

## **ABSTRACT**

BRUN, LUKAS CHRISTOPH. The Dual-purpose of Public Procurement Policy: How U.S. Municipalities Are Using Government Purchasing to Achieve Economic, Social, and Environmental Goals. (Under the direction of Dr. Branda Nowell).

Governments use purchasing to achieve a variety of goals beyond the receipt of goods or services at a specified time, price, and quality. The goals provide for an additional public benefit to be derived from the procurement activities of governments, including increased innovation, economic development, social equity, and environmental sustainability. The purpose of this project is to better understand the extent to which local U.S. governments use procurement to achieve economic, social, and environmental goals with their purchasing, a concept defined as “dual-purpose” procurement policies. The specific research questions investigated in this project are “what policy goals do U.S. municipalities seek to achieve with their procurements?”, “how prevalent are procurement policies seeking to achieve ‘dual-purpose’ policy goals among U.S. municipalities?”, and “what factors explain the adoption of dual-purpose procurement policy goals among U.S. municipalities?”

The project uses the political market model (Lubell, Feiock, & Ramirez, 2005) to understand the adoption by U.S. municipalities of public procurement policies achieving economic, social, and environmental goals. The fundamental assumption of the theoretical model is that governments adopt policies suitable to their political economies, which are dependent on supply and demand conditions. Supply conditions associated with policy adoption are the managerial, technical, and fiscal capacity of the organization and the legal environment of the state; demand conditions associated with policy adoption are demographic, political, and regional variables. An original national survey of U.S. municipalities is used to determine the level of adoption of dual-purpose procurement policies among cities and towns in the United

States with populations greater than 50,000. Poisson regression analysis is used to determine how well a political market perspective explains the adoption of dual-purpose procurement policies by U.S. municipalities. The regression results demonstrate that a political market model helps explain factors associated with dual-purpose procurement policy adoption, particularly the social and environmental dimensions.

The significance of the project is to demonstrate that roughly a third of municipalities in the United States are using procurement to achieve policy goals other than simply lowest cost acquisition of goods and services needed for their organizations. On a scholarly level, the significance of the project is to help close the theoretical and empirical gaps between the local government sustainability and procurement literatures. The local government sustainability literature has developed theoretical and empirical models used to explain the adoption of sustainability policy, yet has not recognized that public procurement can be used to achieve the economic, social and environmental outcomes it seeks. Meanwhile, the procurement literature is increasingly concerned that its traditional focus on relevance to practitioners has resulted in evidence absent of theory (Flynn & Davis, 2014) and in empirical modeling that has largely ignored the development of theoretically relevant insights. By illuminating the gaps in both literatures, theory and multivariate analysis are demonstrated to be relevant for the procurement literature to advance theory and develop empirical insights to advance both scholarly understanding and procurement practice.

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The Dual-Purpose of Public Procurement Policy: How U.S. Municipalities Are Using  
Government Purchasing To Achieve Economic, Social, and Environmental Goals

by  
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## **BIOGRAPHY**

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## CHAPTER 1: INTRODUCTION

Public procurement represents 10% of U.S. GDP (\$1.6 trillion), of which 64% (~\$1 trillion) was used by state and local governments (OECD, 2015), and approximately 15-20% of local government budgets are related to government purchases of goods and services (Yarkin, 2010). As large purchasers, governments establish public policy goals for procurement to achieve goals beyond the receipt of a good or service at a specified time, price, and quality.<sup>1</sup> The goals provide for additional public benefit to be derived from the procurement activities of governments, such as increasing innovation, economic development, workforce development, or improved environmental sustainability. To provide a specific example of this dual role of procurement policy, the U.S. has long recognized and established legislation supporting the use of Department of Defense procurements to develop technology (Weiss, 2014a, 2014b) and to assist with the development of small businesses (Hardin, Lanahan, & Brun, 2015).

Although significant attention has been given to the role of national-level procurement policy to stimulate innovation and technological development for the U.S. (Block & Keller, 2011) and other countries (Lember, Kattel, & Kalvet, 2014), the academic literature has largely omitted the examination of how local governments use procurement policy to achieve economic development, social inclusion, and environmental sustainability goals for their jurisdictions. The purpose of this project is to better understand how local U.S. governments achieve multiple policy goals through their procurement power. These goals are variously called in the literature as “ancillary”, “indirect”, or “collateral” effects of procurement because they are secondary to the receipt of a good or service at a specific price, quantity or quality. This project uses the term

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<sup>1</sup> OECD (2017, pp. 174-175) lists the initiatives in place among OECD member countries at the national level to support “secondary policy objectives” with public procurement.

“dual-purpose” to underscore that some governments use procurement intentionally to achieve multiple goals beyond the simple purchase of goods and services required for operations. The specific research questions investigated in this project are “what dual-purpose policy goals do U.S. municipalities seek to achieve with their procurements?”, “how prevalent are dual-purpose procurement policies among U.S. municipalities?”, and “what factors explain the adoption of dual-purpose procurement policies among U.S. municipalities?” The project is organized to answer these three research questions. The next section (Section 2) discusses the relevant theoretical and empirical literatures used to ground the research. Section 3 provides the theoretical framework and hypotheses. Section 4 details the data and methods used to answer the research questions of this project. Section 5 reports the results and Section 6 provides a discussion of the results, their implications, and proposed next steps in the research. Section 7 concludes.

## CHAPTER 2: LITERATURE REVIEW

This section provides a “systematic” literature review of relevant international and domestic scholarship related to what can be termed “dual-purpose” procurement policies; that is using government procurement to achieve economic, social, and environmental goals. The introduction defines what a systematic literature review is, how it differs from a traditional literature review, and the research questions answered by conducting the literature review. The next sections describe the process used to find articles related to the dual-purpose procurement policy research domain, the findings from the database search, and a detailed, critical review of the domestic (U.S.) literature on the topic. The conclusion provides a summary of findings and how they are related to the theoretical and empirical goals of this project.

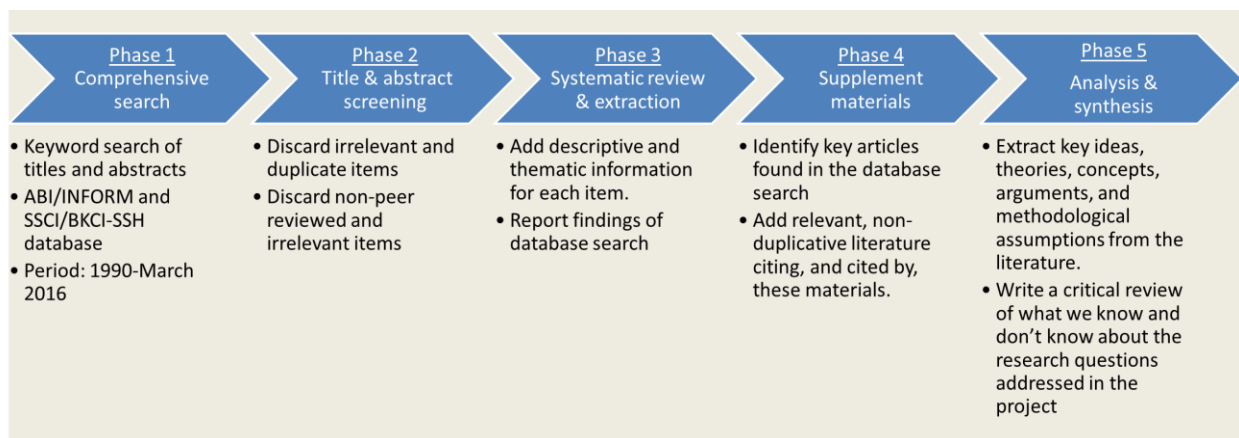
### 2.1 Introduction

A systematic literature review uses academic databases to conduct a comprehensive search for articles and books relevant to a topic. The goal of a systematic literature review is to reduce the bias of the literature reviewed by the author and to promote replicability and reliability (Denyer & Tranfield, 2009). One definition of a systematic literature review is “a review of the evidence on a clearly formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant primary research, and to extract and analyze data from the studies that are included in the review” (Khan et al., 2001, p. iv). This project uses the systematic literature review methodology to help answer the following three questions:

1. What is known about the multiple purposes (i.e., categories) that procurement policy seeks to achieve, and what is known about its prevalence at the U.S. national and subnational levels?

2. What explanatory factors are provided in the literature to explain the emergence and adoption of using procurement policy to achieve multiple policy goals?
3. What critiques exist in the literature for using procurement policy to achieve multiple policy goals?

The methodology used for this literature review follows the procedure developed by Denyer and Tranfield (2009), as modified by Zorzini, Hendry, Huq, and Stevenson (2015). As illustrated in Figure 1, the procedure consists of five stages: 1) a comprehensive keyword search of academic database(s), 2) title and abstract screening to eliminate irrelevant and duplicate items, 3) a systematic review of articles and books to screen for items not meeting quality (e.g., academic peer-review) or relevance standards, 4) supplementing materials identified through the mechanical process with materials cited in articles surviving stage three, and 5) writing a critical review of the materials relevant to answering the project’s research question. A critical literature review is “a reviewer’s critical account designed to convince a particular audience about what published (and possibly also unpublished) theory, research, practice or policy texts indicate what is and is not known about one or more questions framed by the reviewer” (Poulson & Wallace, 2004, p. 24).



Source: Author, adapted from Denyer and Tranfield (2009); Zorzini et al. (2015).

**Figure 1: The steps of a systematic literature review**

The remainder of this literature review is organized into two main sections. The first section reports the procedures and results of phases 1-4, referred to in Figure 1 above, encompassing the comprehensive search and systematic review of published academic materials related to “dual-use” procurement policies. The second section uses the academic materials garnered from the databases to help answer the current state of the literature with regard to the three research questions stated above, and to create a critical review of the dual-use procurement policy research domain.

## **2.2 Systematic literature review methods**

The first phase of the systematic literature review consisted of conducting a comprehensive search of articles related to public sector procurement and dual-purpose policy goals. To derive appropriate search strings and keywords with which to query academic article databases, key terms in two types of articles were collected. The first is related to the use of public procurement to enhance innovation, the so-called “public procurement for innovation” (PPI) literature, which is the set of scholarship examining how the U.S., in particular, and other countries use public spending as part of their national and regional “innovation systems” for technological development [on national systems, see Lundvall (1992a); R. R. Nelson (1993); on regional systems, see Cooke, Uranga, and Etxebarria (1997)]. The second is related to the use of public procurement to achieve sustainable development objectives, which the literature refers to as “sustainable procurement” (SP). Specifically, “sustainable procurement is a purchasing and investment process that takes into account the economic, environmental and social impacts of the entity’s spending” (DEFRA, 2006). The search for literature related to PPI indicated that key words used in this literature included “innovation-oriented (or friendly) public procurement”, “strategic, innovative, or developmental public procurement”, and “public technology

procurement”. The search for literature related to SP revealed the use of multiple terms within the literature, specifically, green public procurement (GPP), responsible supply chain management (RSCM), green supply chain management (GSCM), green government procurement/government green procurement (GGP), socially responsible sourcing (SRS), and sustainable supply chain management (SSCM).

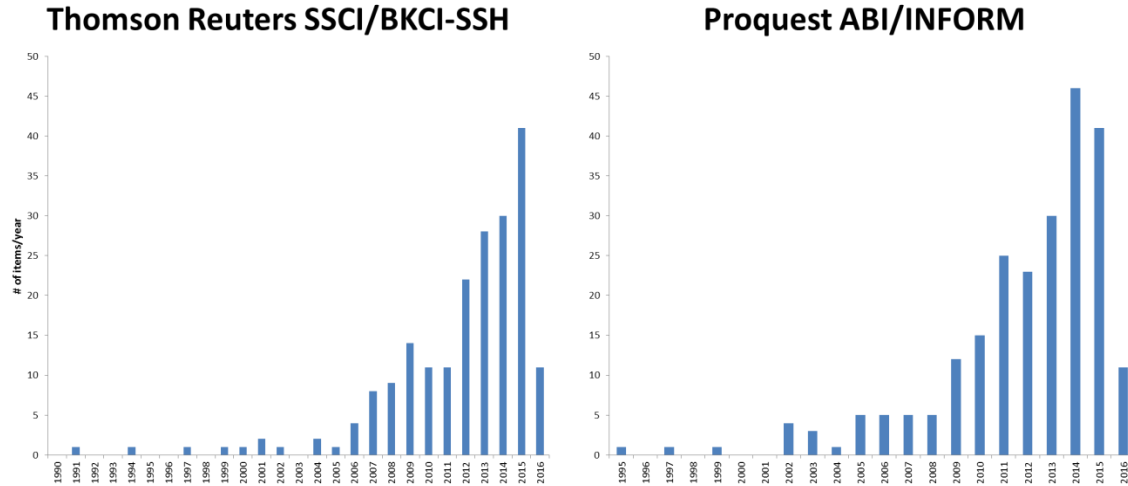
**Table 1: Database search terms**

Public Procurement for Innovation (PPI)	“innovation-oriented public procurement”, “public procurement for innovation”, “public procurement of innovation”, “innovation-friendly public procurement”, “innovative public procurement”, “developmental public procurement”, “public technology procurement”, “far-sighted procurement”, “strategic public procurement”, and “enlightened public procurement”
Sustainable Procurement (SP)	“green public procurement” (GPP), “responsible supply chain management” (RSCM), “green supply chain management” (GSCM), “green government procurement/government green procurement” (GGP), “socially responsible sourcing” (SRS), and “sustainable supply chain management” (SSCM)

Note: searches for GSCM, SRS, and SSCM included the Boolean search term “‘public’ OR ‘government’” to specify the set of articles addressing government procurement.

Source: Author

Using the collection of terms listed in Table 1, two academic journal databases were then searched, ProQuest’s ABI/INFORM Complete and Thomson Reuters Social Sciences Citation Index (SSCI), which included the Book Citation Index– Social Sciences & Humanities (BKCI-SSH). Two databases were used to conduct the search so that results could be compared and to avoid a perceived limitation of the ABI/INFORM database as being primarily a business and finance-related database (Kabashi). The search resulted in 200 unique articles and books for the SSCI/BKCI-SSH published between 1990 and 2016, and 234 articles from the ABI/INFORM database published between 1995 and 2016. The search was limited to peer-reviewed academic journal articles and books published between 1990 and February 2016. The search indicated a growing interest in the topic, with the majority of publications since 2009. A comparison of returned results by the two databases is reported in Figure 2.



Note: 2016 is through February 2016 only.

Source: Author, from a keyword search of ThomsonReuters Social Sciences Citation Index (SSCI) and Book Citation Index– Social Sciences & Humanities (BKCI-SSH) and ABI/INFORM databases

**Figure 2: Keyword search results, by academic database**

In phase two, duplicative items were deleted, resulting in 407 unique documents. The 27 duplicative sets of documents (54/434, ~12%) are surprisingly low, considering that the databases both purport to cover peer-reviewed academic literature. The low level of duplication between the two databases supports the need to search both databases in a systematic literature review to capture a reasonable set of articles on a topic.

In phase three, article abstracts were read and irrelevant items were discarded, resulting in 171 documents in the database. Items were considered irrelevant if they were not related to public sector procurement, public procurement for innovation, sustainable procurement, or in peer-reviewed publications. Of the two databases, SSCI resulted in better search results, with 60% of articles originating from the SSCI database although ABI/INFORM returned more articles in the initial search. Articles were then coded by category (PPI or SP), geography (UK, EU, US, etc.), government level (local, state/province, national, multinational) and sector (e.g., healthcare, building and construction).

The articles appeared in 95 unique journals and book titles, with the *Journal of Public Procurement* leading with 14 articles published on procurement for innovation or sustainable procurement topics from 1995-February 2016. Other journals with five or more articles published on these topics were *Innovation*, *Journal of Cleaner Production*, *Research Policy*, and the *Journal of Purchasing and Supply Management*. As summarized in Table 2, the journals span a number of disciplines and fields, including public policy, urban and regional planning, environmental science, public administration, and law.

**Table 2: Journals with three or more relevant articles, 1990- February 2016**

<b>Journal Name</b>	<b>1990-2001</b>	<b>2002-2008</b>	<b>2009-Feb 2016</b>	<b>Total</b>
Journal of Public Procurement	0	2	12	14
Innovation-The European Journal of Social Science Research	0	0	10	10
Journal of Cleaner Production	0	2	7	9
Research Policy	0	1	6	7
Journal of Purchasing and Supply Management	0	0	5	5
International Journal of Operations & Production Management	0	1	3	4
The International Journal of Public Sector Management	0	0	4	4
Natural Resources Forum	0	2	2	4
Supply Chain Management	0	0	3	3
Technovation	0	0	3	3
Technological Forecasting and Social Change	0	0	3	3
Public Money & Management	0	0	3	3
Ecological Economics	0	1	2	3
Common Market Law Review	0	0	3	3

Source: Author, extracted from journals database

Public Administration journals publishing articles on the topics include the *Journal of Public Procurement*, *International Journal of Public Sector Management*, the *International Journal of Public Administration*, and *Public Administration Review*. Table 3 lists Public Administration journals with at least one article published on relevant topics since 1990.

