The Status of Green Purchasing in the Five Most Populous U.S. States

by

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ABSTRACT

I present a new framework for qualitative assessment of the current green purchasing practices of U.S. state governments. Increasing demand from citizens for green public purchasing has prompted state governments to adopt new, and improve existing, practices. Yet there has been little assessment of public green purchasing in academic research; what has been done has not provided the conceptual support necessary to assess green purchasing practices as a single component of the procurement process. My research aims to fill that gap by developing a conceptual framework with which to assess the status of green purchasing practices and by applying this framework to determine and describe the status of green purchasing in the five most populous U.S. states. The framework looks at state purchasing practices through the lenses of policy, policy implementation, and transparency.

DEDICATION

To my grandparents and my parents, who have always inspired me to accomplish my dreams

ACKNOWLEDGMENTS

I am honored and fortunate to have worked with the esteemed researchers who agreed to be on my committee. Their support, expertise, and guidance throughout the whole process of my research were a blessing. Their mentorship has helped me learn beyond conducting research and writing my thesis.

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My thesis would never have achieved its current structure or logical flow of arguments without the warmth and support that Kathryn Kyle extended to me.

I feel indebted to all my committee members and to Ms. Kyle for having faith in my ability and giving me the opportunity to present my very first thesis. I feel short of words with which to express my gratitude for their support.

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INTRODUCTION

Sustainable purchasing programs are being adopted by all kinds of organizations (Sustainable Purchasing Network, 2008), and preferences for environmentally friendly products and services are increasingly becoming part of government purchasing policies (Sustainable U.N., 2008). This "green purchasing" is driven by, and has an impact on, sustainability. Sustainability issues include pollution, climate change, waste management, environmental degradation, energy independence, public health and safety, and efficient use of finite natural and financial resources.

Though public demand for green purchasing has escalated during the last decade, (Worldwatch Institute, 2003) the mere existence of a green purchasing policy is insufficient to contribute to sustainability. The policy must include specific standards for effective implementation if it is to contribute to sustainable practice in any area of concern.

Governments increasingly recognize the *value of greening operations* as a way to *streamline costs* and *achieve wider environmental policy goals*, such as reducing waste and meeting targets for energy efficiency (Worldwatch Institute, 2003). National agencies such as the United States Environmental Protection Agency (EPA), and international agencies such as the International Green Purchasing Network (IGPN), provide an overview of green purchasing policies and programs instituted by governments across the globe, as well as guidelines for

green purchasing. This information is sufficient for governments to understand the new trends in green purchasing, but may not be sufficient to enable them to assess their current purchasing practices or to incorporate best practices into their green purchasing policy.

By assessing current purchasing practices, governments can uncover areas in which their practices can be improved. But no conceptual framework yet exists to help state governments in the United States (U.S.) assess their current green purchasing practices. This thesis presents an analysis of the current status of green purchasing practices in the five most populous U.S. states. To conduct the analysis, I created and applied a conceptual framework that can be used by researchers, citizens, and other stakeholders in the public purchasing domain.

The framework can help government policymakers identify the gaps between current and ideal (or "best") practices, and develop policies to achieve the latter. In this way, the framework, and the analysis of current practices presented in this thesis, can contribute to making state purchasing more sustainable.

The second chapter of this thesis reviews the history of green public purchasing in the United States, and examines the literature on the economic, social, and environmental roles that green public purchasing can play, as well as the challenges to its effective implementation. It reviews two existing frameworks designed to improve state green purchasing.

Chapter Three describes research methods and the criteria used to develop the conceptual framework, while Chapter Four outlines the results obtained from

applying the framework to the states of California, Texas, New York, Florida, and Illinois.

Chapter Five summarizes the commonalities among the five states and highlights key findings. It also discusses the benefits and limitations of the study and suggests further research that could be done to increase our understanding of how state green purchasing practices can contribute to sustainability.

Chapter 2

LITERATURE REVIEW

Public Procurement

Public procurement is the acquisition of goods and services by government or other public-sector organizations (Uyarra & Flanagan, 2010). There is evidence of public procurement as early as 800 B.C., about the same time that China first began trading silk to a Greek colony (Coe, 1989). The earliest procurement order dates from sometime between 2400 and 2800 B.C. (Coe, 1989). In modern times, the first formal, federal-level, centralized public procurement was instituted in Europe in 1971, in accordance with the Directive 71/305/EEC. This directive was accepted by the Council of European Communities to coordinate procedures for awarding public-works contracts.

Role of Public Procurement

Government procurement constitutes approximately 16 percent of Gross Domestic Product (GDP) in developed countries (Com, 2008). It is one of the key economic activities of government (Thai, 2001); it is also an instrument that complements policymaking because it can be used by governments to change market offerings, and the behavior of decision-makers and end-consumers (Simula, 2006).

Public procurement accounts for a significant portion of overall demand for goods and services (Uyarra & Flanagan, 2010). The financial transactions of government procurement managers in the United States are believed to be on the

order of 10-30 percent of Gross National Product (GNP) (Callender & Mathews, 2000). Governments can use their purchasing power to influence suppliers, and eventually market offerings, for the wider benefit of the society (NAO, 2009). Public procurement can change market offerings by using public demand as a driver of innovation (Uyarra & Flanagan, 2010). Policy makers have increasingly considered public procurement "as an attractive and feasible instrument for furthering the goals of innovation policy" (Uyarra & Flanagan, 2010, p.123). State procurement is more effective in generating innovation than research-and-development subsidies (Rothwell and Zegveld, 1981). Procurement decisions should be based on both value for money and costs and benefits to society, environment, and economy (NAO, 2009).

In the U.S., collective state and local government expenditures for purchasing in 2001 were approximately six times greater than those of the federal government (Thai, 2001). In 2011, state governments alone purchased goods and services totaling nearly $1.4 trillion. This number demonstrates their power to influence market offerings. Governments can catalyze a shift to sustainable products through their consumption choices.

Public Procurement in the United States

Though the first federal purchasing action occurred in 1778, the first formal system of public procurement was developed at the municipal level, and later implemented at state and federal levels (Page, 1980). Today, the Federal Acquisition Regulation (FAR) codified in Title 48 of the United States Code of Federal Regulations specifies regulations for federal procurement. FAR ensures

that uniform policies and procedures are followed by all agencies of the federal government.

The first single entity to procure centrally for all state departments and agencies was created in Oklahoma in 1810; other states soon followed (Thai, 2001). The right to decide who purchases what is held by state legislatures, local councils, or boards of commissioners or directors. These groups exercise their rights by establishing policies and authorizing or appropriating money for programs related to state-level purchasing (Thai, 2001).

Green Purchasing and Sustainability

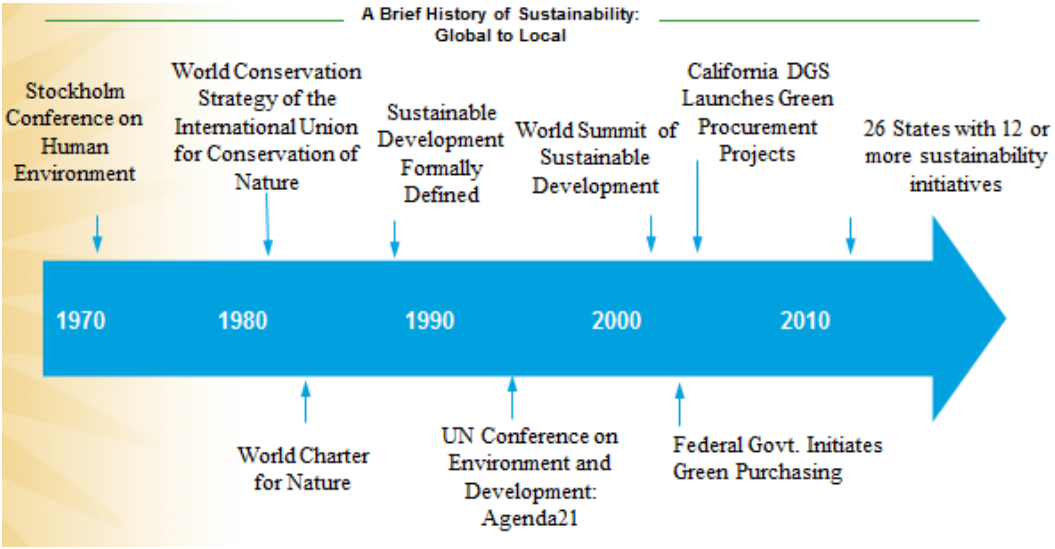

Figure 1. A brief history of sustainability.
Source: Author

Today's emphasis on sustainability, and the attendant consumer demand for green products, has resulted in part from the global environmental movement which began in the 1970s. The 1972 Stockholm Conference on the Human

Environment paved the way for global conversations about “common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment” (Brundtland, 1987). The 1980 World Conservation Strategy of the International Union for the Conservation of Nature marked the dawn of the ”sustainable development era,” when world leaders recognized that natural resources had more than just an economic value. The World Bank, the United Nations Environment Programme (UNEP), and the United Nations Development Programme (UNDP) undertook to ensure that environmental well-being was included on national agendas around the globe.

In the 1980s, state governments could not yet enforce environmentally conscious purchasing through effective laws; instead they used green purchasing to internalize environmental costs and benefits throughout the economy. Purchasing decisions have significant effects on the environment, which economists refer to as “externalities.” An externality is a cost or benefit not transmitted through prices that is incurred by a party who did not agree to the action causing the cost or benefit (Lin, 1976). Because states provided large markets for green products by choosing them over conventional products, their purchasing policies effectively subsidized the development of green products. By using their buying power to reduce the marginal costs of green products, state governments helped firms to lower costs of green products through economies of scale. This government financial support encouraged more private-sector investment in green product manufacturing, and provided opportunities for innovation and learning-by-doing. By buying green products, state governments

traded economic gains for environmental gains—a trade-off that is inherent in many sustainability challenges.

In the 1990s, public interest in sustainable development resulted in the United Nations Conference on Environment and Development (UNCED, 1992) in Rio de Janeiro, which produced Agenda 21. One hundred and fifty countries at the conference agreed to abide by a defined set of rights and responsibilities regarding the conservation of natural resources "in a global partnership for sustainable development" (Agenda 21, 1992). Although the United States did not sign Agenda 21, the impact of the conference was strong enough that U.S. state governments began to mandate purchasing practices that were not only fiscally efficient, but also environmentally responsible.

Subsequent UN conferences in 2002 and in 2012 have encouraged state governments to play a bigger role in sustainable development directly, as well as indirectly by raising public awareness. California responded quickly to this encouragement, mandating state-wide carbon reduction under its Global Warming Solutions Act of 2006. California was also the first state in the U.S. to adopt green purchasing policies. Its greenhouse-gas cap-and-trade program came into effect this year (2012). The state will prefer not to buy products with high carbon footprints (AB 32); this limitation reduces perverse subsidies and supports development of green products.

Consumer Demand for Green Products

The concept of green products as we know it today did not take hold until the 1980s (Schlegelmilch et al., 1996). In the 1970s, when environmental issues first came to the fore of public consciousness in the United States, environmentalists believed that reducing consumption was the only way to tackle the problem of resource-depletion (Henley Centre, 1990). Some economists (e.g., Larry E. Ruff) viewed environmental issues as responsible for economic problems, which raised public concern about environmental issues even higher. Technological advances in energy efficiency and pollution control during the late 1980s and early 1990s made consumers aware that reducing consumption was not the only way to solve environmental problems (Henley Centre, 1990; Schlegelmilch et al., 1996). They realized that *what* they consumed could affect the environment as much as *how much* they consumed. "Consumers began to seek out environmentally-friendly alternatives in preference to their usual product purchases" (Elkington, 1989).

