Local Energy Planning in Practice: A Review of Recent Experiences

Eric Mackres and Borna Kazerooni

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529 14th Street NW, Suite 600, Washington, D.C. 20045

Phone: (202) 507-4000 • Twitter: @ACEEEDC

Facebook.com/myACEEE • http://aceee.org

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Co-author Borna Kazerooni is a Master of Public Policy student at the University of Virginia who interned with ACEEE in the summer of 2011.

About ACEEE

ACEEE is a nonprofit organization that acts as a catalyst to advance energy efficiency policies, programs, technologies, investments, and behaviors. For more information, see http://aceee.org. ACEEE fulfills its mission by:

- Conducting in-depth technical and policy assessments
- Advising policymakers and program managers
- Working collaboratively with businesses, public interest groups, and other organizations
- Organizing conferences and workshops
- Publishing books, conference proceedings, and reports
- Educating consumers and businesses

Projects are carried out by staff and selected energy efficiency experts from universities, national laboratories, and the private sector. Collaboration is key to ACEEE's success. We collaborate on projects and initiatives with dozens of organizations including federal and state agencies, utilities, research institutions, businesses, and public interest groups.

Executive Summary

The recent proliferation of local strategic energy efficiency planning, as a result of funding from the American Reinvestment and Recovery Act of 2009 (ARRA) and other local motivations, provides an opportunity to achieve considerable energy savings, save money, create jobs, and protect the environment. Sustained and effective management of planning processes will be a key determinant of how well these initiatives achieve their energy savings goals.

In this study, we review the planning activities of a sample of localities that have developed energy-related plans. We summarize the progress communities have made in their planning processes and analyze the key choices that local leaders make when drawing up strategic energy plans. Using a 9-step process we compare the planning processes of a sample of thirty finalized local energy plans from communities around the United States. We document different approaches and key decisions that communities made when working through each particular step in the planning process. Although the sample size is small and non-random, we were successfully able to include a wide of variety of plans published sometime between 2006 and 2011, including varying community sizes, government types, states, and regions. We also identify gaps in current local energy planning practice and specific strategic opportunities for improved management of planning processes.

The plans we reviewed did not all closely follow the 9-step process. In general, while steps near the beginning of the process were pretty consistently followed, the steps near the end of the process were followed in fewer of the plans. The final step, plan measurement/evaluation, was the most commonly absent or incomplete step among the plans. The steps of plan adoption, identifying funding sources, prioritizing actions, goal development, and energy baseline development were also incomplete in a significant number of plans. Increased focus on these steps in planning processes may help communities to achieve greater success in meeting their energy-related goals.

Our analysis suggests that there are a number of advantages to the framing of "local energy planning," including the ability to support a variety of community visions. Communities are also experiencing a variety of challenges when undertaking energy planning, including difficulties in connecting their visions with the metrics used to track their goals, prioritizing implementation actions, finding sustainable funding to support planning and implementation, and, in some cases, difficulties tracking progress toward goals and an absence of plan evaluation and revision. Going forward, these challenging areas should be a major focus of technical assistance and peer learning efforts seeking to enable more effective local energy planning.

Introduction

As a condition of funding from the American Reinvestment and Recovery Act of 2009 (ARRA) Energy Efficiency and Conservation Block Grant (EECBG) program, many local governments were required to develop Energy Efficiency and Conservation Strategies or submit pre-existing documents that fulfilled the requirement. Grantees had considerable flexibility in how they developed their strategies. In many cases, local governments simply listed a series of short-term projects or programs to improve energy efficiency in local government operations as the content of their strategy. However, a number of local governments took the opportunity to undertake or revise longer-term, strategic planning processes related to energy, climate, environmental sustainability, and/or economic development in local government operations, their community as a whole, or both. These strategic planning processes are largely intended to serve as roadmaps to guide communities to energy-efficient or more broadly sustainable energy futures. This proliferation of local strategic energy efficiency planning, if effectively managed, presents an opportunity to achieve considerable energy savings, save money, create jobs, and protect the environment.

In this study, we review the activities of a sample of localities with existing energy-related plans with the aim of summarizing the progress communities have made in their planning processes to date and to gain a better understanding of the key choices that local leaders make when drawing up strategic energy plans. While not intending to draw any definitive conclusions regarding best practices, this study provides a basic overview of the state of local energy planning across the country and describes trends in its current practice. This information can inform local officials and other stakeholders looking to learn from the choices of other communities in their community planning processes. It can also identify gaps in current local energy planning practice and identify strategic opportunities for improved technical assistance and peer learning.

Only a few of the communities we profile undertook their planning efforts as a result of ARRA; many were developed prior to ARRA funding being made available. However, as of May 2010, around 650 communities, out of about 1,700 total formula grantees, chose to apply some of their EECBG funds to develop a more comprehensive energy efficiency strategy for their community, making it the second most common use of funds after energy efficiency retrofits (DOE 2010). Similarly, the number of local sustainability or climate action plans has grown in recent years. As of November 2009, over 140 climate action plans and over 50 sustainability plans were completed or under development by local governments (ICLEI 2009). While local energy, sustainability, and climate plans have some important distinctions in their focuses and aims, they also have considerable overlap, particularly around energy issues. There is considerable opportunity for the communities new to energy-related planning to learn from the experiences of those communities who have existing experience.

Perhaps most importantly, planning efforts endeavor to cultivate a shared long-term vision to focus efforts, increase collaboration, and sustain momentum toward specific goals, thereby leading to long-term energy savings. Additionally, planning can help to identify mechanisms through which energy efficiency technologies and practices can continue to be adopted. These mechanisms may include policies, programs, outreach, funding sources, and adjustments to existing practices. With the expiration of ARRA funds for local energy efforts during 2012, local energy planning activities take on increased importance. While funds from federal formula block grants may be expiring, many communities who previously had little or no experience with systematic approaches to energy efficiency have developed first-hand knowledge of the benefits, expertise in deployment, and interest in continuing their efforts. Energy planning—approached as a multi-year process not as a single product—can be one important tool to enable communities to develop a sustained commitment to their nascent efforts.

This report begins with a brief overview of the communities whose plans were reviewed for inclusion and a description of the methodology used in reviewing the different plans as well as some of its limitations. Next, the report outlines the progress these communities have made overall towards the completion of each step in the planning process while reflecting on some general trends and variables of importance in local energy planning practice.

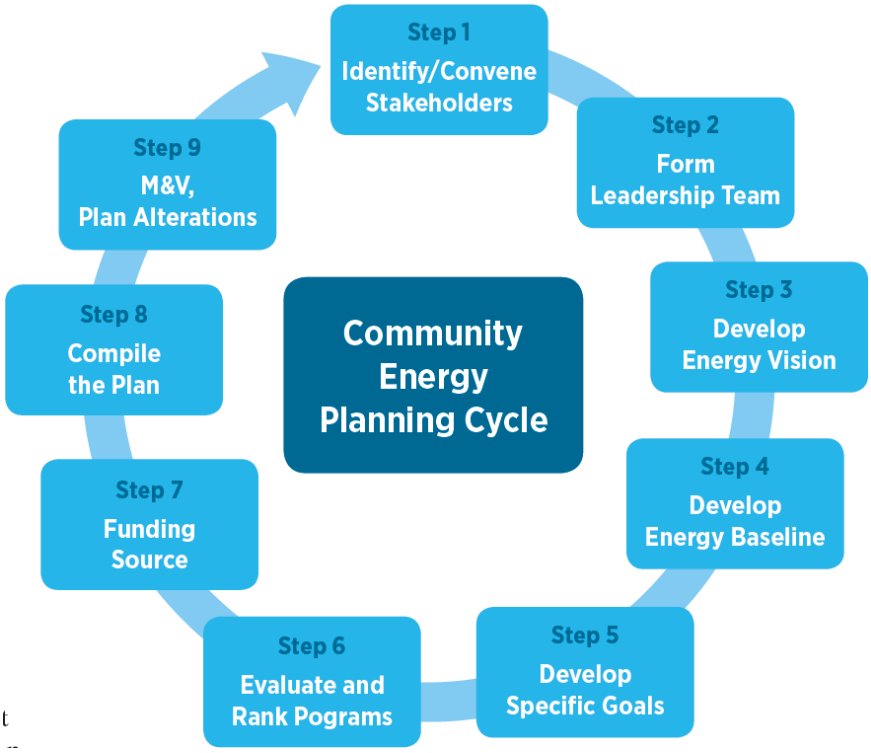
Overview

While assessments of energy-related plans have been done for the world's largest cities (ARUP 2011; Hendriksen et al. 2011) and specific states, such as California (Keneipp, Jensen & Reed 2010), there has been little in the way of comparative surveys of local government energy planning processes in the U.S. However, there is much valuable technical assistance literature (ICLEI 2011; Boswell, Greve & Seale 2012) and there have been some deep dives into the energy planning of specific communities (Parzen 2009; Parzen et al. 2009; Peterson, Matthews & Weingarden 2011). This report attempts to contribute to this body of knowledge through a general overview of the variety of local energy planning occurring around the U.S. and related trends.

The National Renewable Energy Laboratory (NREL) developed a short introduction to local energy planning for the U.S. Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy, entitled *Community Greening: How to Develop a Community Energy Plan* (NREL 2009). The document included a 9-step cycle for communities to use when developing an energy-related plan (see Figure 1 below).[1] This process was further developed to become the basis of a Community Energy Strategic Planning Academy sponsored by DOE, as well as resources under development for the DOE Solution Center (DOE 2012). For this report we use the original NREL 9-step process as a framework through which to analyze the planning processes captured in a sample of finalized local energy plans.

We use NREL's nine-step cycle to assess the progress that 30 communities have made in their energy planning processes. We also document different approaches and key decisions that communities made when working through each particular step in the planning process. It is important to note that the cycle implies that an ideal planning process is never complete, but always in the process of refinement and revision. This continuous improvement approach itself is important to effective management of the planning process. However, it also means that the data presented in this report represents only a snapshot in time and that, hopefully, many of the planning processes may soon, or may already, be developed beyond what we have documented.

Figure 1. The Nine-Step Community Energy Planning Cycle



Source: NREL 2009

Although this report does not attempt to identify best practices beyond the completion of the components of the 9-step cycle, existing research and experience have highlighted many relevant guidelines for completing these steps effectively. The metrics for the completion of each step that we have chosen are intended in part to highlight these pre-identified best practices.

Methodology

Each community plan included in our review was nominated by staff from one or more organizations that provides energy-related technical assistance to local governments, based on their perception of a plan as providing useful examples of aspects of the community energy planning cycle. These organizations included ACEEE, ICF International, the National Renewable Energy Laboratory, and the Vermont Energy Investment Corporation. Nominations were then vetted based on five general criteria to ensure that the sample included documented planning experience from various political, geographic, issue, and resource contexts:

1. Level of demonstrated experience with community energy planning (including a published plan);
2. Diversity of geography;
3. Diversity of community type (e.g., city, county, etc.) and size;
4. Diversity of plan scopes (focus on government operations, community-wide focus, or both); and
5. Diversity of energy visions.

Although the sample size is small and non-random, we were successfully able to include a wide of variety of plans. The resulting group of 30 communities all had existing energy-related plans available on the

Internet that had been published sometime between 2006 and 2011. The group of plans reviewed includes those authored by municipalities (including 17 cities, 2 townships, 1 town, and one village), counties (7), and jointly by a city and a county (2). Community sizes range from the Town of Brattleboro, Vermont with a resident population of fewer than 12,000 to the City of Chicago, Illinois with a population greater than 2.8 million. The communities are located across 18 states and representatives are included from each region of the continental U.S. All of the communities included in our sample received EECBG formula grants as a result of ARRA. Although every plan is energy-related, each has a slightly different vision or thematic focus. These variations include energy efficiency, clean energy, economic development, climate change, and sustainability.

The thirty communities included in this report are listed in Table 1. Citations and detailed summaries of each community's energy plan and links to supporting documents referenced in this report are included in the appendix.

We then reviewed the strategic planning process based on its resulting documentation—not the details of specific policies, practices, programs, or projects, or their implementation. We looked for the presence of key features of the energy planning processes as documented in the strategic plans that emerged in each community. For this reason we use the terms "plan" and "planning process" interchangeably for the purpose of this report, although at all times our focus is primarily on the process associated with the plan. The information gathered on these planning efforts was based solely on information available on the Internet during July and August 2011, typically in the format of finalized PDF plans and associated HTML webpages and miscellaneous documents hosted by the local government or other planning partners. Hence, it would be unfair to conclude based on this research that, for example, because a locality's strategic plan neglects to mention specific funding sources, that it lacks funding. Those details may be documented outside of the plan and associated documents or may have been finalized after the plan was published and were not later provided on the webpages of the planning process. While we made every effort to ensure our data was complete within these constraints, it is possible that we missed certain relevant documents published online. Also, as our research represents only one point in time, it is likely that some of this information has already changed from when we started our research.

Our choice of methodology was based primarily on a tradeoff between breadth and depth in which we choose to include a larger number of plans rather than great detail on each. One result of a methodological choice based around Internet research is that our research captures information on the transparency and public accessibility of a planning process as much as, if not more than, the planning process itself. This data on transparency is itself valuable in assessing the level and type of stakeholder engagement in the development of the plan.

Table 1. Localities Reviewed in the Study (N=30)

Community	State	Title of Plan	Plan Year	Comm. Type	Popula-tion
Alameda	CA	Local Action Plan for Climate Protection	2008	City	70,272
Arlington County	VA	Community Energy Plan / Community Energy & Sustainability Task Force Report	2011	County	204,568
Austin	TX	Austin Climate Protection Plan	2007	City	743,074
Boulder	CO	Climate Action Plan	2006	City	93,552
Boulder County	CO	Sustainable Energy Plan	2008	County	112,177
Brattleboro	VT	Town Plan Draft Energy Plan (and Climate Action Plan)	2011 (2003)	Town	11,590
Burlington	VT	2011 Burlington Municipal Development Plan—Part VIII. Energy Plan (and Climate Action Plan)	2006 (2000)	City	38,531
Charleston	SC	Charleston Green Plan	2010	City	110,015
Chicago	IL	Chicago Climate Action Plan (CCAP)	2008	City	2,836,658
Denver	CO	Greenprint Denver: Climate Action Plan	2007	City	588,349
Durham/Durham County	NC	Greenhouse Gas and Criteria Air Pollutant Emissions Inventory and Local Action Plan for Emission Reductions	2007	City/ County	217,847
Frederick County	MD	Comprehensive Energy Plan	2010	County	165,485
Gresham	OR	Internal Operations and Facilities Sustainability Plan	2011	City	99,721
Kansas City	MO	Climate Protection Plan	2008	City	475,830
Knoxville	TN	Knoxville's Energy Inventory: Government and Community Analysis and Strategic Plans	2009	City	183,546
Loudoun County	VA	Loudoun County Energy Strategy	2009	County	240,332
Miami-Dade County	FL	Green Print Plan	2010	County	1,363,299
Missoula	MT	Greenhouse Gas Energy Conservation Plan	2009	City	67,165
Montclair	NJ	An Energy Plan for Township of Montclair, New Jersey	2010	Town-ship	37,052

Community	State	Title of Plan	Plan Year	Comm. Type	Popula-tion
Palm Bay	FL	Sustainability Master Plan	2010	City	100,116
Philadelphia	PA	Greenworks Philadelphia	2009	City	1,449,634
Pierce County	WA	Implementing Sustainability 2010-2015	2010	County	481,380
Portland/ Multnomah County	OR	Climate Action Plan 2009	2009	City/ County	550,396
San Antonio	TX	Mission Verde: Building a 21st Century Economy	2009	City	1,328,984
Schaumburg	IL	Comprehensive Green Action Plan (CGAP)	2008	Village	72,147
Seattle	WA	Seattle Climate Action Plan	2006	City	594,210
Skagit County	WA	Climate Action Plan	2010	County	116,397
Topeka	KS	Energy Efficiency & Conservation Strategy	2010	City	122,642
West Palm Beach	FL	Green Task Force Recommendations Report	2010	City	99,377
Woodbridge	NJ	Sustainable Community Plan and Climate Action Plan	2010	Townsh ip	98,450

Case Study: Arlington Community Energy Plan

This content is adapted from ACEEE 2011, a case study on the Arlington AIRE program, information from the Arlington Community Energy Plan website, and personal correspondence with John Morrill, Arlington County's Energy Manager.