**Table 3: Public Administration journals with relevant publications**

<b>Journal Name</b>	<b># of articles</b>
Journal of Public Procurement	14
The International Journal of Public Sector Management	4
Public Money & Management	3
Public Administration Research	1
International Journal of Public Administration	1
Public Finance Review	1
Public Administration	1
Public Administration Review	1

Source: Author, extracted from journals database

As illustrated in Table 4, the geography under examination spanned both developed and developing countries and regions, but European countries and the U.S. were examined the most. The UK led with the most number of articles (29) written on public procurement for innovation and sustainable development topics, while other European countries, notably Nordic countries (Denmark, Sweden, and Finland), Italy, Ireland and France were also well covered (65 articles). The US had 11 articles written on relevant topics since 1990, with the first article written in 1997 in *Public Finance Review* (Marron, 1997).

**Table 4: Geographic distribution of articles by level of analysis**

Country	Local	Regional	National	Multinational	Total
UK	8	1	19	0	29
EU	1	0	2	15	18
US	8	3	0	0	11
Denmark	4	0	5	0	9
Italy	3	2	1	0	7
Sweden	1	0	5	0	6
Brazil	0	1	4	0	6
Ireland	0	0	3	0	5
China	0	0	4	0	4
France	2	0	1	0	3
Spain	0	0	1	0	2
Norway	0	0	2	0	2
Nigeria	0	0	2	0	2
Finland	1	0	1	0	2
Poland	1	0	1	0	2
Germany	1	0	0	0	2
Hungary	1	0	1	0	2
Australia	0	0	2	0	2
Other or non-geographic	6	0	19	5	57
<b>Grand Total</b>	<b>37</b>	<b>7</b>	<b>73</b>	<b>20</b>	<b>171</b>

Note: Table lists the level of geography for counties with two or more peer-reviewed articles. The sum of regions may not add up to the total because some articles did not focus on a specific geography or were theoretical in nature.

Source: Author, extracted from journals database

As also indicated by Table 4, the articles ranged across levels of government. National-level studies were the most common, with 73 (43%) national level studies, 37 (22%) local (city or county-level) analyses, 20 (12%) multi-country or multinational studies, and 7 (4%) regional studies. The remainder of the articles were either theoretical in nature or did not focus on a specific country or geographic region.

As illustrated by Table 5, of the 171 relevant articles, 118 (69%) were related to the sustainable procurement literature, with the balance (29%) related to PPI. Environmental topics were the most commonly addressed topic within the sustainable procurement literature, with 58 (49%) articles addressing environmental topics, 22 (19%) addressing economic topics, 8 (7%)

addressing social topics, with the remainder addressing one or more sustainability topics within the article.

**Table 5: SP and PPI articles, by focus area – US and non-US**

<b>Article Focus</b>	<b># of articles</b>	<b># of US articles</b>
<b>Sustainable Procurement Articles</b>	<b>118</b>	<b>11</b>
Economic	26	2
Social	8	1
Environmental	58	4
Economic and Social	2	1
Economic and Environmental	7	1
Social and Environmental	6	0
Economic, Social, and Environmental	10	1
<b>Public Procurement for Innovation Articles</b>	<b>53</b>	<b>0</b>
<b>Total</b>	<b>171</b>	<b>11</b>

Source: Author, extracted from journals database

For the set of 11 U.S.-related articles, all addressed sustainable procurement at the local or state level, with four focused on environmental sustainability, two on economic sustainability, one on social sustainability, with the balance of articles related to a mix of all three sustainability categories.

At this point of the search, it became apparent that the articles could be grouped by themes. A number of articles in the sustainability subset were concerned with how governmental institutions could promote sustainability objectives through food procurement (the “farm to institution” literature), construction (“green construction” practices) and improved green supply chain management practices. Other major topics addressed in the literature were related to success and inhibiting factors within governmental organizations (“organizational barriers”) to adopt sustainable procurement practices or to use procurement to promote innovation. Reading over the abstracts it also became clear that, with the exception of some green supply chain management articles, especially those published in *Supply Chain Management*, authors did not rely heavily on theory to derive testable propositions or to show how the evidence presented

contributed to or challenged a body of theory. This conclusion is consistent with the finding by (Zorzini et al., 2015) that the literature has generally used theory as “window dressing” as it has emerged as an area of inquiry.

The global perspective offered by the journal database search was helpful in that it illustrated that procurement’s multiple policy objectives [or “side-policies” in Lember et al. (2014, p. 299)] was something that had concerned scholars internationally across multiple disciplines, primarily in the “public procurement for innovation” and “sustainable development” literatures. More substantively, the review of titles and abstracts challenge the notion that economic, social, and environmental policy goals are ancillary rather than primary goals of procurement. Kattel and Lember (2010, p. 368) argue that "government procurement should not be seen as only an indirect support measure for development, but a direct vehicle for innovation and industries, and thus, growth and development". The quotation is important because it places development as a core, not ancillary, goal of procurement policy, and puts the focus not on sustainability, but on development. Conway (2012) uses the term “collateral” policies to refer to procurement being used strategically to promote sustainability. Similarly, Arrowsmith (2010, p. 150) argues that the term “‘horizontal’ policies is preferable ...[because] in contrast with the terminology of ‘secondary’ or ‘collateral’ policies, does not imply that such policies are necessarily illegitimate or subservient...”. This study uses the term “dual-use” procurement policies because they achieve goals in addition to the receipt of a good or service at a specific price, quantity, or quality.

Denyer and Tranfield (2009) state that systematic literature reviews should not rely solely on mechanical means to capture relevant literature, but that researchers should complement the literature gathered from a database search with literature found in particularly relevant articles

and books. In the fourth phase, citations from particularly relevant articles within the U.S. context were reviewed and compared to the list of articles derived from the search of the databases. Additional relevant articles were identified, and, by referencing their citations again, additional relevant material was revealed. This process was repeated until no new relevant academic citations could be identified. These articles were then read and used to answer what the state of research had to say about 1) the types of policy goals governments use procurement to achieve and the prevalence of its use among U.S. state and local governments, 2) the factors explaining why some governments use procurement to achieve multiple policy goals, and 3) the criticisms for using government procurement to achieve multiple policy goals. The next section reports the findings of the literature review with regard to these questions.

### **2.3 Findings to core research questions**

#### **2.3.1 What is known about the multiple purposes (i.e., categories) that procurement policy seeks to achieve, and their prevalence in U.S. state and local governments?**

The academic literature has examined both private sector and public sector procurement as having multiple purposes and goals. Procurement is the act of obtaining equipment, materials, or supplies usually from outside suppliers via a bidding process. Public procurement is the purchase of goods and services by government and public sector organizations. In this section, the private sector literature examining how purchasing can be used to achieve economic, social, and environmental goals is briefly reviewed before turning to a longer examination of how the public sector uses procurement to achieve these goals for governmental organizations.

##### **2.3.1.1 Private Sector literature**

The overwhelming majority of scholarship on sustainable purchasing and sustainable supply chain management has been conducted within private sector manufacturing contexts, with only

14% of articles published in the last 20 years focused on the public sector (Walker, Mayo, Brammer, Touboulic, & Lynch, 2012). The business literature has investigated the use of private sector procurement to reduce the environmental footprint of an organization, which it calls the “green supply chain management” (Srivastava, 2007) and “sustainable supply chain” (Seuring & Müller, 2008) literature. Scholarship in these literatures has investigated the “triggers” for increased concern about an organization’s environmental footprint (Fronzel, Horbach, & Rennings, 2008; Seuring & Müller, 2008); the organizational barriers to reduce the environmental footprint of an organization (Brun & Gereffi, 2011; Schleich, 2009; Sorrell, O’Malley, Schleich, & Scott, 2004; Walker & Jones, 2012), and how an organization’s environmental footprint can be measured, including ISO 14001 (Nawrocka, Brorson, & Lindhqvist, 2009), balanced scorecards (Figge, Hahn, Schaltegger, & Wagner, 2002), and eco-labels (Teisl, Rubin, & Noblet, 2008). Key debates in the literature are whether so-called “win-win” solutions between economic gain for companies and environmental footprint reduction are enough (Porter & Van der Linde, 1995), or whether the goal for business ought to be environmentally neutral production through green design, green operation, or closed-loop production systems (Srivastava, 2007). Underlying these debates are questions regarding whether businesses have moral or ethical obligations to society and the environment which are greater than maximizing profits and shareholder value (see DesJardins (1998); contra Friedman (2009 [1962])).<sup>2</sup>

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<sup>2</sup> The notion that firms should only be concerned with maximizing profits is sometimes attributed to Milton Friedman who stated that, “there is one and only one social responsibility of business – to use its resources and engage in activities to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition, without deception or fraud” (Friedman, 2009 [1962], p. 133). This view was repeated in a widely cited piece in the *New York Times Magazine* on 13 Sep 70 (vol32:issue13, p.122) entitled “The Social

Although most of the private sector literature has focused on the environmental effects of production, a number of studies have pointed out that a concern for social issues was the initial focus of the corporate social responsibility (CSR) literature and should receive increased attention. Social issues examined by scholars with regards to purchasing include corruption (Carter, 2000), the working conditions in supplier companies (Mamic, 2005), and the role of racial or ethnic minority companies in the supply chain (Carter, Auskalnis, & Ketchum, 1999; D. R. Krause, Ragatz, & Hughley, 1999). Examining social and environmental issues in combination has been the focus of the purchasing social responsibility (PSR) literature (Carter, 2005; Carter & Jennings, 2002, 2004), while the use of theory to examine all three aspects of sustainability was the focus of a literature review on sustainable supply chain management (SSCM) by Carter and Rogers (2008). In brief, Carter and Rogers develop theoretical propositions about how resource dependence theory, transaction cost economics, population ecology, and the resource-based view of the firm affect SSCM considerations by the firm and its implications to managers. This project returns to Carter and Rogers's insights in the conclusion.

In sum, the private sector literature has certainly examined the effects of purchasing on environmental and social conditions, and sought ways to reduce their negative effects. However, the focus of the literature is on how to decrease the negative externalities of a modern production system in order to reduce costs or risks for the company, rather than a conscious effort to use procurement to improve economic, social, or environmental conditions. In this regard, the

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Responsibility of Business is to Increase its Profits.” [see also Friedman (2007). The perspective contrasts with the corporate environmental literature arguing that “business remains free to pursue profits within the rules of the game; but the rules must be changed to include the obligation to leave natural ecosystems no worse off in the process.”

literature on private sector procurement fundamentally differs from the procurement literature in the public sector, to which this review now turns.

### 2.3.1.2 Public Sector Procurement literature

The public procurement literature identifies economic, social, and environmental goals of public procurement. The economic goals of public procurement are examined by the “public procurement for innovation” (PPI) in the international public administration literature, aspects of the domestic (U.S.) innovation literature, and the discussion of geographic preference policies. The social and environmental goals of public procurement are examined in the international public administration scholarship on sustainable procurement (SP), which is “is the pursuit of sustainable development objectives through the purchasing and supply process, and involves balancing environmental, social, and economic objectives” (Walker & Phillips, 2008). The sustainability concept, which incorporates economic, social and environmental goals as part of the “triple bottom line” (Elkington, 1997) objectives of an organization, is central to the SP literature. Although sustainability continues to be a contested term (Stern, 1997), the triple bottom line approach recognizes organizations as needing to be concerned with economic prosperity, environmental quality, and social justice. In the next three sections of this review, the SP and PPI literatures are examined regarding how they address these three major policy goals.<sup>3</sup>

#### 2.3.1.2.1 Using public procurement to achieve economic goals

Within the economic goals of public procurement, three strands of literature can be identified. The first is a focus on the innovation effects of public, primarily military, purchasing.

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<sup>3</sup> Readers interested in better understanding the definitions and debates of the sustainability concept should consult McElroy (2008). A very helpful introduction to local government sustainability is provided by Saha (2008, 2009).

The notion is that government is a particularly effective promotor of research and development (R&D) when it is the final customer of the product or service purchased (R. R. Nelson, 1987). Stimulating R&D, in turn, provides economic development benefits to the larger economy through a variety of mechanisms, including the development of firms and universities further investing in innovation and invention, and the diffusion of knowledge through “regionally proximate face-to-face interaction” (Audretsch & Stephan, 1996). The geography of innovation literature (Audretsch & Feldman, 1996, 2004; Feldman, 1994), national (R. R. Nelson, 1993) and regional (Lundvall, 1992a, 1992b) innovation systems literature, and the territorial innovation (Moulaert & Sekia, 2003) literature all examine how innovation, spurred in part by government demand and purchasing, are the main ingredients for economic growth (Oerlemans, Meeus, & Kenis, 2007). A related strand of literature examines the role of government procurement policy to help develop small businesses (SMEs), including the federal Small Business Innovation Research (SBIR) program and complementary programs at the state level (Hardin et al., 2015; Keller & Block, 2012). The international PPI literature (Aschhoff & Sofka, 2009; Edler & Georghiou, 2007; Lember et al., 2014) draws on these literatures to further examine how public procurement can be used as a “demand-side” policy to incentivize product and process innovations, and its benefits to local and national economic development.

The second strand of literature examining economic goals of public procurement in the U.S. is the scholarship examining the use of public procurement to benefit local companies and protect them from outside competition. Developing local business, in turn, is thought to create local jobs and generate tax revenue for governments. The strand of literature, to borrow from Wilson (1995), embraces locality as a means to economic growth. Examples of economic protection are “Buy American” provisions in federal government contracting (McCrudden, 2007)

and geographic preference laws at the state and local level (Qiao, Thai, & Cummings, 2009). Twenty-five states provide a legal preference for in-state bidders and products (Moreland, 2012). At the local level, 140 U.S. municipalities had “buy-local” preferences for locally produced goods and services in 2011 (Shahan, 2011).

Geographic preference laws, also called “local bidding preferences”, provide an advantage to companies within the designated area by discounting their bids by a specific percentage, or, less commonly, requiring that government must buy certain goods and services from companies in the area. More specifically, five types of geographic preference policies exist: the simplest is a percentage preference, in which a business receives a bid discount if it meets the criteria established in the policy for being a business in a covered geography, 2) a “tie-bid” preference in which bidders located within a covered geography are awarded the contract if they are equal to outside bidders, 3) “comparable preferences” in which administrators are permitted to choose bidders that serve the best interests of the jurisdiction as far as is practicable (71), 4) reciprocal preferences in which states without preference laws are treated as part of the covered geography, and 5) absolute preferences, in which government must buy certain goods or services from bidders in a specific geography (Short, 1992). In this latter category, Short (1992) explains that printing is the most common category of absolute preference, which originated in the 19<sup>th</sup> century “Party Boss” days as a means to support the printing offices of political parties. “Buy American” preference policies adopted by local, state and Federal governments are a geographic preference policy.

In 2004-2006 surveys of local preference programs by state and local governments, Qiao et al. (2009) find that 32% of responding governments had local business preferences in their procurement policies. In 2008, the non-profit consulting firm CGR found that seven states had

local preference laws with defined percentage or dollar limits, and at least five municipalities had local preference policies on city contracts. State bid preferences ranged from 1-15%, with the most common being 5% (Zetteck, 2008).

The effect of these policies on the local economy and cost to government has been examined, with mixed results. A review of bid preference policies for the Colorado General Assembly (Jones, 2012) found that the policies have little to no effect on the prices paid by governments and are “likely” to have a positive impact on economic activity and promote job creation. Corns and Schotter (1999) find that companies not eligible for bid preferences will reduce their prices to be competitive with companies eligible for bid preferences. Krasnokutskaya and Seim (2011) find that a preference for small businesses increased California’s highway construction costs by 1.5% or less, contrary to the 3.8% finding in Marion (2007). Studies examining the impacts of local preference business policies find that preferences increase local employment. The estimated impact for Los Angeles was 10 additional jobs for every 1 million spent within the city, and the resulting 8% bid preference policy would result in approximately 10,000 direct and indirect jobs (Swenson, 2010). A report for Fresno concluded that a 5% preference policy for local business would result in a 3.2 million net gain in additional economic output and support 79 jobs (Avalos & Birdyshaw, 2007). A study for Kalamazoo found that a 5% bid premium for local businesses would generate one job for every \$2,000 spent by the city (Erickcek & Goheen, 2001). However, neither the academic nor grey literature has addressed how often a local bidder wins, whether the price offered by local bidders is higher than non-local bidders, and how much the city gains from awarding the contract to a local bidder rather than a non-local bidder (Swenson, 2010).