Consumer attitudes and awareness drive demand for green products (see Figure 2). Consumers who are unaware of the link between products and their environmental costs will not demand green products. But awareness alone will not necessarily make a consumer demand green products; he or she must also be "environmentally conscious." The literature on the "environmental consciousness construct" links the eco-consciousness of consumers to their purchasing decisions (Schlegelmilch et al., 1996; Bohlen et al., 1993). Research by Bohlen et al. (1993) suggests that at an individual level, the "attitudinal component of the

environmental domain is the most important predictor of green purchasing decisions" (p.51). Researchers in sociology (Maloney et al., 1975; Lounsbury & Tornatsky, 1977; Arbuthnot & Lingg, 1975) and environmental studies (Vining & Ebreo, 1990; Scott & Willits, 1994) have also analyzed eco-consciousness at the individual level (Schlegelmilch et al., 1996) and found that environmental attitudes and purchasing decisions are related.

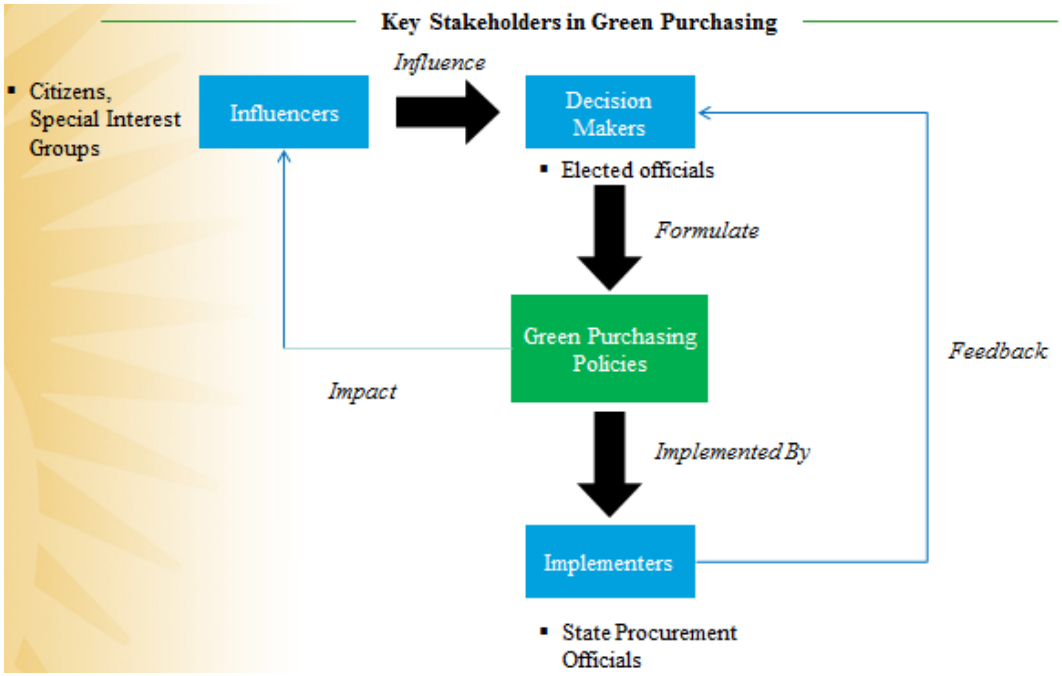

Figure 2: A simplistic view of the interactions among the key stakeholders in green purchasing.
Source: Author

Consumer desire for the environmental benefits of green products fueled a demand for public green purchasing (Min & Galle, 1997). Environmental literature from institutions like the United Nations Economic Program and the United Kingdom National Audit Office encourages adoption of green public purchasing practices (e.g., 2007 report by UNEP'S Division of Technology,

Industry and Economics) (UNEP, 2011; NAO, 2009), and thus supports demand for green products.

Institutional Green Purchasing

Purchasing decisions play an important role in an institution's value-adding processes. Therefore, they have a major impact on an organization's environmental footprint (Gunther et al., 2010). Institutional purchasing has been described as a "gate-keeper for green-oriented decisions" (Gunther et al., 2010) because it is connected to all parts of the value chain of a company (Gunther et al., 2010). Purchasing is increasingly viewed as a strategic intervention point to inspire change in all other units of an institution (Porter, 1990; Wingard, 2001; Kaufmann, 2002).

Research on green purchasing in private-sector institutions developed hand-in-hand with supply-chain management research. Therefore, it has focused primarily on the management of environmental issues in supply chains, and on the greening of supply chains (Srivastava, 2007; Zhu et al., 2005). A significant body of research exists in the form of investigations of the environmental dimension of sustainable procurement, mostly in the manufacturing industry (Simpson & Power, 2005; Svensson, 2007; Srivastava, 2007).

Public purchasing, despite its magnitude and long history, has only recently become a subject of academic research (Trionfetti, 2000; Brulhart & Trionfetti, 2004). Moreover, researchers have seldom employed "systems-thinking" to understand how public purchasing works (Thai, 2001; Ostrom, 1999). But a systems approach is exactly what is needed to uncover and analyze

the nested institutional structure of public purchasing (Thai, 2001) and the configuration of relationships (Ostrom, 1999) that exist among different institutions.

Research on public green purchasing has largely focused on developing frameworks and tools for *implementing* green purchasing (Coggburn, 2004; Gunther & Scheibe, 2005; Li & Geiser, 2005; Swanson et al., 2005). State government reports on green purchasing have been limited to descriptions of their experience with the process and the methods they used to implement green purchasing practices (Corzine & Jackson, 2006). Most of the existing literature on green purchasing from international (e.g., UNEP), federal (e.g., U.S. EPA), and state agencies (e.g., state procurement departments) describes different strategies and tools for adopting green purchasing practices. State purchasing departments (Tetz, 2009) and institutions like the International Council for Local Environmental Initiatives (ICLEI, 2000) facilitate adoption of green purchasing practices by creating state-specific green purchasing guidelines.

Principles of Institutional Green Purchasing

Raymond (2008) suggests that the key principles underlying public procurement should be value for money, ethics, competition, and transparency (Jeanette, 2008). Researchers suggest that themes such as client satisfaction, public interest, fair play, honesty, justice, and equity are important in public green purchasing (Barrett, 2000). Supporting local businesses is also considered an important principle of green procurement by some governments (Brunel et al., 2009).

Many researchers (Arrowsmith, 1995; Knight et al., 2003; Bolton, 2006; Knight et al., 2007) support these themes as the basis for designing green purchasing policies (Snider et al., 2008). Thai (2005) states that public green purchasing policies should accomplish "economic goals (preferring domestic or local firms), environment protection or green procurement (promoting the use of recycled goods), [and] social goals (assisting minority and woman-owned business concerns)" (p.3). Resource reduction and waste elimination are the two key green purchasing strategies that authors use to classify green purchasing (Min & Galle, 1997).

According to the UNEP (2011), green purchasing helps to decouple economic growth from environmental impact and create a "space" for poor people to meet their basic needs. Green purchasing is an opportunity for governments to lead by example (NAO, 2009). Consumers, both private and institutional, should "express their environmental and social concerns–in addition to price, convenience and quality–in their purchasing decisions" (UNEP, 2011). Green purchasing makes "green sectors attractive opportunities for investors and businesses, and it also supports the market development of green goods and services" (UNEP, 2011).

Green purchasing practice must also, of course, achieve financial efficiency while meeting the goal of long-term sustainability, because *all* forms of public procurement need to consider value for money. Usually, the most economically efficient product or service is narrowly identified by its purchase price. But in green purchasing, it is important to consider the long-term costs and benefits of

the product or service, as well as costs and benefits that are not strictly financial. Green products are usually considered more socially responsible than their traditional counterparts, and better for the environment. Government policies and regulations can ensure that public money is efficiently allocated to green procurement (Albano & Kim, 2010).

Federal and State Green Purchasing

Federal and most state governments provide incentives for green purchasing, though most of their policies and incentives are limited to renewable energy, use of recycled material in products, use of alternative fuel, and energy-efficiency for electronics and buildings.

The General Services Administration (GSA), which supplies products for federal offices, requires that its purchases meet comprehensive criteria for environmental sustainability. Recent federal initiatives to support energy efficiency have included funding through the American Recovery and Reinvestment Act of 2009 to help convert GSA facilities to High-Performance Green Buildings, as defined in the Energy Independence and Security Act of 2007. The federal government encourages state green purchasing through policies like the Energy Improvement and Extension Act of 2008, and the American Clean Energy and Security Act of 2009.

Historically, states have been more agile in implementing new policy ideas than the federal government (Larson, 2008). State governments, especially in California and Oregon, have been at the forefront of adopting green purchasing

policies. For example, state initiatives like California's Clean Vehicle Rebate Project support the production and use of zero-emission vehicles.

The authority to purchase for a state government is defined by law. For each of the 50 states, purchasing authority is specified in a unique set of constitutional, statutory, and regulatory provisions (Morose & Battle, 2003). Procurement rules may also be mandated by federal regulations that apply to all states. Thus, law sets the boundaries within which purchasing policies and decisions can be made. Policy (defined for the purposes of this research as state law) specifies how procurement decisions will be made; it is therefore the default foundation upon which green purchasing practices are built. While policy is specified by law, its implementation can take different forms. Hence policy implementation offers opportunities for adopting or changing green purchasing practices that are distinct from those determined by the policies themselves. Both policy and its implementation are determinants of the status of green purchasing practices in a state.

A third determinant is transparency. Transparency opens transactions to public scrutiny (Jeanette, 2008), increasing the likelihood that they will comply with current federal and state policies (Public Governance Committee, 2007). Transparency helps to ensure that the procurement process is well understood by stakeholders, open for discussion, and applied equitably to all parties, from procurement planners to end users. Lack of accessible information about procurement rules and practices can be a barrier to efficient procurement practices (Albano & Kim, 2010). Clear reporting on green procurement processes by the

government is a key to securing public support for investment decisions, efficient asset and acquisition management, ethical contract management, and disbursement of public money (Albano & Kim, 2010).

Challenges to Implementing Public Green Purchasing

There are numerous challenges to implementing public green purchasing. One challenge is the presence of "perverse subsidies," which are subsidies that lower the cost of "doing business in an environmentally unsustainable way" (Tang, 2009, p.271). These subsidies have reduced the incentives to develop green products and have thereby slowed the growth of green-product use (Karaoke, 2006; Tang, 2009).

Three additional challenges to implementing public green purchasing are discussed in the research on Hurdles Analysis by Guenther et al. (2010). The first challenge Guenther identifies is lack of allowance, which means that those who advocate green purchasing do not have the power to implement it. The second challenge is lack of willingness, which refers to the prevailing lack of rewards for implementing green purchasing practices, and lack of negative consequences for failing to implement them (i.e., lack of coercive power and reward power). The third challenge is lack of knowledge and information, meaning that advocates of green purchasing lack the know-how necessary to implement it (i.e., lack of expertise).

Another significant challenge to implementing public green purchasing is the lack of well-defined green purchasing standards. The majority of U.S. states lack green purchasing policies altogether, and even in states that do have policies,

the policies are often imprecise and lack specific green purchasing standards. Such standards may be lacking because they are not prioritized in the complex decision-making process through which procurement policies are designed, a process that involves interactions between internal forces (e.g., skills of procurement officials) and external forces (e.g., market, political influence) (Thai, 2001).

Without specific green purchasing standards, public procurement offices do not have guidance in establishing specific criteria for the purchase of environmentally friendly products (Katowice, 2006; Saetrang, 2010). The lack of standards also makes it difficult to compare practices among different organizations (Ecovadis, 2010), and makes inter-organizational information flow, which is essential for the adoption of green purchasing criteria (Ecovadis, 2010), challenging.

