Advancing Green Purchasing in Local Governments

June 2017

ASU **Center for Organization Research and Design**

Arizona State University

Sustainable Purchasing Research Initiative

Advancing Green Purchasing in Local Governments

Table of Contents

Executive Summary

While green purchasing policies have the potential to significantly reduce carbon impacts across the globe, most U.S. cities have either struggled to implement them or do not have one at all. Consequently, green purchasing policies have not reached their potential to help local governments mitigate their environmental impacts. These are significant concerns that the United Nations Environmental Programme, the International City/County Management Association (ICMA), the Sustainable Purchasing Leadership Council (SPLC) and others suggest must be resolved if we are to move toward an environmentally sustainable economy.

Researchers at the Arizona State University (ASU) Center for Organization Research and Design (CORD) have sought to address these issues with the assistance of a grant from the V. Kann Rasmussen Foundation. Our three broad objectives are to:

- Determine the facilitators and the barriers to adoption and implementation of green purchasing policies in local governments.

- Recommend actions for advancing green purchasing practices.

- Encourage local governments that lack green purchasing policies to implement them within their jurisdictions.

To accomplish the first two objectives above, we conducted a national survey of finance, public works and environmental directors in a sample of U.S. local governments. The survey generated 616 individual responses from 459 cities of 25,000 residents or more. These cities were representative based on their population size, income and geographic dispersion by state.

Directors surveyed reported that 28 percent of their cities have a green purchasing policy; 60 percent reported they have no policy, and 12 percent did not know if their city has such a policy.

How are local governments that have adopted green purchasing policies different from nonadopters?

Department directors indicated that cities that adopt green purchasing policies differ in five ways from those cities without such policies:

1.   Complementary policies and practices

2.   Purchasing criteria

3.   Information access

4.   Leadership, employees and resources

5.   Vendor roles

What factors are more strongly related to implementation success?

Of the 28 percent (170 total) of department directors who reported that their cities had adopted green purchasing policies, more than half (58 percent, 90 total) indicated that their cities have implemented the policy successfully. By contrast, 42 percent (65 total) of the department directors considered the implementation of their green purchasing policies to be either "neutral" (neither successful nor unsuccessful) or "unsuccessful."

Directors in cities who reported successful implementation of their green purchasing policies noted that these policies are more likely to have five general features:

1.   Complementary policies and practices

2.   Information access

3.   Leadership and implementation responsibility

4.   Vendor roles

5.   Innovation culture

Recommendations:

Based on these findings, we have developed eight recommendations aimed at increasing cities' green purchasing policy adoption and implementation success:

1.   Build on complementary policies and practices

2.   Use information about environmentally preferred products like those recommended in the U.S. Environmental Protection Agency's (EPA's) Guidelines for Environmental Performance Standards and Ecolabels

3.   Utilize e-procurement systems that integrate environmental product information

4.   Track spending related to green purchases

5.   Enhance collaborative vendor relationships

6.   Assign accountability to top-level management

7.   Foster a culture for innovation

8.   Participate in professional networks to share best practices

Acknowledgements

About the ASU Center for Organization Research and Design

This report was developed by researchers at the Arizona State University (ASU) Center for Organization Research and Design (CORD). CORD is a research center launched at ASU to promote, support and conduct fundamental research on public, private, nonprofit and hybrid organizations and their design. To achieve its mission, CORD has identified five areas that have high potential for improving societal conditions, one being environmental policy and sustainability. Thirteen core ASU faculty, including four who developed this report, work closely with an extensive network of affiliated individuals who assess the effects of environmental policies. This report is an example of our use-inspired research.

Please Share this Report

This report is designed to help cities integrate green purchasing into their procurement processes. Readers are encouraged to share it widely among their professional networks. A physical copy of this report can be obtained by emailing Nicole Darnall, associate director of CORD at ndarnall@asu.edu.

Additional Information

Please visit ASU's Sustainable Purchasing Research Initiative (spa.asu.edu/greenpurchasing) for additional information about green purchasing, best practices, project updates and related research papers.

Authors

Dr. Nicole Darnall is a professor of management and public policy at ASU and associate director of CORD. Her research examines the factors that facilitate or impede organizations' and individuals' sustainability behaviors. She has served as Collaborative Visiting Fellow with the Economic and Social Research Council (U.K.) and the Social Science Research Council. She is an Erasmus Mundus International Scholar and an International Fellow with the Spanish Ministry of Education. Her research has been supported by the U.S. Environmental Protection Agency, the National Science Foundation, the European Commission, the Economic and Social Research Council, the Social Science Research Council, and the Organisation for Economic Co-operation and Development.

Dr. Justin M. Stritch is an assistant professor of public management at ASU, a CORD affiliate and Research Fellow at SFI-The Danish National Centre for Social Research. His research focuses on employee motivation, management, performance and decision-making in public organizations. He applies these topics to a variety of settings, including how organizations can encourage workplace participation in pro-environmental behavior.

Dr. Stuart Bretschneider is Foundation Professor of Organization Design and Public Administration at ASU's School of Public Affairs. He is also CORD's director of research. His research focuses on innovation in public organizations, the use of information technology and the effects of those technologies on public organizations, and the evaluation of environmental and energy policies. A founding editor of public management's premier journal, his research has been supported by the National Science Foundation, the U.S. Department of Agriculture, the U.S. Department of State, and the U.S. Environmental Protection Agency.

Dr. Lily Hsueh is an assistant professor of public policy, a CORD affiliate and senior sustainability scientist at ASU. Her research focuses on the emergence, evolution and impacts of alternative governance approaches (e.g., cap-and-trade policies and industry self-regulation) in environmental protection, sustainability and natural resource management. She has been supported by the National Research Council, the National Oceanic Atmospheric Administration, and the Center for Statistics and the Social Sciences at the University of Washington.

Dr. Melissa Duscha is a CORD postdoctoral scholar who received her PhD in public policy from the University of North Carolina at Charlotte. Dr. Duscha's research focuses on private sector contracting in state and local governments.

Jeffrey Iles holds a master's degree in public administration and a master's degree in sustainability solutions from ASU. His research interests include organizational purchasing, e-procurement systems, ecolabels, circular economies, organizational behavior and organizational theory.

Won No is a PhD candidate in public administration and policy at ASU. Her research interests include civic participation, participatory governance and participatory budgeting. She assesses the redistributive effects of participatory budgeting, e-participation and ideation processes in online invited spaces, and participatory processes with a focus on the quality of deliberation.

Jorge Suarez holds a BS in public service and public policy with a concentration in nonprofit management and global studies from ASU. His research interests include cross-sector collaboration, the impact of science and innovation in policies, smart cities and smart living, and the government promotion and support of research, innovation, and development (R+I+D).

Caitlin Burwell is an ASU graduate student pursuing degrees in sustainability solutions and legal studies. Her research interests include organizational purchasing, organizational behavior and environmental law and policy.

Introduction

In the U.S. alone, local governments purchase $1.72 trillion of goods annually, which accounts for 25 to 40 percent of every tax dollar spent, and between 15 to 30 percent of country-level gross domestic product (GDP). Purchased items include vehicle fleets, construction materials, chemicals, electronics and office materials, all contributors to global climate change and other environmental concerns during these products' production and use.

To address the environmental impacts associated with government purchasing, some local governments have implemented green purchasing policies. A green purchasing policy refers to the set of activities undertaken by an organization to implement purchasing that reduces negative effects on the environment. Governments that practice green purchasing can mitigate their climate impacts swiftly and significantly, while stimulating the increased production of green products and services. For instance, by purchasing green products, local governments can reduce energy-related carbon emissions, water, solid waste and a host of other activities, while increasing internal efficiencies (e.g., reduced energy use) that lead to cost savings.

Since green products often are designed with enhanced durability features, green purchasing policies have the potential to reduce consumption, while creating significant market incentives for companies to reconsider their production processes, incorporate environmental principles into their daily business routines and thereby reduce their environmental impacts. Further, green purchasing policies can result in the expansion of the production of green products and services. By virtue of local governments encouraging their suppliers to produce and deliver greener products, research shows that 40 percent of these companies will, in turn, assess the environmental activities of the organizations that supply them. Green purchasing policies therefore have the potential to create spillover benefits that extend up the supply chain and across the globe, leading to significant environmental benefits.

However, most U.S. local governments have not adopted green purchasing policies. Moreover, many that have them have failed to implement them fully, suggesting that there are significant barriers to implementing these policies. As a consequence, green purchasing policies have not reached their potential to help local governments mitigate their environmental impacts, and markets have been slow to increase their delivery of green products and services. These are significant concerns that the United Nations Environmental Programme, ICMA, SPLC and others have suggested must be resolved if we are to move toward an environmentally sustainable economy.
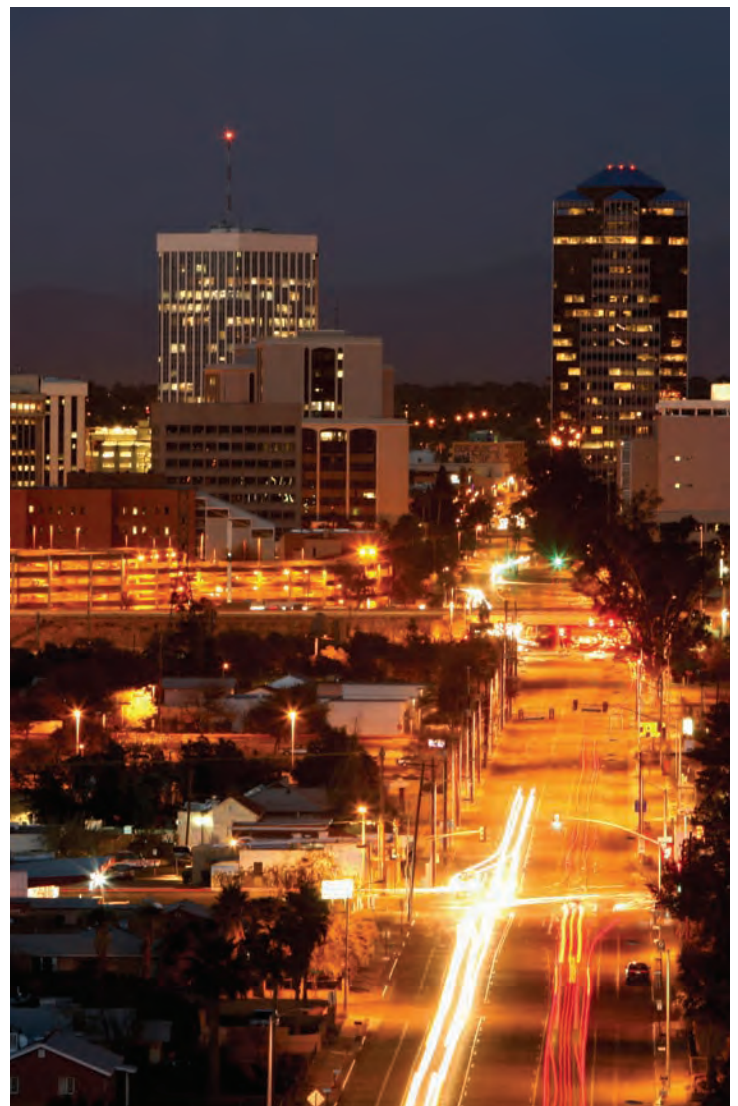
Project Goals

To enhance the potential of green purchasing in local governments, we initiated a study with three project goals:

1.   *Determine which factors impede or facilitate green purchasing policy adoption and implementation*

     To achieve this goal, we surveyed 1,825 directors of departments of environment, finance and public works from a sample of 791 cities of 25,000 residents or more. These governments consisted of cities that had green purchasing policies in place and those that did not. We identified the factors related to local governments' green purchasing policy adoption.

