

Chapter 26

Environmental purchasing in the City of Phoenix

Nicole Darnall*

Arizona State University

Lily Hsueh

Arizona State University

Justin M. Stritch

Arizona State University

Stuart Bretschneider

Arizona State University

Abstract

U.S. local governments purchase \$1.72 trillion of goods and services annually that contribute to global climate change and other environmental problems. Cities that successfully implement environmental purchasing policies can mitigate these environmental concerns while saving money and demonstrating their environmental leadership. However, cities confront numerous challenges when implementing an environmental purchasing policy. This chapter identifies the facilitators and barriers of implementing an environmental purchasing policy. It draws on the experiences within the City of Phoenix as an example and offers eight recommendations for how the City of Phoenix and similar cities can integrate environmental purchasing more fully into their existing purchasing processes.

Keywords: green purchasing, green procurement, environmental purchasing, sustainable purchasing, sustainable procurement, facilitators, barriers, implementation, public policy

Background

While the United States (U.S.) federal government withdrew from the Paris Climate Agreement, more than 372 U.S. mayors have committed to upholding the Agreement's

Correspondence: Nicole Darnall, School of Public Affairs & School of Sustainability, Arizona State University, ndarnall@asu.edu

© 2018. *Handbook of Sustainability: Case Studies and Practical Solutions*. Garren, S., Brinkman, R. (eds.). London: Palgrave Macmillan, pp. 485-502.

commitments to reduce greenhouse gases (U.S. Climate Mayors, 2017). One way some cities are fulfilling their commitments is through purchasing.

U.S. cities purchase \$1.72 trillion of goods and services annually (U.S. Census, 2016), accounting for between 25% and 40% of every state and local tax dollar spent (Coggburn, 2003). Purchased items include chemicals, electronics, furnishings, and office materials, which all contribute to global climate change and other environmental concerns during their production and use. These purchases together create a carbon footprint nine times that of buildings and vehicle fleets (U.S. General Services Administration, 2014).

To mitigate these environmental impacts, some local governments have implemented environmental purchasing policies (EPPs). Also known as “environmentally sustainable purchasing policies” or “green purchasing policies,” EPPs improve cities’ internal efficiencies by reducing energy use, conserving water, and decreasing the frequency of certain purchases. They can also lead to cost savings while helping cities establish themselves as environmental leaders.

Because of their large purchasing power, cities’ eco-friendly purchases have the potential to stimulate the global production of green products and services (United Nations Environmental Programme, 2012; Li and Geiser, 2005). They also can create significant market incentives for companies to reconsider their existing production processes, incorporate environmental principles into their daily business routines, and reduce their environmental impacts (Case, 2004). By local governments encouraging their suppliers to produce and deliver greener products and services, an estimated 40% of these companies will, in turn, assess the environmental activities of the organizations that supply them (Arimura, Darnall & Katayama 2011). Cities’ eco-friendly purchases, 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. cities have not adopted an EPP (Darnall et al., 2017). Cities that have an EPP often struggle to implement them fully (Sustainable Purchasing Leadership Council, 2016; Darnall et al., 2017). As a consequence, many cities – large and small – have not realized the full potential of their EPPs towards mitigating their environmental impacts. Moreover, markets have been slow to develop green products and services. These are significant concerns that the United Nations Environmental Programme, the International City/County Management Association, the Sustainable Purchasing Leadership Council, and others have suggested must be resolved if we are to move toward an environmentally sustainable economy.

Case Study – The City of Phoenix

One example of a large U.S. city that has experienced several challenges implementing its EPP is the City of Phoenix, the state capital of Arizona. It is the fifth largest city in the U.S. with approximately 1,615,017 residents in 2016 (U.S. Census 2017a). It is situated in the U.S.’s 12th largest metropolitan area (U.S. Census 2017b) and has experienced significant growth in recent years. Between 2010 and 2015 its population increased by 32% (U.S. Census 2017b). The area’s above-average growth is expected to continue (Forbes 2015), with an increase of

2.2 million residents by 2030 (World Population Review, 2017) and a doubling of its population by 2050 (City of Phoenix, 2014). All these factors will increase demands on infrastructure and increase greenhouse gases.

Against this backdrop, and in the last ten years, the City of Phoenix has experienced increases in recorded weather events, such as drought, temperature increases, and heat waves (U.S. Climate Change Science Program, 2008). Rapid urbanization has extended the urban heat island effect over larger areas and longer seasons, raising night-time temperatures by as much as 10 degrees compared to adjoining natural areas (Wittlinger, 2011). These quality of life factors affect businesses' decisions to locate or expand their operations in the area (City of Phoenix, 2014).

Responding to these concerns, in 2016, the Phoenix City Council approved the "Phoenix 2050 Environmental Sustainability Goals." The goals consist of seven ambitious sustainability targets, and one long-term ambition of becoming carbon neutral by operating on 100% clean energy (City of Phoenix, 2017a). Phoenix 2050 articulates the community's desire to become a "Sustainability Desert City" (City of Phoenix, 2017a).

