGHAM	0	0	2	2
CLEVELAND	0	2	0	2
KNOXVILLE	0	0	2	2
MCALLEN	0	2	0	2
MESA	0	2	0	2
NASHVILLE	0	2	0	2
NEW ORLEANS	0	2	0	2
ORLANDO	0	2	0	2
RIVERSIDE	0	2	0	2
ROCHESTER	0	2	0	2
ST. PAUL	0	2	0	2
ST. PETERSBURG	0	2	0	2
TAMPA	0	0	2	2
VIRGINIA BEACH	0	0	2	2
AURORA	0	1	0	1
BALTIMORE	0	1	0	1
EL PASO	0	1	0	1
HONOLULU	0	1	0	1
INDIANAPOLIS	1	0	0	1
JACKSONVILLE	0	1	0	1
MEMPHIS	0	1	0	1
MIAMI	0	1	0	1
PHILADELPHIA	0	1	0	1

Chapter 4. Buildings Policies

CITY	CITY STAFFING (1 PT)	COMPLIANCE STRATEGIES (2 PTS)	UP-FRONT SUPPORT (2 PTS)	TOTAL (5 PTS)
PROVIDENCE	0	1	0	1
RENO	1	0	0	1
SALT LAKE CITY	0	1	0	1
BRIDGEPORT	0	0	0	0
BUFFALO	0	0	0	0
CHARLOTTE	0	0	0	0
DETROIT	0	0	0	0
GRAND RAPIDS	0	0	0	0
HENDERSON	0	0	0	0
MILWAUKEE	0	0	0	0
NEW HAVEN	0	0	0	0
NEWARK	0	0	0	0
OKLAHOMA CITY	0	0	0	0
ST. LOUIS	0	0	0	0
TULSA	0	0	0	0
WORCESTER	0	0	0	0

BUILDING BENCHMARKING, RATING, AND ENERGY USE TRANSPARENCY

An increasing number of cities are implementing building benchmarking, rating, and energy use transparency policies that require owners to report their annual energy consumption to the local government. How cities share this information varies. Some require disclosure to the public on a recurring basis (e.g., annually), while others require disclosure only at the time of a transaction like a purchase or lease agreement, and only to the parties involved.

While these policies do not directly require upgrades or changes in behavior, cities can use energy consumption data to quantify and evaluate their building stock performance and determine whether it improves from year to year. They can also identify high-consuming buildings and design energy savings policies and programs to target them. Additionally, building owners may become motivated to make efficiency improvements when they see how their buildings perform relative to their neighbors. Cities with benchmarking ordinances report 3–8% reductions in energy use in their building stocks over a two- to four-year implementation period (Mims et al. 2017).

Cities often benchmark the energy consumption of commercial and multifamily buildings using a web-based tool like the ENERGY STAR Portfolio Manager. For all cities but Austin, we calculated commercial and multifamily coverage from DOE's SLED and Cities-LEAP analysis of CoStar Realty Information Inc. data (CoStar 2019). For Austin, we used coverage

data provided by the city because its policy sets requirements by number of units rather than square footage. Cities often reported a single, undifferentiated compliance rate for both commercial and multifamily buildings. Austin, New York, and Philadelphia, however, reported unique compliance rates for each building type. For these three cities, we list the commercial compliance rate.

Some cities are implementing energy use transparency policies that apply to single-family homes. These policies require homeowners to disclose energy usage information when selling or listing their homes. Some cities, like Portland and Austin, require home sellers to receive and disclose an energy audit, while other cities, like Chicago, require the seller to disclose annual energy bills. The recipient of the disclosure also varies. Some cities require sellers to disclose to the public when listing their home, while others require disclosure to only the buyer at the time of sale.

Cities could earn a maximum of 5 points for mandatory benchmarking, rating, and transparency policies: 2 points for commercial, 2 for multifamily, and 1 for single-family buildings.[39] We based our scoring for commercial and multifamily on natural cut points in the data we received. Cities could earn 2 points if their policies cover 70% of their commercial and multifamily building stock, 1.5 points for 50%, and 1 point for policies that cover less than 50%.[40] We also awarded a 0.5-point bonus to cities with compliance rates greater than or equal to 90%.

We give single-family policies less weight (1 point compared to 2 for commercial and multifamily) because very few cities have adopted them. Still, it is important to give these cities credit for leading the way in single-family home energy use and transparency. We plan to balance the weighting in future scorecards as these policies become more prevalent.

Table 28 summarizes the scoring for benchmarking policies, and table 29 lists the scores.

TABLE 28. SCORING FOR BENCHMARKING AND TRANSPARENCY POLICIES

COMMERCIAL	SCORE
Policies cover at least 70% of buildings.	2
Policies cover 50–69% of buildings.	1.5
Policies cover less than 50% of buildings.	1
MULTIFAMILY	
Policies cover at least 70% of buildings.	2
Policies cover 50–69% of buildings.	1.5
Policies cover less than 50% of buildings.	1
SINGLE FAMILY	
City has mandatory policy.	1

39 Some states prohibit cities from passing benchmarking policies. These cities can receive 1 point for voluntary policies in our Required Energy Actions metric.

40 In the past, we awarded points based on qualitative metrics to reward cities that had implemented policies and incorporated best practices in their policy design. This year we shifted to a quantitative metric to reward cities with policies that cover a large percentage of their building stock.

BENCHMARKING COMPLIANCE RATE	BONUS
Compliance rate is 90% or more	0.5

TABLE 29. BENCHMARKING AND TRANSPARENCY POLICIES SCORES

CITY	COMMERCIAL COVERAGE	POINTS (2 PTS)	MULTIFAMILY COVERAGE	POINTS (2 PTS)	COMPLIANCE RATE	COMPLIANCE BONUS (0.5 PTS)	SINGLE-FAMILY (1 PT)	TOTAL (5 PTS)
CHICAGO	73%	2	67%	1.5	95%	0.5	1	5
MINNEAPOLIS	75%	2	72%	2	95%***	0**	1	5
BOSTON	86%	2	86%	2	90%	0.5	0	4.5
DENVER	80%	2	87%	2	90%	0.5	0	4.5
NEW YORK	88%	2	85%	2	93%	0.5	0	4.5
SEATTLE	83%	2	83%	2	99%	0.5	0	4.5
WASHINGTON	93%	2	95%	2	91%	0.5	0	4.5
ATLANTA	87%	2	96%	2	30%	0	0	4
KANSAS CITY	70%	2	83%	2	57%	0	0	4
PHILADELPHIA	69%	1.5	82%	2	91%	0.5	0	4
RENO	71%	2	90%	2	N/A*	0	0	4
SAN JOSÉ	83%	2	83%	2	N/A*	0	0	4
ST. LOUIS	71%	2	83%	2	N/A*	0	0	4
LOS ANGELES	76%	2	50%	1.5	76%	0	0	3.5
ORLANDO	56%	1.5	98%	2	40%	0	0	3.5
PORTLAND	75%	2	0%	0	91%	0.5	1	3.5
SACRAMENTO	60%	1.5	77%	2	N/A*	0	0	3.5
SAN DIEGO	64%	1.5	70%	2	N/A*	0	0	3.5
AUSTIN	83%	2	0%	0	83%	0	1	3
BAKERSFIELD	46%	1	75%	2	N/A*	0	0	3
CHULA VISTA	49%	1	76%	2	N/A*	0	0	3
RIVERSIDE	46%	1	77%	2	N/A*	0	0	3
LONG BEACH	53%	1.5	34%	1	N/A*	0	0	2.5
OAKLAND	56%	1.5	44%	1	N/A*	0	0	2.5
SALT LAKE CITY	72%	2	0%	0	N/A*	0	0	2
SAN FRANCISCO	88%	2	0%	0	80%	0	0	2

Chapter 4. Buildings Policies

CITY	COMMERCIAL COVERAGE	POINTS (2 PTS)	MULTIFAMILY COVERAGE	POINTS (2 PTS)	COMPLIANCE RATE	COMPLIANCE BONUS (0.5 PTS)	SINGLE-FAMILY (1 PT)	TOTAL (5 PTS)
PITTSBURGH	67%	1.5	0%	0	70%	0	0	1.5
ALBUQUERQUE	0%	0	0%	0	0%	0	0	0
AURORA	0%	0	0%	0	0%	0	0	0
BALTIMORE	0%	0	0%	0	0%	0	0	0
BIRMINGHAM	0%	0	0%	0	0%	0	0	0
BRIDGEPORT	0%	0	0%	0	0%	0	0	0
BUFFALO	0%	0	0%	0	0%	0	0	0
CHARLOTTE	0%	0	0%	0	0%	0	0	0
CINCINNATI	0%	0	0%	0	0%	0	0	0
CLEVELAND	0%	0	0%	0	0%	0	0	0
COLUMBUS	0%	0	0%	0	0%	0	0	0
DALLAS	0%	0	0%	0	0%	0	0	0
DETROIT	0%	0	0%	0	0%	0	0	0
EL PASO	0%	0	0%	0	0%	0	0	0
FORT WORTH	0%	0	0%	0	0%	0	0	0
GRAND RAPIDS	0%	0	0%	0	0%	0	0	0
HARTFORD	0%	0	0%	0	0%	0	0	0
HENDERSON	0%	0	0%	0	0%	0	0	0
HONOLULU	0%	0	0%	0	0%	0	0	0
HOUSTON	0%	0	0%	0	0%	0	0	0
INDIANAPOLIS	0%	0	0%	0	0%	0	0	0
JACKSONVILLE	0%	0	0%	0	0%	0	0	0
KNOXVILLE	0%	0	0%	0	0%	0	0	0
LAS VEGAS	0%	0	0%	0	0%	0	0	0
LOUISVILLE	0%	0	0%	0	0%	0	0	0
MCALLEN	0%	0	0%	0	0%	0	0	0
MEMPHIS	0%	0	0%	0	0%	0	0	0
MESA	0%	0	0%	0	0%	0	0	0
MIAMI	0%	0	0%	0	0%	0	0	0
MILWAUKEE	0%	0	0%	0	0%	0	0	0

CITY	COMMERCIAL COVERAGE	POINTS (2 PTS)	MULTIFAMILY COVERAGE	POINTS (2 PTS)	COMPLIANCE RATE	COMPLIANCE BONUS (0.5 PTS)	SINGLE-FAMILY (1 PT)	TOTAL (5 PTS)
NASHVILLE	0%	0	0%	0	0%	0	0	0
NEW HAVEN	0%	0	0%	0	0%	0	0	0
NEW ORLEANS	0%	0	0%	0	0%	0	0	0
NEWARK	0%	0	0%	0	0%	0	0	0
OKLAHOMA CITY	0%	0	0%	0	0%	0	0	0
OMAHA	0%	0	0%	0	0%	0	0	0
PHOENIX	0%	0	0%	0	0%	0	0	0
PROVIDENCE	0%	0	0%	0	0%	0	0	0
RALEIGH	0%	0	0%	0	0%	0	0	0
RICHMOND	0%	0	0%	0	0%	0	0	0
ROCHESTER	0%	0	0%	0	0%	0	0	0
SAN ANTONIO	0%	0	0%	0	0%	0	0	0
ST. PAUL	0%	0	0%	0	0%	0	0	0
ST. PETERSBURG	0%	0	0%	0	0%	0	0	0
TAMPA	0%	0	0%	0	0%	0	0	0
TUCSON	0%	0	0%	0	0%	0	0	0
TULSA	0%	0	0%	0	0%	0	0	0
VIRGINIA BEACH	0%	0	0%	0	0%	0	0	0
WORCESTER	0%	0	0%	0	0%	0	0	0

**Compliance data not yet available. **Did not qualify for the bonus because Minneapolis already receives maximum points for this metric. ***Response rate reported by city. Compliance rate of 91% represented the percentage of buildings that passed data quality tests. We deemed the response rate more comparable with the data other cities reported.*

INCENTIVES AND FINANCING FOR EFFICIENT BUILDINGS AND SOLAR GENERATION

High upfront costs discourage many property owners from making energy efficiency and onsite renewable investments. Cities can provide incentives and financing to help owners afford these improvements. They can also offer additional support to low-income residents, who typically live in more inefficient homes and face higher cost barriers.

Many cities offer at least one of the following financial incentives: tax abatement, permit fee reductions or waivers, grants, and rebates. Some also have policies that provide financing and loans for efficiency upgrades and solar installation. Examples include property assessed clean energy financing (PACE), tax increment financing (TIF), and revolving loan funds. These government-provided funds and incentives can make investments more attractive by reducing cost barriers, lowering risk,

and mitigating regulatory compliance costs. They also help support technologies, products, and practices that are new to the market or not widely adopted (EPA 2015b).

Cities can also use nonfinancial incentives to encourage developers and builders to construct buildings that exceed code minimums and meet additional certifications like LEED. Speeding up the permitting process is one example. With little to no financial investment, jurisdictions can motivate builders by moving their projects up in the permitting and plan review process, which can otherwise take up to 18 months (USGBC 2009). Density bonuses are another common nonfinancial incentive. Several cities allow builders to construct buildings that exceed zoning restrictions on size or height if they meet more stringent efficiency requirements.

A number of cities have established or supported programs that serve low-income communities. For example, some have partnered with Grid Alternatives, an organization that helps residents and businesses in low-income areas afford onsite renewables (Grid Alternatives 2019). Cities can also help nonprofits that serve low-income communities reduce their own energy use and free up funds for their programs. For example, Denver's Nonprofit Energy Efficiency Program helped STEP Denver reduce its energy costs by 32% and use the savings to hire an additional case manager (Energy Outreach 2018).

This scoring category captures city-provided incentives and financing programs that are not run through a utility. Cities could earn up to 3 points for financial mechanisms that promote energy efficiency or onsite solar generation or target low-income communities. A few solar incentives did not receive points in this category because they receive credit in other chapters. We did not award points for solar incentives offered by municipal utilities because they receive credit in the Energy and Water Utilities chapter. Nor did we provide credit for expedited solar permitting in this chapter because it receives credit in the Community-Wide Initiatives chapter.

We assigned points based on the number of programs a city has implemented. We counted programs that target residential, commercial, and multifamily buildings separately. For example, we counted PACE financing programs for commercial and residential buildings as two programs. We based our scoring on natural cut points in the data. Table 30 outlines the scoring and table 31 lists the scores for this metric. The ACEEE Local Policy Database provides detailed information about each city's programs.

TABLE 30. SCORING FOR INCENTIVES AND FINANCING

NUMBER OF PROGRAMS	SCORE
5 or more	3
3–4	2
1–2	1

TABLE 31. INCENTIVES AND FINANCING SCORES

CITY	NUMBER OF PROGRAMS	TOTAL (3 PTS)
MINNEAPOLIS	13	3

Chapter 4. Buildings Policies

CITY	NUMBER OF PROGRAMS	TOTAL (3 PTS)
SEATTLE	11	3
BALTIMORE	10	3
COLUMBUS	8	3
RIVERSIDE	8	3
SACRAMENTO	8	3
SAN DIEGO	8	3
SAN FRANCISCO	8	3
WASHINGTON	8	3
BOSTON	7	3
CINCINNATI	7	3
CLEVELAND	7	3
OAKLAND	7	3
ATLANTA	6	3
DALLAS	6	3
DENVER	6	3
LONG BEACH	6	3
LOS ANGELES	6	3
MIAMI	6	3
ORLANDO	6	3
ST. LOUIS	6	3
AUSTIN	5	3
CHULA VISTA	5	3
HARTFORD	5	3
HOUSTON	5	3
PROVIDENCE	5	3
SALT LAKE CITY	5	3
SAN JOSÉ	5	3
DETROIT	4	2
EL PASO	4	2
FORT WORTH	4	2

Chapter 4. Buildings Policies

CITY	NUMBER OF PROGRAMS	TOTAL (3 PTS)
GRAND RAPIDS	4	2
INDIANAPOLIS	4	2
MCALLEN	4	2
MILWAUKEE	4	2
ST. PETERSBURG	4	2
ALBUQUERQUE	3	2
CHICAGO	3	2
KANSAS CITY	3	2
KNOXVILLE	3	2
MEMPHIS	3	2
NASHVILLE	3	2
NEW ORLEANS	3	2
PHILADELPHIA	3	2
PITTSBURGH	3	2
SAN ANTONIO	3	2
ST. PAUL	3	2
TAMPA	3	2
HONOLULU	2	1
JACKSONVILLE	2	1
LAS VEGAS	2	1
PHOENIX	2	1
VIRGINIA BEACH	2	1
BRIDGEPORT	1	1
LOUISVILLE	1	1
NEW YORK	1	1
OKLAHOMA CITY	1	1
OMAHA	1	1
PORTLAND	1	1
RALEIGH	1	1
RICHMOND	1	1

Chapter 4. Buildings Policies

CITY	NUMBER OF PROGRAMS	TOTAL (3 PTS)
ROCHESTER	1	1
AURORA	0	0
BAKERSFIELD	0	0
BIRMINGHAM	0	0
BUFFALO	0	0
CHARLOTTE	0	0
HENDERSON	0	0
MESA	0	0
NEW HAVEN	0	0
NEWARK	0	0
RENO	0	0
TUCSON	0	0
TULSA	0	0
WORCESTER	0	0

ENERGY ACTION REQUIREMENTS

Cities can pass ordinances or use regulatory action to require increased levels of energy efficiency in existing buildings. In this category, we assessed the extent to which cities have established energy action requirements. We use the term *energy action requirements* to describe a range of policies that aim to reduce energy use or lessen information barriers to energy efficiency.

Energy action requirements come in different forms. One form is a stand-alone ordinance requiring building owners to reduce energy use in some way. For example, Seattle adopted a form of a retrocommissioning requirement in its Building Tune-Up policy, adopting it separately from other clean energy policies. Cities can also integrate requirements into broader policies like energy benchmarking. While we scored benchmarking policies in an earlier category, in this section we awarded points for energy action requirements attached to those policies.

In this category, we scored cities on

- **Audit requirements** (0.5 points each for residential and commercial)
- **Energy efficiency provisions in rental properties** (1 point each)
- **Retrocomissioning requirements** (1 point each)
- **Retrofit requirements** (1 point each)

- **Low-energy-use requirements (**1 point each)
- **Crosscutting requirements** (1 point each)
- **Other energy-saving requirements** (1 point each)
- **Voluntary programs (for cities without authority to enact requirements)** (1 point each)

Cities could earn a maximum of 7 points in the category by pursuing any of the above actions, even though the scoring pathways add up to 13 points. We provided multiple scoring pathways for cities to earn the maximum score because we recognized that they have varying degrees of authority to pursue these actions. We assigned points based on the impact we gauged each policy could have. Those that would achieve greater energy savings earned 1 point; audit requirements—which would result in lower savings—earned 0.5 points. We doubled the points for policies that applied to both residential and commercial buildings.

Audit Requirements

Energy audits help building owners identify ways to make their buildings more energy efficient. They specify potential upgrades to consider for retrofits as well as tune-up opportunities for retrocomissioning. Audits generally target the whole building, providing an avenue for maximizing energy savings.

Local governments can require energy audits for certain buildings. They can also require audits as compliance mechanisms for benchmarking policies or require them at milestones like the sale of a home. Cities earned 0.5 points for having an audit requirement for residential buildings and 0.5 points for requiring it in commercial buildings.

Energy Efficiency Provisions in Rental Properties

Cities can take steps to make their rental building stock more energy efficient. Options for doing so vary based on rental licensing programs, but many cities can include energy efficiency provisions in a rental license or can integrate efficiency standards into short-term rental housing. For example, the SmartRegs policy in Boulder, Colorado, requires rental properties to meet or exceed minimum efficiency standards before property owners can receive rental licenses for them (Petersen and Lalit 2018). Cities earned 1 point for having energy efficiency requirements for rental properties in residential buildings and 1 point for commercial.

Cities could also earn also 0.5 points each for having information disclosure policies for residential or commercial rental properties. For example, they might require building owners to provide an energy report to renters before they signed a lease.

The maximum score for efficiency provisions in rentals is 2 points.

Retrocomissioning Requirements

Retrocommissioning (RCx) is a process of improving the operations and maintenance of building equipment to increase efficiency. Its goal is to optimize the performance of building subsystems like chillers and boilers and the way those systems function together. RCx is a good mechanism for achieving cost-effective energy savings in large buildings. The US

Chapter 4. Buildings Policies

Environmental Protection Agency (EPA) estimates RCx can reduce energy use by up to 15% in commercial buildings and have a payback period of eight to nine months (EPA 2019b).

Cities can establish RCx requirements that call for building owners to upgrade their buildings on schedules or at various stages of the homeownership cycle. Cities earned 1 point for having an RCx requirement for residential buildings and 1 point for commercial.

Retrofit Requirements

Building retrofits involve modifying existing buildings to increase energy savings; they emphasize equipment upgrades and building envelope improvements. By following the guidance of energy audits, building owners can typically reduce their energy bills by 5–30% (DOE 2013). Comprehensive upgrades can reduce commercial building energy use by 20–50% (York et al. 2015).

Some cities have retrofit requirements for certain buildings. For example, San Francisco's Residential Energy Conservation Ordinance requires a minimum set of retrofits at time of sale for residential properties built before 1978 (San Francisco 2019). Cities earned 1 point for having a retrofit requirement for residential buildings and 1 point for commercial.

Low-Energy-Use Building Requirements

Cities have adopted a variety of low-energy-use building requirements, like ENERGY STAR certification requirements and green building requirements. Some go into effect if public funding is used for a project; others are in place for specific classes or sizes of buildings. Some cities include green building requirements in stretch codes for new construction.

We awarded points in the code stringency section earlier in this chapter to cities whose building codes included low-energy-use requirements that applied to the entirety of their residential or commercial building stock. The metric discussed here recognizes additional efforts a city has made to extend more stringent, above-code requirements to specific categories of buildings.[41]

Cities earned 1 point for having a low-energy-use requirement for residential buildings and 1 point for commercial.

Crosscutting Requirements

Some cities have policies that require building owners to pursue one energy action from a menu of several possibilities. For example, Orlando's Building Energy and Water Efficiency Strategy requires certain buildings to perform an energy audit or pursue retrocomissioning. Because these policies require building owners to implement only one energy action, we did not credit cities for these policies under other metrics in this category in order to avoid overcounting their efforts. We categorized these policies as crosscutting requirements and gave credit for them only under this metric. Cities received 1 point for having crosscutting requirements for residential buildings and 1 point for commercial.

41 Green building requirements do not necessarily focus solely on energy efficiency improvements. Often they address how a building affects the surrounding environment and ecosystem through some or all of the following features: site selection, water conservation, stormwater management, reduced use of materials, recycling, composting, use of green building materials, indoor air quality, and reduction of the urban heat island effect (EPA 2013c).

Other Energy-Saving Requirements

Cities are also instituting other innovative energy-saving requirements that do not fall into the above categories but deserve recognition. The following are examples of policies that earned credit in this catchall category:

- The Chicago Energy Rating System requires building owners to post a building energy performance rating.
- Similar to Chicago, New York's Local Law 33 of 2018 requires building owners to post energy efficiency grades or labels.
- In Washington, the Clean Energy DC Omnibus Act of 2018 includes a provision setting energy performance standards for large buildings.

Cities earned 1 point for such energy-saving requirements in residential buildings and 1 point for having them in commercial buildings.

Voluntary Programs

We focus on required energy actions but acknowledge that some cities do not have the authority to enact these requirements due to overriding state legislation or the lack of enabling state legislation. For example, some or all cities in Arizona (Mesa, Phoenix, and Tucson), Minnesota (St. Paul), Virginia (Richmond and Virginia Beach), and Wisconsin (Milwaukee) cannot pass these requirements. In these cases, we awarded cities points if they administer a voluntary program to encourage building owners to take energy actions. Cities received 1 point for running voluntary programs for residential buildings and 1 point for commercial.

Table 32 summarizes the scoring and table 33 lists the scores for energy action requirements.

TABLE 32. SCORING FOR ENERGY ACTION REQUIREMENTS

POLICY	SCORE (7 PTS MAX)	
	RESIDENTIAL BUILDINGS	COMMERCIAL BUILDINGS
Audit requirements	0.5	0.5
Energy efficiency provisions in rental properties	**2 PTS MAX**	
Efficiency standards	1	1
Information disclosure	0.5	0.5
Retrocomissioning requirements	1	1
Retrofit requirements	1	1
Low-energy-use building requirements	1	1
Crosscutting requirements	1	1
Other energy-saving requirements	1	1
Voluntary program (only for cities without authority to enact requirements)	1	1

Chapter 4. Buildings Policies

TABLE 33. SCORES FOR ENERGY ACTION REQUIREMENTS

CITY	AUDIT (1 PT)	RENTALS (2 PTS)	RETRO-COMMISSIONING (2 PTS)	RETROFITS (2 PTS)	LOW ENERGY USE (2 PTS)	CROSS-CUTTING (2 PTS)	OTHER (2 PTS)	VOLUNTARY PROGRAM (2 PTS)	TOTAL (7 PTS)
NEW YORK	1	0	2	2	0	0	2	N/A	7
AUSTIN	0.5	0.5	0	0	2	0	1	N/A	4
BOSTON	0	0	0	0	2	2	0	N/A	4
CHICAGO	0	0	0	0	2	0	2	N/A	4
SAN FRANCISCO	0	0	0	1	2	1	0	N/A	4
SAN JOSÉ	0	0	0	0	2	2	0	N/A	4
WASHINGTON	0	0	0	0	2	0	2	N/A	4
LOS ANGELES	1	0	2	0	0	0	0	N/A	3
MINNEAPOLIS	0.5	0.5	0	0	0	2	0	N/A	3
PORTLAND	0.5	0	0	0	2	0	0	N/A	2.5
BALTIMORE	0	0	0	0	2	0	0	N/A	2
DALLAS	0	0	0	0	2	0	0	N/A	2
DENVER	0	0	0	0	0	2	0	N/A	2
MIAMI	0	0	0	0	2	0	0	N/A	2
OAKLAND	0	0	0	0	2	0	0	N/A	2
ORLANDO	0	0	0	0	0	2	0	N/A	2
PHOENIX*	0	0	0	0	0	0	0	2	2
RENO	0	0	0	0	0	2	0	N/A	2
SEATTLE	0.5	0	1	0	0	0	0	N/A	1.5
ATLANTA	1	0	0	0	0	0	0	N/A	1
COLUMBUS	0	0	0	0	1	0	0	N/A	1
KANSAS CITY	0	0	0	0	1	0	0	N/A	1
SALT LAKE CITY	1	0	0	0	0	0	0	N/A	1
ALBUQUERQUE	0	0	0	0	0	0	0	N/A	0
AURORA	0	0	0	0	0	0	0	N/A	0
BAKERSFIELD	0	0	0	0	0	0	0	N/A	0
BIRMINGHAM	0	0	0	0	0	0	0	N/A	0
BRIDGEPORT	0	0	0	0	0	0	0	N/A	0

Chapter 4. Buildings Policies

CITY	AUDIT (1 PT)	RENTALS (2 PTS)	RETRO-COMMISSIONING (2 PTS)	RETROFITS (2 PTS)	LOW ENERGY USE (2 PTS)	CROSS-CUTTING (2 PTS)	OTHER (2 PTS)	VOLUNTARY PROGRAM (2 PTS)	TOTAL (7 PTS)
BUFFALO	0	0	0	0	0	0	0	N/A	0
CHARLOTTE	0	0	0	0	0	0	0	N/A	0
CHULA VISTA	0	0	0	0	0	0	0	N/A	0
CINCINNATI	0	0	0	0	0	0	0	N/A	0
CLEVELAND	0	0	0	0	0	0	0	N/A	0
DETROIT	0	0	0	0	0	0	0	N/A	0
EL PASO	0	0	0	0	0	0	0	N/A	0
FORT WORTH	0	0	0	0	0	0	0	N/A	0
GRAND RAPIDS	0	0	0	0	0	0	0	N/A	0
HARTFORD	0	0	0	0	0	0	0	N/A	0
HENDERSON	0	0	0	0	0	0	0	N/A	0
HONOLULU	0	0	0	0	0	0	0	N/A	0
HOUSTON	0	0	0	0	0	0	0	N/A	0
INDIANAPOLIS	0	0	0	0	0	0	0	N/A	0
JACKSONVILLE	0	0	0	0	0	0	0	N/A	0
KNOXVILLE	0	0	0	0	0	0	0	N/A	0
LAS VEGAS	0	0	0	0	0	0	0	N/A	0
LONG BEACH	0	0	0	0	0	0	0	N/A	0
LOUISVILLE	0	0	0	0	0	0	0	N/A	0
MCALLEN	0	0	0	0	0	0	0	N/A	0
MEMPHIS	0	0	0	0	0	0	0	N/A	0
MESA*	0	0	0	0	0	0	0	0	0
MILWAUKEE*	0	0	0	0	0	0	0	0	0
NASHVILLE	0	0	0	0	0	0	0	N/A	0
NEW HAVEN	0	0	0	0	0	0	0	N/A	0
NEW ORLEANS	0	0	0	0	0	0	0	N/A	0
NEWARK	0	0	0	0	0	0	0	N/A	0
OKLAHOMA CITY	0	0	0	0	0	0	0	N/A	0
OMAHA	0	0	0	0	0	0	0	N/A	0

CITY	AUDIT (1 PT)	RENTALS (2 PTS)	RETRO-COMMISSIONING (2 PTS)	RETROFITS (2 PTS)	LOW ENERGY USE (2 PTS)	CROSS-CUTTING (2 PTS)	OTHER (2 PTS)	VOLUNTARY PROGRAM (2 PTS)	TOTAL (7 PTS)
PHILADELPHIA	0	0	0	0	0	0	0	N/A	0
PITTSBURGH	0	0	0	0	0	0	0	N/A	0
PROVIDENCE	0	0	0	0	0	0	0	N/A	0
RALEIGH	0	0	0	0	0	0	0	N/A	0
RICHMOND*	0	0	0	0	0	0	0	0	0
RIVERSIDE	0	0	0	0	0	0	0	N/A	0
ROCHESTER	0	0	0	0	0	0	0	N/A	0
SACRAMENTO	0	0	0	0	0	0	0	N/A	0
SAN ANTONIO	0	0	0	0	0	0	0	N/A	0
SAN DIEGO	0	0	0	0	0	0	0	N/A	0
ST. LOUIS	0	0	0	0	0	0	0	N/A	0
ST. PAUL*	0	0	0	0	0	0	0	0	0
ST. PETERSBURG	0	0	0	0	0	0	0	N/A	0
TAMPA	0	0	0	0	0	0	0	N/A	0
TUCSON*	0	0	0	0	0	0	0	0	0
TULSA	0	0	0	0	0	0	0	N/A	0
VIRGINIA BEACH*	0	0	0	0	0	0	0	0	0
WORCESTER	0	0	0	0	0	0	0	N/A	0

**City does not have local authority to adopt energy action requirements.*

ENERGY EFFICIENCY AND RENEWABLE ENERGY WORKFORCE DEVELOPMENT

Cities that invest in the development of their local clean energy workforce can save energy, reduce greenhouse gas emissions and other pollutants, and create high-quality career opportunities for their residents. In 2019 the National Association of State Energy Officials (NASEO) and the Energy Futures Initiatives reported that 2.32 million people worked either in part or in full on energy efficiency in 2018. In the same year, more than 330,000 workers performed at least some solar-related work, while the wind industry employed more than 111,000 people (NASEO and EFI 2019).

Several cities are partnering with state governments, community colleges, nonprofits, utilities, unions, and others to grow their local energy efficiency and renewable energy workforce. They also want to ensure that these workers receive the training and career guidance they need to stay competitive in a growing clean energy economy. These city-supported workforce development initiatives are most effective when they identify and address gaps in worker skills and include

trainings, job placement, and job access strategies (Shoemaker and Ribeiro 2018; Solar Foundation 2018b). Some cities are adopting community-wide green-job goals to guide these workforce development activities, while others are focusing on creating jobs to support specific local policy priorities (Shoemaker and Ribeiro 2018).

Clean energy jobs have been growing in number in recent years, but they are not always distributed equally across demographics (ACEEE 2017; Solar Foundation 2018a; AWEA 2018). Women make up 47% of the national workforce, but they account for only about one-quarter of energy efficiency and solar jobs (Shoemaker and Ribeiro 2018; Solar Foundation 2018a). Black workers account for 13% of the US workforce but only 8% of efficiency jobs and 7% of solar jobs (BLS 2018; Shoemaker and Ribeiro 2018; Solar Foundation 2018a). Cities can help address these disparities by awarding city contracts to women- or minority-owned businesses and targeting marginalized groups for participation in workforce development initiatives (Shoemaker and Ribeiro 2018).

For energy efficiency, we awarded 0.5 points to cities that have enacted inclusive workforce development initiatives or inclusive procurement and contracting processes for efficiency projects. We also gave 0.5 points to cities that support workforce development programs with complementary energy efficiency policies or support third-party training opportunities with funding. We gave the same two awards of 0.5 points for renewable energy support. To receive points, city-led initiatives must have been active within the past five years.

Table 34 summarizes the scoring and table 35 presents city scores for this category.

TABLE 34. SCORING FOR CITY SUPPORT FOR ENERGY EFFICIENCY AND RENEWABLE ENERGY WORKFORCE DEVELOPMENT

ENERGY EFFICIENCY	SCORE
City has inclusive workforce development initiatives or inclusive procurement and contracting processes for energy efficiency projects.	0.5
City has workforce development programs complemented by or associated with energy efficiency policies, or city funds third-party training.	0.5
RENEWABLE ENERGY	
City has inclusive workforce development initiatives or inclusive procurement and contracting processes for renewable energy projects.	0.5
City has workforce development programs complemented by or associated with renewable energy policies, or city funds third-party training.	0.5

TABLE 35. CITY SUPPORT FOR ENERGY EFFICIENCY AND RENEWABLE ENERGY WORKFORCE DEVELOPMENT SCORES

CITY	EE WORKFORCE DEVELOPMENT PROGRAMS (0.5 PTS)	INCLUSIVE EE WORK-FORCE DEVELOPMENT (0.5 PTS)	RE WORKFORCE DEVELOPMENT PROGRAMS (0.5 PTS)	INCLUSIVE RE WORK-FORCE DEVELOPMENT (0.5 PTS)	TOTAL (2 PTS)
AUSTIN	0.5	0.5	0.5	0.5	2
BOSTON	0.5	0.5	0.5	0.5	2
CLEVELAND	0.5	0.5	0.5	0.5	2
RALEIGH	0.5	0.5	0.5	0.5	2

CITY	EE WORKFORCE DEVELOPMENT PROGRAMS (0.5 PTS)	INCLUSIVE EE WORK-FORCE DEVELOPMENT (0.5 PTS)	RE WORKFORCE DEVELOPMENT PROGRAMS (0.5 PTS)	INCLUSIVE RE WORK-FORCE DEVELOPMENT (0.5 PTS)	TOTAL (2 PTS)
BUFFALO	0	0.5	0.5	0.5	1.5
CHICAGO	0.5	0	0.5	0.5	1.5
NEW ORLEANS	0.5	0.5	0	0.5	1.5
ORLANDO	0.5	0	0.5	0.5	1.5
PHILADELPHIA	0	0.5	0.5	0.5	1.5
PROVIDENCE	0.5	0.5	0	0.5	1.5
BIRMINGHAM	0.5	0.5	0	0	1
BRIDGEPORT	0	0.5	0	0.5	1
CINCINNATI	0	0.5	0	0.5	1
KANSAS CITY	0	0.5	0	0.5	1
LOS ANGELES	0.5	0	0.5	0	1
MILWAUKEE	0.5	0.5	0	0	1
MINNEAPOLIS	0	0.5	0	0.5	1
PHOENIX	0.5	0	0.5	0	1
PORTLAND	0	0.5	0	0.5	1
ROCHESTER	0.5	0.5	0	0	1
SAN JOSÉ	0.5	0.5	0	0	1
SEATTLE	0	0.5	0	0.5	1
WASHINGTON	0.5	0	0.5	0	1
WORCESTER	0.5	0.5	0	0	1
AURORA	0	0	0.5	0	0.5
BALTIMORE	0.5	0	0	0	0.5
DENVER	0.5	0	0	0	0.5
EL PASO	0.5	0	0	0	0.5
JACKSONVILLE	0.5	0	0	0	0.5
KNOXVILLE	0.5	0	0	0	0.5
LOUISVILLE	0	0.5	0	0	0.5
NASHVILLE	0.5	0	0	0	0.5
NEW YORK	0.5	0	0	0	0.5

CITY	EE WORKFORCE DEVELOPMENT PROGRAMS (0.5 PTS)	INCLUSIVE EE WORK-FORCE DEVELOPMENT (0.5 PTS)	RE WORKFORCE DEVELOPMENT PROGRAMS (0.5 PTS)	INCLUSIVE RE WORK-FORCE DEVELOPMENT (0.5 PTS)	TOTAL (2 PTS)
OAKLAND	0.5	0	0	0	0.5
RIVERSIDE	0	0	0.5	0	0.5
SAN DIEGO	0	0	0.5	0	0.5
SAN FRANCISCO	0	0	0.5	0	0.5
ALBUQUERQUE	0	0	0	0	0
ATLANTA	0	0	0	0	0
BAKERSFIELD	0	0	0	0	0
CHARLOTTE	0	0	0	0	0
CHULA VISTA	0	0	0	0	0
COLUMBUS	0	0	0	0	0
DALLAS	0	0	0	0	0
DETROIT	0	0	0	0	0
FORT WORTH	0	0	0	0	0
GRAND RAPIDS	0	0	0	0	0
HARTFORD	0	0	0	0	0
HENDERSON	0	0	0	0	0
HONOLULU	0	0	0	0	0
HOUSTON	0	0	0	0	0
INDIANAPOLIS	0	0	0	0	0
LAS VEGAS	0	0	0	0	0
LONG BEACH	0	0	0	0	0
MCALLEN	0	0	0	0	0
MEMPHIS	0	0	0	0	0
MESA	0	0	0	0	0
MIAMI	0	0	0	0	0
NEWARK	0	0	0	0	0
OKLAHOMA CITY	0	0	0	0	0
OMAHA	0	0	0	0	0
NEW HAVEN	0	0	0	0	0

Chapter 4. Buildings Policies

CITY	EE WORKFORCE DEVELOPMENT PROGRAMS (0.5 PTS)	INCLUSIVE EE WORK-FORCE DEVELOPMENT (0.5 PTS)	RE WORKFORCE DEVELOPMENT PROGRAMS (0.5 PTS)	INCLUSIVE RE WORK-FORCE DEVELOPMENT (0.5 PTS)	TOTAL (2 PTS)
PITTSBURGH	0	0	0	0	0
RENO	0	0	0	0	0
RICHMOND	0	0	0	0	0
SACRAMENTO	0	0	0	0	0
SALT LAKE CITY	0	0	0	0	0
SAN ANTONIO	0	0	0	0	0
ST. LOUIS	0	0	0	0	0
ST. PAUL	0	0	0	0	0
ST. PETERSBURG	0	0	0	0	0
TAMPA	0	0	0	0	0
TUCSON	0	0	0	0	0
TULSA	0	0	0	0	0
VIRGINIA BEACH	0	0	0	0	0

LEADING CITIES: BUILDINGS POLICIES

Austin. The city has set stringent energy codes and adopted solar-ready regulations for new residential construction. It is one of just a few cities to require performance testing for both residential and commercial code compliance.