Saetrang (2010) and Thai (2001) identify an additional challenge to effective implementation of public green purchasing. They believe that public purchasing managers lack the skills necessary to implement green purchasing practices effectively. Purchasing managers need interdisciplinary knowledge to understand the interplay among multiple institutional forces (Thai, 2001). Thai (2001) states that, “It is impossible to integrate these disciplines (policy knowledge, decision-making) into the public procurement knowledge” (p.39); therefore, training purchasing managers is unlikely to provide them with the breadth of knowledge they require. This lack of skills, combined with the lack of specific green purchasing standards, adds to uncertainty when evaluating the costs

and benefits of integrating green purchasing into procurement decisions (NAO, 2009).

National and international compliance requirements comprise yet another challenge to the implementation of green purchasing practices (Thai et al., 2005) because procurement operations must be designed to meet social and economic procurement goals without violating regional and/or international trade agreements.

	Foundation – Level 1	Embed – Level 2	Practice – Level 3	Enhance – Level 4	Lead – Level 5
People	Sustainable Procurement champion identified. Key procurement staff have received basic training in Sustainable Procurement principles. Sustainable Procurement is included as part of a key employee induction programme.	All procurement staff have received basic training in sustainable procurement principles. Key staff have received advanced training on sustainable procurement principles.	Targeted refresher training on latest Sustainable Procurement principles. Performance objectives and appraisal include Sustainable Procurement factors. Simple incentive programme in place.	Sustainable Procurement included in competencies and selection criteria. Sustainable Procurement is included as part of employee induction programme.	Achievements are publicised and used to attract procurement professionals. Internal and external awards are received for achievements. Focus is on benefits achieved. Good practice shared with other organisations.
Policy, Strategy and Communication	Agree overarching Sustainability objectives for procurement. Simple Sustainable Procurement policy in place endorsed by CEO. Communicate to staff and key suppliers.	Review and enhance sustainable procurement policy, in particular consider supplier engagement. Ensure it is part of a wider Sustainable Development strategy. Communicate to staff, suppliers and key stakeholders.	Augment the Sustainable Procurement policy into a strategy covering risk, process integration, marketing, supplier engagement, measurement and a review process. Strategy endorsed by CEO.	Review and enhance the Sustainable Procurement strategy, in particular recognising the potential of new technologies. Try to link strategy to EMS and include in overall corporate strategy.	Strategy is: reviewed regularly, externally scrutinised and directly linked to organisations' EMS. The Sustainable Procurement strategy recognised by political leaders, is communicated widely. A detailed review is undertaken to determine future priorities and a new strategy is produced beyond this framework.
Procurement Process	Expenditure analysis undertaken and key Sustainability impacts identified. Key contracts start to include general Sustainability criteria. Contracts awarded on the basis of value-for-money, not lowest price. Procurers adopt Government Buying Standards.	Detailed expenditure analysis undertaken, key Sustainability risks assessed and used for prioritisation. Sustainability is considered at an early stage in the procurement process of most contracts. Whole-life Costing analysis adopted.	All contracts are assessed for general Sustainability risks and management actions identified. Risks managed throughout all stages of the procurement process. Targets to improve Sustainability are agreed with key suppliers.	Detailed Sustainability risks assessed for high impact contracts. Project/contract Sustainability governance is in place. A life-cycle approach to cost/impact assessment is applied.	Life-cycle analysis has been undertaken for key commodity areas. Sustainability Key Performance Indicators agreed with key suppliers. Progress is rewarded or penalised based on performance relevant to the contract. Barriers to Sustainable Procurement have been removed. Best practice shared with other organisations.
Engaging Suppliers	Key supplier spend analysis undertaken and high sustainability impact suppliers identified. Key suppliers targeted for engagement and views on procurement policy sought.	Detailed supplier spend analysis undertaken. General programme of supplier engagement initiated, with senior manager involvement.	Targeted supplier engagement programme in place, promoting continual Sustainability improvement. Two way communication between procurer and supplier exists with incentives. Supply chains for key spend areas have been mapped.	Key suppliers targeted for intensive development. Sustainability audits and supply chain improvement programmes in place. Achievements are formally recorded. CEO involved in the supplier engagement programme.	Suppliers recognised as essential to delivery of organisations' sustainable procurement strategy. CEO engages with suppliers. Best practice shared with other/peer organisations. Suppliers recognise they must continually improve their Sustainability profile to keep the client's business.
Measurements and Results	Key Sustainability impacts of procurement activity have been identified. Simple measures based on achieving all aspects of the Foundation level of the flexible framework are put in place and delivered.	Detailed appraisal of the Sustainability impacts of the procurement activity has been undertaken. Measures implemented to manage the identified high risk impact areas. Simple measures based on achieving all aspects of the Embedding level of the flexible framework are put in place and delivered.	Sustainability measures refined from general departmental measures to include individual procurers and are linked to development objectives. Simple measures based on achieving all aspects of the Practicing level of the flexible framework are put in place and delivered.	Measures are integrated into a balanced score card approach reflecting both input and output. Comparison is made with peer organisations. Benefit statements have been produced. Simple measures based on achieving all aspects of the Enhancing level of the flexible framework are put in place and delivered.	Measures used to drive organisational sustainable development strategy direction. Progress formally benchmarked with peer organisations. Benefits from Sustainable Procurement are clearly evidenced. Independent audit reports available in the public domain. Simple measures based on achieving all aspects of the Leading level of the flexible framework are put in place and delivered.

Figure 3. The Flexible Framework.
Source: Defra, 2009

Frameworks for Self-Assessment of Green Purchasing

Researchers and institutions have developed various frameworks to support adoption of green public procurement; two are discussed below.

The widely used Flexible Framework was developed by the United Kingdom's Sustainable Procurement Task Force as a self-assessment mechanism (Defra, 2009). This framework is based on the Capability Maturity Model, and "allows organizations to measure and monitor their progress on sustainable procurement over time" (Defra, 2009, p.4). It can be used by organizations with any level of procurement expertise. As shown in Figure 3, the framework identifies five themes for achieving and measuring progress in sustainable procurement: policy, strategy and communications, measurements and results, procurement process, and engaging suppliers and people. The framework rates each theme to evaluate how well sustainable procurement is integrated into the organization. The U.K.'s Sustainable Procurement Action Plan of 2007 encouraged government departments to adopt the framework.

The second framework, a self-evaluation tool for municipalities, was developed by Gunther and Scheibe (2006) to identify, analyze, and overcome barriers to green procurement. The authors focus on the role that key people in a procurement process play, to uncover the "insufficient use of the existing potentials of green procurement" (Gunther & Scheibe, 2006, p.63). The framework is implemented in a two-step process. The first step uses Hurdles Analysis, which was developed by Guenther in 1999 to identify the hurdles to green procurement. In the second step, key people and decision elements within

the procurement process are identified, to assign them relevant responsibilities and generate solutions. These relationships are usually represented visually, as shown in Figure 4.

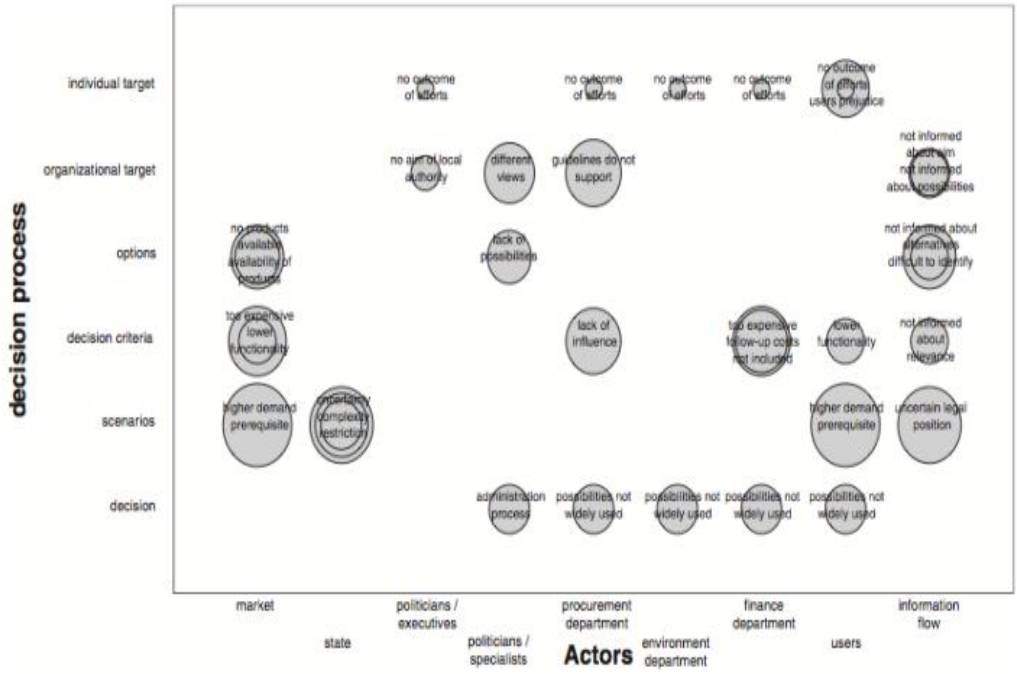

Figure 4: Connecting actors to the hurdles in purchasing decision process. Source: Guenther and Scheibe, 2006

To use the framework, municipalities first choose the participants for self-evaluation, then identify barriers to green procurement, and ultimately develop strategies for surmounting the barriers after interpreting the results of the analysis.

Both of the above frameworks are useful for assessing public green purchasing *processes*, but they do not provide for assessing green purchasing *practices*. The Flexible Framework does not allow for analysis of individual green purchasing practices because it requires analysis of more components of the public procurement process than just green purchasing practices. The Hurdles

Analysis does not have the capacity to identify new areas related to green purchasing in order to improve the existing purchasing practices. It assumes that the full potential of the existing practices is not realized, so it enables the organization to work towards achieving the highest potential of the existing practices. Neither the Flexible Framework nor Gunther and Schiebe's self-assessment framework can be used by an external researcher to analyze the current state of an institution's public green purchasing practices.

As shown in Figure 5, the themes of policy, policy implementation, and transparency are included in the Flexible Framework to assess maturity. The Hurdles Analysis Framework includes policy and transparency in an assessment only if they are identified as hurdles. Guenther and Scheibe (2006) suggest that lack of green purchasing policies can be a big hindrance to achieving the full potential of the procurement process.

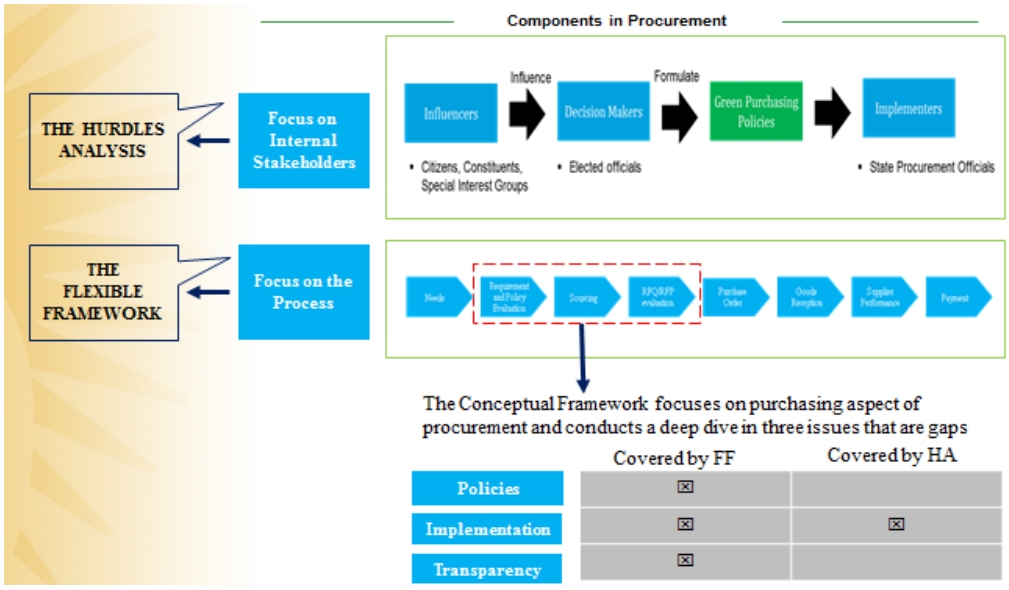

Figure 5: Themes covered by the Flexible Framework and the Hurdles Analysis Framework
Source: Author

Need for a New Framework

I propose a new framework for qualitative assessment of the current green purchasing practices of U.S. state governments. Increasing demand from citizens for green public purchasing has prompted state governments to adopt new, and improve existing, practices. Their efforts to do so include learning from one another through institutions like the National Institute of Governmental Purchasing (NIGP), participating in purchasing alliances like the U.S. Communities Green Purchasing Program, and sharing best practices. There has been little assessment of public green purchasing in academic research; what has been done has not provided the conceptual support necessary to assess green purchasing practices as a single component of the procurement process. My research aims to fill that gap by developing a conceptual framework and then applying it to assess the status of green purchasing practices in the five most populous U.S. states. The framework looks at practices through three of the lenses used in the Flexible Framework: policy, policy implementation, and transparency.