2.   *Recommend immediate actions for governments to advance their green purchasing policies more effectively*

     We applied statistical tools to the survey data to identify which factors are related to the implementation success of local governments' green purchasing policies.

3.   *Encourage local governments that lack green purchasing policies to consider implementing green purchasing policies within their jurisdictions*

     We combined the results of project goals 1 and 2 to develop a list of best practices that facilitate the implementation success of green purchasing policies.

We are sharing our findings through the following outlets:

- Postcard mailings featuring our key findings to the sample of 791 U.S. cities of 25,000 residents or more

- Emails to all directors of cities who completed our survey, including a direct link to the report and the project website

- Emails to professional organizations (e.g., ICMA, SPLC) that have agreed to distribute the report's findings to their network members

- Presentations at professional meetings (ICMA, SPLC, the Association for Public Policy Analysis and Management and the Network of Schools of Public Policy, Affairs, and Administration)

- Emails to relevant media outlets with direct links to the report.

Additionally, we developed the following materials and posted them to our website (spa.asu.edu/greenpurchasing). These materials will be featured in more that 175 social media posts via Twitter, Facebook, Instagram, and LinkedIn.

- Project summary
- Video tips
- Podcasts

- Slide deck
- *ASU Now* news article about the project
- Case studies

Research Approach

To achieve our project goals, we first reviewed the existing research. While prior surveys had assessed sustainability efforts and practices in local governments (e.g., ICMA's Local Government Survey), they were not specific to green purchasing. Additionally, many green purchasing practices are not applicable to cities that have not adopted a green purchasing policy.

For this reason, we developed an original survey that addressed the following areas:

- City-level purchasing activities

- City-level environmental sustainability policies/practices

- Department-level policies/practices

- Department structure and culture

- Professional/personal information

Within these broader areas, questions covered topics such as:

- The structure of purchasing decisions

- Access to information

- Vendor roles

- The influence of stakeholders

Prior to finalizing our survey, we conducted focus groups with 14 City of Phoenix employees to understand more about the structure of purchasing in local governments. Focus group participants included department directors and purchasing officers. Additionally, we solicited feedback on our draft survey from 31 stakeholders working in city government, county government, the U.S. Environmental Protection Agency, ICMA, SPLC, U.S. General Services Administration, environmental consulting and academia. See spa.asu.edu/greenpurchasing for a full listing of the stakeholders who advised us on our survey and research approach.

ICMA, the premiere professional association for city and county managers, agreed to co-sponsor our survey. Co-sponsorship included permission for the use of the association's logo on our survey and on correspondence with survey recipients. Since ICMA is widely recognized by city and county managers, we believed the partnership would increase our survey responses.

Survey recipients

Because the project is focused on the implementation of organization-level purchasing and green purchasing policies, we surveyed city managers whose operations were a) related to purchasing; b) related to environmental management; or c) significantly affected by purchasing. We focused on directors within the following departments to obtain a representative view of green purchasing implementation:
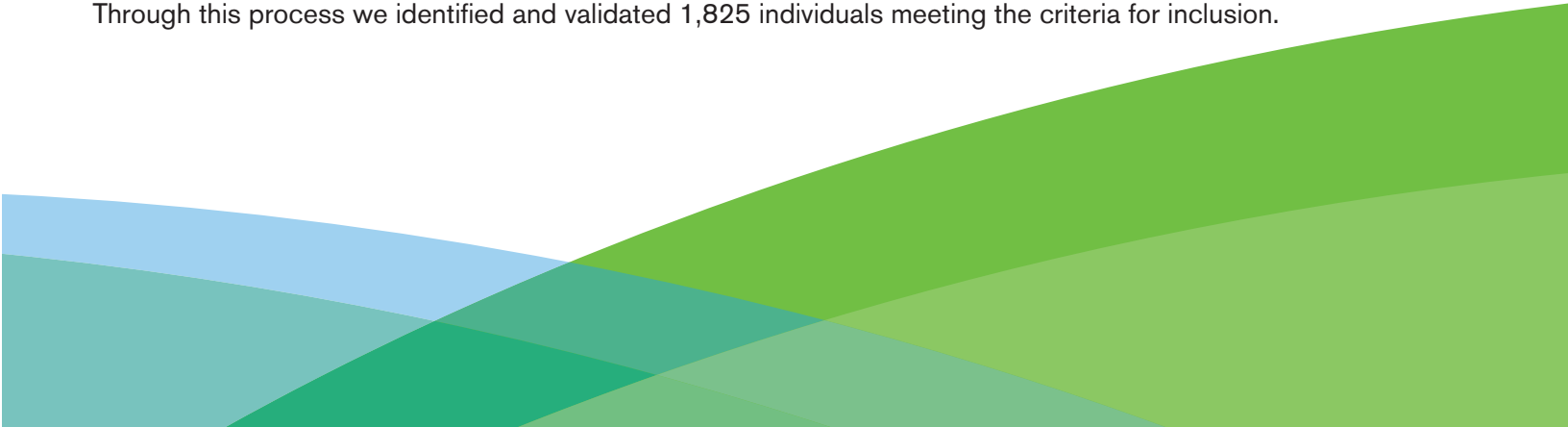
1.   Finance departments

2.   Public works departments

3.   Environment departments

Finance departments generally have some role (either primary or supportive) in citywide purchasing processes. Public works departments are typically large purchasers within cities. The public works directors therefore generally understand city purchasing policies and practices. Further, public works departments typically involve managing resources that have large environmental impacts (e.g., water, energy, construction, roads). Finally, while not present in all cities, directors of environment are generally tasked with the integration of environmental concerns into the city's routines and processes.

We used the following protocol to obtain department contacts within each of the 791 cities:

1.   We acquired the 2014 U.S. Census list of all U.S. cities with 25,000 or more residents.

2.   In Google, we used search words (e.g., The City of Phoenix) to find each city's official webpage.

3.   Once a city webpage was found, we identified the relevant city department's webpage.

4.   If the department director's contact information was available, we recorded the director's name, email address, phone number and mailing address.

5.   If the department director's information was not available, we conducted a Google search for the position title and the city. For example, if we were searching for the finance director of Seal Beach, California, we entered the search term "Director of Finance, City of Seal Beach, CA" to identify an individual. The city engineer often served as the director of public works within smaller cities. Search words used to identify environment-related departments included: sustainability, environmental sustainability, environment and green. While most cities had an environmental sustainability commission or committee, relatively few had a formal department.

6.   If contact information could not be identified on city webpages, we obtained it by searching the name of individuals using Google and social media (e.g., LinkedIn).

Through this process we identified and validated 1,825 individuals meeting the criteria for inclusion.

Survey administration

We finalized our survey in November 2016 and pre-tested it with 94 department directors. The pretest consisted of 51 percent finance directors, 37 percent public works directors and 12 percent environment directors. Only minor revisions were made to the survey prior to the launching of the final version on January 24, 2017. The final survey contained 37 questions that required approximately 12 minutes to complete.

The survey was distributed online to 1,825 department directors within 791 U.S. cities over a period of eight weeks. Department directors received an initial letter informing them of the survey and its co-sponsorship with ICMA. Several days later, the survey was administered electronically using Qualtrics survey software. Up to four email reminders and two postcard reminders were sent to nonrespondents, in addition to two phone call reminders.

A total of 585 of the 1,825 department directors completed the survey. After adding the 31 completed pre-test responses (out of 94), our sample consisted of 616 department directors, a response rate of 33.8 percent. The final sample consisted of 48.2 percent finance directors, 36.5 percent public works directors and 15.3 percent environment directors. We received responses from at least one director in 58 percent (459) of the cities in our sample.

A comparison of our sample to the population of U.S. cities of 25,000 residents or more (using 2014 U.S. Census data) indicates that our sample is representative of all U.S. cities, based on their total population, location (state), and geographically by population and mean income.

The following documents provide further explanation about our research approach. All documents are available at spa.asu.edu/greenpurchasing.

- Results of our focus group discussions with City of Phoenix purchasing employees

- A list of expert stakeholders who provided feedback on our survey and research approach

- The final survey

- Print materials used to contact department directors (e.g., initial letter, postcards)

- Post-hoc assessments of our sample's representativeness

- Frequencies associated with each of our survey questions

Measurement and statistical assessment

Two survey questions formed the basis of our evaluation of the factors that impede or facilitate green purchasing policy adoption and implementation. The first question examined green purchasing policy adoption and asked, *"To the best of your knowledge, has your city implemented a formal policy pertaining to the following purchasing issues?"*

Department directors were provided a list of policies, one of which was *"Environmentally sustainable purchasing."* The following definition was provided:

> *Environmentally sustainable purchasing is the set of activities undertaken by an organization to implement purchasing that reduces negative effects on the environment.*

Department directors who answered "Yes" to this question were identified as individuals working in cities that had a green purchasing policy in place. Those who answered "No" were identified as working in cities with no green purchasing policy.