Austin provides a variety of incentive and financing programs for energy efficiency improvements and renewable generation. Austin Energy, the municipal utility, runs a weatherization program for low- to moderate-income customers. The program offers improvements that reduce energy costs while improving indoor air quality.

Austin was one of the first cities to implement a single-family-home energy use and transparency policy. The Energy Conservation Audit and Disclosure (ECAD) ordinance requires single-family and multifamily building owners to have an energy audit and disclose the results to potential buyers of single-family units and to current or potential tenants of multifamily units. ECAD also includes benchmarking and disclosure requirements for commercial buildings with at least five units. The regulation also requires high-energy-use multifamily properties to reduce consumption by 20%.

Chapter 4. Buildings Policies

Boston. Boston continues be a leader in building energy efficiency policies. The city's stretch codes make its building energy codes among the most stringent in the United States. On top of this, Boston has an EV-ready policy that requires parking structures to have 5% of spaces equipped with EV-chargers and an additional 10% to be EV-ready.

Boston also implements stringent energy code compliance and enforcement strategies. The city partners with Mass Save to provide and fund training programs for energy code officials, builders, and contractors. The city also requires all new residential construction to undergo HERS rating blower door tests to prove that they perform as required by the energy code.

Boston offers several incentive and financing programs and dedicates resources to engaging low-income communities. The Boston Seniors Save Program helps income-eligible seniors replace their failing or inefficient heating systems. The city has also invested in the Boston Housing Authority's building stock to address some of its most critical needs while achieving energy savings and improving the comfort, health, and safety of residents. Over the past decade, these investments have saved approximately $24 million in energy costs.

Boston's Building Energy Reporting and Disclosure Ordinance (BERDO) requires owners of commercial and multifamily buildings that are greater than 50,000 square feet to report and disclose their energy consumption every year. BERDO also requires owners to show that they have made strong progress on reducing their buildings' emissions after their fifth year of reporting. One potential compliance path is earning certification by a green building third party. This can include either LEED certification or being ENERGY STAR–certified in three out of the prior five years.

Chapter 5. Energy and Water Utilities

Lead Authors: Ariel Drehobl and Emma Cooper

Energy and water utilities can be valuable partners to cities by helping to deliver clean energy programs to their communities. Energy utilities play a critical role in both energy efficiency and renewable energy pursuits. Customers of energy utilities typically fund energy efficiency programs through a surcharge on their utility bills. In many cases, these programs are supplemented by other funding streams, such as tax revenue, Regional Greenhouse Gas Initiative (RGGI) funds, or federal weatherization funding. Energy efficiency programs—implemented by the electric and gas utilities or through statewide independent program administrators—have a long record of delivering energy and cost savings to residential, commercial, and industrial customers (Nowak, Kushler, and Witte 2019). Investments in these programs have increased steadily over the past decade, reaching $7.9 billion annually in 2017 (Berg et al. 2018).

Cities and utilities also have the opportunity to increase their clean energy production from solar and wind. As of early 2019, more than 100 cities and towns have committed to transition to 100% clean, renewable energy (Sierra Club 2018). To meet these commitments, utilities can invest in their own renewable energy production and provide incentives to encourage customers to install distributed solar or wind systems. To spur more clean energy production, cities can address their own consumption by participating in utility renewable energy programs, typically through a surcharge or a usage-based payment. Cities can also use their participation in a program to encourage their local utility to increase utility-scale or distributed renewable energy generation. These commitments and other policy actions can help spur utility investment in renewable energy resources and lead to a cleaner local electric grid, which impacts consumption by both local government operations and the broader community.

In cities served by investor-owned utilities (IOUs), state policy is usually the primary driver of utility-administered energy efficiency and renewable energy programs. Even so, cities can often participate in state-level proceedings to advocate for improvements and expansion of programs to better serve their communities. While cities generally do not directly regulate

IOUs, they can also 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 on program development, cities can help to align utility incentives with local policy goals.

In contrast, cities served by municipally owned energy utilities (munis) generally have some influence over the level of investment and the types of efficiency programs they offer. Many of these cities are leaders in delivering energy savings (Kushler et al. 2015). Municipal utility efficiency programs are often tied to local policies and sustainability or climate plans. For example, Austin Energy, the city of Austin's municipally owned utility, has goals for energy savings, reductions in GHG emissions, and renewable energy generation that are consistent with the city's Climate Protection Plan (Austin Energy 2017).

Furthermore, utilities are well suited to design and implement programs to reach traditionally underserved markets, such as those with lower incomes or residents of multifamily buildings (Samarripas and York 2019). Cities can assist utilities by helping with program outreach and coordination. As discussed earlier in the community-wide chapter, low-income urban families pay a substantially greater percentage of their income on utility bills than the average household (Drehobl and Ross 2016). Energy efficiency programs can help alleviate this high burden. Both IOUs and munis are well suited to design programs for low-income and multifamily residents.

Drinking water and wastewater utilities are also important influencers of energy efficiency, often implementing programs to improve both energy and water efficiency throughout the water treatment and delivery system and among their customers. Water usage consumes a substantial amount of energy. Electricity and natural gas are used to source, treat, and transport potable water and to collect, transport, treat, and discharge wastewater, as well as to heat hot water at the consumer end use. For many local governments, the energy required throughout the water process accounts for 30–40% of their energy budgets (EPA 2017). As a result, improving water efficiency in municipal systems can make a large dent in energy consumption (Young 2014).

Chapter 5. Energy and Water Utilities

SCORING

We scored cities based on the energy efficiency and renewable energy efforts of their primary electric, gas, and water utilities, as well as on the extent to which the cities partner or engage with them to enable utility-sector investments and programs. We allocated 15 points across three categories:

- **Efficiency efforts of energy utilities** (8 points)
- **Renewable energy efforts of energy utilities** (3 points)
- **Efficiency efforts in water services** (4 points)

We discuss the scoring methodology for each metric following the presentation of results.

RESULTS

San Diego was the top-scoring city in this policy area, achieving 13.5 out of 15 points. Los Angeles had the second-highest score with 13 points, and Boston and Chula Vista tied for third with 12.5 points. These high-scoring cities and the utilities serving them scored well across all the energy efficiency, renewable energy, and water efficiency metrics.

Boston and Providence both earned all 8 available points for metrics related to utility energy efficiency. Los Angeles and Minneapolis earned almost full points at 7.5 out of 8. All four cities received full points for their low-income and multifamily efficiency programs, and they all achieved perfect or high scores in energy savings and data provision. Boston, Providence, and Minneapolis have strong formal partnerships with their energy utilities. For example, Renew Boston provides low- and no-cost efficiency upgrades to residences through a one-stop-shop partnership between the city and the local utilities. RePower PVD is Providence's voluntary energy challenge program, designed to help large buildings in the city conserve energy and save money. The program also includes the "Race to Zero," in which property owners are competing to achieve the first zero-energy building in Providence. The local utilities, government, and nonprofits collaborate on the program.

None of the cities in the 2019 *Scorecard* earned full credit for the renewable energy efforts of its energy utilities. San Diego scored the highest with 2.5 out of 3 points. Chula Vista, San Francisco, San José, Oakland, Portland, and Fort Worth earned the next-highest scores with 2 out of 3 points. About 40% of cities earned no points for renewable energy efforts, suggesting that many cities can ramp up their efforts to encourage local decarbonization of their utility grids.

Six cities—Austin, Columbus, Denver, Los Angeles, San Diego, and Seattle—earned full credit for water efficiency. They are leading on efforts to jointly administer energy and water efficiency programs and to institute water savings targets, efficiency programs, and self-generation at their water treatment plants.

Cities did better in electric efficiency savings this year than in the previous *Scorecard*, averaging 1.05% for 2017 savings compared with 0.85% for 2015 savings. Average natural gas savings went up slightly, to 0.49% in 2017 compared with 0.40% in 2015. In addition, more cities have developed formal partnerships with their energy utilities, and many utilities are continuing to improve and expand their low-income and multifamily programs.

Table 36 lists the scores for energy and water utilities.

Chapter 5. Energy and Water Utilities

TABLE 36. SCORES FOR EFFICIENCY AND RENEWABLE ENERGY EFFORTS OF ENERGY UTILITIES AND EFFICIENCY EFFORTS OF WATER UTILITIES

CITY	EFFICIENCY EFFORTS (8 PTS)	RENEWABLE EFFORTS (3 PTS)	WATER SERVICES (4 PTS)	TOTAL (15 PTS)
SAN DIEGO	7	2.5	4	13.5
LOS ANGELES	7.5	1.5	4	13
BOSTON	8	1	3.5	12.5
CHULA VISTA	7	2	3.5	12.5
MINNEAPOLIS	7.5	1	3.5	12
SAN FRANCISCO	6.5	2	3.5	12
DENVER	6	1.5	4	11.5
PORTLAND	6.5	2	3	11.5
SAN JOSÉ	6.5	2	3	11.5
PROVIDENCE	8	0.5	2.5	11
OAKLAND	6.5	2	1.5	10
RIVERSIDE	5.5	1	3.5	10
SEATTLE	5	1	4	10
AUSTIN	4	1.5	4	9.5
NEW YORK	5	1	3.5	9.5
CHICAGO	6.5	0	2.5	9
COLUMBUS	4.5	0	4	8.5
GRAND RAPIDS	6	0.5	2	8.5
HARTFORD	5.5	0.5	2.5	8.5
SACRAMENTO	5	1	2.5	8.5
ST. PAUL	7	0.5	1	8.5
WASHINGTON	5.5	0.5	2.5	8.5
BAKERSFIELD	5	1.5	1.5	8
MILWAUKEE	5	1	2	8
FORT WORTH	2	2	3.5	7.5
PHILADELPHIA	4.5	0.5	2.5	7.5
PHOENIX	4.5	0	3	7.5
HONOLULU	5	0.5	1.5	7
WORCESTER	6.5	0	0.5	7

Chapter 5. Energy and Water Utilities

CITY	EFFICIENCY EFFORTS (8 PTS)	RENEWABLE EFFORTS (3 PTS)	WATER SERVICES (4 PTS)	TOTAL (15 PTS)
ALBUQUERQUE	3.5	0.5	2.5	6.5
BALTIMORE	4.5	0.5	1.5	6.5
BUFFALO	4.5	0.5	1.5	6.5
LONG BEACH	3.5	0.5	2.5	6.5
SALT LAKE CITY	4	1	1.5	6.5
CLEVELAND	3.5	0	2.5	6
AURORA	4.5	0.5	0.5	5.5
KANSAS CITY	3	1	1.5	5.5
ORLANDO	2.5	0	3	5.5
ATLANTA	2	0	3	5
BRIDGEPORT	4.5	0	0.5	5
CHARLOTTE	2.5	0.5	2	5
DALLAS	1.5	1.5	2	5
DETROIT	5	0	0	5
INDIANAPOLIS	2.5	0.5	2	5
PITTSBURGH	3	0	2	5
HOUSTON	3	0	1.5	4.5
LAS VEGAS	0.5	0.5	3.5	4.5
NEW HAVEN	4.5	0	0	4.5
CINCINNATI	2	0.5	1.5	4
EL PASO	1.5	0	2.5	4
MEMPHIS	1.5	0	2.5	4
MESA	4	0	0	4
RICHMOND	1.5	0.5	2	4
SAN ANTONIO	1	1	2	4
JACKSONVILLE	1.5	0	2	3.5
KNOXVILLE	1.5	0	2	3.5
NEWARK	3.5	0	0	3.5
OKLAHOMA CITY	2.5	0	1	3.5
RALEIGH	1.5	0	2	3.5

Chapter 5. Energy and Water Utilities

CITY	EFFICIENCY EFFORTS (8 PTS)	RENEWABLE EFFORTS (3 PTS)	WATER SERVICES (4 PTS)	TOTAL (15 PTS)
ROCHESTER	3.5	0	0	3.5
ST. LOUIS	3.5	0	0	3.5
TAMPA	2	0	1.5	3.5
TULSA	3.5	0	0	3.5
TUCSON	2.5	0	0.5	3
HENDERSON	0.5	0.5	1.5	2.5
NASHVILLE	0	0	2.5	2.5
ST. PETERSBURG	1	0.5	1	2.5
VIRGINIA BEACH	1	0	1.5	2.5
NEW ORLEANS	2	0	0	2
OMAHA	0.5	0.5	1	2
LOUISVILLE	0.5	0	1	1.5
RENO	0.5	1	0	1.5
BIRMINGHAM	1	0	0	1
MCALLEN	0.5	0.5	0	1
MIAMI	0.5	0	0.5	1
MEDIAN	**3.5**	**0.5**	**2**	**5.5**

EFFICIENCY EFFORTS OF ENERGY UTILITIES

Utilities can save energy through energy efficiency programs offered to their customers. They can ramp up efforts to save energy by offering comprehensive programs, partnering with cities to promote higher energy savings and more effective program delivery, offering targeted programs, and improving data access provisions.

We scored cities in this section on

- **Electric efficiency savings and city–utility partnerships** (3 points)
- **Natural gas efficiency savings** (1.5 points)
- **Low-income and multifamily efficiency programs** (2.5 points)
- **Data provision efforts of energy utilities** (1 point)

Chapter 5. Energy and Water Utilities

Electric Efficiency Savings

Although the purpose of this section of the *Scorecard* is to evaluate energy efficiency programs serving each city, we include utility-wide electric savings across the entire utility service territory in each city's state, which typically encompasses more than just the city itself. We use this methodology because city-level data are not always available for each utility. In cities where customer-funded programs are administered by independent statewide administrators, we scored their savings attributable to the city's local utility.[42] Unless otherwise noted, we retrieved data on 2017 electric efficiency program savings and total sales as well as data on city and utility partnerships through data requests that we sent to both utility and city staff.[43]

Cities' abilities to influence program savings and to require energy utilities to save energy depend on whether the utilities are municipally owned or investor owned. While levels of control and influence vary, cities generally have less direct control over energy savings of IOUs.[44]

We awarded points differently depending on the type of utility serving each city. For cities served by an IOU, we awarded two of the three points for savings and one of the three for city–utility partnerships, using tiered amounts to score achieved savings. For cities served by a muni, we awarded up to three points based on their electric savings. See table 37 for more details on scoring. Our scoring for electric savings is based on the net annual incremental electric savings from efficiency programs as a percentage of total electricity sales for the primary electric utility serving the most customers in the city. Unless otherwise noted, we collected data on 2017 electric efficiency program savings and total retail sales, and we scored the utilities on net meter savings data.[45] In cases where utilities reported gross data, we applied a standard factor of 0.856 to convert gross savings to net savings (a net-to-gross ratio).[46] Detailed information about electric savings is included in Table E9 in Appendix E.

Natural Gas Efficiency Savings

The number of utilities offering natural gas efficiency programs and the budgets for such programs have risen considerably in recent years (Berg et al. 2018). 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

42 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. Details on whether customer-funded programs are administered by independent statewide program administrators can be found in ACEEE's State and Local Policy Database at **database.aceee.org.**

43 For a list of all city and utility staff who responded to data requests, see table C1 in Appendix C.

44 We treat Entergy New Orleans as a muni because it is an IOU regulated by the New Orleans city council. Similarly, we treat Pepco and Washington Gas as munis because the DC city council has oversight over their utility programs in the city of Washington. In both cases, the local government can influence the utility's efficiency spending, as is the case with municipal utilities.

45 Meter savings do not include savings due to avoided line losses. We included residential, commercial, and industrial sales for electric programs, and we included residential and commercial sales for natural gas programs. Net savings are attributable to energy efficiency programs and may implicitly or explicitly include the effects of factors such as free ridership, participant and nonparticipant spillover, and induced market effects. ACEEE recognizes that utilities calculate and report net savings in various ways and for various purposes (or, in some cases, do not recognize the concept of net savings), so in the data request we asked for clarification and sources for the figures provided for the purpose of improving comparison across utilities.

46 We based the 0.856 net-to-gross factor on the 2017 median net-to-gross electric savings ratio calculated from states that reported figures for both net and gross savings for *The 2018 State Energy Efficiency Scorecard* (Berg et al. 2018). These included Connecticut, Delaware, District of Columbia, Maryland, Massachusetts, Missouri, Montana, New Hampshire, New York, North Carolina, Oklahoma City, Oregon, Pennsylvania, Utah, West Virginia, and Wisconsin.

programs as a percentage of natural gas residential and commercial sales for the primary natural gas utility serving the city.[47]

Unless otherwise noted, we retrieved data on natural gas savings from utility data requests, and we retrieved data on 2017 retail sales from the EIA-176 form for all utilities (EIA 2018b). Due to the limited availability of public energy efficiency reports for natural gas utilities, we had difficulty collecting these data for utilities that did not respond to our data request. We adjusted gross savings to net savings using a factor of 0.897.[48] Detailed information about natural gas savings is included in table E10 in Appendix E.

City–Utility Partnerships

Cities earned a full 1 point if the city and its electric and/or natural gas utility have a formal partnership in the form of a jointly developed or administered energy-saving strategy, plan, or agreement. For example, Minneapolis's Clean Energy Partnership—among the city, Xcel Energy, and CenterPoint Energy—is a leading example of a formal partnership to advance clean energy and energy efficiency policies. Cities earned 0.5 points for a strong collaboration with the electric and/or natural gas utility without a formal partnership. Details about city–utility partnerships are included in table E9 in Appendix E.

Low-Income and Multifamily Efficiency Programs

Low-income and multifamily households are often underserved by utility programs. Many utilities design and implement programs that specifically target these households to make their offerings accessible to more of their customers. Residential efficiency programs generally involve rebates or behavioral strategies, which are not always well suited to low-income or multifamily markets. Low-income programs often include whole-home retrofits or single and/or multifamily direct-install programs, offered at no cost or low cost to households or building owners (Cluett, Amann, and Ou 2016). These programs have benefits beyond just energy savings, such as improvements in health and safety and increased comfort (Russell et al. 2015).

Multifamily buildings have opportunities for substantial energy savings. As of 2015, program administrators had increased national multifamily program spending to almost $290 million annually, three times the amount spent on such programs nationally in 2011 (Samarripas, York, and Ross 2017). Cost-effective energy efficiency upgrades can improve efficiency by 15% to 30% in multifamily buildings; on a national level, this would translate to as much as $3.4 billion in savings (McKibbin et al. 2012). Even with this potential, these buildings have been historically underserved by traditional energy efficiency programs, most of which are designed to target and serve single-family homes. Multifamily energy efficiency programs can provide multiple benefits to residents and building owners, such as reduced maintenance costs; improved appliance and equipment performance; increased property value and building durability; and enhanced tenant health, safety, and comfort (Cluett and Amann 2015).

47 Because Hawaii consumes almost no natural gas, we scored Honolulu only on electric efficiency savings. To address this, we awarded Hawaii points for natural gas efficiency savings equivalent to the proportion of points it earned for corresponding electricity savings.

48 We based the 0.897 net-to-gross factor for gas savings on the median 2017 net-to-gross ratio calculated from states that reported both net and gross natural gas savings for *The 2018 State Energy Efficiency Scorecard* (Berg et al. 2018). These states included Connecticut, Delaware, District of Columbia, Maryland, Massachusetts, Montana, New Mexico, New York, Oklahoma City, Oregon, Vermont, and Wisconsin.

Chapter 5. Energy and Water Utilities

Typically, each state's public utility commission determines what constitutes a multifamily building and a low-income household for its regulated utilities, and these definitions may differ among states and utilities. Many utilities define multifamily buildings as those containing five or more units. As for low-income, many programs use the federal definition of 200% of the federal poverty level. Multifamily and low-income utility programs are not necessarily mutually exclusive; some multifamily programs will also target low-income households, and vice versa.

Cities could earn up to 1.5 points for low-income energy efficiency programs and up to 1 point for multifamily energy efficiency programs. Detailed scores for low-income programs and multifamily programs are provided in tables E11 and E12, respectively, in Appendix E.

Data Provision Efforts of Energy Utilities

Information about energy consumption enables better energy management in homes and large buildings. 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 a delivery mechanism appropriate for the user's needs. In this section, cities could earn up to 1 point across two metrics for the accessibility of energy usage data from their electric and gas utilities. Detailed scores for data provision efforts are given in table E13 in Appendix E.

Table 37 summarizes the scoring for efficiency efforts of energy utilities, and table 38 lists the scores.

TABLE 37. SCORING FOR EFFICIENCY EFFORTS OF ENERGY UTILITIES

ELECTRIC EFFICIENCY SAVINGS AS A PERCENTAGE OF SALES	SCORE	
	MUNIs	IOUs
2% or greater	3	2
1.75–1.99%	2.5	1.5
1.50–1.74%	2	1
1.25–1.49%	1.5	1
1.00–1.24%	1	0.5
0.60–0.99%	0.5	0.5
CITY–UTILITY PARTNERSHIPS	**MUNIs**	**IOUs**
City has a formal partnership with the electric and/or natural gas utility in the form of a jointly developed or administered energy-saving strategy, plan, or agreement.	N/A	1
City has informally collaborated with the electric and/or natural gas utility on an energy efficiency project or program.	N/A	0.5
NATURAL GAS SAVINGS AS A PERCENTAGE OF SALES	**MUNIs**	**IOUs**
1.20% or greater	1.5	1.5

0.70–1.19%	1	1
0.20–0.69%	0.5	0.5
LOW-INCOME ENERGY EFFICIENCY PROGRAMS	**MUNIs AND IOUs**	
• Electric and/or natural gas utility provide(s) a comprehensive low-income energy efficiency program.* • Electric and/or natural gas utility partner(s) with local government, local nonprofits, and/or community organizations to design, advertise, and/or implement its low-income program. • Electric and/or natural gas utility provide(s) a portfolio of low-income energy efficiency programs including more than one program targeting the low-income sector. • Electric and/or natural gas utility braid(s) low-income program funds with federal, state, local, nonprofit, or other funding sources to address health and safety issues. • Local government contributes funds toward local weatherization providers or other low-income energy efficiency efforts.	0.5 EACH (1.5 MAX)	
MULTIFAMILY ENERGY EFFICIENCY	**MUNIs AND IOUs**	
Electric utility offers a comprehensive energy efficiency program for multifamily customers that focuses on whole-building improvements.**	0.5	
Natural gas utility offers a comprehensive energy efficiency program for multifamily customers that focuses on whole-building improvements.	0.5	
PROVISION OF ENERGY DATA BY UTILITIES	**MUNIs AND IOUs**	
Utilities provide automated benchmarking services through ENERGY STAR Portfolio Manager for multi-tenant commercial and/or multifamily buildings.	0.5	
City advocates for improvements in data provision by utilities or has established a data-sharing agreement with them.	0.5	

**Comprehensive low-income programs provide efficiency measures that go beyond direct-install measures to address the whole building envelope.*
***Comprehensive multifamily programs include measures such as insulation and air sealing of building envelopes, upgrades to hot-water and HVAC equipment and systems, improved building controls, and lighting efficiency improvements to common areas and individual units.*

TABLE 38. SCORES FOR EFFICIENCY EFFORTS OF ENERGY UTILITIES

CITY	ELECTRIC UTILITY	TYPE	NATURAL GAS UTILITY	ELECTRIC AND NATURAL GAS EFFICIENCY (4.5 PTS)	LOW-INCOME AND MULTIFAMILY PROGRAMS (2.5 PTS)	DATA PROVISION (1 PT)	TOTAL (8 PTS)
BOSTON	Eversource (MA)	IOU	National Grid (Boston Gas & Colonial Gas Co.)	4.5	2.5	1	8
PROVIDENCE	National Grid RI (Narragansett)	IOU	National Grid RI (Narragansett)	4.5	2.5	1	8
LOS ANGELES	LADWP	MUNI	SoCal Gas	4	2.5	1	7.5
MINNEAPOLIS	Xcel Energy (Northern States Power)	IOU	CenterPoint Energy	4	2.5	1	7.5

Chapter 5. Energy and Water Utilities

CITY	ELECTRIC UTILITY	TYPE	NATURAL GAS UTILITY	ELECTRIC AND NATURAL GAS EFFICIENCY (4.5 PTS)	LOW-INCOME AND MULTIFAMILY PROGRAMS (2.5 PTS)	DATA PROVISION (1 PT)	TOTAL (8 PTS)
CHULA VISTA	San Diego Gas & Electric	IOU	San Diego Gas & Electric	3.5	2.5	1	7
SAN DIEGO	San Diego Gas & Electric	IOU	San Diego Gas & Electric	3.5	2.5	1	7
ST. PAUL	Xcel Energy (Northern States Power)	IOU	Xcel Energy (Northern States Power)	4	2.5	0.5	7
CHICAGO	ComEd	IOU	Peoples Gas	3	2.5	1	6.5
OAKLAND	PG&E	IOU	PG&E	3.5	2	1	6.5
PORTLAND	Portland General Electric	IOU	NW Natural	3.5	2.5	0.5	6.5
SAN FRANCISCO	PG&E	IOU	PG&E	3.5	2	1	6.5
SAN JOSÉ	PG&E	IOU	PG&E	3.5	2	1	6.5
WORCESTER	National Grid (MA)	IOU	Eversource (MA)	4	2.5	0	6.5
DENVER	Xcel Energy (Public Service Co. of CO)	IOU	Xcel (Public Service Co. of CO)	2.5	2.5	1	6
GRAND RAPIDS	Consumers Energy Co.	IOU	DTE Energy	3	2.5	0.5	6
HARTFORD	Eversource (Connecticut Light & Power)	IOU	Connecticut Natural Gas	2.5	2.5	0.5	5.5
RIVERSIDE	City of Riverside Public Service	MUNI	SoCal Gas	2	2.5	1	5.5
WASHINGTON	PEPCO	MUNI	Washington Gas (DC SEU)	2	2.5	1	5.5
BAKERSFIELD	PG&E	IOU	SoCal Gas	2.5	2	0.5	5
DETROIT	DTE Energy	IOU	DTE Energy	2.5	2.5	0	5
HONOLULU	Hawaiian Electric Co.	IOU	Hawaii Gas	2.5	2	0.5	5
MILWAUKEE	We Energies	IOU	We Energies	2	2.5	0.5	5
NEW YORK	ConEdison	IOU	National Grid (Brooklyn Union Gas Co.)/NYSERDA	1.5	2.5	1	5
SACRAMENTO	SMUD	MUNI	PG&E	3.5	1	0.5	5
SEATTLE	Seattle City Light	MUNI	Puget Sound Energy	1.5	2.5	1	5

Chapter 5. Energy and Water Utilities

CITY	ELECTRIC UTILITY	TYPE	NATURAL GAS UTILITY	ELECTRIC AND NATURAL GAS EFFICIENCY (4.5 PTS)	LOW-INCOME AND MULTIFAMILY PROGRAMS (2.5 PTS)	DATA PROVISION (1 PT)	TOTAL (8 PTS)
AURORA	Xcel Energy (Public Service Co. of CO)	IOU	Xcel (Public Service Co. of CO)	1.5	2.5	0.5	4.5
BALTIMORE	Baltimore Gas & Electric Co.	IOU	Baltimore Gas & Electric	1.5	2.5	0.5	4.5
BRIDGEPORT	United Illuminating Co.	IOU	Southern Connecticut Gas	2	2	0.5	4.5
BUFFALO	National Grid (NY)	IOU	National Fuel Gas	1	2.5	1	4.5
COLUMBUS	American Electric Power (Ohio Power)	IOU	Columbia Gas of Ohio (NiSource)	1.5	2	1	4.5
NEW HAVEN	United Illuminating Co.	IOU	Southern Connecticut Gas	2	2	0.5	4.5
PHILADELPHIA	PECO	MUNI	PGW	1	2.5	1	4.5
PHOENIX	Arizona Public Service	IOU	Southwest Gas	2.5	1.5	0.5	4.5
AUSTIN	Austin Energy	MUNI	Texas Gas Service	1	2	1	4
MESA	Salt River Project	MUNI	Southwest Gas	3	0.5	0.5	4
SALT LAKE CITY	Rocky Mountain Power (PacifiCorp)	IOU	Dominion Energy (Questar Gas)	1.5	1.5	1	4
ALBUQUERQUE	Public Service Co. of NM	IOU	New Mexico Gas	1	2	0.5	3.5
CLEVELAND	First Energy (Cleveland Electric Illuminating)	IOU	Dominion Energy Ohio	1.5	1.5	0.5	3.5
LONG BEACH	Southern California Edison	MUNI	Long Beach Energy Resources	1.5	1.5	0.5	3.5
NEWARK	PSE&G	IOU	PSE&G	1	2.5	0	3.5
ROCHESTER	Rochester Gas & Electric	IOU	Rochester Gas & Electric	1	2.5	0	3.5
ST. LOUIS	Ameren UE (Union Electric)	IOU	Spire Missouri	1	2.5	0	3.5
TULSA	Public Service Co. of Oklahoma	IOU	Oklahoma Natural Gas	1	2	0.5	3.5
HOUSTON	CenterPoint Energy	IOU	CenterPoint Energy	0	2.5	0.5	3
KANSAS CITY	Kansas City Power & Light	IOU	Spire Missouri	1	1.5	0.5	3

Chapter 5. Energy and Water Utilities

CITY	ELECTRIC UTILITY	TYPE	NATURAL GAS UTILITY	ELECTRIC AND NATURAL GAS EFFICIENCY (4.5 PTS)	LOW-INCOME AND MULTIFAMILY PROGRAMS (2.5 PTS)	DATA PROVISION (1 PT)	TOTAL (8 PTS)
PITTSBURGH	Duquesne Light Co.	IOU	Peoples Natural Gas	0.5	2	0.5	3
CHARLOTTE	Duke Energy Carolinas	IOU	Piedmont Natural Gas	0.5	1.5	0.5	2.5
INDIANAPOLIS	Indianapolis Power & Light	IOU	Citizens Energy Group	1.5	1	0	2.5
OKLAHOMA CITY	Oklahoma Gas & Electric	IOU	Oklahoma Natural Gas	1.5	1	0	2.5
ORLANDO	Orlando Utilities Commission	MUNI	TECO Peoples Gas	0.5	1.5	0.5	2.5
TUCSON	Tucson Electric Power Co.	IOU	Southwest Gas	1	1.5	0	2.5
ATLANTA	Georgia Power	IOU	Atlanta Gas Light (Southern Company Gas)	0	1	1	2
CINCINNATI	Duke Energy Ohio	IOU	Duke Energy Ohio	1	1	0	2
FORT WORTH	ONCOR	IOU	ATMOS Energy	0.5	1.5	0	2
NEW ORLEANS	Entergy New Orleans	MUNI	Entergy New Orleans	0	2	0	2
TAMPA	Tampa Electric Co.	IOU	TECO Peoples Gas	0.5	1	0.5	2
DALLAS	ONCOR	IOU	ATMOS Energy	0	1.5	0	1.5
EL PASO	El Paso Electric	IOU	Texas Gas Service	0.5	1	0	1.5
JACKSONVILLE	JEA	MUNI	TECO Peoples Gas	0	1.5	0	1.5
KNOXVILLE	Knoxville Utilities Board	MUNI	Knoxville Utilities Board	0	1.5	0	1.5
MEMPHIS	Memphis Light, Gas & Water	MUNI	Memphis Light, Gas & Water	0	1.5	0	1.5
RALEIGH	Duke Energy Progress	IOU	PSNC Energy	0.5	0.5	0.5	1.5
RICHMOND	Dominion Virginia Power	MUNI	Richmond Department of Public Utilities	0	1	0.5	1.5
BIRMINGHAM	Alabama Power	IOU	Alagasco	0	0.5	0.5	1
SAN ANTONIO	CPS Energy (City of San Antonio)	MUNI	CPS Energy (San Antonio PSB)	0.5	0.5	0	1
ST. PETERSBURG	Duke Energy Florida	IOU	TECO Peoples Gas	0	1	0	1

Chapter 5. Energy and Water Utilities

CITY	ELECTRIC UTILITY	TYPE	NATURAL GAS UTILITY	ELECTRIC AND NATURAL GAS EFFICIENCY (4.5 PTS)	LOW-INCOME AND MULTIFAMILY PROGRAMS (2.5 PTS)	DATA PROVISION (1 PT)	TOTAL (8 PTS)
VIRGINIA BEACH	Dominion Virginia Power	MUNI	Virginia Natural Gas (AGL Resources)	0	0.5	0.5	1
HENDERSON	NV Energy	IOU	Southwest Gas	0.5	0	0	0.5
LAS VEGAS	NV Energy	IOU	Southwest Gas	0.5	0	0	0.5
LOUISVILLE	Louisville Gas & Electric	IOU	Louisville Gas & Electric	0	0.5	0	0.5
MCALLEN	American Electric Power (TX)	IOU	Texas Gas Service	0	0.5	0	0.5
MIAMI	Florida Power & Light	IOU	Florida City Gas	0	0.5	0	0.5
OMAHA	Omaha Public Power District	MUNI	Metropolitan Utilities District of Omaha	0	0.5	0	0.5
RENO	NV Energy	IOU	NV Energy	0.5	0	0	0.5
NASHVILLE	Nashville Electric Service	MUNI	Piedmont Natural Gas	0	0	0	0

RENEWABLE ENERGY EFFORTS OF ENERGY UTILITIES

As cities make commitments to 100% carbon neutral energy generation, they can influence their local utilities to move toward a cleaner electrical system. On the utility side, both IOUs and munis are increasingly investing in renewable sources as renewables continue to become more cost competitive with fossil fuel sources. In a 2018 survey by Utility Dive and PA Consulting Group, utility leaders anticipate substantial solar and wind growth over the next decade; more than half indicated that utility-scale solar will increase substantially, wind will increase moderately, and oil and coal production see a substantial decrease (Gahran 2018). The transition to a cleaner electrical system is already underway, and cities can help spur faster utility investment through policies and actions.

In this category we scored cities on

- **Renewable energy incentives** (2 points)
- **Efforts to decarbonize the electric grid** (1 point)

Renewable Energy Incentives

Not only can utilities invest in utility-scale and utility-owned renewable resources for their own generation mix, but they can also incentivize increased distributed renewable sources among their customers. Distributed energy can help increase the electric system's reliability and resilience; reduce peak demand; offset needed investments and improvements in generation,

transmission, or distribution infrastructure; and improve energy security. Many utilities provide incentives to customers to offset the cost of installing their own distributed energy system. Based on natural cut points in the spending data, cities earned up to 2 points if their electric utility provided a renewable energy incentive for the construction of new distributed solar or wind systems (nonutility assets). Detailed information about renewable energy incentives is included in table E14 in Appendix E.

Efforts to Decarbonize the Electric Grid

Cities can influence the renewable generation efforts of their local utility by participating in utility renewable energy programs, local policy development, and city–utility partnerships. State and local governments can also implement policies and programs to transition their generation mixes to carbon neutral sources and help distributed generation overcome market and regulatory barriers to implementation. Actions can include regulatory involvement or participation in related public utility commission proceedings on topics such as net metering and city–utility partnerships or engagement to increase renewables.

Cities with IOUs could earn up to 1 point for their efforts to spur utility-scale or distributed energy generation from their local electric utility through involvement in public utility commission proceedings on renewable energy, a formal partnership with a utility to promote renewable energy initiatives, or additional efforts to encourage the utility to adopt more utility-scale generation. These additional efforts include the city identifying the utility in its climate action planning as needed to achieve goals, public letters to encourage utility renewable generation, collaboration on renewable planning efforts, and aggregation agreements.

We scored this metric differently for cities with munis since these cities have more control over renewable generation in their electrical grid. Based on natural cut points in the data, cities with munis could earn up to 1 point for the percentage of electricity generation from renewable sources. Unless otherwise noted, we retrieved data on city efforts from the data requests completed by city staff. Detailed scoring on IOU efforts to decarbonize the electric grid is included in table E15 of Appendix E, and muni efforts are detailed in table E16.

Table 39 summarizes the scoring and table 40 lists the scores for renewable efforts of energy utilities.