Chapter 3

METHOD

The U.S. Environmental Agency defines “environmentally preferable” products or services as those with a less negative effect on human health and the environment than their conventional counterparts. Environmentally preferable purchasing (EPP) is generally referred to as “green purchasing” in the context of government procurement processes (Coggburn & Rahm, 2005). To assess the green purchasing practices of U.S. states, a conceptual framework is developed as part of this thesis. Part of the reason for developing the framework is to analyze characteristic aspects of public purchasing, like transparency.

Public procurement can be studied at many different levels: county, municipality, state, and federal. This thesis focuses on the state as an analysis unit because states have more freedom than counties and municipalities to create policy. Moreover, policy implementation at the state level is easier than at the federal level (Stewart, 1977).

The federal government depends on state governments to implement federal-level policies because the large size of the United States and its geographic diversity make national implementation difficult and unwieldy (Stewart, 1977). Implementing any regulation at the state level is usually more efficient than at the national level because of the close relationship between environmental controls and other state specific laws, such as those covering land use (Larson, 2008). State governments have jurisdiction over smaller populations

and have an advantage over the federal governments because of their smaller size and awareness of their unique stakeholder interests. States can customize their policies to fit the needs of their residents. For example, state governments enjoy the freedom to regulate GHG emissions according to their individual environmental commitments. According to the World Resources Institute, states work as "laboratories for developing new, innovative policies" (Larson, 2008). Historically, states have been more agile in implementing new policy ideas than the federal government (Larson, 2008). For these reasons, I infer that states can reap the benefits of analyzing the current status of their green purchasing more easily than can the nation as a whole.

Though the terms are sometimes used interchangeably, "green purchasing practices" are not the same thing as "green procurement." Procurement is the institutional function of a supply chain that includes all the activities and processes involved in acquiring goods and services (Rowlinson & McDermott, 1998). Distinct from "purchasing," procurement includes the activities related to establishing fundamental requirements, sourcing activities (e.g., market research), and contract negotiation. It may also include the purchasing activities required to order and receive goods.

The term "purchasing" refers only to the process of ordering and receiving goods and services. It is one component of the procurement process. Purchasing also refers to the processes involved in obtaining goods, such as requesting permission to order goods or services, approving requests to order, and receipting the goods or services obtained.

For the purpose of this thesis, state purchasing practices are limited to the laws that directly apply to purchasing decisions, and the practices relevant to policy execution (e.g., existence of a dedicated team that ensures that green procurement is enforced). This thesis treats not only monetary and mechanical transactions as purchasing practices, but also includes the regulations that come into play when a purchasing manager make decisions about product specifications. For example, California's low carbon fuel law, pursuant to the California Assembly Bill AB 32, and the Governor's Executive Order S-01-07, specifies that state agencies must reduce their average carbon intensity requirements to 95.37 percent of their 2010 level. This law ensures that state agencies will buy alternative fuel, which becomes a fuel specification when the agencies send requests for proposals to suppliers.

State governments are usually the single biggest buyers in a state. The buying capacity of states represents not only their significant purchasing power, but also the number of people they serve. The five most populous U.S. states make up 36.8 percent of the total U.S. population (U.S. Census, 2011). This thesis is limited to these states because assessment of these states can impact a greater part of U.S. population than any other set of states in the country.

Procurement rules are usually founded in state law and in the in federal regulations that apply to all states. Policies are essential to mandate and ensure green purchasing (Coggburn & Rahm, 2005), so they constitute an important theme for assessing the status of green purchasing. As noted in the previous

chapter, for the purposes of this thesis, policy will always refer to a state-level law.

Policy implementation is a second lens through which to view green purchasing. A policy specified by law can be implemented in various ways, and the way it is implemented will affect outcomes. Therefore, implementation may provide greater leeway for decision-making about green purchasing than policy does. Thus, policy implementation is used as a second theme with which to assess green purchasing.

Transparency is the third lens through which I assess green purchasing practices, because it is a characteristic without which is difficult, if not impossible, to ensure that policies are indeed being implemented as the law intends. Transparency is necessary to ensure that the procurement process is well understood by stakeholders, and that information about it is accessible, and that the process is applied equitably. Lack of accessible information about procurement rules and practices can be a barrier to efficient procurement practices (Albano & Kim, 2010).

The three lenses—policy, policy implementation, and transparency—make it possible to assess purchasing practice from a citizen's perspective, as well as from the perspective of those who conduct the practice. It is important for policy makers to understand the public's perspective on the state's green purchasing, particularly because it is the public’s preferences that drive the demand for public green purchasing. The table below presents the three themes of the conceptual framework created for this thesis to assess state-level green purchasing.

Table 1. Conceptual Framework for Evaluating the Status of Green Purchasing Practices in the U.S. States

Themes	Attributes
Policy	Areas[1] covered under green buying policies
	Frequency of green policy update
	Carbon offsets/ Carbon footprint details
Policy implementation/ Operations Management	Dedicated department for overseeing green procurement
	Metrics available [2]
	Guidelines for suppliers and contractors
Transparency	Availability of online data
	Availability of online complaints process

Attributes for Themes in the Framework

Policy

Compliance with existing policies is mandated; hence, by analyzing attributes like the scope and timeliness of policies, we can effectively measure the potential impact of a state's green purchasing practices. Analyzing the "field of influence" of state-level policies means analyzing the areas that are covered under such policies (Sonis et al., 1995). The more areas covered by green purchasing policies, the more effective purchasing practices are expected to be. For policies

1 Areas Covered under Green Purchasing: A Energy, Water, Waste, Appliances, Electronics, Buildings & Maintenance, Office Supplies, Office Equipment, Transportation, Safety, Food, , Public Lighting, Grounds/Parks, Education, Recycling and Take-back.

2 Possible Metrics available: Energy and Corresponding Carbon Emissions, Water, Public Transit and Corresponding Carbon Emissions, Recycling and Take-back, State of the Environment (groundwater, lakes and watercourses, seas, and coastal areas), and Waste

to stay current, regular updates of existing, or introduction of new, policies important. Thus, frequency of policy update is an important factor to consider when analyzing the existing green purchasing policies of a state.

Policies that limit carbon footprints reduce resource use (Dian & Rogers, 2002) and can decrease the cost of manufacturing. Carbon dioxide (CO2) is the primary pollutant associated with global warming, and can have toxic effect on humans (Lambertsen, 1971) and other living beings. State and national governments can use policies that limit carbon emissions (e.g., by implementing a carbon tax, as Australia has already done) to benefit the public, and the environment (Dian & Rogers, 2002). Noting the success of carbon policies in reducing emissions in the European Union, states like California have already started experimenting with carbon-reduction policies. Hence, carbon-related policies have been chosen as an indicator of a continually improving state.

Policy Execution and Operations Management

While procurement policies are mandated by law, they must be adequately executed in order to achieve the desired benefits. According to HEC Paris's European Sustainable Procurement Benchmark 2009, "Sustainable procurement often begins with the appointment of a dedicated manager" who can be an internal champion to oversee the execution of green-purchasing policies (Brunel et al., 2009, p12). The trend in the private sector is to establish a dedicated team within the procurement department that reports to the head of procurement (Brunel et al., 2009). This trend indicates that green purchasing policies are becoming increasingly effective in the private sector. A team dedicated to green purchasing

can develop the technical expertise (e.g., knowledge of social rights, environmental regulations, life cycle analysis) necessary to support green purchasing, and have the independence necessary to meet competing demands for local cost optimization and mitigation or avoidance of any long-term impact of a suppliers' poor environmental and social practices on the company's image (Reid & Meidzink, 2008). Assigning dedicated resources to oversee green purchasing operations helps to ensure effective execution of procurement policies (Public Governance Committee, 2007). This assessment combined with current trends in the private sector suggests that dedicated department oversight is important for green purchasing.

We measure what we care about and in turn we start caring about the things we measure (UNEP, 2011). As Donella Meadows said, "Indicators arise from values and they create values" (Meadows, 1998, p2). The lack of metrics for green purchasing practices makes it difficult to obtain support for large-scale deployment of green-purchasing practices (Reid & Meidzink, 2008), such as at the state level. For most private-sector companies, too, the lack of metrics is a big obstacle when implementing green purchasing practices (Reid & Meidzink, 2008).

A set of sustainable procurement requirements or guidelines for suppliers is necessary to ensure that green purchasing policies are implemented consistently and effectively across multiple state agencies. To implement green purchasing policies, an agency must evaluate tenders (supplier bids) when awarding a government contract. Before a procurement contract is approved, a state agency

must make sure that the supplier complies with the environmental and social standards established by state policies. According to the sustainable procurement guide of the Sustainable United Nations (SUN), defining requirements for products and services which serve as guidelines for suppliers "is a key factor in ensuring best value for money and the most sustainable outcome" (UNEP, 2011). Therefore, I've chosen established supplier guidelines as an indicator of effectiveness in policy implementation.

Transparency

The UN Procurement Capacity Development Centre states that "immediate availability of procurement information enables civil society or the media to oversee procurement processes," which in turn enhances the transparency of the green procurement process. Therefore, the online availability of procurement data is one of the attributes included in my metric. For the purposes of this research, only the data related to government contracts for products and services are considered. For green-purchasing information to be effectively available for public scrutiny and a corresponding action, the data needs to be timely (Public Governance Committee, 2007). Therefore, timeliness is another indicator in the metric.

An online forum that enables stakeholders and the public to scrutinize green procurement practices is one way to make those practices transparent. Such a forum should also help resolve the complaints of bidders and end-consumers. Providing effective recourse systems, like online complaint forums, allows timely access to information and independent review of procurement decisions. Allowing

public access to complaints and corresponding remedies to redress individual issues can help protect individual rights and ensure policy compliance. This is recognized in the European Union (EU), where regulations like the EU directive of 2007, Section 66 of *6/EC* of the European Parliament and Council, allows national courts the power to render government contracts ineffective if, within the *standstill period*[3] the bidders decide to initiate a review procedure (Official Journal of the EU, 2007).

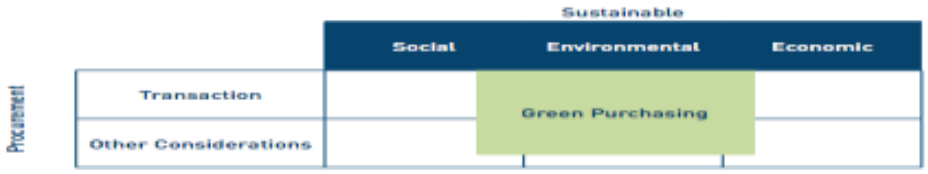

Figure 6: Goals accomplished by green purchasing policies.
Source: South Australian Green Purchasing Report, 2009

Though the focus of state green purchasing policies is usually to reduce the impact of purchased goods and services on the environment, the policies do not accomplish only this goal. As shown in Figure 6, green purchasing policies are also used to achieve part of the social and economic goals of state governments (South Australian Green Purchasing Report, 2009).