The Arlington Initiative to Reduce Emissions (AIRE) was launched in 2007 with the goal of reducing greenhouse gas (GHG) emissions from county government operations to 10% below 2000 levels by 2012, including reducing energy use by 2% per year from 2007 to 2012 with energy efficiency retrofits. The original effort focused primarily on county operations, including purchasing clean energy and increasing the efficiency of buildings, vehicles, and other infrastructure, such as traffic signals and street lights. The AIRE initiative was the signature effort of Paul Ferguson, Chairman of the Arlington County Board. Mr. Ferguson engaged a group of employees from a range of county departments to develop a plan. The team identified meaningful, realistic goals for which activities could be set in motion in the short term with limited financial resources.

In January 2010, recognizing that GHG emissions from government operations (including schools) are less than 4% of the total GHG emissions across the County, County Board Chairman Jay Fisette announced that the county would expand its efforts to reduce greenhouse gas emissions by preparing a Community Energy Plan that would encompass all energy use within the county. A 30-person Community Energy and Sustainability Task Force was established to guide the effort. The resulting plan establishes actions that focus on furthering three aims: ensuring economic competitiveness, providing energy security and affordability, and protecting the environment. The energy plan doubles as a climate action plan by using greenhouse gas emissions as a proxy for overall energy productivity. The headline goal of the plan is to reduce per capita greenhouse gas emissions by over 75% by 2050. The Task Force Report was accepted and its policy determinations adopted by the County Board in May 2011. Staff are now working to integrate the plan into the County's Comprehensive Plan, the most formal policy instrument available to Arlington and most other local governments. The Energy Plan element is to be presented to the County Board for adoption at the end of 2012. Meanwhile staff are also developing an implementation plan and beginning to put recommended actions in place.

The Department of Environmental Services (DES) in the county government manages AIRE and the Energy Plan. The efforts are now funded by a dedicated residential utility tax proposed by County Manager Ron Carlee in the FY2008 budget and approved by a vote of 5-0 in May 2007. Capped at $72 per household per year and designed to avoid adversely harming low-income households, the tax generates approximately $1.5 million per year for the AIRE program. These funds support retrofits in public buildings and pay for eight full-time staff that lead sustainability efforts for the government and community, as well as program costs associated with the effort.

Local Energy Planning Experiences

This section of the report outlines each of the steps of the Community Energy Planning Cycle in greater detail, describes the efforts communities have made in assembling their energy-related plans, and summarizes the choices they have made along the way. We first summarize activities across all steps and then provide greater detail on each of the nine steps.

Summary of Steps across Plans

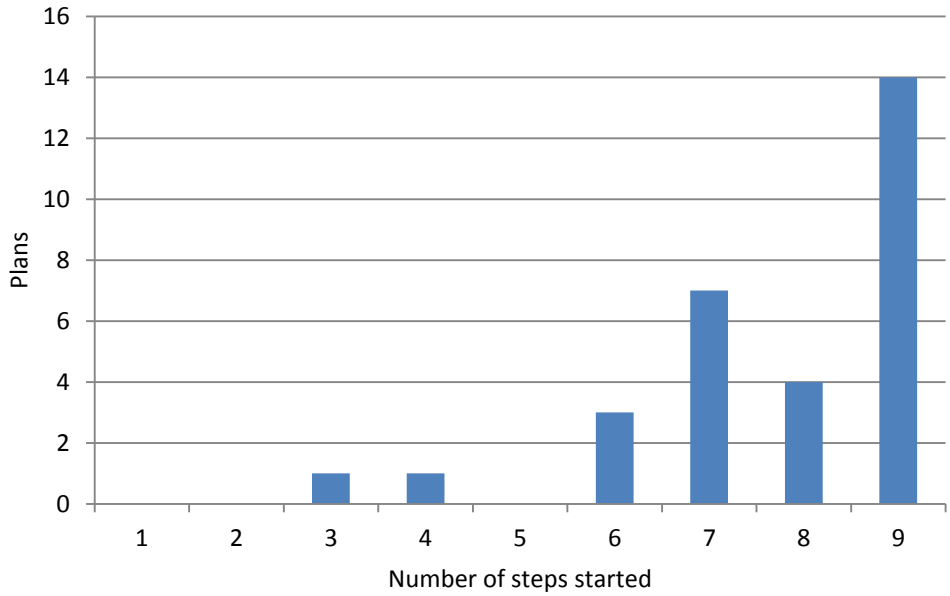
By way of summary of the subsequent sections, we first compare the performance of the plans against two different sets of metrics: 1) the number of steps in the planning cycle that each planning process has significantly started, and 2) the number of normative characteristics of "best practice" plans that were

present in each planning process. For the first metric we simply counted the number of steps each planning process had made significant efforts to accomplish. For the second metric we identified 23 characteristics discussed in our step-by-step review of the plans that could be described as normative. Finally, we also look at this plan-by-plan data from the perspective of each step, to determine which have been most frequently and infrequently addressed among the planning processes.

Steps Started

The distribution of number of steps started in each plan is summarized in Figure 2. Almost half of the plans have at least started each of the nine steps in the Community Energy Planning Cycle. By starting the step we mean they have one or more characteristics related to the step, as listed below, documented in their plan or related documents. All but two of the plans had started at least six of the nine steps. The plans with the fewest number of steps started were those from Township of Montclair, New Jersey and Village of Schaumburg, Illinois. These plans served more as a catalog of energy-related implementation options and/or visioning exercises that did not emphasize stakeholder engagement, developing a baseline, or goal setting.

Figure 2. Number of Steps in the Community Energy Planning Cycle Started in Each of the Plans



Distribution of Normative Characteristics

The normative characteristics[1] we evaluated for each step are as follows (they are also designated by the italicized fields found in the appendix):

[1] These characteristics are based on our research and the components of the steps described in *Community Greening*. They overlap with other descriptions of best practices, such as the "10 Keys to Sustainability Planning Success" developed by ICLEI (undated):

> Key #1: Hire a sustainability coordinator to run the show
> Key #2: Obtain buy-in from a big wig
> Key #3: Form teams that build bridges across city departments—and beyond city hall
> Key #4: Develop a greenhouse gas emissions inventory

Step 1: Identify/Convene Stakeholders

1. Were stakeholders beyond the leadership team engaged?

Step 2: Form Leadership Team

2. Was there a leadership team consisting of community or government stakeholders?
3. Was there a diversity of stakeholders represented (from a variety of community segments or government departments)?
4. Is there staff designated to support the administration of planning effort?

Step 3: Develop Energy Vision

5. Is there a vision articulated for the plan?

Step 4: Develop Energy Baseline and Assess Local Context

6. Is there an energy baseline?
7. Is a business-as-usual forecast included?
8. Has a self-assessment (SWOT analysis, etc.) been completed?

Step 5: Develop Specific Goals

9. Are there concrete goals included?
10. Do the goals have specific metrics associated with them?
11. Are the vision and goal tightly coupled?

Step 6: Evaluate and Rank Implementation Actions

12. Are concrete actions identified?
13. Are the identified options evaluated?
14. Are the options prioritized for purposes of implementation?

Step 7: Funding Source

15. Are one or more potential funding sources identified?
16. Are one or more sustainable funding sources identified?
17. Are one or more funding sources in place?

Step 8: Finalize & Adopt Plan

Key #5: Define clear, relevant, and measurable goals
Key #6: Get regular people to tell you what sustainability goals are important to them
Key #7: Develop implementation plans within your plan
Key #8: Take a deep breath and release a draft plan for public comment
Key #9: Obsessively track the implementation status of your measures
Key #10: Remain accountable to the public

18. Has the plan been formally adopted?
19. Does the plan include provisions of implementation, including identifying responsible entities?
20. Is an implementation schedule included?

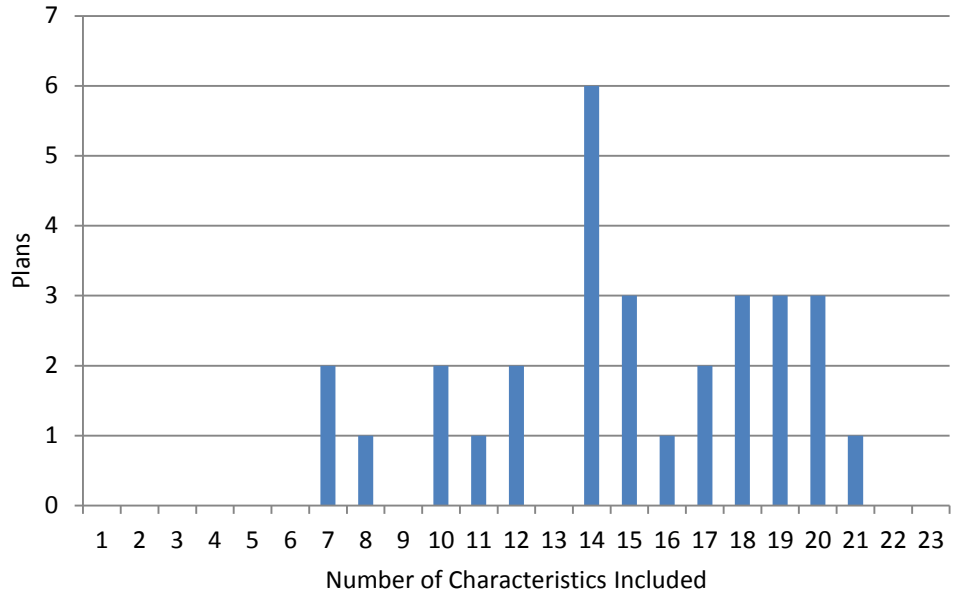
Step 9: Measure/Evaluate/Update

21. Have a progress report(s) been publicly released?
22. Has the plan and its implementation been systematically reviewed/evaluated?
23. Have plan revisions or updates been proposed or adopted?

The plans received one point for each of the characteristics that were present in their work. It is important to highlight that while we chose these characteristics to compare the plans, all characteristics may not be appropriate for the economic, social, and political realities of every community. Figure 3 displays the distribution of normative characteristics among the plans. It displays the number of characteristics present in each of the 30 plans, but not which characteristics were present.

None of the plans had all 23 of the normative characteristics present. The presence of 14 characteristics was the most common in the plans we reviewed. Over half of the plans had more than 14 characteristics present. The plans with the most characteristics present were the City of Boulder, with 21, and Denver, Portland, and Chicago each with 20. Arlington County, Miami-Dade County, and Seattle each had 19. Plans that scored 17 or higher represent the most comprehensive plans, based on the characteristics we assessed, and they also consist overwhelmingly of the plans most commonly cited as best practices in other literature on energy planning. The complete scores for each plan for both the number of steps started and characteristics included are available in the appendix.

Figure 3. Number of Normative Characteristics Included in Each of the Thirty Plans



Level of Step Development

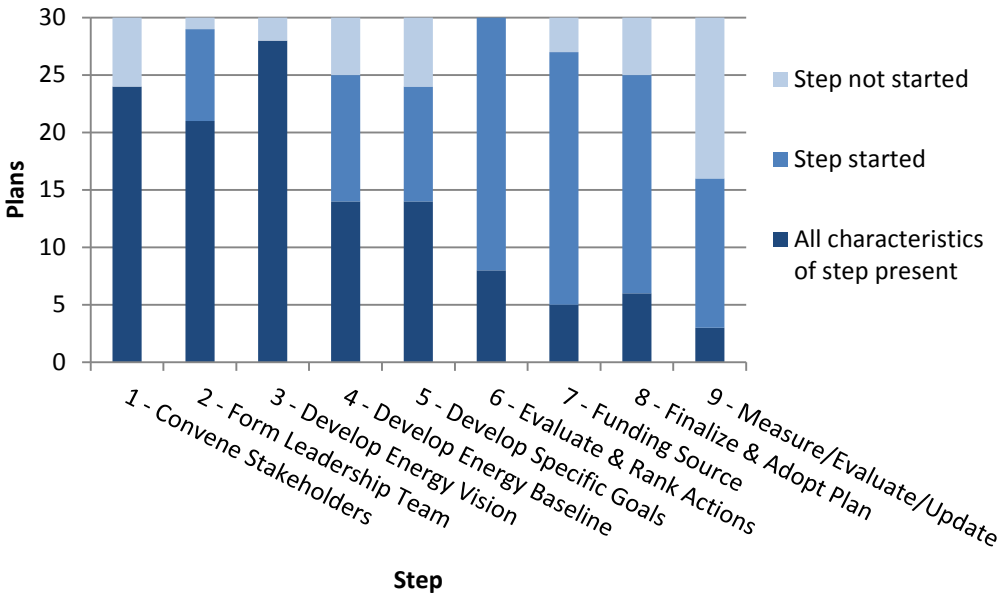
Finally, we evaluated how well each step has been developed in the plans by determining the number of plans that have all the normative characteristics of a step present, the number of plans that have started

each step (i.e., having at least one characteristic of the step present), and the number of plans that have not yet started each step. This look at the plans, in Figure 4, helps to identify the steps and the characteristics that were most common and those that were the less frequently included. Those less frequently included were likely more challenging or seen as less important to the plans' authors and therefore may be important opportunities for improved technical assistance.

For all steps, 24 or more of the plans had at least started it, with the one exception of *Step 9: Measure/Evaluate/Update* that had only been started by 16 of the plans. This is not unexpected because some of the plans were completed only in the past year or two, and it may be too soon to evaluate or update the plan. However, many of these plans are old enough that they could have begun publicly reporting progress toward their goals in order to continue to effectively engage stakeholders. Without such reporting and evaluation of progress, the actions may be languishing and the goals may be being ignored. In essence, without progress reporting, there is no evidence that the plan isn't simply "sitting on a shelf."