TABLE 39. SCORING FOR RENEWABLE ENERGY EFFORTS OF ENERGY UTILITIES

RENEWABLE ENERGY INCENTIVES SPENT PER KW INSTALLED IN 2017	SCORE
$1,500 or more	2
$1,000–1,499	1.5
$400–999	1
$1–399	0.5

EFFORTS TO DECARBONIZE THE UTILITY ELECTRIC GRID IN CITIES WITH IOUs	
City has submitted comments or has been involved in public utility commission proceedings regarding renewable energy advocacy (e.g., net metering legislation).	0.5 EACH (1 MAX)
City and energy utility(ies) have a formal partnership to advance the development of renewable energy.	
City has participated in planning efforts with their electric utility to promote renewables or has made additional efforts to encourage more utility-scale renewable generation from the utility.	
% OF 2017 ELECTRICITY GENERATION FROM RENEWABLE SOURCES IN CITIES WITH MUNIs	
40% or greater	1
20–39%	0.5

TABLE 40. SCORES FOR RENEWABLE ENERGY EFFORTS

CITY	RENEWABLE ENERGY INCENTIVES (2 PTS)	DECARBONIZE ELECTRIC GRID (ELECTRIC IOUs ONLY, 1 PT)	DECARBONIZE ELECTRIC GRID (ELECTRIC MUNIs ONLY, 1 PT)	TOTAL (3 PTS)
SAN DIEGO	2	0.5	—	2.5
CHULA VISTA	2	0	—	2
FORT WORTH	1.5	0.5	—	2
OAKLAND	1.5	0.5	—	2
PORTLAND	1	1	—	2
SAN FRANCISCO	1.5	0.5	—	2
SAN JOSÉ	1.5	0.5	—	2
AUSTIN	1	—	0.5	1.5
BAKERSFIELD	1.5	0	—	1.5
DALLAS	1.5	0	—	1.5
DENVER	0.5	1	—	1.5
LOS ANGELES	1	—	0.5	1.5
BOSTON	0	1	—	1
KANSAS CITY	1	0	—	1
MILWAUKEE	0.5	0.5	—	1
MINNEAPOLIS	0	1	—	1
NEW YORK	0	1	—	1
RENO	0.5	0.5	—	1
RIVERSIDE	0.5	—	0.5	1
SACRAMENTO	0.5	—	0.5	1

Chapter 5. Energy and Water Utilities

CITY	RENEWABLE ENERGY INCENTIVES (2 PTS)	DECARBONIZE ELECTRIC GRID (ELECTRIC IOUs ONLY, 1 PT)	DECARBONIZE ELECTRIC GRID (ELECTRIC MUNIs ONLY, 1 PT)	TOTAL (3 PTS)
SALT LAKE CITY	0	1	—	1
SAN ANTONIO	1	—	0	1
SEATTLE	0	—	1	1
ALBUQUERQUE	0	0.5	—	0.5
AURORA	0.5	0	—	0.5
BALTIMORE	0	0.5	—	0.5
BUFFALO	0	0.5	—	0.5
CHARLOTTE	0	0.5	—	0.5
CINCINNATI	0	0.5	—	0.5
GRAND RAPIDS	0	0.5	—	0.5
HARTFORD	0	0.5	—	0.5
HENDERSON	0.5	0	—	0.5
HONOLULU	0	0.5	—	0.5
INDIANAPOLIS	0	0.5	—	0.5
LAS VEGAS	0.5	0	—	0.5
LONG BEACH	0.5	0	—	0.5
MCALLEN	0.5	0	—	0.5
OMAHA	0	—	0.5	0.5
PHILADELPHIA	0	0.5	—	0.5
PROVIDENCE	0	0.5	—	0.5
RICHMOND	0	0.5	—	0.5
ST. PAUL	0	0.5	—	0.5
ST. PETERSBURG	0	0.5	—	0.5
WASHINGTON	0.5	—	0	0.5
ATLANTA	0	0	—	0
BIRMINGHAM	0	0	—	0
BRIDGEPORT	0	0	—	0
CHICAGO	0	0	—	0
CLEVELAND	0	0	—	0
COLUMBUS	0	0	—	0

CITY	RENEWABLE ENERGY INCENTIVES (2 PTS)	DECARBONIZE ELECTRIC GRID (ELECTRIC IOUs ONLY, 1 PT)	DECARBONIZE ELECTRIC GRID (ELECTRIC MUNIs ONLY, 1 PT)	TOTAL (3 PTS)
DETROIT	0	0	—	0
EL PASO	0	0	—	0
HOUSTON	0	0	—	0
JACKSONVILLE	0	—	0	0
KNOXVILLE	0	—	0	0
LOUISVILLE	0	0	—	0
MEMPHIS	0	—	0	0
MESA	0	—	0	0
MIAMI	0	0	—	0
NASHVILLE	0	—	0	0
NEW HAVEN	0	0	—	0
NEW ORLEANS	0	—	0	0
NEWARK	0	0	—	0
OKLAHOMA CITY	0	0	—	0
ORLANDO	0	—	0	0
PHOENIX	0	0	—	0
PITTSBURGH	0	0	—	0
RALEIGH	0	0	—	0
ROCHESTER	0	0	—	0
ST. LOUIS	0	0	—	0
TAMPA	0	0	—	0
TUCSON	0	0	—	0
TULSA	0	0	—	0
VIRGINIA BEACH	0	0	—	0
WORCESTER	0	0	—	0

EFFICIENCY EFFORTS IN WATER SERVICES

Energy and water are inextricably linked; reducing the use of one can impact the use of the other. Regardless of climate zone, water services use a great deal of energy at a substantial cost to local governments and citizens. According to the

Chapter 5. Energy and Water Utilities

EPA's ENERGY STAR program, drinking water and wastewater plants typically are the largest energy consumers associated with local government operations, often accounting for 30–40% of total energy consumed (EPA 2017). Nationally, water and wastewater plants account for approximately 3–4% of energy use, equating to 56 billion kilowatts, $4 billion, and 45 million tons of GHG emissions annually (EPA 2017; EPA 2018). In California, sourcing, moving, treating, heating, collecting, and disposing of water are estimated to account for approximately 20% of the state's electricity use, 30% of business and home natural gas use, and 10% of the state's GHG emissions (PPIC 2016). In addition, water is required for the production of energy, such as in hydropower generation, thermoelectric power plants, oil and gas extraction, and nuclear power plants.

The actions of drinking water and wastewater utilities play an important role in the efficiency of a city. By upgrading municipal water supply and wastewater systems with energy efficiency measures, municipalities and utilities can reduce energy consumption by 15–30%, saving thousands of dollars with payback periods of a few months to a few years (EPA 2018). Utilities can save energy by improving pumps and motors, as well as generate energy for use onsite through the processing of wastewater. Aeration is the largest energy consumer at wastewater treatment plants, and efficiency efforts can help reduce energy use in this process (Amerlinck et al. 2016). Water utilities can reduce energy consumption by lowering water consumption (Berg and Ribeiro 2018). Energy utilities can also partner with water utilities to provide joint energy- and water-saving measures to customers.

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.

End-use water heating uses a good deal of energy. Water utilities can run programs to reduce both water and energy use. Energy efficiency programs that include new appliances such as clothes washers, dishwashers, and toilets, as well as new hot water heaters, can greatly reduce both water and energy use.

In this category, we highlight how cities are tackling efficiency within their water systems. We examined policies targeted at both energy efficiency and water efficiency. We awarded points regardless of whether the city has direct control over its water utilities or is served by regional utilities.

In this category we scored cities on:

- **Joint energy–water programs** (1 point)
- **Water-saving strategy** (1 point)
- **Water utility energy efficiency programs** (1 point)
- **Water utility energy recovery** (1 point)

Table 41 summarizes the scoring and table 42 lists scores for energy efficiency in water services.

Chapter 5. Energy and Water Utilities

TABLE 41. SCORING FOR ENERGY EFFICIENCY IN WATER SERVICES

JOINT ENERGY–WATER PROGRAMS	SCORE
Water utility or city partners with energy utility to offer joint programs including energy- and water -saving measures, ***OR*** water or energy utility offers an independent program that includes water and energy efficiency measures.	1
Energy utility, water utility, or city offers a water efficiency program that includes deep water-saving measures (e.g., beyond faucet aerators and low-flow showerheads).	0.5
WATER-SAVING STRATEGY	**SCORE**
City or water utility is on track with respect to city's formalized water-saving target or utility's long-term strategy for water savings.	1
City has a formalized water savings target, or water utility has a long-term strategy for water savings.	0.5
WATER UTILITY ENERGY EFFICIENCY PROGRAMS	**SCORE**
At least one drinking water or wastewater utility serving the city has an energy efficiency target or comprehensive energy efficiency strategy.	1
City has pursued some energy efficiency initiatives at its local or regional water utilities.	0.5
WATER UTILITY ENERGY RECOVERY	**SCORE**
Wastewater utility generates electricity and/or fuel from its wastewater influent.	1

TABLE 42. SCORES FOR WATER UTILITIES' EFFICIENCY EFFORTS

CITY	JOINT WATER–ENERGY PROGRAMS (1 PT)	WATER SAVINGS STRATEGY (1 PT)	WATER UTILITY ENERGY EFFICIENCY PROGRAMS (1 PT)	WATER UTILITY ENERGY RECOVERY (1 PT)	TOTAL (4 PTS)
AUSTIN	1	1	1	1	4
COLUMBUS	1	1	1	1	4
DENVER	1	1	1	1	4
LOS ANGELES	1	1	1	1	4
SAN DIEGO	1	1	1	1	4
SEATTLE	1	1	1	1	4
BOSTON	1	0.5	1	1	3.5
CHULA VISTA	1	0.5	1	1	3.5
FORT WORTH	0.5	1	1	1	3.5
LAS VEGAS	1	1	0.5	1	3.5
MINNEAPOLIS	1	0.5	1	1	3.5
NEW YORK	1	0.5	1	1	3.5
RIVERSIDE	1	1	0.5	1	3.5
SAN FRANCISCO	0.5	1	1	1	3.5

CITY	JOINT WATER–ENERGY PROGRAMS (1 PT)	WATER SAVINGS STRATEGY (1 PT)	WATER UTILITY ENERGY EFFICIENCY PROGRAMS (1 PT)	WATER UTILITY ENERGY RECOVERY (1 PT)	TOTAL (4 PTS)
ATLANTA	0.5	0.5	1	1	3
ORLANDO	1	1	1	0	3
PHOENIX	0.5	0.5	1	1	3
PORTLAND	1	0	1	1	3
SAN JOSÉ	0.5	1	0.5	1	3
ALBUQUERQUE	1	0.5	0	1	2.5
CHICAGO	0.5	0.5	0.5	1	2.5
CLEVELAND	0	0.5	1	1	2.5
EL PASO	0	0.5	1	1	2.5
HARTFORD	0.5	0.5	0.5	1	2.5
LONG BEACH	1	0.5	0	1	2.5
MEMPHIS	0.5	0	1	1	2.5
NASHVILLE	0	0.5	1	1	2.5
PHILADELPHIA	0.5	0	1	1	2.5
PROVIDENCE	0.5	0.5	0.5	1	2.5
SACRAMENTO	1	0.5	0	1	2.5
WASHINGTON	0.5	0.5	0.5	1	2.5
CHARLOTTE	0.5	0.5	1	0	2
DALLAS	0.5	0.5	0	1	2
GRAND RAPIDS	1	0	1	0	2
INDIANAPOLIS	1	0	1	0	2
JACKSONVILLE	1	0	0	1	2
KNOXVILLE	1	0	1	0	2
MILWAUKEE	0	0	1	1	2
PITTSBURGH	0	0	1	1	2
RALEIGH	0.5	0.5	1	0	2
RICHMOND	0.5	0.5	1	0	2
SAN ANTONIO	0.5	1	0.5	0	2
BAKERSFIELD	0.5	0.5	0.5	0	1.5
BALTIMORE	0.5	0	0	1	1.5

CITY	JOINT WATER–ENERGY PROGRAMS (1 PT)	WATER SAVINGS STRATEGY (1 PT)	WATER UTILITY ENERGY EFFICIENCY PROGRAMS (1 PT)	WATER UTILITY ENERGY RECOVERY (1 PT)	TOTAL (4 PTS)
BUFFALO	0	0	0.5	1	1.5
CINCINNATI	0	0	0.5	1	1.5
HENDERSON	1	0.5	0	0	1.5
HONOLULU	0	0.5	1	0	1.5
HOUSTON	0.5	0.5	0.5	0	1.5
KANSAS CITY	0	0.5	1	0	1.5
OAKLAND	1	0.5	0	0	1.5
SALT LAKE CITY	0	0.5	0	1	1.5
TAMPA	0.5	0	1	0	1.5
VIRGINIA BEACH	0.5	0	0	1	1.5
LOUISVILLE	0	0	1	0	1
OKLAHOMA CITY	0.5	0.5	0	0	1
OMAHA	0.5	0.5	0	0	1
ST. PAUL	0	0	0	1	1
ST. PETERSBURG	0	0.5	0.5	0	1
AURORA	0	0.5	0	0	0.5
BRIDGEPORT	0	0	0.5	0	0.5
MIAMI	0.5	0	0	0	0.5
TUCSON	0	0.5	0	0	0.5
WORCESTER	0.5	0	0	0	0.5
BIRMINGHAM	0	0	0	0	0
DETROIT	0	0	0	0	0
MCALLEN	0	0	0	0	0
MESA	0	0	0	0	0
NEW HAVEN	0	0	0	0	0
NEW ORLEANS	0	0	0	0	0
NEWARK	0	0	0	0	0
RENO	0	0	0	0	0
ROCHESTER	0	0	0	0	0
ST. LOUIS	0	0	0	0	0

Chapter 5. Energy and Water Utilities

CITY	JOINT WATER-ENERGY PROGRAMS (1 PT)	WATER SAVINGS STRATEGY (1 PT)	WATER UTILITY ENERGY EFFICIENCY PROGRAMS (1 PT)	WATER UTILITY ENERGY RECOVERY (1 PT)	TOTAL (4 PTS)
TULSA	0	0	0	0	0

LEADING CITY: EFFICIENCY EFFORTS OF ENERGY UTILITIES

Providence. The city of Providence partners with the local energy utilities through the RepowerPVD partnership, a voluntary energy challenge program designed to help large buildings in the city save energy. The partnership also aims to reduce energy consumption in buildings larger than 10,000 square feet by 20% by 2025 and encourages property owners to race to have the first zero-energy building in Providence. National Grid (Narragansett Electric) and other nonprofit organizations partner with the city on this program. National Grid has also achieved high energy savings from both electric and natural gas efficiency programs and runs comprehensive and impactful low-income and multifamily efficiency programs.

Seattle. Seattle City Light funds the statewide low-income weatherization program, called HomeWise, through the city's Office of Housing. This program provides whole-building weatherization measures, refrigerator replacement, and ductless heat pumps and serves both single- and multifamily buildings. The Office of Housing braids funding from various sources in order to address health and safety. In addition, Seattle City Light offers four separate programs targeting multifamily buildings. Puget Sound Energy offers a Multifamily Retrofit Incentive Program that provides whole-building upgrades and direct-install measures.

LEADING CITY: RENEWABLE ENERGY EFFORTS OF ENERGY UTILITIES

San Diego. San Diego Gas and Electric offers the Single-Family Affordable Solar Homes (SASH) Program, which provides $3,000 per kW installed for new solar systems in both San Diego and Chula Vista. SDG&E plans to launch its Multifamily Affordable Housing (SOMAH) Program, which will provide $0.60 to $3.20 per kW installed. San Diego regularly advocates to the California Public Utility Commission to encourage better renewable energy adoption. For example, the city advocated in the net metering proceeding to grandfather older net metering rates into the cost-benefit analysis.

Chapter 5. Energy and Water Utilities

LEADING CITY: EFFICIENCY EFFORTS IN WATER SERVICES

Denver. Denver set a 2020 water quantity goal to reduce per capita potable water use by 22% relative to 2001 levels (to 165 gallons per capita daily) and has already achieved this goal. Denver Water and Xcel Energy partner on energy- and water-saving programs. Denver Water offers free water audits to all customers as well as toilet and irrigation rebates and incentives, and Xcel offers additional direct-install water-saving measures. Denver Water has additionally implemented several energy efficiency initiatives at its pumping stations and has a goal in its comprehensive plan to reduce energy use by 5% annually. Denver Water also participates in an Xcel Energy program to help increase energy conservation specific to pumping operations. Finally, the Metro Wastewater District operates a 5 MW combined heat and power system that captures methane gas and generates electricity that is used onsite.

Chapter 6. Transportation Policies

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A comprehensive approach to GHG reduction in transportation at the federal, state, or local level must address both individual vehicles and the transportation system as a whole, including its interrelationship with land use policies. Transportation recently replaced the power sector as the largest emitter of GHGs in the United States (EPA 2019c). Transportation is responsible for 28.8% of energy use in the United States and for 25–38% of energy use in most cities in industrialized countries (Davis, Williams, and Boundy 2017; López Moreno et al. 2008).

Local governments and metropolitan regions play a critical role in maximizing this sector's energy efficiency and reducing GHG emissions. 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 policies at the local level must respond to the changing landscape of technology and prices while simultaneously addressing the increasingly urgent need to curb GHG emissions from the transportation sector. Cities play a critical role in strategically planning for efficient vehicle deployment, investing in the necessary fueling infrastructure, and reducing the upfront cost of purchasing these vehicles. These actions will help to ensure that efficient vehicles contribute to achieving GHG reduction goals.

Likewise, cities can influence and respond to changes in the average American's travel behavior. More and more people are choosing new mobility options, such as bike sharing, to go about their daily activities (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. The embrace of information and communications technologies (ICT) can also play an important role in spurring transportation efficiency, through such opportunities as driver feedback applications and car and bike sharing (Vaidyanathan 2014).

Chapter 6. Transportation Policies

SCORING

We allocated 30 points to policies that reduce GHG emissions in the transportation sector. We scored points across seven categories of transportation metrics with substantial energy and emissions savings potential:

- **Sustainable transportation strategies** (4 points)
- **Location efficiency policies** (6 points)
- **Mode shift strategies** (7 points)
- **Public transit** (4 points)
- **Efficient vehicle policies** (4 points)
- **Sustainable freight policies** (2 points)
- **Clean, efficient transportation for low-income communities** (3 points)

Most of the metrics in this chapter focus on local government action and policies that city decision makers can influence in the short run. At the same time, city-level policies are most effective when they interact with or build on the policies of encompassing jurisdictions. State policies and programs can foster local progress by promoting 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 to reduce GHGs from transportation, they could all do more to take advantage of the potential in this sector. San Francisco, Washington, Boston, Portland, and Seattle topped the transportation scores. These cities are dedicated to reducing transportation energy use through a number of mechanisms. Nevertheless, all cities have room for improvement, with the top two earning just 23.5 and 23 points of the 30 available, respectively. The median total score for the transportation sector fell from 10.5 points in 2017 to 8.5 points in 2019 due to changes in our methodology and the addition to the *Scorecard* of a number of smaller cities that are still grappling with their transportation challenges.

Table 43 lists the transportation scores for 2019 by policy category.

TABLE 43. TRANSPORTATION POLICIES SCORES

CITY	SUSTAINABLE TRANSPORTATION (4 PTS)	LOCATION EFFICIENCY (6 PTS)	MODE SHIFT (7 PTS)	PUBLIC TRANSIT (4 PTS)	EFFICIENT VEHICLES (4 PTS)	FREIGHT (2 PTS)	EQUITABLE TRANSPORTATION (3 PTS)	TOTAL (30 PTS)
SAN FRANCISCO	3.5	5.5	6	3.5	3	0	2	23.5
WASHINGTON	4	4	5	3.5	2.5	2	2	23
BOSTON	4	5	5	4	3	0	1.5	22.5
PORTLAND	2.5	6	3.5	3	2	2	2.5	21.5

Chapter 6. Transportation Policies

CITY	SUSTAINABLE TRANSPORTATION (4 PTS)	LOCATION EFFICIENCY (6 PTS)	MODE SHIFT (7 PTS)	PUBLIC TRANSIT (4 PTS)	EFFICIENT VEHICLES (4 PTS)	FREIGHT (2 PTS)	EQUITABLE TRANSPORTATION (3 PTS)	TOTAL (30 PTS)
SEATTLE	4	3.5	3.5	3	3	2	2	21
NEW YORK	1	4.5	5	4	1	2	2.5	20
MINNEAPOLIS	3	4.5	6	2.5	0.5	1	2.5	20
DENVER	1	3.5	5.5	2.5	0.5	1	2	16
PHILADELPHIA	3.5	2.5	2.5	3.5	0	1	3	16
PITTSBURGH	3	1.5	4.5	2.5	2	0	2.5	16
OAKLAND	1	4	3.5	3	1.5	0	2.5	15.5
ATLANTA	3	3	2.5	2	2	0	3	15.5
CHICAGO	1	3	2.5	3	3	0	2.5	15
SAN JOSÉ	2.5	3	2.5	2.5	2.5	0	2	15
HARTFORD	1	5	2	2	2	0	3	15
AUSTIN	1	3.5	3.5	1.5	3	0	2.5	15
LOS ANGELES	2.5	2.5	2.5	2.5	1.5	1	2	14.5
ORLANDO	1	4.5	2.5	1.5	2.5	0	2	14
BALTIMORE	1	3.5	3	3	1	0	2	13.5
LONG BEACH	1	2.5	1.5	2	2.5	2	2	13.5
PHOENIX	1	3	2	1	3	0	3	13
COLUMBUS	1	4	2.5	1	2.5	1	1	13
SAN DIEGO	3.5	2	2	1	2.5	0	1.5	12.5
ST. PAUL	0.5	3.5	1.5	1.5	1.5	1	2.5	12
HONOLULU	0	0.5	3.5	3	2	0	2.5	11.5
CLEVELAND	3	2	3	2	0	0	1	11
BUFFALO	0	3	2.5	3	1.5	0	1	11
PROVIDENCE	1	3	2.5	1.5	1	0	2	11
RICHMOND	1	2.5	3	1.5	0.5	0.5	1.5	10.5
SACRAMENTO	1	3.5	1	1	3	0	1	10.5
KNOXVILLE	1	2.5	3	1	1	0	1.5	10
CINCINNATI	1	3.5	2	0.5	1.5	0	1	9.5
LAS VEGAS	1	2	2	1.5	1.5	0	1.5	9.5

Chapter 6. Transportation Policies

CITY	SUSTAINABLE TRANSPORTATION (4 PTS)	LOCATION EFFICIENCY (6 PTS)	MODE SHIFT (7 PTS)	PUBLIC TRANSIT (4 PTS)	EFFICIENT VEHICLES (4 PTS)	FREIGHT (2 PTS)	EQUITABLE TRANSPORTATION (3 PTS)	TOTAL (30 PTS)
LOUISVILLE	3	2	2	1	0	0	1	9
ROCHESTER	0.5	3	1.5	1	2.5	0	0.5	9
SAN ANTONIO	2.5	2.5	1.5	1.5	0	0	1	9
HOUSTON	0.5	1.5	3	1	2	0	0.5	8.5
KANSAS CITY	0	3.5	1.5	0.5	1	0	2	8.5
GRAND RAPIDS	1	4	1	1	0.5	0	1	8.5
MILWAUKEE	0	3	1.5	1.5	0.5	0	2	8.5
MIAMI	0	2	1.5	2	0.5	1	1	8
RALEIGH	0	3	2	0	0.5	0	2.5	8
SALT LAKE CITY	1	1.5	1	2.5	2	0	0	8
ALBUQUERQUE	1	2.5	2	1	1.5	0	0	8
ST. PETERSBURG	1	2.5	4	0	0.5	0	0	8
NEW HAVEN	1	2	2	1.5	1.5	0	0	8
NEW ORLEANS	1	2.5	1.5	2	0	0	0.5	7.5
CHULA VISTA	1	2	0	0.5	2	0	2	7.5
NEWARK	0	2	1	2.5	1	0	1	7.5
RIVERSIDE	1	2.5	0	0.5	1.5	1	1	7.5
TAMPA	1	1.5	1	1	0.5	0	2	7
FORT WORTH	0	3	2.5	0	0	0	1.5	7
OMAHA	0.5	2	2.5	0.5	1.5	0	0	7
BRIDGEPORT	0.5	3	0.5	1	1	0	1	7
INDIANAPOLIS	0	2.5	3	0	0	0	1	6.5
NASHVILLE	1	4	1	0	0.5	0	0	6.5
ST. LOUIS	1	1.5	1	1.5	0.5	0	1	6.5
JACKSONVILLE	2	2.5	0	0.5	1	0	0	6
DETROIT	1	3	0.5	0.5	0	0	1	6
MEMPHIS	0	2.5	2.5	0	0	0	1	6
DALLAS	0	1.5	2	1	0	0	1	5.5
TUCSON	0	1	1	0.5	1	0	2	5.5

Chapter 6. Transportation Policies

CITY	SUSTAINABLE TRANSPORTATION (4 PTS)	LOCATION EFFICIENCY (6 PTS)	MODE SHIFT (7 PTS)	PUBLIC TRANSIT (4 PTS)	EFFICIENT VEHICLES (4 PTS)	FREIGHT (2 PTS)	EQUITABLE TRANSPORTATION (3 PTS)	TOTAL (30 PTS)
VIRGINIA BEACH	1	1	1.5	0.5	0	0	0.5	4.5
EL PASO	0	2.5	0	1	0	0	1	4.5
AURORA	0.5	2	0	0.5	0.5	0	1	4.5
WORCESTER	0.5	2.5	0.5	0.5	0	0	0	4
MESA	1	2	0	0	0	0	1	4
CHARLOTTE	1	1	0	1	0	0	0.5	3.5
BIRMINGHAM	0	1.5	1	0	0.5	0	0	3
BAKERSFIELD	0.5	1	0	0	1	0	0	2.5
RENO	1	0	0	0.5	0.5	0	0	2
TULSA	0	0	2	0	0	0	0	2
HENDERSON	1	1	0	0	0	0	0	2
MCALLEN	0	0.5	0.5	0	0	0	0	1
OKLAHOMA CITY	0	0	0	0	0	0	0	0
MEDIAN	**1**	**2.5**	**2**	**1**	**1**	**0**	**1**	**8.5**

Washington, Boston, and Seattle scored full points in the sustainable transportation plan category and are among a very few cities that are making efforts to track progress toward their transportation-specific GHG reduction goals. Washington was also one of the few cities to score full points in the freight category.

Overall, cities performed best in the location efficiency and mode shift categories. This shows that many cities recognize the need for more clean transportation options and land use changes to support those mobility choices. For example, Portland has been a longtime leader on land use and transportation integration, scoring the maximum 6 points in the location efficiency category. Recent updates to the city's zoning code include a requirement for new construction to be mixed use and connected to transportation facilities. San Francisco and Minneapolis led on mode shift, earning 6 points.

Although the median score in the freight category was low, cities are showing promise. For example, Long Beach, New York, Portland, Seattle, and Washington all have robust freight plans in place that outline strategies such as last-mile solutions, off-hour deliveries, or street design initiatives to improve the efficiency of their freight systems. Scores for sustainable transportation planning were also low. Only 12 cities out of the 75 scored earned 3 points or more out of the possible 4 points in this category.

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

Chapter 6. Transportation Policies

SUSTAINABLE TRANSPORTATION PLANS AND VEHICLE MILES TRAVELED (VMT) TARGETS

Sustainable transportation plans can encourage the creation of clean and efficient transportation systems in cities. They often outline multiple strategies, including improved transit, location efficiency, and multimodal options, to reduce VMTs and GHG emissions. Some plans go a step further to include specific VMT or greenhouse gas reduction targets, with details on how each of the proposed strategies will help achieve that target. Including codified targets is a best practice because these targets give cities specific benchmarks against which to measure progress and gauge success.

In this category we scored cities on

- **The presence of a sustainable transportation plan** (1 point)
- **Codified VMT/GHG targets** (1 point)
- **The stringency of these targets** (1 point)
- **Progress made toward these targets** (1 point)

Cities with either a stand-alone sustainable transportation plan or strategies included within a broader plan, such as a climate action plan, earned 1 point. We chose not to review the quality and content of these plans in this metric as many of the strategies outlined by cities to achieve their transportation goals are captured in the other metrics in this chapter. We awarded 1 additional point to cities with codified VMT or GHG reduction targets for the transportation sector. We then evaluated the stringency of these GHG or VMT reduction targets using the average annual rate of reduction. We awarded 1 full point to targets that would reduce VMT or GHG by at least 1.5% per year (a natural cut point in the data we received) and gave all other targets 0.5 points. Finally, cities could earn 1 point for providing us with data that demonstrated at least a 0.5% reduction from their baseline, even if their goals are not officially codified.

Table 44 summarizes the scoring and table 45 lists the scores for sustainable transportation plans and VMT targets. Table E17 in Appendix E includes an explanation of each of these plans.

TABLE 44. SCORING FOR SUSTAINABLE TRANSPORTATION PLANS AND VMT TARGETS

SUSTAINABLE TRANSPORTATION PLAN	SCORE
City has stand-alone sustainable transportation plan or strategies included within a broader plan that has been updated within the past five years.	1
City has stand-alone sustainable transportation plan or strategies included within a broader plan that has not been updated within the past five years.	0.5
CODIFIED VMT/GHG TARGETS	
City has codified VMT/GHG targets or goals.	1
STRINGENCY OF VMT/GHG TARGETS	
Target calls for an improvement of at least 1.5% per year.	1
Target calls for an improvement of less than 1.5% per year.	0.5

Chapter 6. Transportation Policies

PROGRESS TOWARD VMT/GHG TARGETS	
City has demonstrated a reduction of at least 0.5% from its VMT/GHG target baseline.	1

TABLE 45. SUSTAINABLE TRANSPORTATION PLAN SCORES

CITY	SUSTAINABLE TRANSPORTATION PLAN (1 PT)	CODIFIED VMT/GHG TARGETS (1 PT)	STRINGENCY OF VMT/ GHG TARGET(1 PT)	PROGRESS MADE TOWARD VMT/GHG TARGET(1 PT)	TOTAL (4 PTS)
BOSTON	1	1	1	1	4
SEATTLE	1	1	1	1	4
WASHINGTON	1	1	1	1	4
PHILADELPHIA	1	1	0.5	1	3.5
SAN DIEGO	1	1	0.5	1	3.5
SAN FRANCISCO	1	1	0.5	1	3.5
ATLANTA	1	1	1	0	3
CLEVELAND	1	1	1	0	3
LOUISVILLE	1	1	1	0	3
MINNEAPOLIS	1	1	1	0	3
PITTSBURGH	1	1	1	0	3
LOS ANGELES	1	1	0.5	0	2.5
PORTLAND	1	1	0.5	0	2.5
SAN ANTONIO	1	1	0.5	0	2.5
SAN JOSÉ	1	1	0.5	0	2.5
JACKSONVILLE	0.5	1	0.5	0	2
ALBUQUERQUE	1	0	0	0	1
AUSTIN	1	0	0	0	1
BALTIMORE	1	0	0	0	1
CHARLOTTE	1	0	0	0	1
CHICAGO	1	0	0	0	1
CHULA VISTA	1	0	0	0	1
CINCINNATI	1	0	0	0	1
COLUMBUS	1	0	0	0	1
DENVER	1	0	0	0	1
DETROIT	1	0	0	0	1

CITY	SUSTAINABLE TRANSPORTATION PLAN (1 PT)	CODIFIED VMT/GHG TARGETS (1 PT)	STRINGENCY OF VMT/ GHG TARGET(1 PT)	PROGRESS MADE TOWARD VMT/GHG TARGET(1 PT)	TOTAL (4 PTS)
GRAND RAPIDS	1	0	0	0	1
HARTFORD	1	0	0	0	1
HENDERSON	1	0	0	0	1
KNOXVILLE	1	0	0	0	1
LAS VEGAS	1	0	0	0	1
LONG BEACH	1	0	0	0	1
MESA	1	0	0	0	1
NASHVILLE	1	0	0	0	1
NEW HAVEN	1	0	0	0	1
NEW ORLEANS	1	0	0	0	1
NEW YORK	1	0	0	0	1
OAKLAND	1	0	0	0	1
ORLANDO	1	0	0	0	1
PHOENIX	1	0	0	0	1
PROVIDENCE	1	0	0	0	1
RENO	1	0	0	0	1
RICHMOND	1	0	0	0	1
RIVERSIDE	1	0	0	0	1
SACRAMENTO	1	0	0	0	1
SALT LAKE CITY	1	0	0	0	1
ST. LOUIS	1	0	0	0	1
ST. PETERSBURG	1	0	0	0	1
TAMPA	1	0	0	0	1
VIRGINIA BEACH	1	0	0	0	1
AURORA	0.5	0	0	0	0.5
BAKERSFIELD	0.5	0	0	0	0.5
BRIDGEPORT	0.5	0	0	0	0.5
HOUSTON	0.5	0	0	0	0.5
OMAHA	0.5	0	0	0	0.5
ROCHESTER	0.5	0	0	0	0.5

CITY	SUSTAINABLE TRANSPORTATION PLAN (1 PT)	CODIFIED VMT/GHG TARGETS (1 PT)	STRINGENCY OF VMT/ GHG TARGET(1 PT)	PROGRESS MADE TOWARD VMT/GHG TARGET(1 PT)	TOTAL (4 PTS)
ST. PAUL	0.5	0	0	0	0.5
WORCESTER	0.5	0	0	0	0.5
BIRMINGHAM	0	0	0	0	0
BUFFALO	0	0	0	0	0
DALLAS	0	0	0	0	0
EL PASO	0	0	0	0	0
FORT WORTH	0	0	0	0	0
HONOLULU	0	0	0	0	0
INDIANAPOLIS	0	0	0	0	0
KANSAS CITY	0	0	0	0	0
MCALLEN	0	0	0	0	0
MEMPHIS	0	0	0	0	0
MIAMI	0	0	0	0	0
MILWAUKEE	0	0	0	0	0
NEWARK	0	0	0	0	0
OKLAHOMA CITY	0	0	0	0	0
RALEIGH	0	0	0	0	0
TUCSON	0	0	0	0	0
TULSA	0	0	0	0	0

LOCATION EFFICIENCY

Where we choose to live and develop our neighborhoods has a huge impact on overall energy use and emissions. Households can reduce their transportation-related energy use by settling in compact, mixed-use communities that are "location efficient"—well connected by multiple modes of traditional and active transportation (EPA 2011b). Policies that encourage location efficiency 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.

Chapter 6. Transportation Policies

In this category we scored cities on:

- **The presence of zoning codes that promote location efficiency** (2 points)
- **The removal or reduction of minimum parking requirements** (2 points)
- **Incentives to encourage the creation of mixed-use, compact communities** (2 points)

Zoning Codes for Location-Efficient Development

Post–World War II zoning practices have traditionally segregated industrial and residential uses of land, and some codes further divide land used for commercial, institutional, and recreational purposes. In combination with highway-focused transportation investment, this has created the sprawl in which people live far from where they work, shop, go to school, and enjoy recreation. Well-crafted zoning codes, by contrast, promote the creation of walkable, mixed-use, location-efficient communities that moderate overall VMT and energy use. They may even reduce the need to drive altogether as households are often positioned near public transit, employment centers, schools, and other amenities (CNT 2019b).

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 easier creation of mixed-use developments (FBCI 2019). Form-based codes focus on the relationships between building facades and the public, the shapes 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 modifications are useful in areas that already have a certain amount of development and are located near existing transit infrastructure.

Zoning regulations that support location efficiency

- Require mixed-use zones in areas that can support such development
- Recalibrate zoning standards to allow compact development
- Increase building density in city centers, around transit nodes, and in other targeted areas that can support denser development
- Modernize street standards or enact new standards to foster walkable communities
- Designate preferred growth areas (Nelson 2009)

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

Parking Policies for Location-Efficient Development

We awarded another 2 points to cities with sound parking policies. Conventional zoning codes often have minimum parking requirements that call for one or more onsite parking spaces per housing unit for all occupied units. Such parking

requirements claim surface area and drive up development costs, which prevent denser, more-compact development from flourishing. Research also suggests a causal link between per capita parking spaces and automobile use in cities (McCahill et al. 2015). To enable the growth of compact development, developers can facilitate access by non-auto modes of transportation and set aside less land for parking. Table 46 outlines the scoring methodology.

Location Efficiency Incentives and Information Disclosure

Cities may use a number of incentives or incentive-based zoning policies, ranging from tax credits to expedited permitting, to encourage compact growth and mixed-use projects (MITOD 2019). Such financial and nonmonetary policy levers can make these projects deeply attractive to developers. Financial incentives help promote transit-oriented development (TOD) or other community land use priorities in that they bring down the overall cost of construction in areas for which denser, less auto-dependent development is a priority. Commonly used measures include low-interest loans and property tax abatement programs. TOD 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.

Nonfinancial measures such as density bonuses and expedited permitting similarly provide incentives for compact, mixed-use development. Expedited permitting fast-tracks 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. They incentivize the construction of more total floor area in a given area than would otherwise be allowed. Note that we awarded points for density bonuses in the Buildings Policies chapter to cities that allow builders to construct buildings that exceed zoning restrictions on size or height if they meet more stringent efficiency requirements. The density bonuses evaluated in this chapter typically earned points on the basis of efficient transportation proximity or access.

Information and incentives for prospective residents can also increase demand for communities that have better transportation choices. To attract residents to transit-oriented development and mixed-use communities, cities may require a real estate transaction or rental listing to disclose information on the location efficiency of buildings to potential buyers or tenants. Transit Score, for example, rates neighborhoods based on how well they are served by transit (Walk Score 2019). However this strategy is uncommon.

We gave credit to cities with financial or nonfinancial incentive programs for location-efficient development and/or disclosure policies for location efficiency. Cities earned 0.5 points for each incentive or policy, up to a maximum of 2 points.

Table 46 summarizes the scoring and table 47 lists the scores for location efficiency.

TABLE 46. SCORING FOR LOCATION EFFICIENCY

LOCATION-EFFICIENT ZONING CODES	SCORE
Codes apply to the whole city.	2
Codes apply only to certain areas or neighborhoods.	1

PARKING REQUIREMENTS	
No minimum parking requirements are in place for new developments.	2
At least one zone, neighborhood, or district has no minimum parking requirement, or the whole city has a requirement of 0.5 or fewer spaces 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 a requirement of one or fewer spaces per unit.	0.5
LOCATION EFFICIENCY INCENTIVE PROGRAMS AND DISCLOSURE POLICIES	
4 or more	2
3	1.5
2	1
1	0.5

TABLE 47. LOCATION EFFICIENCY SCORES

CITY	LOCATION-EFFICIENT ZONING (2 PTS)	PARKING REQUIREMENTS (2 PTS)	LOCATION EFFICIENCY INCENTIVES AND DISCLOSURE (2 PTS)	TOTAL (6 PTS)
PORTLAND	2	2	2	6
SAN FRANCISCO	2	2	1.5	5.5
BOSTON	2	2	1	5
HARTFORD	2	2	1	5
MINNEAPOLIS	2	2	0.5	4.5
NEW YORK	1	1.5	2	4.5
ORLANDO	2	1	1.5	4.5
COLUMBUS	2	1.5	0.5	4
GRAND RAPIDS	2	1.5	0.5	4
NASHVILLE	2	1.5	0.5	4
OAKLAND	2	1.5	0.5	4
WASHINGTON	2	1.5	0.5	4
AUSTIN	1	1.5	1	3.5
BALTIMORE	2	1.5	0	3.5
CINCINNATI	2	1.5	0	3.5
DENVER	2	1.5	0	3.5
KANSAS CITY	2	1.5	0	3.5

CITY	LOCATION-EFFICIENT ZONING (2 PTS)	PARKING REQUIREMENTS (2 PTS)	LOCATION EFFICIENCY INCENTIVES AND DISCLOSURE (2 PTS)	TOTAL (6 PTS)
SACRAMENTO	1	1.5	1	3.5
SEATTLE	1	1.5	1	3.5
ST. PAUL	1	1.5	1	3.5
ATLANTA	2	0.5	0.5	3
BRIDGEPORT	1	1.5	0.5	3
BUFFALO	1	2	0	3
CHICAGO	1	1.5	0.5	3
DETROIT	1	1.5	0.5	3
FORT WORTH	2	0	1	3
MILWAUKEE	1	1.5	0.5	3
PHOENIX	1	1.5	0.5	3
PROVIDENCE	1	1.5	0.5	3
RALEIGH	2	1	0	3
ROCHESTER	1	1.5	0.5	3
SAN JOSÉ	1	1	1	3
ALBUQUERQUE	0	1	1.5	2.5
EL PASO	2	0.5	0	2.5
INDIANAPOLIS	1	0.5	1	2.5
JACKSONVILLE	1	1.5	0	2.5
KNOXVILLE	1	1.5	0	2.5
LONG BEACH	1	0.5	1	2.5
LOS ANGELES	1	1	0.5	2.5
MEMPHIS	1	1.5	0	2.5
NEW ORLEANS	1	1.5	0	2.5
PHILADELPHIA	1	1.5	0	2.5
RICHMOND	2	0	0.5	2.5
RIVERSIDE	1	0.5	1	2.5
SAN ANTONIO	1	0.5	1	2.5
ST. PETERSBURG	2	0.5	0	2.5
WORCESTER	1	1.5	0	2.5

CITY	LOCATION-EFFICIENT ZONING (2 PTS)	PARKING REQUIREMENTS (2 PTS)	LOCATION EFFICIENCY INCENTIVES AND DISCLOSURE (2 PTS)	TOTAL (6 PTS)
AURORA	2	0	0	2
CHULA VISTA	1	0	1	2
CLEVELAND	1	1	0	2
LAS VEGAS	1	0.5	0.5	2
LOUISVILLE	0	1.5	0.5	2
MESA	2	0	0	2
MIAMI	2	0	0	2
NEW HAVEN	2	0	0	2
NEWARK	2	0	0	2
OMAHA	2	0	0	2
SAN DIEGO	1	0.5	0.5	2
BIRMINGHAM	1	0.5	0	1.5
DALLAS	1	0.5	0	1.5
HOUSTON	0	1.5	0	1.5
PITTSBURGH	0	1	0.5	1.5
SALT LAKE CITY	1	0.5	0	1.5
ST. LOUIS	1	0.5	0	1.5
TAMPA	1	0.5	0	1.5
BAKERSFIELD	1	0	0	1
CHARLOTTE	1	0	0	1
HENDERSON	1	0	0	1
TUCSON	1	0	0	1
VIRGINIA BEACH	1	0	0	1
HONOLULU	0	0	0.5	0.5
MCALLEN	0	0.5	0	0.5
OKLAHOMA CITY	0	0	0	0
RENO	0	0	0	0
TULSA	0	0	0	0

Chapter 6. Transportation Policies

MODE SHIFT

More than 80% of all trips in the United States are made by private vehicles (Bureau of Transportation Statistics 2017). To improve the efficiency of a transportation system, cities must implement policies that encourage other modes of transportation (e.g., public transit, ride sharing, bicycling, walking). These include steps to incentivize and facilitate the use of alternative modes and, more holistically, to integrate municipal land use and transportation planning.