The City's Chief Sustainability Officer and the City's Administrator of the Office Environmental Programs (OEP) believed that having a strong EPP would be critical to meeting Phoenix's 2050 sustainability goals. Both City of Phoenix leaders also agreed that environmental purchasing could save taxpayers money. As an example, the City's Office of Sustainability determined that if the City purchased 100,000 energy-efficient streetlights and replaced the existing inefficient bulbs, it could cut carbon emissions by up to 60% (City of Phoenix, 2017c). The purchase was also estimated to save taxpayers up to \$22 million through 2030 due to energy savings and reduced maintenance costs (City of Phoenix, 2017b).

Environmental Purchasing

The City's interest in eco-friendly purchasing took root in 2007 when the Phoenix City Council passed Resolution 20519. The resolution granted authority to the City of Phoenix to develop an EPP that:

1. Integrated contract provisions for sustainable products and services, where the contract provisions were updated as necessary to address changes in technologies or changes in environmental conditions.
2. Considered the purchase of products and services that achieved the best value, which consisted of price, performance, and environmental characteristics over the lifecycle of a product or service.
3. Supported manufacturers and vendors whose services, production, and distribution systems reduced environmental and human health impacts.
4. Encouraged buyers and consumers to adopt similar policies and programs (City of Phoenix, 2007).

The City of Phoenix developed its EPP in 2012 (City of Phoenix, 2012), although by 2016, it had not been implemented fully. The challenge facing the City of Phoenix (and many other U.S. cities) was how to integrate its EPP into its existing organizational structure and

purchasing systems given decreasing budgets and greater focus within departments on low-cost purchases.

Additionally, purchasing within the City of Phoenix was not centralized within a single department but decentralized within individual departments. While each department had similar core purchasing procedures, there was significant variation regarding the types of purchases made (e.g. routine vs. non-routine, low cost vs. high cost). Departments also varied in the autonomy they granted to purchasing officers, in addition to purchasing officers' level of specialization and training.

While these issues complicated EPP implementation, the City of Phoenix's OEP Administrator believed that implementing the City's EPP was important. He was open to innovative approaches that might assist. This setting led to a partnership between OEP and the Center for Organization Research and Design (CORD), a research center at Arizona State University (ASU) that promotes, supports, and conducts fundamental research on public, nonprofit, and hybrid organizations and their design.

The City of Phoenix/CORD partnership had two goals:

1. Determine which factors impede and facilitate EPP implementation within the City of Phoenix;
2. Develop recommendations for how the City of Phoenix could improve EPP implementation.

Research Approach

To achieve its partnership goals, in cooperation with the City of Phoenix, CORD researchers completed a series of focus groups with City purchasing employees. The focus groups allowed for the collection of qualitative data in a setting that was dynamic and user-driven (Merton et al., 1956). They provided a "safe" environment for purchasing employees to discuss the City's EPP. CORD used a semi-structured interview to leverage the group context and create interaction among interviewees. This approach was particularly important given the complexity of purchasing within the city and the lack of information regarding how purchasing employees integrated environmental considerations into their existing purchasing procedures.

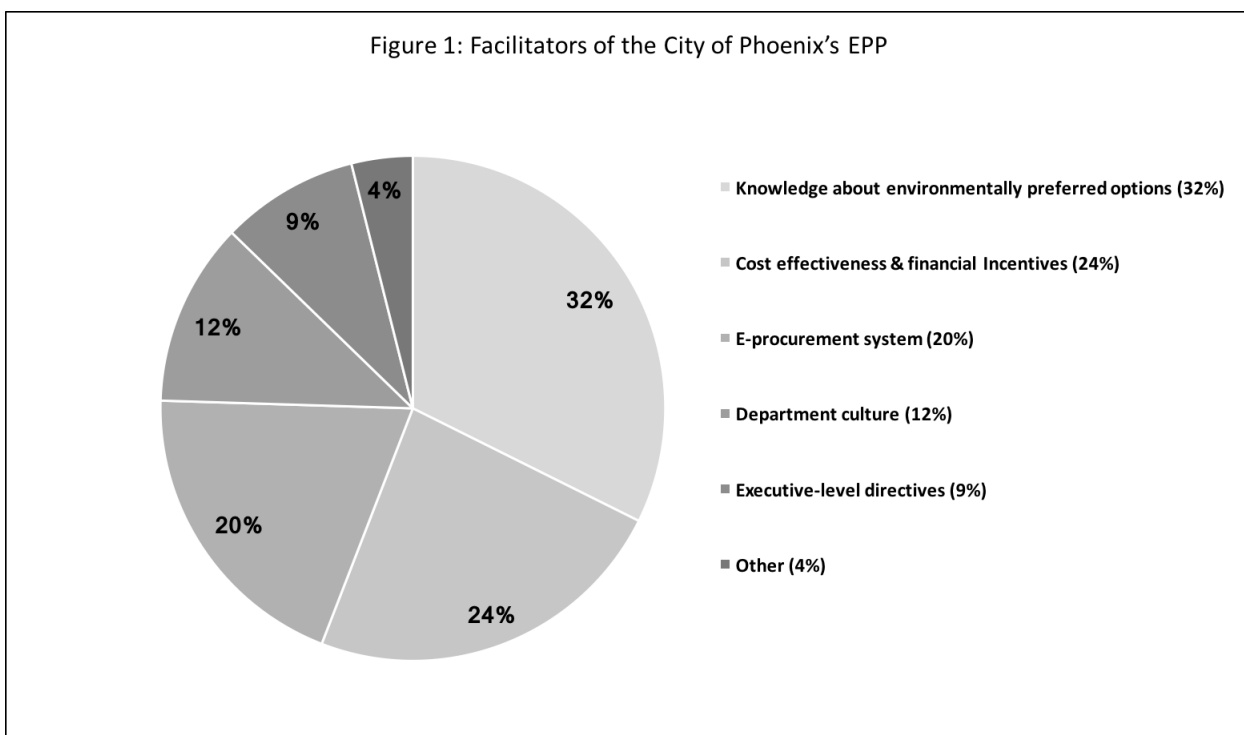
CORD identified focus group participants with the assistance of OEP and interviewed 14 Phoenix purchasing employees (across five different departments). The City assembled participants into three focus groups. The first group consisted of purchasing employees within the Finance Department and the Deputy Director of Finance. The second and third groups included a combination of purchasing employees within the Water Services Department, Public Works, Aviation, and the Convention Center.