The second survey question that formed the basis of our evaluation assessed department directors' perceptions of the success of their green purchasing policies' implementation. Directors who responded "Yes" to the question above were asked to answer a follow-up question: *"We are interested in your overall assessment of the implementation of your city's environmentally sustainable purchasing policy. How would you assess your city's overall implementation of this policy?"*

Department directors responded on an 11-point scale with 5 being "Very successful," 0 being "Neither successful nor unsuccessful" and -5 being "Very unsuccessful." For the purposes of this report, we identified cities as having a "Successful" green purchasing policy by combining responses of 1 through 5. We identified policies that were "Less than successful" by combining responses 0 through -5.

This measure of success is perceptual and was used for several reasons. First, cities' green purchasing policies are extremely diverse. They vary based on their degree of formalization, scope, maturity and other factors. Determining *actual* implementation success would require using a benchmarking tool that must be applicable to all cities. Additionally, many cities that adopt green purchasing policies reported that these policies are unsuccessful. We anticipated that asking directors within these cities a series of questions that would not be applicable to them would lead to survey fatigue and nonresponse. Asking directors in cities about the success of their green purchasing policies attempts to balance these survey design concerns.

Responses to both questions were compared to the responses to all other survey questions using chi-square statistical tests. Only statistically significant survey items are displayed within the report's figures. Our findings offer a preliminary assessment of the factors that facilitate the adoption of green purchasing policies and their implementation success.

The next section describes our sample of cities with respect to those that have and have not adopted green purchasing policies.

Green Purchasing in U.S. Cities

Green purchasing policies can take a variety of forms. They consist of formal policy vehicles such as legal frameworks, ordinances, executive orders, resolutions and administrative directives. Policies also include less formal approaches that involve adding language to existing or complementary policies (e.g., a sustainability plan or an energy conservation policy) that address green purchasing.

For the department directors in our sample, just more than one quarter (28 percent) reported that their cities have a green purchasing policy (see Figure 1). This compares with 60 percent of department directors who reported that their cities do not have a green purchasing policy. In 12 percent of cities, directors did not know whether a green purchasing policy existed in their cities. This lack of knowledge is likely to be indicative of the city not having a green purchasing policy.

Figure 1. Green Purchasing Policy Adoption in U.S. Cities

60% (n=366)

28% (n=170)

12% (n=73)

■ Green Purchasing Policy   ■ Don't Know   ■ No Green Purchasing Policy
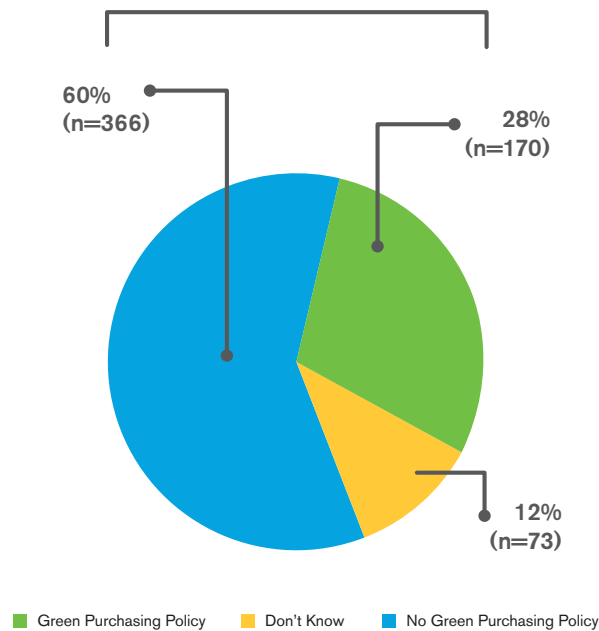
Which Factors Impede or Facilitate Green Purchasing Policy Adoption?

Regardless of their form, department directors indicated that cities that adopt green purchasing policies differ in five ways from those cities without such policies:

1.   Complementary policies and practices

2.   Purchasing criteria

3.   Information access

4.   Leadership, employees and resources

5.   Vendor roles

1.   *Complementary policies and practices*

Complementary policies and practices can reduce the costs of adopting green purchasing policies, since similar internal capabilities are typically needed to manage both types of activities. They also help create management commitment and shared vision around similar issues.

We asked department directors several questions about their cities' complementary policies and practices, the first of which was, "To the best of your knowledge, does your city have any of the following?"

Department directors were presented a list of options. Figure 2 describes those found to be statistically significant. Figure 2 shows that directors in cities with and those without green purchasing policies share a variety of complementary citywide policies; however, directors in cities with green purchasing policies typically have more of these policies. For instance, 76 percent of directors in cities with green purchasing policies also have a citywide environmental sustainability policy, and the same proportion of directors reported that their cities also have a green building policy. This compares to directors in cities that lack a green purchasing policy, where only 15 percent have an environmental sustainability policy and 17 percent have a green building policy.

Figure 2. Citywide Implementation of Complementary Environmental Policies
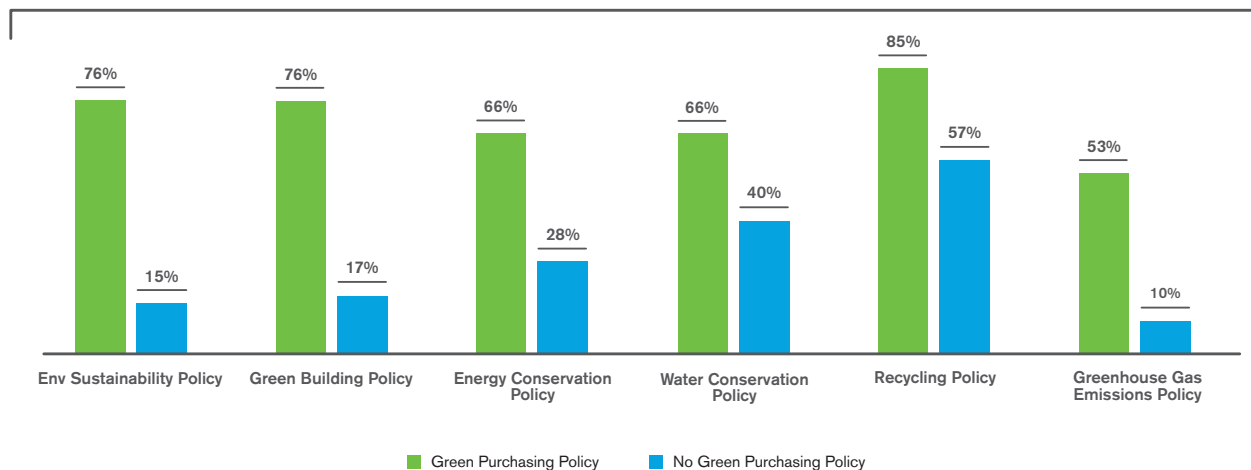
Similarly, two-thirds of directors (66 percent) in cities with a green purchasing policy also have an energy conservation policy and a water conservation policy. By contrast, about one-quarter of directors (28 percent) in cities without a green purchasing policy have an energy conservation policy, and 40 percent have a water conservation policy. When considering cities' implementation of a recycling policy, directors in cities with green purchasing policies implement more of these recycling programs. Even though these policies are not required by federal law, 85 percent of department directors in cities with green purchasing policies reported that their cities have a recycling policy, compared with 57 percent of directors in cities that lack a green purchasing policy.

To explore issues related to more socially oriented complementary policies, department directors were also asked, *"To the best of your knowledge, has your city implemented a formal policy pertaining to any of the following purchasing issues?"*

Department directors were presented a list of options. Figure 3 describes the items found to be statistically significant that pertained to the broader social aspects of sustainability. Our results show that directors in cities with green purchasing policies are more likely than others to have implemented these broader purchasing policies. For instance, two-thirds of directors (67 percent) in cities with green purchasing policies have a local business purchasing policy in place, compared with 39 percent of directors in cities without a green purchasing policy. Similarly, 53 percent of directors in cities with green purchasing policies have a citywide minority-owned business purchasing policy, while 21 percent of directors in cities that lack green purchasing policies have minority-owned business purchasing policies. Just more than half of directors (51 percent) in cities with green purchasing policies reported a women-owned business purchasing policy, compared with 18 percent of directors in those cities surveyed without a green purchasing policy. Fewer — cities with and without green purchasing policies — have veteran-owned and small business purchasing policies, although a larger share of department directors in cities with green purchasing policies reported having adopted these policies.

Figure 3. Citywide Implementation of Complementary Social Policies

	Green Purchasing Policy	No Green Purchasing Policy
Local Business Purchasing Policy	67%	39%
Minority-Owned Business Purchasing Policy	53%	21%
Women-Owned Business Purchasing Policy	51%	18%
Veteran-Owned Business Purchasing Policy	23%	5%
Small Business Purchasing Policy	33%	7%
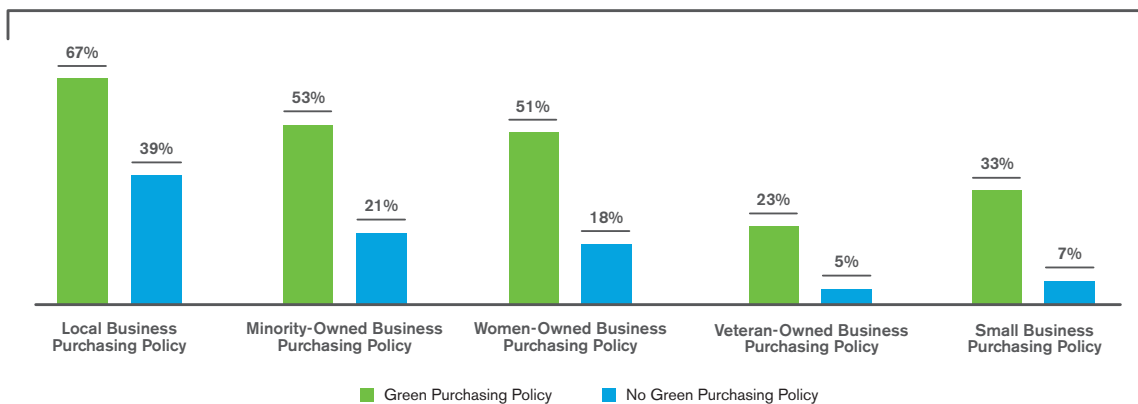
In addition to asking about complementary policies, we also examined cities' complementary environmental practices. Department directors were asked, *"Please indicate whether the following environmental practices have been implemented or adopted throughout your city."*

Department directors were presented a list of options. Figure 4 describes those found to be statistically significant. Directors in cities with green purchasing policies reported having a greater presence of citywide environmental practices. More than half of department directors (57 percent) in cities with green purchasing policies have set goals/targets for environmental performance. This compares with 17 percent of cities without a green purchasing policy. Additionally, about one-third of department directors (31 percent) in cities with green purchasing policies reported having citywide environmental training for all city employees, compared with 8 percent of directors in cities without a green purchasing policy.