In this section we scored cities on

- **Modal share targets and progress toward them** (3 points)
- **Complete streets policies** (2 points)
- **Car and bicycle sharing** (3 points)

Modal Share Targets and Strategy Implementation

Cities can use a number of policy levers to shift travel from personal vehicles to cleaner, more efficient modes of transport. These include modal share targets, which aim to increase the percentage of trips taken using non-automobile modes of transportation. Cities that commit to long-run modal share targets can change the travel behavior of their communities in favor of modes of transportation that consume less energy.

Cities with codified modal share targets for trips within the city for all modes of transportation earned 1 point; they earned 0.5 points if they have targets for some but not all modes. Cities that provided us with data demonstrating quantifiable progress toward these modal share goals could earn an additional point.

Complete Streets

Complete streets policies focus on the interconnectivity of streets to provide safe, easy access for pedestrians, bicyclists, motorists, and public transportation users. Complete streets create a network of roads, sidewalks, and bicycle lanes that connect to transit facilities, making people less likely to drive, thereby lowering a community's fuel consumption and GHG emissions. Complete streets can also promote economic development by helping residents save money on transportation costs that can then be spent elsewhere and by creating vibrant neighborhoods that increase the exposure of local businesses.

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 transportation. Using these alternatives 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 do those located in traditional suburbs (NCSC 2012). Many states and municipalities have incorporated complete streets policies into their land use planning tools. As of 2017, 1,348 complete streets policies had been passed in municipalities across the United States (NCSC 2018).

ACEEE's scoring of complete streets policies in this report leverages the NCSC's complete streets policy scores, which range from 0 to 100 according to the quality of each adopted policy (NCSC 2018). NCSC separates its rankings by policy type—

resolution, city ordinance, and so on.[49] In our scoring, a city with an NCSC complete streets policy score of 75 or above earned 2 points, one that scored from 51 to 74 earned 1.5 points, one with a score of 25 to 50 earned 1 point, and one that scored below 25 earned 0.5 points. Table E18 in Appendix E lists complete streets policy by city.

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. According to the Transportation Research Board, each shared car replaces at least five private vehicles (Mason, Fulton, and McDonald 2015).

The emergence of companies such as Zipcar, Car2Go, and others 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 underused personal vehicles. Car sharing enables households to give up owning a first, second, or third vehicle and to rely on other modes of transportation.

Bike 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 has the potential to bridge gaps in transportation access and existing networks, easing urban mobility challenges (Shaheen and Martin 2015).

Cities have a critical role to play in encouraging the deployment of private and public car and bike sharing programs. To encourage car sharing, one of the primary ways municipalities can show leadership is to ensure that parking policies provide an adequate network of parking spots for shared vehicles. This could mean amending parking requirements to allow shared vehicles universal access to street parking or setting aside specific parking spots for these vehicles throughout the city. Cities with parking policies that promote the use of car sharing earned 1 point.

For bike sharing, we awarded points to cities based on the number of bike-share bikes available per 100,000 people. Cities with 400 bikes per 100,000 people earned 2 points, while those with 190 bikes per 100,000 people were awarded 1.5 points. Cities with 75 bikes per 100,000 earned 1 point, and 20 bikes per 100,000 earned 0.5 points. While we recognize that many urban bike sharing systems use dockless bikes, the benefits of these sharing programs relative to emissions and energy use are more difficult to document. As a result, we focus on docked bike sharing in our scoring.

Table 48 summarizes the scoring and table 49 lists the scores for mode shift.

TABLE 48. SCORING FOR MODE SHIFT

MODAL SHARE TARGETS	SCORE
City has a modal share target for all modes of transportation (single-occupancy vehicles, public transit, biking, and walking).	2
City has a modal share target for only some modes of transportation.	1

49 For more information on specific policy types, see NCSC (2018).

PROGRESS TOWARD MODAL SHARE TARGETS	
City demonstrates any quantitative progress towardstoward modal share target.	1
NCSC COMPLETE STREETS POLICY SCORE*	
75 or above	2
51–74	1.5
25–50	1
Less than 25	0.5
CAR SHARING	
City has a formal policy that provides dedicated on-street and/or off-street parking for car sharing use.	1
BIKE-SHARE BIKES PER 100,000 PEOPLE	
At least 400	2
At least 190	1.5
At least 75	1
At least 20	0.5
**NCSC 2018*	

TABLE 49. MODE SHIFT SCORES

CITY	MODE SHARE TARGETS (1 PT)	PROGRESS TOWARD MODE SHIFT TARGETS (1 PT)	COMPLETE STREETS (2 PTS)	CAR SHARING (1 PT)	BIKE-SHARE BIKES (2 PTS)	TOTAL (7 PTS)
MINNEAPOLIS	0.5	0.5	2	1	2	6
SAN FRANCISCO	1	1	1	1	2	6
DENVER	1	1	1.5	1	1	5.5
BOSTON	1	1	0.5	1	1.5	5
NEW YORK	1	1	1	1	1	5
WASHINGTON	1	0.5	0.5	1	2	5
PITTSBURGH	1	0	2	0.5	1	4.5
ST. PETERSBURG	1	0	2	0	1	4
AUSTIN	1	0	1	1	0.5	3.5
HONOLULU	0	0	2	0	1.5	3.5
OAKLAND	0	0	1	1	1.5	3.5
PORTLAND	1	1	0.5	1	0	3.5
SEATTLE	1	0	1.5	1	0	3.5

CITY	MODE SHARE TARGETS (1 PT)	PROGRESS TOWARD MODE SHIFT TARGETS (1 PT)	COMPLETE STREETS (2 PTS)	CAR SHARING (1 PT)	BIKE-SHARE BIKES (2 PTS)	TOTAL (7 PTS)
BALTIMORE	0	0	1.5	1	0.5	3
CLEVELAND	1	0	1.5	0	0.5	3
HOUSTON	0	0	1.5	1	0.5	3
INDIANAPOLIS	0	0	2	0.5	0.5	3
KNOXVILLE	0	0	2	1	0	3
RICHMOND	0	0	2	0	1	3
ATLANTA	1	0	0.5	0	1	2.5
BUFFALO	0.5	0	1	0	1	2.5
CHICAGO	0	0	1	0	1.5	2.5
COLUMBUS	0	0	1	1	0.5	2.5
FORT WORTH	0	0	2	0	0.5	2.5
LOS ANGELES	1	0	0	1	0.5	2.5
MEMPHIS	0	0	1.5	0	1	2.5
OMAHA	0	0	2	0	0.5	2.5
ORLANDO	1	0	0	1	0.5	2.5
PHILADELPHIA	0.5	0	1	0	1	2.5
PROVIDENCE	0	0	0.5	0.5	1.5	2.5
SAN JOSÉ	1	0	0	1	0.5	2.5
ALBUQUERQUE	0	0	1.5	0	0.5	2
CINCINNATI	0	0	0	1	1	2
DALLAS	0	0	2	0	0	2
HARTFORD	0	0	2	0	0	2
LAS VEGAS	1	0	0.5	0	0.5	2
LOUISVILLE	1	0	0.5	0	0.5	2
NEW HAVEN	0	0	1	0	1	2
PHOENIX	0	0	1.5	0	0.5	2
RALEIGH	0.5	0	1.5	0	0	2
SAN DIEGO	1	1	0	0	0	2
TULSA	0	0	1.5	0	0.5	2
KANSAS CITY	0.5	0	0.5	0.5	0	1.5

CITY	MODE SHARE TARGETS (1 PT)	PROGRESS TOWARD MODE SHIFT TARGETS (1 PT)	COMPLETE STREETS (2 PTS)	CAR SHARING (1 PT)	BIKE-SHARE BIKES (2 PTS)	TOTAL (7 PTS)
LONG BEACH	0.5	0	0	0	1	1.5
MIAMI	0	0	0.5	0	1	1.5
MILWAUKEE	0	0	0.5	0	1	1.5
NEW ORLEANS	0	0	1.5	0	0	1.5
ROCHESTER	0	0	1.5	0	0	1.5
SAN ANTONIO	0	0	1	0	0.5	1.5
ST. PAUL	0.5	0	1	0	0	1.5
VIRGINIA BEACH	0	0	1.5	0	0	1.5
BIRMINGHAM	0	0	0	0	1	1
GRAND RAPIDS	0.5	0	0.5	0	0	1
NASHVILLE	0.5	0	0	0	0.5	1
NEWARK	0	0	1	0	0	1
SACRAMENTO	0	0	0	1	0	1
SALT LAKE CITY	0	0	0	0	1	1
ST. LOUIS	0	0	1	0	0	1
TAMPA	0	0	1	0	0	1
TUCSON	0	0	0.5	0	0.5	1
BRIDGEPORT	0.5	0	0	0	0	0.5
DETROIT	0	0	0	0	0.5	0.5
MCALLEN	0	0	0	0	0.5	0.5
WORCESTER	0	0	0.5	0	0	0.5
AURORA	0	0	0	0	0	0
BAKERSFIELD	0	0	0	0	0	0
CHARLOTTE	0	0	0	0	0	0
CHULA VISTA	0	0	0	0	0	0
EL PASO	0	0	0	0	0	0
HENDERSON	0	0	0	0	0	0
JACKSONVILLE	0	0	0	0	0	0
MESA	0	0	0	0	0	0
OKLAHOMA CITY	0	0	0	0	0	0

Chapter 6. Transportation Policies

CITY	MODE SHARE TARGETS (1 PT)	PROGRESS TOWARD MODE SHIFT TARGETS (1 PT)	COMPLETE STREETS (2 PTS)	CAR SHARING (1 PT)	BIKE-SHARE BIKES (2 PTS)	TOTAL (7 PTS)
RENO	0	0	0	0	0	0
RIVERSIDE	0	0	0	0	0	0

PUBLIC TRANSIT

Well-connected public transit networks reduce residents' need to drive and therefore decrease the number of vehicle miles traveled and transportation-related emissions in metropolitan areas. Although total transit ridership has seen a 7% decline in the past 10 years (if we exclude increases in ridership in New York), a number of cities have put substantial effort into financing and expanding their transit infrastructure to reverse this trend (Mallett 2018).

For public transit we scored cities on

- **Transit funding** (3 points)
- **Access to transit service** (2 points)

Transit Funding

Federal, state, and local transportation funding continues to grow year by year. Although much transportation funding comes from entities at the federal and state levels, a number of municipalities across the United States have come up with inventive funding mechanisms to foster transit development with local funds, indicating their interest in promoting public transit as a reliable means of transportation. 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 toll roads and parking pricing schemes, and transit fares. The city of Los Angeles generated $660 million in local funding from Measure R, a regional 0.5-cent sales tax approved by voter referendum (DeGood 2012). The sales tax is expected to generate $40 billion over its 30-year authorization, earmarked for a mix of new highway projects and construction of the Crenshaw/LAX light-rail line, which will reach completion in 2019 (Metro 2017).

We scored cities based on total transit funding (federal, state, and local sources) for all transit systems per capita, using MSA population and an average of transit expenditures from 2013 to 2017 as reported in the National Transit Database (FTA 2019). Cities could earn up to 2 points for per capita transit funding. Table 50 outlines the scoring criteria.

Access to Transit Service

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 increase transit ridership and improve overall access to transit, local agencies can work to boost the frequency of service and ensure that coordination among modes and routes is in place so that the transit system is efficient, usable, and attractive to potential customers. Other strategies to increase transit ridership include price reductions and educational initiatives that highlight the benefits of using public transit.

Chapter 6. Transportation Policies

We scored cities on their transit service using the Center for Neighborhood Technology's Transit Performance Score, which rates transit connectivity, access to jobs, and frequency of service (CNT 2019a). Cities could earn up to 2 points based on their CNT Transit Performance Score, which falls on a scale of 1–10. Table 50 summarizes the scoring, and table 51 lists scores for the transit-related metrics.

TABLE 50. SCORING FOR PUBLIC TRANSIT METRICS

TRANSIT FUNDING PER CAPITA*	**SCORE**
≥ $150	2
≥ $100 and <$150	1.5
≥ $50 and <$100	1
≥ $20 and <$50	0.5
CITY'S TRANSIT PERFORMANCE SCORE**	
≥ 9	2
≥ 8 and <9	1.5
≥ 7 and <8	1
≥ 5 and <7	0.5
**Funding data from FTA 2019. **Score from CNT 2019a.*	

TABLE 51. TRANSIT SCORES

CITY	TRANSIT FUNDING (2 PTS)	ACCESS TO TRANSIT (2 PTS)	TOTAL (4 PTS)
BOSTON	2	2	4
NEW YORK	2	2	4
PHILADELPHIA	1.5	2	3.5
SAN FRANCISCO	1.5	2	3.5
WASHINGTON	1.5	2	3.5
BALTIMORE	1.5	1.5	3
BUFFALO	2	1	3
CHICAGO	1	2	3
HONOLULU	2	1	3
OAKLAND	1.5	1.5	3
PORTLAND	1.5	1.5	3
SEATTLE	1.5	1.5	3

Chapter 6. Transportation Policies

CITY	TRANSIT FUNDING (2 PTS)	ACCESS TO TRANSIT (2 PTS)	TOTAL (4 PTS)
DENVER	1.5	1	2.5
LOS ANGELES	1.5	1	2.5
MINNEAPOLIS	1	1.5	2.5
NEWARK	1	1.5	2.5
PITTSBURGH	1	1.5	2.5
SALT LAKE CITY	1.5	1	2.5
SAN JOSÉ	1.5	1	2.5
ATLANTA	1	1	2
CLEVELAND	1	1	2
HARTFORD	1	1	2
LONG BEACH	0	2	2
MIAMI	0.5	1.5	2
NEW ORLEANS	1	1	2
AUSTIN	1	0.5	1.5
LAS VEGAS	1	0.5	1.5
MILWAUKEE	0.5	1	1.5
NEW HAVEN	0.5	1	1.5
ORLANDO	0.5	1	1.5
PROVIDENCE	0.5	1	1.5
RICHMOND	0.5	1	1.5
SAN ANTONIO	1	0.5	1.5
ST. LOUIS	0.5	1	1.5
ST. PAUL	0	1.5	1.5
ALBUQUERQUE	0.5	0.5	1
BRIDGEPORT	0	1	1
CHARLOTTE	1	0	1
COLUMBUS	0.5	0.5	1
DALLAS	0.5	0.5	1
EL PASO	0.5	0.5	1
GRAND RAPIDS	0.5	0.5	1

Chapter 6. Transportation Policies

CITY	TRANSIT FUNDING (2 PTS)	ACCESS TO TRANSIT (2 PTS)	TOTAL (4 PTS)
HOUSTON	0.5	0.5	1
KNOXVILLE	1	0	1
LOUISVILLE	0.5	0.5	1
PHOENIX	0.5	0.5	1
ROCHESTER	0.5	0.5	1
SACRAMENTO	0.5	0.5	1
SAN DIEGO	0.5	0.5	1
TAMPA	0.5	0.5	1
AURORA	0	0.5	0.5
CHULA VISTA	0	0.5	0.5
CINCINNATI	0	0.5	0.5
DETROIT	0	0.5	0.5
JACKSONVILLE	0.5	0	0.5
KANSAS CITY	0.5	0	0.5
OMAHA	0	0.5	0.5
RENO	0.5	0	0.5
RIVERSIDE	0	0.5	0.5
TUCSON	0	0.5	0.5
VIRGINIA BEACH	0.5	0	0.5
WORCESTER	0.5	0	0.5
BAKERSFIELD	0	0	0
BIRMINGHAM	0	0	0
FORT WORTH	0	0	0
HENDERSON	0	0	0
INDIANAPOLIS	0	0	0
MCALLEN	0	0	0
MEMPHIS	0	0	0
MESA	0	0	0
NASHVILLE	0	0	0
OKLAHOMA CITY	0	0	0

Chapter 6. Transportation Policies

CITY	TRANSIT FUNDING (2 PTS)	ACCESS TO TRANSIT (2 PTS)	TOTAL (4 PTS)
RALEIGH	0	0	0
ST. PETERSBURG	0	0	0
TULSA	0	0	0

EFFICIENT VEHICLES

The US vehicle market has seen an increase in high-efficiency, low-emission options for consumers in recent years. Manufacturers are improving the efficiency of conventional internal-combustion vehicles, and many more hybrids, plug-in hybrids, and electric vehicles are now available for sale in dealerships across the country. Simultaneously, cities are looking to high-efficiency vehicles, specifically electric vehicles, to meet their ambitious climate targets and to provide their residents with access to cleaner, more efficient forms of mobility. Faced with the challenge of incorporating electric vehicles into the transportation system and providing the relevant charging infrastructure, a number of cities have begun evaluating their EV readiness and developing policies to deploy EVs and enable consistent access to EV charging sites.

In this section, we evaluated cities based on

- **Efficient vehicle purchase incentives** (1 point)
- **Vehicle charging infrastructure incentives** (1 point)
- **EV charging locations** (1 point)
- **Renewable charging infrastructure incentives** (1 point)

We do not include government vehicle fleet procurement in this chapter; it was included in Chapter 2, Local Government Operations. Additionally, we scored EV-ready building codes in Chapter 4, Buildings Policies.

A key barrier to entry in the market for fuel-efficient, advanced-technology 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. In the case of EVs, the federal government provides the largest incentives, followed by state incentives. However a few cities across the country further subsidize the cost of these vehicles. Los Angeles, for example, provides incentives for residential and commercial EV chargers. We awarded cities 1 point if they provide purchase incentives for hybrid, plug-in hybrid, or electric vehicles—all of which typically have high fuel efficiency—or for conventional vehicles with high fuel efficiency. While alternative-fuel vehicles, such as those that run on ethanol or compressed natural gas, may reduce smog-forming pollution, they do not generally improve vehicle fuel efficiency, nor do they have clear climate benefits. Therefore, policies to promote the purchase of alternative-fuel vehicles, but not high-efficiency vehicles, did not receive a point.

While they provide energy- and emissions-saving opportunities, plug-in electric vehicles that require frequent charging also present infrastructure challenges. The arrival of a variety of new electric models from car manufacturers such as BMW, Honda, and Nissan to the American vehicle market has increased the need for a comprehensive network of electric charging stations.

A city earned 1 point if it had an incentive program, such as a rebate program, to support the implementation of electric vehicle charging infrastructure. We awarded up to 1 point based on the number of charging stations available to the public. Using natural cut points in the collected data, we awarded cities with at least 20 stations per 100,000 people the full 1 point. Cities with at least 10 stations per 100,000 people earned 0.5 points.

Finally, an additional 1 point was available for cities that promoted the construction of charging facilities that run on renewable fuels. We automatically awarded this additional point to cities with a high proportion of renewables (more than 85%) in their grid mix.

Table 52 summarizes the scoring and table 53 lists the scores for efficient vehicles.

TABLE 52. SCORING FOR EFFICIENT VEHICLES

EFFICIENT VEHICLE PURCHASE INCENTIVES	SCORE
City or utility has incentive program in place for the purchase of high-efficiency vehicles.	1
VEHICLE INFRASTRUCTURE INCENTIVES	
City or utility offers incentives for installation of public or private EV charging infrastructure.	1
EV CHARGING STATIONS PER 100,000 PEOPLE*	
At least 20	1
At least 10	0.5
RENEWABLE CHARGING INCENTIVES	
City has incentives or requirements for the installation of public or private EV charging infrastructure powered by renewable energy.	1
**Data from DOE 2019*	

TABLE 53. EFFICIENT VEHICLES SCORES

CITY	VEHICLE PURCHASE INCENTIVES (1 PT)	VEHICLE INFRASTRUCTURE INCENTIVES (1 PT)	EV CHARGING LOCATIONS (1 PT)	RENEWABLE CHARGING INFRASTRUCTURE INCENTIVES (1 PT)	TOTAL (4 PTS)
AUSTIN	0	1	1	1	3
BOSTON	1	1	1	0	3
CHICAGO	1	1	0	1	3
PHOENIX	1	1	0	1	3
SACRAMENTO	1	1	1	0	3
SAN FRANCISCO	1	1	1	0	3
SEATTLE	0	1	1	1	3
COLUMBUS	1	1	0.5	0	2.5

CITY	VEHICLE PURCHASE INCENTIVES (1 PT)	VEHICLE INFRASTRUCTURE INCENTIVES (1 PT)	EV CHARGING LOCATIONS (1 PT)	RENEWABLE CHARGING INFRASTRUCTURE INCENTIVES (1 PT)	TOTAL (4 PTS)
LONG BEACH	1	1	0.5	0	2.5
ORLANDO	0.5	1	1	0	2.5
ROCHESTER	1	0	0.5	1	2.5
SAN DIEGO	1	1	0.5	0	2.5
SAN JOSÉ	1	1	0.5	0	2.5
WASHINGTON	1	1	0.5	0	2.5
ATLANTA	0	1	1	0	2
CHULA VISTA	1	1	0	0	2
HARTFORD	0.5	1	0.5	0	2
HONOLULU	1	0	1	0	2
HOUSTON	0	1	0	1	2
PITTSBURGH	0	1	1	0	2
PORTLAND	0	1	1	0	2
SALT LAKE CITY	1	0	1	0	2
ALBUQUERQUE	0.5	1	0	0	1.5
BUFFALO	0	1	0.5	0	1.5
CINCINNATI	1	0	0.5	0	1.5
LAS VEGAS	0	1	0.5	0	1.5
LOS ANGELES	0	1	0.5	0	1.5
NEW HAVEN	0.5	0	0	1	1.5
OAKLAND	1	0	0.5	0	1.5
OMAHA	0.5	1	0	0	1.5
RIVERSIDE	1	0	0.5	0	1.5
ST. PAUL	0	1	0.5	0	1.5
BAKERSFIELD	1	0	0	0	1
BALTIMORE	0	0	1	0	1
BRIDGEPORT	0	0	0	1	1
JACKSONVILLE	1	0	0	0	1
KANSAS CITY	0	0	1	0	1

CITY	VEHICLE PURCHASE INCENTIVES (1 PT)	VEHICLE INFRASTRUCTURE INCENTIVES (1 PT)	EV CHARGING LOCATIONS (1 PT)	RENEWABLE CHARGING INFRASTRUCTURE INCENTIVES (1 PT)	TOTAL (4 PTS)
KNOXVILLE	0	0	1	0	1
NEW YORK	0	1	0	0	1
NEWARK	0.5	0.5	0	0	1
PROVIDENCE	0	1	0	0	1
TUCSON	0	1	0	0	1
AURORA	0.5	0	0	0	0.5
BIRMINGHAM	0	0	0.5	0	0.5
DENVER	0	0	0.5	0	0.5
GRAND RAPIDS	0	0	0.5	0	0.5
MIAMI	0	0	0.5	0	0.5
MILWAUKEE	0.5	0	0	0	0.5
MINNEAPOLIS	0	0	0.5	0	0.5
NASHVILLE	0	0	0.5	0	0.5
RALEIGH	0	0	0.5	0	0.5
RENO	0	0	0.5	0	0.5
RICHMOND	0	0	0.5	0	0.5
ST. LOUIS	0.5	0	0	0	0.5
ST. PETERSBURG	0	0	0.5	0	0.5
TAMPA	0	0	0.5	0	0.5
CHARLOTTE	0	0	0	0	0
CLEVELAND	0	0	0	0	0
DALLAS	0	0	0	0	0
DETROIT	0	0	0	0	0
EL PASO	0	0	0	0	0
FORT WORTH	0	0	0	0	0
HENDERSON	0	0	0	0	0
INDIANAPOLIS	0	0	0	0	0
LOUISVILLE	0	0	0	0	0
MCALLEN	0	0	0	0	0

CITY	VEHICLE PURCHASE INCENTIVES (1 PT)	VEHICLE INFRASTRUCTURE INCENTIVES (1 PT)	EV CHARGING LOCATIONS (1 PT)	RENEWABLE CHARGING INFRASTRUCTURE INCENTIVES (1 PT)	TOTAL (4 PTS)
MEMPHIS	0	0	0	0	0
MESA	0	0	0	0	0
NEW ORLEANS	0	0	0	0	0
OKLAHOMA CITY	0	0	0	0	0
PHILADELPHIA	0	0	0	0	0
SAN ANTONIO	0	0	0	0	0
TULSA	0	0	0	0	0
VIRGINIA BEACH	0	0	0	0	0
WORCESTER	0	0	0	0	0

FREIGHT SYSTEM EFFICIENCY

Freight movement accounts for 18% of oil consumption in the United States (Foster and Langer 2013) and offers substantial opportunities for energy efficiency gains. In 2016 the EPA and the US Department of Transportation adopted the second phase of the fuel efficiency and GHG standards for medium- and heavy-duty vehicles. While Phase 1 and Phase 2 of the standards would improve vehicle fuel economy by up to 48% between model years 2010 and 2027 (depending on vehicle type), certain components of the standards are in danger of elimination by the current administration. This makes city action on freight efficiency and emissions all the more important.

Urban areas are major sources of and destinations for freight. Policies and infrastructure for the movement of freight in small to large cities and their metropolitan areas can facilitate improvements in efficiency. Strategies that reduce the fuel used in the movement of goods, such as load consolidation and streamlining logistics, are particularly useful for improving the overall efficiency of the freight system.

Locally developed freight plans can go above and beyond state freight plan requirements and policies. They can serve as the foundation for strategies to increase freight efficiency, which may include truck loading plans, multimodal infrastructure requirements, street design, last-mile delivery solutions, zoning provisions, and off-hour delivery programs (Portland 2012). Each strategy positively affects freight efficiency, but a plan with a comprehensive package of strategies can result in greater fuel savings.

We awarded a city 2 points if it had a stand-alone sustainable freight plan or a freight-mobility plan outlining multiple strategies to increase efficiency. We awarded a city 1 point if it did not have a freight plan but still pursued at least one freight efficiency strategy. Strategies for which we awarded points include incentives for multimodal freight, clean vehicle technology standards, low-emission zones, and urban consolidation centers (micro hubs to which shippers send deliveries,

rather than sending them directly to the recipient's building). We also awarded points for last-mile solutions or off-hours delivery programs.

Table 54 summarizes the scoring and table 55 lists scores for sustainable freight. Table E19 in Appendix E offers more detail on the freight plans and strategies that earned points in this metric.

TABLE 54. SCORING FOR SUSTAINABLE FREIGHT

SUSTAINABLE FREIGHT PLANS	SCORE
City has a stand-alone sustainable freight plan or a freight modality plan outlining multiple strategies to increase efficiency.	2
City does not have a freight plan but has pursued at least one freight efficiency strategy.	1

TABLE 53. EFFICIENT VEHICLES SCORES

CITY	TOTAL (2 PTS)
LONG BEACH	2
NEW YORK	2
PORTLAND	2
SEATTLE	2
WASHINGTON	2
COLUMBUS	1
DENVER	1
LOS ANGELES	1
MIAMI	1
MINNEAPOLIS	1
PHILADELPHIA	1
RIVERSIDE	1
ST. PAUL	1
RICHMOND	0.5*
ALBUQUERQUE	0
ATLANTA	0
AURORA	0
AUSTIN	0
BAKERSFIELD	0
BALTIMORE	0

Chapter 6. Transportation Policies

CITY	TOTAL (2 PTS)
BIRMINGHAM	0
BOSTON	0
BRIDGEPORT	0
BUFFALO	0
CHARLOTTE	0
CHICAGO	0
CHULA VISTA	0
CINCINNATI	0
CLEVELAND	0
DALLAS	0
DETROIT	0
EL PASO	0
FORT WORTH	0
GRAND RAPIDS	0
HARTFORD	0
HENDERSON	0
HONOLULU	0
HOUSTON	0
INDIANAPOLIS	0
JACKSONVILLE	0
KANSAS CITY	0
KNOXVILLE	0
LAS VEGAS	0
LOUISVILLE	0
MCALLEN	0
MEMPHIS	0
MESA	0
MILWAUKEE	0
NASHVILLE	0
NEW HAVEN	0

CITY	TOTAL (2 PTS)
NEW ORLEANS	0
NEWARK	0
OAKLAND	0
OKLAHOMA CITY	0
OMAHA	0
ORLANDO	0
PHOENIX	0
PITTSBURGH	0
PROVIDENCE	0
RALEIGH	0
RENO	0
ROCHESTER	0
SACRAMENTO	0
SALT LAKE CITY	0
SAN ANTONIO	0
SAN DIEGO	0
SAN FRANCISCO	0
SAN JOSÉ	0
ST. LOUIS	0
ST. PETERSBURG	0
TAMPA	0
TUCSON	0
TULSA	0
VIRGINIA BEACH	0
WORCESTER	0
** Richmond's plan concentrates on infrastructure improvements to ports to improve connectivity, but it lacks a focus on sustainability or efficiency.*	

CLEAN, EFFICIENT TRANSPORTATION FOR LOW-INCOME COMMUNITIES

As cities have sprawled and jobs have moved away from urban cores, many low-income communities have become geographically more isolated and inadequately served by affordable, efficient transportation. These communities'

transportation options are often limited to automobiles and unreliable public transport services. Expenditures for vehicles, including fuel consumption, insurance, and maintenance, can be large and unpredictable for these households (Vaidyanathan 2016). Cities can use a number of policy levers to increase access to mobility options other than the personal vehicle for low-income communities.

In this category, we scored on

- **Low-income housing around transit** (1 point)
- **Low-income access to high-quality transit** (1 point)
- **Subsidized access to efficient transportation options** (1 point)

We gave up to 1 point to cities that increase transit access for low-income communities by requiring affordable housing in new, transit-oriented developments or by preserving existing affordable housing in transit-served areas.

We used the Center for Neighborhood Technology's AllTransit tool (CNT 2019a) to score cities on low-income households' access to high-quality transit. We based the scoring on the percentage of low-income housing within a half mile of high-quality all-day (7 a.m. to 10 p.m.) transit. CNT provides data on the percentage of households near high-quality transit in $25,000 income increments. We chose to look at the two lowest income categories ($25,000–$49,999, and $25,000 or less) as we thought those were the best approximation of the range in low-income household earnings. Cities with more than 40% of low-income households near high-quality transit earned 0.5 points, while those with more than 55% earned a full point.

Finally, we awarded an additional 1 point to cities that provide subsidized access to efficient transportation options (bike sharing, EV car sharing, transit) through incentives and rebates.

Table 56 summarizes the scoring and table 57 lists scores for clean, efficient transportation for low-income communities.

TABLE 56. SCORING FOR CLEAN, EFFICIENT TRANSPORTATION FOR LOW-INCOME COMMUNITIES

LOW-INCOME HOUSING AROUND TRANSIT	SCORE
City policy encourages low-income housing development around transit facilities.	0.5–1
LOW-INCOME ACCESS TO HIGH-QUALITY TRANSIT*	
More than 55% of low-income households have access to high-quality transit.	1
More than 40% and less than 55% of low-income households have access to high-quality transit.	0.5
SUBSIDIZED ACCESS TO EFFICIENT TRANSPORTATION OPTIONS	
City provides rebates or incentives for low-income residents for efficient transportation options.	1
**Data from CNT 2019a*	

TABLE 57. CLEAN, EFFICIENT TRANSPORTATION FOR LOW-INCOME COMMUNITIES SCORES

CITY	LOW-INCOME HOUSING AROUND TRANSIT (1 PT)	LOW-INCOME ACCESS TO HIGH-QUALITY TRANSIT (1 PT)	SUBSIDIZED ACCESS TO EFFICIENT TRANSPORTATION OPTIONS (1 PT)	TOTAL (3 PTS)
ATLANTA	1	1	1	3
HARTFORD	1	1	1	3
PHILADELPHIA	1	1	1	3
PHOENIX	1	1	1	3
AUSTIN	1	0.5	1	2.5
CHICAGO	1	0.5	1	2.5
HONOLULU	1	0.5	1	2.5
MINNEAPOLIS	1	0.5	1	2.5
NEW YORK	1	0.5	1	2.5
OAKLAND	1	0.5	1	2.5
PITTSBURGH	1	0.5	1	2.5
PORTLAND	1	0.5	1	2.5
RALEIGH	1	0.5	1	2.5
ST. PAUL	1	0.5	1	2.5
BALTIMORE	0	1	1	2
CHULA VISTA	0	1	1	2
DENVER	1	0.5	0.5	2
KANSAS CITY	0	1	1	2
LONG BEACH	1	0.5	0.5	2
LOS ANGELES	0	1	1	2
MILWAUKEE	0	1	1	2
ORLANDO	1	0.5	0.5	2
PROVIDENCE	0	1	1	2
SAN FRANCISCO	1	0	1	2
SAN JOSÉ	1	0	1	2
SEATTLE	1	0	1	2
TAMPA	1	1	0	2
TUCSON	0	1	1	2
WASHINGTON	1	0	1	2

CITY	LOW-INCOME HOUSING AROUND TRANSIT (1 PT)	LOW-INCOME ACCESS TO HIGH-QUALITY TRANSIT (1 PT)	SUBSIDIZED ACCESS TO EFFICIENT TRANSPORTATION OPTIONS (1 PT)	TOTAL (3 PTS)
BOSTON	0	0.5	1	1.5
FORT WORTH	1	0.5	0	1.5
KNOXVILLE	0.5*	1	0	1.5
LAS VEGAS	0.5**	1	0	1.5
RICHMOND	0	0.5	1	1.5
SAN DIEGO	1	0.5	0	1.5
AURORA	0	1	0	1
BRIDGEPORT	1	0	0	1
BUFFALO	0	1	0	1
CINCINNATI	0	1	0	1
CLEVELAND	0	1	0	1
COLUMBUS	0	1	0	1
DALLAS	0.5**	0.5	0	1
DETROIT	0	1	0	1
EL PASO	0	1	0	1
GRAND RAPIDS	0	1	0	1
INDIANAPOLIS	1	0	0	1
LOUISVILLE	1	0	0	1
MEMPHIS	0.5**	0	0.5	1
MESA	0	1	0	1
MIAMI	0	1	0	1
NEWARK	0	1	0	1
RIVERSIDE	1	0	0	1
SACRAMENTO	0	0	1	1
SAN ANTONIO	0	1	0	1
ST. LOUIS	0	1	0	1
CHARLOTTE	0	0.5	0	0.5
HOUSTON	0	0.5	0	0.5
NEW ORLEANS	0	0.5	0	0.5
ROCHESTER	0	0	0.5	0.5

Chapter 6. Transportation Policies

CITY	LOW-INCOME HOUSING AROUND TRANSIT (1 PT)	LOW-INCOME ACCESS TO HIGH-QUALITY TRANSIT (1 PT)	SUBSIDIZED ACCESS TO EFFICIENT TRANSPORTATION OPTIONS (1 PT)	TOTAL (3 PTS)
VIRGINIA BEACH	0	0.5	0	0.5
ALBUQUERQUE	0	0	0	0
BAKERSFIELD	0	0	0	0
BIRMINGHAM	0	0	0	0
HENDERSON	0	0	0	0
JACKSONVILLE	0	0	0	0
MCALLEN	0	0	0	0
NASHVILLE	0	0	0	0
NEW HAVEN	0	0	0	0
OKLAHOMA CITY	0	0	0	0
OMAHA	0	0	0	0
RENO	0	0	0	0
SALT LAKE CITY	0	0	0	0
ST. PETERSBURG	0	0	0	0
TULSA	0	0	0	0
WORCESTER	0	0	0	0

**City has fund for low-income housing in TOD zones. **Low-income housing around transit legislation pending.*

LEADING CITY: TRANSPORTATION POLICIES

Washington. Sustainable DC 2.0 outlines a set of comprehensive targets that include the goal of reducing transportation-related GHGs by 2.3% a year until 2032 and having 50% of commuter trips in all wards by public transit by the same year. The city is also working hard to ensure that low-income households are able to access sustainable transportation options through requirements for the creation of affordable housing near transit services and discounts for a range of mobility options. Washington's 2015 housing code requires that 20% of housing units constructed be set aside as affordable housing if the project is not located close to transit, and 30% if the project is located close to transit.

The city's popular Capital Bikeshare has a Community Partners Program that offers a $5 annual membership rate for qualifying residents in the District, including low-income households. Working in tandem with 28 community partners, the program now has more than 1,300 participants.

Chapter 6. Transportation Policies

San Francisco. San Francisco's efforts to address transportation greenhouse gases and energy consumption span a wide range of strategies. On the location efficiency side, the General Plan Housing Element codifies three levels of density for residential zoning (low, medium, and high). The distribution of these three levels is strongly related to public transit resource availability. Additionally, numerous special area plans have been adopted that generally increase the height and density allowed in transit-rich locations and facilitate expansion and improvement of transit infrastructure and services.

Additionally, in an ordinance signed by the mayor on December 21, 2018, the city eradicated parking minimums citywide for any kind of development. The ordinance went into effect in the beginning of 2019.

Conclusion

Several clear conclusions emerge from our expanded analysis of city clean energy efforts. Our assessment of 24 additional cities has broadened our view of what local governments have been able to achieve in every corner of the country. Cities are showing leadership on clean energy in local government operations, buildings, transportation, energy and water utilities, and community-wide initiatives. By doing so they are reducing GHG emissions, saving households and businesses money, creating jobs, and making their communities more resilient. Energy efficiency and renewables are partners in these efforts, working both individually and in synergy. Cities that engage low-income communities and communities of color in sustainability planning and develop policies for marginalized populations are showing their dedication to a clean energy future for all their residents.