The pattern is different for the plans in which all characteristics of a step were present. The number of plans "completing" each step dramatically declines in the later steps of the planning cycle. Of particular note are Steps 6 through 9 for which eight or fewer of the plans included all the characteristics of the step. These later steps—which focus on translating the plan's goals into high-impact actions, funding and management of the implementation, and ensuring accountability and long-term commitment—are clearly a challenge for many of the planning processes. Finally, although better than in the later steps, all characteristics of Steps 4 and 5 were present in just under half of the plans, making it clear that there is also room for improvement in developing baselines and goal-setting practices.

Figure 4. Level of Step Development among the Plans



The remaining sections of this report detail choices made among the plans we reviewed at each step of the planning cycle.

Case Study: Greenprint Denver

This content is adapted from Peterson, Matthews and Weingarden 2011, a detailed report on the Denver and Austin energy plans.

Denver first began to formally address local energy policy in the early 1990s. In 1991, Denver's City Council passed a resolution committing the city to the ICLEI Urban CO2 Reduction Project, including developing a local action plan to reduce the city's greenhouse gas emissions. In the 1990s, Denver developed an energy plan that included energy initiatives focused on cost-effective energy improvements in government operations. In 1993, Mayor Wellington E. Webb signed an executive order creating the first Green Fleets program in the nation, which established a comprehensive program to make Denver's municipal fleet vehicles more efficient. Another program created in the mid-1990s focused on retrofitting municipal buildings with energy-efficient lighting. In 2000, the Denver City Council adopted the Denver Comprehensive Plan 2000, a document that established sustainability as a key component of future city policy and planning decisions.

In 2006 and 2007, after committing to the U.S. Mayors' Climate Protection Agreement, Mayor John Hickenlooper signed a series of executive orders to codify the Greenprint Denver Initiative and establish the Greenprint Denver Office within the mayor's office. Greenprint Denver had a small staff within the mayor's office and dozens of committee members from 10 city departments and was tasked to coordinate sustainability activities within city departments. The Greenprint Denver Plan developed by Mayor Hickenlooper's staff served as the guiding document for the city's sustainability efforts. The plan established sustainability goals for city government, including energy and emissions, waste, transportation, and land use, economic development, water, and urban forestry. In addition to the goals for the city government, the plan set a citywide energy and emissions goal of reducing per capita greenhouse gas emissions by 10% below 1990 levels by 2011.

To meet the goal of reducing citywide greenhouse gas (GHG) emissions, Mayor Hickenlooper established the Greenprint Denver Advisory Council, appointing 33 civic, business, university, and government leaders to the Council. The Greenprint Denver Advisory Council led the effort to develop Denver's Climate Action Plan (DCAP), a climate-oriented energy plan that would serve as a guiding document for the city in its efforts to address energy use across the community. The city formally adopted the DCAP in 2007 through an executive order signed by Mayor Hickenlooper. DCAP included a set of recommended strategies for reducing the GHG emitted by the city and community, largely through implementing a series of energy programs and initiatives for promoting energy efficiency and renewable energy use in city government operations and across the community.

The Advisory Council selected action items based on evaluation criteria that prioritized technical, economic, and political feasibility. The Advisory Council anticipated that the energy programs included would reduce citywide GHG emissions 75% toward the 2012 goal established by the Greenprint Denver Plan. Most DCAP action items emphasize leveraging resources of the utility, nongovernmental organizations, and state and federal government programs. In terms of financial resources, the city does not dedicate line-item funding for putting DCAP action items into place, apart from funding staff for the Greenprint Denver office, and select initiatives of some city departments (such as the Green Fleets program within Denver Public Works and a green business training program supported by the Office of Economic Development). City departments have provided funding and staff for the implementation of some DCAP programs. In addition, energy initiatives targeting improvements in energy use in municipal buildings have utilized the city's capital improvement fund. The Greenprint Denver office is tasked with leveraging non-city resources, both financial and personnel, to advance the action items in DCAP. The city is currently working on revising the DCAP. The revised plan will refocus the city's efforts on the more successful aspects of the original plan.

STEP 1: IDENTIFY/CONVENE STAKEHOLDERS

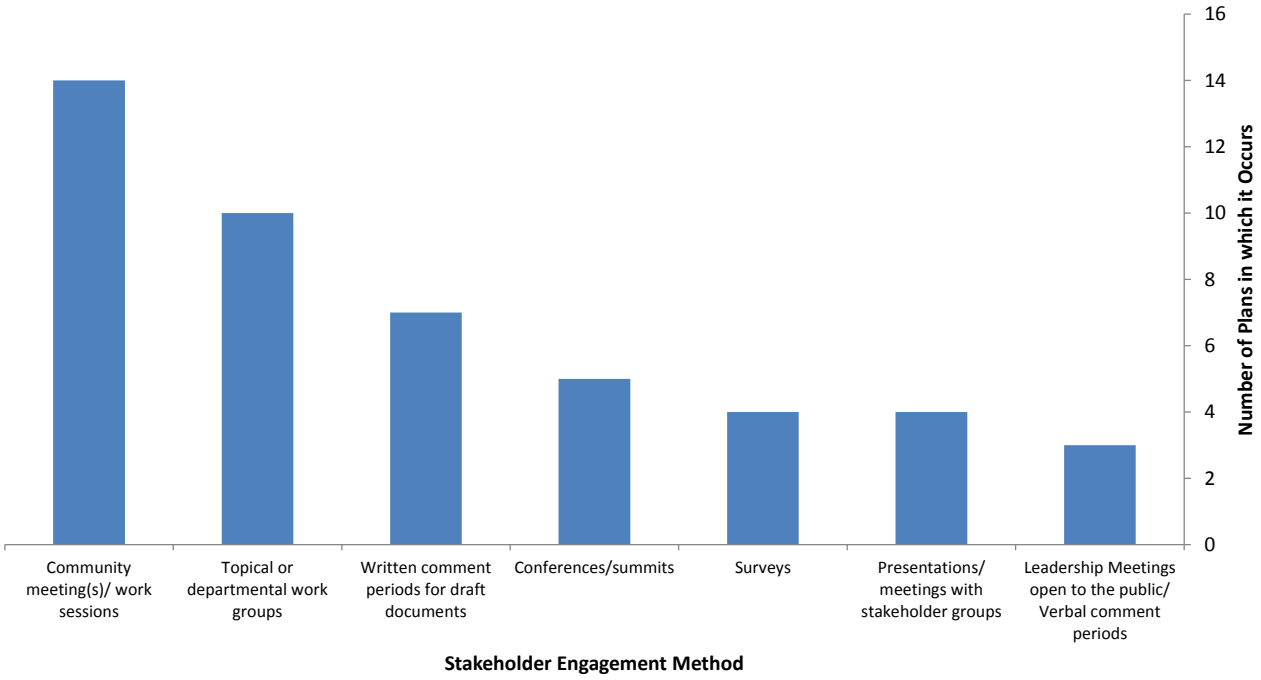
The "Community Greening" planning process suggests that plans effective at meeting their goals exist in localities that elicit input from stakeholders at the beginning and throughout the planning process in order to improve the opportunities for successful implementation of the plan. While it is difficult to ascertain exactly how stakeholders participated in the planning process from the plans and other online resources, many do provide some detail about the public engagement process.

The most common stakeholder engagement method was in assembling a leadership team, whereby stakeholders are engaged primarily through invitations to serve on the leadership body of the planning process. For plans focused exclusively on a scope of local government operations, stakeholders included in the planning leadership team often consist primarily of county commissioners, departmental heads, and other government representatives and employees. In some cases private citizens, nonprofits, and people from the business and utility sectors are also engaged. For plans that also had a community-wide focus, representatives of the broader community are almost always included in the leadership team. In a few cases, plans were completed by local government staff and consultants alone, without engagement of additional stakeholders.

Because of the necessity of a leadership team to conduct the planning process, these technical and professional stakeholders are usually engaged in the beginning of the process. However, not all plans directly engaged citizens and businesses in the community through opportunities for participation in planning process. Of the 30 plans, 24 engaged stakeholders through methods additional to involvement in a leadership team, four plans engaged stakeholders through their leadership team exclusively, and two plans did not note any stakeholder engagement.

Plans that directly engage the community at large, in addition to stakeholders on the leadership team, used various methods including hearings, public meetings, and comment periods for draft documents. For example, the City of Alameda hosted an open house, distributed a survey on climate change, and developed an implementation plan specifically focused on community outreach on climate and energy issues. Of those engagement methods noted in plans and associated documents, those most commonly mentioned are summarized in Figure 5.

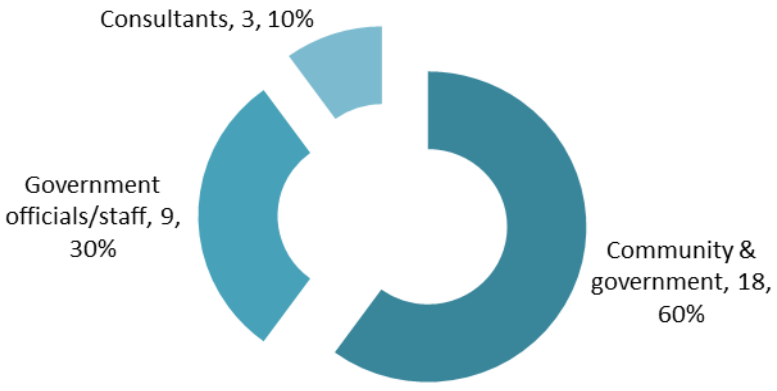
Figure 5. Stakeholder Engagement Methods Beyond Leadership Team Membership



Step 2: Form Leadership Team

All of the plans reviewed in our study were developed by teams of people, though not always necessarily leaders from the community. The vast majority of the plans reviewed were shaped by leadership teams with a specific focus on the issues to be addressed in the plan, rather than by a generic planning team. These teams either consisted of a mix of government representatives and community leaders (in 18 of the plans) or exclusively of government representatives (in 9 of the plans). In a few cases, plans were first drafted by outside consultants and then reviewed and/or adopted by elected leaders or a designated leadership team. Three of the plans examined were assembled primarily by consultants. This distribution is reviewed in Figure 6.

Figure 6. Planning Leadership



Leadership teams were most commonly appointed by the mayor or city council/county board, but in some cases were self-organized by government staff or citizens. Teams were often named with variations

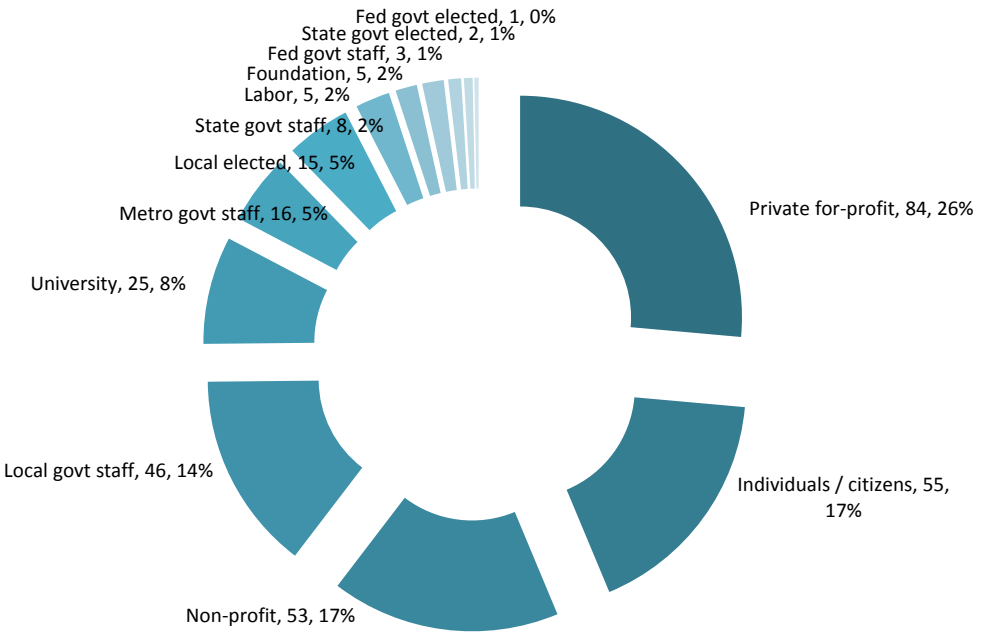
on "sustainability steering committee," "climate change/sustainability/energy task force," or "green team." In all cases these teams included representatives of local government and often included businesses, nonprofits, members of the community, and representative of other levels of government.

The number of members on the leadership teams varied from 4 to 33, with an average membership of 17. Joint community and government teams were usually on the larger end, but not in all cases. The chairperson or co-chairperson of the leadership team, when identified, was commonly an established business or local government leader. Local business leaders chaired five of the plans. Former or current council or commission members were chairs for three of the plans. The director of the local government's energy or sustainability office chaired three plans. A city manager, university administrator, environmental nonprofit, and a foundation each chaired one plan.

The teams consisting exclusively of government officials and/or staff were most commonly made up of representatives of multiple local government agencies, but in a few cases were based on a subcommittee of the local legislative body, or the energy-related planning process was a part of the comprehensive planning process run by the planning department.

Among teams with government and community representation, team members came from nearly all sectors of the community. Representatives of government still comprised the largest group of the team members, with 91 out of a total of 318 members for these 18 communities. This consists of 61 representatives of local government, 16 of metropolitan regional entities (such as regional planning commissions, transit agencies, air districts, or water districts), 10 of state government, and 4 from federal government. Of the 91, 73 were staff members and 18 were elected representatives. The next largest groups were private for-profit firms with 84 members, individual citizen who were not identified with an affiliation (55), nonprofits (53), and university representatives or academics (25). We looked at two other organizational affiliations that were in a handful of plans: foundations (5) and labor organizations (5). Team member affiliations are also presented in Figure 7.

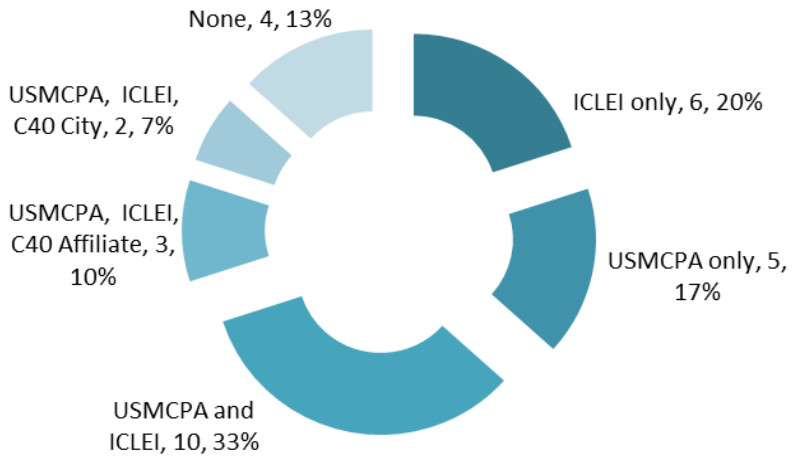
Figure 7. Organization Type Representation among Leadership Team Members



All but three of the plans noted the designated staff persons and/or department(s) charged with guiding the implementation of the plan. The departments of these staff designees varied across the plans, with the largest number (7) situated in dedicated sustainability departments or offices, including planning or environment departments with sustainability in their title. This common departmental arrangement was closely followed by staff leads placed in an environment department (5) and then followed by Community Development, Health, Management Services, and Public Works departments (with 1 each). In six plans it was noted that the staff lead was under the direct purview of the mayor's or city/county manager's office, regardless of other departmental affiliations. The titles of the designated staff implementation lead were largely similar to their department affiliations. In nine cases, "sustainability" was included in the position title; in three cases each "energy" or "environment" were included in the position title.