Figure 4. Citywide Implementation of Environmental Practices
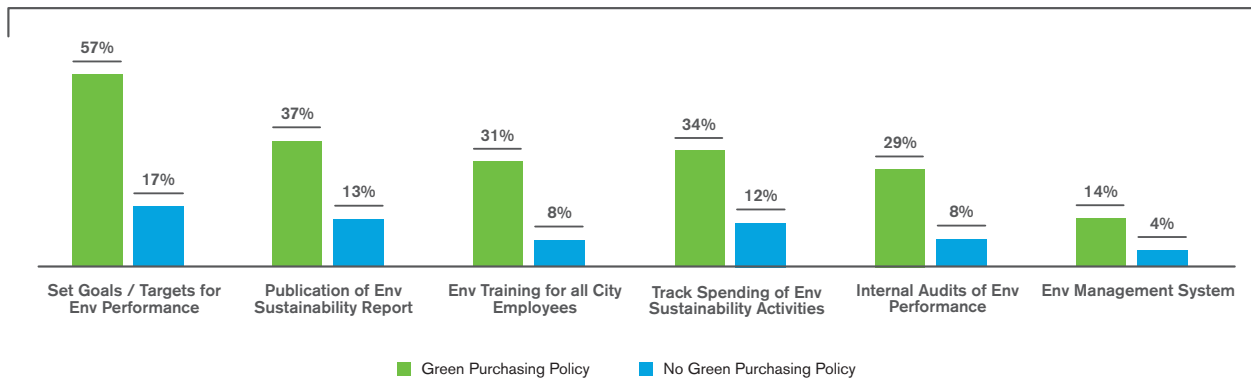
About one-third of directors (34 percent) in cities with green purchasing policies reported having citywide practices that track spending of environmental activities, compared with 12 percent of directors in cities without a green purchasing policy. Similar patterns are seen for department directors' reported use of internal audits of environmental performance and the use of environmental management systems, although these practices are less prevalent in all cities.
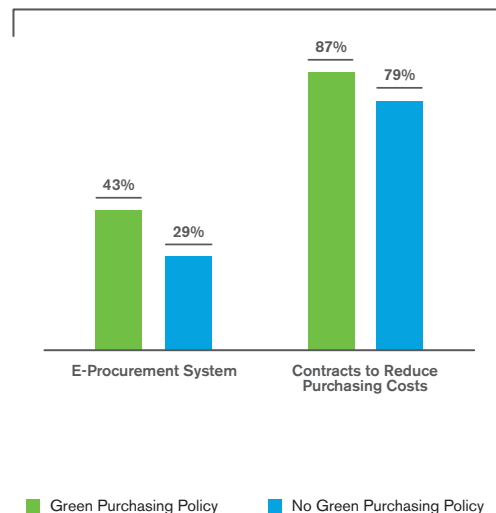
While department directors of cities with green purchasing policies tend to have more complementary environmental practices, the prevalence of these practices is still quite low. Yet many of these items, such as setting goals/targets for environmental performance, environmental training for all city employees and internal audits of environmental performance, are necessary to improve the implementation outcomes of a city's green purchasing policies. As such, there are potential opportunities for cities with green purchasing policies to strengthen their internal capacities in a way that improves their implementation success.

The final area we assessed focused on complementary policies and practices related to the more technical aspects of purchasing. Department directors were asked, *"To the best of your knowledge, has your city implemented the following purchasing activities?"*

Department directors were presented with several items that pertain to the technical aspects of purchasing, including the two featured in Figure 5. Our findings indicate that directors in cities with green purchasing policies are more likely to have implemented these broader activities. For instance, 43 percent of directors in cities with green purchasing policies have implemented an e-procurement system, while 29 percent of directors in cities lacking these policies have an e-procurement policy in place.

Figure 5. Citywide Implementation of Complementary Purchasing Activities

E-procurement systems are recognized as being important facilitators of the successful implementation of green purchasing policies because these systems help routinize sustainability concerns in the purchasing process if they are coupled with information about green products and services. Related to cities' use of contracts to reduce purchasing costs, 87 percent of directors in cities with green purchasing policies reported that they use these types of cost-reduction contracts. This compares with 79 percent of directors in cities without green purchasing policies. While the proportional difference between the two types of cities is small, it is still statistically significant and important because these types of contracts can be utilized to advance green purchasing concerns and may be a tool for cities to reduce their costs and environmental impacts.
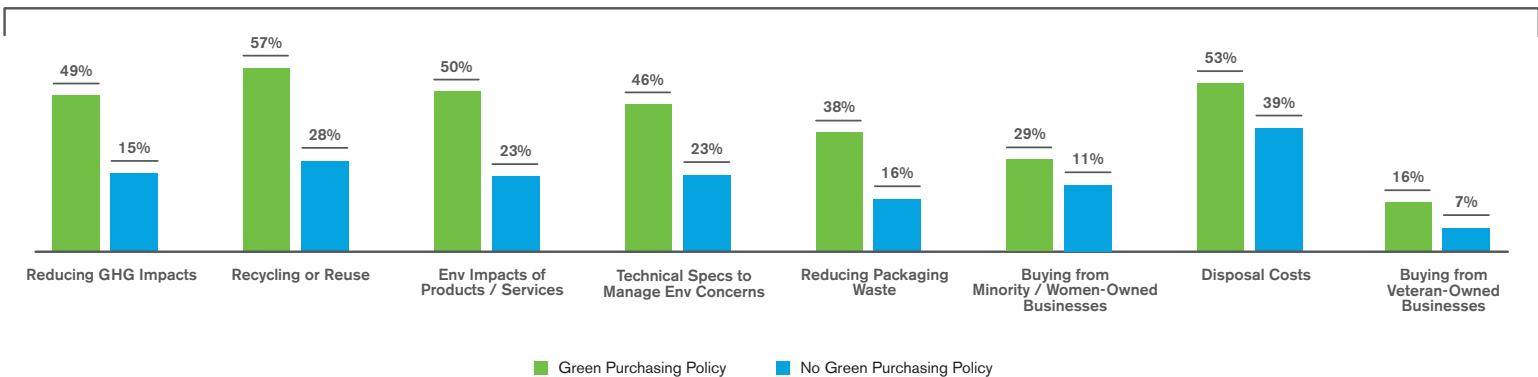
In sum, directors in cities with green purchasing policies reported having more complementary policies and practices than directors in cities without green purchasing policies. However, the rate of adoption of these complementary policies and practices is low, even in cities that have adopted a green purchasing policy. Having these supporting policies and practices can reduce the cost of adopting a green purchasing policy and facilitate its overall implementation success. Our findings thus identify a potential opportunity for cities to further embed green purchasing concerns within the procurement process.

2.   Purchasing criteria

Purchasing criteria are the factors that individuals consider when deciding to purchase a good or service. Department directors were asked, *"In thinking about your department's purchasing criteria, how important is each of the following characteristics of a product or service?"*

Department directors were presented a list of options. Figure 6 describes those found to be statistically significant. The greatest difference among cities that have a green purchasing policy and those that do not is evident in directors' reported "importance" associated with reducing greenhouse gas (GHG) impacts as a purchasing criterion. Just under half of directors (49 percent) in cities with a green purchasing policy reported that reducing these impacts is "Important" or "Very Important," compared with 15 percent of directors in cities without green purchasing policies.

Figure 6. Importance of Departments' Purchasing Criteria

|	Reducing GHG Impacts	Recycling or Reuse	Env Impacts of Products / Services	Technical Specs to Manage Env Concerns	Reducing Packaging Waste	Buying from Minority / Women-Owned Businesses	Disposal Costs	Buying from Veteran-Owned Businesses
Green Purchasing Policy	49%	57%	50%	46%	38%	29%	53%	16%
No Green Purchasing Policy	15%	28%	23%	23%	16%	11%	39%	7%

While more department directors (57 percent) in cities with green purchasing policies stated that recyclability or reuse is an "Important" or "Very Important" purchasing criterion, so did directors (28 percent) in cities without a green purchasing policy. Differences lessen (but are still statistically significant) when considering purchasing criteria such as packaging waste and disposal costs. More than half of directors (53 percent) in cities with green purchasing policies reported that disposal costs are an "Important" or "Very Important" purchasing criterion, compared with 39 percent of directors in cities without green purchasing policies.

Half of department directors (50 percent) in cities with green purchasing policies reported that the environmental sustainability of products/services is "Important" or "Very Important," compared with less than a quarter of directors (23 percent) in cities without a green purchasing policy. About the same percentage of directors (46 percent) in cities with green purchasing policies reported the importance of technical specifications in managing their environmental sustainability concerns, compared with 23 percent of directors in cities without a green purchasing policy.

To explore the importance of environmental concerns as they relate to specific purchasing categories, we asked department directors, *"Within your department, how important are environmental sustainability concerns to the purchase of the following types of products and services?"*

Department directors were presented a list of product/service categories. Figure 7 describes the product/service categories that were statistically significant.