We see striking examples of local leadership on climate action across the country. Boston is leading the way with outstanding clean energy policies. San Francisco and Washington's transportation efforts are a model for the country. Others cities like Seattle and Minneapolis are continuing their efforts to reduce GHG emissions by increasing energy efficiency and ramping up renewable energy generation.

The top cities face competition from several that have redoubled their efforts since we published the 2017 edition. San José built on its past success by enacting the Energy and Water Building Performance Ordinance and nearly broke into the top 10 for the first time. We also identified several cities to watch due to their substantial policy progress since the last edition. Cincinnati, Hartford, and Providence have all improved their rankings and aggressively pursued a suite of clean energy policies. If they continue to make improvements, these cities are poised to move up in future *Scorecard* rankings

At the same time, all cities—even the top five—have room for improvement. Only 17 earned at least half of the available points across the *Scorecard*. While cities can improve in all policy areas, they have the most room for growth in transportation policies. Whereas 13 cities or more earned at least 55% of the available points in most policy areas, only 7 broke that threshold in transportation.

A wide gap remains between the cities at the top of the *Scorecard* rankings and those near the bottom. The challenge going forward for many communities is to prioritize the energy efficiency and renewable energy activities that will have the greatest impact. We provide general recommendations for improving scores in Chapter 1. Each city will need to develop or refine its own plan for advancing efficiency and clean energy based on its own needs and priorities. We hope this *Scorecard* will serve as a guide for doing so.

FUTURE SCORECARDS

We will continue to refine our methodology in future editions of the *City Scorecard* based on feedback and new developments in clean energy policy. We conducted an extensive methodology review with input from experts and sustainability staff prior to the this *Scorecard*. Although many methodology updates made it into this year's edition, we tabled other suggestions that require additional research. We will revisit these possible changes before establishing the methodology for the 2020 *Scorecard*. Overall, we will progressively refine the methodology, metrics, and scoring for future editions as new research and data on local policy implementation from clean energy activities become available. The *Scorecard* will continue to report cities' clean energy progress and keep efficiency and renewables at the forefront of local climate action.

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Appendix A. Methodology and Scoring Updates

We made improvements to the *2019 City Scorecard* methodology in several areas:

- We broadened our approach to capture clean energy efforts beyond energy efficiency. For the first time, the *Scorecard* assesses policies, codes, and activities to encourage renewable energy.
- We increased our emphasis on metrics capturing the extent to which policies like goals for vehicle miles traveled (VMT) and outdoor lighting programs are delivering results.
- We placed more emphasis on equity, expanding metrics that capture the extent to which city actions are equitable & just.

Table A1 summarizes scoring changes by policy areas and metric categories. We describe improvements in the sections that follow the table.

TABLE A1. SCORING BY POLICY AREAS AND THEIR SUBCATEGORIES WITH CHANGES IN SCORING METHODOLOGY

CITY	MAXIMUM SCORE 2019	MAXIMUM SCORE 2017	CHANGE
LOCAL GOVERNMENT OPERATIONS	**9**	**10**	**–1**
Local government goals	4	4.5	–0.5
Procurement and construction policies	2.5	3	–0.5
Asset management	2.5	2.5	0
COMMUNITY-WIDE INITIATIVES	**16**	**12**	**4**
Community-wide goals	9	7.5	1.5
Equity-driven approaches to clean energy planning	1.5	0	1.5
Local clean distributed energy systems	4	2	2
Urban heat island mitigation	1.5	2.5	–1
BUILDINGS POLICIES	**30**	**28**	**2**
Building energy code stringency	8	8	0
Building energy code compliance	5	6	–1
Benchmarking and transparency	5	6	–1
Incentives and financing	3	3*	0
Required energy actions	7	5*	2
Workforce development	2	0	2
ENERGY AND WATER UTILITIES	**15**	**20**	**–5**
Utility efficiency savings	4.5	9	–4.5
Targeted energy efficiency programs	2.5	4	–1.5
Energy data provision	1	2	–1
Renewable energy incentives and efforts	3	0	3

Appendix A. Methodology and Scoring Updates

CITY	MAXIMUM SCORE 2019	MAXIMUM SCORE 2017	CHANGE
Efficiency efforts in water services	4	5	–1
TRANSPORTATION POLICIES	**30**	**30**	**0**
Sustainable transportation strategies	4	4	0
Location efficiency	6	6	0
Mode shift	7	6	1
Public transit	4	5	–1
Efficient vehicles policies	4	3	1
Freight	2	3	–1
Efficient transportation for low-income communities	3	3	0
** In the 2017* Scorecard*, these metric categories were combined as "Requirements and incentives for efficient buildings." We separated them here for ease of comparison to the 2019* Scorecard*.*			

POINT REALLOCATIONS AMONG POLICY AREAS

We revaluated the distribution of points among the chapters during our methodology review. We refined the point distribution among policy areas based on an analysis of local energy consumption as well as stakeholder and expert feedback.

This year we allocated 9 points to policies and actions that increase efficiency in local government operations, a reduction from the 10 points assigned for these activities in the 2017 edition and the 15 points in the 2015 edition. The *2017 City Scorecard* showed that local government–related energy use typically does not exceed 5% of community-wide energy consumption (Ribeiro et al. 2017, 5). By changing the point allocation, we can more closely approximate the sector's share of community-wide energy use while still reflecting the importance local government activities can have as building blocks for broader community efforts.

In this edition, we allocated 15 points to the activities of electric, gas, and water utilities. This is a reduction from the 20 points assigned to this policy area in the *2017 City Scorecard.* Stakeholders, experts, and city staff have had varied views on our assessment of utility activities. Some recommended we remove our assessment of energy utility activities as cities do not always have strong levers to influence utility activities. They argued we should not hold cities accountable for utility activities in scores that are predominantly associated with cities, rather than utilities. Others took the opposite view and recommended we increase the amount of points allocated to utility investments. They argued that utility activities to increase energy efficiency and use more renewable energy are key to helping cities achieve their climate goals. Acknowledging the validity of both viewpoints, we took a middle road approach by halving the number of points allocated to assessing utilities' energy efficiency programs but by also maintaining our assessment of utility activities.[50] Chapter 5 also still assesses the activities of water utilities and includes new metrics on renewable energy.

50 In the *2017 City Scorecard*, we allocated 9 points to assessing energy utility spending on energy efficiency programs and the savings from those programs. In the 2019 *Scorecard*, we allocated 4.5 point to assessing these investments.

Appendix A. Methodology and Scoring Updates

We reallocated points to buildings policies and community-wide initiatives. Buildings policies received 2 more, bringing the total allocation to 30 points. This brought point allocations for both the transportation and buildings policies chapters to 30, the highest of any of the chapters. Because private buildings and transportation are the two largest sources of GHG emissions in communities, it was appropriate to give both chapters the most points among the five policy areas. We allocated 4 more points for community-wide initiatives to account for new metrics related to planning for distributed energy such as community solar and distributed solar, and for expanded metrics on clean energy goals.

DETAILED SCORING CHANGES

Local Government Operations

We reduced the number of points in local government operations from 10 to 9 in this year's edition and removed some metrics. In past editions of the *City Scorecard,* ACEEE credited local governments for employing fleet management software. Fleet management software can help fleet managers collect and analyze data such as driving behavior and vehicle condition. While this can ultimately increase efficiency, this year we focused more on fuel efficiency requirements and performance metrics such as the composition of the vehicle fleet. For example, cities could earn 0.5 points for municipal fleets with above average numbers of hybrid, plug-in hybrid, battery electric, and fuel cell vehicles.

Previously, we credited local governments for having an energy efficiency or life-cycle cost consideration in their procurement policy. We removed this metric from the 2019 *Scorecard* because municipal appliance use is only a small portion of total municipal energy consumption.

Beyond removing metrics, we also revised existing metrics and added new ones. In the local government climate and energy goals category, we included renewable energy targets and removed points for annual reporting. (We created a metric that comprehensively looked at energy data in the community-wide initiatives chapter, as we discuss below.) We also decreased the number of points available for new building construction by 0.5 points. In an effort to shift focus toward performance, we increased scoring thresholds for public lighting and benchmarking. To receive maximum points for public lighting, cities had to have converted 50% or more of streetlights to LEDs. Similarly, we awarded maximum points for benchmarking to cities that had benchmarked 100% of municipal buildings over 5,000 square feet.

We will consider additional improvements in future editions:

- Devise new ways to assess the performance of municipal renewable energy goals since very few cities report data that could be used to assess stringency
- Include more renewable energy metrics in the chapter
- Assess bus fleet electrification goals
- Recognize public disclosure of municipal building benchmarking data

Appendix A. Methodology and Scoring Updates

Community-Wide Initiatives

We increased the total number of points in this area from 12 to 16.

We increased the points allocated to community-wide climate mitigation and energy goals from 7.5 to 9. For the first time, we expanded the category to account for renewable energy goals and the stringency of those goals. We no longer award points for the formal adoption of climate-mitigation goals. We also no longer award points for progress toward energy-related goals, as we generally found the data unavailable.

We added a new metric on equity-driven clean energy planning. It assesses the extent to which climate action, energy, sustainability, or resilience planning achieves environmental justice and social equity outcomes.

We added a new metric on the availability of comprehensive energy data, assessing the extent to which cities track and release community-wide energy data.

We broadened the clean distributed energy resources category to include not only district energy systems and CHP but also on-site renewable energy and community solar systems. We increased the number of points for this category from 2 to 4. We also revised the metric so that it focuses solely on formal policies, rules, or agreements that result in the creation of distributed energy systems.

We decreased the number of points a city may earn for urban heat island mitigation policies from 2 to 1 while expanding eligible policies to include private tree planting programs that account for energy savings and municipal procurement policies.

We will consider additional improvements in future editions:

- Refine our approach to accounting for the share of electricity generated from renewable energy sources
- Examine ways to better account for state limitations on the deployment of distributed energy resources
- Include additional distributed energy resources
- Investigate methods for assessing city performance in mitigating the urban heat island effect

Buildings Policies

We increased the total number of points in this area from 28 to 30 points.

In past scorecards, we assessed building code stringency based on a qualitative assessment of the building code adopted by the city or state. In the 2019 *Scorecard*, we made our assessment of energy code stringency and adoption more robust by using NBI's Zero Energy Performance Index (zEPI) scores. For home-rule cities, we decreased the maximum number of points a city may earn for residential and commercial code stringency and adoption from 4 points per building sector to 3 points. For non-home-rule cities, we increased the maximum number of points a city may earn for residential and commercial code stringency and adoption from 2 points per building sector to 2.5 points. We decreased the points a city could earn for code advocacy from 2 to 1.

Appendix A. Methodology and Scoring Updates

For the first time, we awarded 1 point for solar-readiness ordinances and 1 point for EV-ready ordinances.

We decreased the number of points a city may earn for energy code compliance and enforcement from 6 to 5; the category no longer considers required training for building code officials.

We decreased the number of points for benchmarking and transparency policies from 6 to 5. Rather than focusing only on adoption of the policy and pursuit of best practices, we revised the metric to quantitatively assess the percentage of commercial and multifamily buildings covered by the policy. We also added a half-point bonus for cities that achieved compliance rates greater than 90%. Finally, we included 1 point for single-family home benchmarking policies.

We reorganized the metric categories from past scorecards assessing incentives and requirements, splitting the former requirement and incentives for efficient buildings metric category into two sets, namely incentives and financing and required energy actions. For the first time, incentives and financing allowed cities to earn points for renewable energy incentives. Required energy actions created a menu of potential actions that cities can require of building owners and gave cities points based on the pursuit of those requirements.

We created a new metric to assess energy efficiency and renewable energy workforce development programs administered by, or in partnership with, cities.

We will consider additional improvements in future editions:

- Revisit scoring for energy code compliance to better distinguish leading cities from those implementing commonplace strategies, particularly with regard to the full-time staff metric and performance testing metric
- Revisit the benchmarking and disclosure scoring methodology to include a qualitative metric that accounts for decreases in building stock energy use intensity
- Create a dedicated metric for voluntary initiatives like downtown energy challenges
- Refine our assessment of city workforce development initiatives to recognize the most effective practices

Energy and Water Utilities

In this edition, we allocated 15 points to the activities of electric, gas, and water utilities, a reduction from the 20 points assigned to this policy area in the *2017 City Scorecard*. We made this change based on feedback received on previous editions.

We added 3 points to the chapter assessing the renewable energy efforts of utilities, allocating 2 points to utilities' renewable energy incentives and 1 point to city efforts to decarbonize the electric grid.

We halved the number of points allocated to assessing utilities' energy efficiency programs. We only focused on the savings generated from utility energy efficiency programs; we no longer assessed utility spending on these programs.

We reduced the number of points dedicated to assessing low-income and multifamily energy efficiency programs from 4 to 2.5.

Appendix A. Methodology and Scoring Updates

We reduced the number of points for energy efficiency in water services from 5 to 4. We added an element to the water savings strategy metric that assessed if cities or local water utilities were on track to achieve or have already achieved water savings goals. We removed a metric on green infrastructure planning, which was similar to the urban heat island mitigation metric scored in "community-wide initiatives."

We will consider additional improvements in future editions:

- Expand our assessment of activities that spur renewable energy generation
- Explore new equity metrics that capture investments for low-income communities and communities of color
- Make low-income and multifamily program metrics more outcome-based or assess utility program spending on these programs
- Consider ways of incorporating water affordability

Transportation Policies

The total number of points allocated to transportation policies is the same as the previous *Scorecard*, but we made several improvements.

Under the sustainable transportation plans category, we scored cities based on the stringency of their transportation GHG or VMT reduction targets, as well as the data available for tracking progress toward these goals.

Similarly, we assessed cities based on the data available for tracking progress toward any mode shift targets.

In the past, a city that operated or supported a car sharing program earned 1 point, while a city with a program in the planning stages earned 0.5 points. In the 2019 *Scorecard*, we revised the metric and recognized cities with a formal policy providing dedicated on-street and off-street parking for car sharing use.

In the past, a city with a bike sharing program earned 1 point if the program was operational and 0.5 points if it was under development. This year we awarded points based on the number of docked bike-share bikes per 100,000 people.

We scored cities on their transit service using the Center for Neighborhood Technology's (CNT) Transit Performance Score, which assesses transit connectivity, access to jobs, and frequency of service. In the past, we based scoring on CNT's Transit Connectivity Index, which measures transit service levels based on the number of bus routes and train stations within walking distance of households and scaled by frequency of service.

In the efficient vehicles category, we changed the way we assessed the penetration of EV charging stations in cities. In the past, we awarded points to cities based on the overall number of stations. This year, we scaled the scoring based on population.

We added a metric in the efficient vehicles category and scored cities based on whether they had incentives or requirements for the installation of public or private EV charging infrastructure powered by renewable energy.

Appendix A. Methodology and Scoring Updates

We revised the way we scored cities on clean, efficient transportation for low-income communities. In the past, cities earned points for each requirement or incentive that encouraged the creation of affordable housing in transit-served areas. This year, we scored on the following three areas: 1) low-income housing around transit, 2) low-income access to high-quality transit, and 3) subsidized access to efficient transportation options for income-qualified households.

We will consider additional improvements in future editions:

- Include dockless biking in bike sharing metrics
- Account for more microtransit options (e.g., scooters)
- Address pricing-based transportation policies (e.g., congestion pricing)

Appendix B. Categorization of Metrics by Various Factors

Table B1 categorizes each metric based on the following factors:

- **What type of clean energy policy does it assess?**
- **Does it assess policy or performance?**
- **Does it consider equity?**
- **Is it new?**

DEFINITIONS

Energy efficiency. Policy or activity primarily designed to save energy.

Renewable energy. Policy or activity primarily designed to increase the use of renewable energy.

Climate change mitigation. Policy or activity that reduces GHG emissions but does not prescribe whether energy efficiency or renewable energy should be used to achieve emissions reductions.

Policy. Metric assesses the adoption of a policy, program, or plan.

Performance. Metric assesses the results or progress of an adopted policy, program, or plan.

Equity considerations. Metric evaluates the extent to which city actions engage with or invest in low-income communities and communities of color.

New. Metric is new to the 2019 edition of the *City Scorecard* or has changed significantly since the previous edition.

Existing. Metric has not significantly changed since the previous edition.

Appendix B. Categorization of Metrics by Various Factors

TABLE B1. CATEGORIZATION OF METRICS

METRIC	ENERGY EFFICIENCY, RENEWABLE ENERGY, OR CLIMATE CHANGE MITIGATION	POLICY OR PERFORMANCE	EQUITY CONSIDERATIONS	NEW OR EXISTING	MAXIMUM POINTS
LOCAL GOVERNMENT OPERATIONS (9 PTS)					
Climate change mitigation goal stringency	CLIMATE CHANGE MITIGATION	POLICY		EXISTING	1
Progress toward climate change mitigation goals	CLIMATE CHANGE MITIGATION	PERFORMANCE		EXISTING	1
Existence of energy savings and generation goals	ENERGY EFFICIENCY, RENEWABLE ENERGY	POLICY		EXISTING	1
Energy savings goal stringency	ENERGY EFFICIENCY	POLICY		EXISTING	1
Fleet procurement policies	ENERGY EFFICIENCY	POLICY		EXISTING	0.5
Fleet composition	ENERGY EFFICIENCY	PERFORMANCE		NEW	0.5
Efficient public lighting	ENERGY EFFICIENCY	POLICY, PERFORMANCE*		NEW*	1
Green building requirements	ENERGY EFFICIENCY, RENEWABLE ENERGY	POLICY		EXISTING	0.5
Building energy benchmarking	ENERGY EFFICIENCY	PERFORMANCE		EXISTING	1
Municipal building retrofit strategies	ENERGY EFFICIENCY	POLICY, PERFORMANCE		EXISTING	1
Public workforce commuting	ENERGY EFFICIENCY	POLICY		EXISTING	0.5
COMMUNITY-WIDE (16 POINTS)					
Stringency of climate change mitigation goal	CLIMATE CHANGE MITIGATION	POLICY		EXISTING	2
Progress toward climate change mitigation goal	CLIMATE CHANGE MITIGATION	PERFORMANCE		EXISTING	2
Existence of energy savings goals	ENERGY EFFICIENCY	POLICY		NEW	1
Existence of renewable electricity goals	RENEWABLE ENERGY	POLICY		NEW	1
Stringency of energy savings goals	ENERGY EFFICIENCY	POLICY		EXISTING	1
Stringency of renewable electricity goals	RENEWABLE ENERGY	POLICY		NEW	1
Comprehensive energy data	NONE†	POLICY		NEW	1
Equity-driven approaches to climate and energy planning, implementation, or evaluation	CLIMATE CHANGE MITIGATION	POLICY		NEW	1.5

Appendix B. Categorization of Metrics by Various Factors

METRIC	ENERGY EFFICIENCY, RENEWABLE ENERGY, OR CLIMATE CHANGE MITIGATION	POLICY OR PERFORMANCE	EQUITY CONSIDERATIONS	NEW OR EXISTING	MAXIMUM POINTS
Clean distributed energy systems	ENERGY EFFICIENCY, RENEWABLE ENERGY	POLICY		NEW	4
Urban heat island mitigation goal	ENERGY EFFICIENCY	POLICY		EXISTING	0.5
Urban heat island mitigation policies and programs	ENERGY EFFICIENCY	POLICY		EXISTING	1
BUILDINGS POLICIES (30 POINTS)					
Residential code stringency	ENERGY EFFICIENCY	POLICY		EXISTING	3
Commercial code stringency	ENERGY EFFICIENCY	POLICY		EXISTING	3
Solar ready requirements	RENEWABLE ENERGY	POLICY		NEW	1
EV ready requirements	ENERGY EFFICIENCY	POLICY		NEW	1
City staffing for building energy code compliance	ENERGY EFFICIENCY	POLICY		EXISTING	1
Energy code compliance strategies	ENERGY EFFICIENCY	POLICY		EXISTING	2
Up-front support for building energy code compliance	ENERGY EFFICIENCY	POLICY		EXISTING	2
Commercial benchmarking policy	ENERGY EFFICIENCY	POLICY, PERFORMANCE**		EXISTING	2
Single-family benchmarking policy	ENERGY EFFICIENCY	POLICY		NEW	1
Multifamily benchmarking policy	ENERGY EFFICIENCY	POLICY, PERFORMANCE**		EXISTING	2
Incentives and financing for efficient buildings and solar generation	ENERGY EFFICIENCY, RENEWABLE ENERGY	POLICY		NEW	3
Required energy actions	ENERGY EFFICIENCY	POLICY		NEW	7
Energy efficiency workforce development	ENERGY EFFICIENCY	POLICY		NEW	1
Renewable energy workforce development	RENEWABLE ENERGY	POLICY		NEW	1
ENERGY AND WATER UTILITIES (15 POINTS)					
Electric and natural gas efficiency savings	ENERGY EFFICIENCY	PERFORMANCE		EXISTING	4.5
Low-income energy efficiency programs	ENERGY EFFICIENCY	POLICY		EXISTING	1.5
Multifamily energy efficiency programs	ENERGY EFFICIENCY	POLICY		EXISTING	1

Appendix B. Categorization of Metrics by Various Factors

METRIC	ENERGY EFFICIENCY, RENEWABLE ENERGY, OR CLIMATE CHANGE MITIGATION	POLICY OR PERFORMANCE	EQUITY CONSIDERATIONS	NEW OR EXISTING	MAXIMUM POINTS
Provision of energy data by utilities	ENERGY EFFICIENCY	POLICY		EXISTING	1
Renewable energy incentives	RENEWABLE ENERGY	PERFORMANCE		NEW	2
Efforts to decarbonize utility electric grid	RENEWABLE ENERGY	POLICY		NEW	1
Joint water–energy programs	ENERGY EFFICIENCY	POLICY		EXISTING	1
Water savings strategy	ENERGY EFFICIENCY	POLICY, PERFORMANCE		NEW	1
Water utility energy efficiency programs	ENERGY EFFICIENCY	POLICY		EXISTING	1
Water utility self-generation	ENERGY EFFICIENCY, RENEWABLE ENERGY	POLICY		EXISTING	1
TRANSPORTATION (30 POINTS)					
Sustainable transportation plan	CLIMATE CHANGE MITIGATION	POLICY		EXISTING	1
Codified VMT/GHG targets	CLIMATE CHANGE MITIGATION	POLICY		EXISTING	1
Stringency of VMT/GHG targets	CLIMATE CHANGE MITIGATION	POLICY		NEW	1
Progress achieved toward VMT/GHG goal	CLIMATE CHANGE MITIGATION	PERFORMANCE		NEW	1
Location-efficient zoning codes	ENERGY EFFICIENCY	POLICY		EXISTING	2
Parking requirements	ENERGY EFFICIENCY	POLICY		EXISTING	2
Location efficiency incentives and disclosure	ENERGY EFFICIENCY	POLICY		EXISTING	2
Mode shift targets	ENERGY EFFICIENCY	POLICY		EXISTING	1
Progress achieved toward mode shift target	ENERGY EFFICIENCY	PERFORMANCE		NEW	1
Complete streets	ENERGY EFFICIENCY	POLICY		EXISTING	2
Car sharing	ENERGY EFFICIENCY	POLICY		NEW	1
Bike-share bikes per 100,000 people	ENERGY EFFICIENCY	PERFORMANCE		NEW	2
Transit funding	ENERGY EFFICIENCY	PERFORMANCE		EXISTING	2
Access to transit	ENERGY EFFICIENCY	PERFORMANCE		EXISTING	2
Efficiency vehicle purchase incentives	ENERGY EFFICIENCY	POLICY		EXISTING	1
Vehicle infrastructure incentives	ENERGY EFFICIENCY	POLICY		EXISTING	1

Appendix B. Categorization of Metrics by Various Factors

METRIC	ENERGY EFFICIENCY, RENEWABLE ENERGY, OR CLIMATE CHANGE MITIGATION	POLICY OR PERFORMANCE	EQUITY CONSIDERATIONS	NEW OR EXISTING	MAXIMUM POINTS
EV charging locations	ENERGY EFFICIENCY	PERFORMANCE		EXISTING	1
Renewable charging incentives	RENEWABLE ENERGY	POLICY		NEW	1
Sustainable freight plans	ENERGY EFFICIENCY	POLICY		EXISTING	2
Low-income housing around transit	ENERGY EFFICIENCY	PERFORMANCE		NEW	1
Low-income access to high-quality transit	ENERGY EFFICIENCY	PERFORMANCE		NEW	1
Subsidized access to efficient transportation options	ENERGY EFFICIENCY	POLICY		EXISTING	1

**Although we scored on public lighting in the* 2017 City Scorecard, *the metric went through a major update. Now we score cities simultaneously on the adoption of a Model Lighting Ordinance or similar city-specific policy, and the percentage of public streetlights converted to LEDs. **Most of the points associated with these metrics were associated with assessing the benchmarking policies; 0.5 points were available across both metrics to score cities on compliance rates. †Listed as "none" since the metric is not linked to a specific energy efficiency or renewable energy intervention, although energy data reporting is vital to removing information barriers to both efficiency and renewables.*

Appendix C. Data Request Respondents

TABLE C1. DATA REQUEST RESPONDENTS BY CITY

CITY	PRIMARY LOCAL GOVERNMENT DATA REQUEST RESPONDENT	ELECTRIC UTILITY DATA REQUEST RESPONDENT	NATURAL GAS UTILITY DATA REQUEST RESPONDENT
ALBUQUERQUE	Fabian Macias, Air Quality Official, Environmental Health Department		Dru Jones, Program Developer, New Mexico Gas
ATLANTA	Kate Taber, Clean Energy Programs Associate, Mayor's Office of Resilience[a,c]	Jeff Smith, Energy Efficiency Strategy and Implementation Manager, Georgia Power[c]	
AURORA		Aaron Tinjum, Senior Regulatory Analyst, Xcel Energy (Northern States Power)	Xcel Energy also provides natural gas services to Aurora
AUSTIN	Cavan Merski, Senior Business Systems Analyst, Office of Sustainability	Zach Baumer, Climate Program Manager, Austin Energy	Hayley Cunningham, Energy Efficiency Programs Manager, Texas Gas Service
BAKERSFIELD		Lucy Morris, Policy Analyst, PG&E	Erin Brooks, Customer Programs Policy and Support Manager, SoCal Gas
BALTIMORE	Anne Draddy, Sustainability Coordinator, Office of Sustainability	Sheldon Switzer, Manager of Measurement and Verification, BGE	BGE also provides natural gas services to Baltimore
BIRMINGHAM	Nina Morgan, Intern, University of Alabama at Birmingham Sustainability[a]		
BOSTON	Adam Jacobs, Energy Manager	Michael Goldman, Energy Efficiency Program Evaluation Manager, Eversource	Steve Menges, Customer Energy Management Senior Analyst, National Grid (Boston Gas & Colonial Gas)
BRIDGEPORT	Jacob Robinson, City Planner, Office of Planning and Economic Development	Sheri Borrelli, Senior Business Development Professional, United Illuminating Co.	Brian Sullivan, CBS Technical Support, Southern Connecticut Gas
BUFFALO	Kelley Mosher, RENEW Project Assistant, University of Buffalo Ed Righter, RENEW Fellow, University of Buffalo	Steve Bonanno, National Grid NY[b]	
CHARLOTTE	Katie Riddle, Sustainability Analyst[b,c]	Daniel Maddox, Senior Program Performance Analyst, Duke Energy	David Nestor, Piedmont Natural Gas[b]
CHICAGO	Amy Jewel, Senior City Advisor, City Energy Project Chicago	Rebecca McNish, Energy Efficiency Analyst, ComEd	Christina Pagnusat, Energy Efficiency and Business Customer Engagement, Peoples Gas
CHULA VISTA	Coleen Wisniewski, Environmental Sustainability Manager	Sheila Lee, Customer Programs Policy, San Diego Gas & Electric	San Diego Gas & Electric also provides natural gas services to Chula Vista
CINCINNATI	Michael Forrester, Energy Manager, Office of Environment and Sustainability	Daniel Maddox, Program Performance Analyst, Duke Energy	Duke Energy Ohio also provides natural gas services to Cincinnati
CLEVELAND	Matt Gray, Chief of Sustainability, Mayor's Office of Sustainability		Vicki Friscic, Director, Regulatory and Pricing, Dominion Energy Ohio

Appendix C. Data Request Respondents

CITY	PRIMARY LOCAL GOVERNMENT DATA REQUEST RESPONDENT	ELECTRIC UTILITY DATA REQUEST RESPONDENT	NATURAL GAS UTILITY DATA REQUEST RESPONDENT
COLUMBUS	Jeffrey Ortega, Assistant Director/ Sustainable Columbus Coordinator, Department of Public Utilities Alana Shockey, Assistant Director of Sustainability, Department of Public Utilities	Brian Billing, Compliance Manager, American Electric Power (Ohio Power)	Sarah Poe, Team Leader, Evaluation Demand Side Management, Columbia Gas of Ohio
DALLAS	Susan Alvarez, Assistant Director, Environmental Quality and Sustainability	Michael Stockard, Energy Efficiency Director, Oncor	Christopher Felan, Vice President of Regulatory Affairs, ATMOS Energy
DENVER	Elizabeth Babcock, Climate Action Team Manager, Department of Public Health and Environment	Aaron Tinjum, Senior Regulatory Analyst, Xcel Energy (Northern States Power)	Xcel Energy also provides natural gas services to Denver
DETROIT	Joel Howrani Heeres, Director, Office of Sustainability	Manish Rukadikar, Energy Waste Reduction Strategy and EM&V, DTE Energy	DTE also provides natural gas services to Detroit
EL PASO	Fernando Berjano, Sustainability Coordinator, Service, Commuting and Human Development	Desmond Machuca, Energy Efficiency Program Coordinator, El Paso Electric	Hayley Cunningham, Energy Efficiency Programs Manager, Texas Gas Service
FORT WORTH	Dana Burghdoff, Deputy Planning Director	Michael Stockard, Director of Energy Efficiency, ONCOR	Christopher Felan, Vice President of Regulatory Affairs, ATMOS Energy
GRAND RAPIDS	Alison Sutter, Sustainability Manager, Executive Office	Ted Ykimoff, Director of Energy Waste Reduction Programs, Consumers Energy Co.	Manish Rukadikar, Energy Waste Reduction Strategy and EM&V, DTE Energy
HARTFORD	Shubhada Kambli, Sustainability Coordinator	Stephen J. Bruno, Manager, Eversource (Connecticut Light & Power)	Sheri Borrelli, Senior Business Development Professional, Connecticut Natural Gas
HENDERSON		Edgar Patino, NV Energy[b]	Brooks Congdon, Regulation and Energy Efficiency Manager, Southwest Gas
HONOLULU	Rocky Mould, Energy Program Manager, Office of Climate Change, Sustainability and Resiliency	Brian Kealoha, Executive Director, Hawai'i Energy	
HOUSTON	Larissa Williams, Energy Manager, Administration and Regulatory Affairs Department	Cheryl Bowman, Energy Efficiency Implementation Manager, CenterPoint Energy[b]	CenterPoint Energy also provides natural gas services to Houston
INDIANAPOLIS	Katie Robinson, Director, Office of Sustainability	Jake Allen, DSM Program Development Manager, Indianapolis Power and Light	Brett McClellan, Energy Efficiency Program Coordinator, Citizens Energy Group
JACKSONVILLE		Donald Wucker, Research Project Consultant, JEA	Erika Perez, Regulatory Rate Analyst Associate, TECO Peoples Gas

Appendix C. Data Request Respondents

CITY	PRIMARY LOCAL GOVERNMENT DATA REQUEST RESPONDENT	ELECTRIC UTILITY DATA REQUEST RESPONDENT	NATURAL GAS UTILITY DATA REQUEST RESPONDENT
KANSAS CITY	Jerry Shechter, Sustainability Coordinator, Office of the City Manager, Office of Environmental Quality	Chris DeLaTorre, Senior Product Manager Energy Efficiency, Kansas City Power & Light[a]	Shaylyn Dean, Energy Efficiency Program Manager, Spire Missouri
KNOXVILLE	Erin Gill, Sustainability Director, Office of Sustainability	Liz Hannah, Executive Services and Environmental Stewardship Manger, Knoxville Utilities Board	Knoxville Utilities Board also provides natural gas services to Knoxville
LAS VEGAS	Marco N. Velotta, Long Range Planning, Office of Sustainability	Edgar Patino, NV Energy[b]	Brooks Congdon, Regulation and Energy Efficiency Manager, Southwest Gas
LONG BEACH	Kristyn Payne, Sustainability Analyst Office of Sustainability	Jose Monterroso, Program/Project Analyst, Southern California Edison	Dennis Burke, Administrative Analyst, Long Beach Energy
LOS ANGELES	Michael Samulon, Senior Sustainability Policy Analyst, Budget and Innovation Team	Craig Tranby, Environmental Supervisor, LADWP	Erin Brooks, Customer Programs Policy and Support Manager, SoCal Gas
LOUISVILLE	Maria Koetter, Director of Sustainability, Office of Sustainability		
MCALLEN		Pam Osterloh, American Electric Power (TX)	Hayley Cunningham, Energy Efficiency Programs Manager, Texas Gas Service
MEMPHIS	Vivian Ekstrom, Planner, Sustainability Office	Becky Williamson, Strategic Planning and Innovation, Memphis Light, Gas, & Water	Memphis Light, Gas, & Water also provides natural gas services to Memphis
MESA			Brooks Congdon, Regulation and Energy Efficiency Manager, Southwest Gas
MIAMI	Melissa Hew, Programs Manager, Office of Resilience and Sustainability		
MILWAUKEE	Erick Shambarger, Director, Office of Environmental Sustainability[b]	Missie Muth, Services Manager, We Energies	We Energies also administers natural gas efficiency programs for Milwaukee
MINNEAPOLIS	Luke Hollenkamp, Sustainability Program Coordinator[c]	Aaron Tinjum, Senior Regulatory Analyst, Xcel Energy (Northern States Power)	Emma Schoppe, Local Energy Policy Manager, CenterPoint Energy
NASHVILLE	Laurel Creech, Assistant Director, Division of Sustainability, Metro Nashville Department of General Services	Anthony Richman, Energy Services Engineering Manager, Nashville Electric Service[a]	David Nestor, Piedmont Natural Gas[b]
NEW HAVEN		Sheri Borrelli, Senior Business Development Professional, United Illuminating Co.	Brian Sullivan, CBS Technical Support, Southern Connecticut Gas
NEW ORLEANS	Camille Pollan, Energy Efficiency Program Manager, Office of Resilience and Sustainability	Derek Mills, Demand Side Management Manager, Entergy New Orleans	Entergy New Orleans also provides natural gas services to New Orleans

Appendix C. Data Request Respondents

CITY	PRIMARY LOCAL GOVERNMENT DATA REQUEST RESPONDENT	ELECTRIC UTILITY DATA REQUEST RESPONDENT	NATURAL GAS UTILITY DATA REQUEST RESPONDENT
NEW YORK	Nicole Joseph, Clean Energy Communities Coordinator, NYC Mayor's Office of Sustainability[c]	Alex Buell, Energy Efficiency and Demand Management Department Manager, ConEdison Robert Bergen, Project Manager, NYSERDA	Stephen Bonanno, National Grid (Brooklyn Union Gas Co.)[b] Robert Bergen, Project Manager, NYSERDA
NEWARK		Tim Fagan, Evaluation Manager, PSE&G Sara Bluhm Gibson, Division of Clean Energy Director, NJ Office of Clean Energy	PSE&G also provides natural gas services to Newark
OAKLAND	Daniel Hamilton, Sustainability Program Manager	Lucy Morris, Policy Analyst, PG&E	PG&E also provides natural gas services to Oakland
OKLAHOMA CITY	T. O. Bowman, Sustainability Manager, Office of Sustainability	Randy Warren, Products and Programs Manager Oklahoma Gas & Electric	Teri Green, Energy Efficiency Programs Manager, Oklahoma Natural Gas
OMAHA		Heather Siebken, Director of Product Development and Marketing, Omaha Public Power District	Sarah Jones, Utilization Engineer, Metropolitan Utilities District of Omaha
ORLANDO	Chris Castro, Director, Office of Sustainability and Resilience	Melissa Lucas, Sustainability and Development Services Manager, Orlando Utilities Commission	Erika Perez, Regulatory Rate Analyst Associate, TECO Peoples Gas
PHILADELPHIA	Richard Freeh, Senior Program Manager, Office of Sustainability	Marina Geneles, Senior Marketing Analyst, PECO	Jon David, Customer Programs Director, Philadelphia Gas Work
PHOENIX	Mark Hartman, Chief Sustainability Officer	Roger Krouse, Senior Account Executive, Arizona Public Service	Brooks Congdon, Manager, Energy Efficiency, Southwest Gas
PITTSBURGH	Sarah Yeager, Climate and Resilience Analyst, Office of Sustainability	Krysia Kubiak, State Regulatory Strategy and Government Affairs Director, Duquesne Light Co.	
PORTLAND	Michele Crim, Chief Sustainability Officer, Bureau of Planning and Sustainability	Peter Schaffer, Planning Project Manager, Energy Trust of Oregon, Portland General Electric[c]	Peter Schaffer, Planning Project Manager, Energy Trust of Oregon, NW Natural[c]
PROVIDENCE	Leah Bamberger, Director of Sustainability, Office of Sustainability	Matthew Ray, Customer Energy Management Lead Analyst, National Grid (Narragansett Electric)	National Grid (Narragansett Electric) also administers natural gas efficiency programs to Providence
RALEIGH	Cindy Holmes, Assistant Sustainability Manager, Office of Sustainability	Daniel Maddox, Senior Program Performance Analyst, Duke Energy	
RENO	Lynne Barker, Sustainability Manager, City Manager's Office	Edgar Patino, NV Energy[b]	NV Energy also provides natural gas services to Reno
RICHMOND	Alicia Zatcoff, Sustainability Manager	Michael Hubbard, Energy Conservation Manager, Dominion Virginia Power	Michael Kearns, Energy Services Manager, Richmond Department of Public Utilities

Appendix C. Data Request Respondents

CITY	PRIMARY LOCAL GOVERNMENT DATA REQUEST RESPONDENT	ELECTRIC UTILITY DATA REQUEST RESPONDENT	NATURAL GAS UTILITY DATA REQUEST RESPONDENT
RIVERSIDE	Tracy Sato, Utilities Integration Manager, Public Utilities – Resource Operations and Strategic Analytics, City of Riverside Public Service	Tracy Sato, Utilities Integration Manager, Public Utilities – Resource Operations and Strategic Analytics, City of Riverside Public Service	Erin Brooks, Customer Programs Policy and Support Manager, SoCal Gas
ROCHESTER	Shalini Beath, Energy and Sustainability Analyst, Department of Environment Services	Veronica Dasher, Community Outreach and Development Manager, Rochester Gas & Electric	Rochester Gas & Electric also provides natural gas services to Rochester
SACRAMENTO	Jennifer Venema, Sustainability Manager, Department of Public Works	Jamie Cutlip, Local Government Affairs Representative, SMUD	Lucy Morris, Policy Analyst, PG&E
SALT LAKE CITY	Peter Nelson, Sustainability Coordinator, Division of Sustainability and the Environment	Michael Snow, Regulatory Affairs and Procurement Manager, Rocky Mountain Power (PacifiCorp)	
SAN ANTONIO	Douglas Melnick, Chief Sustainability Officer, Office of Sustainability	Justin Chamberlain, Manager of Energy Efficiency and Demand Response, CPS Energy[b]	CPS Energy also provides natural gas services to San Antonio
SAN DIEGO	Aaron Lu, Program Coordinator, Environmental Services Department	Sheila Lee, Customer Programs Policy, San Diego Gas & Electric	San Diego Gas & Electric also provides natural gas services to San Diego
SAN FRANCISCO	Barry Hooper, Green Built Environment Team, Department of the Environment	Lucy Morris, Policy Analyst, PG&E	PG&E also provides natural gas services to San Francisco
SAN JOSE	Phil Cornish, Sustainability and Compliance Manager, City of San Jose Environmental Services Department	Lucy Morris, Policy Analyst, PG&E	PG&E also provides natural gas services to San José
SEATTLE	Christie Bunch, Climate and Energy Advisor, Office of Sustainability and Environment	Jennifer Finnigan, Energy Planning Supervisor, Seattle City Light	Jim Perich-Anderson, Senior Market Analyst, Puget Sound Energy
ST. LOUIS	Catherine Werner, Sustainability Director, City of St. Louis Mayor's Office	Bill Davis, Director of Energy Efficiency and Renewables, Ameren UE (Union Electric)	Shaylyn Dean, Energy Efficiency Program Manager, Spire Missouri
ST. PAUL	Russ Stark, Chief Resilience Officer, Mayor's Office	Aaron Tinjum, Senior Regulatory Analyst, Xcel Energy (Northern States Power)	Xcel Energy also provides natural gas services to St. Paul
ST. PETERSBURG	Sharon Wright, Sustainability and Resiliency Director, Mayor's Office[b]	Daniel Maddox, Program Performance Manager, Duke Energy Florida	Erika Perez, Regulatory Rate Analyst Associate, TECO Peoples Gas
TAMPA	Thomas Snelling, Director, Planning and Development	Erika Perez, Regulatory Rate Analyst Associate, Tampa Electric Co.	Erika Perez, Regulatory Rate Analyst Associate, TECO Peoples Gas
TUCSON	Claire Kaufman, Planning, Transportation, and Sustainability Policy Advisor, Office of the Mayor[a]		Brooks Congdon, Regulation and Energy Efficiency Manager, Southwest Gas
TULSA		Jeff Brown, Energy Efficiency and Consumer Programs Manager, Public Service Co. of Oklahoma	Teri Green, Energy Efficiency Programs, Oklahoma Natural Gas

Appendix C. Data Request Respondents

CITY	PRIMARY LOCAL GOVERNMENT DATA REQUEST RESPONDENT	ELECTRIC UTILITY DATA REQUEST RESPONDENT	NATURAL GAS UTILITY DATA REQUEST RESPONDENT
VIRGINIA BEACH	Lori J. Herrick, Energy Management Administrator	Michael Hubbard, Energy Conservation Manager, Dominion Virginia Power	Tyler Lake, State Regulatory Affairs, Virginia Natural Gas (AGL Resources)
WASHINGTON	Kate Johnson, Green Building and Climate Branch Chief, Department of Energy and Environment	Benjamin Plotzker, Technical Energy Analyst, DCSEU	DCSEU also administers natural gas efficiency programs to Washington
WORCESTER	Luba Zhaurova, Sustainability Project Manager	Steve Menges, Customer Energy Management Senior Analyst, National Grid (MA)	Michael Goldman, Energy Efficiency Program Evaluation Manager, Eversource (MA)

[a] Contact submitted data during external review period. [b] Contact did not complete data request but submitted brief comments in response to external review draft. [c] Primary contact changed during report process. Name listed is latest contact.