Many of the localities whose plans we reviewed are (or were at the time of their plans) members of organizations or party to agreements related to local energy, sustainability, or climate change, as shown in Figure 8. These affiliations serve to provide technical assistance resources, to act as forums to exchange information among peers on successful or challenging activities, and to bring attention the work done by members. The most common of these affiliations were with the U.S. Conference of Mayors Climate Protection Agreement and ICLEI USA-Local Governments for Sustainability. We found that about half of the plans examined were drawn up by cities that were signatories of the U.S. Mayors Climate Protection Agreement and members of ICLEI. Of the remaining half, six of the localities were members of ICLEI only, five were party to the Mayors Agreement only, and four were affiliated with neither. Finally, the two biggest cities included in our sample—Chicago and Philadelphia—are member cities of the C40 Cities Climate Leadership Group, which includes many of the world's largest cities. Additionally, three more of our cities (Austin, Portland, and Seattle) are C40 Affiliate Cities, a designation for smaller leading cities.

Figure 8. Localities with Energy, Climate or Sustainability Affiliations

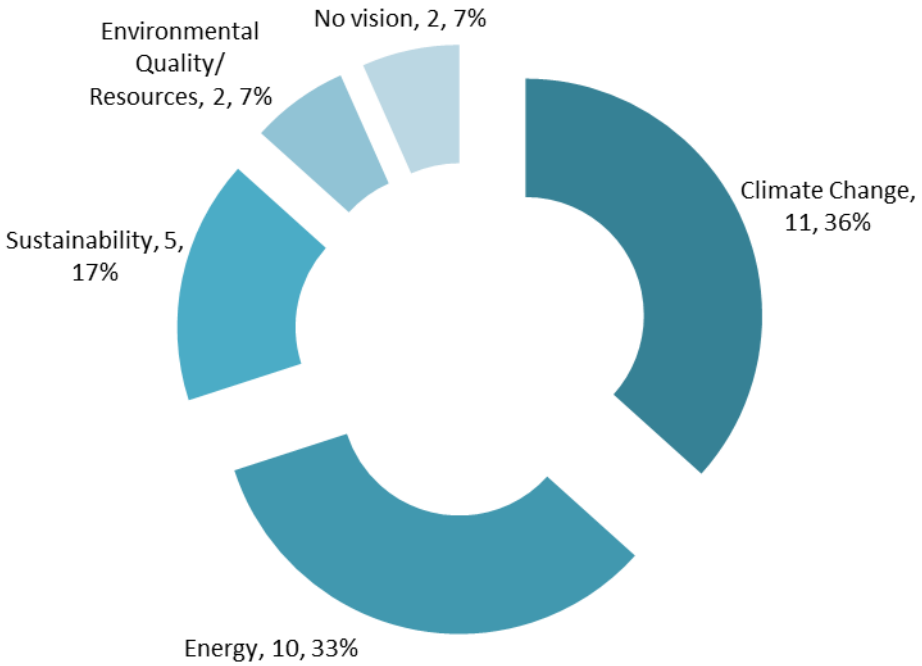


STEP 3: DEVELOP ENERGY VISION

The purpose of an energy vision is to unite a community behind a common goal and purpose. The vision gives direction to the plan and is usually a statement that describes the motivation for the plan and outcome to which the community aspires. In our review of the 30 plans, we were able to identify some kind of vision statement in all but two of them. All of these visions included at least one of the following themes: energy, economics, sustainability, environmental quality/resources, quality of life, or climate change.

Visions that focused on energy generally tended to also be motivated by economic concerns. Oftentimes they addressed the 'affordability' of energy and energy 'reliability.' Sometimes they prioritized specific energy resources like renewable energy or energy efficiency. Economics-related visions tended to emphasize the potential for job-creation and business competitiveness, while climate visions emphasized the importance of reducing greenhouse gas emissions and mitigating and/or adapting to climate change. The primary or core theme in the vision statement of each plan is displayed in Figure 9.

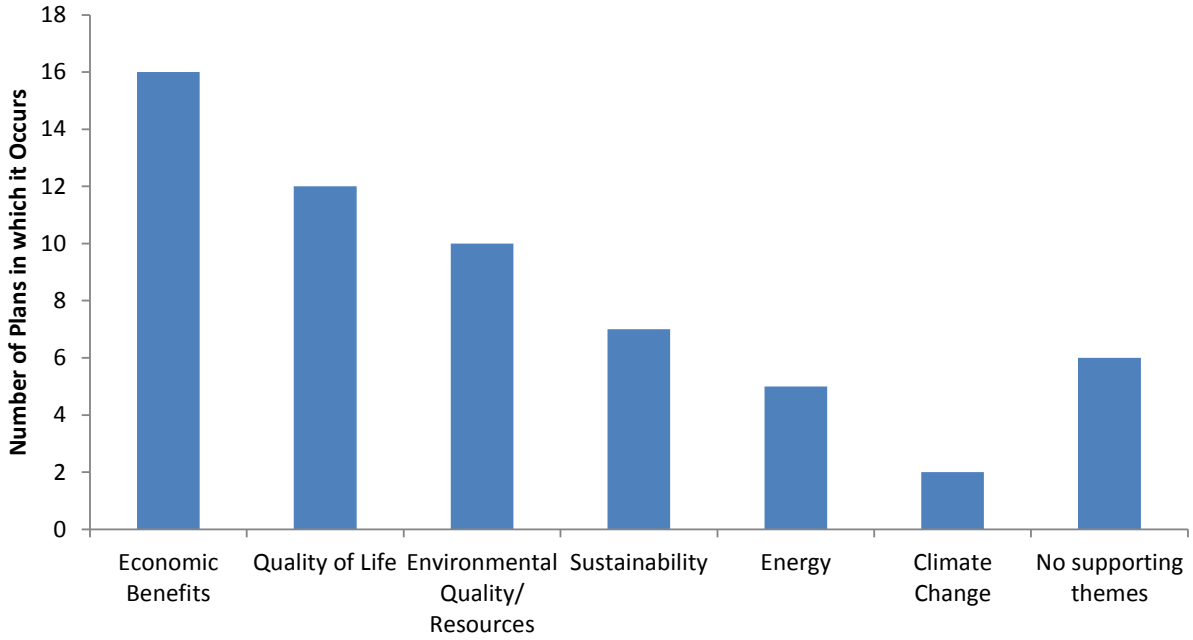
Figure 9. Number of Plans by Primary Vision Theme



None of these themes were mutually exclusive. Almost all of the plans had some mix of the themes embedded in the vision. For example, the city of Knoxville's vision was to "define a new paradigm for Knoxville's development: one that reduces energy consumption while enhancing the quality and competitiveness of our community." Here, the vision incorporates both the theme of reducing energy consumption, but also competitiveness or economic development. Most visions tended to incorporate several themes, but some only include one theme, like Frederick County's vision that seeks to "identify, promote, and expand the use of cost-effective renewable energy." Here, Frederick County's plan only seems centered on one energy strategy. Of the 28 plans with explicitly stated visions, only 6 seemed to be focused around a single theme whereas 22 incorporated multiple themes.

Figure 10 displays the frequency of occurrence of specific supporting themes—those themes additional to the primary theme in vision statements with multiple themes.

Figure 10. Number of Plans in Which Supporting Themes Occur within a Vision Statement



Combining the counts of primary and supporting themes show that the most common themes overall were economic benefits with 16 occurrences (all as supporting themes); energy with 15 occurrences; climate changes with 13 occurrences; and sustainability, environmental quality/resources, and quality of life each with 12 occurrences.

Each of the 15 vision statements that included energy as an explicit theme gave additional details about their energy focus and motivations. These energy themes fell into four general categories: clean energy, economic benefits, affordability, and reliability. Nine vision statements noted a focus on "clean energy" strategies, which reduce environmental impacts. Five visions noted potential positive benefits on the local economy from a focus on energy. Six noted affordable energy as a theme and two noted reliability as a theme. Thirteen of the vision statements also noted specific resources: six noted energy efficiency and renewable energy, six noted only efficiency, and one noted only renewable energy.

It is important to note that our review only assessed the themes that occurred in the vision statement itself. Additional themes may have been presented elsewhere in the plan, but these are likely to be of secondary concern to the authors and those in the vision statement more likely to represent the primary motivations of the authors. Energy-related themes, for example, were discussed in detail in at least one section of each of the plans; however, if it was the "means" rather than the "end" of the plan it may not have occurred in the vision statement.

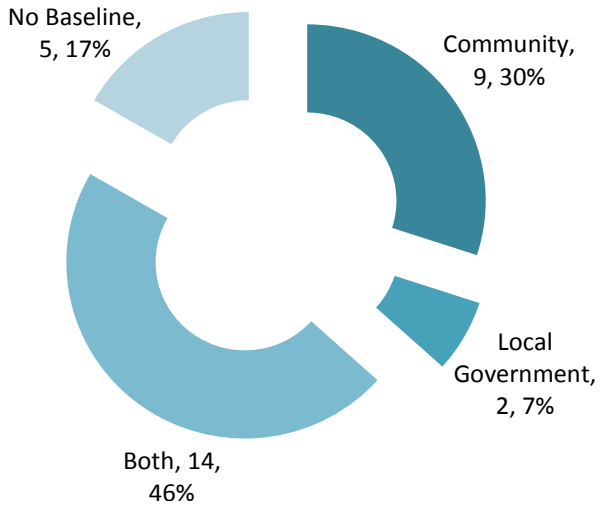
Step 4: Develop Energy Baseline and Assess Local Context

Having baseline measurements before setting a goal enables the planning team to set specific, achievable, and measurable goals relative to present and past performance, as well as track progress relative to the baseline over the course of plan implementation. In addition to establishing a baseline, many communities during this stage also analyze their community's economic, policy, and institutional context, often through some variation on identifying specific strengths, weaknesses, opportunities, and threats.

All but five of the communities analyzed had completed an energy or energy-related baseline. These plans had some mention of baseline measurements even if a small minority among them failed to include documentation of their process in the body of their plan. Some communities, such as the City of Seattle, chose to include more specific documentation of their baseline calculations in separate documents or appendices. Baselines were reviewed first through scope (whom do they include: local government, community, or both), the unit of the baseline measure, and the methods by which the baseline was disaggregated (e.g., was the analysis broken across sectors, energy source, or both?). These details of the baseline methodology can be important in developing a baseline that matches the scope and focus of a community's plan and which is helpful in understanding where the greatest energy-saving opportunities lay. We did not review when or how often a baseline was developed, but these can be important factors. Although it can make goal setting more difficult, some communities develop a baseline after they develop their first round of energy-related goals. Updating a baseline inventory every few years is important for tracking progress.

The scope, baseline year, protocol used, and methodologies varied across the 25 plans that had developed an energy baseline. The scope of the baselines included the entire community, local government, or both. Nine plans focused only on community emissions (which includes local government emissions by definition, but these assessments did not have a separate inventory to show the local government's contribution). Two plans focused solely on local government emissions and 14 plans had both inventories in their plans (see Figure 11).

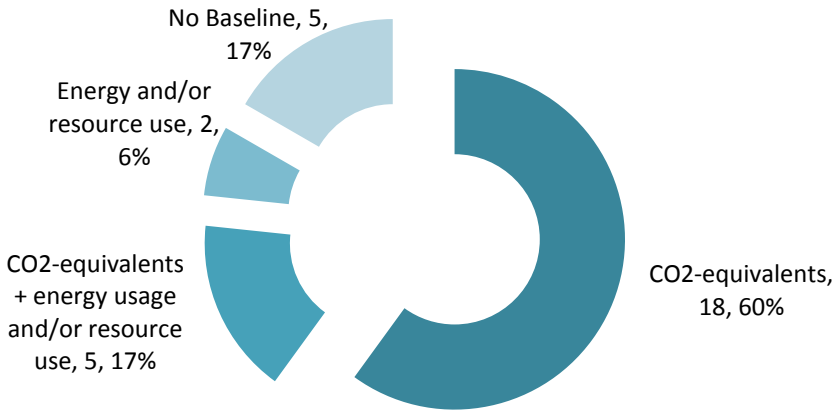
Figure 11. Scope of the Baseline Assessments



Baselines also used different units of measure. While the largest number of plans (18) used carbon dioxide (CO_2) equivalents (to quantify energy- and non-energy-related greenhouse gas emissions), five plans used a combination of greenhouse gas emissions in CO_2 equivalents and resource use and/or energy consumption and two plans used one or more measure of resource and/or energy use and did not include measurements of greenhouse gas emissions (see Figure 12). Energy or resource units of measure used in at least one plan include BTU-equivalents, energy expenditures, vehicle miles traveled, per capita passenger miles, per capita electricity usage, and resources consumed (e.g., gallons of water consumption). For example, Portland, Oregon used a baseline that measured greenhouse gas emissions in CO_2-equivalents, passenger miles per person per day, and electricity usage per person. The two baselines focused solely on resource use were Miami-Dade County's *Green Print Plan* (with a baseline that measured water

consumption and non-renewable energy use) and Frederick County's *Comprehensive Energy Plan* (with a baseline focused on non-renewable energy use).

Figure 12. Baseline Measures used in Plans



Baselines that are more detailed allow goals and strategies to be given more detail. Twenty-three of the plans included baselines that differentiated consumption by end-use categories split by sector (industrial, residential, commercial, etc.), energy source (electricity, diesel, natural gas, coal, wind, solar, etc.), or both. A depiction found in many plans included both sector and energy-source representations side-by-side, as in Figure 13. Seventeen of the community plans split their baseline inventories across both sectors and energy sources; four broke it down only along economic sector; and only two disaggregated their baselines only by energy source (see Figure 14).

Figure 13. Example of Greenhouse Gas Emissions from Local Government Operations Presented by Source and by Sector

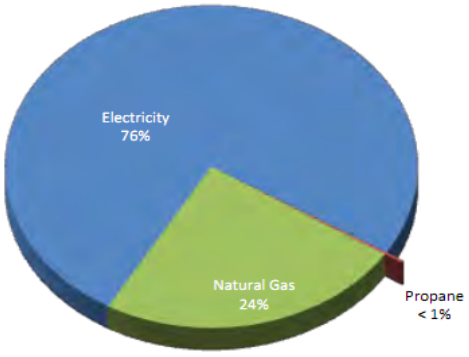


Figure 7. Skagit County's 2006 total municipal operations emissions by source type.