The third strand of literature is the “farm to institution” or “farm to school” literature examining the economic (and health and/or educational) benefits of purchasing food used by

governmental organizations from local farms. The general need for farm to institution procurement and the disparities in access to healthy food among low-income and minority groups are examined by Story, Kaphingst, Robinson-O'Brien, and Glanz (2008). The distribution costs of farm-to-school programs in Vermont with respect to the social or economic motivations of farmers were studied by Conner, Sevoian, Heiss, and Berlin (2014). The opportunity to increase local and sustainable food in U.S. hospital group purchasing organizations was examined by Klein (2015). Potential legal challenges to these programs are examined by Ackerman (2011).<sup>4</sup>

#### 2.3.1.2.2 Using public procurement to achieve social goals

Studies focusing primarily on the use of public procurement to achieve social outcomes in the U.S. exist. McCrudden (2004, 2007) investigates the history of using public procurement to achieve social outcomes in the U.S. and other countries (U.K., Malaysia, South Africa, Northern Ireland, and Canada). He uses the term “linkage” to capture the notion that governments use their purchasing power to advance their notions of social and distributive justice. McCrudden points out that far from being purely a domestic issue, “linkage” has been used as a mechanism to promote anti-discrimination and human rights abroad. U.S. local, state, and federal governments were required to abide by the Sullivan and MacBride principles<sup>5</sup> prohibiting contracting with

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<sup>4</sup> A summary of the legal challenges to procurement “side-policies” is provided in section 2.3.3 (p.27).

<sup>5</sup> The Sullivan principles (1977) applied economic pressure on South Africa in protest of its system of apartheid (“Sullivan principles,” 2014). The MacBride principles (1984) are a corporate code of conduct for US companies doing business in Northern Ireland and have become the Congressional standard for all US aid to, or for economic dealings with, Northern Ireland (“MacBride Principles,” 2015).

companies working in apartheid South Africa, Northern Ireland, and to a more limited extent Burma.

McGrudden argues that since WWII, procurement has been used in the U.S. to promote linkage in three categories: 1) to enforce anti-discrimination (“contract compliance”), 2) to promote distributive justice (“affirmative action”) and 3) to stimulate entrepreneurial activity by disadvantaged groups (“set asides”). Executive orders were used to guarantee contract compliance from 1941-1964 to ensure non-discrimination in federal contracts until the Civil Rights Act of 1964. Affirmative action policies not only prohibited discrimination but included special provisions to increase the participation of disadvantaged groups in government contracts. One of the earliest was the Philadelphia Plan, adopted in June 1969, which required affirmative action policies to be put in place when administrative findings identified under-representation in contracting. In set-asides, a proportion of a government contract was required to be filled by black-owned business, which later expanded to all minorities and women. Thus, the social goals governments seek to achieve with procurement policy are to address past discrimination, current disadvantages experienced by specific categories of persons and businesses, and to reduce poverty.

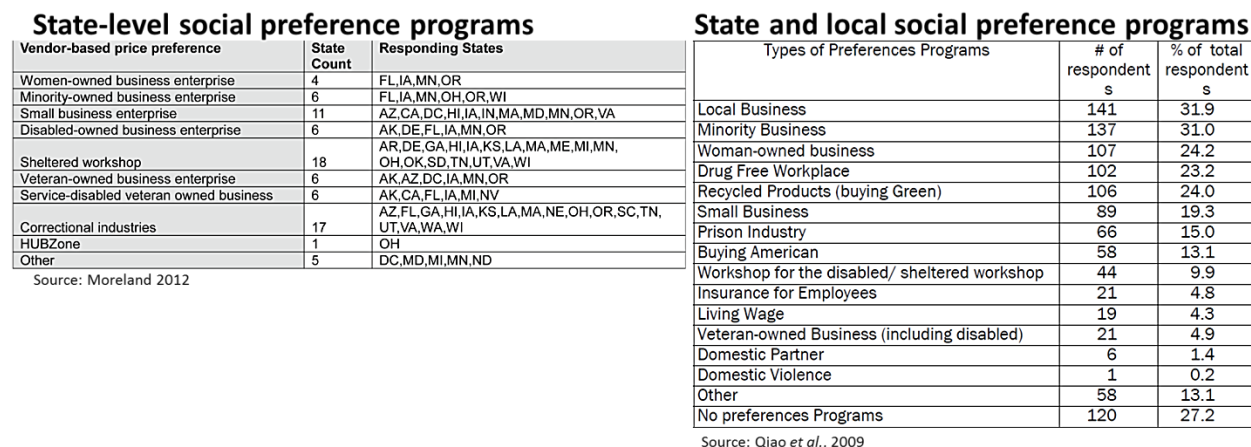
Preference policies exist for minority, women, disabled, and small business enterprises (“MWDSBE” policies), or disadvantaged business enterprises (“DBE”) for short.<sup>6</sup> In a 2004-2006 survey of local and state governments, Qiao et al. (2009) find that the most common social preference policies were for minority (31%) and women-owned (24%) businesses. Small

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<sup>6</sup> MWDSBE are also called “vendor-based price preferences” to contrast them with product-based preferences, which include environmental preference policies (Moreland, 2012).

business preference policies were reported by 19% of respondents. The 2011 NASPO survey of state level social preference policies finds that six states had preference policies for minority-owned business, four states had preference policies for women-owned business, and six states had preference policies for disabled-owned businesses (Moreland, 2012). Supplier selection in government procurement systems seeking local, small, and minority businesses is examined by Williams (2014).

Governments have established categories in addition to DBE preferences. In a review of state-level price preference policies, Moreland (2012) finds preference policies for sheltered workshops (supervised workplace for physically disabled or mentally handicapped adults), veteran-owned businesses, service-disabled veterans, correctional industries, and HUBZone preferences. Please see Figure 3.



**Figure 3: State and local social preference programs in the U.S.**

Public procurement has also been used to advance living wage laws in the U.S., which requires employers receiving government contracts or business subsidies to pay full-time workers with a wage sufficient to support themselves and the families at a subsistence level (Elmore, 2003). More than 100 cities and counties have living wage laws, and Maryland became the first state with a state-wide living wage (Fairris, 2005; Fairris & Reich, 2005). A small group

of articles and sponsored research reports seek to understand whether living wage laws have had a measurable effect on the populations targeted by the policy. Fairris and Reich (2005) note that three types of “impact studies” exist on this issue. Qualitative studies (Elmore, 2003; Luce, 2005; Zabin & Martin, 1999) find that the effectiveness of living wage laws are dependent on the establishment of monitoring and evaluation of the policies occurring after they are passed, which in turn is dependent on the continued participation of activist organizations in the region. Quantitative approaches are of two types. The first type uses cross-sectional data at the MSA level to determine the effect of living wage laws. The studies find that living wage laws reduce employment, but also reduce urban poverty by increasing wages (Adams & Neumark, 2005; Neumark & Adams, 2003a, 2003b). The second type of study uses time series data to measure the effect of living wage laws in a specific geography before and after they are adopted. The studies generally find that living wage laws increase income, have negligible effects on employment loss, and reduce employee turnover, absenteeism, overtime hours and job training costs for employers compared to a control group of establishments (Brenner, 2005; Fairris, 2005; Fairris & Reich, 2005; Howes, 2005; Reich, Hall, & Jacobs, 2005).

Local hiring programs combine geographic and social preference policies. Local hiring programs seek to increase the benefits of building and construction development for low-income and minority local residents, and are instituted in multiple ways, including project labor agreements (PLAs), community benefit agreements (CBAs), and ordinances. A report for the Partnership for Local Families (Mulligan-Hansel, 2008) profiles the design, implementation, and success factors of nine local hire programs in U.S. cities.<sup>7</sup> The City of New York has expanded

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<sup>7</sup> Other reports on the topic are: *Replicating Success: The Alameda Corridor Job Training and Employment Program- A Replication Manual for Winning and Implementing Community-Based*

local hiring programs to cover goods and services procurement, human services, and affordable housing contracts (2015).

The effectiveness of targeted business policies to achieve desired social outcomes at the local and state level has been an area of limited scholarship, with notable exceptions. The effect of targeted business policies on the participation of minority contractors was examined in an Urban Institute report (Enchautegui, 1997). He found a disparity in awards to minority contractors by state and local governments in 18 states, and that the disparities are greater when no targeted business policies exist. My review of the existing literature could not find a similar study examining the level of disparity in government contracting among women-owned businesses, although a case study of Erie County, New York found structural barriers to access information by women and minority-owned firms, which when overcome, contributed to economic development (Wallace, 1999). In a survey of local and state government procurement officers, Qiao et al. (2009) asked about the perceived effectiveness of local and targeted business preference policies. They found that an overwhelming majority of surveyed procurement officials in 2004 (78%) and 2006 (55%) agreed or strongly agreed that targeted business policies violated principles of open competition, a slight majority agreed or strongly agreed (2004: 53%, 2006: 38%) that government had to pay higher prices, but only a minority of survey respondents (2004: 11%, 2006: 10%) agreed or strongly agreed that preference programs led to lower quality.

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Jobs Programs on Public Construction Projects. Lisa Rhangelli. Center for Community Change, 2002; Winning Construction Jobs for Local Residents: A User's Guide for Community Organizing Campaigns. Kate Rubin and Dough Slater. Brennan Center for Justice, July 2005; Building in Good Jobs: Linking Economic and Workforce Development with Real Estate-Led Development. Laura Wolf-Powers, Jeremy Reiss and Margaret Stix. Pratt Center for Community Development, 2006.

However, only a quarter of survey respondents (2004: 28%, 2006: 24%) agreed or strongly agreed that their government has always met the preference requirement, leading to questions about effective implementation of effective preference policies at the state and local level. Bates (2009) reviews evidence about why MBE vendors for government construction contracts are more likely to go out of business than MBE businesses that only serve private sector clients or other nonminority-owned businesses. Large contracts exceeding the capacity of MBEs, hostile prime contractors, slow payment of invoices, difficulty in obtaining adequate bonding and insurance required for government construction contracts make them “a trap for ill-prepared MBEs” (182), particularly because governments rarely address the known barriers. Bates argues for awarding contracts to already large MBEs because they are able to successfully perform on their contracts and achieve the economic development goals of governments by creating jobs, particularly in low-income minority communities. To examine the effectiveness of MBE policies, Bates reviews construction procurement data from the Chicago convention authority from 2002-2005. He finds that overcoming barriers for minority-owned business requires smaller contracts, quick payment, and some reductions in bonding and insurance requirements, policies which can be enacted by procurement officials. A Duke University study (Daly, Brun, & Guinn, 2015) examined participation levels by targeted businesses across the water infrastructure value chain of six U.S. municipalities and water utility districts. They found variation in participation levels by targeted businesses across the value chain of the infrastructure construction projects, in particular, higher levels of participation in design and planning segments of the value chain and lower levels in the construction and maintenance segments. However, the authors did not separate participation levels by geographic and social preference policies, or explain why the observed variation existed within and across cases. One possible explanation not explored in the

report but consistent with the CGR memo (Zetteck, 2008) is that since professional service contracts are generally only subject to local government purchasing guidelines, professional service contracts (which include architects and engineering service contracts conducting design and planning) are more likely to be awarded to local companies because local governments can take non-price factors, such as past performance, into account when awarding these types of contracts. Apart from these five studies, little effort has been used to address the effectiveness of these policies at the state and local level. Thus, a significant gap in the U.S. public procurement literature is better understanding the effectiveness of targeted business policies to achieve desired social outcomes.<sup>8</sup>

#### 2.3.1.2.3 Using public procurement to achieve environmental goals

The environmental goal for government procurement policy is to reduce the environmental footprint of the organization. Reducing the environmental footprint of organizations also meets goals to reduce costs, risks, and to influence the adoption of technology and production practices of the private sector [see NASPO (2015)]. Environmental preferable purchasing requires bidders to be responsive to product specifications that reduce the environmental footprint of the product or service purchased by government. Examples of these product specifications are recycled content, recyclability of the product, use of recovered materials, resource (water, energy) efficiency standards (e.g., Energy Star products), emissions standards, or input requirements (renewable fuels/"green electricity"). The "lowest responsive bidder" to these specifications is

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<sup>8</sup> At the federal level, Smith and Fernandez (2010) examine contract award decisions of 60 federal agencies over three years to find that increased minority representation in leadership positions leads to an increased proportion of small minority-owned firms receiving federal contracts.

awarded the procurement contract rather than the lowest cost bidder, language which NASPO states permits jurisdictions to include environmental criteria in their purchasing decisions (NASPO, 2015). Conway (2012) provides a useful overview of the legal and procedural implications of using procurement to achieve sustainability goals.

Studies primarily focusing on the use of public procurement in the U.S. to achieve environmental outcomes exist. In one of the earliest articles written on the topic of achieving environmental goals through procurement, Marron (1997) examines the financial and environmental benefits of using price preference policies (granting a price-premium for green products) and set-asides (minimum purchasing targets) to achieve environmental policy goals of governments. He finds, using a static optimization technique, that government procurement is an imperfect environmental policy instrument unless it is a large buyer of a product, supply for the good is elastic, and private demand for the good is inelastic. He finds that government demand for green goods results in a price decrease for brown goods, which increases consumption of brown goods in the private sector, thus making the environmental effects of government purchasing green products at best negligible, but more likely harmful to the environment.

New, Green, and Morton (2002) study the key differences and similarities among public and private organizations seeking to adopt green supply chain management practices. Key similarities are internal organizational barriers in establishing links among persons across departments to achieve environmental purchasing goals. A second similarity is the need to align green purchasing with broader organizational goals, which are particularly effective when tied to economic development goals in the public sector and attractiveness of the product to customers in the private sector. Organizations who failed to adopt green purchasing criteria often failed to make these connections between environmental and economic incentives. Key differences are

the degree of formal procedures and routines controlling how suppliers are selected, managed, and evaluated.

Coggburn (2004) examines the congruence of green public procurement with traditional managerial values of economy and efficiency, and argues that adopting green procurement is consistent with both traditional values and a concern for improving the environmental quality of public organizations (“effectiveness”). Coggburn and Rahm (2005, 2007) review the definition, policy goals, and implementation of green public procurement practices at the federal, state, and local level in the United States. They find a willingness to adopt green public procurement at the state and especially local levels. L. Li and Geiser (2005) examine state-level organizational buying processes to identify organizational, behavioral, and product-specific parameters of purchasing decisions. They examine how these parameters affect the purchasing decisions of more energy efficient personal computers in Florida and Washington. They find that organizational barriers, costs, and lack of senior management focus act as barriers to further adopt energy-efficient personal computers, but that procurement managers can contribute to environmentally responsible purchasing by incorporating environmental criteria in contractor evaluation and purchasing contracts.

The sustainable procurement literature has also examined how purchasing by the public sector can influence green supply chain practices within specific sectors. U.S.-focused studies have examined food (Conner et al., 2014), construction (Simcoe & Toffel, 2014), bus transportation (S. J. Li, Kahn, & Nickelsburg, 2015), and hospitals (Klein, 2015). The experience of local and state governments with green public procurement is explored by (EPA, 2000). In a rare example of how government procurement could achieve environmental, social and economic goals, Nijaki and Worrel (2012) study how buy-local and environmentally preferable

purchasing could be linked with organizational goals to promote economic development, equity, and environmental benefits and achieve “green” local economic development. Saha (2009) explores the factors that are most responsible for the success of sustainability efforts in the 50 largest U.S. municipalities and finds that cultural, economic, and governmental factors affect the success of sustainability efforts in the sampled municipalities.

At the state level, Moreland (2015) finds that 30 states responding to the 2015 NASPO Survey of State Procurement Practices had green purchasing programs, with enabling legislation in 17 states, executive orders in 11, and policy mandates in 16 states. Green specifications are not required for all bids but are encouraged for all bids in 10 states and for some bids in 15 states. 27 states use LEED standards for some of their construction specifications and 4 states use LEED for all of their construction specifications (Moreland, 2015). At the state and local level, Qiao et al. (2009) report that in 2004-2006, green purchasing preference policies existed in 24% of state and local governments responding to the survey. Although the survey is, by the authors’ own account, flawed because it does not use a representative sample of state and local governments, its results match reasonably well with those of a 2010 ICMA sustainability survey finding that 13% of city and county government respondents had a green product purchasing policy (Svara, Watt, & Jang, 2013). In a survey of 30 OECD countries, Brammer and Walker (2011) find that environmental practices such as green procurement were much less common in the U.S. than in other countries.