Appendix D. Top-Scoring Cities by Factor

The *2019 City Scorecard* expands beyond our traditional focus on energy efficiency, including a new focus on renewable energy and an expanded focus on equity. Below we provide total city scores for three topics or factors that cut across chapters in the report, namely energy efficiency policy, renewable energy policy, and equity. Tables D1 and D3 provide more detail on energy efficiency policy and equity-driven clean energy planning and policies for the leading cities. Table D2 lists top-scoring cities for renewable energy policy. Our scoring on renewable energy policies in this edition was meant to be a starting point rather than a comprehensive assessment. As such, the cities in table D2 should be interpreted as those with notable practices to share, as opposed to a definitive assessment of city performance for renewable energy policy.

Appendix D. Top-Scoring Cities by Factor

TABLE D1. CITIES BY ENERGY EFFICIENCY TOTAL SCORE

CITY	TOTAL ENERGY EFFICIENCY SCORE (78 PTS)
BOSTON	62
NEW YORK	59.5
SAN FRANCISCO	57.5
MINNEAPOLIS	54.5
DENVER	53.5
WASHINGTON	53.5
SEATTLE	53
SAN JOSÉ	51.5
LOS ANGELES	51
PORTLAND	51
AUSTIN	49.5
OAKLAND	49.5
CHICAGO	46.5
SAN DIEGO	45
LONG BEACH	43.5
ORLANDO	41
PHOENIX	41
HARTFORD	39.5
CHULA VISTA	38
PHILADELPHIA	37.5
PITTSBURGH	37.5
SACRAMENTO	37.5
KANSAS CITY	37
ATLANTA	35.5
RIVERSIDE	35
COLUMBUS	34.5
PROVIDENCE	34

CITY	TOTAL ENERGY EFFICIENCY SCORE (78 PTS)
BALTIMORE	33
ST. PAUL	30.5
SALT LAKE CITY	29
LAS VEGAS	28.5
SAN ANTONIO	28.5
CLEVELAND	27.5
HOUSTON	27.5
DALLAS	27
GRAND RAPIDS	27
BUFFALO	26
ST. LOUIS	25.5
CINCINNATI	24.5
FORT WORTH	24
RALEIGH	24
HONOLULU	23.5
KNOXVILLE	23.5
MILWAUKEE	23.5
BRIDGEPORT	22.5
RICHMOND	22
ST. PETERSBURG	21.5
TUCSON	21
ALBUQUERQUE	20.5
BAKERSFIELD	20.5
MIAMI	20.5
WORCESTER	20
INDIANAPOLIS	19.5
NEW ORLEANS	19.5

CITY	TOTAL ENERGY EFFICIENCY SCORE (78 PTS)
ROCHESTER	19.5
EL PASO	18.5
NASHVILLE	18.5
TAMPA	18.5
MEMPHIS	18
DETROIT	17
LOUISVILLE	17
NEW HAVEN	16
AURORA	15.5
RENO	15.5
VIRGINIA BEACH	15.5
JACKSONVILLE	14.5
NEWARK	14.5
OMAHA	14.5
MESA	14
CHARLOTTE	13
BIRMINGHAM	11
MCALLEN	9.5
HENDERSON	9
TULSA	6.5
OKLAHOMA CITY	5.5

Appendix D. Top-Scoring Cities by Factor

TABLE D2. CITIES BY RENEWABLE ENERGY TOTAL SCORE

CITY	TOTAL RENEWABLE ENERGY SCORE (16.5 PTS)
AUSTIN	13.5
SEATTLE	13
LOS ANGELES	11.5
SAN DIEGO	11.5
SAN FRANCISCO	11.5
WASHINGTON	11
BOSTON	10.5
SAN JOSÉ	10.5
CHICAGO	10
DENVER	10
MINNEAPOLIS	10
OAKLAND	10
ORLANDO	10
CHULA VISTA	9.5
RIVERSIDE	9.5
ATLANTA	9
CINCINNATI	9
CLEVELAND	9
LONG BEACH	9
PHOENIX	8.5
PROVIDENCE	8.5
SACRAMENTO	8.5
SALT LAKE CITY	8.5
NASHVILLE	8
PHILADELPHIA	8
PORTLAND	8
KANSAS CITY	7.5
NEW YORK	7
ST. PETERSBURG	7
BALTIMORE	6.5
COLUMBUS	6.5
DALLAS	6.5
HARTFORD	6.5
PITTSBURGH	6.5
ST. LOUIS	6.5
HOUSTON	6
EL PASO	5.5
FORT WORTH	5.5
MILWAUKEE	5.5
NEW ORLEANS	5.5
SAN ANTONIO	5.5
INDIANAPOLIS	5
LAS VEGAS	5
ST. PAUL	5
MIAMI	4.5
ALBUQUERQUE	4
GRAND RAPIDS	4
BAKERSFIELD	3.5
BRIDGEPORT	3.5
KNOXVILLE	3.5
OMAHA	3.5
VIRGINIA BEACH	3.5
HONOLULU	3
MEMPHIS	3
TAMPA	3
TUCSON	3
AURORA	2.5
BUFFALO	2.5
JACKSONVILLE	2.5
MCALLEN	2.5
NEW HAVEN	2.5
RALEIGH	2.5
ROCHESTER	2.5
DETROIT	2
LOUISVILLE	2
RICHMOND	2
HENDERSON	1.5
RENO	1.5
MESA	1
OKLAHOMA CITY	1
WORCESTER	1
CHARLOTTE	0.5
BIRMINGHAM	0
NEWARK	0
TULSA	0

Appendix D. Top-Scoring Cities by Factor

TABLE D3. CITIES BY EQUITY-DRIVEN CLEAN ENERGY PLANNING AND POLICIES TOTAL SCORE

CITY	TOTAL EQUITY SCORE (12 PTS)
MINNEAPOLIS	8.5
SEATTLE	8
BOSTON	7.5
PHILADELPHIA	7.5
PROVIDENCE	7.5
WASHINGTON	7.5
AUSTIN	7
CHICAGO	7
LOS ANGELES	7
BALTIMORE	6.5
NEW YORK	6.5
ORLANDO	6.5
PORTLAND	6.5
HARTFORD	6
MILWAUKEE	6
OAKLAND	6
PHOENIX	6
ST. PAUL	6
DENVER	5.5
HONOLULU	5.5
RALEIGH	5.5
SAN JOSÉ	5.5
BUFFALO	5
CLEVELAND	5
PITTSBURGH	5
RIVERSIDE	5
SAN FRANCISCO	5
ATLANTA	4.5

CITY	TOTAL EQUITY SCORE (12 PTS)
CHULA VISTA	4.5
KANSAS CITY	4.5
LONG BEACH	4.5
NEW ORLEANS	4.5
ROCHESTER	4.5
SAN DIEGO	4.5
AURORA	4
BRIDGEPORT	4
CINCINNATI	4
COLUMBUS	4
DALLAS	3.5
DETROIT	3.5
GRAND RAPIDS	3.5
HOUSTON	3.5
KNOXVILLE	3.5
MEMPHIS	3.5
NEWARK	3.5
ST. LOUIS	3.5
TUCSON	3.5
WORCESTER	3.5
FORT WORTH	3
SACRAMENTO	3
SAN ANTONIO	3
TAMPA	3
EL PASO	2.5
INDIANAPOLIS	2.5
RICHMOND	2.5
ALBUQUERQUE	2

CITY	TOTAL EQUITY SCORE (12 PTS)
BAKERSFIELD	2
CHARLOTTE	2
JACKSONVILLE	2
LOUISVILLE	2
NEW HAVEN	2
TULSA	2
BIRMINGHAM	1.5
LAS VEGAS	1.5
MESA	1.5
MIAMI	1.5
NASHVILLE	1.5
SALT LAKE CITY	1.5
OKLAHOMA CITY	1
ST. PETERSBURG	1
VIRGINIA BEACH	1
MCALLEN	0.5
OMAHA	0.5
HENDERSON	0
RENO	0

Appendix E. Additional Tables on Policies and Results

LOCAL GOVERNMENT OPERATIONS

TABLE E1. PERCENTAGE COMPOSITION OF VEHICLE FLEET

CITY	HYBRID	BATTERY ELECTRIC	PLUG-IN HYBRID	FUEL CELL	COMPRESSED NATURAL GAS (CNG)	PRO-PANE	BIO-DIESEL	FLEX FUEL/ E85/E54	OTHER (UNSPE-CIFIED)	INTERNAL COMBUSTION ENGINE (ICE)
ALBUQUERQUE	2	2	0	0	0	0	7	16	0	73
ATLANTA	0.7	0.4	0.6	0	0.7	0	0	0	0	97.6
AUSTIN	7.8	0.3	1.1	0	0.1	4.3	4.9	60.4	0	21.1
BOSTON	6.8	0.1	0.4	0	0	6.4	0	0	0	86.3
CHULA VISTA	4.5	6.3	4.3	0	1.3	0.2	0	0	0	83.3
CLEVELAND	2.6	0.1	0.1	0	0	0	0	0	0	97.2
COLUMBUS	1	1	3	0	8	0	0	0	0	87
DALLAS	3.1	0.3	0	0	14.6	0.1	31.9	0	0	50
DENVER	5	1	1	0	1	1	0	0	0	91
FORT WORTH	0.6	0.3	0.3	0	0	1.4	0	34.6	25.1	37.8
GRAND RAPIDS	10.1	0.4	0	0	0.4	0	0	0	0	89
HONOLULU	0.8	0	0.1	0	0	0.1	52.9	0	0	46.1
HOUSTON	6.1	0.5	0.1	0	0	0	0	0	0	93.3
INDIANAPOLIS	6	2	0	0	12	0	59	0	0	21
KNOXVILLE	0.1	0	0	0	0	0	0	0	0	99.9
LAS VEGAS	10	1	1	0	0	0	0	0	0	88
LONG BEACH	14	2	1	0	8	0	0	0	5.0	70
LOS ANGELES	12.3	3.1	2.8	0	15.5	0	0	0	10.3	56
LOUISVILLE	0	0	0.1	0	0.1	0	0	0	0	99.8
MEMPHIS	0.8	0.9	0.8	0	0.5	0	0	0	0	97
MINNEAPOLIS	2.8	0.6	0	0	0	0	0	0	0	96.6
NASHVILLE	4.1	0.7	0	0	0	0	0	0	0	95.2
NEW YORK	19	1.8	2.1	0	0.6	0	35	0	0.5	41
OAKLAND	5.3	2.5	0	0	9.1	0	30.6	0	0	52.6
OKLAHOMA CITY	0.6	0.2	0.1	0	9.9	0	0	0	0	89.2
ORLANDO	3.8	3	0.4	0	3	0.9	0	0	0	88.9
PHILADELPHIA	2.7	0.4	0.5	0	0	0	0	18.1	0	78.2

Appendix E. Additional Tables on Policies and Results

CITY	HYBRID	BATTERY ELECTRIC	PLUG-IN HYBRID	FUEL CELL	COMPRESSED NATURAL GAS (CNG)	PRO-PANE	BIO-DIESEL	FLEX FUEL/ E85/E54	OTHER (UNSPE-CIFIED)	INTERNAL COMBUSTION ENGINE (ICE)
PHOENIX	0.1	1.7	0	0	7.2	0.5	21.5	8.6	2.4	58
PITTSBURGH	0.9	0.9	0	0	0	0	2.2	0	0	96
PORTLAND	26	23	0	0	0	0	0	0	0	51
PROVIDENCE	0.2	0.4	0	0	0	0	0	0	0	99.4
RALEIGH	5.8	0.6	0.2	0	0.1	0	10.3	28.1	0	54.9
RICHMOND	0	0.1	0	0	6.7	0	0	0	0	93.2
RIVERSIDE	8	3.0	1	0	18	1.5	0	18	0	50.5
ROCHESTER	2.2	0.1	0.6	0	0.8	1.2	5.3	33.6	0	56.2
SACRAMENTO	0.3	0.3	0.1	0.1	0	0	0	0	0	99.2
SALT LAKE CITY	8.9	1	0	0	1.8	0	0	0	0	88.3
SAN ANTONIO	9	2	0	0	0	2	0	0	0	87
SAN DIEGO	1	2	0	0	1	1	0	0	0	95
SAN FRANCISCO	15	8	1	0	6	0	0	0	0	70
SAN JOSÉ	13	3	0.5	0	1	0	0	0	0	82.5
SEATTLE	0	5	0	0	0	1.4	0	0	0	93.6
ST. PAUL	0.5	0.5	0	0	0	0	0	0	0	99
TAMPA	1	1	0	0	0	0	0	0	0	98
TUCSON	0.1	0	0	0	3.8	0	0	30.7	0	65.4
WASHINGTON	5.1	0.2	0.8	0	6.4	0	2	38.5	0	47

Notes. Those cities assessed in the Scorecard *that are not displayed in table E1 either did not report data or did not report complete data.*

Appendix E. Additional Tables on Policies and Results

TABLE E2. PERCENTAGE OF STREETLIGHTS CONVERTED TO LEDS

CITY	% OF STREETLIGHTS CONVERTED TO LEDS
ALBUQUERQUE	90%
ATLANTA	50%
AUSTIN	25%
BAKERSFIELD	100%
BALTIMORE	32%
BIRMINGHAM	100%
BOSTON	76%
BRIDGEPORT	83%
CHICAGO	37%
CHULA VISTA	100%
CINCINNATI	100%
DETROIT	100%
EL PASO	56%
FORT WORTH	29%
GRAND RAPIDS	5%
HARTFORD	50%
HONOLULU	60%
HOUSTON	95%
INDIANAPOLIS	17%
KANSAS CITY	100%
KNOXVILLE	60%
LAS VEGAS	80%
LONG BEACH	81%
LOS ANGELES	90%
MILWAUKEE	2%
MINNEAPOLIS	70%
NASHVILLE	100%
NEW ORLEANS	75%
NEW YORK	100%
OAKLAND	95%
PHILADELPHIA	3%
PHOENIX	100%
PORTLAND	75%
PROVIDENCE	100%
RALEIGH	85%
RIVERSIDE	5%
SACRAMENTO	33%
SALT LAKE CITY	60%
SAN ANTONIO	35%
SAN DIEGO	88%
SAN FRANCISCO	97%
SAN JOSÉ	39%
SEATTLE	79%
TUCSON	50%
VIRGINIA BEACH	100%
WASHINGTON	5%
WORCESTER	100%

Cities assessed in the Scorecard *that are not displayed in this table either did not report data or did not report complete data.*

Appendix E. Additional Tables on Policies and Results

TABLE E3. IMPACTS OF MUNICIPAL BUILDING ENERGY RETROFIT STRATEGIES

CITY	RETROFIT STRATEGIES	IMPACT
ALBUQUERQUE	Buildings evaluations without results	N/A
ATLANTA	ESCO partnership	181 buildings, forecasting $10 million annually
AUSTIN	Buildings evaluations without results	N/A
BALTIMORE	Buildings evaluations with results	60% of buildings, $307,000 annually
BIRMINGHAM	ESCO partnership	N/A
BOSTON	Buildings evaluations with results	14 buildings, 2,700,000 kWh electricity, 49,000 therms natural gas, 2,500 k/gal water, and 4,500 Mlbs steam.
BRIDGEPORT	Buildings evaluations without results	N/A
BUFFALO	Buildings evaluations with results	40% of square footage, 2 million kWh energy savings
CHARLOTTE	Buildings evaluations with results	30% of buildings, projected 1,100 metric tons of C02
CHICAGO	ESCO partnership	N/A
CINCINNATI	ESCO partnership	50% of buildings
CLEVELAND	Buildings evaluations with results	70 buildings
DALLAS	Buildings evaluations with results	248 buildings, 3.3 million square feet
DENVER	ESCO partnership	14 buildings, 15% energy use reduction
FORT WORTH	ESCO partnership	9% of buildings
GRAND RAPIDS	Buildings evaluations without results	N/A
HARTFORD	Buildings evaluations without results	N/A
HONOLULU	Buildings evaluations without results	N/A
HOUSTON	ESCO partnership	N/A
KNOXVILLE	ESCO partnership	N/A
LAS VEGAS	Buildings evaluations without results	N/A
LONG BEACH	Buildings evaluations without results	N/A
LOS ANGELES	Buildings evaluations without results	N/A
LOUISVILLE	ESCO partnership	N/A
MILWAUKEE	ESCO partnership	N/A
MINNEAPOLIS	Buildings evaluations with results	$8 million in last six years, 13% energy costs savings annually
NASHVILLE	Buildings evaluations without results	N/A
NEW ORLEANS	Buildings evaluations with results	50% energy use reduction

Appendix E. Additional Tables on Policies and Results

CITY	RETROFIT STRATEGIES	IMPACT
NEW YORK	Buildings evaluations with results	190 buildings, $10.5 million annually
NEWARK	ESCO partnership	N/A
OAKLAND	Buildings evaluations without results	N/A
ORLANDO	Buildings evaluations with results	$1.1 million, 31% energy use reduction since 2010
PHILADELPHIA	Buildings evaluations with results	7,800 metric tons of carbon, $1.4 million annually
PHOENIX	Buildings evaluations with results	20% energy use reduction
PITTSBURGH	ESCO partnership	N/A
PORTLAND	Buildings evaluations with results	100 buildings
PROVIDENCE	Buildings evaluations with results	71,240 square feet, 40% energy use reduction
RALEIGH	Buildings evaluations without results	N/A
RICHMOND	Buildings evaluations without results	N/A
RIVERSIDE	Buildings evaluations without results	N/A
SACRAMENTO	Buildings evaluations with results	1,900,000 kWh gas, $250,000 annually
SALT LAKE CITY	Buildings evaluations without results	N/A
SAN ANTONIO	Buildings evaluations with results	279 buildings, $11 million
SAN DIEGO	Buildings evaluations without results	N/A
SAN FRANCISCO	Buildings evaluations with results	15.7% energy use intensity reduction, 26% GHG emissions reduction
SAN JOSÉ	ESCO partnership	N/A
SEATTLE	Buildings evaluations with results	27% of buildings
ST. LOUIS	Buildings evaluations without results	N/A
ST. PAUL	Buildings evaluations without results	N/A
ST. PETERSBURG	Buildings evaluations without results	N/A
VIRGINIA BEACH	Buildings evaluations without results	N/A
WASHINGTON	Buildings evaluations with results	9% of buildings, 30% energy savings
WORCESTER	ESCO partnership	50% of buildings

Appendix E. Additional Tables on Policies and Results

TABLE E4. 2019 LOCAL GOVERNMENT GOALS TO REDUCE ENERGY USE, INCREASE RENEWABLE ELECTRICITY, AND MITIGATE CLIMATE CHANGE

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
ALBUQUERQUE	Reduce local government energy use 58% by 2029 using lighting upgrades		Use renewable energy to power 100% of city operations by 2022		None		
ATLANTA	Reduce local government energy use 20% by 2020, using a 2009 baseline	0%	Use clean energy to power 100% of city operations by 2025		Reduce local government GHG emissions 20% by 2020, using a 2009 baseline	4.4%	
AURORA	Reduce local government energy use 5% annually through 2020, using a 2014 baseline	6%	None		Reduce local government GHG 10% by 2025, using a 2007 baseline		
AUSTIN	Reduce local government building energy use 5% annual through 2020	6%	Use renewable energy to power 100% of city-owned building energy use		Reduce local government GHG emissions 100% by 2020, using a 2007 baseline	16.7%	100%
BAKERSFIELD	None		None		None		
BALTIMORE	Reduce local government energy use 30% by 2030, using a 2006 baseline		Use renewable energy to power 20% of city-owned building energy use by 2022		Reduce local government GHG emissions 15% by 2020, using a 2007 baseline	1.1%	
BIRMINGHAM	None		None		None		
BOSTON	Reduce local government energy use 20% by 2023, using a 2012 baseline	2.8%	None		Reduce local government GHG emissions 50% by 2030, using a 2016 baseline	4.2%	100%
BRIDGEPORT	None		None		Reduce local government GHG emissions 30% by 2030, using a 2007 baseline	1.8%	

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
BUFFALO	Reduce local government energy use 20% by 2020, using a 2009 baseline	3%	None		None		
CHARLOTTE	None		Use 100% zero-carbon energy for city buildings and fleet by 2030		Reduce local government GHG emissions 100% by 2030		
CHICAGO	None		Use renewable energy to power 100% of city operations by 2025		Reduce local government GHG emissions 26% by 2025, using a 2005 baseline		
CHULA VISTA	Reduce local government energy use 20% by 2020, using a 2010 baseline		None		None		
CINCINNATI	None		Use renewable energy to power 100% of city operations by 2035		None		
CLEVELAND	Reduce local government energy use 10% by 2020, using a 2010 baseline	0.8%	Use on-site renewable energy to power 2% of city energy use by 2020		Reduce local government GHG emissions 20% by 2020, using a 2010 baseline	2.5%	100%
COLUMBUS	Reduce local government energy use 20% by 2020		Use renewable energy to power 10% of city operations by 2020	6%	Reduce local government GHG emissions 30% by 2020, using a 2005 baseline	0%	
DALLAS	None		None		None		
DENVER	Reduce local government energy use 20% by 2020, using a 2012 baseline	4.9%	Double city renewable energy use by 2020 relative to 2012 levels		Reduce local government GHG emissions 4% by 2020, using a 2012 baseline	1.6%	100%
DETROIT	None		None		None		

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
EL PASO	None		None		None		
FORT WORTH	None		None		None		
GRAND RAPIDS	None		Use renewable energy to power 100% of city operations by 2025		Reduce local government GHG emissions 25% by 2021, using a 2009 baseline	2.5%	
HARTFORD	None		None		None		
HENDERSON	None		None		None		
HONOLULU	None		Use renewable energy to power 100% of city operations by 2045		None		
HOUSTON	Reduce local government energy use 20% by 2020, using a 2008 baseline	2.4%	None		None		
INDIANAPOLIS	None		Use renewable energy to power 25% of city operations by 2025		Reduce local government GHG emissions 100% by 2050	2.9%	
JACKSONVILLE	None		None		None		
KANSAS CITY	Reduce local government energy use 50% by 2050		Use renewable energy to power 100% of city operations by 2022		Reduce local government GHG emissions 30% by 2020, using a 2000 baseline	2.4%	100%
KNOXVILLE	Reduce local government energy use 20% by 2022, using a 2010 baseline	1.6%	None		Reduce local government GHG emissions 20% by 2020, using a 2005 baseline	2.2%	49.6%
LAS VEGAS	Reduce local government energy use 30% by 2050 using energy efficiency		Use renewable energy to power 100% of city operations by 2050		Reduce local government GHG emissions 100% by 2050, using a 2010 baseline	3%	100%

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
LONG BEACH	Reduce local government electricity use 25% and natural gas use 15% by 2020, using a 2007 baseline	2.1%	Install at least 2 MW of solar energy on city facilities by 2020		Reduce local government GHG emissions 15% by 2020	1.6%	63%
LOS ANGELES	Reduce local government energy use 18% by 2025, using a 2013 baseline		None		Reduce local government GHG emissions 55% by 2025, using a 2008 baseline	3.7%	100%
LOUISVILLE	Reduce local government energy use 30% by 2020, using a 2010 baseline		Increase the use of renewable energy in city-owned buildings 50% by 2025		None		
MCALLEN	None		None		None		
MEMPHIS	None		None		None		
MESA	None		None		None		
MIAMI	None		None		None		
MILWAUKEE	Reduce local government building energy use 20% by 2020, using a 2009 baseline		Use renewable energy to power 25% of city operations by 2025		None		
MINNEAPOLIS	None		Use renewable energy to power 100% of city operations by 2022		Achieve a 1.5% annual reduction in GHG emissions from city facilities	2.2%	100%
NASHVILLE	Reduce local government building resource use 20% by 2020, using a 2017 baseline		Install 10 MW of renewable energy by 2020		Reduce local government GHG emissions 20% by 2020, using a 2014 baseline	4%	

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
NEW HAVEN	None		Use renewable energy to power 100% of city operations by 2030		Reduce local government GHG emissions 55% by 2030, using a 1999 baseline	2%	
NEW ORLEANS	Reduce local government energy use 15% by 2020, using a 2014 baseline		None		None		
NEW YORK	None		Install 100 MW of solar on city-owned property by 2025		Reduce local government GHG emissions 35% by 2025, using a 2006 baseline	2.4%	100%
NEWARK	None		None		None		
OAKLAND	None		Use 100% zero-carbon energy to power city operations		Reduce local government GHG emissions 36% by 2020, using a 2005 baseline	2.7%	100%
OKLAHOMA CITY	None		None		None		
OMAHA	None		None		None		
ORLANDO	Reduce local government energy use 50% by 2030, using a 2010 baseline	3.2%	Use renewable energy to power 100% of city operations by 2030	5%	Reduce local government GHG emissions 100% by 2030, using a 2010 baseline	5%	100%
PHILADELPHIA	Reduce local government energy use 20% by 2030, using a 2006 baseline		Use renewable energy to power 100% of city operations by 2030	6.7%	Reduce local government GHG emissions 50% by 2030, using a 2006 baseline	2.3%	100%
PHOENIX	Reduce local government energy use 20% by 2020		Use renewable energy to power 15% of city operations by 2025		Reduce local government GHG emissions 40% by 2025, using a 2005 baseline	4.4%	48.4%
PITTSBURGH	Reduce local government energy use 50% by 2030, using a 2010 baseline		Use renewable electricity to power 100% of city operations by 2030		Reduce local government GHG emissions 20% by 2023, using a 2003 baseline	0.5%	100%

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
PORTLAND	Reduce local government energy use 2% annually by 2030, using a 2007 baseline	3.2%	Continue using renewable electricity to power 100% of city operations		Reduce local government GHG emissions 53% by 2030, using a 2007 baseline	2.7%	100%
PROVIDENCE	Reduce local government energy use 30% by 2030, using a 2010 baseline	2.9%	Use renewable energy to power 100% of city operations by 2030.		Reduce local government GHG emissions 100% by 2050, using a 2015 baseline	2.9%	0%
RALEIGH	None		Use renewable energy to meet 20% of peak load by 2030		None		
RENO	Reduce local government energy use 20% by 2025, using a 2014 baseline	3.2%	None		None		
RICHMOND	Reduce local government energy use 1% annually, using a 2008 baseline		None		None		
RIVERSIDE	None		None		Reduce local government GHG emissions 15% by 2020, using a 2007 baseline	0%	
ROCHESTER	Reduce local government building energy use 20% by 2020		None		Reduce local government GHG emissions 20% by 2020, using a 2008 baseline	2%	
SACRAMENTO	Reduce local government energy use 25% by 2030, using a 2005 baseline	1.6%	None		Reduce local government GHG emissions 15% by 2020, using a 2005 baseline	1.8%	100%

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
SALT LAKE CITY	Reduce local government building energy use 20% by 2025, using a 2012 baseline		Use renewable energy to power 50% of city operations by 2020		Reduce local government GHG emissions 50% by 2030, using a 2009 baseline	4%	60.1%
SAN ANTONIO	None		None		None		
SAN DIEGO	Reduce local government energy use 15% by 2020, using a 2010 baseline	3.64%	Use renewable energy to power 100% of city operations by 2035	1.5%	Reduce local government GHG emissions 15% by 2020, using a 2010 baseline		
SAN FRANCISCO	None		Continue using renewable electricity to power 100% of city facilities		Reduce local government GHG emissions 40% by 2025, using a 1990 baseline	3%	100%
SAN JOSÉ	None		Install 11 MW of solar energy on city buildings by 2021		None		
SEATTLE	Reduce local government energy use 20% by 2020, using a 2008 baseline	3.3%	Continue using renewable electricity to power 100% of city facilities		Reduce local government GHG emissions 40% by 2025, using a 2008 baseline	3.3%	
ST. LOUIS	None		Use renewable electricity to power 100% of city operations by 2035		None		
ST. PAUL	None		Use renewable energy to power 50% of city operations within five years		Reduce local government building GHG emissions 100% by 2030		
ST. PETERSBURG	None		Use renewable energy to power 100% of city operations by 2035		Reduce local government GHG emissions 20% by 2020, using a 2016 baseline	5.4%	

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
TAMPA	None		Use renewable energy to power 25% of city operations by 2025		None		
TUCSON	None		None		None		
TULSA	None		None		None		
VIRGINIA BEACH	Reduce municipal energy use 5% below 2015 levels by 2020	1.6%	None		None		
WASHINGTON	Reduce local government energy use 50% by 2032, using a 2012 baseline	3.5%	Use renewable energy to power 50% of city operations by 2032		Reduce local government GHG emissions 50% by 2032, using a 2006 baseline	2.9%	100%
WORCESTER	Reduce local government building energy use 20% by 2020, using a 2009 baseline		None		None		

Sources: We collected information regarding city goals from city ordinances, mayoral executive orders, and city climate action, sustainability, energy, resilience, comprehensive community, and municipal management plans. We calculated targeted changes in energy use using data from these sources, online data portals, greenhouse gas emissions inventories, and correspondence with city staff. We used city greenhouse gas emissions inventories to calculate targeted and projected changes in greenhouse gas emissions. We used information obtained through our data requests to city staff to calculate targeted changes in renewable energy generation.