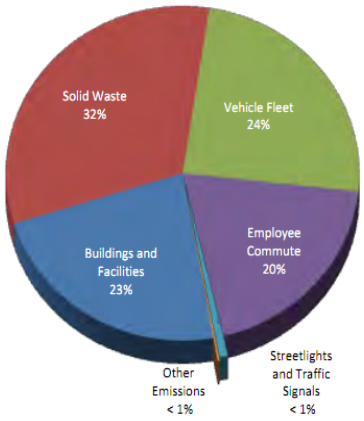
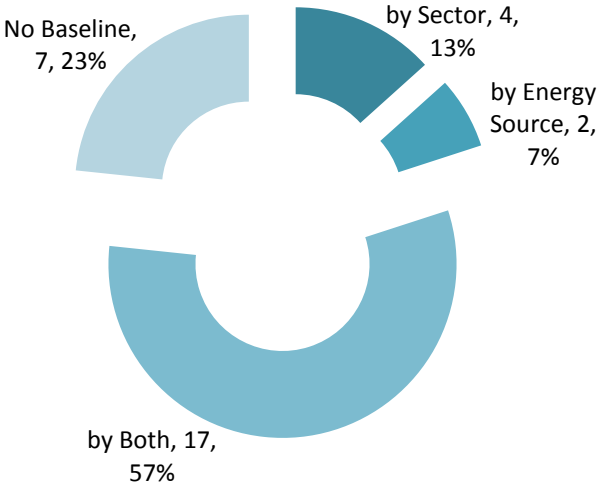


Figure 8. Skagit County's 2006 total municipal operations greenhouse gas emissions by sector.

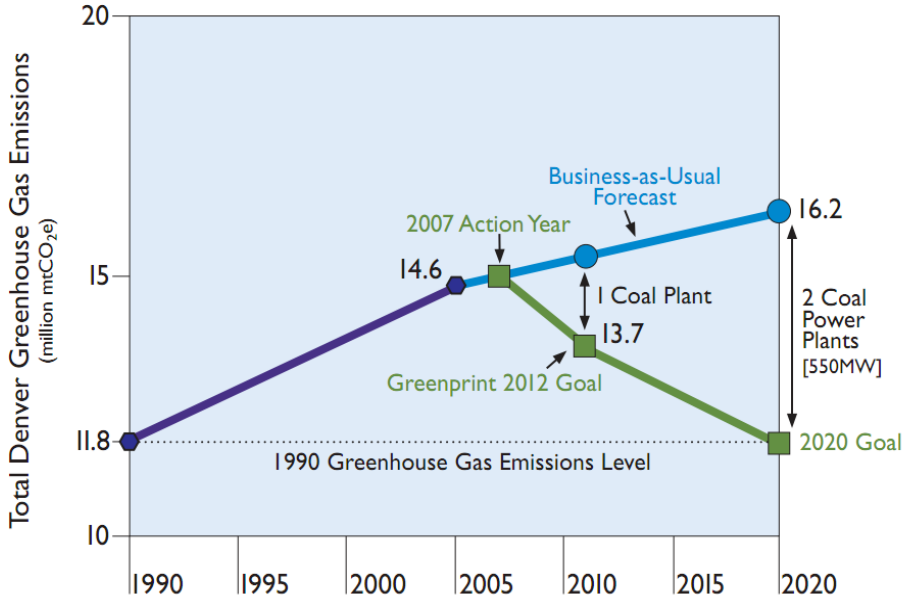
Source: Skagit County, Washington Climate Action Plan, page 19

Figure 14. Baseline Disaggregation across Sectors and/or Energy Source



There are two additional components we looked at in our review of baseline and local assessment practices: business-as-usual forecasts and community self-assessment. Part of assessing the current energy environment is also making estimates about future changes. This most commonly takes the form of a business-as-usual (BAU) forecast of projected future energy use and/or emissions. Without this component, the plan cannot compare projected or actual performance under the plan with likely future performance in the absence of implementation of the plan (see the example in Figure 15). And, depending on how the goals are stated, the community may not be able to quantify the level of changes needed in the metric in order to reach the intended target. Nineteen of the plans reviewed included a business-as-usual forecast that could be compared with a proposed policy case and future performance.

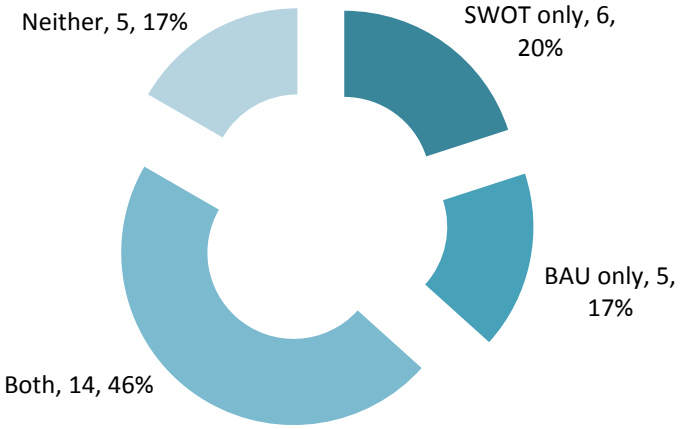
Figure 15. Example of Business-as-Usual Forecast Compared to Plan Goals



Source: Denver, Colorado Greenprint Plan, page 5

In addition to the quantitative baseline and business-as-usual projection, 20 community plans also included some form of a strategic assessment that considered the community's existing situation relative to the specific energy-related topic for which they were planning. This kind of assessment, the most common of which is known as a SWOT analysis (an acronym for Strengths, Weaknesses, Opportunities and Threats), can help to identify areas where the community may be able to build on existing activities, use existing policies or community interests to make faster progress, and understand which vulnerability may need more concerted attention, among other pieces of information that can help to shape goals and strategies. While most plans simply described their strategic assessment processes and/or highlighted some of the major findings, the most detailed strategic assessment resulting from the planning processes we reviewed was the over-300 page *Sustainability Assessment Report* developed by Miami-Dade County, Florida to inform their *Green Print* Plan. A summary of the inclusion of business-as-usual projections and strategic assessments in the plans reviewed is presented in Figure 16.

Figure 16. Plans Which Include Business-as-Usual Forecasts and/or Strategic Community Assessments



Step 5: Develop Specific Goals

Goal-setting is an essential step in an effective planning process. Without a goal a community's plan cannot fail, but it also cannot succeed.[2] One of the most important strengths that specific and measurable goals provide to energy plans is a target date and measurable target value around which the community can organize its activities toward achieving. Goals should be directly related to a community's vision, should be achievable based on what the community can realistically control, and should be designed to be appropriate to as many stakeholders as possible.

Plans with goals usually contain more than one kind of goal. They usually incorporate a combination of different types of goals in different topic areas that support the plan's larger vision. While many plans include a number of sector-specific goals, most also have a "headline" goal that describes an overall target they are trying to hit. In this report we focus on headline goals, which are most heavily emphasized in

[2] While this statement may seem obvious or even trite, it is an important to keep in mind that some participants in a planning process may be wary of setting specific goals for this very reason: if goals are set then significant efforts may have to made to meet the goals and if the goals are not met there is a possibility that the effort could reflect poorly on the plan's participants in the future.

climate action plans where a certain level of reduction in greenhouse gas emissions is the primary goal. Because plans focused on sustainability have broader scopes, they tend to have goals for each focus area (e.g., "energy," "environment," and "economy"). If there are multiple primary goals in a plan, for our purposes we focus on the primary energy-related goal in that plan.

In the plans we reviewed, the most common issues addressed by the goals, or goal types, are:

- Greenhouse gas emissions reduction
- Energy use reduction (either relative to business as usual or in absolute terms)
- Shift in energy source mix toward clean or renewable sources

Greenhouse gas emission reduction goals were the most common energy-related goal formulation in the plans we reviewed. In many cases, this goal is a logical extension of a vision primarily focused on mitigating climate change through reducing emissions, as is the case with most "Climate Action Plans" we reviewed. For example, the goal of the *Chicago Climate Action Plan* is to reduce overall emissions by 20% by 2025 and 80% by 2050 from 1990 levels. In other cases, greenhouse gas reduction goals were used as a proxy measurement for tracking combined progress toward energy use and energy source goals in a plan exclusively focused on energy, as in the Loudoun County, Virginia *Energy Strategy* and the Arlington County, Virginia *Community Energy Plan,* which respectively aim for a 22% reduction in emissions from 2009 to 2039 and a 70% reduction in per capita emissions from 2007 to 2050.

Plans focused on energy use reduction emphasize the demand side of the energy market and typically entail conservation and efficiency measures. For example, Topeka, Kansas had an overall goal in its plan of a 10% reduction in energy use in the community and the government by 2020 compared to 2010 levels. Such goals were also included as a primary energy goal in a broader sustainability plan, as in the *Greenworks Philadelphia* plan where the goal of lowering city government energy consumption by 30% and community-wide building energy consumption by 10% by 2015 supports the overarching energy vision of securing an affordable and reliable energy supply. This plan also includes an energy source goal and greenhouse gas reduction goal.

Plans with energy source goals as their primarily emphasis were typically most focused on increasing renewable energy generation. However, they usually formulated their goal statements with recognition that energy use reduction could also contribute to furthering their vision. For example the Frederick County, Maryland *Comprehensive Energy Plan* aims for a 50% reduction in non-renewable energy use over 15 years, a goal that could be met through decreasing demand, increasing renewable energy generation, or, most likely, a combination of the two. Austin, Texas in the "Utility Plan" portion of its *Climate Protection Plan* originally set a goal of providing 30% of energy need from renewable sources by 2020, including 100 megawatts of solar power. While this goal can only be met through new renewable energy development, it was accompanied by another very specific goal focused on energy efficiency: 700 megawatts of energy savings between 2007 and 2020. (These goals have since by raised to 35%, 200 MW, and 800 MW respectively.) No plan reviewed included an energy source goal phrased in such a way that it excluded contributions from energy use reduction toward meeting it.

In their most simplified form, goals in plans we looked at were phrased as follows:

By _____ (target year), _____ (locality) will (reduce/increase) _____ (measurable metric) by _____ percent below/above _____ (baseline year) levels.

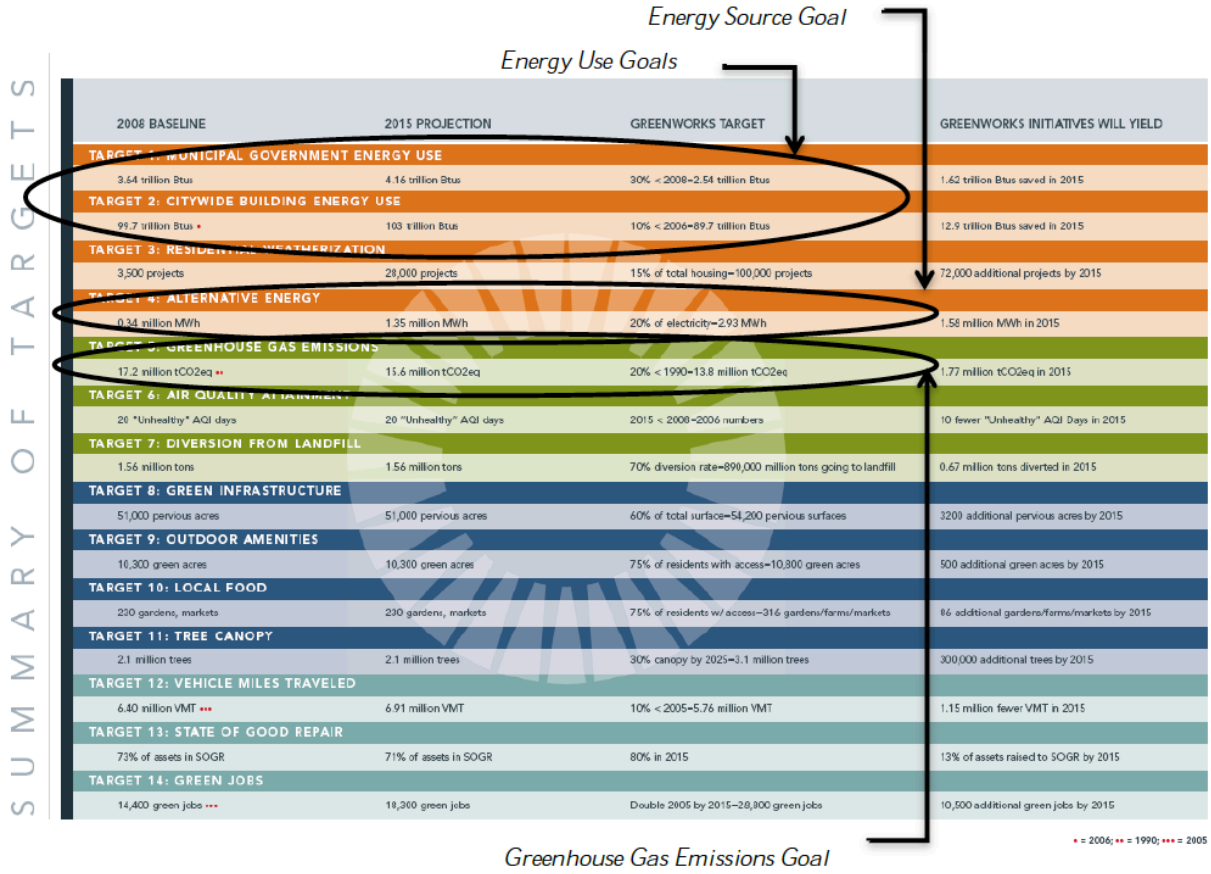
For example, to paraphrase from the Boulder, Colorado *Climate Action Plan*: by 2012, Boulder, Colorado will reduce its greenhouse gas emissions by 7% below 1990 levels. The Boulder goal expresses an absolute reduction goal. Other communities have selected to normalize their goals based on exogenous variables, particularly population growth. For example, the goals of Loudoun County and Arlington County, two communities expecting significant population growth over the period of their plans, are expressed in terms of GHG emission reductions per capita instead of absolute emissions reductions.

In more complex formulations of goals, more commonly found among sustainability plans, there is no single specific goal that the plan is trying to realize; instead, there are goals for each of several topic areas that are combined to constitute the overall goal of the plan. For example, Woodbridge, New Jersey's *Sustainable Community Plan* is split along six different sustainability focus areas (see Figure 17). Similarly, the *Greenworks Philadelphia* plan has four target areas: "energy," "environment," "equity," and "engagement" (see Figure 18). Under each of these areas, the plans identify specific goals and related activities which when combined with those in the other focus areas are expected to contribute to meeting an overall greenhouse gas emissions reduction target while achieving other sector-specific ends.