Figure 7. Importance of Environmental Concerns to Specific Types of Products
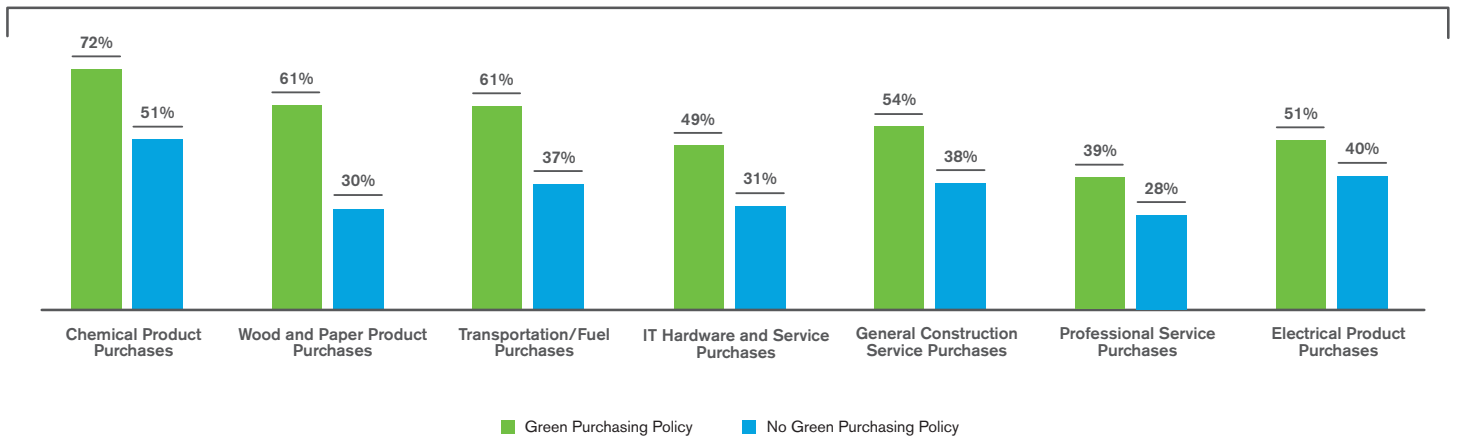
In all instances, directors in cities with green purchasing policies reported that environmental concerns have greater importance than did directors in cities that lack these policies. Additionally, directors reported that chemical products have greater importance when it comes to environmental concerns than other purchases. About 72 percent of directors in cities with a green purchasing policy recognized that the environmental concerns of chemical products are important, compared with just more than half of directors (51 percent) in cities without a green purchasing policy.

The largest proportional difference between directors in cities with and those without a green purchasing policy is seen in wood and paper products: 61 percent of directors in cities with a green purchasing policy reported that the environmental concerns specific to these types of products are "Important" or "Very Important." This compares with only 30 percent of department directors without a green purchasing policy. Similarly, 61 percent of directors in cities with green purchasing policies reported that the environmental concerns associated with transportation and fuel products are "Important" or "Very Important," compared with 37 percent of directors in cities without a green purchasing policy. Department directors reported fewer differences across cities with respect to professional services and electrical products.

One observation about cities' use of environmental criteria (see Figures 6 and 7) in decision-making is the relatively low rates of importance among cities that have a green purchasing policy. Outside of recyclability/reuse and disposal costs, no more than half of the directors in cities with green purchasing policies reported that their purchasing decisions are based on environmental purchasing criteria. When assessing specific product categories, overall, department directors recognized the importance of environmental concerns in chemical products. About half of directors (54 percent) in cities with green purchasing policies also recognized the importance of environmental considerations in general construction service purchases. Fewer recognized the importance of IT hardware and service purchases, professional service purchases and electrical product purchases. However, these types of decision criteria are likely to be important to the success of a city's green purchasing policy. These results are consistent with our overall finding that directors in cities with green purchasing policies have more complementary environmental policies/practices than directors in cities without green purchasing policies (see Figures 2 and 4). However, the prevalence of these complementary policies and practices is still relatively low.

3.   *Information access*

Information can influence purchasing decisions and outcomes. For this reason, we asked department directors about their departments' access to specific information sources in the following question, *"Departments may use a number of different information sources when making purchases. Please indicate whether each of the following information sources is available to your department when making purchasing decisions."*

Our findings show that less than half of directors (45 percent) in cities with green purchasing policies have green product/service lists available to their departments when making purchasing decisions (see Figure 8). By contrast, only 13 percent of cities without green purchasing policies have access to green product/service lists.

**Figure 8. Information Sources Available to Departments When Making Purchasing Decisions**
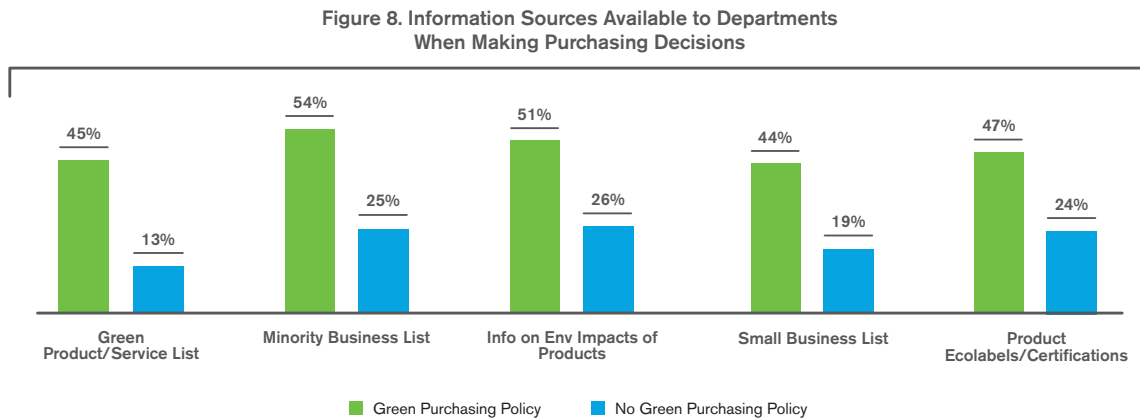
Additionally, just more than half of directors (54 percent) in cities with green purchasing policies reported that when making purchasing decisions, access to information about the environmental impacts of products is available. About half of directors (47 percent) in cities with green purchasing policies have access to product ecolabel/certification information when making purchasing decisions. This compares to about a quarter of directors (24 percent) in cities without a green purchasing policy.

While these findings suggest that directors in cities with green purchasing policies have greater access to more environmental information sources when making purchasing decisions, this access is limited. Since information access shapes decisions, low access may be an important barrier to the successful implementation of cities' green purchasing policies.

4.   Leadership, employees and resources

Leadership, employees and resources are often cited as critical elements in the adoption of organizational policies. Department directors were asked, *"In your view, to what extent does each of the following either constrain or facilitate your department's ability to implement environmentally sustainable purchasing?"*

More than two-thirds of directors (69 percent) in cities with green purchasing policies reported that top management "Facilitates" or "Strongly Facilitates" their ability to implement green purchasing (see Figure 9). This compares with less than half of directors (48 percent) in cities without a green purchasing policy. Though less important overall, 48 percent of directors in cities that have a green purchasing policy reporte that employee attitudes "Facilitate" or "Strongly Facilitate" their ability to implement green purchasing. This value compares to 32 percent of those directors whose cities do not have a green purchasing policy. Finally, while about one-third of directors (34 percent) in cities with green purchasing policies reported that financial resources "Facilitate" or "Strongly Facilitate" their ability to implement green purchasing, just more than a quarter of directors (26 percent) in cities without a green purchasing policy reported that financial resources are important.

Figure 9. Facilitators of Departments' Ability to Implement Green Purchasing
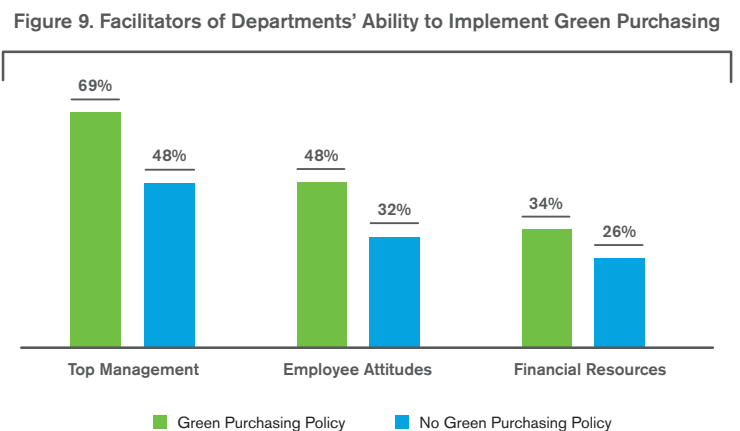
To further consider the role of financial resources, we asked department directors about the importance of external support in promoting their city's environmental programs in the following question, *"Over the last five years, how important has each of the following federal or state government programs been in promoting environmental sustainability in your city?"*

Department directors were presented a list of options. Programs found to be statistically significant included state or federal awards/recognition programs, educational programs, grants, voluntary programs and technical assistance (see Figure 10). Directors in cities with green purchasing policies reported that programs such as those listed here as being "More important" than did those directors in cities without a green purchasing policy.

Figure 10. Importance of Federal/State Resources to Promoting City-Level Environmental Sustainability
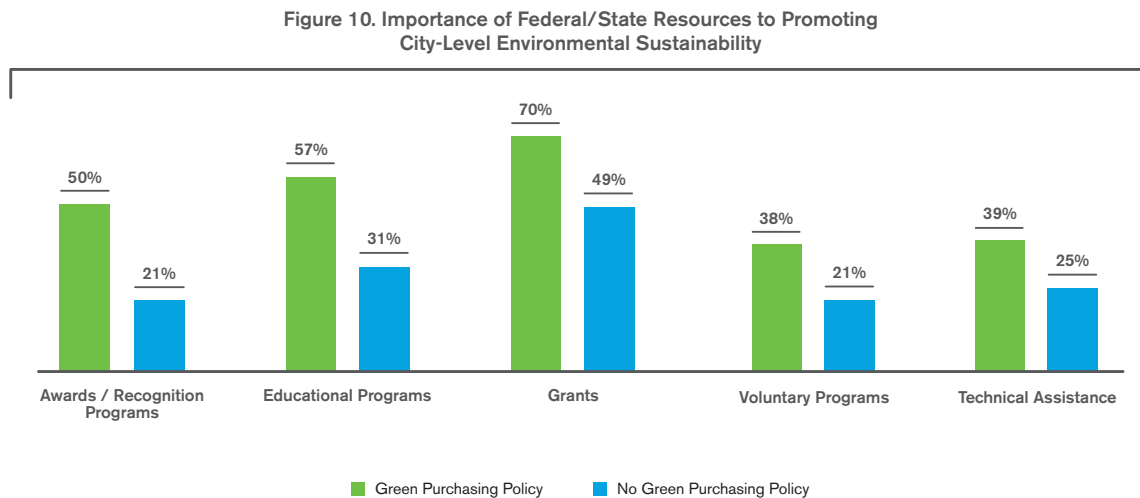
Half of directors (50 percent) in cities with green purchasing policies reported that awards/recognition programs are important in promoting their city's environmental sustainability, compared with about one-fifth of directors (21 percent) in cities without green purchasing policies. Additionally, more than half of directors (57 percent) in cities with a green purchasing policy indicated that educational programs are important to promoting their cities' environmental sustainability. This compares with less than a third of directors (31 percent) in cities without a green purchasing policy who indicated educational programs are important.