Appendix E. Additional Tables on Policies and Results

COMMUNITY-WIDE INITIATIVES

TABLE E5. 2019 COMMUNITY-WIDE GOALS TO REDUCE ENERGY USE, INCREASE RENEWABLE ELECTRICITY, AND MITIGATE CLIMATE CHANGE

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
ALBUQUERQUE	None		None		None		
ATLANTA	Reduce energy use in private facilities 20% by 2020, using a 2009 baseline	1.4%	Generate 100% renewable energy by 2035	5.1%	Reduce community-wide GHG emissions 20% by 2020, using a 2009 baseline	3.7%	
AURORA	None		None		Reduce community-wide GHG emissions 10% by 2025, using a 2007 baseline		
AUSTIN	None		Generate 55% renewable energy by 2025	2.5%	Reduce community-wide GHG emissions 25% by 2020, using a 2010 baseline	3.5%	99.8%
BAKERSFIELD	None		None		None		
BALTIMORE	Reduce energy use in buildings 13% by 2020, using a 2010 baseline	0.8%	None		Reduce community-wide GHG emissions 25% by 2020, using a 2007 baseline	0.6%	100%
BIRMINGHAM	None		None		None		
BOSTON	None		Install 10 MW of renewable energy by 2020		Reduce community-wide GHG emissions 50% by 2030, using a 2016 baseline	4.2%	86.3%
BRIDGEPORT	None		None		Reduce community-wide GHG emissions 20% by 2020, using a 2007 baseline	2.3%	
BUFFALO	None		None		None		

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
CHARLOTTE	None		None		Reduce community-wide GHG emissions 2 tons CO2e per capita by 2050, using a 2015 baseline	2.38%	
CHICAGO	Reduce energy use in Better Buildings Challenge buildings 20% by 2022, using a 2011 baseline		Generate 100% renewable energy by 2035	5.7%	Reduce community-wide GHG emissions 26% by 2025, using a 2005 baseline	0.9%	100%
CHULA VISTA	None		Generate 100% renewable energy by 2035	3.1%	Reduce community-wide GHG emissions 15% by 2020, using a 2005 baseline	1.6%	
CINCINNATI	Reduce community-wide energy use 2% annually	2.8%	Generate 100% renewable energy by 2035	5.5%	Reduce community-wide GHG emissions 40% by 2028, using a 2006 baseline	1.8%	97.4%
CLEVELAND	Reduce residential and commercial energy use 50% and industrial energy use 30% by 2030, using a 2010 baseline	1.8%	Generate 15% renewable energy by 2022	0.6%	Reduce community-wide GHG emissions 16% by 2020, using a 2010 baseline	3.2%	100%
COLUMBUS	Reduce community-wide energy use 20% by 2020	4.2%	Generate 10% renewable energy by 2022	0%	Reduce community-wide GHG emissions 20% by 2020, using a 2013 baseline	5.5%	79.1%
DALLAS	Reduce energy in the Dallas 2030 District 50% by 2030		None		Reduce GHG emissions in the Dallas 2030 District 50% by 2030		

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
DENVER	Reduce energy use 10% in non-single-family buildings by 2020 and single-family buildings by 2025, using a 2005 baseline		Generate 100% renewable energy by 2030	5.1%	Reduce community-wide GHG emissions 15% by 2020, using a 2005 baseline	4.1%	99.3%
DETROIT	None		None		Reduce community-wide GHG emissions 28% by 2025, using a 2005 baseline		
EL PASO	None		None		None		
FORT WORTH	Reduce energy use in Better Buildings Challenge buildings 20% by 2020, using a 2009 baseline		None		None		
GRAND RAPIDS	Reduce energy in the Grand Rapids 2030 District 50% by 2030		None		None		
HARTFORD	None		None		None		
HENDERSON	None		None		None		
HONOLULU	None		None		None		
HOUSTON	Reduce energy use in Better Buildings Challenge buildings 20% by 2020, using a 2008 baseline		None		None		
INDIANAPOLIS	None		Generate 20% renewable energy by 2025	2.2%	Reduce community-wide GHG emissions 100% by 2050, using a 2016 baseline	3%	
JACKSONVILLE	None		None		None		

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
KANSAS CITY	Reduce community-wide energy use 50% by 2050, using a 2008 baseline		Generate 50% renewable energy by 2050	1.1%	Reduce community-wide GHG emissions 30% by 2020, using a 2000 baseline	2.7%	94.4%
KNOXVILLE	None		None		Reduce community-wide GHG emissions 20% by 2020, using a 2005 baseline	1.4%	0%
LAS VEGAS	Reduce community-wide energy use in downtown 100% by 2045		None		None		
LONG BEACH	Reduce community-wide electricity use 15% and natural gas use 10% by 2020, using a 2007 baseline	1.4%	Install 8 MW of solar energy by 2020	0.1%	None		
LOS ANGELES	Reduce energy use in buildings 14% by 2025, using a 2013 baseline	1.2%	None		Reduce community-wide GHG emissions 100% by 2050, using a 2016 baseline	3%	100%
LOUISVILLE	Reduce community-wide energy use 25% per capita by 2025, using a 2012 baseline	1.9%	None		Reduce community-wide GHG emissions 80% by 2050, using a 2016 baseline	2.5%	
MCALLEN	None		None		None		
MEMPHIS	None		None		None		
MESA	None		None		None		

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
MIAMI	None		None		Reduce community-wide GHG emissions 25% by 2020, using a 2006 baseline	2.7%	
MILWAUKEE	Reduce energy use in Better Buildings Challenge buildings 20% by 2020, using a 2009 baseline	2%	None		Reduce community-wide GHG emissions 26% by 2025, using a 2005 baseline		
MINNEAPOLIS	Increase the efficiency of commercial buildings 20% and residential buildings 15% by 2025, using a 2014 baseline	2.6%	Generate 100% renewable energy by 2030	5.4%	Reduce community-wide GHG emissions 30% by 2025, using a 2006 baseline	2.7%	100%
NASHVILLE	Reduce building resource use 10% by 2020, using a 2017 baseline		Generate 30% renewable energy by 2030	1.2%	Reduce community-wide GHG emissions 20% by 2020, using a 2014 baseline	4%	
NEW HAVEN	None		None		Reduce community-wide GHG emissions 55% by 2030, using a 1999 baseline	2.8%	100%
NEW ORLEANS	Reduce community-wide energy use 3.3% annually through 2030		Install 255 MW of renewable energy by 2030	17.3%	Reduce community-wide GHG emissions 50% by 2030, using a 2014 baseline	1.6%	
NEW YORK	None		Install 250 MW of solar capacity on private buildings by 2025	6.0%	Reduce community-wide GHG emissions 30% by 2025, using a 2005 baseline	1.4%	0%

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
NEWARK	None		None		Reduce community-wide GHG emissions to 1990 levels by 2020		
OAKLAND	Reduce community-wide electricity use 32% and natural gas use 14% by 2020, using a 2005 baseline	5.05%	Generate 39% renewable energy by 2020	0%	Reduce community-wide GHG emissions 36% by 2020, using a 2005 baseline	4.9%	74.4%
OKLAHOMA CITY	None		None		None		
OMAHA	Reduce community-wide energy use per capita 20% by 2020, using a 2010 baseline		Generate 20% renewable energy by 2030	0.8%	None		
ORLANDO	Reduce community-wide energy use 25% by 2040, using a 2010 baseline		Generate 100% renewable energy by 2050	3.11%	Reduce community-wide GHG emissions 90% by 2040, using a 2007 baseline	3.9%	0%
PHILADELPHIA	None		Generate 100% carbon-free electricity by 2050	2.5%	Reduce community-wide GHG emissions 28% by 2025, using a 2006 baseline	1.5%	100%
PHOENIX	Achieve net-positive energy and materials in all buildings by 2050		Generate 100% renewable energy by 2060	2%	Reduce community-wide GHG emissions 30% by 2025, using a 2012 baseline	3.6%	100%
PITTSBURGH	Reduce community-wide energy use 50% by 2030, using a 2003 baseline	2.2%	Generate 100% renewable energy by 2035	5.5%	Reduce community-wide GHG emissions 20% by 2023, using a 2003 baseline	2.5%	38%

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
PORTLAND	Reduce energy use in buildings built before 2010 25% by 2030		Generate 100% renewable energy by 2050	2.8%	Reduce community-wide GHG emissions 40% by 2030, using a 1990 baseline	2.5%	89.5%
PROVIDENCE	None		Generate 50% carbon-free energy by 2035	2.7%	Reduce community-wide GHG emissions 100% by 2050, using a 2015 baseline	2.9%	
RALEIGH	None		None		None		
RENO	Increase commercial, industrial, and multifamily efficiency 20% by 2025		None		None		
RICHMOND	None		None		Reduce community-wide GHG emissions 80% by 2050, using a 2008 baseline	2.27%	100%
RIVERSIDE	Reduce community-wide energy use 1% annually, using a 2004 baseline		Generate 33% renewable energy by 2020	1.6%	Reduce community-wide GHG emissions 26% by 2020, using a 2007 baseline	2.4%	
ROCHESTER	None		None		Reduce community-wide GHG emissions 20% by 2020, using a 2010 baseline	0.3%	
SACRAMENTO	Reduce community-wide energy use 25% by 2030, using a 2005 baseline		None		Reduce community-wide GHG emissions 15% by 2020, using a 2005 baseline	2.5%	

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
SALT LAKE CITY	None		Generate 100% renewable energy by 2032	5.1%	Reduce community-wide GHG emissions 50% by 2030, using a 2009 baseline	3.8%	
SAN ANTONIO	Reduce community-wide energy use 22% by 2040, using a 2014 baseline	0.9%	Generate 50% renewable energy by 2040	1.3%	Reduce community-wide GHG emissions 26% by 2025, using a 2005 baseline		
SAN DIEGO	Reduce community-wide energy use 15% in 20% of housing by 2020, using a 2015 baseline	15.8%	Generate 100% renewable energy by 2035	3%	Reduce community-wide GHG emissions 15% by 2020, using a 2010 baseline	7.7%	25.5%
SAN FRANCISCO	None		Generate 100% renewable energy by 2030	5.8%	Reduce community-wide GHG emissions 40% by 2025, using a 1990 baseline	2.6%	100%
SAN JOSÉ	Reduce per capita household energy use 50% by 2022, using a 2008 baseline	4.2%	Generate 31% renewable energy by 2050	0%	Reduce community-wide GHG emissions 4% by 2021, using a 2014 baseline	2.4%	100%
SEATTLE	Reduce commercial energy use 10% and residential use 20% by 2030, using a 2008 baseline	1.4%	The community is powered with electricity generated from more than 90% renewable sources		Reduce community-wide GHG emissions 58% by 2030, using a 2008 baseline	3.3%	25.2%
ST. LOUIS	None		Generate 100% renewable energy by 2035	5.4%	Reduce community-wide GHG emissions 25% by 2020, using a 2005 baseline	2.9%	0%
ST. PAUL	None		None		Reach carbon neutrality in the buildings sector by 2050		

Appendix E. Additional Tables on Policies and Results

CITY	ENERGY REDUCTION GOAL	ANNUAL % DECREASE TARGETED	RENEWABLE ELECTRICITY GOAL	ANNUAL % INCREASE TARGETED	CLIMATE CHANGE MITIGATION GOAL	ANNUAL % DECREASE TARGETED	PROJECTED PROGRESS TOWARD GOAL
ST. PETERSBURG	None		Generate 100% renewable energy by 2035	5.2%	Reduce community-wide GHG emissions 20% by 2020, using a 2016 baseline	5.4%	
TAMPA	None		Install renewable energy systems in 20% of existing residential and commercial buildings by 2025		Reduce community-wide GHG emissions to 1990 levels by 2025	2%	
TUCSON	Reduce energy in the Tucson 2030 District 50% by 2030		None		None		
TULSA	None		None		None		
VIRGINIA BEACH	Reduce community-wide energy use 10% by 2040, using a 2006 baseline		None		None		
WASHINGTON	Reduce community-wide energy use 50% by 2032, using a 2012 baseline	3.2%	Generate 100% renewable energy by 2032	4.8%	Reduce community-wide GHG emissions 50% by 2032, using a 2006 baseline	2.7%	76.6%
WORCESTER	None		None		None		

Sources: We collected information regarding city goals from city ordinances, mayoral executive orders, and city climate action, sustainability, energy, resilience, and comprehensive community plans. We calculated targeted changes in energy use by using data from these sources, online data portals, greenhouse gas emissions inventories, and correspondence with city staff. We used city greenhouse gas emissions inventories to calculate targeted and projected changes in greenhouse gas emissions. We used utility public reporting to calculate targeted changes in renewable energy generation.

Appendix E. Additional Tables on Policies and Results

TABLE E6. 2019 COMMUNITY-WIDE EQUITY-DRIVEN CLEAN ENERGY PLANNING STRATEGIES

CITY	EQUITY-DRIVEN COMMUNITY ENGAGEMENT	EQUITY-DRIVEN DECISION MAKING	ACCOUNTABILITY TO EQUITY
ATLANTA	None	None	Adopted goal to reduce energy burdens for 10% of households with tracking metrics focused on those with low incomes
BALTIMORE	None	None	Equity Assessment Program requires city agencies to assess existing and proposed policies and practices for disparate outcomes based on race, gender, or income
BOSTON	None	None	Resilient Boston plan sets specific goals and indicators to improve transportation access and increase proximity to parks for marginalized residents
CHICAGO	None	None	Resilient Chicago plan includes specific goals and indicators to improve transit service to underserved areas and install efficient lighting in low-income communities
CINCINNATI	City held Green Cincinnati Plan development meetings in Spanish and in its communities of color	None	Adopted goal to reduce energy burdens 10% by 2023
CLEVELAND	None	None	City uses a racial equity tool to plan implementation for its climate action plan
DALLAS	None	None	The Resilient Dallas Plan adopted specific time-limited goals and metrics to track how energy efficiency or climate action initiatives are achieving positive environmental justice or social equity outcomes
INDIANAPOLIS	In planning Thrive Indianapolis, the city held specialized focus groups and training for re-entry, veterans, low-income, and homeless populations in convenient locations	None	None
LONG BEACH	The city's Climate Action and Adaptation Plan outreach process has included direct outreach in communities that are home to marginalized groups, and outreach conducted in Spanish and Khmer	None	None

Appendix E. Additional Tables on Policies and Results

CITY	EQUITY-DRIVEN COMMUNITY ENGAGEMENT	EQUITY-DRIVEN DECISION MAKING	ACCOUNTABILITY TO EQUITY
LOS ANGELES	None	The city has created formal partnerships with marginalized community-based organizations to apply for grants supporting climate action initiatives in South LA and the Watts neighborhood	None
MINNEAPOLIS	Green Zone Task Forces develop and lead outreach work plans to engage community members in planning their initiatives	The city has created community-driven Northern and Southside Green Zones where community members sit on task forces that serve as an advisory board to the city council and mayor on implementation and evaluation of their corresponding climate action work plans, which were also developed by community members	The city and Green Zone Task Forces use numerous indicators to track outcomes of sustainability initiatives that serve the two zones
NASHVILLE	None	None	The Livable Nashville Recommendations adopted time-limited goals to improve energy affordability so that no low-income resident will spend more than 20% of income on energy utility bills by 2020.
NEW YORK	None	None	Int. 886-A sets up an Interagency Working Group to create a citywide Environmental Justice Plan that provides guidance on incorporating environmental justice concerns into city decision making, identifies possible citywide initiatives for promoting environmental justice, and provides specific recommendations for city agencies to bring their operations, programs and projects in line with these concerns.
OAKLAND	None	None	City uses Equity Indicators Reports to track both pollution and energy cost burdens.
ORLANDO	Parramore is a historically black community in Orlando. In developing the Parramore Comprehensive Plan, public meetings were located within the neighborhood at community centers, giving people the opportunity to speak out during the meetings, provide comments, vote, and talk to community leaders.	None	The Parramore Comprehensive Plan includes several metrics to track outcomes related to energy and health.

Appendix E. Additional Tables on Policies and Results

CITY	EQUITY-DRIVEN COMMUNITY ENGAGEMENT	EQUITY-DRIVEN DECISION MAKING	ACCOUNTABILITY TO EQUITY
PHILADELPHIA	None	None	Philadelphia Energy Authority programs track and annually report several metrics related to outcomes for low-income households.
PITTSBURGH	None	None	City recently released the "Pittsburgh Equity Indicators: A Baseline Measurement for Enhancing Equity in Pittsburgh." An annual review of these metrics will be done in future years.
PORTLAND	None	To develop the city's 2015 climate action plan, representatives from community-based organizations serving marginalized populations were included in an Equity Working Group and paid a stipend for their participation	None
PROVIDENCE	The Racial and Environmental Justice Committee (REJC) is leading the community engagement process for developing Providence's climate strategy.	The city helped create the REJC, which is made up of frontline community members of color to help the Office of Sustainability better incorporate equity into its work.	The REJC created Principals and Values for a Racially Equitable and Just Providence, which are being used to evaluate every recommendation proposed for the city's climate strategy.
SAN ANTONIO	None	The city's Climate Equity Technical Working Group consists of 15 community members who bring expertise and personal experience to identify San Antonio-specific climate challenges, barriers, and solutions that can also reduce disparities and increase equity while strategically mitigating GHG emissions.	With the help of the Climate Equity Technical Working Group, the city designed its Climate Equity Screening Mechanism as a framework for intentionally considering equity issues while implementing climate action strategies (i.e., policies, programs, and budget decisions). It is intended as a practical tool for applying an equity lens to all climate mitigation and adaptation actions.
SAN JOSÉ	The city partnered with community-based organizations to conduct 38 outreach events in Spanish- and Vietnamese-speaking neighborhoods while developing the San José's climate action plan.	None	None

Appendix E. Additional Tables on Policies and Results

CITY	EQUITY-DRIVEN COMMUNITY ENGAGEMENT	EQUITY-DRIVEN DECISION MAKING	ACCOUNTABILITY TO EQUITY
SEATTLE	The city created the Duwamish Valley Action Plan in collaboration with marginalized residents living in the South Park region of Seattle. The city employed several approaches to increase participation from these residents.	In 2017 the city created the Environmental Justice Committee (EJC), which gives those most affected by environmental inequities an opportunity to direct implementation of the city's Equity and Environment Agenda. The EJC oversees the Environmental Justice Fund, a new grant opportunity for community-led projects that improve environmental conditions, respond to impacts of climate change, and work toward environmental justice.	The city, through its Race and Social Justice Initiative (RSJI), requires all city departments, including the utility and the Office of Sustainability and Environment, to develop RSJI goals and to utilize an RSJI toolkit prior to and throughout development and implementation of an initiative.
ST. PAUL	None	None	The city adopted a goal to reduce energy burdens within 10 years so that no St. Paul household spends more than 4% of household income on energy costs.
WASHINGTON	Two of the three main goals in updating the District's sustainability plans are to focus the planning process on underserved communities and to make the plan more relevant to people who have not previously participated in sustainability, particularly people of color. To make the planning process most convenient for residents from underserved communities, Washington partnered with community organizations to help recruit new participants, held meetings in familiar Metro-accessible venues in communities of focus, and restructured meeting formats to be more casual and accessible.	In 2017 and 2018, the District and the Georgetown Climate Center convened an Equity Advisory Group (EAG) of community leaders and residents of Far Northeast Ward 7 to develop recommendations on DOEE's implementation of its Climate Ready DC and Clean Energy DC plans. The District's climate vulnerability analysis showed that these communities face disproportionate flooding and other climate-related risks relative to other parts of the District.	None
Sources: We corresponded with city staff and collected information regarding city's equity-driven strategies for clean energy planning through correspondence from city climate action, energy, sustainability, and resilience planning documents.			

Appendix E. Additional Tables on Policies and Results

TABLE E7. CITY POLICIES, RULES, AND AGREEMENTS SUPPORTING THE DEPLOYMENT OF CLEAN DISTRIBUTED ENERGY SYSTEMS

CITY	DISTRICT ENERGY AND MICROGRIDS	COMBINED HEAT AND POWER	ON-SITE RENEWABLE ENERGY	COMMUNITY SOLAR
ATLANTA	None	None	Allows solar-by-right accessory use in all land use zones	None
AURORA	None	None	Allows solar-by-right accessory use in all land use zones	None
AUSTIN	Developed municipal district energy system	Developed municipal CHP system	Directs utility to install customer-sited solar	Developed community solar system
BAKERSFIELD	None	None	Offers streamlined solar permitting State directs cities to require solar installations on buildings	None
BALTIMORE	None	Developed municipal CHP system	Developed municipal solar systems	None
BOSTON	Requires some new buildings to conduct microgrid feasibility studies	Requires some new buildings to conduct CHP feasibility studies	Adopted zoning regulations supporting wind energy systems	None
BRIDGEPORT	Energy Improvement District can enter into agreements to construct microgrids	Energy Improvement District can enter into agreements to construct CHP systems	Energy Improvement District can enter into agreements to construct solar systems	None
BUFFALO	Developed municipal district energy system	None	None	None
CHARLOTTE	None	Developed municipal CHP system	None	None
CHICAGO	None	None	Provided city land for solar systems	Provided city land for community solar systems
CHULA VISTA	None	None	State directs cities to require solar installations on buildings	None
CINCINNATI	None	None	Developed municipal solar systems	None
CLEVELAND	Developed municipal district energy system	None	Adopted zoning regulations supporting wind energy systems	None

Appendix E. Additional Tables on Policies and Results

CITY	DISTRICT ENERGY AND MICROGRIDS	COMBINED HEAT AND POWER	ON-SITE RENEWABLE ENERGY	COMMUNITY SOLAR
DENVER	Developed municipal district energy system	None	None	Developed community solar system Provided city land for community solar system
EL PASO	None	None	Offers streamlined solar permitting Allows solar-by-right accessory use in all land use zones	None
HARTFORD	Energy Improvement District can enter into agreements to construct microgrids	Energy Improvement District can enter into agreements to construct CHP systems	Energy Improvement District can enter into agreements to construct solar systems	None
HENDERSON	None	None	Adopted zoning regulations supporting wind energy systems	None
HONOLULU	Developed municipal district energy system	None	None	None
HOUSTON	None	None	Offers streamlined solar permitting	None
JACKSONVILLE	Developed municipal district energy system	None	None	None
KANSAS CITY	None	None	Developed municipal solar systems	None
KNOXVILLE	None	None	Developed municipal solar systems	None
LAS VEGAS	None	None	Offers streamlined solar permitting Allows solar-by-right accessory use in all land use zones	None
LONG BEACH	None	None	Developed municipal solar systems State directs cities to require solar installations on buildings	None
LOS ANGELES	None	None	Municipal utility is developing solar systems	Municipal utility is developing community solar systems

Appendix E. Additional Tables on Policies and Results

CITY	DISTRICT ENERGY AND MICROGRIDS	COMBINED HEAT AND POWER	ON-SITE RENEWABLE ENERGY	COMMUNITY SOLAR
MESA	None	None	Developed municipal solar systems	None
MIAMI	None	None	Offers streamlined solar permitting	None
MILWAUKEE	None	None	Offers streamlined solar permitting Allows solar-by-right accessory use in all land use zones Developed municipal solar systems	None
MINNEAPOLIS	None	None	None	Developed community solar systems
NASHVILLE	None	None	Requires all new municipal buildings to include renewable energy systems if possible	Provided city land for community solar systems
NEW HAVEN	None	None	Offers streamlined solar permitting	None
NEW YORK	Developed municipal district energy systems and microgrids	None	None	None
OAKLAND	Developing microgrid	None	Offers streamlined solar permitting State directs cities to require solar installations on buildings	None
ORLANDO	Municipal utility developed district energy systems	None	Municipal utility engages in solar bulk purchasing	Municipal utility developed community solar system
PHILADELPHIA	None	None	City engages in solar bulk purchasing program	None
PHOENIX	Developed municipal district energy system	None	Developed municipal solar systems	None
PITTSBURGH	Developing district energy system	None	None	None

Appendix E. Additional Tables on Policies and Results

CITY	DISTRICT ENERGY AND MICROGRIDS	COMBINED HEAT AND POWER	ON-SITE RENEWABLE ENERGY	COMMUNITY SOLAR
PROVIDENCE	None	Developed municipal CHP systems	Developed municipal wind and solar systems Offers streamlined solar permitting Allows solar-by-right accessory use in all land use zones	None
RIVERSIDE	None	None	State directs cities to require solar installations on buildings	None
SACRAMENTO	None	None	Developed municipal solar systems State directs cities to require solar installations on buildings	Municipal utility developed community solar systems
SAN DIEGO	None	None	Offers streamlined solar permitting State directs cities to require solar installations on buildings	None
SAN FRANCISCO	None	None	City requires solar installations on new developments	None
SAN JOSÉ	None	None	Developed municipal solar systems State directs cities to require solar installations on buildings	None
SEATTLE	Developed municipal district energy systems and microgrids	None	Issues grants to private solar projects	Issues grants to community solar projects
ST. LOUIS	None	None	None	Provided city land for community solar systems
ST. PAUL	Developed municipal district energy system	None	Allows solar-by-right accessory use in all land use zones	None
ST. PETERSBURG	None	Developed municipal CHP system	Developed municipal solar systems	None

Appendix E. Additional Tables on Policies and Results

CITY	DISTRICT ENERGY AND MICROGRIDS	COMBINED HEAT AND POWER	ON-SITE RENEWABLE ENERGY	COMMUNITY SOLAR
TUCSON	None	None	Provided city land for solar systems	None
WASHINGTON	None	None	Develops low-income solar systems	Develops low-income community solar systems
WORCESTER	None	None	Developed municipal solar systems	None

Sources: We used city websites along with adopted ordinances, rules for implementation, and copies of contracts to collect information regarding city policies, rules, and agreements that support clean distributed energy systems.

Appendix E. Additional Tables on Policies and Results

BUILDINGS POLICIES

TABLE E8. RESIDENTIAL AND COMMERCIAL ZERO ENERGY PERFORMANCE INDEX (zEPI) SCORES

CITY	RESID-ENTIAL zEPI SCORE	COMME-RCIAL zEPI SCORE
ALBUQUERQUE	67.8	69.5
ATLANTA	67.7	66.9
AURORA	54.7	53.6
AUSTIN	58.4	52.3
BAKERSFIELD	58.1	49.1
BALTIMORE	55.9	55.3
BIRMINGHAM	63.4	53.9
BOSTON	48.9	49.8
BRIDGEPORT	55.5	51.6
BUFFALO	53.4	56.5
CHARLOTTE	62.9	57.6
CHICAGO	59.3	53.4
CHULA VISTA	58.1	49.1
CINCINNATI	68.6	59.0
CLEVELAND	68.6	59.0
COLUMBUS	68.6	59.0
DALLAS	59.8	53.7
DENVER	53.4	52.3
DETROIT	57.0	50.3
EL PASO	58.4	53.7
FORT WORTH	59.8	53.7
GRAND RAPIDS	57.0	50.3
HARTFORD	55.5	51.6
HENDERSON	52.8	45.3
HONOLULU	75.0	75.4
HOUSTON	59.8	53.7
INDIANAPOLIS	68.5	69.0
JACKSONVILLE	60.7	53.4
KANSAS CITY	54.4	50.1
KNOXVILLE	70.5	59.2
LAS VEGAS	52.8	45.3
LONG BEACH	58.1	49.1
LOS ANGELES	59.6	51.7
LOUISVILLE	68.4	58.6
MCALLEN	58.4	53.7
MEMPHIS	57.6	52.7
MESA	59.6	48.6
MIAMI	60.7	53.4
MILWAUKEE	63.6	53.8
MINNEAPOLIS	51.9	57.3
NASHVILLE	70.5	59.2
NEW HAVEN	55.5	51.6
NEW ORLEANS	68.0	70.3
NEW YORK	50.7	53.7
NEWARK	62.7	52.0
OAKLAND	58.1	49.1
OKLAHOMA CITY	65.6	56.4
OMAHA	68.4	67.0
ORLANDO	60.7	53.4
PHILADELPHIA	58.0	46.4
PHOENIX	59.6	48.6
PITTSBURGH	58.0	51.3
PORTLAND	53.2	59.9
PROVIDENCE	65.2	60.0
RALEIGH	62.9	57.6
RENO	54.1	45.3
RICHMOND	62.2	54.4
RIVERSIDE	59.6	51.7
ROCHESTER	53.4	56.5
SACRAMENTO	59.6	51.7
SALT LAKE CITY	65.5	55.4
SAN ANTONIO	58.4	47.2
SAN DIEGO	59.6	51.7
SAN FRANCISCO	58.1	49.1
SAN JOSÉ	59.6	51.7
SEATTLE	N/A	N/A
ST. LOUIS	53.1	41.5
ST. PAUL	51.9	57.3
ST. PETERSBURG	60.7	53.4
TAMPA	60.7	53.4
TUCSON	59.6	48.6
TULSA	65.6	74.5
VIRGINIA BEACH	62.2	54.4
WASHINGTON	62.1	63.9
WORCESTER	48.9	49.8

Appendix E. Additional Tables on Policies and Results

ENERGY AND WATER UTILITIES

TABLE E9. SCORES FOR ELECTRIC EFFICIENCY EFFORTS AND CITY–UTILITY PARTNERSHIPS FOR ENERGY UTILITIES

CITY	ELECTRIC UTILITY	2017 NET INCREMENTAL SAVINGS (MWH)	% OF RETAIL SALES	SCORE FOR UTILITY SAVINGS (3 PTS MUNIs, 2 PTS IOUs)	CITY–UTILITY PARTNERSHIP (1 PT IOUs; MUNIs N/A)	TOTAL (3 PTS)
BOSTON	Eversource (MA)	706,920	3.46%	2	1	3
PROVIDENCE	National Grid RI (Narragansett Electric)	232,023	3.17%	2	1	3
CHULA VISTA	San Diego Gas & Electric	440,258	2.32%	2	1	3
SAN DIEGO	San Diego Gas & Electric	440,258	2.32%	2	1	3
WORCESTER	National Grid (MA)	724,272	3.64%	2	0.5	2.5
MESA	Salt River Project*†	520,546	1.84%	2.5	N/A	2.5
PORTLAND	Portland General Electric	325,304	1.83%	1.5	1	2.5
LOS ANGELES	LADWP†	409,927	1.81%	2.5	N/A	2.5
MINNEAPOLIS	Xcel Energy (Northern States Power)	537,642	1.81%	1.5	1	2.5
ST. PAUL	Xcel Energy (Northern States Power)	537,642	1.81%	1.5	1	2.5
PHOENIX	Arizona Public Service	494,776	1.77%	1.5	0.5	2
CHICAGO	ComEd[a]	2,372,922	1.72%	1	1	2
OAKLAND	PG&E	1,343,224	1.63%	1	1	2
SAN FRANCISCO	PG&E	1,343,224	1.63%	1	1	2
SAN JOSÉ	PG&E	1,343,224	1.63%	1	1	2
SACRAMENTO	SMUD†	164,200	1.52%	2	N/A	2
DENVER	Xcel Energy (Public Service Co. of CO)	386,710	1.35%	1	1	2
BRIDGEPORT	United Illuminating Co.	94,629	1.86%	1.5	0	1.5
NEW HAVEN	United Illuminating Co.	94,629	1.86%	1.5	0	1.5
HARTFORD	Eversource (Connecticut Light & Power)†	329,842	1.57%	1	0.5	1.5
GRAND RAPIDS	Consumers Energy Co.	562,121	1.56%	1	0.5	1.5
HONOLULU	Hawaiian Electric Co.	92,253	1.41%	1	0.5	1.5
CLEVELAND	First Energy (Cleveland Electric Illuminating)*†	230,540	1.26%	1	0.5	1.5

Appendix E. Additional Tables on Policies and Results

CITY	ELECTRIC UTILITY	2017 NET INCREMENTAL SAVINGS (MWH)	% OF RETAIL SALES	SCORE FOR UTILITY SAVINGS (3 PTS MUNIs, 2 PTS IOUs)	CITY–UTILITY PARTNERSHIP (1 PT IOUs; MUNIs N/A)	TOTAL (3 PTS)
SALT LAKE CITY	Rocky Mountain Power (PacifiCorp)	254,907	1.06%	0.5	1	1.5
INDIANAPOLIS	Indianapolis Power & Light	136,843	1.04%	0.5	1	1.5
LONG BEACH	Southern California Edison	540,757	0.64%	0.5	1	1.5
KANSAS CITY	Kansas City Power & Light*†	135,850	1.64%	1	0	1
BAKERSFIELD	PG&E	1,343,224	1.63%	1	0	1
DETROIT	DTE Energy	761,630	1.62%	1	0	1
AURORA	Xcel Energy (Public Service Co. of CO)	386,710	1.35%	1	0	1
CINCINNATI	Duke Energy Ohio	265,284	1.34%	1	0	1
SEATTLE	Seattle City Light†	116,957	1.24%	1	N/A	1
COLUMBUS	American Electric Power (Ohio Power)†	456,625	1.07%	0.5	0.5	1
NEW YORK	ConEdison	564,854	1.02%	0.5	0.5	1
AUSTIN	Austin Energy	130,814	1.01%	1	N/A	1
BALTIMORE	Baltimore Gas & Electric Co.	251,140	0.87%	0.5	0.5	1
ST. LOUIS	Ameren UE (Union Electric)	272,125	0.86%	0.5	0.5	1
PHILADELPHIA	PECO[b]	281,939	0.75%	0.5	0.5	1
MILWAUKEE	We Energies	169,205	0.72%	0.5	0.5	1
ROCHESTER	Rochester Gas & Electric	42,390	0.60%	0.5	0.5	1
CHARLOTTE	Duke Energy Carolinas†	691,781	1.23%	0.5	0	0.5
TUCSON	Tucson Electric Power Co.*†	99,686	1.12%	0.5	0	0.5
BUFFALO	National Grid (NY)*†	335,563	1.00%	0.5	0	0.5
RALEIGH	Duke Energy Progress	338,876	0.92%	0.5	0	0.5
NEWARK	PSE&G†	339,765	0.83%	0.5	0	0.5
SAN ANTONIO	CPS Energy (City of San Antonio)*†	163,544	0.75%	0.5	N/A	0.5
ALBUQUERQUE	Public Service Co. of NM*†	63,234	0.72%	0.5	0	0.5
RIVERSIDE	City of Riverside Public Service	15,443	0.69%	0.5	N/A	0.5

Appendix E. Additional Tables on Policies and Results

CITY	ELECTRIC UTILITY	2017 NET INCREMENTAL SAVINGS (MWH)	% OF RETAIL SALES	SCORE FOR UTILITY SAVINGS (3 PTS MUNIs, 2 PTS IOUs)	CITY–UTILITY PARTNERSHIP (1 PT IOUs; MUNIs N/A)	TOTAL (3 PTS)
WASHINGTON	PEPCO†	73,027	0.67%	0.5	N/A	0.5
ORLANDO	Orlando Utilities Commission†	42,476	0.65%	0.5	N/A	0.5
OKLAHOMA CITY	Oklahoma Gas & Electric	147,479	0.62%	0.5	0	0.5
HENDERSON	NV Energy*†	197,642	0.61%	0.5	0	0.5
LAS VEGAS	NV Energy*†	197,642	0.61%	0.5	0	0.5
RENO	NV Energy*†	197,642	0.61%	0.5	0	0.5
PITTSBURGH	Duquesne Light Co.[c]	57,584	0.45%	0	0.5	0.5
EL PASO	El Paso Electric†	19,955	0.32%	0	0.5	0.5
TAMPA	Tampa Electric Co.†	33,777	0.18%	0	0.5	0.5
FORT WORTH	ONCOR	158,603	0.13%	0	0.5	0.5
TULSA	Public Service Co. of Oklahoma	104,661	0.58%	0	0	0
LOUISVILLE	Louisville Gas & Electric*†	64,311	0.56%	0	0	0
NEW ORLEANS	Entergy New Orleans[d]	19,061	0.44%	0	N/A	0
ATLANTA	Georgia Power*†	341,718	0.41%	0	0	0
JACKSONVILLE	JEA	37,330	0.32%	0	N/A	0
MCALLEN	American Electric Power (TX)	64,971	0.25%	0	0	0
OMAHA	Omaha Public Power District†	26,696	0.25%	0	N/A	0
HOUSTON	CenterPoint Energy*†	151,278	0.21%	0	0	0
KNOXVILLE	Knoxville Utilities Board	10,590	0.20%	0	N/A	0
ST. PETERSBURG	Duke Energy Florida†	66,081	0.17%	0	0	0
DALLAS	ONCOR	158,603	0.13%	0	0	0
RICHMOND	Dominion Virginia Power	79,809	0.10%	0	0	0
VIRGINIA BEACH	Dominion Virginia Power	79,809	0.10%	0	0	0
MIAMI	Florida Power & Light*†	58,052	0.05%	0	0	0
NASHVILLE	Nashville Electric Service	3,391	0.03%	0	N/A	0
BIRMINGHAM	Alabama Power*†	9,939	0.02%	0	0	0

Appendix E. Additional Tables on Policies and Results

CITY	ELECTRIC UTILITY	2017 NET INCREMENTAL SAVINGS (MWH)	% OF RETAIL SALES	SCORE FOR UTILITY SAVINGS (3 PTS MUNIs, 2 PTS IOUs)	CITY–UTILITY PARTNERSHIP (1 PT IOUs; MUNIs N/A)	TOTAL (3 PTS)
MEMPHIS	Memphis Light, Gas & Water	1,441	0.01%	0	N/A	0

*Savings and sales data are as reported for 2017 by utility staff except where noted. We include savings from the utilities as well as from statewide program administrators (i.e., NYSERDA, TVA, Energy Trust, Focus on Energy, Hawai'i Energy, and DCSEU) that are attributable to each utility. † Savings converted from gross to net using 0.856 conversation factor. * 2017 savings data from EIA-861 (EIA 2018a).*

[a] ComEd's sales and savings data cover its program year from June 2016 through December 2017. [b] PECO's sales and savings data cover its program year from 2016 through 2017. [c] Duquesne Light Co.'s sales and savings data cover its program year from June 2017 to May 2018. [d] Entergy New Orleans's programs ran from April 2017 through December 2017, and its sales and savings span this period.

Appendix E. Additional Tables on Policies and Results

TABLE E10. SCORES FOR NATURAL GAS EFFICIENCY EFFORTS FOR ENERGY UTILITIES

CITY	NATURAL GAS UTILITY	2017 NET INCREMENTAL SAVINGS (MMTHERMS)	% OF RETAIL SALES	SCORE (1.5 PTS)
MINNEAPOLIS	CenterPoint Energy†	23.61	2.20%	1.5
BOSTON	National Grid (Boston Gas & Colonial Gas Co.)	16.42	2.10%	1.5
WORCESTER	Eversource (MA)	6.90	2.09%	1.5
PROVIDENCE	Narragansett (National Grid RI)	4.68	1.99%	1.5
ST. PAUL	Xcel Energy (Northern States Power)	7.99	1.53%	1.5
DETROIT	DTE Energy	16.73	1.51%	1.5
GRAND RAPIDS	DTE Energy	16.73	1.51%	1.5
OAKLAND	PG&E	28.00	1.45%	1.5
SACRAMENTO	PG&E	28.00	1.45%	1.5
SAN FRANCISCO	PG&E	28.00	1.45%	1.5
SAN JOSÉ	PG&E	28.00	1.45%	1.5
BAKERSFIELD	SoCal Gas	34.41	1.31%	1.5
LOS ANGELES	SoCal Gas	34.41	1.31%	1.5
RIVERSIDE	SoCal Gas	34.41	1.31%	1.5
WASHINGTON	Washington Gas (DC SEU)†	1.44	1.25%	1.5
PORTLAND	NW Natural	5.90	0.88%	1
MILWAUKEE	We Energies (Wisconsin Energy)	8.60	0.81%	1
HARTFORD	Connecticut Natural Gas	2.21	0.79%	1
CHICAGO	Peoples Gas	9.88	0.78%	1
OKLAHOMA CITY	Oklahoma Natural Gas	3.78	0.70%	1
TULSA	Oklahoma Natural Gas	3.78	0.70%	1
HONOLULU	Hawai'i Gas	N/A	N/A	1
COLUMBUS	Columbia Gas of Ohio (NiSource)	10.67	0.69%	0.5
MESA	Southwest Gas†	2.87	0.68%	0.5
PHOENIX	Southwest Gas	2.87	0.68%	0.5
TUCSON	Southwest Gas†	2.87	0.68%	0.5
NEW YORK	National Grid (Brooklyn Union Gas Co.)/NYSERDA	3.85	0.58%	0.5
AURORA	Xcel (Public Service Co. of CO)	6.27	0.57%	0.5
DENVER	Xcel (Public Service Co. of CO)	6.27	0.57%	0.5

Appendix E. Additional Tables on Policies and Results

CITY	NATURAL GAS UTILITY	2017 NET INCREMENTAL SAVINGS (MMTHERMS)	% OF RETAIL SALES	SCORE (1.5 PTS)
BRIDGEPORT	Southern Connecticut Gas	1.36	0.50%	0.5
NEW HAVEN	Southern Connecticut Gas	1.36	0.50%	0.5
CHULA VISTA	San Diego Gas & Electric	1.64	0.43%	0.5
SAN DIEGO	San Diego Gas & Electric	1.64	0.43%	0.5
SEATTLE	Puget Sound Energy	3.61	0.39%	0.5
BUFFALO	National Fuel Gas	1.51	0.37%	0.5
ALBUQUERQUE	New Mexico Gas	1.15	0.35%	0.5
BALTIMORE	Baltimore Gas & Electric	0.87	0.24%	0.5
NEWARK	PSE&G†	3.82	0.23%	0.5
KANSAS CITY	Spire Missouri	1.75	0.18%	0
ST. LOUIS	Spire Missouri	1.75	0.18%	0
PHILADELPHIA	PGW	0.64	0.17%	0
ROCHESTER	Rochester Gas & Electric	0.28	0.12%	0
AUSTIN	Texas Gas Service	0.31	0.11%	0
EL PASO	Texas Gas Service	0.31	0.11%	0
MCALLEN	Texas Gas Service	0.31	0.11%	0
VIRGINIA BEACH	Virginia Natural Gas (AGL Resources)	0.16	0.07%	0
FORT WORTH	ATMOS Energy	0.47	0.04%	0
KNOXVILLE	Knoxville Utilities Board	0	0%	0
ATLANTA	Atlanta Gas Light (Southern Company Gas)	0	0%	0
BIRMINGHAM	Alagasco	0	0%	0
CHARLOTTE	Piedmont Natural Gas	0	0%	0
CINCINNATI	Duke Energy Ohio	0	0%	0
CLEVELAND	Dominion Energy Ohio	0.15	0%	0
DALLAS	ATMOS Energy	0	0%	0
HENDERSON	Southwest Gas	0	0%	0
HOUSTON	CenterPoint Energy	0	0%	0
INDIANAPOLIS	Indianapolis Power & Light	0	0%	0
JACKSONVILLE	TECO Peoples Gas	0	0%	0
LAS VEGAS	Southwest Gas	0	0%	0

Appendix E. Additional Tables on Policies and Results

CITY	NATURAL GAS UTILITY	2017 NET INCREMENTAL SAVINGS (MMTHERMS)	% OF RETAIL SALES	SCORE (1.5 PTS)
LONG BEACH	Long Beach Energy Resources	0	0%	0
LOUISVILLE	Louisville Gas & Electric	0	0%	0
MEMPHIS	Memphis Light, Gas & Water	0	0%	0
MIAMI	Florida City Gas	0	0%	0
NASHVILLE	Piedmont Natural Gas	0	0%	0
NEW ORLEANS	Entergy New Orleans	0	0%	0
OMAHA	Metropolitan Utilities District of Omaha	0	0%	0
ORLANDO	TECO Peoples Gas	0	0%	0
PITTSBURGH	Peoples Natural Gas	0	0%	0
RALEIGH	PSNC Energy	0	0%	0
RENO	NV Energy	0	0%	0
RICHMOND	Richmond Department of Public Utilities	0	0%	0
SALT LAKE CITY	Dominion Energy (Questar Gas)	0	0%	0
SAN ANTONIO	CPS Energy (San Antonio PSB)	0	0%	0
ST. PETERSBURG	TECO Peoples Gas	0	0%	0
TAMPA	TECO Peoples Gas	0	0%	0