Figure 17. Woodbridge, New Jersey Focus Areas and Color Coding

Source: Woodbridge, NJ Sustainable Community Plan and Climate Action Plan, page II-1

Figure 18. The Energy-Related Goals in the Greenworks Philadelphia Plan are a Mix of Energy-Use, Energy-Source, and Greenhouse Gas Emission Targets

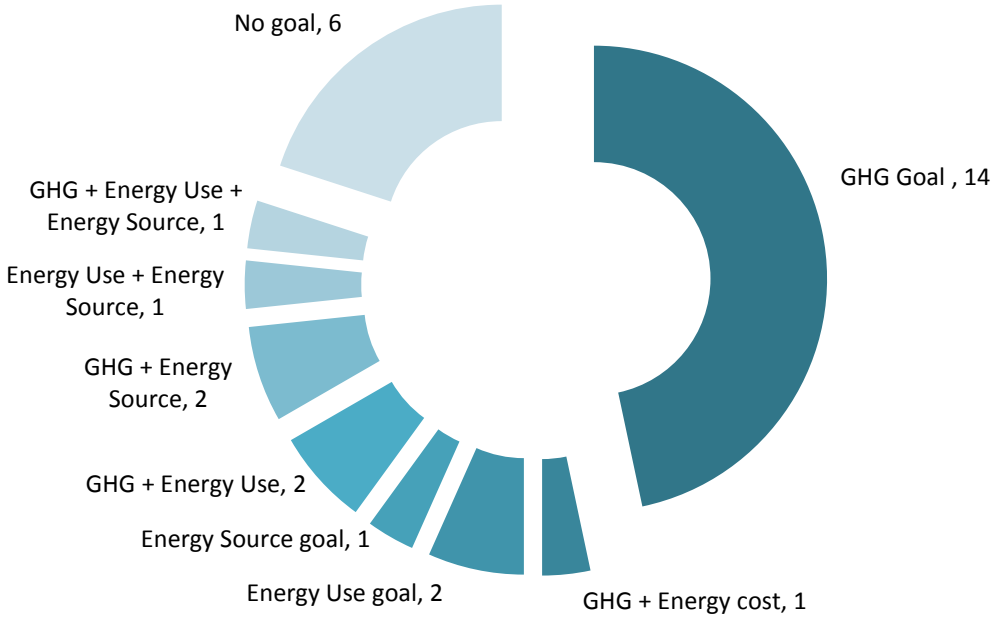


Source: Greenworks Philadelphia, pages 10-11

Of the 30 plans examined, 24 had measurable and specific goals, meaning that the plan had one or more quantitative targets and an associated date by which to achieve that target. The rest of the plans were without specific goals. As a result, these plans without goals functioned primarily as aspirational statements or collections of planned or proposed activities related to energy issues.

The headline goals or primary energy-related goals of each of the 24 plans were from one or more of four goals types: greenhouse gas (GHG) emission reduction; energy use reduction; energy source shift; and, in one case, energy cost reduction. Several of the plans included multiple headline or primary goals from more than one of these categories. Figure 19 shows the occurrence of primary goal types among the plans reviewed. GHG emission reduction goals were a primary goal in 20 of the plans we reviewed and the only headline goal in 14, making it the most common goal type. Energy use goals were primary goals in six plans and the only primary energy-related goal in two plans. Energy source goals were primary goals in five plans and the only primary energy-related goal in two plans. Energy cost savings was a primary goal (alongside GHG reduction) in only one plan: Boulder County's *Sustainable Energy Plan*.

Figure 19. Headline or Primary Energy-Related Goal(s) of Plans



Many of the communities with goals (10 out of 24) had intermediate, or medium-term, goals in addition to the long-term primary goal of the plan. For example, Burlington, Vermont's 2009 *Climate Plan* aspired to achieve an 80% reduction in GHG emissions compared to 2007 levels by 2050 and a 20% reduction compared to 2007 levels by 2020. These intermediate goals are used to provide a more tangible and immediate focus for plans that include long timelines. Intermediate goals can be instrumental in providing medium term opportunities to celebrate success and/or revise plans in order to maintain momentum toward achieving the primary goal.

We compared the visions and goals of the plans we reviewed to determine how closely they fit with each other. We characterized visions and goals within a plan as either tightly or loosely linked. With a tightly linked vision and goal, the metric for the goal will measure a variable that directly relates to the vision. If the vision and goal are loosely linked, the goal metric is often an indirect and potentially inaccurate measure of progress toward the vision, because the metric also captures data unrelated to the specific vision (e.g., GHG emissions used to measure energy use reduction would also capture data on increased clean energy generation and non-energy GHG emission changes) or because it only measures one part of progress toward the vision (e.g., if a vision is focused on both affordability and GHG reduction but the goal is only focused on GHG emissions reductions, then affordability of energy will not be equally pursued through the implementation of the plan). In many communities there may be strategic reasons for choosing visions and goals that are loosely linked; however, it may make progress toward the vision more difficult if the plan is focused on achieving goals that are not directly focused on furthering the vision. Of the 23 plans with both visions and goals, 14 were tightly linked, and 9 were loosely linked (Figure 20). Examples of visions and goals that are tightly linked and loosely linked are included in Table 2.

Figure 20. Communities with Loosely and Tightly Coupled Visions and Goals

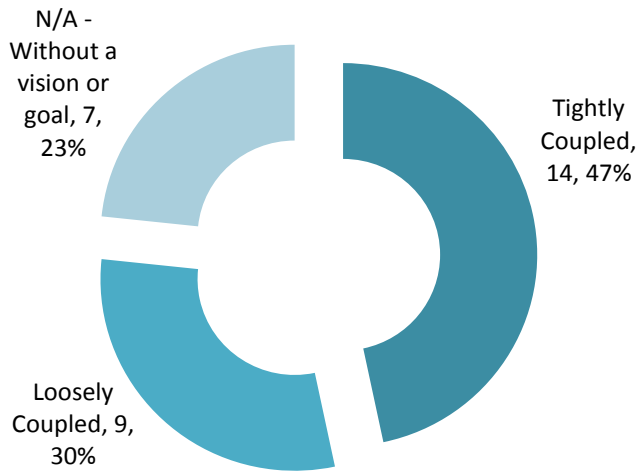


Table 2. Visions and Goal Metrics Loosely or Tightly Coupled

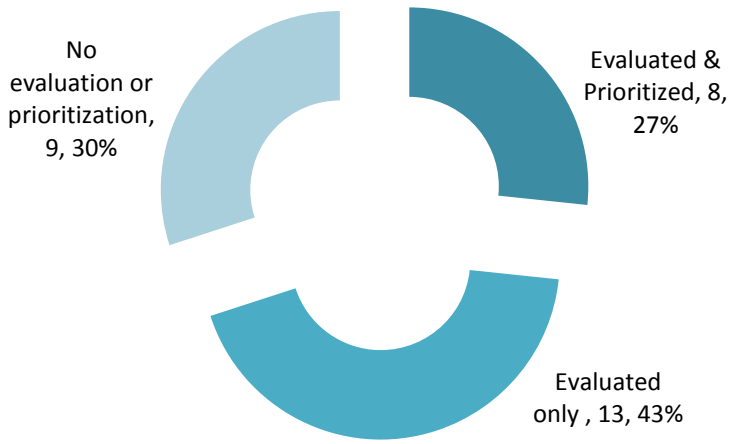
Vision	Goal Metric(s)
Loosely Coupled	
"Always have reliable and affordable energy, be energy efficient, and have reduced greenhouse gases." (Loudoun County)	Reduction in GHG Emissions and energy use reduction
"Identify, promote, and expand the use of cost-effective renewable energy" (Frederick County)	Reduction in *Non*-Renewable Energy Usage
"Design and deliver services that: • Support a stable, diverse and equitable economy. • Promote community health and well-being, outdoor recreation, cultural awareness, and encourage learning. • Protect and improve the quality of the air, water, land and other natural resources by reducing human impacts and increasing public awareness of the valuable services the environment provides." (City of Gresham)	Reduction in GHG Emissions and increase in renewable energy
Tightly Coupled	
"Make Austin the leading city in the nation in the fight against climate change." (City of Austin)	Cap for existing power plants GHG emissions, carbon neutrality for new generation, energy use reduction, and renewable energy target
"To become a national leader in energy efficiency, conservation, and sustainability in the U.S. and to drive future economic development based on that leadership." (City of Topeka)	Energy use reduction
"Reducing greenhouse gas emissions that contribute to climate disruption will result in substantial benefits" (Kansas City)	GHG Emissions

Vision	Goal Metric(s)
"The past 15 years have also seen a tremendous growth in our understanding of climate change and the important role that cities can plan in addressing it. This worldwide threat to our planet demands an encompassing plan from every city, state and nation and action from every resident and business to reduce emissions of heat-trapping gases and to ensure a good quality of life for future generations." (City of Chicago)	GHG Emissions

STEP 6: EVALUATE AND RANK IMPLEMENTATION ACTIONS

The characteristic most consistently present among the plans was the inclusion of descriptions of specific activities to be undertaken to implement the plan; all thirty of the plans identified multiple specific implementation actions. However, not all of the plans evaluated and prioritized these implementation options based on relevancy to achieving their goals, resources required, and feasibility. While 21 of the plans included some form of evaluation of the actions included in the plan, only 8 prioritized the options included (see Figure 21).

Figure 21. Communities that Prioritized Options



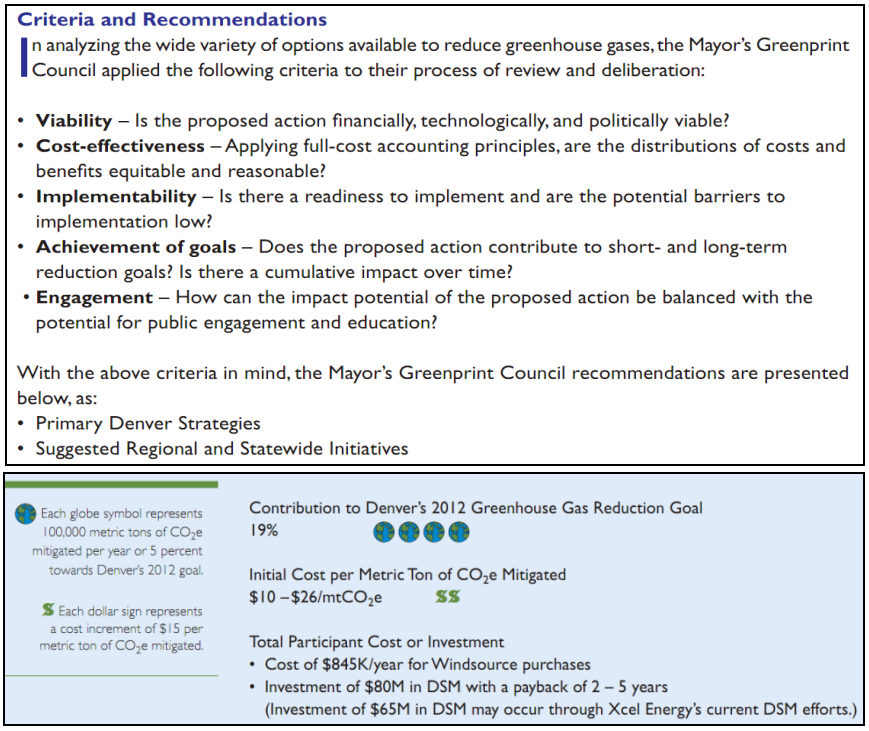
In the plans that evaluated options and used standard metrics for each action in order to allow for comparison between them, the most common evaluation metrics were total investment costs, GHG emissions (or energy use) reduction, and resulting cost savings. Other evaluation metrics used in one or more of the plans include job creation, community preferences from surveys, other environmental impacts such as air and water quality, actors with influence over action, political support, technical and economic feasibility, impact on non-renewable energy use, operating costs, and impact on local quality of life and economy.

Among the eight plans that included prioritization of actions, costs, cost savings, and emissions reductions were most commonly used to rank priority actions. Several of the other evaluation metrics were also used in some of the plans. Some plans such as the *Greenprint Denver: Climate Action Plan* developed review criteria to identify options appropriate to the plan, and then used a combination of quantitative and qualitative data on each proposed option to select the primary actions to be implemented (see Figure 22). Other plans used more quantitative methods. One of the most detailed prioritization methods among the plans was applied to the Burlington *Climate Action Plan*. Its prioritization method

consisted of developing a localized greenhouse gas emissions abatement cost curve similar to the charts popularized by McKinsey & Co (see Figure 23). The most common prioritization method is to rank actions by cost-effectiveness so that communities can focus on undertaking the low-cost actions before pursuing more costly alternatives. However, agreeing and consistently applying an evaluation and prioritization method, no matter its details, is perhaps more important for the successful implementation of a plan than the specifics of the method itself. This requires making choices and implementing only some actions from a list of options.

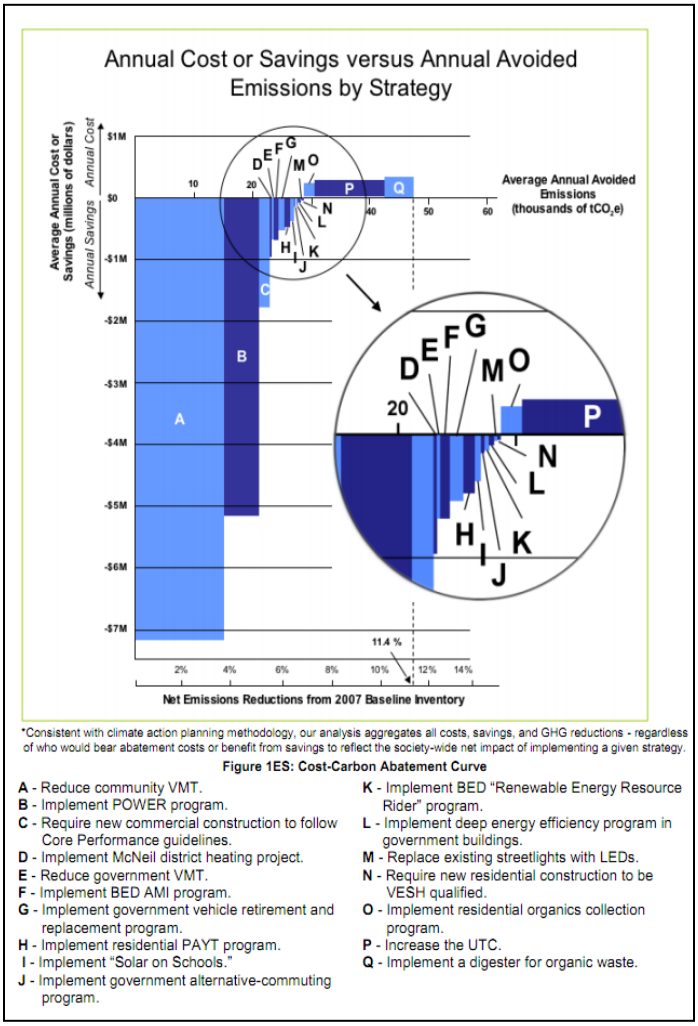
Without some evaluation of proposed actions, those charged with implementing the plan are unable to know if the actions included in the plan will effectively contribute toward achieving the goal of the plan or the size of the contribution provided by each action. Furthermore, in a resource-constrained environment, prioritization of actions also becomes essential because it gives guidance to those implementing the plan as to where to focus their efforts. While some plans are written assuming that all actions included will be undertaken, that is often not feasible because of resource constraints, not all actions can be implemented immediately at the beginning of the implementation period, and some actions may fail to achieve significant results. For all of these reasons, evaluation and then strategic prioritization of actions will allow for more effective implementation.