Each focus group session lasted between 75 and 90 minutes. One CORD researcher served as the focus group facilitator. This individual ran each session and asked the same interview questions to each focus group. Three other CORD researchers took notes. The notes were content analyzed and assessed for the presence of major themes. Content analysis was the preferred analytical method because of its higher level of rigor and lower risk of error compared to other types of interview analyses (Krueger & Casey, 2001). Since the focus

group discussions were not audio recorded, the quotes offered in the sections below may not be verbatim and represent a paraphrase of the group discussion.

Facilitators of Environmentally Preferred Purchasing

Despite their diverse work settings, the City’s purchasing employees were fairly consistent in their identification of the different EPP facilitators. COD researchers focused on the top five most frequently discussed, which accounted for approximately 96% of the themes emerging across all of the focus group sessions (see Figure 1). The five facilitators were: knowledge about sustainable alternatives, cost effectiveness and financial incentives, e-procurement system, department culture, and executive-level directives. The percentages associated with each facilitator reflect the proportion of the total comments related to each theme. Across all the facilitators, reducing costs was a unifying concern in that focus group participants often suggested that successful eco-friendly purchases were generally motivated by cost-savings.



1. Knowledge of Environmentally Preferred Alternatives (32%)

The most commonly mentioned facilitator for the implementation of the City of Phoenix’s EPP was knowledge of environmentally preferred options or alternatives. With limited

resources, many focus group participants expressed that they did not have the time or capacity to research eco-friendly alternatives for product requests. However, access to information about these alternatives can have a significant influence on purchasing decisions. Focus group participants also emphasized the need for greater education about environmentally preferred options.

“There are so many options for sustainable products that departments might not be aware of them all. Education and vendor forums might be a good way to distribute information to the departments.”

“At all department levels, people do not know what sustainable products are out there, and the product options are continually changing. We are constantly playing catch up.”

2. Cost Effectiveness and Financial Incentives (24%)

The second most widely cited facilitator that focus group participants discussed was cost effectiveness, including financial incentives (e.g., federal energy rebates). If eco-friendly purchases can generate immediate cost savings, participants note that the transaction is more likely to take place. Focus group participants noted that the City of Phoenix’s 2050 goals include significant waste-reduction measures that are motivated by cost reductions. Environmental impact reductions are often secondary concerns.

“The City has an efficiency initiative that will drive change. For example, the City eliminated all desktop printers. Printing now occurs from centralized department printers. The change has caused staff to print less and we have fewer orders for cartridges, printers, and paper. All of this has helped control costs.”

“Initiatives that are most successful are the ones where the City saves money.”

“The City generates a lot of waste. Eco-friendly purchases that are regarded as more successful reduce environmental impacts by creating opportunities to sell the waste they generate to vendors who take it away and recycle it.”

Likewise, focus group participants reported EPP implementation is facilitated by financial incentives, such as federal or state rebate programs for energy and water conservation. Some participants stated that they pursue purchases that conserve energy primarily to obtain government rebates, thus saving the City money. The fact that these purchases are also eco-friendly is a secondary benefit.

“We are reducing energy usage. If the electric utility has a rebate program, we have a designated energy purchaser to look at it to see if the City can qualify and save additional resources.”

3. E-procurement System (20%)

Focus group participants mentioned the City of Phoenix’s new e-procurement system as a potential facilitator for implementing the City’s EPP. They believed that e-procurement could be leveraged as a cataloging tool that centralizes transaction records about eco-friendly products, thus allowing the city to track its environmentally preferable purchasing activities. Participants also mentioned that coupling the e-procurement system with information about ecolabeled products could further facilitate EPP implementation because it would reduce the

effort required to identify environmentally preferred products. While the City's e-procurement system had this capability, it was not being used in this way. Participants cited a lack of training as the main reason the system has not yet been leveraged to promote environmentally preferred purchasing.