3 Contracting authorities need to wait for at least 10 days after deciding who has won the public contract before the contract can actually be signed. This period gives bidders time to examine the decision and decide whether to initiate a review procedure. If they do so within the standstill period, the procurement process is automatically suspended until the review body takes its decision. If these rules are not respected, under certain conditions national review bodies must render a signed contract ineffective.

Chapter 4

RESULTS

I applied the conceptual framework to assess the current state of green purchasing practices in the U.S. states of California, Texas, New York, Florida, and Illinois. These five states are home to approximately 36 percent of the total U.S. population. Collectively, the five states purchased goods and services worth more than USD 36 billion in Financial Year (FY) 2011. The analysis is not meant to compare the states in any respect, but to understand the states' existing purchasing practices.

California

California is the eighth largest economy in the world and its purchases, including all contractual goods and services, are expected to be approximately USD 15 billion in FY2011. This is based on the FY2009 purchases, which were more than USD 10 billion per annum (Tetz, 2009). California has also been a U.S. leader in addressing climate change issues (Frostic & Stefen, 2010). One example of this leadership is seen in the state's green purchasing policies. For over a decade, the state has mandated environmentally preferable purchasing for all state agencies (Cal. Pub. Con. Code § 12400, 2002).

As shown in Figure 7, the Department of General Services (DGS) is responsible for state procurement through its procurement division. Green purchasing is promoted through Environmentally Preferable Purchasing (EPP) (Cal. Pub. Con. Code §§ 12400-12404), which requires that the DGS consult with

the California Environmental Protection Agency in promoting EPP and developing and implementing strategies, programs, training, and manuals relating to EPP (Cal. Pub. Con. Code §12401). In 2009, over 30 state employees were part of an EPP task force chaired by DGS to encourage the adoption of green purchasing at both the state and local government levels (Tetz, 2009). There is no indication on the state's official procurement website that the EPP task force has been reduced in size; rather, it is likely that the EPP task force has increased in size given the increase in California's green purchasing practices since 2009.

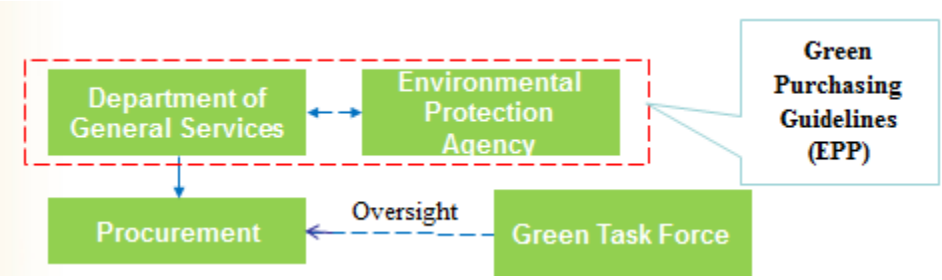

Figure 7. Green purchasing governance for California.
Source: Author

California's green purchasing policies are set forth in section §§ 12153-12404 of California's public contract code. Section 12201 sets forth the state's findings, declarations, and intent regarding the purchase of recycled materials, goods, and supplies (Cal. Pub. Con. Code § 12201, 2005). It is the state's policy "to conserve and protect its resources" and to "pursue all feasible measures to improve markets for recycled products" (Cal. Pub. Con. Code § 12201, (b)). State statutes, regulations, and executive orders collectively impact green purchasing decisions, as do federal regulations and international laws. California state agencies are mandated to award purchasing contracts based on the environmental

impact of a product or service (Cal. Pub. Con. Code § 12400). This includes considering factors like disposal, energy efficiency, and product performance.

To further the state policy of resource-efficiency, state agencies are required to "purchase recycled products . . . whenever recycled products are available at the same or a lesser total cost than non-recycled products" (Cal. Pub. Con. Code § 12201, (c)). State agencies must ensure that at least 50 percent of (reportable) state purchases are recycled products (Cal. Pub. Con. Code § 12203). The minimum amount of post-consumer material that different product categories must contain in order to be considered recycled under the state's green purchasing policies is set forth in § 12209 (Cal. Pub. Con. Code § 12209).

California's green purchasing policies have significant impacts beyond the area of recycling. Under the state's EPP program, preference is given to "goods and services that have a lesser or reduced effect on human health and the environment when compared with competing goods or services" (Cal. Pub. Con. Code § 12400). In determining whether a good or service is environmentally preferable, the state must consider "to the extent feasible raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, disposal, energy efficiency, product performance, durability, safety, the needs of the purchaser, and cost" (Assembly Bill 498, 2001). The impacts of this preference, and California's green purchasing policies, are far-reaching.

In the area of energy, California was recognized in 2011 as the state with the highest use and purchase of renewable energy (Pernick, 2011), and the state has set a minimum target of 33 percent of total energy provided by retail sellers to

be renewable energy by 2020 (Cal. Exec. Order S-14-08, 2008; Cal. Exec. Order S-21-09, 2009). California's green purchasing policies also impact areas such as buildings and maintenance (24 Cal. Code of Reg. §§ 101.7, 101.8, 301.1-306.1), state and local government vehicle purchases (Cal. Pub. Res. Code §§ 25725-25726; Assembly Bill 236, 2007; Assembly Bill 118, 2007), carbon fuel standards (Cal. Assembly Bill 32, 2006), toxic cleaning chemicals (Cal. Health and Safety Code §§ 25210-25210.1), and food services (Cal. State Contract Nos. 1-08-73-02-A, 1-09-73-02-C).

The low-carbon-fuel standard (LCFS) (17 Cal. Admin. Code §§ 95480-95490) was enacted in 2007 pursuant to the California Global Warming Solutions Act of 2006 (17 Cal. Admin. Code §95480). Through the LCFS, California seeks to further its commitment to reduce its environmental impact by reducing greenhouse gas emissions of the transportation fuel used in the state ((Assembly Bill 32, 2006). The LCFS thus mandates reduction of the state's carbon footprint.

California encourages green purchasing decisions through legislation such as the California Green Chemistry Initiative (Assembly Bill 1879, 2009; and Senate Bill 509, 2008), which establishes processes for identifying, prioritizing, and evaluating chemicals of concern in consumer products and their potential alternatives.

The state has been very active in updating its green policies, which it has done at least annually during the last five years. The state has consistently added new products to its existing green product categories, or made its existing purchasing laws more stringent to decrease their environmental impacts.

The California Global Warming Solutions Act (Assembly Bill 32, 2006) mandates reporting greenhouse gases (GHG) by major sources, such as the largest industrial facilities. Electricity retail providers and marketers also reported electricity transactions. Since 2009, GHG data reports have had to be reviewed and verified by third-party verifiers accredited by the state's Air Resources Board, which maintains California's GHG inventory and makes it available online. The inventory provides aggregated data on GHG emissions from the following sources: transportation, electric power, commercial and residential buildings, industrial facilities, recycling, and waste. Metrics relevant only to green purchasing, like GHG emissions of products, and financial expenditures, are not available online.

Supplier guidelines are not available online. The buyer's guide, which is available online, appears to be the best information available to inform suppliers about the green products that the state purchases. The green product list is available on the state green purchasing website. It includes the following products: electronics, buildings, industrial appliances, cleaning supplies, printers and copiers, paper, toner cartridges, and alternative-fuel vehicles.

Details about suppliers, like the names of businesses and business ownership categories (e.g., veteran-owned), are available as part of the state's contract information. The contract information includes details such as contract number, type of contract (e.g., public works), type of commodity, term of contract, and status of contract (current or expired). Details about state contract administration are accessible online through the state procurement website.

Though complaints cannot be filed online, the contact for filing procurement complaints is accessible on the state procurement website. For a complaint against a contractor for violation of the "sweat-free" procurement policy and code of conduct, the investigating state agency "may limit its investigation to evaluating the information provided by the person or entity submitting the complaint and the information provided by the contractor" (Cal. Pub. Con. Code 6108(d) (1))

Table 2: Results from Application of the Conceptual Framework

Themes	Attributes	**California**	**Texas**	**New York**	**Florida**	**Illinois**
Policy	**Areas covered under green buying policies**	☑ Appliances ☑ Alternative Fuel ☑ Buildings & Maintenance ☑ Energy Purchase ☑ Food Service ☑ Office Supplies ☑ Office equipment ☑ Safety ☑ Toxic Substances Control ☑ Transportation ☑ Water ☑ Waste & Recycling	☑ Appliances ☑ Alternative Fuel ☐ Buildings & Maintenance ☑ Energy Purchase ☐ Food Service ☐ Office Supplies ☐ Office equipment ☐ Safety ☐ Toxic Substances Control ☑ Transportation ☑ Water ☐ Waste & Recycling	☑ Appliances ☑ Alternative Fuel ☑ Buildings & Maintenance ☑ Energy Purchase ☐ Food Service ☑ Office Supplies ☑ Office equipment ☐ Safety ☑ Toxic Substances Control ☑ Transportation ☐ Water ☐ Waste & Recycling	☑ Appliances ☑ Alternative Fuel ☑ Buildings & Maintenance ☐ Energy Purchase ☐ Food Service ☑ Office Supplies ☑ Office equipment ☐ Safety ☐ Toxic Substances Control ☑ Transportation ☐ Water ☑ Waste & Recycling	☑ Appliances ☑ Alternative Fuel ☑ Buildings & Maintenance ☑ Energy Purchase ☑ Food Service ☑ Office Supplies ☑ Office equipment ☐ Safety ☑ Toxic Substances Control ☑ Transportation ☐ Water ☑ Waste & Recycling

	Frequency of green policy update	Every year	Mostly every two years	Every year	Every two years	Every year
	Carbon offsets/ Carbon footprint details (GHG cap)	AB32	Monitor, measure, and verify the permanent status of sequestered carbon dioxide	Efficiency measures are in place	Rules under preparation	None
Policy execution or Operations Management	**Dedicated department for overseeing green purchasing**	Yes	None	None	None	Yes

	Metrics available	Greenhouse Gas Emission Inventory exists, emission data not directly related to green purchasing	Greenhouse Gas Emission Inventory exists, emission data not directly related to green purchasing	GHG Emission Inventory Exists, data not related to green purchasing.	GHG Emission Inventory Exists, data not related to green	GHG Emission Inventory Exists, data not related to green Reports exist for greening projects for every year since 2007
	Guidelines for suppliers and contractors	Green purchasing guidelines for buyers available	Procurement guidelines available, not specific to green purchasing	Guidelines available for both buyers and providers	Guidelines for buyers only	Guidelines for buyers only

Transparency	**Data Available Online**	Supplier Information, Contract Details	Supplier Information, Contract Details	Supplier Information, Contract Details	Supplier Information, Contract Details. Available list of green products	Supplier and contract information available, reports available
	Complaints	Online contact for filing complaints available, but complaint cannot be filed online	Online contact for customer support available; complaint cannot be filed online.	Online contact for customer support available; complaint cannot be filed online.	Online contact for customer support available; complaint cannot be filed online.	Online contact for customer support available; complaint cannot be filed online.

Texas

During the past decade, Texas has become the country's second largest economy (USA Today, 2011). As per a personal communication with Ron Pigot, Director, Texas Procurement and Support Services, Texas Comptroller of Public Accounts, the contractual purchases of Texas in FY2011 was $14,075,376,019. The conversation is included as part of Appendix II.

As shown in Figure 8, the purchasing authority for the state is granted to the Comptroller of Public Accounts (CPA), Department of Information Resources (DIR), and the Council of Competitive Governments (CCG) by the Texas Government Code. These agencies award contracts for commonly used goods and services for state-agency and local-government use (TGC Title 10.D and Texas Administrative Code, Title 34.1). Policies for state purchasing are defined by Title 10, Subtitle D of the Texas Government Code (TGC).