Nearly three-quarters of directors (70 percent) in cities with green purchasing policies reported that grants are important to promoting their cities' environmental sustainability, and 49 percent of directors in cities without green purchasing policies reported the same. Similar patterns are seen with respect to the importance of voluntary programs and technical assistance in that directors in cities with green purchasing policies reported they place greater importance on their city's environmental sustainability, compared with the responses of directors in cities without these policies. However, the differences between the two groups are less than they are for awards/recognition programs, educational programs and grants.

Overall, these findings are noteworthy because organizations often report that financial constraints prevent the adoption of sustainability-oriented policies. While financial resources may have some relevance, it appears that top-level management support has more impact, as do employee attitudes. Moreover, directors in cities with green purchasing policies tend to leverage more financial resources from external sources, which can further facilitate their green purchasing implementation.

5.   *Vendor roles*

"Vendor roles" refers to the ways in which cities engage their vendors over time. We asked directors about their department's roles of vendors with this survey question: *"In thinking about your relationships with vendors, to what extent do you disagree or agree with the following statements about procurement/purchasing in your department?"*

Our findings show that 57 percent of directors in cities with green purchasing policies "Agree" or "Strongly Agree" that many vendors offer environmentally friendly products/services, compared to 36 percent of directors from cities that lack a green purchasing policy, who answered the same (see Figure 11). Additionally, half of directors (50 percent) in cities with a green purchasing policy "Agree" or "Strongly Agree" that vendors help them learn about environmentally sustainable purchasing options. This compares to 35 percent of directors in cities without a green purchasing policy.

Figure 11. Vendor Roles

| | Green Purchasing Policy | No Green Purchasing Policy |
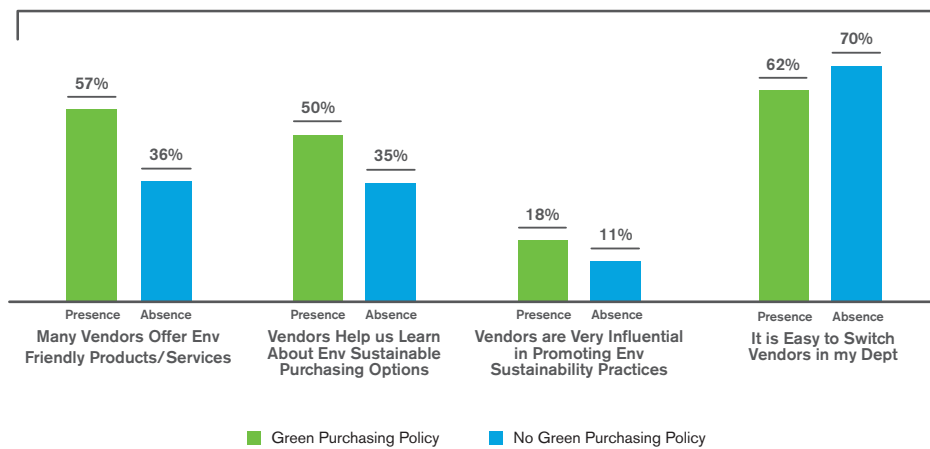
Similar (but smaller) differences exist with respect to department directors' reported agreement that vendors are "Very influential" in promoting environmental sustainability practices. Just 18 percent of directors in cities with green purchasing policies "Strongly Agree," compared with 11 percent of directors in cities without green purchasing policies. A greater proportion of directors (70 percent) in cities *without* a green purchasing policy reported that they "Strongly Agree" it is easy to switch vendors in their departments, as compared with 62 percent of directors in cities *with* green purchasing policies. These differences may be because cities with green purchasing policies are more likely to negotiate contracts to reduce their purchasing costs (as shown earlier in Figure 5), and these contracts make it more difficult to switch vendors. Overall, the results point to a number of ways in which vendors may facilitate the adoption of cities' green purchasing policies and implementation success.

Similarities among cities with and without green purchasing policies

Related to their use of general purchasing criteria, directors reported many similarities across their cities, regardless to whether the city had a green purchasing policy. These similarities include their city's use of purchasing criteria related to:

- Price

- Performance requirements

- Pre-existing contract agreements

- Technical specifications in managing purchase complexity

- Product lifecycle costs

Outside of purchasing criteria, other similarities across directors in cities with and without a green purchasing policy included departments' typical rules and procedures. Directors also reported comparable levels of bureaucracy. Additionally, departments reported similar commitments to innovation and employee rewards systems for innovative solutions, and were similar with respect to their entrepreneurial nature and risk-taking.

These results suggest that department directors perceive that their city's general administrative environment (e.g. rule formalization, bureaucratization and degree of entrepreneurship) and traditional procurement criteria are the same, regardless of their city's capacity to adopt a green purchasing policy.
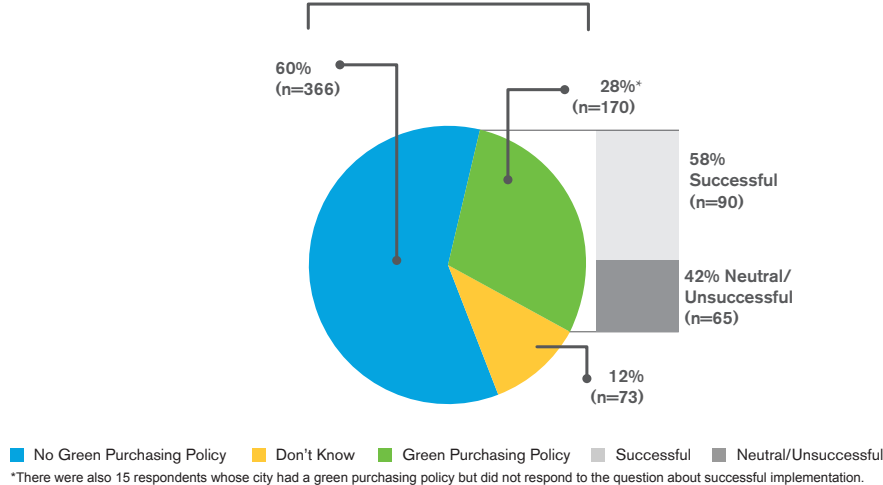
What Factors are Associated with Green Purchasing Implementation Success?

Simply adopting a green purchasing policy does not necessarily mean that its implementation is successful. Of the 28 percent (170) of department directors who reported that their cities have adopted a green purchasing policy, more than half (58 percent, 90 total) indicated that their policy is "Successful." Forty-two percent (65 total) reported their policy success is either "Neutral" (neither successful nor unsuccessful) or "Unsuccessful."

Figure 12. Green Purchasing Policy Adoption and Implementation Success

■ No Green Purchasing Policy   ■ Don't Know   ■ Green Purchasing Policy   ▪ Successful   ▪ Neutral/Unsuccessful
*There were also 15 respondents whose city had a green purchasing policy but did not respond to the question about successful implementation.

To determine what factors are associated with green purchasing policy implementation success, we examined their presence in different activities or policies. From this analysis, we identified five key practices and activities associated with the likelihood of implementation success:

1.   Complementary policies and practices

2.   Information access

3.   Leadership and implementation responsibility

4.   Vendor roles

5.   Innovation culture

1.   *Complementary policies and practices*

As discussed earlier, complementary policies and practices are formalized procedures that can facilitate green purchasing, and thus increase their likely success because similar internal capabilities are needed to manage both types of activities. They also create management commitment and shared vision around similar issues, thus embedding green purchasing deeper into a city's routine operations.

For directors who indicated that the green purchasing policies in their cities were successful, we compared them based on whether the city had or had not implemented complementary policies. Our findings show that, in general, directors in cities that have specific complementary policies in place are more likely to report the successful

implementation of their green purchasing policy than those without such policies (see Figure 13).
The presence of a citywide environmental sustainability policy is much more likely (67 percent) to lead to green
purchasing success than if a city does not have such a policy (29 percent). Another way to say this is that cities with
citywide environmental sustainability policies are more than twice as likely to be successful at implementing their
sustainable purchasing policies. Additionally, the probability of successfully implementing a green purchasing policy
increases in the presence of a greenhouse gas (GHG) emission policy, a water conservation policy and an energy
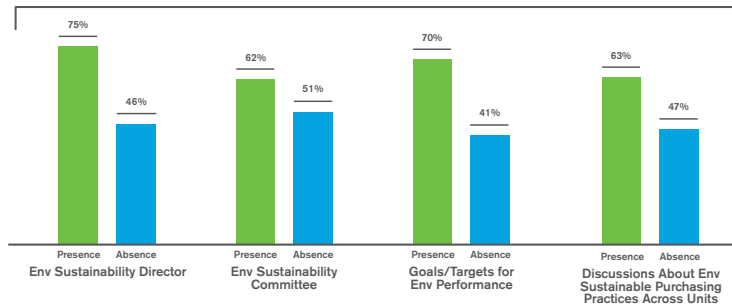conservation policy.

Figure 13. Probability of Successful Implementation of Green Purchasing Policy, Given Citywide Policies
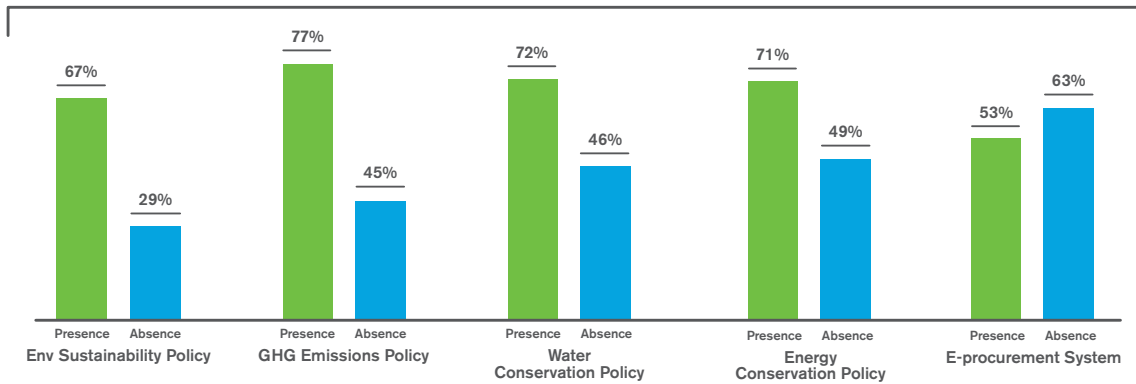
However, the probability of successful implementation of green purchasing policies decreases from 63 percent to
53 percent when an e-procurement system is present. Although the proportional difference is small, it is statistically
significant. Based on our focus group interviews with City of Phoenix employees, we suspect that these results
are because cities that have e-procurement systems are more likely to recognize the shortcomings of these
systems when using them for green purchases. To be effective, these systems must utilize information about the
environmental impacts of products or green product lists. However, as discussed previously (see Figure 8), directors
reported that access to this information is still relatively low, even in cities with a green purchasing policy.