"I think the e-procurement has the capability to allow you to track green purchases, but I am not sure it is currently being used in this way."

"Our whole contracting process is new. Understanding it involves a steep learning curve. Eventually there should be sustainable purchasing catalogs. Environmental specifications should be included or tracked in the request for proposal (RFP) process."

4. Department Culture (12%)

The fourth most cited facilitator that focus group participants mentioned was the role of management to elevate environmental concerns as a priority within their department. Participants emphasized the importance of top-management in establishing a department culture where employees are expected to implement the City's EPP.

"Management has to take the lead and set the tone. This will help make the program successful."

"Other than encouraging water conservation— sustainability is not discouraged, but it is also not actively encouraged."

"Getting users on board would facilitate environmental purchasing. The general mentality is that people want to purchase goods fast and cost effectively. Purchasing employees need to learn more about green purchasing options. However, these same people tend to want to get things done and identifying these options takes time and comes with tradeoffs that are not always supported at a higher level. Department managers need to prioritize it."

5. Executive-level Directives (9%)

Executive mandates or purchasing directives from the City Mayor or City Council were also discussed as important motivators for implementing the City of Phoenix's EPP. At the department-level, purchasing employees agreed that while cost is the immediate concern, departments will prioritize directives coming from executive mandates. For example, the City has a mayoral directive that gives preference for purchases from small business enterprises. Even if other bids are more competitive in terms of cost, purchasing professionals must first confirm that small business enterprises are unable to provide the same product or service. Focus group participants indicated that having a similar directive for environmental purchasing would help facilitate EPP implementation.

"Environmental purchasing needs authority from the council and mayor. It needs power like the City's Office of Local Small Business Enterprises."

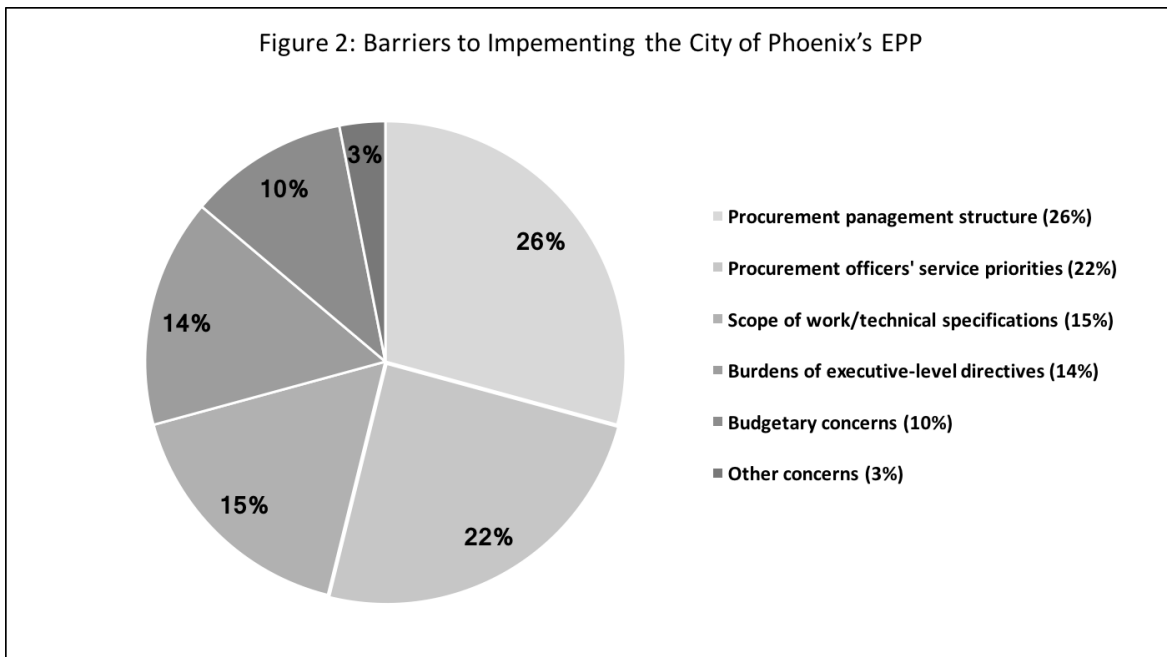
"Purchasing employees can't tell their departments what to do. To implement EPP across departments we have to get direction from department leadership or the mayor."

While City Council passed a resolution for the City's EPP in 2007 many of the City's purchasing professionals were not employed by the City at the time. Purchasing employees noted that reaffirmation of the City Council's support for the City's EPP would help facilitate implementation.

“We need the EPP to be backed by City Council. It needs to state that this is a priority.”