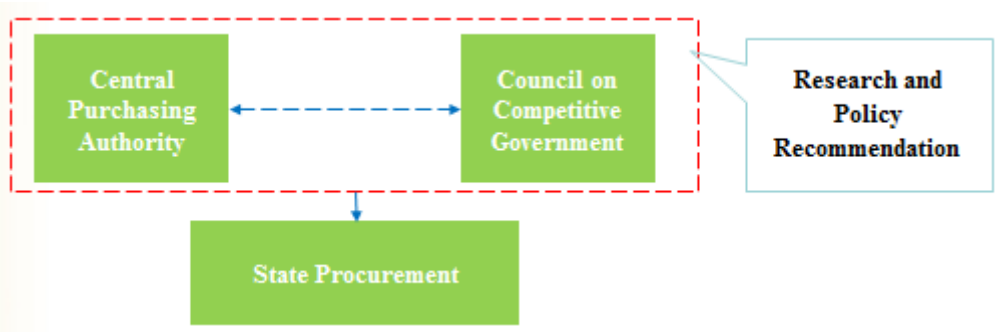

Figure 8: Green purchasing governance for Texas.
Source: Author

The Texas green purchasing website defines green items, or *First Choice* items, as "recycled, remanufactured or environmentally sensitive products. For reporting or for writing on a term contract, the *First Choice* items are indicated by

an "E" code. They are divided into three categories - Recycled Products (E1), Remanufactured Products (E2), and Environmentally Sensitive Products (E3).

The state agencies are encouraged to purchase green products (TGC, Section 2155.445). They are to give preference to recycled, remanufactured, or environmentally sensitive products, in accordance to TGC's State Purchasing and General Services Act (TGC, Title 10, Subtitle D, Section 2155.445). The purchasing decision for recycled products is limited by the condition that the "the average price of the product is not more than 10 percent greater than the price of comparable non recycled products" (TGC, Title 10, Subtitle D, Section 2155.455.2). If in certain circumstances, a state agency decides to purchase non-green items instead of *First Choice* products, it is mandated to submit a letter of justification for that particular purchase. This justification document is subject to possible audit by the Texas Comptroller of Public Accounts. State agencies are required by TGC, Section 2155.448 to submit an annual recycling report to the Texas Comptroller of Public Accounts.

A very-well-documented set of annual financial reports on green purchasing is available on the state procurement website. The state's expenditures for all green or *First Choice* products, along with the corresponding expenditures for non-green or *virgin* alternatives, are available. The annual reports are a summary of reported state expenditures on recycled, remanufactured, or environmentally sensitive purchases in different categories (represented as E1, E2, and E3, respectively) of the *First Choice* products. In 2011, a total of over $200

million was spent on the E1, E2, and E3 categories across all the green products. No other data related only to green purchasing, like emissions or GHG footprint, is reported by the state.

The green product categories are defined under the TGC, Section 2155.448. The *First Choice* green product categories listed on the official green purchasing website are Motor Oil and Lubricants, Plastic Trash Bags, Plastic-covered Binders, Recycling Containers, Toilet Paper, Toilet Seat Covers, ENERGY STAR® Labeled Copiers, Business Envelopes, Copier Paper, Computer Paper, Paper Towels, and Printing Paper.

Other areas covered under green purchasing are motor vehicles (Texas Transportation Code (TCG), Section 457.201), alternative fuel usage (TCG, Section 457.204), motor vehicle emissions (TCG, Section 548.306), electronics (TGC, Section 2177.051), recycled oil (TGC, Section 2155.447), and energy-efficiency (TGC, Section 2155.442).

The state has focused on improving its green purchasing policies, even though there is no mention of a team for enforcing green purchasing. It has updated its green purchasing policies at least every two years since 2007. In the last five years, it has made the requirements for some of its green purchasing policies more stringent. For example, the Purchase and Percent of Vehicles Using Alternative Fuel Act was updated in 2005 to mandate that at least 50 percent of the fleet vehicles operated by an authority must be capable of using compressed natural gas or another alternative fuel (TTC, Section 457.201). New policies have

been added to meet the resource efficiency challenge, like the Energy Conservation Act enacted in 2007 to buy energy-efficient equipment and appliances (TGC, Section 2158. 301).

Currently, no green purchasing policy relevant to the carbon content of purchased products or services is in effect. The state has policies in place to acquire carbon dioxide, which can later be sold as a commodity. As per the Natural Resources Code (NRC), the state acquires possession of any carbon dioxide captured by a clean coal project (NRC, Section 119.002). The transfer of carbon dioxide to the state is to occur without cost, other than administrative and legal costs incurred in making the transfer (NRC, Section 119.003). The state has the right to sell the carbon dioxide for enhanced oil recovery or other beneficial use (NRC, Section 119.005).

Texas may pass carbon-related laws in the near future; this is suggested by the Rollback Relief for Pollution Control Requirements Act, which notes the possibility of future policies to control pollutants like carbon dioxide (Texas Tax Code, 26.045).

New York

New York is the third largest state economy in the U.S., with a GDP of $1.16 trillion (Bureau of Economic Analysis, 2011). If ranked separately as a country, New York would be 16th largest economy in the world (CIA Fact Book, 2012). In 2010, the state's total population was over 19 million (United States Census, 2010). According to the Office of General Services for New York State,

"At any given time the OGS has over 2,500 contracts in place with a value of over $5 billion annually." (OGSNY official website, 2012)

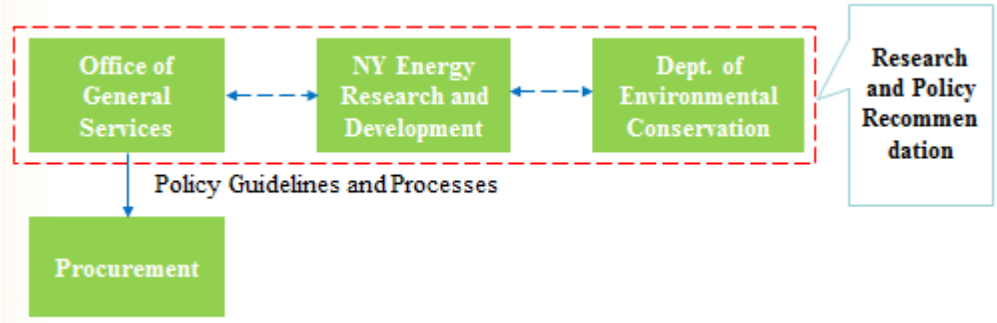

Figure 9. Green purchasing governance in New York
Source: Author

Green purchasing in New York is managed by various agencies. While procurement and purchasing activities are carried out by the Office of General Services, green purchasing policies are researched and recommended by the New York State Energy Research and Development Authority. As shown in Figure 9, the Department of Environmental Conservation also advises on policies affecting green purchasing, while the Governor's office has passed executive orders on rules and regulations that provide a policy framework for green purchasing.

The general procurement guidelines for the state are defined by Title 9 of the New York Code, Rules and Regulation (NYCRR). The policies related to purchasing procedures are defined by Subtitle G, Chapter I of Title 9 of NYCRR. Specific guidelines on procurement policies and processes, including provider selection, method of procurement, private providers, and contract terms are clearly defined by the purchasing policies of the state (New York Code, Title 9, Subtitle G, §§ 250.0. - 250.20.). Green purchasing is also articulated in Executive Order 111 (2001), which clearly defines the state's commitment to environmental

conservation through energy-efficient buildings and alternative fuel vehicles. The use of energy efficient products is mandated and clearly defined (New York Code, State Energy Law, § 9-110). Executive Order 111 (2001) goes beyond mandating energy-efficiency to provide comprehensive guidelines for green purchasing. The Green Building Guidelines guide the purchase of renewable power, alternative-fuel vehicles, and state-leased spaces.

The product categories in which purchasing is mandated by policies include Fluorescent Lamp Ballasts, Air Conditioners and Heat Pumps, Electric Motors, Water Heaters, Boilers, Washers, Dishwashers, Water-cooled and Air-cooled Chillers. In the last five years, New York State has updated its green policies at least once a year. The New York State Energy Research and Development authority (NYSERDA) has played a leading role in updating and implementing green policies. The agency tracks and monitors all relevant green policies of the state and updates them on an annual basis. The agency was also responsible for managing and implementing several programs through the stimulus funding available through the American Recovery and Reinvestment Act of 2009. The active role of the agency was recognized by the EPA in 2010 with the Energy Star Sustained Excellence Award (NYSERDA, 2012). The state funds many programs to encourage energy efficiency. The New York Energy $mart Program achieved an annual savings of 1,950 GWh of electricity by 2005 (NYSERDA, 2012).

The state tries to address the issue of greenhouse-gas emissions through several policies, a few of which relate to energy emissions. For example, in 1996 a System Benefit Charge was levied on the sale of electricity to fund energy-efficiency research in accordance with the Public Service Commission (New York PSC Opinion No. 96-12, Cases 94-E-0952 et al.). This helped the state lower carbon dioxide emissions by 1.4 million tons. The state has also adopted California's regulatory framework for transportation fuels and fleet average emissions with the goal of reducing CO2 emissions by 15 million tons by 2015, and 20 million tons by 2020 (NYSERDA, 2012). The state has a mandated target for increasing the electricity from renewable sources to 30 percent by 2030 (Institute of Energy Research, 2012). In 2011, the Department of Environmental Conservation (DEC) introduced legislature to regulate CO2 emissions from power plants in the state (Power NY Act of 2011). These regulations mandate that fossil-fuel-fired plants reduce their CO2 emissions to a specified target limit (i.e., 1450 lbs/mw-hr as output-based limit), or160 lbs/mmBtu as input-based limit).

The New York State Energy Research and Development Authority publishes a variety of reports that provide comprehensive information about various New York State green energy programs. These include New York Energy $mart Program Reports, Energy Analysis Reports, and General Reports, which include green jobs, renewable portfolio reports, home energy reports, and state building energy-efficiency reports, among others. The NYSERDA publishes annual reports Specific to green purchasing that measure the success of and

compliance with Executive Order 111. Reports are accessible to the public on the NSERDA's official website.

Florida

Florida is the fourth most populous state in the US. In 2010, Florida's GDP was $748 billion, making it the fourth largest economy within the United States. Florida's population grew by 17 percent over the last decade, to over 18.8 million in 2010 (U.S. Census, 2010). The Department of Management Services (DMS) oversees purchasing for the state, and manages over $1 billion in state contracts and agreements.

Florida's green purchasing practices are not overseen by a single entity. As shown in Figure 10, the Purchasing Division within the Department of Management Services oversees all purchasing-related actions. Various departments and task forces, such as Department of Environmental Protection, Florida Action Team, and the Office of Energy within the Department of Agriculture and Consumer Services, are responsible for research and policy recommendations. Many agencies are responsible for implementing the green purchasing laws as they pertain to them individually; however, a centralized department has not been created to track and monitor green purchasing practices. Various green and energy policies are implemented, managed, and monitored by the Office of Energy within the Department of Agriculture and Consumer Services, and by the Department of Environmental Protection.

Florida's green purchasing policies are primarily guided by the statute of Climate Friendly Business (Florida Statues, Title XIX, §§ 286.29, 2008). The scope of the statute includes mandating use of climate-friendly products, "Green Lodging" destinations for meetings and conferences, vehicle fuel-efficiency standards and maintenance during state vehicle purchase and leasing, and use of ethanol and biodiesel blended fuels for transportation (Florida Statues, Title XIX, §§ 286.29, 2010). Purchasing of recycled paper for printing is mandated (Florida Statues, Title XIX, §§ 283.32, 2007), and the state agencies are mandated to prefer products with the maximum recycled content. The policy is subject to the availability of the product within a reasonable time period (Florida statues, Title XVIII, §§ 403.7065).