Figure 22. Example of Multicriteria Prioritization



Source: City of Denver Climate Action Plan, pages 17 and 22

Figure 23. Example of Prioritization through Cost of Avoided Emissions



Source: Burlington, VT Cost-Carbon-Benefit Analysis

STEP 7: FUNDING SOURCE

Funding is essential not only for the planning process, but also to implement the specific actions of a plan and to allow for management of the plan over the entire implementation period. Of the plans reviewed, 26 out of 30 touched, at least briefly, on the topic of how to pay for the implementation of the plan. The rest either briefly mentioned that funding would be a challenge and delegated the task of securing funding to the staff charged with implementing the plan or they avoided the topic altogether. Even in the plans that identified specific funding opportunities, many had not yet secured funding and some simply listed places a staff person could seek funding. Only 12 of the plans noted that they had funding for plan implementation already in place. Among these plans, it was clear that at least five of them had secured funding only for specific actions or projects identified in the plan, and not the plan's broader implementation.

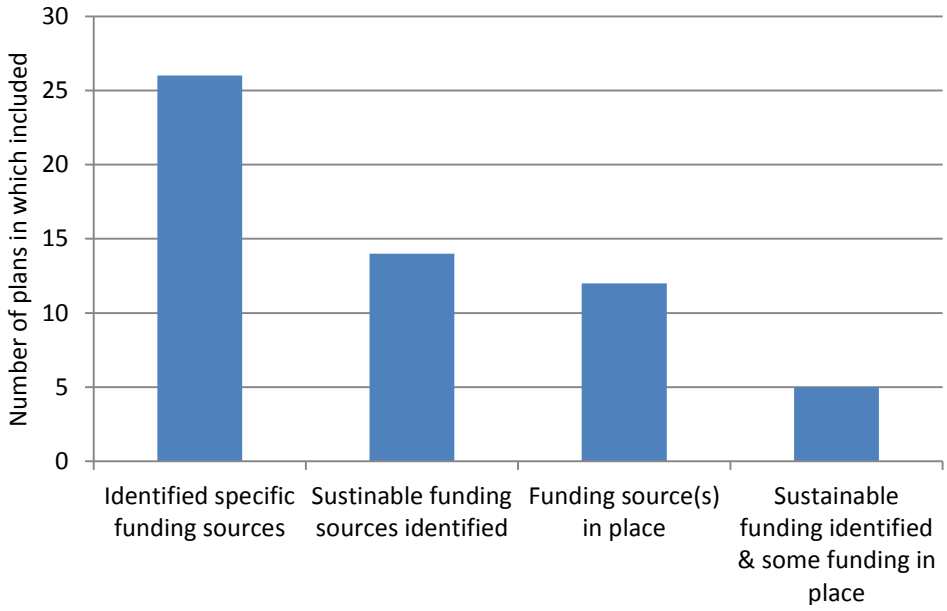
In the implementation of a local energy plan there are two basic kinds of funding: program and project funding. Although some funding mechanisms can provide both, these funding types serve two very different purposes. Program funding supports the administrative costs and general activities

of operating a government program or policy, such as planning, meetings, research, policy development, and education. For example, the salary of a sustainability coordinator or energy office director responsible for implementing a plan through developing policies and projects would be a program cost that would be covered by program funds. Consistent program funding is important to provide continuity, momentum and strategic direction toward achieving the vision and goals laid out in a plan. On the other hand, project funding, or project financing, refers to money allocated for implementing specific projects. For example, the labor and materials required for an energy efficiency project on a city building or the cost of customer financial incentives in a residential efficiency program are costs paid for out of project funds. There are different limitations regarding which activities each funding sources can be used for. For local governments, both kinds of funding can be challenging to obtain.

In the plans we reviewed, localities most commonly identified project funding opportunities such as grants or revolving loan funds that finance specific facility energy efficiency retrofits or upgrades such as upgrading lighting in existing buildings, doing energy audits, upgrading a wastewater treatment plant, or installing a district energy or combined heat/power system. For the most part, the plans devoted very little attention to program funding. A few plans recommended that a Sustainability Coordinator or similar position be filled, and some recommended using EECBG funds or other grant money to do that. Many plans suggested that a coordinator or community official be placed in charge of securing program funding.

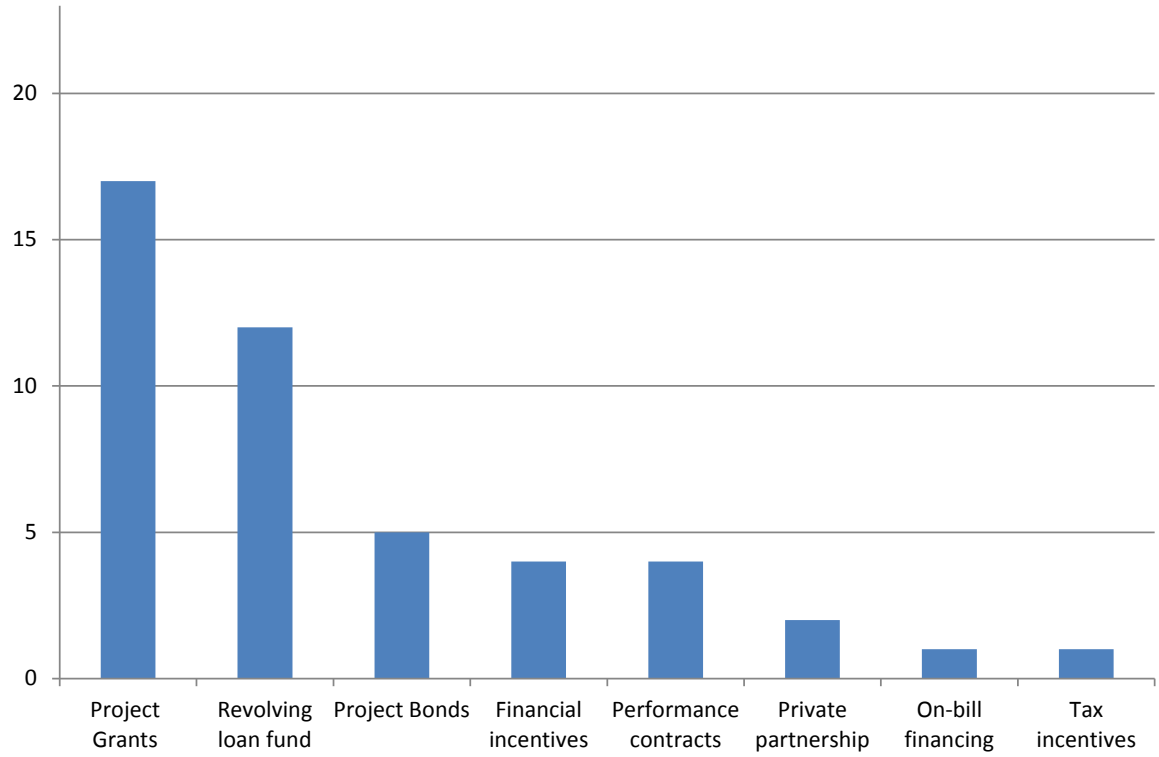
Only 14 of the plans identified potential funding sources that we considered to be sustainable, that is, flexible enough to be used as program or project funding and available for the purposes of plan implementation over an extended period of time or into perpetuity (e.g., dedicated taxes or fees) rather than a limited period (e.g., grants). Only five plans identified sustainable funding sources and had some form of funding in place. It is likely that since these plans were published, many of the communities have secured funding sources, some of which are sustainable. However, with less than half of communities with funding in place and only 15% with sustainable funding in place, for many of these of communities implementation of their plans will continue to be a constant struggle and a piecemeal effort. The number of plans identifying funding and having funding in place is summarized in Figure 24.

Figure 24. Plans with Identified & In Place Funding Sources



The specific funding mechanisms identified in the plans varied considerably. We counted only those that were explicitly described as funding mechanisms and we attempted to differentiate between program and project funding mechanisms. The most common project funding mechanisms described in the plans were project grants (from federal, state, or foundation sources, with EECBG formula allocations being most common specific source) that were identified in 17 plans, and revolving loan funds that were described in 12 plans. Bonds (including Property Assessed Clean Energy bonds or Qualified Energy Conservation Bonds) were identified in 5 plans. Financial incentives (typically utility, state, or local rebate programs) and performance contracts (public facility improvements through arrangements with energy services companies) were each identified in 4 plans. The remaining project funding mechanisms identified were private partnerships (one venture capital fund), on-bill financing, and tax incentives. A summary of the frequency of project funding mechanisms in the plans provided in Figure 25.

Figure 25. Occurrence in Plans of Project Funding Mechanisms



Identification of program funding mechanisms in the plans was much less common. Four plans identified some variation on a user fee. Three plans identified a dedicated tax. Three plans identified energy utility rate structures as a program funding source. Finally, while budget allocations from the community's general fund for program costs was only explicitly described in four plans, it is likely that the majority of plans that did not describe their mechanism for program funding are relying on this mechanism.

Leaders in the area of securing funding include Austin, City of Boulder, and Seattle, all of which have a sustainable program funding mechanism in place. Austin has a municipal utility, Austin Energy, which is a core stakeholder and implementer of its plan. Austin Energy pays for its customer energy efficiency and renewable energy programs through including the cost of the programs in the rates that it charges its customer for energy. Boulder funded the early implementation of its *Climate Action Plan* with a trash tax levied on residents based on the amount of solid waste they produce. The city evaluated several additional long-term funding options and in 2006 Boulder voters passed a Climate Action Plan Tax. Residents and businesses are taxed based on the amount of electricity they consume and the funds collected are exclusively dedicated to implementing the plan. Seattle's plan is implemented in part through a nine-year levy passed in 2006 for funding transportation improvements including expanded transit infrastructure and service and bicycle and pedestrian improvements. Seattle also adopted a commercial parking tax in 2006 that discourages single-occupancy vehicle use and raises funds for implementation of the plan.

STEP 8: FINALIZE & ADOPT PLAN

Formal adoption of energy plans serve an important role in legitimizing the plan and acknowledging that the plan describes the formal strategic priorities of the community. While in some cases a local champion such as the mayor or a councilmember may have put their support behind the planning effort from the beginning, adoption of the plan puts momentum behind its implementation. Some plans are intentionally designed not be formally adopted. For example, Miami-Dade County's plan is described as "not a Miami-Dade County government plan. It is a community plan for all residents, organizations and businesses." Plan adoption processes may also vary with form of government and the particular legal context of a jurisdiction. The scope of the plan—government operations or community-wide—can also impact the process. However, plans that are formally adopted have a distinct advantage in that there is an explicit expectation that it be implemented and, at a minimum, an implicit mechanism in place to ensure accountability. At the point of adoption, responsibilities for implementation and a schedule for implementation are often established.

Of the plans we reviewed, 25 had been formally adopted. Of these, 18 had been adopted by the relevant local legislative body (e.g., city council or county board of commissioners) and 5 had been adopted by executive order of a mayor, county administrator, or other local executive. Of those plans not formally adopted, most were instead accepted as recommendations only by governing body. Our review of these thirty plans also included an assessment of designations of responsibility for implementation and the establishment of a schedule for implementation. Eighteen of the thirty plans or related documents designated the specific actors responsible for implementation of the plan. Only ten out of the thirty plans established a schedule for implementation. In most cases, these designations and schedules serve to establish a structure and medium- and long-term benchmarks for progress. Some planning processes (such as those in Knoxville and Topeka) resulted in stand-alone implementation plans or work plans. Figure 26, showing the organization of the Topeka document, provides an example of an implementation plan.

Figure 26. Example Implementation Plan

THE CITY OF TOPEKA
A CAPITAL CITY GOVERNMENT. WORKING FOR YOU

Implementation Plan and High Impact Items for Municipal Operations							
#	Goal	Metrics	Strategy	Action	Leaders	Savings	Timeline
2	Reduce energy use in the City's fleet by 10% by 2020.	Gasoline = gallons/yr Diesel = gallons/yr Or MMBtu equivalent per year. Baseline = 2010 gallons/yr	Establish a fleet mpg fleet efficiency standard similar to the State of Kansas.	Draft a mutually agreed upon standard using the State of Kansas as a starting point.	SAB, Fleet, City Council	10%	2011
			Establish a vehicle purchasing policy that requires the City to purchase cost effective alternative fuel vehicles.	Require financial analysis of the cost effectiveness of alternative fuel vehicles at each vehicle procurement.	Fleet, Finance	10%	2011
			Adopt a no engine idling and warm up policy.	Draft policy for City Manager.	DPW	1%	2010
			Evaluate the use of CNG in the City's fleet.	Partner with TMTA to evaluate the use of CNG in the City's fleet vehicles.	Fleet		2011
			Reduce vehicle miles traveled.	Evaluate using teleconference services to reduce unnessary trips.	IT, Fleet	10%	2010

Source: City of Topeka Implementation Plan and High Impact Items for Municipal Operations

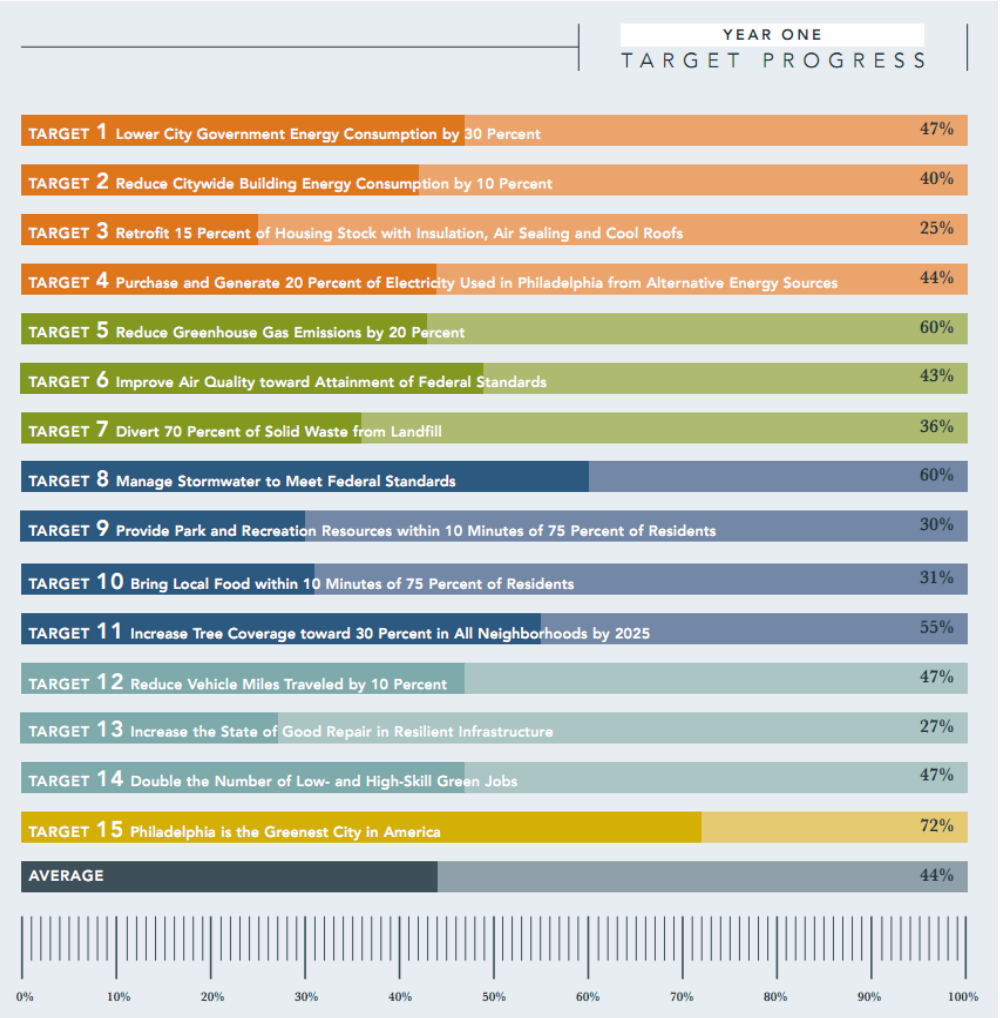
STEP 9: MEASURE/EVALUATE/UPDATE

The final step in the planning cycle focuses on measuring progress, evaluating, and updating the plan. (Implementation, the ultimate goal of any planning process, could be considered "Step 8.5" in this cycle, because of its primary focus on the planning aspects.) As the plan is implemented, tracking progress, documenting challenges, celebrating successes, and publicly sharing progress reports allows for stakeholders to remain invested in and engaged with the plan. In the course of implementation, a systematic evaluation often helps to identify opportunities for improving the plan, including adjustments to specific activities and strategies. And regularly exploring revisions and updates to the plan begins the planning cycle anew, helping to keep it relevant to stakeholders and changing circumstances. Some plans are designed with specific timelines and medium-term planned revisions associated with them. Even plans with very long timelines are often updated before they reach their target date.