Directors' reported perceptions of the successful implementation of their cities' green purchasing policy success are
similarly conditioned on complementary practices (see Figure 14).

Figure 14. Probability of Successful Implementation of Green Purchasing Policy, Given Citywide Practices

Having a city environmental sustainability director appears to be relatively more important than other activities. For
instance, the presence of a sustainability director increased the probability of successful implementation of green
purchasing policy from 46 percent to 75 percent, according to our survey. The presence of an environmental
sustainability committee, goals and targets for environmental performance, and discussions on green purchasing
policies across units also increased the probability of green purchasing success.

2.   Information access

Since information shapes purchasing decisions, it is not a surprise to learn that directors in cities that reported implementation success of a green purchasing policy were more likely to have access to relevant environmental information (see Figure 15). For instance, access to information about the environmental impacts of their products increases the probability of reporting a successful implementation to 68 percent, compared with just 45 percent when the information is not available. The conditional relationship between information and policy success holds for other categories of information as well, including green product or service lists, tracking of spending on environmental products and services, and access to an online database of green products and services.

Figure 15. Probability of Successful Implementation of Green Purchasing Policy, Given Access to Types of Information
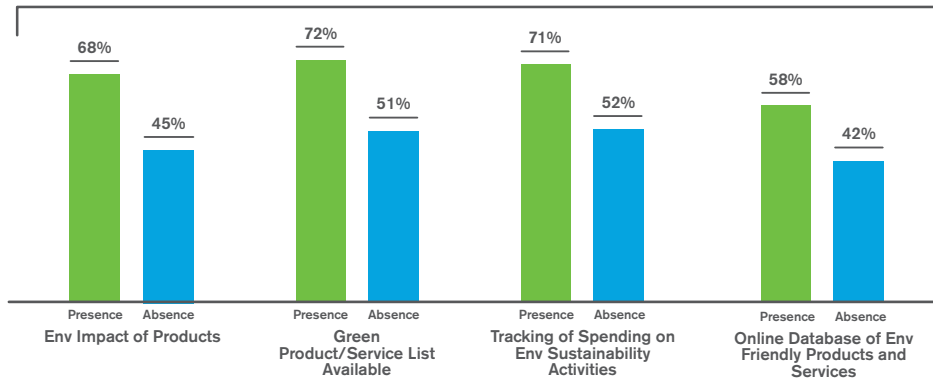
Despite the fact that access to information sources is relevant to the implementation success of green purchasing policies, no more than about half of the cities with a green purchasing policy have access to these information resources (see Figure 8). Combined, these findings suggest that access to environmental information sources is potentially important in facilitating the implementation success of green purchasing policies.

3.   Leadership and implementation responsibility

Earlier we described how leadership is related to cities' adoption of green purchasing policies. Figure 16 shows that leadership is also related to the implementation success of cities' green purchasing policies. Indeed, department directors' "agreement" that top managers are responsible for the implementation of the department's environmental practices increases the probability of reporting a successful implementation of green purchasing policy to 80 percent, compared with 67 percent when there is "disagreement." Directors were also more likely to report implementation success when mid-level managers and staff employees are *not responsible* for the implementation of environmental sustainability policies. These findings underscore the importance of top-management accountability, as opposed to lower-level responsibility in the implementation of green practices and policies.

Figure 16. Probability of Successful Implementation of Green Purchasing Policy, Given Directors' Perceptions of Locus of Responsibility
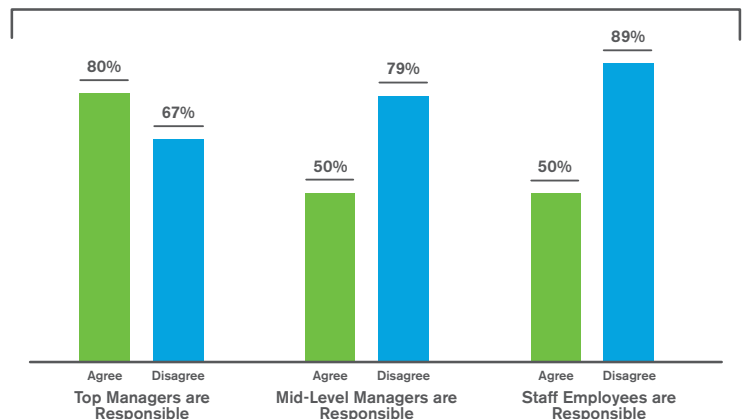
4.   Vendor roles

Like leadership, the roles of vendors appear not only to be important to a city's adoption of green purchasing policies, but also to the city's successful implementation of that policy (see Figure 17). More specifically, department directors' "agreement" that when their department vendors offer environmentally friendly products and services the probability of reporting a successful implementation increases to 80 percent, compared with 33 percent when directors "disagree" with the notion that vendors offer environmentally friendly products and services.

Additionally, directors' reported "agreement" that vendors help a city learn about environmentally sustainable purchasing options increases the probability of green purchasing policy implementation success to 83 percent, compared with 50 percent when directors "disagree" that vendors help a city learn.

Figure 17. Probability of Successful Implementation of Green Purchasing Policy Given Directors' Perceptions of Vendor Roles
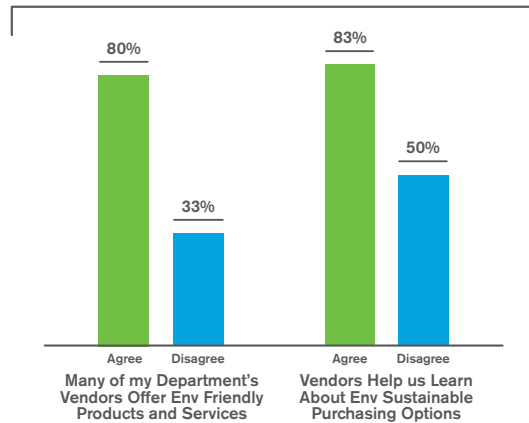
These findings point to the potential importance of collaborative relationships with vendors. Cities with green purchasing policies tend to regard their vendors more as collaborators when it comes to implementing their green purchasing programs. This situation may represent an important shift in how cities engage with vendors around issues of sustainability. Given the complexity associated with producing greener products, the fact there are a limited number of these products on the market, and cities' limited access to information about green product and service options, vendors may serve as useful allies that facilitate the success of green purchasing policies.

5.   Innovation culture

An organization's culture is a function of leaders' and employees' values, norms, messages and behaviors. Strong cultures for innovation encourage organizational change and openness to new ideas. While a department's innovation culture is not related to its adoption of a green purchasing policy, it is related to the policy's implementation success (see Figure 18). Department directors' "agreement" that rewarding employees for developing innovative solutions is associated with a 75 percent probability of implementation success, compared with 17 percent when directors "disagree" that their department rewards employees for developing innovative solutions. Similarly, departmental commitment to innovation and allowing employees to take risks are both positively associated with the probability of policy success.

Figure 18. Probability of Successful Implementation of Green Purchasing Policy, Given Directors' Perceptions of Departments' Innovation Culture
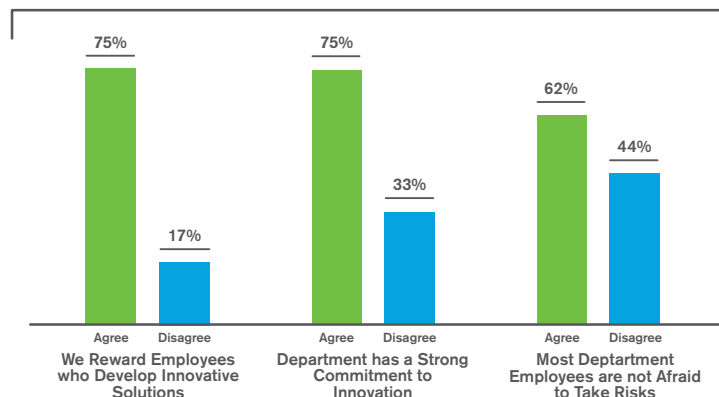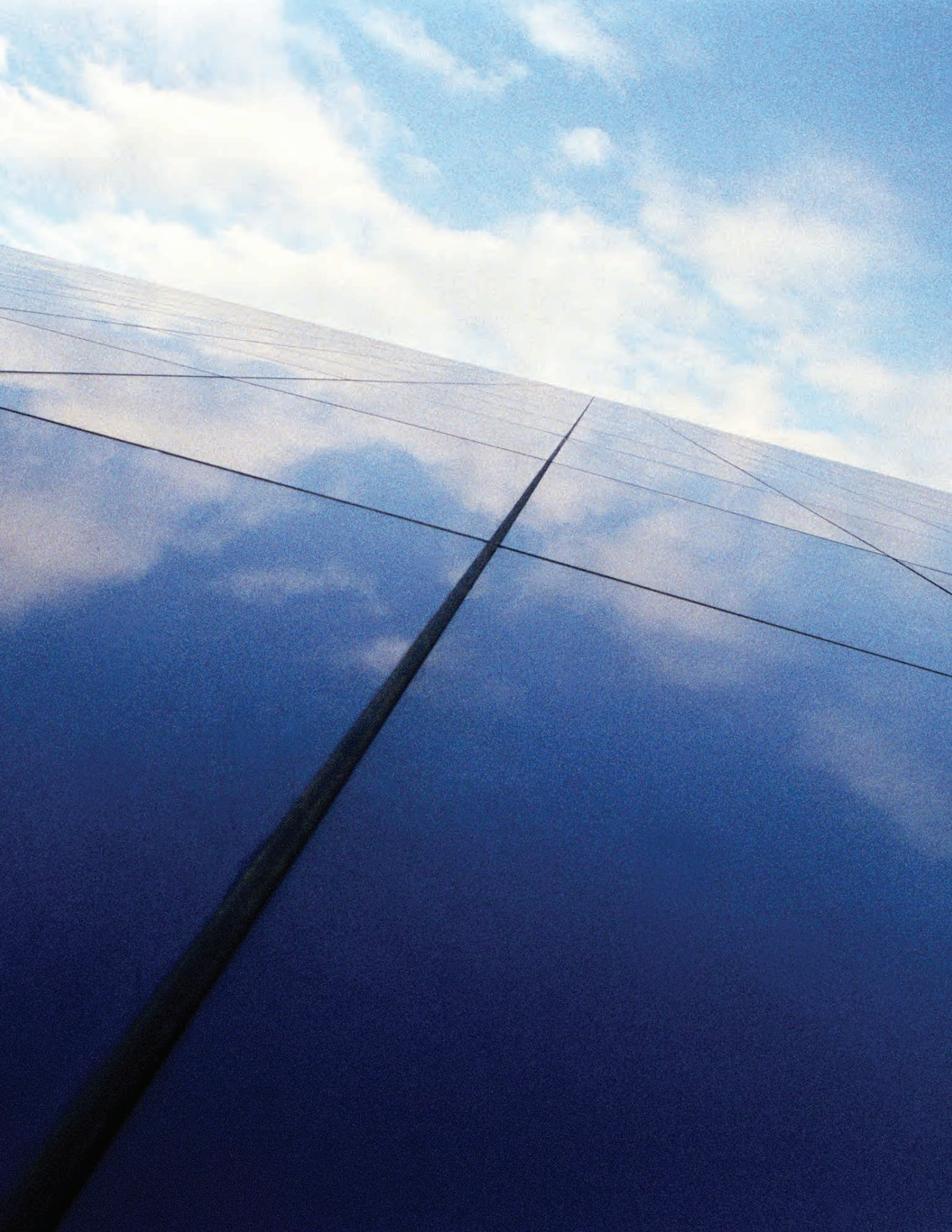
Similarities among cities with and without successful green purchasing policies