The data provided by NASPO at the state level (Moreland, 2012, 2015), by Qiao et al. (2009) at the state and local level, and ICMA at the city and county level (ICMA, 2010) provide some insights about the type and prevalence of procurement policies adopted by U.S. state and local governments to achieve economic, social, and environmental sustainability goals. The surveys

establish that state and local governments use procurement policy to achieve multiple goals, with local bidder, women and minority preference policies being the most common. However, in the only survey of local procurement preference practices covering economic, social, and environmental goals (Qiao et al., 2009) four major weaknesses exist. First, as the authors admit, the surveys rely on a non-representative sample of National Institute of Governmental Purchasing (NIGP) members to derive results. Second, the surveys had a low response rates (~12%) and thus subject to nonresponse bias.<sup>9</sup> Third, the type of government surveyed included public schools, hospitals, utility and special districts in addition to state and local governments. Because they did not report the type of preference programs by type of government, it remains unknown how prevalent these policies are at the city and county level. Fourth, the surveys were conducted more than 10 years ago, and much has likely changed, due in part to the development of professional practice in this area and the 2008-2009 financial crises placing greater pressure on local governments to address economic and social development in their communities (on latter point, see Block and Keller (2011); Murray (2009); Williams and Wilson (2015)). Clearly, an updated inventory of local government preference policies is needed.<sup>10</sup> One purpose of the survey portion of this project is to provide an updated inventory of municipal preference policies and the level of activity among U.S. municipalities in using these policies to achieve economic, social, and environmental goals.

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<sup>9</sup> The authors conducted two surveys to derive results. The first, in Oct 2004, had a response rate of 13% (256/1985), the second, in 2006, had a response rate of 11% (227/1985). This is less than the reported 23%.

<sup>10</sup> The Canadian government compiled a list of procurement preference policies for US state governments to assist Canadian companies doing business with state governments, see Government of Canada and Development (2008).

### 2.3.2 What factors are identified in the literature to explain the emergence and adoption of procurement policy to achieve multiple policy goals?

The review of the literature did not find a comprehensive study examining the factors leading U.S. local, state, and national governments to adopt procurement policies with multiple policy objectives. However, related strands of the literature have examined why governments adopt living wage and environmental sustainability policies. In the living wage literature, the political and economic characteristics of municipalities that were the first to adopt living wage policies were examined by Martin (2001) who found that political mobilization was an important explanatory factor, as did Nissen (2000) for Miami. The characteristics of successful policy adoption of living wage campaigns were examined by Levi, Olson, and Steinman (2002). They find that coalitions of support among labor, religious, and other community organizations were important to the adoption of living wage laws in the nine medium-to-large municipalities they profiled. The increased scope and coverage of living wage laws of the increasing number of municipalities adopting them was investigated by Luce (2005). She finds that the implementation of living wage laws among U.S. municipalities is stronger when living wage advocates and community organizations participate in monitoring and evaluation than when left solely to city administrators.

In the local government environmental sustainability literature, factors explaining the adoption of sustainability efforts in U.S. municipalities are identified. Svara et al. (2013) examines why and how counties and municipalities pursue sustainability efforts and uses the 2010 ICMA sustainability survey (ICMA, 2010) to find that council-manager government, demographic, and geographic variables affect the level of adoption in local government sustainability policies. Large cities and counties are more likely than small cities and counties to adopt government sustainability efforts, a result consistent with the findings of Qiao et al. (2009)

examining the presence of procurement policies with social goals in U.S. governments. Bae and Feiock (2013) explore the supply and demand factors in the political economy of large and medium local governments to explain the adoption of environmental sustainability policies. Supply factors include council-manager form of government, separate sustainability office, the availability of funding, level of budget conflict, and whether it is a central city. Demand factors are public support, business group support, environmental group support, issue salience, and demographic factors. Other theoretical approaches used in the local government sustainability literature to understand local policy adoption include polycentric action (Homsy & Warner, 2015; Ostrom, 2010a, 2010b; Tiebout, 1956), multilevel governance (Homsy & Warner, 2015; R. M. Krause, 2011, 2012), growth machine perspectives (Molotch, 1976, 1993), and what Feiock (2013) calls an “institutional collective action framework”, which Hawkins, Krause, Feiock, and Curley (2015) use to understand city-level investments in sustainability.<sup>11</sup> Thus, while models explaining the adoption of living wage and local government environmental sustainability policies are suggestive of an approach which could be used to understand the adoption of dual-purpose procurement policies by local governments, a study specifically examining factors to explain why U.S. local governments adopt procurement policies seeking to achieve economic, social, and/or environmental goals has not been conducted, to the best of this researcher’s knowledge. The purpose of the empirical portion of this project is to close this gap in the government procurement literature by applying a political market model to municipal procurement policies seeking to achieve economic, social, and environmental goals.

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<sup>11</sup> Hawkins, Krause, Feiock, & Curley (2015) theorized that investments are a function of sustainability priorities (economic, social, environment), regional governance, personal and professional networks, interest group support, fiscal capacity, and governing institutions.

### 2.3.3 What critiques exist in the literature for using procurement policy to achieve multiple policy goals?

The critiques in the literature for using public procurement policies to achieve objectives other than lowest cost acquisition are that they are either bad policy, illegal, or both. A tension exists at the heart of the procurement literature examining the use of government procurement to achieve innovation and other economic, social, and environmental goals (Lember et al., 2014). On the one hand is the neoclassical economics literature pointing out the inefficiencies inherent in creating geographic and other preference policies, a principle reflected in international agreements and national, state, and local laws. On the other hand is the reality that governments have long used, and continuing political pressure exists to use, procurement policy to achieve a variety of policy goals, which include goals to increase innovation and achieve other economic, social, and environmental goals. The tension constitutes one of the major dilemmas in the literature and practice of public procurement (McCue, Prier, & Swanson, 2015). In this section of the review, the arguments for each side, and the legal challenges in the U.S. to using government procurement to achieve multiple policy goals, are examined.

The principles of open competition, maximum access to government contracting opportunities, transparency, non-discrimination and price-based competition are enunciated both by neoclassical economic theory and by the World Trade Organization's (WTO) Government Procurement Agreement (GPA), the voluntary international agreement governing government procurement for WTO member nations.<sup>12</sup> Arrowsmith (2003a, 2003b) argues that deviation

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<sup>12</sup> Each nation participating in the GPA files a listing of what it agrees to and permissible exceptions, known as the country appendix and annex, which can be updated in "loose-leaf" form. The six annexes cover procurement by the central government, sub-central government, other covered entities, covered services and construction services. Annex II lists the U.S. States that procure in accordance with the provisions of the agreement. The "general notes" section of

from these principles distorts competition and free trade. Lember et al. (2014) argue that the collapse of the Soviet Union, the consolidation of the European Union, the resulting international movement to liberalize economies and trade [the so-called “Washington Consensus” (Williamson, 1990)] and the rise of New Public Management all supported efficiency as the dominant goal for public procurement.<sup>13</sup> As a result, the use of government procurement power to achieve innovation and other economic, social, and environmental goals, seemed largely “irrelevant” during the 1990s and early 2000s (Lember et al., 2014, p. 297). Furthermore, Arrowsmith (2003a); Evenett and Hoekman (2005, 2006) argue that governments should avoid using procurement to achieve “side-policies” because governments are unable to effectively implement procurement policies that seek to achieve goals other than low-cost acquisition.

The paradox, of course, is that the U.S., who globally is associated most with “Washington Consensus” thinking, has long used procurement policy to achieve economic, social, and environmental goals (Weiss & Thurbon, 2006). At the national level, technology development is a core goal of U.S. defense procurement policy (Block & Keller, 2011). Defense procurement

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appendix 1 (note 1) for the U.S. states that the agreement “will not apply to set asides on behalf of small and minority businesses” (“WTO | Government procurement - Appendices and Annexes to the GPA,” n.d. Appendix I, general notes). As a result, the discussion in this section focuses on federal and state law and history with respect to procurement preferences.

<sup>13</sup> In the US, the Winter Commission was part of the reinventing government movement, seeking to make local and state government procurement “more efficient, effective, and responsive ... by strengthening executive leadership, reducing the rules and regulations that tie public managers' hands, and changing governments' organizational culture to create a more flexible, dynamic, and entrepreneurial approach to government management. The commission's aim was not simply to switch governments' role from making goods and services to buying them, but rather to give managers the tools to pursue public value, whether through purchasing or other means” (Potoski, 2008, p. S58). State and local governments spend about 40 percent of their budgets purchasing goods and services (Kelman, 2002).

regulations also promote social development goals by including explicit targets for minority, women, and small business enterprises (Keller & Block, 2012). The Public Works Employment Act of 1977 required that 10% of federal funding to public works be received by minority businesses. The Small Business Administration (SBA) initiated regulations requiring federal contracts to be allocated to businesses owned by women and other socially and economically disadvantaged persons, which was codified in 1978 by amending the Small Business and Small Business Investment Act of 1958. The amendments required federal departments and agencies to set percentage goals for procurement contracts. By 1994, Congress provided a 10% bid discount for disadvantaged businesses, and established a goal for awarding 5% of all government contracts and subcontracts over 500k (\$1 million for some construction contracts) to women and disadvantaged-owned businesses (McCrudden, 2007). At the state and local level, government procurement policies have established preference targets to achieve economic, geographic, social, and environmental goals. According to Lember et al. (2014) all countries with side-policies establish “anchors” to resolve competing conceptual and ideological notions, particularly among the politico-administrative elite (p. 301), about the appropriate role of government in the economy. In the U.S., the traditional anchor has been national security (Weiss, 2012, 2014a), supplemented since the 1960s by conceptions of social and distributive justice regarding the participation of minorities and women in society (McCrudden, 2007). Development of small businesses has also been a longstanding goal of U.S. procurement policy, as demonstrated by the creation in 1953 of the SBA and its precursors, the Reconstruction Finance Corporation (RFC), created by President Herbert Hoover in 1932, and the Smaller War Plants Corporation (SWPC) in 1942 (U.S).

However, the existence of these “anchors” does not absolve government procurement offices and officials from the legal principle awarding contracts to the lowest responsive and responsible bidder. “Responsive” means that the bid matches the technical specifications and legal requirements laid out by government. “Responsible” means that the bidder is able to perform the contract because the bidder meets the required skill, experience, and financial certifications (Youens, 2010). The two major professional associations of procurement officials, the National Association of State Procurement Officials (NASPO) and National Institute of Governmental Purchasing (NIGP), oppose local and socioeconomic preference laws and practices. NASPO opposes it on the basis that preferences run counter to the commitment to “maintaining the openness of the competitive process”, while NIGP opposes them on the basis that they are “impediments to the cost effective procurement of goods, services, and construction in a free enterprise system” (Moreland, 2012, p. 2). Organized labor unions also have opposed the use of preference laws requiring the use of nonunion, local workers because they supplant existing agreements regarding apprenticeships and the use of trades in publicly funded projects (Edel, 2005).

Governments face legal challenges to using preference programs in public procurement based on U.S. constitutional protections established in the privileges and immunities clause, commerce clause, and equal protection clause (Cantrell & Jain, 2013).<sup>14</sup> A challenge based on

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<sup>14</sup> Ackerman (2011) investigates the potential legal challenges of local food purchases (“farm to institution”) procurement by local and state governments. The article covers the challenges presented by international, federal, and state laws, which substantively track those covered in Cantrell & Jain (2013). An earlier examination of race neutral diversity measures in federal procurement policy is offered by Weeden (2001).

the privileges and immunities clause<sup>15</sup> occurred in *United Building & Construction v. Mayor & Council of Camden* (1984) in which at least 40% of the labor force of the contractors and subcontractors working on city construction were required to be local residents. The Supreme Court held that a city can pressure private employers to hire city residents, but the same exercise of power to bias private contractors against out-of-state residents may be called into account under the Privileges & Immunities clause (“*United Building & Construction Trades Council v. Mayor and Council of Camden*,” 2015). The result of the ruling is that “many cities exempt out-of-state residents from the calculation of new hires or total hours worked, so that employers are not penalized for hiring out of state residents” (Liu & Damewood, 2013, p. 12).

Commerce clause challenges are based on the premise that procurement preference statutes and regulations interfere with congressional power to regulate interstate commerce. The Supreme Court in *Southern Pacific Co. v. Arizona* (1945) prohibited state and local regulations that “restrains, interferes with, or materially burdens interstate commerce.” The prohibition is referred to as the “dormant commerce clause”. The dormant commerce clause invalidates “simple economic protectionism” of in-state economic interests over out-of-state economic interests unless it can be shown that there are no other means to advance a legitimate local

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<sup>15</sup> The Privileges and Immunities Clause of Article IV, Section 2, of the United States Constitution provides that “[t]he Citizens of each State shall be entitled to all Privileges and Immunities of Citizens in the several States.” The primary purpose of the Privileges and Immunities Clause is to prevent states from enacting measures that discriminate against nonresidents for reasons of economic protection. It “place[s] the citizens of each State upon the same footing with citizens of other States, so far as the advantages resulting from citizenship in those States are concerned.” (Cantrell & Jain, 2013, p. 5)

purpose (“Dormant Commerce Clause,” 2016).<sup>16</sup> An exception to the dormant commerce clause was established in *Hughes v. Alexandria Scrap Corp* (1976) that the Commerce Clause does not apply to state actions undertaken as a market participant.<sup>17</sup> Market participation is defined as any activity in which local and state governments act like a business or customer, and not as a regulator. Like any other business, governments may favor certain customers or suppliers because it is simply determining how its funds are to be used. The exception was upheld in *White v. Massachusetts Council of Constr. Employers, Inc.* (1983), in which building contractors working on city contracts had to have 50% of their workforce reside in Boston. The Court ruled that “when a state or local government enters the market as a participant it is not subject to the restraints of the Commerce Clause.” The ruling permits governments to determine the rules under which private companies are allowed to participate in contracts funded entirely or in part by local and state government funds. The exception to the dormant commerce clause was also upheld in *South-Central Timber v. Wunnicke* (1984), and *United Building & Construction Trades Council v. Camden* (1984) (“Dormant Commerce Clause,” 2016; Liu & Damewood, 2013).

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<sup>16</sup> From “Dormant Commerce Clause,” (2016): “In a dormant Commerce Clause case, a court is initially concerned with whether the law facially discriminates against out-of-state actors or has the effect of favoring in-state economic interests over out-of-state interests. Discriminatory laws motivated by “simple economic protectionism” are subject to a “virtually per se rule of invalidity,” *City of Philadelphia v. New Jersey* 437 U.S. 617 (1978), *Dean Milk Co. v. City of Madison, Wisconsin*, 340 U.S. 349 (1951), *Hunt v. Washington State Apple Advertising Comm.*, 432 U.S. 333 (1977) which can only be overcome by a showing that the State has no other means to advance a legitimate local purpose, *Maine v. Taylor*, 477 U.S. 131(1986).”

<sup>17</sup> *Hughes* holds that the Commerce Clause does not apply to actions taken by a municipality in the course of its direct participation in the market, that is, when it is acting like a business or customer. “Municipal activities that would violate the Commerce Clause if taken in the context of market regulation may therefore be permissible if taken in the context of market participation” (Liu & Damewood, 2013, p. 11).

Equal protection challenges to minority and women-owned vendor preferences in government procurement have occurred. According to Cantrell and Jain (2013) minority preferences must have evidentiary support, be narrowly tailored, and serve a compelling state interest to survive the “strict scrutiny” test established in *City of Richmond v. JA Croson Co* (1989) and *Adarand Constructors v. Pena* (1995). Statistical evidence, including the use of a disparity index to demonstrate the underutilization of minority-owned business or residents in an industry, can be supplemented with anecdotal evidence to support a racial preference.<sup>18</sup> Race-neutral alternatives should be considered and found ineffective before race-based preferences are implemented. When they are implemented, they should only include racial groups within the specific geography for which discrimination in a particular industry, like construction, can be demonstrated. In contrast, gender-based preferences need not be the least restrictive or option of last resort, although it still should be based on evidence and related to the public agency’s goal (Cantrell & Jain, 2013, pp. 32-33).