Of the 30 planning processes we reviewed, 16 communities had released at least one public document in which progress toward the plan goals was reported. These progress reports took many forms, but almost all specifically referenced the goals and implementation actions established in the plan in order to enable stakeholders to monitor overall progress as well as progress in achieving individual targets. Those that presented straightforward quantitative representations of progress were often the most successful. Philadelphia's *2010 Progress Report*, for example, presented information formatted in a way that referenced the original goals through color choices and design, in addition to presenting progress for each target area quantitatively as a percent of overall goals (see Figure 27).

Only 6 of the 30 plans we looked at had been reviewed or evaluated. However, many of the plans we considered were from the past few years, and arguably two young to be evaluated. Of the 22 plans not yet evaluated, there were 6 plans that had either an evaluation planned for the near future or had included provisions in the plan that explicitly supported an evaluation of the plan. One of the most thorough evaluations we found was the *Climate Action Program (CAP) Assessment*, a look at the City of Boulder plan by an outside, independent reviewer. Finally, revisions to the plan had been proposed or adopted for 5 of the 30 plans we reviewed. Among those plans for which this had not taken place, a plan update was planned or scheduled in four cases.

Figure 27. Example Progress Report Summary Figure



Source: 2010 Progress Report for the Greenworks Philadelphia Plan

Conclusions and Recommendations

Significant Themes

As shown in the step-by-step review of the planning experiences of the 30 communities, there is great variation in local energy planning practices across the country, just as there are great variations among communities. However, there are several important themes that are present among the sample of plans that we reviewed.

- *Energy planning supports a variety of visions*—The stated motivations for engaging in energy-related planning run the gamut from economic benefits, quality of life, environmental quality, meeting energy needs, climate change, and sustainability. Even with these differences, the goals and actions developed were broadly similar. No matter the motivation, an "energy planning" framing has the advantage of creating a forum to address these multiple motivations and that it can be structured to meet the interests of a variety of communities. When compared to other common frameworks such as climate and sustainability planning, an energy planning framing may be more acceptable to a broad range of stakeholders.

- *Greenhouse gas emissions are the dominant goal metric*—The vast majority of the plans we reviewed included greenhouse gas emissions as a metric, and nearly half used GHG emissions as the only headline goal metric. While the method can have political disadvantages, greenhouse gas emission levels have proven to be a simple and elegant metric for energy-related plans. Even among those plans not primarily focused on climate change or emissions reductions, they provide a combined metric for tracking progress on both energy efficiency and clean energy generation. When combined with data on cost-effectiveness, GHG emissions can provide a practical metric to track progress toward economically meeting clean energy goals.

Opportunities for Improvement

Our review of these plans also revealed several important areas where there is significant room for improvement in planning practices. Improvements in these areas are of high priority if local energy planning processes, the implementation of the resulting plans, and the achievement of related goals are to be accomplished and sustained. Areas in need of additional focus by practitioners and technical assistance providers include:

- *Strengthening connections between visions and goals*—The visions and goals included in the plans reviewed are not always tightly coupled. Of particular significance are the conspicuous absence of economic and quality of life goals and related metrics, despite their often prominent position in the visions of the plans. Not only are economic costs and benefits important factors for the long-term political and fiscal feasibility of the actions identified in the plan, but economic and quality of living metrics are important to track to ensure that progress is being made toward the broader vision. Inclusion of these metrics will likely result in greater emphasis on energy efficiency and other clean least-cost resources because of the non-energy (economic and quality of life) benefits that often result (Amann 2006).

- *Prioritizing actions*—While all plans identified some actions to implement the plan and two-thirds of the plans evaluated the potential effectiveness of the actions included, only a quarter of the plans included a systematic prioritization of implementation actions. For local governments and other local actors with limited financial and human resources, prioritization of actions can make the essential difference between a successfully implemented plan and a lackluster collection of piece-meal or under-implemented activities. More communities need to adopt or adapt systems to help prioritize the actions identified in their planning processes. Many models already exist, including analyses of costs of avoided emissions (as shown in Figure 23) or cost-effectiveness tests as used in utility resource planning (NAPEE 2008). Also, ACEEE has developed a quantitative policy comparison tool, LEEP-C, that allows users to determine which policy options make the most sense for their community and prioritize their implementation (Mackres, Laitner, and Neubauer 2011).

- *Identifying sustainable funding*—Funding was a notable challenge among the plans reviewed. Less than half had any funding in place for their implementation and less than half had identified potential sustainable funding sources to implement the plan. Only one-sixth of plans met both conditions. Many of the plans have goals and metrics that stretch forward several decades. It will not be possible to achieve these long-term goals with haphazard feast-or-famine funding sources, designed for one-off projects. Instead, communities need sustainable and predictable funding that allows for the systematic development of human capacity, knowledge building, identification of opportunities, steady program management

and policy development, and continuous improvement. There are sustainable funding options available to local governments—including revolving loan funds, bonds, fees, and taxes (DOE 2012)—but many of these options require participants of the planning process to make a strong and cohesive case for their necessity. ACEEE is currently developing a primer on sustainable funding options for local energy efficiency implementation that is due out later this year.

- *Tracking progress and making updates*—Finally, the planning process does not end when implementation starts. Regularly tracking progress, communicating successes and challenges with stakeholders, reviewing implementation, and revising and updating the plan as needed are essential to staying on track toward achieving the goals. While stakeholder engagement and management of core steps of the planning process were generally strong in the plans we reviewed, success was less clear in Steps 8 and 9 on the topics of keeping implementation on schedule, tracking progress toward goals, and updating the plans. When budgeting and preparing for a planning process, it is important that these last steps, as well as the multi-year period required to complete them, are included in order to ensure continued engagement with and accountability for the plan.

These findings may be valuable additions to the literature on local energy-related planning guidance and best practices. Translating community visions into action can go wrong at many points, but solvable technical barriers, such as process management and analytics as described in the opportunity areas above, should be the least of the worries for a community. Luckily, improvements to these aspects of the planning process can realistically be achieved.

Suggestions for Future Research

This report's surface level overview of current energy planning practice provides as many new questions as it does answers. Some opportunities for future research to explore these questions include:

- *Plan performance*—How well are these plans achieving their goals? While planning is important to achieving community goals, the main objective of any planning process is implementation. Some of the plans reviewed have already reached their goals' target year. Others have not yet reach reached their target years but have several years of experience that can provide insights on their progress and likely future trajectory. The success or challenges faced in the implementation of plans can provide insights for other communities undertaking energy planning processes. Such an assessment could be done in part through reviewing progress reports and plan evaluations, but would also require direct communication with staff and stakeholders in many communities to capture qualitative data and data from communities without public progress reports. The likely reluctance from many communities to share their challenges, not just their successes, may make this research difficult.

- *Relationship between planning best practices and implementation results*—Do communities who follow the steps of the planning cycle and other best practices have more success in achieving their goals? While the planning cycle is based on decades of experience with community planning research and practice, there has been limited document of the relationship between its use and the implementation of this family of plans. Perhaps more importantly, which steps are the most critical to success? Which activities best predict implementation success? As examples: Is funding the lynchpin to success? Are stakeholder

engagement and prioritizing actions where most planning processes lose focus? Can one achieve significant energy savings while only completing certain steps in the cycle? Results of such research would help inform what activities should be prioritized by future technical assistance efforts. Also, this research can help us understand if improvements need to be made to the presentation of the steps or other best practices from how they are currently conveyed.

- *Variations in best practices among community types*—What practices are the most important for which communities? Communities in the U.S. vary greatly along many dimensions: size, economic activity, political organization, issues of importance, resources, and many others. Which particular planning activities take on increased or decreased importance depending on these factors? For example, to date most local sustainability and climate planning best practices, and to a lesser degree best practices for energy planning, have focused on urban communities. How do the needs and best practices of suburban and rural communities differ?

- *Relationship between energy planning and other community planning efforts*—Finally, in most of the communities reviewed, energy-related planning was first undertaken as a stand-alone activity, disconnected from other planning processes in the community. In some cases, the implementation of the plan includes efforts to better integrate energy-related issues into the community's comprehensive plan or other important plans. Integration can play an important role in institutionalizing actions that help to achieve the energy-related priorities and can guard against rollback of progress if specific programs are defunded. More research is needed into how energy issues have been effectively integrated into the overall planning and policy activities of communities.

References

[ACEEE] American Council for an Energy-Efficient Economy. 2011. "Arlington Initiative to Reduce Emissions (AIRE)." *Local Policy Case Studies*. Accessed 12 March 2012. http://aceee.org/sector/local-policy/case-studies/arlington-initiative-reduce-emissions.

Amann, Jennifer. 2006. *Valuation of Non-Energy Benefits to Determine Cost-Effectiveness of Whole-House Retrofits Programs: A Literature Review*. Research Report A061. Washington, D.C.: American Council for an Energy-Efficient Economy. http://aceee.org/research-report/a061.

ARUP. 2011. *Climate Action in Megacities: C40 Cities Baseline and Opportunities*. C40 Cities.http://c40citieslive.squarespace.com/storage/CDP%20Cities%202011%20Global%20Report.pdf.

Boswell, Michael, Adrienne I. Greve, Tammy L. Seale. 2012. *Local Climate Action Planning*. Washington, D.C.: Island Press.

[DOE] U.S. Department of Energy. 2010. *Performance and Accountability for Grants in Energy (PAGE)*. Accessed May 2010. http://www.page.energy.gov/.

[DOE] U.S. Department of Energy. Accessed 12 March 2012. *Solution Center*. http://www1.eere.energy.gov/wip/solutioncenter/.

Hendriksen, B, Y. de Boer, E. Copius Peereboom, S. Jansen, and J. Ballantine. 2011. *CDP Cities 2011: Global Report on C40 Cities*. KPMG. London: Carbon Disclosure Project. http://c40citieslive.squarespace.com/storage/ARUP%20C40%20Basline%20Report.pdf.

[ICLEI] ICLEI USA—Local Governments for Sustainability. 2009. "U.S. Local Sustainability Plans and Climate Action Plans." http://www.icleiusa.org/action-center/planning/List%20of%20U.S.%20Sustainability%20and%20Climate%20Plans.pdf

[ICLEI] ICLEI USA—Local Governments for Sustainability. 2011. "Five Milestones for Sustainability." http://www.icleiusa.org/sustainability/five-milestones-for-sustainability.

[ICLEI] ICLEI USA—Local Governments for Sustainability. Undated. "ICLEI's 10 Keys to Sustainability Planning Success." http://www.icleiusa.org/action-center/planning/ICLEI_10%20Keys%20to%20Sustainability%20Planning%20Success.pdf

Keneipp, Floyd, Thomas Jensen, and John Reed. 2010. *Local Government Strategic Energy Action Report*. San Francisco, Calif.: California Public Utilities Commission. http://www.calmac.org/events/California_Local_Government_Strategic_Energy_Action_Report.pdf.

Mackres, Eric, John A. "Skip" Laitner, and Max Neubauer. 2011. *Local Energy Efficiency Policy Calculator (LEEP-C), Version 1.0 BETA*. Research Report E117. Washington, D.C.: American Council for an Energy-Efficient Economy. http://aceee.org/portal/local-policy/calculator.

[NAPEE] National Action Plan for Energy Efficiency. 2008. *Understanding Cost-Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-*

Makers. Energy and Environmental Economics, Inc. and Regulatory Assistance Project. http://www.epa.gov/cleanenergy/documents/suca/cost-effectiveness.pdf.

[NREL] National Renewable Energy Laboratory. 2009. "Community Greening: How to Develop a Community Energy Plan." Washington, DC: U.S. Department of Energy. http://www.nrel.gov/applying_technologies/pdfs/community_greening.pdf.

Parzen, Julia. 2009. *Lessons Learned: Creating the Chicago Climate Action Plan*. Chicago, Ill.: City of Chicago Department of Environment and ICLEI. http://www.chicagoclimateaction.org/filebin/pdf/LessonsLearned.pdf.

Parzen, Julia, Sadhu Johnston, Suzanne Malec-McKenna, Karen Hobbs, Joyce Coffee, Anne Evens, and John Cleveland. 2009. *Chicago's Guide to Completing an Energy Efficiency & Conservation Strategy*. Chicago, Ill.: The City of Chicago Department of Environment, Urban Sustainability Associates, and The Center for Neighborhood Technology. http://www.cnt.org/repository/CHICAGOEECGUIDE4POST.pdf.

Peterson, D., E. Matthews, and M. Weingarden. 2011. *Local Energy Plans in Practice: Case Studies of Denver and Austin*. Golden Colo.: National Renewable Energy Laboratory. http://www.nrel.gov/applying_technologies/state_local_activities/pdfs/50498.pdf.

Appendix: Plan Summaries

See *http://aceee.org/sites/default/files/publications/otherpdfs/appendix-local-energy-plan-summaries.xlsx*.