Challenges/Barriers of EPP Implementation

In addition to identifying factors that would facilitate EPP implementation, the focus group discussions revealed that the City had five significant challenges/barriers to implementing its EPP, which accounted for approximately 97% of the themes emerging across all of the focus group sessions (see Figure 2). Cost was an overarching concern across all barriers.



1. Purchasing Management Structure (26%)

The focus group participants identified that the top barrier to implementing Phoenix’s EPP was the complexity and variation in how purchasing was managed by the different departments. Some larger departments had nearly autonomous purchasing units, while other departments’ purchasing procedures were managed through the Finance Department. Focus group participants suggested that these variations presented a significant barrier to integrating the City’s EPP across departments because they create inconsistencies across department practices.

“The City’s departments are generally siloed, which creates a lot of variation in how departments operate. The Aviation Department might go about purchasing in a way that is completely different from other departments. Smaller departments might get support from the Finance Department, but they still do their own thing. At a higher level, there is a lot of push for purchasing to use negotiated city-wide contracts.”

“In the Public Works Department, internal purchasing personnel support all the purchasing needs for our department, facilities, fleet management, and solid waste. For purchases above \$50,000, we cooperate with the Finance Department to award most contracts. However, all purchases below \$50,000 are handled at the department level.”

“Our department is affected by negotiated city-wide purchases. Central purchasing manages these transactions, and they reach out to the other departments for feedback prior to making the purchase. However, for these purchases to be successful, each department has to agree on the product or service. The process of reaching agreement makes it difficult to purchase anything—let alone anything sustainable.”

Another barrier in the City’s purchasing management structure was related to coordination between OEP and the other departments, which reduced the influence of the City’s EPP. OEP acted as an environmental policy advisor for the City. While OEP provided departments information on environmentally preferred products, it lacked authority to require EPP implementation. Additionally, OEP was not always included in strategic discussions at a higher level, which might lead to further EPP integration and the creation of incentives that would encourage City departments to purchase greener products.

“OEP needs to be on the City’s team for the implementation of strategic purchasing. It needs more leverage at a higher level.”

“OEP needs to be included on the City’s strategic team.”

2. Purchasing Employees’ Service Priorities (22%)

The second most cited barrier to EPP implementation was the service priorities of the City’s purchasing employees. Purchasing employees felt constrained to implement the City’s EPP because of their belief that environmentally preferred options generally cost more in the short-term, which conflicts with their limited operating budgets. Additionally, they felt restrained by their internal clients’ need for expedient purchases because they report that it takes time to search for and identify eco-friendly products alternatives.

“The challenge that purchasing employees face is that we are often reacting to the immediate needs of departments... We are trying to execute a purchase quickly and don’t have time to search for alternatives.”

“I am working on the client side of the purchasing. I try to figure out what the end user needs. I try to get the best price and best service. I help clients do the research—I keep an eye on performance, quality, and price.”

“We execute 1,500-2,000 contracts, 400 formal purchases per year. Our responsibility is to serve the departments by getting them what they need quickly, by complying with the law, and saving money for taxpayers.”

3. Scope of Work/Technical Specifications (15%)

Focus group participants identified that the third significant barrier to EPP implementation was the scope of work/technical specifications in their RFPs and contracts. A priority for purchasing employees was to meet the specifications and demands of the bid. According to focus group participants, environmentally preferred products often have to meet a higher bar. That is, eco-friendly products and services must be cost effective, and meet or (more often) surpass the performance of the contract's technical specifications. Generally, these technical specifications focus on product performance and have little to do with environmental impact.

"I think the biggest priority for my work is to fulfil the expectations of the end user. Some environmentally preferred products do not work as well as conventional products. Sometimes the user will try a product and it just does not work. We have to get products that meet the end-user's needs."

"It depends on the purchase. In custodial services, we can write technical specifications that require the use of products that have lower environmental impact. However, the cost and the need of the customer matters."

"One instance where it was better to go with a recycled product was with recycled toner cartridges. Departments pushed for recycled toner cartridges in their technical specifications because these cartridges performed as well as non-recycled cartridges and were cheaper."

4. Burdens of Executive-level Directives (14%)

The fourth barrier was related to the idea that while the directives at the executive-level (Mayor, City Manager, City Council) can serve as facilitators of EPP, they were problematic because they might have competed with other mandates, such as the Local Small Business Enterprise Program, which prioritizes small businesses in contracting. Competition arises because small businesses may not have the capacity to offer environmentally preferred product options. Focus group participants also worried that executive mandates for environmental purchasing might have unnecessarily constrained departments.

"Environmental purchasing might negatively affect the mayor's Local Small Business Enterprise Program because local/small businesses may not get green products at low prices."

"City-wide initiatives of all sorts are a challenge. The airport needs 24-hour operation—this creates different organizational needs. The airport might need different vendors that meet federal safety requirements. Also, the airport has different insurance requirements from vendors."