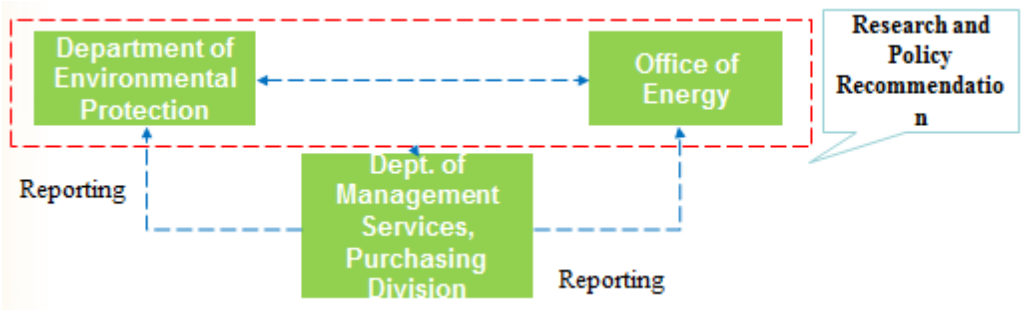

Figure 10. Green purchasing governance for Florida.

The use of energy-efficient materials and design is mandated for state-owned buildings. (Florida Statues, Title XVIII, §§ 255.255, 2008).

The Florida legislature updates green policies on a frequent basis. Governor Charlie Crist has been instrumental in implementing a number of these policies through his executive orders in 2008. Since then, these policies have

become more stringent or have been updated to include more products. For example, the original recycled-product purchase statute (Florida Statues, Title XIX, §§ 287.045, 2002) was later expanded to include printing paper (Florida Statues, Title XIX, §§ 283.32).

Although Florida doesn't have an existing policy to cap carbon emissions, House Bill 7135 (2008) authorizes the Florida Department of Environmental Protection to create a cap-and-trade program and seek its approval from the legislature. HB7135 (2008) has also led to the creation of a climate-change task force: the Florida Action Team was established to research and provide policy recommendations on achieving statewide GHG reductions. The task force submitted its recommendations on October 15th 2008, but the status of the recommendations remains unknown and they have not yet been adopted. HB7135 (2008) also includes additional measures to reduce CO2 emissions and encourage environmentally friendly policies.

Florida mandates energy efficiency through appliance-efficiency standards. State policies mandate that the Florida Public Service Commission adopt interconnection rules for renewable energy systems and establish a statewide Renewable Portfolio Standards (RPS) (Florida Official HB7135, 2008).

In 2009, the state's Public Service Commission submitted its proposal to establish an RPS with stated goals of 12 percent of power sourced from renewable energy by 2016, 18 percent by 2019, and 20 percent by the end of 2020 (Florida Official HB7135, 2008). However, this proposal has not yet been approved by the

state legislature.

Florida does not track or monitor its green purchasing initiatives. The Florida Department of Environmental Protection publishes reports in many areas of environmental concern. Some of these reports provide metrics for specific programs initiated by the state government to increase green purchasing. For example, a report on recycling efforts briefly mentions government efforts to increase recycling in state-owned buildings. In addition, the EPA published a GHG inventory for Florida in October 2008 as part of the activities of the Governor's task force on climate change.

Illinois

Illinois is the fifth most populous state in the country with a GDP of $581 billion (Bureau of Economic Analysis, 2012). At the end of 2010, Illinois had a total population of over 12 million people (U.S. Census, 2010). As per the official state website, the Illinois Department of Centralized Management Services oversees the procurement of over $15 billion of goods and services every year.

Green purchasing in Illinois is overseen by several departments, with the Green Governments Coordinating Council (GGCC) the primary government body responsible (Executive Order 2, 2005). The Department of Centralized Management Services is the single entity that manages contracts, vendor negotiations, and vendor relationships. The Green Governments Coordinate Council, the Climate Change Advisory Group, and the Illinois EPA are responsible for green research for establishing policies and strategy frameworks

for green purchasing. The GGCC is primarily responsible for managing and reporting on all government green initiatives, including purchasing and managing a list of green contractors. The GGCC also provides annual awards to recognize performance by state agencies on green initiatives. As shown in Figure 11, the GGCC provides oversight to ensure that green purchasing policies are implemented. It ensures that services and products are delivered in an environmentally friendly manner. In coordination with other environmental agencies, it advises on policy recommendations and helps implement policies. The GGCC is also responsible for tracking and monitoring the progress of green purchasing practices.

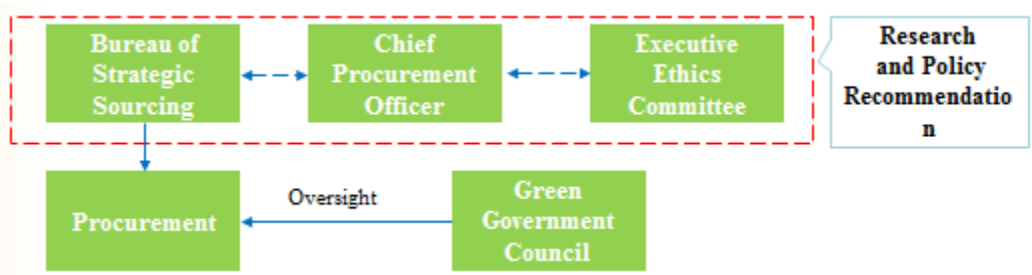

Figure 11. Green purchasing governance for Illinois.

The GGCC has been publishing annual reports since 2005 to document the progress and impact of various green initiatives within state agencies. Annual reports include sections on purchasing, transportation, office operations, facilities management, construction, and education and outreach. The GGCC uses several metrics for purchasing, such as the percentage of recycled paper purchased for office printers, the number of alternative-fueled vehicles acquired, and the

percentage of cleaning materials that are certified green (e.g., have the "Green Seal" label).

The green purchasing practices of the GCGCC are governed by procurement legislation initially signed by Governor Blagojevich in 2007 (i.e., PA 95-0084, PA 95-0104, PA 95-0115, PA 96-0073-77, PA 96-0074, PA 96-0075, PA 96-0077, PA 96-0197, PA 96-0281, PA 96-0393, PA 96-0579, and PA 96-0959). These policies mandate that list of green products include the following product categories: cleaning solutions, energy star lighting, detergents, biodiesel blends, locally grown food and vehicles. The GCCC also manages many green initiatives, including green information technology, recycling, promoting teleconferencing, facilities management, and fleet change (Illinois Government, official website).

Illinois has been a leader in creating policies to enforce energy efficiency. The state has well-defined goals to support alternative fuel. State policies encourage the use of ethanol in state fleets, and give preference to vendors who can fulfill contracts by using vehicles fueled by bio-diesel alternative fuel (Executive Order 11, 2001).

The Illinois legislature, in association with the GCCC and the state's EPA, frequently updates its environmental policies. Several new policies were adopted in 2011, including the modifications to vehicle emission standards (35 IAC 276). Several proposed rules are currently under review, including 35 IAC 275, which provides a regulatory framework for alternative fuels. The policies that support alternative fuels result in reduction of carbon emissions.

Though currently Illinois lacks specific policies to reduce carbon emissions, it is expected to have such policies in the near future. In 2006, Governor Blagojevich created the Illinois Climate Change Advisory Group to consider a full range of policies and strategies to reduce GHG emissions in the state. The group represented a broad range of stakeholders. In September 2007, the group recommended a set of policy proposals in the areas of power, transportation, cap and trade, and commercial, industrial and agriculture. These policies were not adopted, but non-binding targets were set to reduce GHG emissions to 1990 levels by 2020, and to 60 percent below 1990 levels by 2050.

Illinois is part of the Midwestern Greenhouse Gas Accord, a regional agreement among the governors of six states in the Midwest to combat climate change by reducing GHG emissions in their states. An agency was created to provide recommendations on reducing GHG emissions. The agency submitted its final report in 2009, but its recommendations were not adopted.

Illinois has mandated an increase in the proportion of electricity purchased by state agencies from renewable sources to 15 percent by 2020. It has been moderately active in legislating green purchasing policies for the state government. In the last five years, it has updated its green purchasing policies at least once a year.

Trends

Assessing the purchasing practices of the five states reveals the most commonly adopted policies. Energy-efficiency and buying products with recycled content are the most common policies, and have been adopted by all five states. The states support use of alternative fuel and buying energy-efficient vehicles. Greening buildings have been an important extension of the energy-efficiency policy objective of the states.

The main driver for the energy-efficiency and waste-elimination goals of the states could be to achieve economic efficiencies, but all the states show a clear interest in improving their green purchasing practices. The above assessment is expected to help state governments to enhance their current purchasing practices.

Chapter 5

DISCUSSION AND CONCLUSIONS

State purchasing decisions are complex, time sensitive, governed by multiple policies, and open to public scrutiny (Thai, 2001). Purchasing decisions can fulfill both public demands (e.g., protecting the environment) (Min & Galle, 1997) and state social goals (e.g., supporting small businesses) (Thai, 2001). At the same time, they must work within state budgetary constraints (Brammer & Walker, 2008). Thus, state purchasing policies must evolve together with the dynamic socio-economic construct within which they function.

Common Themes

States enjoy the luxury of experimenting with new policies (Larson, 2008) and can reduce the risks of adopting a new policy by adopting one that has already been implemented in another state. The conceptual framework presented in this thesis identifies a number of green purchasing themes that are shared among to the five states studied. Resource efficiency and waste elimination are the main drivers for green purchasing in all five states. Mandating the use of recycled content for product categories like paper (copier paper, toilet supplies) improves resource efficiency and eliminates waste. Energy efficiency is, by far, the policy area most utilized to achieve resource efficiency. All five states mandate exclusive purchase of eco-labeled appliances and electronics. All also

mandate energy-efficient strategies for buildings. California, New York, and Illinois use Leadership in Energy and Environmental Design (LEED) standards for energy-efficient government buildings.

The goal of energy efficiency goes hand-in-hand with states' support for renewable energy. All five states have established renewable portfolio standards, requiring that between 4 and 30 percent of electricity be generated from renewable sources. The focus on renewable energy has encouraged policies like Illinois's House Bill 6202 (2010), which requires utilities to produce 0.5 percent of the energy they sell from solar sources by June 1, 2012. Renewable policies are viewed by many policymakers (former governor Arnold Schwarzenegger, Rep. William Burns) as steps towards mitigating climate change.

Policies like California's AB32 (Global Warming Solutions Act of 2006) cater to growing public concern about climate change (Min & Galle, 1997). California, New York, Florida, and Illinois have comprehensive Climate Action Plans (C2ES, 2011), but only the first three have policies (C2ES, 2011) that tackle the problem of climate change directly. Policies to mitigate climate change target the carbon footprints of government operations; one example is California's low-carbon fuel standard. All five states encourage alternative-fuel use and require a certain percentage of government vehicles to run on alternative fuel.

A desire to reduce hazardous chemicals in the environment has inspired California and Illinois to mandate the use of green cleaning supplies. In the other three states, though green cleaning supplies are not mandated, they are preferred

over their counterparts, with specific constraints. California and New York have mandated purchase of non-PVC carpets, which comprise another big green product category. The governments of all five states are intent on adding more products to the mandated list of green purchases.

The analysis of the green purchasing practices show that resource efficiency and waste elimination are the main drivers for green purchasing in all of the states in the study. These results correlate with the results from the Responsible Purchasing Network Report (2009), shown in Figure 12. Energy conservation and recycled content have been identified as the most important issues for purchasing managers (Responsible Purchasing Network Report, 2009). Mandating the use of recycled content for product categories like paper (copier paper, toilet supplies) helps achieve resource efficiency and eliminates waste. Energy efficiency is by far the most utilized policy area to achieve resource efficiency. All five states mandate exclusive purchase of eco-labeled appliances and electronics. Energy-efficient strategies for buildings are also mandated in all five states. California, New York, and Illinois use Leadership in Energy and Environmental Design (LEED) standards for energy-efficient government buildings.