In addition to complying with U.S. constitutional protections, procurement preference policies must also be consistent with state constitutions, statutes, and legislation. As of 2008, Alaska, California, Louisiana, Montana, Nevada, Virginia, and Wyoming contain provisions which allow in-state bidders to receive bid-discounts, price matching, or tie-bid procurement preferences (Zetteck, 2008). Popular referendums in California (Proposition 209) and Washington prohibit the use of race or gender in contracting. At the local government level, local hire statutes and ordinances have been invalidated by court rulings finding that they violated

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<sup>18</sup> The methodological basis for the creation of the disparity index, and controversies, is addressed by Celec, Voich Jr, Nosari, and Stith Sr (2000); and Rice (1992).

state laws requiring that contracts be awarded to the lowest and responsible bidder. Two examples of these court rulings are *Associates Builders & Contractors, Inc. v. City of Rochester* (1986) finding that without statutory authorization, public agencies are not at liberty to prefer the low bids of resident contractors merely because of their local residency, and *Koester Contracting v. Board of Commoners of Warrick County* (1993) in which the court ruled that the contract award was illegal because the competitive bidding statute granted no preferences and required the award to be made simply to the lowest responsible and responsive bidder (Cantrell & Jain, 2013, p. 23 note 312). A key distinction is between states that have “home rule”, and those who do not, as states with home rule permit local governments broad authority to act unless a state statute, or the state constitution, explicitly limits their authority (Youens, 2010). In contrast, local governments in states without home rule have no power unless expressly granted by statute or the state constitution, which is known as “Dillon’s Rule.” For example, North Carolina requires local governments to award contracts to the lowest responsive, responsible bidder for purchase (supplies, materials, and equipment) and construction contracts greater or equal to \$30,000. Local governments have discretion about how to award contracts below those amounts and for service contracts of any amount (Youens, 2010).<sup>19</sup>

As a result of these legal requirements and challenges, Project Labor Agreements (PLAs), Development Agreements (DAs), and (especially) Community Based Agreements (CBAs) have

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<sup>19</sup> Formal bidding is required for purchase contracts \$90,000 or greater, and construction and repair contracts greater than \$500,000. Informal bidding is required for purchase contracts between 30-90k and for construction contracts between 30-500k (G.S. 143-129, 131). North Carolina state statute (G.S. 143-64.31) requires qualifications based selection for architectural, engineering, surveying, and construction management at risk services. Accounting contracts, janitorial contracts, consultant contracts are not covered Youens (2010).

become preferred to ordinances and statutes as the legal vehicles to establish preferences in construction and development projects (Cantrell & Jain, 2013; Edel, 2005). PLAs, DAs, and CBAs shift the debate about the legality of ordinances and statutes with respect to federal and state (and even international) law to one in which the agreement is based on contract law in which parties agree to specific actions. PLAs contractually establish the key terms of hiring procedures and working conditions between a construction or development company and union or nonunion trades (“Community Benefits Legal Dictionary,” n.d.). DAs are “contracts between a government entity and one or more developers establishing the terms of a single development project or series of related development projects” (Ibid.). The contracts detail the developer’s plans, land use information, development criteria, terms and conditions for approval of the project, and local government subsidies to the project (Cantrell & Jain, 2013). CBAs are legally binding contracts between a developer and community organizations defining specific benefits received by the community in return for a release of claims and support of the project by the organizations. Targeted hiring policies and job training are among the most common commitments included in CBA’s. CBAs and “first source hiring policies”, in which employers are required to exclusively interview candidates referred by a job training or referral organization for a specific period, may be nested into DAs. Recommendations for how to implement successful contract tools, like CBAs, are provided by Cantrell and Jain (2013); Wolf-Powers (2010). Effective compliance and enforcement mechanisms for procurement preference policies are discussed by Cantrell and Jain (2013).

## **2.4 Conclusion**

The purpose of this literature review was to examine whether and how the academic literature has recognized the use of procurement policy by the private and public sector to

achieve objectives other than simply receiving a good or service at a specified time, quantity, and quality. The review of the literature found that, indeed, the academic literature on both private and public sector organizations has examined the use of procurement policy to achieve economic, social, and environmental goals. In the first section of the literature review, a comprehensive search of academic databases found that multiple disciplines and fields, including public policy, law, urban and regional planning, environmental science, and public administration, have published articles on the use of public procurement to achieve these “side policies.” The search also established that the vast majority of articles on the topic were written since 2009, primarily examining European procurement at the national level of analysis, with only 6% (11 of 171) articles related to the U.S. The comprehensive search of the literature also revealed that with rare exceptions, the use of theory in the relevant SP and PPI literatures is thin. The two literatures, published primarily in non-US journals, have largely ignored framing the topic as related to the economic development, social equity, and environmental improvement goals of U.S. local governments. Thus, a key missing component of the literature is a better understanding of how U.S. governments use procurement policy to achieve economic, social, and environmental goals, and how well they achieve them.

The second section of the review placed these concerns at the center of the search for related literature, and sought answers to three questions: 1) how has the literature categorized the dual-purpose policy goals of governments, and how prevalent are these goals among U.S. local governments, 2) what factors explain their adoption in U.S. governments, and 3) what critiques exist to using government procurement policy to achieve multiple policy objectives.

The review of related literature found that separate strands identify the use of public procurement policy to achieve economic, social, and environmental goals (question 1). One

group of literature examines the economic factors related to government procurement. A subset of this literature examines how innovation, spurred by government demand and purchasing, is the main ingredient for national economic growth and small business development (Keller & Block, 2012; Oerlemans et al., 2007; Nelson, 1987). A second subset of the literature examines local preference laws at the national, state, and local level, their prevalence at the state and local level, their effect on local economic conditions, and the cost to government of local preference policies. A third subset of the literature examines the economic benefits of purchasing food used by governmental organizations from local farms. Questions insufficiently addressed in the literature are how often a local bidder wins, whether the price from local bidders is higher than non-local bidders, and how much governmental jurisdictions gain from awarding contracts to local bidders (Swenson, 2010). A second group of literature seeks to understand how government procurement can affect social outcomes, specifically to enforce anti-discrimination, promote distributive justice, or stimulate entrepreneurial activity by disadvantaged groups (McCrudden, 2004, 2007). One strand of literature examines the type and prevalence of social preference policies established by state and local governments to include disadvantaged groups, notably minority, women, disabled, and small businesses in public procurement contracts. A second strand of literature examines how living wage laws and local hiring policies related to government procurement can be used to achieve social outcomes. Significant gaps in the literature are a comprehensive understanding of which local governments have adopted these procurement policies and their effectiveness in achieving desired social outcomes. A third group of literature examines how governments use public procurement to achieve environmental goals. One strand of the literature looks at specific issues related to the use of procurement to achieve environmental goals. Examples include the examination green public procurement at the federal,

state, and local government levels and its consistency with traditional managerial values (Coggburn & Rahm, 2005, 2007; Coggburn, 2004); whether price preference policies or set-asides are more efficient policy vehicles to achieve environmental benefits for governments (Marron, 1997), the differences and similarities among private and public sector organizations in achieving green supply chain management practices (New et al., 2002), and managerial practices which can lead to improved environmental performance of public organizations (“NASPO Green Purchasing Guide,” n.d.). A second strand of literature seeks to better understand the prevalence of green procurement policies among U.S. governments. Surveys at the international (Brammer & Walker, 2011), state level (Moreland, 2015), and local level (ICMA, 2010; Qiao et al., 2009) exist, the latter of which are either narrowly centered on the prevalence of sustainable supply chain policies (ICMA) or use a non-representative sample (Qiao et al., 2009) to derive results. A significant gap in the literature is an updated inventory of procurement policies and practices by local U.S. governments.

The review then turned to better understand what factors have been identified in the literature to explain the adoption by U.S. governments of procurement policies with multiple objectives (question 2). The conclusion of the review was that, to the best of this researcher’s efforts, no theoretically grounded multivariate analysis could be located that identified what factors led governments to adopt procurement policies with economic, social, and environmental policy goals. However, the review also argued that local government policy adoption studies within related literatures, notably the living wage (Fairris & Reich, 2005) and local government sustainability (Bae & Feiock, 2013; Svava et al., 2013; Saha, 2009) literatures, could be used to explain the adoption of dual-purpose procurement policy goals. These literatures used socioeconomic and political factors to explain policy adoption, rather than broader theoretical

approaches in economics (expected utility), psychology (organizational norms), and sociology (isomorphic pressures). Thus, one of the underlying challenges to this literature, in addition to the lack of good data and measures of effectiveness, is the undertheorized nature of public procurement research (Flynn & Davis, 2014). Using a more theoretical approach to understand the drivers for adopting procurement policies with economic, social, and environmental goals by local governments would improve understanding.

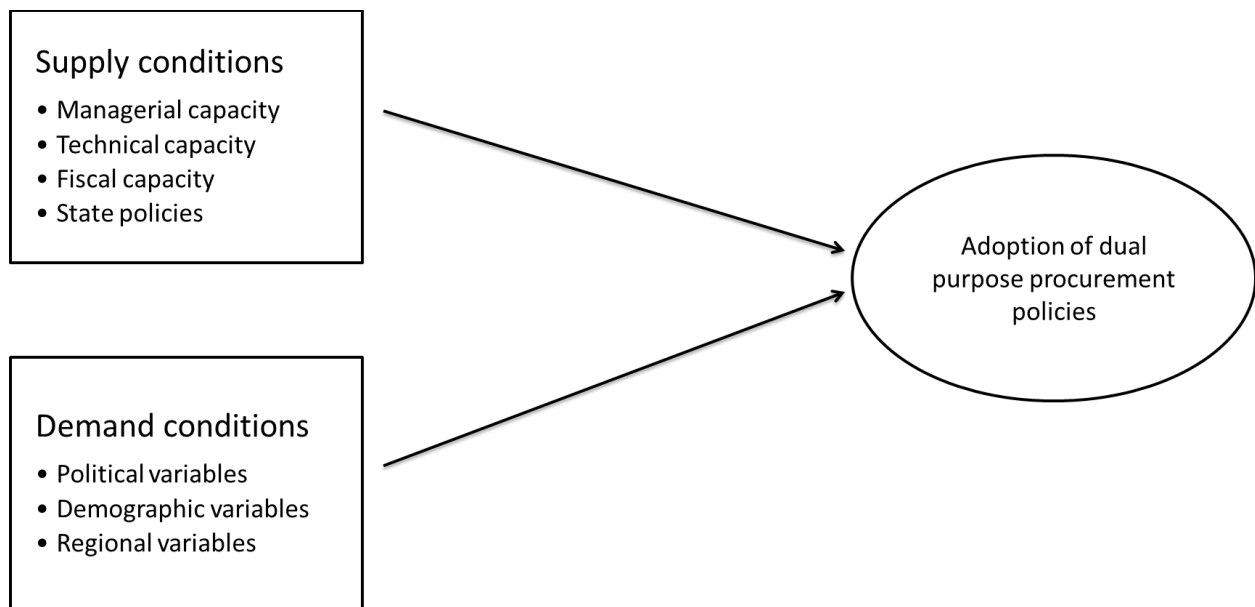
Finally, the review examined the critiques of using procurement policy to achieve dual-purpose policy goals (question 3). The critiques, to state the matter bluntly, are that procurement policies seeking to achieve economic, social, and environmental goals are either inefficient or illegal or both. The inefficiency argument is based on neoclassical economic theory arguing that procurement should be based only on non-discriminatory, price-based competition to achieve maximum efficiency. Deviation from these principles causes social harm, specifically by creating distortions in competition and free trade. Even if social harm is not manifest, governments should avoid adopting “side policies” because they are unable to effectively implement such procurement policies (Arrowsmith, 2003b). The critique regarding illegality is related to the principle of efficiency, because open competition, maximum access to opportunities, transparency, non-discrimination and price-based competition are the stated goals of procurement policy at the international (WTO GPA), state and local level. The review then turned to examining the body of law establishing limitations on the use of procurement policy to achieve geographic and social preference goals as a result of challenges based on U.S. constitutional protections (Privileges and Immunities Clause, Commerce Clause, and Equal Protection Clause). The movement towards project labor agreements (PLAs) and community-based agreements (CBAs) in construction procurement is due to these legal challenges. The

review concluded that a fundamental tension exists in procurement practice, reflected in the academic literature, between the goals enunciated by neoclassical economics and legal principles, and the practice by governments – including the federal, state, and local governments in the U.S. – to use procurement policy to achieve multiple policy objectives.

Having discussed the existing scholarship on the types, prevalence, and critiques of using dual-purpose public procurement policy goals, the next section develops a theoretical framework and hypotheses explaining the adoption of dual-purpose procurement policy goals in U.S. local governments. The overarching goal of the project is to apply the theoretical and multivariate modeling developed in the local government sustainability literature to the procurement domain, thus satisfying the need for theoretical rigor in the government procurement domain called for by Flynn & Davis (2014), while validating the local government policy adoption models developed by urban scholars to understand sustainability to a second empirical domain.

### CHAPTER 3: THEORETICAL FRAMEWORK AND HYPOTHESES

This project uses a modified political market framework (Lubell et al., 2005) to explain the adoption by U.S. local governments of public procurement policies achieving economic, social, and environmental goals. The fundamental assumption of the theoretical model is that governments adopt policies suitable to their political economies, which, in turn, depend on the supply and demand conditions illustrated in Figure 4.



Source: Author; adapted from Lubell et al. (2005)

**Figure 4: Conceptual Model**

Supply conditions are related to organizational capacity to respond to demand from the external environment. Organizational capacity is in three categories: managerial capacity, technical capacity and fiscal capacity (Homsy & Warner, 2015). *Managerial capacity* refers to the presence of human resources necessary to successfully undertake new policy. Homsy & Warner (2015) consider the presence of a city manager and council-manager form of government indicative of managerial capacity because city managers tend to be policy entrepreneurs (Schneider, Teske, & Mintrom, 1995; Teske & Schneider, 1994) and council-manager forms of

government are more likely to adopt more innovative policies earlier (Bowman & Kearney, 2012; Kearney, 2005; Kearney, Feldman, & Scavo, 2000; Kearney & Scavo, 2001) and more extensively (K. L. Nelson & Svara, 2011) than mayor-council municipalities. Thus, municipalities with council-manager forms of government are more likely to be associated with the adoption of dual-purpose public procurement policies than mayor-council municipalities (H<sub>1</sub>).

*Technical capacity* refers to the “ability to craft policies based upon information from advisors and experts in a central government” (Homsy & Warner, 2015, p. 51). Homsy & Warner associate community size with technical capacity, with smaller communities possessing lower levels of technical capacity due to “poorer understanding of the problems and few communities from which to draw inspiration” (51). Technical capacity can also be associated with the number of government personnel and the existence of a specialized office charged with implementing economic, social, and environmental goals across the organization. Thus, municipalities with larger populations are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with smaller populations (H<sub>2a</sub>); municipalities with larger numbers of city employees are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with smaller numbers of city employees (H<sub>2b</sub>); and municipalities with a staffed sustainability office are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities without a staffed sustainability office (H<sub>2c</sub>)

*Fiscal capacity* refers to the financial resources available to enact policies. Local governments with greater financial resources are more likely to be associated with the adoption of new policies (Kearney et al., 2000; Kearney, 2005; Svara et al., 2013), especially with regards

to a greater range of economic development (Betz, Partridge, Kraybill, & Lobao, 2012) and environmental sustainability policies (Hawkins et al., 2015; Lubell, Schneider, Scholz, & Mete, 2002; Sharp, Daley, & Lynch, 2010; Zahran, Brody, Vedlitz, Grover, & Miller, 2008). Hawkins et al., (2015) argue that a secure financial base is essential to support policy change and implementation in local governments. For example, municipalities with higher per capita general tax revenue were both more likely to sign and implement greenhouse gas mitigation strategies than municipalities with lower levels of tax revenue, who tended to sign but not implement the Mayors' Climate Protection Agreement (Hawkins et al., 2015; R. M. Krause, 2011, 2012; Sharp et al., 2010). Own source revenue, measured by the US Economic Census, captures the number of dollars generated through locally collected taxes rather than through intergovernmental transfers. Hawkins et al., (2015) use per capita own source revenue as a measure of human and financial capacity to support city-level sustainability policies. Similarly, municipalities with higher levels of own source revenue are more likely to be associated with the adoption of public procurement dual-purpose policies than municipalities with lower levels (H<sub>3</sub>).

The capacity of municipalities to supply procurement side-policies is constrained by the legal basis for municipalities to enter into contracts, which is established by state statute. Local governments in the United States are not permitted to adopt policies that conflict with state and federal constitutions or statutory requirements. Local governments are creations of state governments, a principle known as "Dillon's Rule", and states vary in the amount of authority they permit local governments to have. In "Home Rule" states, local governments are permitted to pass any local law and ordinance as long as it does not violate the state and federal constitutions or statutes. In other states, only limited authority is granted to local governments and they must receive permission from the state legislature to pass a law or ordinance not

specifically allowed by existing state legislation (“Home rule in the United States,” 2016). The authority of city managers is increasingly constrained by state governments (Bowman & Kearney, 2012). Therefore, the legal framework at higher levels of government, which Homsy and Warner (2015) call “multilevel governance”, is an important factor to consider when seeking to explain whether local governments adopt procurement side-policies. Based on these considerations, municipalities in home rule states are more likely to be associated with the adoption of dual-purpose public procurement policies than municipalities in states without home rule (H<sub>4</sub>).