5. Budgetary Concerns (10%)

The final barrier that focus group participants discussed was related to budgetary concerns. Department budgets had not been structured to consider life-cycle costs of purchases. These costs included avoiding risk to human health, disposal costs after a product is used, and energy savings that accrue over time. Rather, the City's budgeting process emphasized the immediate cost of a good or service. Participants acknowledged that this

posed a significant obstacle to implementing the City's EPP, since many eco-friendly purchases could be justified if considering the life-cycle costs of a product.

"In the context of lightbulbs, some people would rather pay more over the long run for inefficient lightbulbs. Our users are educated enough to see the value—but at the end of the day, they would rather have the nickel today than a dime tomorrow."

"When we are trying to switch to green products, we have to consider budget. Initial cost drives most decisions."

"Department directors look at the rest of the year's budget at three months. If the revenues aren't coming in as they had anticipated, they begin looking at how to cut the budget. When this happens, no one is going to buy the more expensive LED lightbulb even if it saves money in the future."

"While the city encourages us to purchase environmental friendly products, the challenge has been cost—departments have to balance budgets against sustainability."

Lessons Learned

In sum, the City of Phoenix focus group participants suggested that five factors had the potential to facilitate the City's implementation of its EPP:

1. Knowledge of Environmentally Preferred Alternatives
2. Cost Effectiveness and Financial Incentives
3. E-procurement System
4. Department Culture
5. Executive-level Directives

However, multiple barriers existed that prevented further implementation:

1. Purchasing Management Structure
2. Purchasing Officers' Service Priorities
3. Scope of Work/Technical Specifications
4. Burdens of Executive-level Directives
5. Budgetary Concerns

Recommendations

Drawing on these findings, CORD researchers offered eight cross-departmental and city-level recommendations to help the City of Phoenix more fully integrate its EPP into existing purchasing processes.

Recommendations for change at the department-level included:

1. Reinvigorate the City's EPP Team

While the City had an "EPP team" consisting of purchasing professionals across departments and personnel from the Phoenix's OEP it was not active. The City should reinvigorate this team to harmonize purchasing practices and reduce inconsistencies across departments. The EPP team should also work with personnel to negotiate city-wide purchases to ensure that contracting mandates are, to every extent possible, linked with budget adjustments at the department level. Further, the EPP team is advised to ensure that city-wide purchases consider environmentally preferred alternatives.

2. Network to Share Best Practices

The EPP team and Phoenix's OEP should strengthen networks to share best practices. Professional networks such as the International Green Purchasing Network, Responsible Purchasing Network, and Sustainable Purchasing Leadership Council support green purchasing across all types of organizations. They help members share best practices. Participating in these networks can assist the Phoenix's EPP team and OEP programs learn additional ways to integrate environmental purchasing into existing routines and processes, to identify innovative solutions around green purchasing, and to enhance vendor relations. These networks can also inform the City of external support, such as grants, educational programs and awards/recognition that can assist with EPP implementation.

3. Broaden Representation on the City's Strategic Purchasing Team

The City's team for strategic purchasing should be broadened to include the OEP Administrator. Doing so would ensure that environmentally preferred purchasing is considered in strategic purchasing city-wide. Representation would also provide important feedback to OEP with respect to issues which need addressing in order to further integrate environmental considerations into the purchasing process.

4. Implement EPP Training

The City of Phoenix's OEP should coordinate with other departments to offer internal training on environmentally preferred purchasing. Training should be offered to both purchasing employees and cover how scopes of work/technical specifications can be broadened to include environmentally preferred products, how purchasing employees can access information about environmentally preferred alternatives, and how life-cycle costs should be considered when developing technical specifications.

5. Integrate Ecolabel Information into E-procurement

The U.S. Environmental Protection Agency has identified a list of most preferred ecolabels to facilitate eco-friendly purchases within government (USEPA, 2017). This list is based on an independent assessment of private sector environmental performance standards and ecolabels using the EPA Guidelines for Environmental Performance Standards and Ecolabels (USEPA, 2017). The City of Phoenix should link its e-procurement system with this list so that purchasing employees can more easily identify which products are more environmentally friendly than others.

6. Expand Life-Cycle Costing

OEP should expand its the life-cycle costing (LCC) of products and link these costs to departmental budgets whenever possible. LCC is a process of reviewing and evaluating the environmental costs of a product throughout the product's entire life-cycle - from "cradle to cradle" (USEPA 2006). For example, energy efficient appliances can be more expensive at the initial point of purchase but will save energy (and money) throughout the appliances working life. LCC can help identify products that comply with technical specifications and have the lowest total cost. Moreover, using LCC is consistent with the City's EPP guidelines to remain fiscally responsible and can provide the business case to departments about the value associated with purchasing more environmentally friendly products and services.

Recommendations for change at the city-level include:

7. Develop an Executive Directive for Environmentally Preferred Purchasing

The City should develop an executive-level directive on environmentally preferred purchasing similar to its Local Small Business Enterprise directive. This directive should include a reserve contract program, where selected goods and services are reserved for competition only among eco-friendly products that demonstrate significant reductions in life-cycle costs. A mandate at the executive-level would foster a stronger departmental culture around EPP, as well as encourage greater innovation and movement at the department-level around green purchasing.