Importance of Social & Environmental Issues in Purchasing Decisions

Issue	% Saying Important or Very Important	% Saying Very Important
Energy conservation	93%	64%
Recycled content	91%	54%
Recyclability	88%	45%
Human health	87%	47%
Toxics	83%	41%
Greenhouse gas	80%	45%
Water pollution	78%	34%
Sustainability	78%	38%
Air pollution	78%	29%
Water conservation	78%	29%
Reduced packaging	77%	30%
Reusability	72%	26%
Indoor air quality	71%	26%
Climate change	71%	39%
Bio-based alternatives	71%	23%
Volatile organic compounds	71%	27%
Biodegradable/compostable	71%	26%
Remanufactured	68%	22%
Sustainable forestry	64%	18%
Wildlife habitat	61%	21%
Ozone layer protection	57%	21%
Impact on marine environment	57%	19%
Biodiversity	56%	14%
Ancient forests preservation	54%	12%
Locally owned supplier	52%	20%

Figure 12. The top issues considered by the purchasing managers. Source: Responsible Purchasing Network, 2009

All the states update their green purchasing policies fairly frequently, either to add to the number of green product categories or to make purchasing policies more stringent.

Key Finding: Governance and Transparency

While some (McCrudden, 2004) argue that the goals of green purchasing are best realized when the green purchasing department is part of a state's

procurement function, others (Reid & Meidzink, 2008; Public Governance Committee, 2007) prefer a dedicated set of resources to ensure effective execution of green purchasing operations. California, New York, and Illinois have dedicated teams to oversee state green purchasing; Florida and Texas do not. Even so, Texas mandates that expenditure for green purchases be tracked and reported. This information is publicly accessible online.

None of the states report data about carbon footprint or greenhouse gas emissions specific to the state's green purchases, though data on GHG emissions at the state level is available online on the U.S. EPA website.

All the states have information online on contracts, suppliers, green product categories, and procurement guidelines. California and Illinois have online guidelines for suppliers of green products. Contact information for filing complaints is available online in all states, but no state offers online filing of complaints about procurement decisions or breaches of state policy.

Key Finding: Green vs. Affordable

Like any sustainability problem, the implementation of green purchasing practices involves trade-offs among the domains of economy, society, and environment (Gibson, 2001). State governments have to meet the public demand for green products *and* ensure that taxpayers' money is used efficiently. Sometimes green products are more expensive than their counterparts. In such cases, state governments have to choose between buying an expensive but

environmentally friendly product and buying a cheaper but environmentally unfriendly product.

Value for money is an important aspect of public procurement (Arrowsmith & Hartley, 2002) because state budgets are limited. Even when the public demands that a state government buy green products, citizens are not always ready to pay more taxes to support government purchase of such products. This is a typical trade-off between environmental and economic values.

The Ten-Percent Ceiling

Handling the trade-off between environmental impacts and economic constraints is just one of the complexities that state procurement departments face. In Texas, the state government has set a ten-percent limit on the extra outlay that can be made to purchase green products. As per section 2155.455 of the Texas Government Code, which sets rules and procedures for state purchasing, recycled, remanufactured, or environmentally sensitive products will be preferred only if the average price of the product is "not more than 10 percent greater than the price of comparable non-recycled products" (TGC, Title 10, Subtitle D, Section 2155.455).

A similar ten-percent ceiling has been imposed by the New York State Judiciary Code of 2006. Under Section 40-a, it specifies that "all products purchased by the courts shall be recycled . . . unless the cost of the recycled product [exceeds] a cost premium of 10 percent above the cost of comparable product."

Real Cost of a Product

The cost of a product or service is an important factor in purchasing decisions. Some governments (e.g., California) have begun to use the total cost of ownership (TCO) as a basis for purchasing decisions. TCO includes the one-time purchase cost, maintenance costs, license renewal costs, and disposal costs. TCO is a more comprehensive concept of cost than is purchase price; using it enables state governments to evaluate both immediate and longer-term product costs, including the cost of environmental impacts. Using TCO to evaluate purchasing options can reveal that buying an apparently expensive green product might, in the long run, be less costly than buying a conventional product. By using the TCO concept to evaluate product costs, state governments can resolve some of the trade-offs that arise when deciding whether to purchase green or conventional products.

Key Finding: Appetite for Green Policies

All five states in this study have tried to implement policies relevant to green purchasing, some with great success (e.g., California) and some with repeated failure (e.g., Illinois). In Illinois, policy recommendations from the Illinois Climate Change Advisory Group in 2007 did not result in formal state policies to mitigate climate change, but did inspire the creation of non-binding targets for CO2 level reductions. A second effort to create a state-wide GHG policy in 2009 was also unsuccessful, and Illinois still has no formal GHG policy. Why have GHG- and CO2-reduction policies become law in California but not in

Illinois? Perhaps it has something to do with the political landscapes of the two states. In the case of green purchasing policies, while lawmakers' appetite for change may be sufficient to mandate green purchasing, that appetite alone may not be enough. Green purchasing needs to fit in with the economic, social, and environmental goals of both state lawmakers and those individuals and groups who influence public decisions if it is to become policy. As sustainability predicts, stakeholders have to be behind changes if they are to become policy.

Texas vs. California

California has been a pioneer in creating and implementing green purchasing policies, and has much more stringent environmental-protection laws than Texas. California's focus on green purchasing is just one of the policy areas affected by its climate change bill (AB32), which demonstrates the state's commitment to reduce its environmental footprint. Though climate change is a global issue, California tries to do its fair share of mitigation by taking responsibility for reducing the state's overall impact on the environment. Turning environmental commitment into policy cannot happen without the support of citizens.

Public support for green purchasing policies does not exist in Texas to the extent that it does in California. Oil has been a cornerstone of Texas's economy. The oil industry has provided jobs to a sizeable portion of the state's working population, and it makes a sizeable tax contribution to state coffers. The oil

industry, with its attendant negative effects on the environment, has historically been accepted by Texans as crucial to the state's economy. A policy like California's Low Carbon Fuel Standard, which aims to protect the environment by reducing the use of fossil fuels, is unlikely to have strong support in a state where the petroleum industry contributes such a large portion of GDP as it does in Texas.

The purchasing polices of a state should, in theory, reflect the priorities of the citizens who elect state lawmakers. Those priorities are shaped by local factors that may be as or more influential than current national or global trends. When we evaluate the appetite of policymakers and citizens for green purchasing, we need to consider not only current, large-scale trends, but also local conditions and history.

Benefits and Limitations of the Research

The findings discussed above resulted from applying the conceptual framework to assess the current status of green purchasing in the five states. The framework can be used by public procurement officials who are "insiders" in state green purchasing processes or by citizens or researchers who are "outsiders." The framework can supply procurement officials and policymakers with a citizen's perspective on state green purchasing practices; this perspective is important because green purchasing policies have historically been a result of public demand (Min & Galle, 1997).

This research can be used to support adoption of new policies. If a policymaker is aware of potential public demand in a policy area, understanding

the as-is state of practice can support the policymaker's rationale for change. Knowing the as-is state can also help policymakers strategize for the adoption of multiple policies. Though such strategy is influenced by many factors (including potential changes in public perception as a result of policy implementation), this research can contribute to it by highlighting the policy areas that have been important in the five most populous states.

The research results provide insight into the green purchasing practices of only those states studied. Trends identified in those states cannot be generalized to all the states in the U.S. The common themes observed in the states studied do not necessarily represent themes in other states or at national or international levels.

The research results represent a citizen's perspective; all the information used to analyze state purchasing practices was collected online. Analysis was done with only that information that the states make available online. The states may have policies relevant to green purchasing under review but with no information online; such policies were not covered in this research.

Future Research

The conceptual framework developed for this research provides a new way to assess current state-level green purchasing practices, but because the framework was applied only to the five most populous states, it is impossible to extrapolate results for the whole country. A logical next step would be to apply the framework to assess the green purchasing practices of more states, and eventually, of all 50. Doing so would identify the most commonly adopted policies

nationwide. It would also make it possible to compare states comprehensively, and to identify state-of-the-art practices for green purchasing in the U.S. Such comparison could facilitate the adoption of green purchasing policies by states.

In its current form, the conceptual framework provides an analytical structure within which to conduct research on the adoption of green purchasing. It does not assess the maturity of public green purchasing processes. The framework could be enhanced to incorporate the concept of maturity as defined in the Software Engineering Institute's Capability Maturity Model. Including the concept of maturity would make the framework more useful for improving green purchasing processes. The concept of maturity could then be generalized to find linkages between mature processes and the cost of implementing green purchasing practices. The idea of extending the meaning of maturity is similar to research that has been done to "determine the impact of maturity on project performance" (Dooley et al., 2001). Expanding the framework to include the concept of maturity would also make it more useful to private-sector organizations, and support their sustainable development by informing their purchasing decisions.

The conceptual framework focuses only on the environmental impacts of state purchasing. To comprehensively incorporate sustainability, the framework should be extended to include its social and economic dimensions (Gibson, 2001). A set of three stand-alone frameworks, each focused on one of the three dimensions of sustainability, might provide an initial tool to encourage sustainable

purchasing. But to thoroughly explore the options for sustainable purchasing, the relationships and interplay *among* the three dimensions would also have to be considered.

The ultimate aim of this research is to help achieve sustainability by informing purchasing decisions. The framework presented here is a single step towards making public purchasing decisions more environmentally friendly; additional research can move us further along the path.

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APPENDIX A

LINKS TO WEBSITES REFERENCED

California green purchasing

http://www.dgs.ca.gov/Default.aspx?alias=www.dgs.ca.gov/buyinggreen

Texas state procurement.

www.window.state.tx.us/procurement

Office of General Services, New York:

http://www.ogs.ny.gov/BU/PC/BizInfo.asp

Sample report by New York State Energy Research Authority (NYSERA):

http://www.nyserda.ny.gov/~/media/Files/EERP/Commercial/Sector/Municipalities/exec-order111-complete-rpt2009.ashx?sc_database=web

NYSERA Report on GHG targets: http://www.nyserda.ny.gov/Page-Sections/Environmental-Research/EMEP/Research/Climate-Change/New-York-State/What-is-Being-Done-in-New-York-State.aspx

Targets for reaching a certain percentage of renewable sources by Institute of Energy Research: http://www.instituteforenergyresearch.org/states/new-york/#_edn2

Illinois Government, official website:

http://www2.illinois.gov/green/Documents/Illinois%20LegislationProcurement.pdf]

Illinois law to increase electricity from renewable resources:

http://www.epa.gov/statelocalclimate/state/tracking/individual/il.html#a04-a

Illinois law on cleaning supplies:

http://www2.illinois.gov/green/Documents/FINAL%20Report%20Master.pdf].

Amount of goods and services purchased by Illinois:

http://www2.illinois.gov/cms/business/procurement/Pages/default.aspx

Department of Management Services, Florida State Government:

http://www.dms.myflorida.com/business_operations/state_purchasing

APPENDIX B

PERSONAL COMMUNICATION WITH DIRECTOR, TEXAS PROCUREMENT AND SUPPORT SERVICES TEXAS COMPTROLLER OF PUBLIC ACCOUNTS

Lucky Sharma LUCKY.SHARMA@asu.edu via gmail.com Mar 31

to ron.pigott

Hi Ron,

I am working on a thesis for assessing the current purchasing practices of the U.S. states. Please let me know the total expenditure on vendors for 2011. The tool on the procurement website for finding the information, does not work properly. I have the number for TXdot, but I am interested in the dollar spending at the state-level on all contractual purchases.

Best,
Lucky

Lucky Sharma

Ron Pigott Ron.Pigott@cpa.state.tx.us via asu.edu Apr 2 (12 days ago)

to Lucky

The total state spend in fiscal year 2011 on contracted goods and services was $14,075,376,019.

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