Demand conditions are related to the characteristics of the external environment, specifically, demand from groups and citizens outside an organization’s formal bureaucratic structure. Demand conditions are related to what (Hawkins et al., 2015) call local “interest group support”, what Homsy & Warner (2015) call “civic capacity”, and Wang, Hawkins, Lebrede, and Berman (2012) call “political capacity.” Demand conditions have been conceptualized in one of two ways in the local government sustainability literature. The first approach has been to use measures of, in political science terms, issue salience (Epstein & Segal, 2000), in which survey respondents – typically city managers and sustainability officers – provided their *perception* of the importance of environmental sustainability, and less frequently, the importance of achieving economic and social sustainability goals in their jurisdiction. For example, Bae & Feiock (2013) and Hawkins et al., (2015) asked issue salience questions of city officials regarding the perceived level of support for sustainability among the general public/neighborhood groups, the chamber of commerce and environmental organizations. Similarly, Wang et al., (2012) construct a “political capacity” measure by asking survey respondents to provide the perceived level of support for sustainability efforts for a broad range of internal and external organizational stakeholders,

including department heads, mayor's office, managers, legislators, business leaders, employees, citizens, and nonprofits. The statistical effect of measures of perceived issue salience varies by the model specification and data source. Bae & Feiock (2013) report significant results for issue salience using a 2010 survey of large and medium U.S. municipalities. Hawkins et al. (2015) found a trend toward significance ( $p > .05$ ) for neighborhood groups and nonsignificant results for all other groups using data from the Integrated City Sustainability Database ("ICSD") data developed by Feiock, Krause, Hawkins, and Curley (2014). Wang et al. (2012), using a structural equation model, find that political capacity measures are not significantly associated with city sustainability index scores, although they may have an indirect effect on leveraging financial resources for the organization to implement sustainability efforts.

The second, simpler, approach is to use the findings from the pro-environmental behavior (PEB) literature (Clark, Kotchen, & Moore, 2003; Saphores, Ogunseitan, & Shapiro, 2012; Truelove, Carrico, Weber, Raimi, & Vandenberg, 2014) that demographic characteristics of a population predict the propensity to engage in behavior which does not harm the environment, and by extension, support local government sustainability action. Different societal groups may simply have different expectations and needs for sustainability (Portney, 2003), and knowing the demographic makeup of a city may be a good predictor of what sustainability actions the government will engage in. Relevant demographic characteristics evaluated in the local government sustainability literature are measures of income, race, age, and education. This second, simpler, approach is adopted for this project, with the resulting hypothesis that demographic characteristics of a city will predict the likelihood that it will engage in dual-purpose procurement policies. Specifically, younger, non-white communities and communities with higher levels of income and education are expected to adopt dual-purpose procurement

policies to a greater extent than older communities with lower levels of income and education (H<sub>5a-d</sub>). Please see Table 6 for a summary of proposed hypotheses. Previous research found that younger communities and communities with higher incomes and levels of education are more likely to support sustainability programs (Svara et al., 2013). Evidence exists that minorities are more likely to support sustainability policies than whites (Lubell et al., 2005), although Bae and Feiock (2013); Homsy and Warner (2015); and Svara et al. (2013) did not find statistically significant effects for race in their studies. Newell and Green (1997) find that a significant difference exists between African-Americans and whites in their environmental concern, which is negated as income and education rise.

Political variables are also relevant for any model purporting to be a political market model, although surprisingly, Bae and Feiock (2013); Homsy and Warner (2015); and Svara et al. (2013) do not include political variables in their models.<sup>20</sup> Saha (2009) finds that political attitudes are indicative of support for government sustainability activities. Political ideology and party affiliation are found by Konisky, Milyo, and Richardson (2008) to be excellent predictors of citizen preferences on environmental issues, with politically liberal views more likely to be supportive of sustainability efforts (Wang et al., 2012). Thus, municipalities with politically liberal voting records will be more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with less politically liberal voting records (H<sub>6</sub>).

Finally, regional differences in demand for dual-purpose procurement policies may exist that are not explained by other factors. Svara et al. (2013) find that municipalities in the West are

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<sup>20</sup> Only Bae & Feiock (2013) explicitly state they are using a political market model. Still, the lack of political variables in these other models is surprising.

much more likely to adopt sustainability policies, although the authors do not provide a causal mechanism to help us understand why municipalities in western states are more likely to adopt sustainability policies. Perhaps resource conservation, particularly with regards to water, is simply a way of life for municipalities in the West. The PEB literature generally finds that people in the South and Midwest are less likely to be concerned with sustainability policies than people in the Northeast and West (Dunlap, 1993). Thus, region may be an important control variable to help understand why some municipalities may or may not demand dual-purpose procurement policies. The null hypothesis is that adoption of dual-purpose procurement policies will vary significantly by region (H<sub>7</sub>). A summary of hypotheses is provided in Table 6.

**Table 6: Summary of hypotheses**

<u>Supply Conditions</u>	
Hypothesis 1:	Municipalities with council-manager forms of government are more likely to be associated with the adoption of dual-purpose procurement policies than mayor-council municipalities. ( <i>managerial capacity</i> )
Hypothesis 2a:	Municipalities with larger populations are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with smaller populations. ( <i>technical capacity: population</i> )
Hypothesis 2b:	Municipalities with larger numbers of city personnel are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with smaller numbers of city personnel. ( <i>technical capacity: city personnel</i> )
Hypothesis 2c:	Municipalities with a staffed sustainability office are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities without a staffed sustainability office. ( <i>technical capacity: sustainability office</i> )
Hypothesis 3:	Municipalities with higher levels of own source revenue are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with lower levels. ( <i>fiscal capacity</i> )
Hypothesis 4:	Municipalities in “home rule” states are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities in states without home rule. ( <i>multilevel governance</i> )
<u>Demand Conditions</u>	
Hypothesis 5a:	Municipalities with younger populations are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with older populations younger. ( <i>demographic variables: age</i> )
Hypothesis 5b:	Municipalities with larger non-white populations are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with smaller non-white populations. ( <i>demographic variable: race</i> )
Hypothesis 5c:	Municipalities with higher average levels of income are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with lower levels of income. ( <i>demographic variable: income</i> )
Hypothesis 5d:	Municipalities with higher average levels of education are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with lower levels of education. ( <i>demographic variable: education</i> )
Hypothesis 6:	Municipalities with politically liberal voting records will be more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with less politically liberal voting records. ( <i>political variables</i> )
Hypothesis 7:	Adoption of dual-purpose procurement policies will vary significantly by region. ( <i>regional differences</i> )

## CHAPTER 4: DATA AND METHODS

### 4.1 Introduction

Governments use purchasing to achieve a variety of goals beyond the receipt of goods or services at a specified time, price, and quality. The goals provide for an additional public benefit to be derived from the procurement activities of governments, such as increased innovation, economic development, social equity, or environmental sustainability. The purpose of this project is to better understand the extent to which local U.S. governments use procurement to achieve economic, social, and environmental goals with their purchasing. The specific research questions investigated in this project are “what policy goals do U.S. municipalities seek to achieve with their procurements?”, “how prevalent are dual-purpose procurement policies among U.S. municipalities?”, and “what factors explain the adoption of dual-purpose policy goals among U.S. municipalities?”

The purpose of the empirical portion of this project (Chapters 4 and 5) is to use an original municipal survey to help answer these research questions. The first portion of Chapter 4 provides descriptions of how the survey was developed, who responded, and statistical support for the representativeness of the survey as a national sample of municipalities. In the second portion of the chapter, descriptive statistics of the dependent variables and the results of a principal components analysis supporting the combination of individual responses into economic, social and environmental dimensions are presented. The following chapter, Chapter 5, provides the multivariate regression results of the political market model conceptualizing “dual-use” procurement policy as the outcome of both political demand and supply.

## 4.2 Survey

### 4.2.1 Survey goals

The primary goal of the survey was to identify the prevalence of dual-purpose procurement policies in U.S. municipalities. Governments may vary the types of preferred purchasing policies they design and implement, ranging from an exclusive focus on economic development to combinations of economic, social, and environmental goals (Moreland, 2012, 2015; Qiao et al., 2009). Secondary goals of the survey were to provide descriptive characteristics about the municipality, including the form of government, number of municipal employees, the presence of a sustainability office, and the perceived level of political conservatism of voters and elected officials as either direct measures or substitutes for variables needed for regression analysis.

### 4.2.2 Sample development

To accomplish these goals, a survey instrument was developed requesting municipal officials responsible for purchasing (city managers and purchasing directors) of municipalities with populations greater than 50,000 to designate what preference policies exist in their jurisdiction and to provide descriptive information about their organization and political context. The target population for this study was municipalities with populations over 50,000. The survey was limited to municipalities with populations of 50,000 or greater to keep the sample frame manageable<sup>21</sup> and because of the findings in Qiao et al., (2009) that small municipalities generally do not use public procurement to achieve economic, social, or environmental goals. After the draft survey was developed, the survey instrument was submitted to and granted

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<sup>21</sup> In 2016, of the 19,505 incorporated places in the U.S., 16,470 have populations under 10,000. 758 municipalities in the U.S. had populations of 50,000 or greater (US\_CENSUS, 2017).

exempt status by North Carolina State University's Institutional Review Board (IRB) on July 16, 2016.

#### 4.2.3 Survey deployment

The draft survey was pre-tested from July 20 – August 3, 2016, with 10 municipalities in three population categories: small (under 100,000), medium (between 100,000 to 250,000), and large (over 250,000). The municipalities were invited to respond to the electronic survey hosted on the Qualtrics survey platform ([www.Qualtrics.com](http://www.Qualtrics.com)), and to make comments about the survey. Six of the 10 invited municipalities responded. Their responses indicated that minor modifications to the questions were required to clarify terms used in the survey. Specifically, respondents were uncertain about the difference between project labor agreements and development agreements, which brief definitions at the beginning of the question helped resolve. A second issue raised during the initial survey test phase was the accidental omission of counties in a drop-down list for the states of California and Texas; a related issue existed for the state of Virginia in which independent municipalities were not listed. No other technical issues with accessing or responding to the survey were reported by the initial survey respondents.

As a result of the pre-test, the remaining municipalities were randomly divided into halves and survey invitations were sent electronically to the city manager and purchasing director for manager-council governments, and the mayor and purchasing director for mayor-council governments. The invitation to the first half of municipalities was sent on August 29, 2016, and the second half on October 10, 2016. The time between the periods was needed to gather the electronic mail (“email”) addresses for appropriate municipal officials, a surprisingly burdensome process. For municipalities for which email addresses for municipal officials were not available on the municipal website, remediation steps were taken. In the end, a 100%

coverage rate for all 758 municipalities was achieved with the assistance of the National Institute of Government Procurement (NIGP) electronic membership database, the websites of individual municipal governments, and, for a handful of primarily Northeast municipalities, a call requesting the email addresses of the relevant officials. Reminder emails for each round were sent after ten and 25 days after the initial survey invitation, and again three weeks before the survey closed. The survey was closed on December 21, 2016. The appendix provides the emailed letters for each round of invitation and reminders.

#### 4.2.4 Survey response rate and respondents

Invitations to participate in the web-based survey were successfully sent to all 758 U.S. municipalities with populations greater than 50,000, a 100% contact rate. The survey received 327 responses, of which 242 were complete, 85 responses were incomplete responses, and 29 were redundant responses from the same municipality. In the majority (48/85) of incomplete cases, respondents replied to at least some of the questions regarding the municipality's preferred purchasing practices and were retained for analysis.

The unit of analysis for this study is the municipality. Because the survey was sent to two informants from the same municipality, there were 29 cases in which two completed surveys from the same municipality were received. In these cases, the following decision rules were used to identify the primary informant: first, the most complete response was kept; second, the response from the person with more seniority was kept. For instance, if both a procurement analyst and city manager responded, the city manager's response was recorded as the municipality's survey response. The result was 258 responses used for data analysis, which corresponds to a 34.0% (258/758) response rate. Descriptive statistics for respondents are provided in Tables 7-11.

**Table 7: Geographic Region of Responding Municipalities**

Region	Total	Percent
Midwest	60	23.3%
Northeast	11	4.3%
South	97	37.6%
West	90	34.9%
Total	258	100%

\* US Census Regions

**Table 8: Population of Responding Municipalities**

Population	Total	Percent
50-75k	89	34.5%
75-100k	51	19.8%
100-150k	48	18.6%
150-200k	17	6.6%
200-250k	9	3.5%
250-500k	25	9.7%
500k - 1 million	13	5.0%
more than 1 million	6	2.3%
Total	258	100%

**Table 9: Form of Government of Responding Municipalities**

Government	Total	Percent
Mayor - Council	61	23.6%
Council - Manager	195	75.6%
Other	2	0.8%
Total	258	100%

**Table 10: Position of Respondents**

Position	Total	Percent
City Manager / Asst City Manager	45	17.4%
Director/ Asst Director of Finance	37	14.3%
Purchasing/Procurement Manager or Asst Manager	79	30.6%
blank/no response	97	37.6%
Total	258	100%

**Table 11: Years of Experience of Respondents**

Years of Experience	Total	Percent
Less than 5	32	12.4%
5-10	44	17.1%
11-15	38	14.7%
16-20	29	11.2%
more than 20	67	26.0%
blank/no response	48	18.6%
Total	258	100%

4.2.5 Response Analysis

Response bias threatens the generalizability of results in survey research due to the potential that municipalities responding to the survey are different than municipalities not responding to the survey. To address this limitation, Wang et al. (2012) recommend conducting tests of key socioeconomic characteristics (population, income, and form of government) to determine whether responding municipalities are different from nonresponding municipalities. Tables 12- 14 compare the survey respondents with the sampling frame of all U.S. municipalities greater than 50,000 for geographic region, population, and the form of government.

**Table 12: Comparison of Respondents and Sampling Frame by Region**

Region	Respondents (A)	Sampling Frame (B)	Difference (A-B)
Midwest	23%	21%	2%
Northeast	4%	11%	-7%
South	38%	31%	7%
West	35%	38%	-3%

Note: Sampling frame is derived from U.S. Census, Current Population Survey, 2016.

**Table 13: Comparison of Respondents and Sampling Frame by Population categories**

Population	Respondents (A)	Sampling Frame (B)	Difference (A-B)
50-75k	35%	40%	-5%
75-100k	20%	20%	0%
100-150k	19%	17%	2%
150-200k	7%	7%	0%
200-250k	4%	5%	-1%
250-500k	10%	7%	3%
500k - 1 million	5%	3%	2%
more than 1 million	2%	1%	1%

Note: Sampling frame is derived from U.S. Census, Current Population Survey, 2016.

**Table 14: Comparison of Respondents and Sampling Frame by Forms of Government**

Government	Respondents (A)	Sampling Frame (B)	Difference (A-B)
Mayor - Council	24%	33%	-9%
Council - Manager	76%	59%	17%
Other	1%	8%	-7%

Note: Sampling frame data is derived from ICMA (2010)

Using a +/- 5% rule of thumb for representativeness, a review of regions, population, and form of government demonstrates that the survey slightly underrepresents the Northeast region, and Mayor-Council and Other forms of government. The survey slightly over-represents the South and Council-Manager forms of government. When compared to national averages, populations in respondent municipalities had slightly higher rates of racial diversity, education, and poverty than the nation as a whole.

**Table 15: Comparison of Respondents and Sampling Frame by Demographic Variables**

	Responding municipalities (A)	US Average (B)	Difference (A-B)
% non-Hispanic white	57%	64%	-7%
% with bachelor's degree	33%	30%	3%
% in poverty	16%	14%	2%

Note: U.S. averages derived from Census Quick Stats (accessed November 14, 2017)

### **4.3 Dependent Variables**

#### **4.3.1 Primary dependent variable**

The main dependent variable for the study is a count of municipal preferred purchasing policies.