8. Create Incentives for EPP Implementation

The final recommendation is that the City should create incentives across all departments for implementing its EPP. Doing so would help create a culture that encourages creativity and rewards eco-friendly purchasing. These incentives should be made in conjunction with the EPP Team and include recognitions for units (or individuals) that use LCC to reduce long-run purchasing costs. Since initial purchase costs take priority for most city purchases, departments should be granted latitude to purchase goods and general services that may

extend beyond the immediate budget constraints but will save the City significant resources over time. Other incentives include competitions among departments or across purchasing categories to reduce life-cycle costs of purchases.

Epilogue

In February 2017, COD researchers presented their recommendations to the City of Phoenix Administrator of OEP and the City's Deputy Finance Director. The partnership between the City and ASU helped build momentum around implementing the City's EPP by engaging critical stakeholders in the purchasing process. In March 2017, the OEP Administrator stated:

“Phoenix will use the feedback to improve the City's sustainable purchasing program and advance the City's 2050 environmental sustainability goals. The research...will help [us] develop a holistic program that engages the City's buyers to increase green purchasing,” (Newberry, 2017).

Since the partnership's completion, several other changes have occurred. The focus group discussions helped OEP understand the extent to which the City's purchasing employees believed that eco-friendly products cost more than traditional products. In response, OEP has enhanced its LCC to show City of Phoenix departments that purchasing eco-friendly products can reduce costs over the lifecycle of the product (Faller, 2017). Additionally, OEP has continued modifying the City's e-procurement system to make it easier to buy environmentally preferable products (Faller, 2017).

In summer 2017, the City began to revise its EPP to provide more guidance to City of Phoenix purchasing employees so that eco-friendly purchasing can be executed more easily. As part of this revision, OEP began to broaden its EPP to include the social aspects of purchasing in a new “Sustainable Purchasing Policy” (SPP). The City's evolving SPP incorporates several purchasing programs that previously existed outside of OEP, such as the City's focus on purchasing from minority-owned businesses, women-owned businesses, and locally-owned businesses. All these efforts will help the City meet its Phoenix 2050 sustainability goals and its more recent commitment to uphold the provisions of the Paris Climate Accord (Gardiner, 2017).

Further Reading

Darnall N, Stritch JM, 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.

Darnall N, Stritch JM, Bretschneider S, Hsueh L, No W. 2017. Going green on purchasing: eight practices to reduce environmental impacts. *Public Management Magazine*, August 27, p. 28-29.

Gardiner, D. 2017. Mayor Greg Stanton: despite U.S. withdrawal, Phoenix will support Paris climate pact. AZ Central, June 1.
azcentral.com/story/news/local/phoenix/2017/06/02/mayor-greg-stanton-despite-u-s-withdrawal-phoenix-support-paris-climate-pact/363450001/, last accessed 5 September 2017.

Notes on Contributors

Nicole Darnall is a professor of management and public policy at ASU in the School of Public Affairs and the School of Sustainability. She is associate director of ASU's CORD and team leader of the Sustainable Purchasing Research Initiative (SPRI). Her research focuses on factors that facilitate or impede the enactment of organizational sustainability and individuals' sustainability behaviors. Learn more about SPRI's research at spa.asu.edu/spri.

Lily Hsueh is an assistant professor of public policy at ASU's School of Public Affairs. She is a CORD Senior Affiliate, and Senior Sustainability Scientist at ASU's Julie Ann Wrigley Global Institute of Sustainability. Her research focuses on the emergence, evolution, and impacts of voluntary programs and market-based policies across policy issue areas, such as climate change, toxic chemicals, ocean and marine resources, and sustainable purchasing.

Justin M. Stritch is an assistant professor of public management at ASU's School of Public Affairs. He is CORD Senior 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.

Stuart Bretschneider is Foundation Professor of Organization Design and Public Administration at ASU's School of Public Affairs and 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.

Acknowledgements

The authors thank the City of Phoenix for the opportunity to undertake this research and the V. Kann Rasumussen foundation for its financial support.