*All sales data are from 2017 EIA-176 (EIA 2018b). All 2017 savings data are from utility staff. We include savings from the utilities as well as statewide program administrators (i.e., NYSERDA, TVA, Energy Trust, Focus on Energy, Hawai'i Energy, and DCSEU) that are attributable to each utility. †Savings converted from gross to net using 0.897 factor. *Because Hawai'i consumes almost no natural gas, we scored Honolulu only on electric efficiency savings. Accordingly we awarded Hawai'i points for natural gas efficiency savings equivalent to the proportion of points it earned for corresponding electricity savings. **Columbia Gas of Ohio's natural gas sales include residential, commercial, and industrial sales from EIA-176 (EIA 2018b).*

Appendix E. Additional Tables on Policies and Results

TABLE E11. SCORES FOR LOW-INCOME ENERGY EFFICIENCY PROGRAMS

CITY	COMPREHENSIVE LOW-INCOME PROGRAM	LOCAL PARTNERSHIPS	PORTFOLIO OF LOW-INCOME PROGRAMS	BRAIDING FUNDS FOR HEALTH AND SAFETY	LOCAL GOVERNMENT FUNDS (N/A FOR CITIES WITH ELECTRIC MUNIs)	SCORE (1.5 PTS)
AURORA						1.5
AUSTIN					N/A	1.5
BALTIMORE						1.5
BOSTON						1.5
BUFFALO						1.5
CHARLOTTE						1.5
CHICAGO						1.5
CHULA VISTA						1.5
CLEVELAND						1.5
COLUMBUS						1.5
DALLAS						1.5
DENVER						1.5
DETROIT						1.5
FORT WORTH						1.5
GRAND RAPIDS						1.5
HARTFORD						1.5
HOUSTON						1.5
JACKSONVILLE					N/A	1.5
KANSAS CITY						1.5
KNOXVILLE					N/A	1.5
LOS ANGELES					N/A	1.5
MEMPHIS					N/A	1.5
MILWAUKEE						1.5
MINNEAPOLIS						1.5
NEW YORK						1.5
NEWARK						1.5
PHILADELPHIA						1.5
PHOENIX						1.5

Appendix E. Additional Tables on Policies and Results

CITY	COMPREHENSIVE LOW-INCOME PROGRAM	LOCAL PARTNERSHIPS	PORTFOLIO OF LOW-INCOME PROGRAMS	BRAIDING FUNDS FOR HEALTH AND SAFETY	LOCAL GOVERNMENT FUNDS (N/A FOR CITIES WITH ELECTRIC MUNIs)	SCORE (1.5 PTS)
PITTSBURGH						1.5
PORTLAND						1.5
PROVIDENCE						1.5
RIVERSIDE					N/A	1.5
ROCHESTER						1.5
SALT LAKE CITY						1.5
SAN DIEGO						1.5
SEATTLE					N/A	1.5
ST. LOUIS						1.5
ST. PAUL						1.5
TULSA						1.5
WASHINGTON					N/A	1.5
WORCESTER						1.5
ALBUQUERQUE						1
BAKERSFIELD						1
BRIDGEPORT						1
CINCINNATI						1
EL PASO						1
HONOLULU						1
INDIANAPOLIS						1
LONG BEACH						1
NEW HAVEN						1
NEW ORLEANS					N/A	1
OAKLAND						1
OKLAHOMA CITY						1
ORLANDO					N/A	1
RICHMOND						1
SACRAMENTO					N/A	1
SAN FRANCISCO						1

Appendix E. Additional Tables on Policies and Results

CITY	COMPREHENSIVE LOW-INCOME PROGRAM	LOCAL PARTNERSHIPS	PORTFOLIO OF LOW-INCOME PROGRAMS	BRAIDING FUNDS FOR HEALTH AND SAFETY	LOCAL GOVERNMENT FUNDS (N/A FOR CITIES WITH ELECTRIC MUNIs)	SCORE (1.5 PTS)
SAN JOSÉ						1
ST. PETERSBURG						1
TAMPA						1
TUCSON						1
ATLANTA						0.5
BIRMINGHAM						0.5
LOUISVILLE						0.5
MCALLEN						0.5
MESA					N/A	0.5
MIAMI						0.5
OMAHA					N/A	0.5
RALEIGH						0.5
SAN ANTONIO					N/A	0.5
VIRGINIA BEACH						0.5
HENDERSON						0
LAS VEGAS						0
NASHVILLE					N/A	0
RENO						0

Appendix E. Additional Tables on Policies and Results

TABLE E12. SCORES FOR MULTIFAMILY ENERGY EFFICIENCY PROGRAMS

CITY	COMPREHENSIVE ELECTRIC PROGRAM (0.5 PTS)	COMPREHENSIVE NATURAL GAS PROGRAM (0.5 PTS)	TOTAL (1 PT)
ALBUQUERQUE	0.5	0.5	1
AURORA	0.5	0.5	1
BAKERSFIELD	0.5	0.5	1
BALTIMORE	0.5	0.5	1
BOSTON	0.5	0.5	1
BRIDGEPORT	0.5	0.5	1
BUFFALO	0.5	0.5	1
CHICAGO	0.5	0.5	1
CHULA VISTA	0.5	0.5	1
DENVER	0.5	0.5	1
DETROIT	0.5	0.5	1
GRAND RAPIDS	0.5	0.5	1
HARTFORD	0.5	0.5	1
HONOLULU	0.5	0.5	1
HOUSTON	0.5	0.5	1
LOS ANGELES	0.5	0.5	1
MILWAUKEE	0.5	0.5	1
MINNEAPOLIS	0.5	0.5	1
NEW HAVEN	0.5	0.5	1
NEW ORLEANS	0.5	0.5	1
NEW YORK	0.5	0.5	1
NEWARK	0.5	0.5	1
OAKLAND	0.5	0.5	1
PHILADELPHIA	0.5	0.5	1
PORTLAND	0.5	0.5	1
PROVIDENCE	0.5	0.5	1
RIVERSIDE	0.5	0.5	1
ROCHESTER	0.5	0.5	1
SAN DIEGO	0.5	0.5	1

Appendix E. Additional Tables on Policies and Results

CITY	COMPREHENSIVE ELECTRIC PROGRAM (0.5 PTS)	COMPREHENSIVE NATURAL GAS PROGRAM (0.5 PTS)	TOTAL (1 PT)
SAN FRANCISCO	0.5	0.5	1
SAN JOSÉ	0.5	0.5	1
SEATTLE	0.5	0.5	1
ST. LOUIS	0.5	0.5	1
ST. PAUL	0.5	0.5	1
WASHINGTON	0.5	0.5	1
WORCESTER	0.5	0.5	1
ATLANTA	0.5	0	0.5
AUSTIN	0.5	0	0.5
COLUMBUS	0	0.5	0.5
LONG BEACH	0.5	0	0.5
ORLANDO	0.5	0	0.5
PITTSBURGH	0.5	0	0.5
TUCSON	0.5	0	0.5
TULSA	0.5	0	0.5
BIRMINGHAM	0	0	0
CHARLOTTE	0	0	0
CINCINNATI	0	0	0
CLEVELAND	0	0	0
DALLAS	0	0	0
EL PASO	0	0	0
FORT WORTH	0	0	0
HENDERSON	0	0	0
INDIANAPOLIS	0	0	0
JACKSONVILLE	0	0	0
KANSAS CITY	0	0	0
KNOXVILLE	0	0	0
LAS VEGAS	0	0	0
LOUISVILLE	0	0	0
MCALLEN	0	0	0

Appendix E. Additional Tables on Policies and Results

CITY	COMPREHENSIVE ELECTRIC PROGRAM (0.5 PTS)	COMPREHENSIVE NATURAL GAS PROGRAM (0.5 PTS)	TOTAL (1 PT)
MEMPHIS	0	0	0
MESA	0	0	0
MIAMI	0	0	0
NASHVILLE	0	0	0
OKLAHOMA CITY	0	0	0
OMAHA	0	0	0
PHOENIX	0	0	0
RALEIGH	0	0	0
RENO	0	0	0
RICHMOND	0	0	0
SACRAMENTO	0	0	0
SALT LAKE CITY	0	0	0
SAN ANTONIO	0	0	0
ST. PETERSBURG	0	0	0
TAMPA	0	0	0
VIRGINIA BEACH	0	0	0

Appendix E. Additional Tables on Policies and Results

TABLE E13. SCORES FOR PROVISION OF ENERGY DATA BY UTILITIES

CITY	AUTOMATED BENCHMARKING (0.5 PTS)	ADVOCACY (0.5 PTS)	TOTAL (1 PT)
ATLANTA	0.5	0.5	1
AUSTIN	0.5	0.5	1
BOSTON	0.5	0.5	1
BUFFALO	0.5	0.5	1
CHICAGO	0.5	0.5	1
CHULA VISTA	0.5	0.5	1
COLUMBUS	0.5	0.5	1
DENVER	0.5	0.5	1
LOS ANGELES	0.5	0.5	1
MINNEAPOLIS	0.5	0.5	1
NEW YORK	0.5	0.5	1
OAKLAND	0.5	0.5	1
PHILADELPHIA	0.5	0.5	1
PROVIDENCE	0.5	0.5	1
RIVERSIDE	0.5	0.5	1
SALT LAKE CITY	0.5	0.5	1
SAN DIEGO	0.5	0.5	1
SAN FRANCISCO	0.5	0.5	1
SAN JOSÉ	0.5	0.5	1
SEATTLE	0.5	0.5	1
WASHINGTON	0.5	0.5	1
ALBUQUERQUE	0	0.5	0.5
AURORA	0.5	0	0.5
BAKERSFIELD	0.5	0	0.5
BALTIMORE	0.5	0	0.5
BIRMINGHAM	0.5	0	0.5
BRIDGEPORT	0.5	0	0.5
CHARLOTTE	0.5	0	0.5
CLEVELAND	0	0.5	0.5

Appendix E. Additional Tables on Policies and Results

CITY	AUTOMATED BENCHMARKING (0.5 PTS)	ADVOCACY (0.5 PTS)	TOTAL (1 PT)
GRAND RAPIDS	0	0.5	0.5
HARTFORD	0.5	0	0.5
HONOLULU	0	0.5	0.5
HOUSTON	0	0.5	0.5
KANSAS CITY	0	0.5	0.5
LONG BEACH	0.5	0	0.5
MESA	0.5	0	0.5
MILWAUKEE	0	0.5	0.5
NEW HAVEN	0.5	0	0.5
ORLANDO	0	0.5	0.5
PHOENIX	0	0.5	0.5
PITTSBURGH	0.5	0	0.5
PORTLAND	0	0.5	0.5
RALEIGH	0	0.5	0.5
RICHMOND	0	0.5	0.5
SACRAMENTO	0.5	0	0.5
ST. PAUL	0.5	0	0.5
TAMPA	0.5	0	0.5
TULSA	0.5	0	0.5
VIRGINIA BEACH	0	0.5	0.5
CINCINNATI	0	0	0
DALLAS	0	0	0
DETROIT	0	0	0
EL PASO	0	0	0
FORT WORTH	0	0	0
HENDERSON	0	0	0
INDIANAPOLIS	0	0	0
JACKSONVILLE	0	0	0
KNOXVILLE	0	0	0
LAS VEGAS	0	0	0

Appendix E. Additional Tables on Policies and Results

CITY	AUTOMATED BENCHMARKING (0.5 PTS)	ADVOCACY (0.5 PTS)	TOTAL (1 PT)
LOUISVILLE	0	0	0
MCALLEN	0	0	0
MEMPHIS	0	0	0
MIAMI	0	0	0
NASHVILLE	0	0	0
NEW ORLEANS	0	0	0
NEWARK	0	0	0
OKLAHOMA CITY	0	0	0
OMAHA	0	0	0
RENO	0	0	0
ROCHESTER	0	0	0
SAN ANTONIO	0	0	0
ST. LOUIS	0	0	0
ST. PETERSBURG	0	0	0
TUCSON	0	0	0
WORCESTER	0	0	0

Appendix E. Additional Tables on Policies and Results

TABLE E14. SCORES FOR RENEWABLE ENERGY INCENTIVES, INCLUDING ONLY UTILITIES THAT OFFERED A RENEWABLE INCENTIVE IN 2017

CITY	ELECTRIC UTILITY	TOTAL RENEWABLE INCENTIVE SPENDING (2017)	TOTAL INSTALLED 2017 CAPACITY (KW)	TOTAL SPENDING PER KW (2017)	TOTAL (2 PTS)
CHULA VISTA	San Diego Gas & Electric	$655,500	219	$3,000	2
SAN DIEGO	San Diego Gas & Electric	$655,500	219	$3,000	2
DALLAS	ONCOR	$4,557,017	3,342	$1,364	1.5
FORT WORTH	ONCOR	$4,557,017	3,342	$1,364	1.5
BAKERSFIELD	PG&E	$14,798,004	14,238	$1,039	1.5
OAKLAND	PG&E	$14,798,004	14,238	$1,039	1.5
SAN FRANCISCO	PG&E	$14,798,004	14,238	$1,039	1.5
SAN JOSÉ	PG&E	$14,798,004	14,238	$1,039	1.5
AUSTIN	Austin Energy	$6,230,084	6,580	$947	1
SAN ANTONIO	CPS Energy (City of San Antonio)	$17,973,232	29,215	$615	1
KANSAS CITY	Kansas City Power & Light	$637,245	1,448	$440	1
PORTLAND	Portland General Electric	$6,999,654	16,020	$437	1
LOS ANGELES	LADWP	$14,504,862	34,080	$426	1
HENDERSON	NV Energy	$5,134,964	14,880	$345	0.5
LAS VEGAS	NV Energy	$5,134,964	14,880	$345	0.5
RENO	NV Energy	$5,134,964	14,880	$345	0.5
RIVERSIDE	City of Riverside Public Service	$261,422	907	$288	0.5
MILWAUKEE	We Energies	$563,229	2,160	$261	0.5
LONG BEACH	Southern California Edison	$59,706,029	363,370	$164	0.5
WASHINGTON	PEPCO	$366,707	2,244	$163	0.5
SACRAMENTO	SMUD	$690,382	26,165	$26	0.5
AURORA	Xcel Energy (Public Service Co. of CO)	$442,925	20,700	$21	0.5
DENVER	Xcel Energy (Public Service Co. of CO)	$442,925	20,700	$21	0.5
MCALLEN	American Electric Power (TX)	NOT AVAILABLE*	NOT AVAILABLE*	—	0.5

**We awarded 0.5 points in cases where we were able to verify that a utility did offer an incentive but were unable to verify the amount of the incentive and installed capacity resulting from the incentive.*

Appendix E. Additional Tables on Policies and Results

TABLE E15. SCORES FOR CITY EFFORTS TO DECARBONIZE THE UTILITY ELECTRIC GRID FOR IOUs

CITY	PUC COMMENTS	FORMAL PARTNERSHIP	PLANNING EFFORTS (E.G., AGGREGATION)	TOTAL (1 PT)
BOSTON	0.5	0.5	0.5	1
DENVER	0.5	0.5		1
MINNEAPOLIS	0.5	0.5		1
NEW YORK	0.5		0.5	1
PORTLAND	0.5	0.5		1
SALT LAKE CITY	0.5	0.5		1
ALBUQUERQUE	0.5			0.5
BALTIMORE	0.5			0.5
BUFFALO	0.5			0.5
CHARLOTTE			0.5	0.5
CINCINNATI	0.5			0.5
FORT WORTH	0.5			0.5
GRAND RAPIDS	0.5			0.5
HARTFORD	0.5			0.5
HONOLULU	0.5			0.5
INDIANAPOLIS		0.5		0.5
MILWAUKEE			0.5	0.5
OAKLAND		0.5		0.5
PHILADELPHIA	0.5			0.5
PROVIDENCE	0.5			0.5
RENO	0.5			0.5
RICHMOND	0.5			0.5
SAN DIEGO	0.5			0.5
SAN FRANCISCO		0.5		0.5
SAN JOSÉ		0.5		0.5
ST. PAUL		0.5		0.5
ST. PETERSBURG			0.5	0.5

*This table includes only cities that reported efforts. See **database.aceee.org** for descriptions of each city's efforts to decarbonize the local electric grid.*

Appendix E. Additional Tables on Policies and Results

TABLE E16. SCORES FOR CITY EFFORTS TO DECARBONIZE THE UTILITY ELECTRIC GRID FOR MUNICIPAL UTILITIES

CITY	MUNICIPAL UTILITY	% OF TOTAL GENERATION FROM RENEWABLES (2017)	TOTAL (2 PTS)
SEATTLE	Seattle City Light	93%	1
AUSTIN	Austin Energy	36%	0.5
RIVERSIDE	City of Riverside Public Service	36%	0.5
OMAHA	Omaha Public Power District	31%	0.5
LOS ANGELES	LADWP	30%	0.5
SACRAMENTO	SMUD	26%	0.5
SAN ANTONIO	CPS Energy (City of San Antonio)	14%	0
KNOXVILLE	Knoxville Utilities Board	10%	0
MEMPHIS	Memphis Light, Gas & Water	10%	0
NASHVILLE	Nashville Electric Service	10%	0
WASHINGTON	PEPCO	6%	0
ORLANDO	Orlando Utilities Commission	2%	0
JACKSONVILLE	JEA	1%	0
NEW ORLEANS	Entergy New Orleans	0%	0
MESA	Salt River Project	0%	0

Appendix E. Additional Tables on Policies and Results

TRANSPORTATION POLICIES

TABLE E17. SUMMARY OF SCORING ON TRANSPORTATION PLANS AND TARGETS

CITY	SUSTAINABLE TRANSPORTATION POLICY	TOTAL (4 PTS)
BOSTON	Go Boston 2030, released in 2017, set a goal to reduce GHG emissions from transportation by 50% of 2005 levels by 2030.	4
SEATTLE	Seattle's Climate Action Plan calls for an 82% reduction in transportation GHG emissions by 2030 from a 2008 baseline.	4
WASHINGTON	The District Department of Transportation created a six-year transportation demand management (TDM) strategic plan in 2017 building off of recommendations in the MoveDC Plan and including strategies for reducing vehicle miles traveled. Specifically, the plan aims to make getting into and around the District seamless and efficient; provide high-quality and inclusive TDM services to District residents, businesses, employers, and visitors; and to make Washington a national leader in the provision of effective TDM services.	4
PHILADELPHIA	Philadelphia's Strategic Transportation Plan sets numerous goals and strategies around a clean and sustainable transportation system, including continuing to decrease VMT per capita.	3.5
SAN DIEGO	San Diego's Climate Action plan has a specific goal to reduce GHG emissions by 110,000 metric tons of CO2 equivalent by 2035.	3.5
SAN FRANCISCO	San Francisco has a codified transport GHG reduction target of 40% by 2025 from 1990 levels.	3.5
ATLANTA	Atlanta's Climate Action Plan provides a specific plan to reduce VMTs by 20% from a 2009 baseline by 2020. Strategies to meet this goal include promoting EV purchasing, parking pricing, transit investment, and modal share.	3
CLEVELAND	The 2018 updated Cleveland Climate Action Plan includes a focus area on sustainable transportation. It also contains a transportation goal for reducing single-occupancy vehicle driving rates from 70% to 65% by 2020 and to 55% by 2030.	3
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 sharing program, implementing a car sharing program, promoting bus ridership, and improving bicycle facilities and support for bicycle commuting.	3
MINNEAPOLIS	Minneapolis's Climate Action Plan, adopted in June 2013, includes a detailed plan to reduce VMT by 31% from 2010 to 2025, or 2% annually.	3
PITTSBURGH	Pittsburgh's Climate Action Plan outlines strategies for reducing GHG emissions from transportation. The mayor of Pittsburgh has also adopted a goal to reduce citywide transportation GHG emissions by 50% by 2030.	3
LOS ANGELES	The Sustainable City pLAn established a citywide goal of reducing daily VMT per capita by at least 5% from 2012 levels by 2025 and 10% by 2035. This is equivalent to 0.4% per year.	2.5
PORTLAND	Portland's 2035 Transportation System Plan includes specific sustainable transportation policies, such as one to reduce carbon emissions, air pollution, water pollution, and reliance on vehicles. As part of the Climate Action Plan, the city council has adopted targets to reduce the number of miles Portlanders travel by car to 11 miles per day on average by 2035. The city also has a goal to reduce transportation-related carbon emissions to 50% below 1990 levels by 2035.	2.5
SAN ANTONIO	The SA Tomorrow plan includes sustainable transportation provisions and adopts the goal of reducing daily VMT per capita to 16.5 miles by 2040 compared to a baseline of 22.4 miles in 2013.	2.5

Appendix E. Additional Tables on Policies and Results

CITY	SUSTAINABLE TRANSPORTATION POLICY	TOTAL (4 PTS)
SAN JOSÉ	The Envision San Jose 2040 General Plan aims to reduce automobile mode share by 40% by 2040. It includes strategies to reduce VMT, energy consumption, and GHG emissions while creating a healthier community.	2.5
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.	2
ALBUQUERQUE	The Futures 2040 metropolitan transportation plan outlines strategies to streamline transportation energy use in Albuquerque.	1
AUSTIN	Austin has a comprehensive plan in place to develop a more compact and connected city that provides integrated and affordable transportation. It also has GHG emissions goals for its transportation sector.	1
BALTIMORE	Baltimore's 2019 Sustainability Plan outlines strategies to increase mobility choices and commits to advancing a regional transit plan and finding sustainable funding for public transportation.	1
CHARLOTTE	The 2045 Metropolitan Transportation Plan, adopted in March 2018, includes reducing VMT as one of its goals to reduce transportation emissions but does not have a specific target in place. Additionally, the Strategic Energy Action Plan highlights a list of strategies and goals aimed at creating a sustainable transportation system.	1
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.	1
CHULA VISTA	The 2017 Climate Action Plan includes strategies to incorporate complete streets and encourage higher density and mixed-use development, expand bike sharing and car sharing facilities and options, and incentivize alternative-fuel options.	1
CINCINNATI	Cincinnati's 2018 Green Cincinnati Plan includes several actions to reduce VMT, such as increasing fleet fuel efficiency and use of alternative fuels and energy, as well as increasing funding, support, and interconnectivity among mass transit, bicycling, and pedestrian infrastructure.	1
COLUMBUS	The Columbus Climate Adaptation Plan was completed in December 2018. The actions related to transportation include idling reductions and promoting alternative transportation mode options. In addition, the local transit authority, COTA, has adopted a Next Gen plan to increase mass transit ridership and reduce VMT.	1
DENVER	Denver's Mobility Action Plan was published in July 2017 and sets goals to reduce drive-alone rates, emissions, and traffic deaths, focusing on the key metric of reducing single-occupancy vehicle (SOV) driving rates to no more than 50% of trips. The city also has a Denver Moves suite of plans that lay out detailed priorities for all transportation modes.	1
DETROIT	Detroit's 2018 Transportation Plan includes goals to improve transit service, safety, efficiency, and accessibility.	1
GRAND RAPIDS	Although a specific target has not been set, VMT reductions were highlighted as an effect of sustainable transportation in the Green Grand Rapids Report, and reduction of VMT was listed as a value in the City's Vital Streets Plan.	1
HARTFORD	Transportation is one of the six focus areas of the city's 2018 Climate Action Plan, with reducing VMTs as a critical goal. Strategies range from initiating a traffic signal synchronization program to encouraging businesses to develop transportation demand management programs and increasing sustainable transportation alternatives such as public transit and biking.	1

Appendix E. Additional Tables on Policies and Results

CITY	SUSTAINABLE TRANSPORTATION POLICY	TOTAL (4 PTS)
HENDERSON	The Henderson Strong Comprehensive Plan, adopted in 2017, contains goals to reduce transportation-related emissions of ozone and carbon monoxide and VMT.	1
KNOXVILLE	Knoxville's Energy and Sustainability Initiative has a transportation component that outlines green fleets and bike sharing as key strategies to reducing emissions.	1
LAS VEGAS	Las Vegas has in place a Mobility Master Plan that makes recommendations for vehicular, transit, bicycle, and pedestrian improvements over a 20-year time frame. The plan includes over 180 multimodal transportation improvement projects.	1
LONG BEACH	The Mobility Element of the Long Beach General Plan, adopted in 2013, addresses the future of all modes of travel, including walking, bicycling, transit, and driving.	1
MESA	The City of Mesa released a 2040 transportation plan in 2013.	1
NASHVILLE	Access Nashville 2040 is the city's multimodal transportation plan, providing a roadmap for the development of the entire transportation network through 2040. Its main goal is to improve public transit and create walkable streets throughout the city.	1
NEW HAVEN	New Haven's Climate Action Plan, released in January 2018, includes several measures to reduce transportation GHG emissions.	1
NEW ORLEANS	New Orleans' metropolitan transportation plan outlines a vision for creating and maintaining a transportation system that will promote livable, equitable, economically viable, and environmentally sustainable communities for future generations. Objectives in the plan include encouraging clean and more efficient vehicle use and expanding transportation choices beyond single-occupancy vehicles for all households.	1
NEW YORK	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.	1
OAKLAND	Oakland's Department of Transportation Strategic Plan provides detailed strategies to integrate VMT reduction with utilization of low-carbon modes of transportation.	1
ORLANDO	Orlando's 2040 Long Range Transportation Plan includes land use forecasts for VMT reduction.	1
PHOENIX	Phoenix's Sustainability Report is a comprehensive plan that discusses strategies for improving the sustainability of its transportation system.	1
PROVIDENCE	The city's Sustainability Plan has a chapter dedicated to sustainable transportation strategies. It also tracks VMT as a key metric for implementation.	1
RENO	The city highlights reducing VMT in its 2017 Sustainability Report, as well as developing its multimodal transit system while improving reliability, efficiency, and safety.	1
RICHMOND	Richmond's Sustainability Plan, RVAgreen, contains a transportation section with multiple strategies for reducing VMT.	1
RIVERSIDE	Riverside's Green Action Plan includes strategies to reduce VMT such as 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.	1
SACRAMENTO	Sacramento's Metropolitan Transportation Plan/Sustainable Communities Strategy outlines strategies to create a transportation system that supports smart land use, environmental quality and sustainability, access and mobility, equity and choice, and economic vitality for all people.	1

Appendix E. Additional Tables on Policies and Results

CITY	SUSTAINABLE TRANSPORTATION POLICY	TOTAL (4 PTS)
SALT LAKE CITY	Reducing per capita VMT is the number one goal of Salt Lake City's 2017 Transit Master Plan. It also aims to increase public transit use, access, and safety.	1
ST. LOUIS	St. Louis outlines strategies to increase energy efficiency in transportation as part of its Sustainability Plan.	1
ST. PETERSBURG	St. Petersburg's Comprehensive Plan, last updated in 2016, includes strategies to reduce GHG emissions in transportation.	1
TAMPA	Tampa's Comprehensive Plan contains strategies to increase transportation efficiency.	1
VIRGINIA BEACH	The city addresses sustainable transportation as part of a broader city plan, and it contains several strategies to reduce VMT, but there are no specific, codified goals in place.	1
AURORA	The City of Aurora does not have a stand-alone transportation plan, but it does have a sustainability plan with strategies to reduce transportation emissions and energy use.	0.5
BAKERSFIELD	Kern County also has a sustainable transportation plan, which includes the City of Bakersfield but is not specific to the city.	0.5
BRIDGEPORT	Bridgeport's Energy Efficiency and Conservation Plan includes strategies that cover both vehicle fleets and passenger mobility to reduce transportation GHG.	0.5
HOUSTON	The City of Houston has a city mobility plan that emphasizes multimodal mobility solutions, with sub-regional studies still ongoing across various areas in the city.	0.5
OMAHA	Omaha's Master Plan includes a transportation element that is heavily focused on road passenger and freight travel.	0.5
ROCHESTER	Rochester does not have a comprehensive transportation plan but does have a Bicycle Master Plan that was completed in 2011. The plan identified opportunities for improving bicycling infrastructure and promote bicycling in the city. Through Reimagine RTS, the Regional Transit System is also exploring changes needed to better meet the needs of public transit service in Monroe County, including downtown Rochester	0.5
ST. PAUL	Like Rochester, St. Paul does not have a comprehensive transportation plan but has stand-alone bicycle and pedestrian plans.	0.5
WORCESTER	Worcester's Climate Action Plan includes strategies to reduce VMT, like increasing employee carpooling, increasing public transport, and increasing walking and biking.	0.5

Sources: Boston 2017; Seattle data request; District of Columbia 2014 and District of Columbia 2016; Philadelphia 2018; San Diego 2015; Atlanta 2015; Cleveland 2018; Louisville 2013; Minneapolis 2013; Pittsburgh 2015; Riverside 2012; SFMTA 2016; Los Angeles 2015; Portland 2015; San José 2011; Jacksonville 2011; San Antonio 2011; Austin 2015; Chicago 2015; Chula Vista 2017; Cincinnati 2018; Denver 2017; Detroit 2018; Hartford 2018; Las Vegas 2016; Nashville 2015; New Orleans 2015; New York 2015; Oakland 2016; Orlando 2015; Phoenix 2016; Providence 2014; Reno 2017; Richmond 2014; Sacramento 2016; Salt Lake City 2017; St. Louis 2013; Tampa 2016; Virginia Beach 2013.

Appendix E. Additional Tables on Policies and Results

TABLE E18. COMPLETE STREETS POLICIES

CITY	COMPLETE STREETS POLICY	NCSC SCORE (OUT OF 100)	ACEEE SCORE (2 PTS)
INDIANAPOLIS	Chapter 431, Article VIII	92.8	2
PITTSBURGH	A Resolution Adopting the City of Pittsburgh Complete Streets Policy	92.8	2
FORT WORTH	Complete Streets Policy	91.2	2
HARTFORD	An Ordinance Amending Chapter 31 - Streets and Sidewalks - Of the Hartford Municipal Code to Add Article X Complete Streets Policy	91.2	2
KNOXVILLE	Ordinance No. O-204-2014	88.8	2
OMAHA	Complete Streets Policy	88.8	2
HONOLULU	Article 33 of Chapter 14 of the Revised Ordinances of Honolulu	85.6	2
MINNEAPOLIS	Complete Streets Policy	85.6	2
RICHMOND	Resolution No. 2014-R172-170	82.4	2
DALLAS	Resolution 16-0173	81.2	2
ST. PETERSBURG	Administrative Policy No. 020400	80	2
ROCHESTER	Complete Streets Policy	74.4	1.5
NEW ORLEANS	Ordinance No. 24706	70.8	1.5
VIRGINIA BEACH	Complete Streets Administrative Directive	62.4	1.5
BALTIMORE	Council Bill 09-0433	58	1.5
MEMPHIS	An Order Establishing a Complete Streets Policy for the City of Memphis	57.6	1.5
RALEIGH	Complete Streets Policy	56.8	1.5
SEATTLE	Ordinance No. 122386, Bridging the Gap	56.8	1.5
PHOENIX	Ordinance S-41094 and Ordinance G-5937	54	1.5
CLEVELAND	Ordinance No. 798-11	53.2	1.5
TULSA	Resolution	53.2	1.5
ALBUQUERQUE	O-14-27	52.4	1.5
DENVER	Complete Streets Policy	52.4	1.5
HOUSTON	Executive Order No. 1-15	51.6	1.5
ST. LOUIS	Board Bill No. 7	49.6	1
BUFFALO	Complete Streets Policy	49.2	1
NEW HAVEN	Complete Streets Order	46.8	1
PHILADELPHIA	Bill No. 12053201	46.4	1

Appendix E. Additional Tables on Policies and Results

CITY	COMPLETE STREETS POLICY	NCSC SCORE (OUT OF 100)	ACEEE SCORE (2 PTS)
NEWARK	Resolution	45.6	1
SAN ANTONIO	Complete Streets Policy	40.8	1
OAKLAND	Ordinance No. 13153	40.4	1
CHICAGO	Safe Streets for Chicago	39.6	1
SAN FRANCISCO	Public Works Code 2.4.13 (Ordinance No. 209-05)	37.2	1
TAMPA	Resolution No. 2814	35.6	1
ST. PAUL	Resolution No. 09-213	32.4	1
AUSTIN	Resolution No. 020418-40	29.2	1
COLUMBUS	Resolution	29.2	1
NEW YORK[a]		-	1
MIAMI	Resolution No. 09-00274	24.4	0.5
PROVIDENCE	Resolution	21.2	0.5
GRAND RAPIDS	Resolution	9.2	0.5
KANSAS CITY	Resolution No. 110069	9.2	0.5
ATLANTA[b]		-	0.5
BOSTON[c]		-	0.5
LAS VEGAS[d]		-	0.5
LOUISVILLE[e]		-	0.5
MILWAUKEE[f]		-	0.5
PORTLAND[g]		-	0.5
TUCSON[h]		-	0.5
WASHINGTON[i]		-	0.5
WORCESTER[j]		-	0.5

[a] While New York does not have a complete streets policy per se, the Department of Transportation (DOT) released Sustainable Streets: Strategic Plan for the New York City Department of Transportation 2008 and Beyond, which is a complete streets strategic plan for improved infrastructure and transportation design, operation, and maintenance. [b] Atlanta has adopted a complete streets policy, but it is not scored by NCSC. [c] 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. [d] 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. [e] Louisville has had a complete streets policy in place since 2008, but it is not reviewed by NCSC. [f] Milwaukee has had a complete streets policy in place since 2018, but it is not reviewed by NCSC. [g] 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 efforts to incorporate complete streets language in a range of supporting transportation and land use policies. Nevertheless, the city does not have an NCSC-recognized complete streets policy. [h] Tucson adopted a complete streets policy in 2019, but it has not yet been reviewed by NCSC. [i] Washington DC has had a complete streets policy in place since 2010, but it is not reviewed by NCSC. [j] Worcester adopted a complete streets policy in 2018, but it is not reviewed by NCSC. Sources: NCSC 2019b, ACEEE web research, data requests.

Appendix E. Additional Tables on Policies and Results

TABLE E19. FREIGHT SYSTEM EFFICIENCY

CITY	FREIGHT PLAN OR STRATEGY	SCORE (2 PTS)
COLUMBUS	Freight is a primary focus of the Smart Columbus efforts that came out of the Department of Transportation's Smart City Challenge. This document effectively serves as the city's freight strategic plan as it highlights the need to improve the efficiency of the freight system through the use of IT applications.	1
DENVER	Denver is using a port of funds for its Advanced Transportation and Congestion Management Technologies Deployment Program (ATCMTD) on connected vehicle technology. These technologies will allow trucks to communicate with the City's traffic signals to reduce the emissions impact that freight trucks have in local communities, increase safety, improve delivery time reliability, and provide cost savings to participating cargo companies.	1
LONG BEACH	The Port of Long Beach has a comprehensive Clean Air Action Plan with strategies that address ships, trucks, trains, cargo-handling equipment, and harbor craft. The Port's Transportation Planning Division uses several resources to increase freight efficiency including the Multi-County Goods Movement Action Plan and the Southern California Area Government (SCAG) Comprehensive Regional Goods Movement Plan and Implementation Strategy.	2
LOS ANGELES	In June 2017, Mayor Garcetti and Long Beach Mayor Garcia came together to sign a joint declaration setting ambitious goals for the Ports of Los Angeles and Long Beach to make the transition to a zero-emission on-road drayage fleet by 2030 and zero-emission terminal equipment by 2035. These goals are incorporated into the joint Ports' Clean Air Action Plan (CAAP) Update, approved by the ports' governing boards in November 2017 to provide high-level guidance for reaching zero-emission operations while strengthening the ports' economic competitiveness.	1
MIAMI	Freight is a major component of Miami's Long-Range Transportation Plan. Specific goals have not been set, but performance measurements have been identified for several goals.	1
MINNEAPOLIS	Minneapolis has strategies in place to address freight efficiency within the 2009 Minneapolis Plan for Sustainable Growth. Examples include off-street loading requirements with new developments, permitting of freight to use on-street parking meters in the morning, encouragement of off-hours deliveries, strategic placement of truck loading zones, and prioritization of smaller vehicles for drayage. The city is currently revising its freight policy as part of the Minneapolis Transportation Action Plan update. The city will support maintenance and expansion of freight infrastructure where there are apparent benefits to the local and regional economy and minimal impacts to surrounding land uses. The City will encourage adaptation of urban-centered freight innovation and technology, both for shipment into Minneapolis and last-mile distribution.	2
NEW YORK	Freight NYC outlines the need to move freight traffic from road to rail and maritime in order to reduce GHG emissions. Freight trucks currently account for 10% of citywide transportation emissions. The plan also highlights strategies for greening the freight supply chain through logistics consolidation, carbon-neutral shipping, and clean vehicle use.	2
PHILADELPHIA	Philadelphia does not have a sustainable freight plan, but it does have a goal as part of its comprehensive plan to modernize freight rail assets to ensure sufficient goods movement to and through the city. Sustainable management of freight traffic is a key component in the Connect plan. The City also works closely with Philadelphia's metropolitan planning organization, the Delaware Valley Regional Planning Commission, which manages a region-wide freight planning task force.	1

Appendix E. Additional Tables on Policies and Results

CITY	FREIGHT PLAN OR STRATEGY	SCORE (2 PTS)
PORTLAND	Portland has a Sustainable Freight Strategy in place that identifies key action related to truck parking and loading zones, street design best practices, last-mile solutions, centralized freight distribution districts, off-hours delivery, and electric vehicle delivery and multimodal freight strategies. Portland also outlines a goal in its 2015 Climate Action Plan to "improve the efficiency of freight movement within and through the Portland metropolitan area" and identifies key actions that are necessary by 2020.	2
RICHMOND*	In July 2013, the Richmond Strategic Multimodal Transportation Plan was released. This plan provides recommendations for improving multimodal freight movement.	0.5
RIVERSIDE	Riverside has sustainable freight objectives and policies in the Circulation and Community Mobility Element of its General Plan 2025.	1
SEATTLE	Seattle has a Freight Master Plan to improve freight mobility and safety in the city, in conjunction with department efforts to improve mobility across a range of transportation modal opportunities for moving people and goods.	2
ST. PAUL	St Paul's comprehensive plan outlines a number of goals to improve the overall efficiency of the freight system. These include: 1. Prioritize investments in infrastructure that improve river commerce and conditions necessary to maintain and grow regional logistics and commodities hubs connecting, river, rail, truck modes. 2. Explore freight delivery solutions that resolve loading/unloading conflicts in congested areas so as to support businesses and provide safety to pedestrians and road users. 3. Work with agency partners and the St. Paul Port Authority to implement and support freight transportation improvements in and near industrial areas of regional economic importance.	1
WASHINGTON	In July 2017 DDOT initiated a Freight Plan Addendum to incorporate into the District's Freight Plan new requirements stipulated in the Fixing America's Surface Transportation (FAST) Act (Pub. L. No. 114-94), passed December 4, 2015. The District Department of Transportation published a FAST-compliant amendment to the freight plan in October 2017, and contains sustainability metrics around air quality, as well as transportation efficiency metrics.	2

**Richmond's plan concentrates on infrastructure improvements to ports to improve connectivity, but it lacks a focus on sustainability or efficiency.*