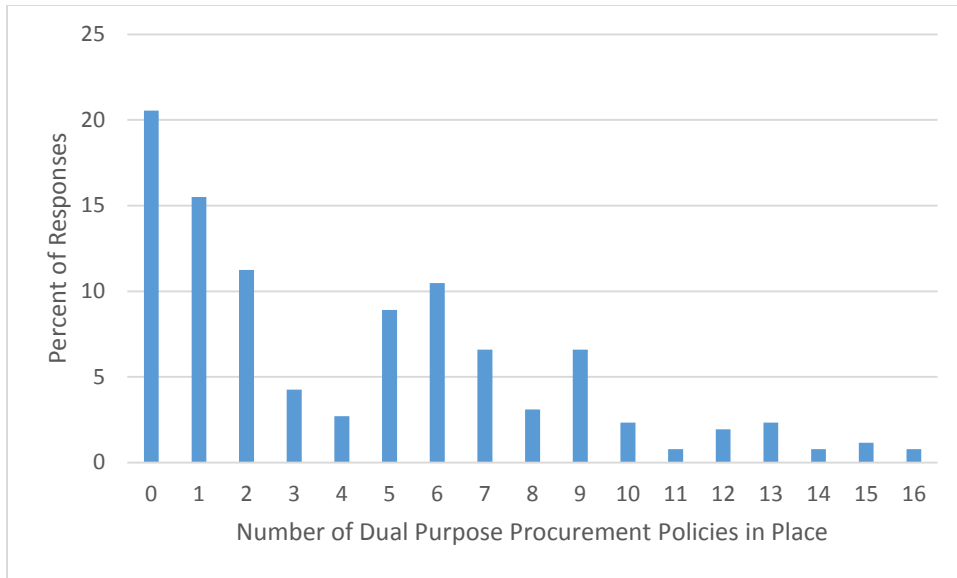
The counts are derived by summing the responses to the following questions:

- “Does your municipality have preferred purchasing goals for any of the following business categories?” [locally-owned business, minority-owned business, women-owned business, disabled-owned business, veteran-owned business, small business enterprise]
- Does your municipality have local hiring or living wage policies that apply to government purchasing and/or contracting? [Living wage and local hiring]
- Does your municipality have environmentally preferable purchasing goals for any of the following product categories? [products with recycled content, products that can be recycled, products that can be reused, products produced with alternative fuels, energy efficient products, water efficient products, hybrid fuel vehicles (gas & electric), alternative fuel vehicles (LPG/LNG, biofuel, electric)]

The resulting composite scale ranges from 0-16. Response categories to the questions are “yes”, “no” and “don’t know”. Descriptive statistics and a histogram for the composite scale are provided in Table 16 and Figure 5 below.

**Table 16: Primary Dependent Variable Descriptive Statistics**

Index Value	Frequency	Percent of Responses
0	53	20.54
1	40	15.50
2	29	11.24
3	11	4.26
4	7	2.71
5	23	8.91
6	27	10.47
7	17	6.59
8	8	3.10
9	17	6.59
10	6	2.33
11	2	0.78
12	5	1.94
13	6	2.33
14	2	0.78
15	3	1.16
16	2	0.78
<b>Total</b>	<b>258</b>	<b>100.00%</b>
	Mean	4.252
	Variance	16.057
	Skewness	0.840
	Kurtosis	2.940



**Figure 5: Histogram of Composite Scale Dependent Variable**

Poisson and negative binomial regression models are appropriate for count dependent variables (Long & Freese, 2014). Poisson regression is used in the estimation portion of this dissertation because the distribution of the dependent variable more closely approximates a Poisson distribution than a negative binomial distribution. However, comparisons between Poisson and negative binomial estimation results are provided in the appendix for interested readers.<sup>22</sup>

#### 4.3.2 Secondary dependent variables

Although the main dependent variable is a count of all sixteen policies, alternative dependent variables are defined and estimated in this project. Perhaps the simplest alternative dependent

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<sup>22</sup> The resulting dependent variable is not normally distributed. Two tests used to measure for the normal distribution of data, the Jarque-Bera test (sktest) for normality and the Shapiro-Wilk (swilk) test for normal data, result in p-values of 0.000, rejecting the null hypothesis that the data are normally distributed. Non-normal distribution is not surprising, and indeed expected, for count variables (Long and Freese 2006).

variable would be a disaggregation of the composite dependent variable into the sixteen individual components listed in Table 17.

**Table 17: Preferred Purchasing Policies**

#	Category	Obs.	# responding “yes”	% responding “yes”
1	locally-owned business	258	108	42%
2	minority-owned business	258	72	28%
3	women-owned business	258	72	28%
4	disabled-owned business	258	70	27%
5	veteran-owned business	258	71	28%
6	small business enterprise	258	70	27%
7	products with recycled content	238	81	34%
8	products that can be recycled	238	69	29%
9	products that can be reused	238	50	21%
10	products produced with alt fuels	238	48	20%
11	energy efficient products	238	82	35%
12	water efficient products	238	72	30%
13	hybrid fuel vehicles (gas & electric)	238	66	28%
14	alt. fuel vehicles (LNG, etc.)	238	67	28%
15	local hire	231	34	15%
16	living wage	231	65	28%

The key benefit of a fully disaggregated dependent variable is that it does not assume that the economic, social, and environmental policies are parts of a similar, single construct, and instead allows the political market model to be estimated for each policy through regression analysis. There is much to recommend to this approach in the absence of a well-defined theoretical construct or empirical evidence that, indeed, the sixteen measures are actually all measuring a single concept.

However, fully disaggregating the dependent variable may not be desirable for at least two reasons. First, the goal of the research project is to understand the level of adoption by U.S. municipalities of public procurement practices that achieve economic, social, and environmental goals, a theoretical concept established in the literature as sustainable procurement. Estimating the effects of the political market on individual policies simply will not achieve the objectives of

the project since the concept being evaluated is about a basket of, not single, policies. Second, the survey questions ask respondents about the existence of policies within a bundle of activities which are likely correlated. For example, if a municipality has a preferred purchasing policy for recycled products, it is highly likely that it also will have a policy in place for purchasing energy-efficient products. Thus, the adoptions of policies are likely bundled in some fashion rather than fully independent policies initiated and implemented separately.

The question whether the dependent variable is a composite of one or more factors can be answered empirically through principal component analysis (PCA).<sup>23</sup> PCA finds components which are a linear combination of the original variables to achieve maximum variance and which are also uncorrelated with other components (Katchova, 2014). The analysis creates a factor loadings matrix, which shows the correlation between the factors and the original variables. By

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<sup>23</sup> There is a reasonable argument about whether Principal Components Analysis (PCA) or Exploratory Factor Analysis (EFA) is more appropriate to identify correlations among factors. The difference between the two analyses is theoretical; factor analysis “assumes the existence of a few common factors driving the variation in the data while principal component analysis does not” (Katchova, 2014). I prefer the less restrictive assumptions of PCA regarding the presumption of common factors, since identifying whether common factors are present seems to be precisely the point of the exercise.

A second argument regarding the suitability of PCA for dichotomous variables is also recorded in the literature (Filmer & Pritchett, 2001; Kolenikov & Angeles, 2009). The outline of the argument is that running PCA on a set of dummy variables does not perform as well as other methods for analyzing discrete data, including simple data transformations to ordinal variables, and more sophisticated transformations such as using polychoric correlations (Kolenikov & Angeles, 2009). The PCA analysis conducted for this project is based on the percent of municipalities adopting a policy, which is a continuous variable for which PCA was designed (Ibid.); thus, the debate regarding the suitability of dichotomous variables for PCA is not relevant to this project.

conducting an Eigenvalue decomposition of the correlation matrix, PCA can illustrate which variables are most correlated with one another (Ibid.).

The first step in PCA is to create a correlation matrix of all variables because the analysis works best when variables have high levels of correlation (Katchova, 2014). Guidance varies about what levels of correlation among variables is necessary to conduct PCA, but generally, correlations around .5 and above are desirable (Ibid.).<sup>24</sup> The correlation matrix for the components of the dependent variable is provided in Table 18 below. Correlations above .5 are bolded.

**Table 18: Correlation matrix between DV components**

	locally-owned business	minority-owned business	women-owned business	disabled-owned business	veteran-owned business	small business enterprise	products with recycled content	products that can be recycled	products that can be reused	products produced with alt fuels	energy efficient products	water efficient products	hybrid fuel vehicles (gas & electric)	alt. fuel vehicles (LNG, etc.)	local hire	living wage
locally-owned business	<b>1.000</b>															
minority-owned business	0.242	<b>1.000</b>														
women-owned business	0.242	<b>1.000</b>	<b>1.000</b>													
disabled-owned business	0.231	<b>0.967</b>	<b>0.967</b>	<b>1.000</b>												
veteran-owned business	0.262	<b>0.956</b>	<b>0.956</b>	<b>0.967</b>	<b>1.000</b>											
small business enterprise	0.251	<b>0.967</b>	<b>0.967</b>	<b>0.978</b>	<b>0.967</b>	<b>1.000</b>										
products with recycled content	0.136	0.036	0.036	0.043	0.056	0.043	<b>1.000</b>									
products that can be recycled	0.168	0.101	0.101	0.108	0.101	0.108	<b>0.835</b>	<b>1.000</b>								
products that can be reused	0.155	0.142	0.142	0.147	0.142	0.147	<b>0.627</b>	<b>0.778</b>	<b>1.000</b>							
products produced with alt fuels	0.153	0.108	0.108	0.138	0.108	0.114	<b>0.538</b>	<b>0.541</b>	<b>0.573</b>	<b>1.000</b>						
energy efficient products	0.110	0.050	0.050	0.058	0.071	0.037	<b>0.643</b>	<b>0.686</b>	<b>0.575</b>	<b>0.532</b>	<b>1.000</b>					
water efficient products	0.085	-0.023	-0.023	-0.017	-0.002	-0.017	<b>0.545</b>	<b>0.575</b>	<b>0.591</b>	<b>0.520</b>	<b>0.736</b>	<b>1.000</b>				
hybrid fuel vehicles (gas & electric)	0.024	0.040	0.040	0.068	0.040	0.068	<b>0.529</b>	<b>0.530</b>	<b>0.501</b>	<b>0.620</b>	<b>0.563</b>	<b>0.590</b>	<b>1.000</b>			
alt. fuel vehicles (LNG, etc.)	0.055	0.077	0.077	0.105	0.077	0.105	0.499	<b>0.564</b>	<b>0.541</b>	<b>0.660</b>	<b>0.573</b>	<b>0.623</b>	<b>0.815</b>	<b>1.000</b>		
local hire	0.140	0.130	0.130	0.134	0.130	0.162	0.013	0.111	0.149	0.007	-0.042	0.019	0.020	0.070	<b>1.000</b>	
living wage	0.047	0.092	0.092	0.077	0.071	0.077	0.103	0.152	0.202	0.146	0.097	0.111	0.092	0.107	0.256	<b>1.000</b>

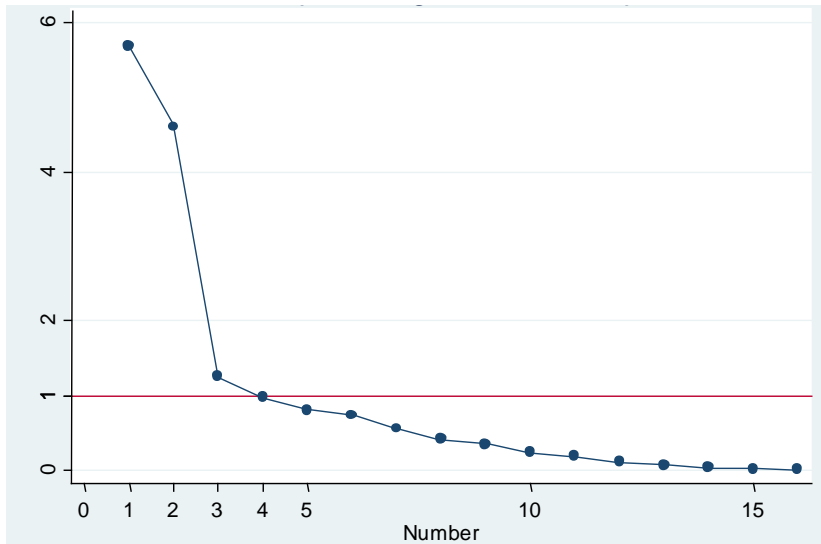
The second step of PCA is to derive the Eigenvalues to determine the number of components with values above 1. Eigenvalues less than 1 account for less variability than does a

<sup>24</sup> Specific tests, such as the Kaiser-Meyer-Olkin (KMO) and Bartlett’s sphericity test may be used as posttests to determine whether PCA should be conducted. The KMO measure of sampling adequacy takes values between 0 and 1, with values above 0.5 considered satisfactory for a principal components analysis. Bartlett’s sphericity test is a chi-square test that examines whether the correlation matrix should be factored because the data are not independent (Stata “Postestimation tools for pca and pcamat”).

single variable and are not retained in the component analysis (Suhr, 2005). The analysis (shown Table 19 and Figure 6) demonstrate that three components are above the eigenvalue of 1, but that a fourth component is very close to the breakoff point. Three components explain 72% of the variation in the data; four components explain 78% of the variation in the data.

**Table 19: Principal component Eigenvalues and cumulative proportions**

Principal components/correlation				
Number of obs = 231				
Number of comp. = 15				
Trace = 16				
Rotation: (unrotated = principal)				
Rho = 1.0000				
Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	<b>5.681</b>	1.077	0.355	<b>0.355</b>
Comp2	<b>4.605</b>	3.350	0.288	<b>0.643</b>
Comp3	<b>1.255</b>	0.278	0.078	<b>0.721</b>
Comp4	<b>0.976</b>	0.167	0.061	<b>0.782</b>
Comp5	0.809	0.077	0.051	0.833
Comp6	0.732	0.175	0.046	0.879
Comp7	0.556	0.152	0.035	0.913
Comp8	0.404	0.059	0.025	0.939
Comp9	0.345	0.114	0.022	0.960
Comp10	0.231	0.049	0.014	0.975
Comp11	0.182	0.074	0.011	0.986
Comp12	0.109	0.045	0.007	0.993
Comp13	0.063	0.033	0.004	0.997
Comp14	0.031	0.010	0.002	0.999
Comp15	0.020	0.020	0.001	1.000
Comp16	0.000	.	0.000	1.000



**Figure 6: Scree plot of PCA eigenvalues**

In the third step of PCA, the Eigenvectors are derived to identify loadings on each component. Guidance about what constitute meaningful loadings is subject to some debate in the literature. Garson (2013) recommends using component factor loadings at .6 or greater with no cross-loadings greater than .4; Katchova (2014) uses factor loadings of .3 or greater to demonstrate separate components. However, strict cutoff points are generally not recommended due to the role of theoretical expectations in interpreting component structure (Katchova, 2014).

Table 20 demonstrates the results of the Varimax rotated PCA eigenvectors, using the .3 cutoff as the basis for defining components. Component 1 clusters around environmental variables, component 2 clusters around the Disadvantaged Business Enterprise (DBE) variables, component 3 loads on local hire/living wage and locally-owned business variables. If four

components are used, then component 3 becomes the local hire/living wage aspects of the “dual-purpose” public procurement concept, and component 4 becomes locally-owned businesses only.

**Table 20: PCA Pattern Matrix**

<b>Variable</b>	<b>Comp1</b>	<b>Comp2</b>	<b>Comp3</b>	<b>Comp4</b>
locally-owned business			<b>.307</b>	<b>.814</b>
minority-owned business		<b>.986</b>		
women-owned business		<b>.986</b>		
disabled-owned business		<b>.984</b>		
veteran-owned business		<b>.978</b>		
small business enterprise		<b>.983</b>		
products with recycled content	<b>.804</b>			
products that can be recycled	<b>.837</b>			
products that can be reused	<b>.777</b>			
products produced with alt fuels	<b>.764</b>			
energy efficient products	<b>.829</b>			
water efficient products	<b>.807</b>			
hybrid fuel vehicles (gas & electric)	<b>.802</b>			
alt. fuel vehicles (LNG, etc.)	<b>.816</b>			
local hire			<b>.794</b>	
living wage			<b>.717</b>	

Note: Rotation Method is Varimax with Kaiser Normalization

The results of the PCA supports the conclusion that at least three, and arguably four, separate components make up the composite scale conceived as the key dependent variable. The results of the PCA do not support a full disaggregation of the composite scale into sixteen different dependent variables since the social and environmental variables hang together quite well. The larger questions are whether the third dimension should be modeled as only local business preferred purchasing policies, whether local hiring and living wage policies should be included with local business preferred purchasing policies, or if local hiring and living wage policies should be modeled as a separate dimension. A reference to practice is required to help make this determination. Since municipalities rationalize local business preferred purchasing policies as promoting local economic development, local business policies must be kept in the analysis. In

the regression portion of the project, the guidance of the PCA will be used to estimate the effects of five dependent variables: 1) composite (“Aggregate Index”), 2) environmental (“Environmental Index”), 3) social (“Social Index”), 4) local hiring and living wage (“Local Hire and Living Wage Index”), and 5) local business only (“Local Business”). Descriptive statistics for all five dependent variables are provided in Table 21 below. The correlation matrix for the six dependent variables is provided in Table 22.