References

- Arimura T.H., Darnall N., Katayama H. 2011. Is ISO 14001 a gateway to more advanced voluntary action? The case of green supply chain management, *Journal of environmental economics and management* 61(2), 170-182.
- Case S. 2004. Policy updates inspire environmental purchasing. *American City & County* 02-13-2014.
- City of Phoenix. 2017a. Environmental Sustainability Goals. <https://www.phoenix.gov/sustainability>, last accessed August 30, 2017.
- City of Phoenix. 2017b. Initial phase for LED street light conversion work begins August 14. phoenix.gov/news/streets/1786, last accessed August 30, 2017.
- City of Phoenix. 2017c. LED streetlight program. phoenix.gov/streets/neighborhood-matters/street-light-information/led, last accessed August 30, 2017.
- City of Phoenix. 2014. Development of 2050 sustainability goals and targets. Environmental Quality Commission, November 20, phoenix.gov/oepsite/Documents/Sustainability%202050%20Goals%20Presentation%20%2011.20.14.pdf, last accessed September 1, 2017.
- City of Phoenix. 2012. Phoenix EPP Policy. <https://www.phoenix.gov/oepsite/Documents/070520.pdf>, last accessed August 30, 2017.
- City of Phoenix. 2007. Resolution 20519. A Resolution of the City of Phoenix on Environmentally Preferable Purchasing. <https://www.phoenix.gov/oepsite/Documents/031916.pdf>, last accessed August 30, 2017.
- Coggburn, J. D. 2003. Exploring differences in the American States' procurement practices, *Journal of Public Procurement* 3(1), 3-28.
- Darnall N, Stritch JM, 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.
- Faller, MB. 2017. ASU initiative helping cities to become more sustainable. *ASU Now*. July 6. ui.asu.edu/content/asu-initiative-helping-cities-become-more-sustainable, last accessed August 31, 2017.
- Forbes. 2015. America's fastest growing cities in 2015. forbes.com/pictures/emeg45eegeg/11-phoenix-ariz-3/#1dfdd43f15b7, last accessed August 30, 2017.
- Gardiner, D. 2017. Mayor Greg Stanton: despite U.S. withdrawal, Phoenix will support Paris climate pact. *AZ Central*, June 1. azcentral.com/story/news/local/phoenix/2017/06/02/mayor-greg-stanton-despite-u-s-withdrawal-phoenix-support-paris-climate-pact/363450001/, last accessed 5 September 2017.

- Krueger, Richard E. and Mary Casey. 2001. "Designing and Conducting Focus Group Interviews." *Social Analysis: Selected Tools and Techniques*. World Bank, Social Development Papers. Paper Number 36: 4-23.
- Li L. and Geiser K. 2005. Environmentally responsible public procurement (ERPP) and its implications for integrated product policy (IPP). *Journal of Cleaner Production* 13, 705-715
- Merton, Robert K., Fiske, Marjorie, and Kendall, Patricia L. 1956. *The Focused Interview*. Glencoe, IL. The Free Press.
- Newberry, B. 2017. ASU research informs city of Phoenix on eco-friendly buying. *ASU Now*. March 3, 2017.
- Sustainable Purchasing Leadership Council. <https://www.sustainablepurchasing.org/>. Last accessed 30 August 2017.
- U.S. Census Bureau. 2016. State and Local Government Finances by Level of Government and by State: 2013-2014, <https://www2.census.gov/govs/local/14slsstab1a.xls>, last accessed August 30, 2017.
- U.S. Census. 2017a. Community Facts. Selected: Philadelphia city, Pennsylvania; Phoenix city, Arizona; Houston city, Texas; Chicago city, Illinois; Los Angeles city, California; New York city, New York. <https://www.census.gov/quickfacts/fact/table/philadelphiacitypennsylvania,phoenixcityarizona,houstoncitytexas,chicagocityillinois,losangelescitycalifornia,newyorkcitynewyork/PST045216>, last accessed September 22, 2017.
- U.S. Census. 2017b. Community Facts. Estimates of Resident Population Change and Rankings: July 1, 2015 to July 1, 2016 - United States -- Metropolitan Statistical Area; and for Puerto Rico, 2016 Population Estimates.
- U.S. Climate Change Science Program. 2008. *Weather and Climate Extremes in a Changing Climate*. T.R. Karl, et al. (eds.). Department of Commerce, NOAA's National Climatic Data Center, Washington, D.C.
- U.S. Climate Mayors. 2017. 372 US Climate Mayors commit to adopt, honor and uphold Paris Climate Agreement goals, medium.com/@ClimateMayors/climate-mayors-commit-to-adopt-honor-and-uphold-paris-climate-agreement-goals-ba566e260097, last accessed September 5, 2017.
- U.S. Environmental Protection Agency (USEPA). 2006. *Life Cycle Assessment: Principles and Practice*. Washington, DC: USEPA, National Risk Management Research Laboratory, Office of Research and Development.
- U.S. Environmental Protection Agency (USEPA). 2017. *EPA's Recommendations of Specifications, Standards, and Ecolabels for Federal Purchasing*. <https://www.epa.gov/greenerproducts/epas-recommendations-specifications-standards-and-ecolabels-federal-purchasing>. Last accessed 30 August 2017.
- U.S. General Services Administration. 2014. Remarks by GSA Administrator Dan Tangherlini at SPLC's 2014 Summit. <https://www.sustainablepurchasing.org/blog/2014/05/24/remarks-by-gsa-administrator-dan-tangherlini-at-splcs-2014-summit/>, last accessed 30 August 2017.

- United Nations Environmental Programme. 2012. *The Impacts of Sustainable Public Procurement: Eight Illustrative Case Studies*. Paris: United Nations Environmental Programme.
- Wittlinger, S. 2011. The urban heat island: jeopardizing the sustainability of Phoenix. *Policy Points* 3(3), 1-3.
- World Population Review. 2017. Phoenix Population 2017. worldpopulationreview.com/us-cities/phoenix-population/, last accessed August 30, 2017.