Finally, there are several areas in which directors within cities with a green purchasing policy responded similarly with respect to the successful implementation of their green purchasing policies. The first relates to department rules and procedures. Directors reported having similar levels of bureaucracy, regardless of the implementation success of their green purchasing policies. Moreover, directors reported similar levels of environmental pressures exerted by internal or external stakeholders. Other similarities relate to the following general purchasing criteria, which were unrelated to implementation success:

- Price

- Performance requirements

- Pre-existing contract agreements

- Technical specifications in managing purchase complexity

- Product life cycle costs

Eight Actions for Cities to Advance Green Purchasing

Our preliminary analysis of the survey data underscores several key facilitating factors for green purchasing adoption and implementation success. We offer eight recommended actions for cities to advance their green purchasing. These recommendations are applicable to both cities that lack a green purchasing policy and cities that wish to strengthen their existing green purchasing activities.

1.   Build on complementary policies and practices

Many of the department directors we surveyed reported that their cities did not have a green purchasing policy; however, they have developed complementary policies and programs such as sustainability policies, GHG emissions policies, water conservation policies and energy conservation policies. In other instances, cities have hired environmental sustainability directors, formed environmental sustainability committees, and set goals/targets for environmental performance. All of these activities are associated with the successful implementation of green purchasing policies. Cities that have implemented complementary policies and activities therefore are in a strong position to adopt a green purchasing policy. For cities that already have a green purchasing policy, having also adopted complementary policies and activities puts them in a stronger position to improve the implementation success of their purchasing policy. This is because the internal capabilities necessary for managing both types of activities are either similar or related. This type of complementarity can create economies of scale and reduce operational costs. Complementary policies and practices also help create management commitment and shared vision around similar issues, reduce the cost of green purchasing adoption and facilitate the overall implementation success of green purchasing policies.

In general, cities' use of complementary environmental practices is quite low, especially for setting goals/targets for environmental performance, environmental training for all city employees and internal audits of environmental performance. However, these practices are related with the implementation successes of cities' green purchasing programs. Cities therefore have an opportunity to improve the implementation success of their green purchasing policies by developing these practices to a greater extent.

2.   Use information about environmentally preferred products

Even for simple decisions, information plays a critical role in the decision-making process. While directors in cities with green purchasing policies experience some success with their green purchasing activities, less than half reported that they have access to environmental information that is critical for the implementation of these policies. Such information includes access to product ecolabels/certifications, green product lists and online databases of environmentally friendly products and services. In the absence of this information, the implementation success of cities' green purchasing activities necessarily will be constrained.

One rationale for why this information is not used may be that cities do not have the resources to identify green products on their own. However, external resources may assist. In January 2017, the U.S. Environmental Protection Agency published its _Recommendations of Specifications, Standards, and Ecolabels_ to help purchasers identify and procure environmentally sustainable products and services. These recommendations are based on an independent assessment of private sector environmental performance standards and ecolabels using the U.S. Environmental Protection Agency's _Guidelines for Environmental Performance Standards and Ecolabels for Federal Procurement._ While designed to assist with federal procurement, the guidelines can be readily applied to city-level purchasing.

3.   Utilize e-procurement systems that integrate environmental product information

On the whole, department directors reported that there is a low prevalence of e-procurement systems in purchasing processes. In instances where cities have e-procurement systems, directors also reported that they generally do not have access to the environmental impacts of products, green product lists and online databases of environmentally friendly products and services.

Simply utilizing an e-procurement system to facilitate green purchasing is likely to be less effective unless the system is integrated with environmental product information so that purchasing employees can access it at their point of purchase. Doing so creates opportunities to increase green purchases by creating default green purchasing requirements and reducing purchasing officers' search costs for green products. E-procurement systems that integrate environmental product information also allow cities to track their spending on green products and incentivize green purchasing behavior. To increase their use, when implementing these systems, cities should educate purchasing officers about how and why they should use to the tools.

Additional information on ways to integrate environmental information into e-procurement systems was developed by Industrial Economics in its 2015 report to the U.S. Environmental Protection Agency, _Summary of Work: Review of Federal E-Procurement Systems for Sustainable Purchasing Integration._ The report provides information that is relevant to any organization wishing to use e-procurement systems that incorporate green purchasing criteria.

4.   Track spending related to green purchases

Organizations manage what they measure. Cities that track their green purchase spending therefore are more likely to elevate the importance of green purchasing in organizational routines and practices. Additionally, by tracking spending related to green purchases, cities are better positioned to reduce costs related to energy, water, fuel and other expenditures. Other tracking approaches might involve monitoring the quantity of environmentally friendly products purchased. Whatever the approach, monitoring green purchases creates opportunities for cities to develop goals and targets around green purchasing and more appropriately recognize departments and employees who are meeting or exceeding (or failing to meet) green purchasing expectations.

Ideally, tracking of green purchases should be integrated into an e-procurement system to assess green product attributes throughout the procurement process and as part of the contract management process. However, cities should consider that some e-procurement systems may be more adept at tracking green attributes than others. In tracking spending on green purchases, city managers should consider important criteria, such as adding requirements to RFPs, default green purchasing requirements, possibilities for customizing their e-procurement system to add more green purchasing features, and creating dashboards within the system.

5.   *Enhance collaborative vendor relationships*

Our findings point to a number of ways in which vendors may facilitate cities' adoption of green purchasing policies and increase the probability of implementation success. Given the complexity associated with green purchasing, as well as the fact there are a limited number of green product options, and that cities have limited access to information about green products, vendors can serve as useful partners in facilitating the success of cities' green purchasing policies. Vendors have the potential to educate cities about green purchasing options. They can also create avenues for cities to increase their environmentally friendly purchasing. This is likely why cities with higher green purchasing policy implementation success tend to work more closely with their vendors and regard them as collaborators in the implementation of their green purchasing policies.

6.   *Assign accountability to top-level management*

Our results underscore the importance of top-management responsibility to both the adoption of green purchasing policies and their implementation success. Indeed, department directors indicate that top-management involvement is more important to the successful implementation of green purchasing than financial resources. Leadership resolve in the adoption and implementation of green purchasing policies will build momentum and commitment. Cities that wish to implement a successful green purchasing policy should consider seriously the role of leadership and assignment to top-level managers.

7.   Foster a culture for innovation

Cities that have already adopted a green purchasing policy should consider how they can increase employee incentives for developing innovative solutions around green purchasing. Incentives for green purchasing can help create a culture that encourages and rewards creativity. Incentives include typical internal recognitions and rewards. Other examples are creative competitions among (or across) departments or for specific purchasing categories.

Employees can also be encouraged to apply for external awards that encourage an innovation culture and further embed green purchasing in the city's routines and practices. For instance, the Green Electronics Council honors leaders (including cities) in green purchasing of electronics. Additionally, the SPLC offers awards for organizational and individual green purchasing leadership and opportunities to develop case studies of organizational successes.

8.   Participate in professional networks to share best practices

Our final recommendation is related to several of the recommended actions identified above. As more cities develop their green purchasing programs, an opportunity is created to learn from best practices. Professional networks such as the International Green Purchasing Network, Responsible Purchasing Network, and SPLC have emerged to support green purchasing in cities, companies and other organizations and help members by sharing best practices. By participating in these networks, cities can learn additional ways to introduce or strengthen and expand green purchasing, to make it part of organizational routines and processes, to improve their understanding of innovative solutions around green purchasing, and to enhance vendor relations. Professional networks can offer access into peer efforts and can help cities avoid implementation hurdles already encountered by others by way of training webinars and conferences. Networks can also inform cities of external support, such as grants, educational programs and awards/recognitions that can assist with the development of a green purchasing policy and its successful implementation.

Additional Resources and Contacts

Please visit our website **spa.asu.edu/greenpurchasing** for additional resources, including:

- Project updates
- Survey materials
- Related research papers and reports
- Video clips
- Podcasts
- Slide decks
- *ASU Now* news articles
- Links to other green purchasing resources

Contacts:

Nicole Darnall
Associate Director, Center for Organization Research and Design
Sustainable Purchasing Research Initiative
School of Public Affairs, School of Sustainability
Arizona State University

Phone: +1.602.496.0445
Email: ndarnall@asu.edu

411 N. Central Ave., Mail Code: 3720
Phoenix, AZ 85004-0687 USA

Please cite this report as:

Darnall N., Stritch J.M., Bretschneider S., Hsueh L., Duscha M., Iles J., No W., Suarez J., Burwell C. 2017.
Advancing Green Purchasing in Local Governments. Phoenix: Arizona State University, Center for Organization
Research and Design, Sustainable Purchasing Research Initiative.

Center for Organization Research and Design

Arizona State University

Sustainable Purchasing Research Initiative

We thank the V. Kann Rasmussen Foundation for funding this research.