**Table 21: Dependent variable descriptive statistics**

	Min	Max	Mean	Std. Dev.	Variance	Skewness	Kurtosis
Aggregate Index	0	16	4.252	4.007	16.057	0.840	2.940
Component 1: Environmental Index	0	8	2.074	2.851	8.131	1.059	2.594
Component 2: Social Index	0	5	1.376	2.201	4.843	1.018	2.070
Component 3: Local Hire Living Wage	0	2	0.375	0.617	0.381	1.418	3.860
Component 4: Local Business	0	1	0.416	0.494	0.244	0.341	1.116

Note: Aggregated Index is a composite of all policies; Component 1: Environmental Index is a composite of all environmental purchasing policies; Component 2: Social Index is a composite of all DBE purchasing policies; Component 3: Local Hire Living Wage is a composite of local hire and living wage policies. Component 4: Local Business is the local business policy measure only.

**Table 22: Correlation matrix for dependent variables**

	Aggregated Index	Environmental Index	Social Index	Local Hire Living Wage	Local Business
Aggregate Index	1				
Environmental Index	0.7784	1			
Social Index	0.6389	0.0559	1		
Local Hire/Living Wage	0.3427	0.1606	0.1177	1	
Local Business	0.3312	0.0835	0.2503	0.0686	1

#### 4.4 Independent Variables

The independent variables in this project operationalize the demand and supply conditions of the political market model hypothesized to help explain the adoption of dual-purpose procurement policies by municipalities in the United States. The narrative of this section describes the data and sources used to operationalize the supply and demand conditions of the

model. A summary of the data and operationalization of the independent variables is provided in Table 23.

**Table 23: Variable Descriptions and Data Sources**

<b>Variable</b>	<b>Description and Operationalization</b>	<b>Source</b>
<b><u>Supply Conditions</u></b>		
(H <sub>1</sub> ): managerial capacity	1 for council-manager; 0 for mayor-council or other form	ICMA
(H <sub>2</sub> ): technical capacity		
population	city population	US Census
government size	number of municipal employees	Original survey
sustainability office	existence of staffed sustainability office (1 for existing office; 0 for non-existing office)	Original survey
(H <sub>3</sub> ): fiscal capacity	own-source revenue (% of total revenue - <i>see note</i> )	US Census of Governments
(H <sub>4</sub> ): multilevel governance	dummy variable (1= "home rule state", 0= all others)	Nat'l League of Cities
<b><u>Demand Conditions</u></b>		
(H <sub>5</sub> ): Demographic variables		
age	% of population 25-44	US Census
race	% of population non-Hispanic white	US Census
income	median family income; poverty rate	US Census
education	% with bachelor degree or higher	US Census
(H <sub>6</sub> ): Political variables		
% Democratic votes	% of Democratic votes in national elections	Congressional Quarterly
(H <sub>7</sub> ): Regional variables		
South	dummy variable (1=South, 0=all other regions)	Calculated
West	dummy variable (1=West, 0=all other regions)	Calculated
California	dummy variable (1=California, 0=all other states)	Calculated

Note: "own source revenue" measures the amount of a local government's revenue that is generated from its local citizens and businesses rather than intergovernmental transfers from higher levels of governments. It commonly used to measure a city's financial viability, independence, and control ("Global City Indicators Facility," n.d.).

#### 4.4.1 Supply conditions

The supply condition in the conceptual model has four components: managerial capacity, technical capacity, fiscal capacity, and multilevel governance. Managerial capacity refers to the existence of human resources necessary to undertake new policy. Homsy and Warner (2015) consider the presence of a city manager and council-manager form of government indicative of

managerial capacity because city managers tend to be policy entrepreneurs (Schneider et al., 1995; Teske & Schneider, 1994) and council-manager forms of government are more likely to adopt innovative policies earlier (Bowman & Kearney, 2012; Kearney et al., 2000; Kearney & Scavo, 2001; Kearney, 2005) and more extensively (Nelson & Svara, 2011) than mayor-council municipalities. Forms of government are coded 1 for council-manager and 0 for mayor-council or other municipal forms of government. The source of the data is the International City and County Manager’s Association (ICMA) *Municipal Form of Government Survey 2011*, question 1. The form of government for respondents is summarized in Table 24.

**Table 24: Descriptive statistics for respondent form of government**

Category name	Category	Number	Percent
Mayor-Council	0	63	24.42%
Council-Manager	1	195	75.58%
	total	258	100

Technical capacity is related to the ability to craft policies from advisors. Homsy & Warner (2015) associate technical capacity with community size, with smaller communities possessing lower levels of technical capacity due to a “poorer understanding of the problems and few communities from which to draw inspiration” (51). However, technical capacity could also be associated with the presence of a sustainability office staff in the municipality or the number of city employees. Therefore, three measures of technical capacity are operationalized: city population, the existence of a staffed sustainability office in the municipality, and third, the number of city employees. The source of population data is from the U.S. Census, Census QuickFacts (<https://www.census.gov/quickfacts/>), which provides decennial census and yearly population estimates at the municipal level. The source of information for the existence of a sustainability office and the number of city employees is data self-identified by survey respondents. The questions asked:

*Q: Does your municipality have a staffed sustainability office?*

**Table 25: Descriptive statistics for presence of sustainability office**

Category name	Category	Number	Percent
No	0	184	71.32%
Yes	1	74	28.68%
	total	258	100

*Q: How many FTE employees does your municipality have?*

**Table 26: Descriptive statistics for number of municipal employees**

Category name	Category	Number	Percent
< 100	1	6	2.33%
100-249	2	24	9.30%
250-499	3	48	18.60%
500-999	4	91	35.27%
1,000-2,500	5	55	21.32%
> 2,500	6	34	13.18%
	total	258	100%

Fiscal capacity measures the availability of financial resources to enact policies in the city. Hawkins et al., (2015) argue that a secure financial base is essential to support policy change and implementation in local governments. For example, municipalities with higher per capita general tax revenue were both more likely to sign and implement greenhouse gas mitigation strategies than municipalities with lower levels of tax revenue who tended to sign but not implement the Mayors' Climate Protection Agreement (Hawkins et al., 2015; R. M. Krause, 2011, 2012; Sharp et al., 2010). Taliercio (2005) argues that own source revenue is a good measure of financial independence of governments throughout the world because the measure captures the number of dollars generated through locally collected taxes rather than through intergovernmental transfers. In the U.S., own source revenue is measured by the US Census, Annual Survey of Public Employment & Payroll (ASPEP), Local Government Employment and

Payroll series.<sup>25</sup> Hawkins et al., (2015) use own source revenue as a measure of human and financial capacity to support city-level sustainability policies. This project mirrors the use of municipal own source revenue as a measure of the fiscal capacity of municipal governments to adopt dual-purpose procurement policies. Own source revenue was calculated from the ASPEP, which captures the amount of municipal own source revenue from total revenues.<sup>26</sup> Please see Table 27 for descriptive statistics for municipal own source revenue variable.

**Table 27: Descriptive statistics for municipal own source revenue**

	Municipal Own-source Revenue (2015) (total)
Min	0.492
Max	0.991
Mean	0.839
Std. Dev.	0.107
Variance	0.011
Skewness	-0.959
Kurtosis	3.384

\* Note: Total revenues include revenue from locally collected taxes, utilities, liquor sales, and insurance trusts.

Multilevel governance, a concept related to municipal policy constraints by higher levels of government, is measured as a function of whether the municipalities surveyed live in a “home rule” state or not (Homsy & Warner, 2015). States allow varying levels of policy discretion to subordinate levels of government. Municipalities in home rule states have the broadest amount of power to enact ordinances, executive orders, resolutions, and administrative directives as long as

<sup>25</sup> Barnett, Shekells, Peterson, and Tydings (2012) note that the U.S. Census of Governments also captures these data for years ending in 2 and 7. This project used 2015 ASPEP data since it was the most recently available.

<sup>26</sup> See Barnett et al. (2012) Census of Governments: Finance— State and Local Government Summary Report [https://www2.census.gov/govs/local/summary\\_report.pdf](https://www2.census.gov/govs/local/summary_report.pdf) (table A-2) for details. Other conceptualizations of own-source revenue, which exclude revenue from utilities, liquor sales, and insurance trusts

they do not directly contradict or conflict with state law. In Dillon Rule states, the balance of power is flipped; municipalities may only enact formal policies which are expressly granted to them by the state. A third category of states limits Dillon’s Rule for certain municipalities. A total of 12 states are home rule states, 31 are Dillon’s Rule states, and 7 are limited Dillon’s rule states (DuPuis, Langan, McFarland, Panettieri, & Rainwater, 2017).

**Table 28: Descriptive statistics for multilevel governance**

	HomeRule_Dummy	DillonsRuleDummy	LtdDillon Dummy
0	212	141	163
1	46	117	95
total	258	258	258
Mean	0.178	0.453	0.368

#### 4.4.2 Demand conditions

The demand condition in the conceptual model has three components: demographic variables, political variables, and regional difference variables. Demographic variables hypothesized to be relevant are age, race, income, and education. Different societal groups may simply have different expectations and needs for sustainability (Portney, 2003) and knowing the demographic makeup of a city may be a good predictor of what sustainability actions the government will engage in. Relevant demographic characteristics evaluated in the local government sustainability literature are measures of age, race, income, and education. *Age* is operationalized as the percent of the municipal population with ages between 25 and 44, a measure found by (Svara et al., 2013) as statistically significant with support for sustainability action in U.S. municipalities. The source of the data is the U.S. Census. *Race* is operationalized as the percent of the population that is non-Hispanic white, a measure used by Bae and Feiock (2013); Homsy and Warner (2015); and Svara et al. (2013). Evidence exists that minorities are

more likely to support sustainability policies than whites (Lubell et al., 2005); however, neither Bae and Feiock (2013); Homsy and Warner (2015); nor Svara et al. (2013) found statistically significant effects for race. The source of the data is the U.S. Census. *Income* is operationalized as median household income, a measure found by Svara et al., (2013) as significant with support for sustainability action in U.S. municipalities. An alternative operationalization of income is the percent of the municipal population in poverty. Both median household income and poverty rates are from the U.S. Census. *Education* is operationalized as the percent of residents with a bachelor degree or higher, a measure found by Bae and Feiock (2013); Hawkins et al. (2015); and Homsy and Warner (2015) to be a statistically significant association with support for city-level sustainability action. The source of the data is the U.S. Census. Descriptive statistics for demographic variables are provided in Table 29 below.

**Table 29: Descriptive statistics for demographic variables**

Variable	% 25 to 44 (2015)	% non-Hispanic White (2015)	Median HH income (2015)	Poverty Rate (2015)	% Bachelor's degree (2015)
Mean	27.97	0.58	57,196	0.17	0.33
Std. Dev.	3.54	0.20	20,381	0.07	0.14
Min	20.40	0.02	27,683	0.03	0.06
Max	46.50	0.94	147,349	0.38	0.80
Variance	12.53	0.04	415,000,000	0.01	0.02
Skewness	1.44	-0.38	1.363	0.34	0.86
Kurtosis	7.45	2.54	5.383	2.61	3.48

Political variables are hypothesized to affect support for dual-purpose procurement policies. Political attitudes were found by Saha (2009) as a significant factor among municipalities supporting environmental sustainability; Konisky et al. (2008) found that political ideology and party affiliation are excellent predictors of support for sustainability. Political variables for this project are operationalized as the percentage of votes for the Democratic presidential candidate in national elections, a variable used by Wang et al. (2012) in their study

of city-level sustainability action. County-level election data are used as a proxy for municipal level election data due to the difficulty of obtaining and aggregating precinct-level election data. The source of the 1996-2016 county-level presidential elections data for the responding municipalities is the Congressional Quarterly Press Voting and Elections Collection (CQPress, 2017).

**Table 30: Descriptive statistics for election data, 1996-2016**

Variable	%Dem1996	%Dem2000	%Dem2004	%Dem2008	%Dem2012	%Dem2016	DemAvg
Mean	52.996	49.961	49.024	55.120	53.490	54.903	52.582
Std. Dev.	11.234	12.685	13.307	13.468	14.375	15.922	13.173
Min	20.800	14.340	11.920	19.480	9.920	21.120	16.380
Max	85.320	85.400	83.060	89.540	90.690	91.290	86.290
Variance	126.212	160.900	177.075	181.399	206.654	253.508	173.525
Skewness	0.188	0.239	0.268	0.029	0.067	0.076	0.191
Kurtosis	2.908	2.874	2.715	2.713	2.741	2.366	2.676

The percent of Democratic votes across elections is highly correlated, as would be expected, with the majority of correlations above 90% across the years. The correlation matrix for the election return data is provided in Table 31.

**Table 31: Correlation matrix for election data, 1996-2016**

	%Dem1996	%Dem2000	%Dem2004	%Dem2008	%Dem2012	%Dem2016	DemAvg
%Dem1996	1						
%Dem2000	0.976	1					
%Dem2004	0.957	0.978	1				
%Dem2008	0.907	0.941	0.971	1			
%Dem2012	0.918	0.950	0.973	0.991	1		
%Dem2016	0.838	0.887	0.928	0.957	0.965	1	
DemAvg	0.950	0.976	0.991	0.987	0.992	0.958	1

The availability of multiple years of election data raises a theoretical question about which year's election data is most relevant for understanding policy adoption. (Wang et al., 2012) use the most recently available presidential election data as the basis for their model. However, an argument can be made that since municipalities adopted dual-purpose procurement policies between 5-19 years ago (see Table 32 for exact dates), the political factors relevant for

understanding policy initiation and adoption are in the past. Table 32 describes the results of the survey regarding the average year of policy adoption for each preferred purchasing category. The means range from 1998 for living wage policies to 2012 for local hire and veteran preference policies. (Note that the response rates for the questions are very low, indicating that few respondents knew the date their municipality enacted the preferred purchasing policies, reducing the confidence that the reported date is the true date.) Given this approach, the election data should be lagged by some value corresponding to the average date of policy adoption or averaged across the years of available election data.

**Table 32: Descriptive statistics for preferred purchasing policy adoption year**

	Local Business	Minority owned business	Women owned business	Disabled owned business	Veteran owned business	Small Business	Environmental Purchasing	Local hire	Living wage
Obs.	35	13	13	8	9	7	29	8	14
Mean	2007	2001	2001	2006	2012	2009	2008	2012	1998
Std. Dev.	7.79	10.68	10.68	8.40	4.18	6.26	6.75	4.11	22.33
Min	1988	1979	1979	1991	2003	1996	1992	2005	1945
Max	2016	2016	2016	2014	2016	2015	2016	2016	2016
Variance	60.65	114.14	114.14	70.57	17.44	39.24	45.56	16.86	498.40
Skewness	-1.05	-0.52	-0.52	-0.64	-1.24	-1.21	-1.21	-0.61	-1.35
Kurtosis	3.17	2.54	2.54	2.10	3.62	3.60	3.59	1.92	3.51

An alternative approach is to consider policies in place as having the current support of the socio-economic and political environment. The presumption of this perspective is that policies in effect have enough support to permit their continuation, or else they would be changed by elected officials in response to the political environment. Although (Wang et al., 2012) do not defend their use of the most recently available election data, this alternative approach provides a theoretical basis for using the most recent data to understand policy adoption rather than using the data for when the policies were put in place. This project answers the question empirically by using both the most current and averaged election data to determine which best explains the adoption of dual-purpose procurement policy by municipalities.

Following Wang et al., (2012) two additional political variables are operationalized by asking survey respondents their perception of the political propensity of elected officials and municipal residents (“elected officials in my local government are politically liberal or progressive” and “residents of my local government are politically liberal or progressive”). The response categories are a five-point Likert scale. Descriptive statistics for the two questions are provided in Table 33.

**Table 33: Political propensity of elected officials and residents**

Q: Elected officials in my local government are politically liberal or progressive			Q: Residents in my local government are politically liberal or progressive		
Scale	#	%	Scale	#	%
1 (strongly disagree)	22	9.91	1 (strongly disagree)	16	7.21
2 (somewhat disagree)	31	13.96	2 (somewhat disagree)	49	22.07
3 (neither agree or disagree)	100	45.05	3 (neither agree or disagree)	95	42.79
4 (somewhat agree)	47	21.17	4 (somewhat agree)	43	19.37
5 (strongly agree)	22	9.91	5 (strongly agree)	19	8.56
Obs	222		Obs	222	
Mean	3.072		Mean	3.000	
Std. Dev	1.070		Std. Dev	1.025	
Min	1		Min	1	
Max	5		Max	5	
Variance	1.144		Variance	1.050	
Skewness	-0.144		Skewness	0.076	
Kurtosis	2.727		Kurtosis	2.689	

An average of these two questions can be created since they are highly correlated (.85). Creating a new variable for the average political propensity of elected officials and residents results in a 9-point scale with the distribution illustrated in Table 34. One downside of using the political propensity variable is that since not all municipalities responded to the question, the number of observations decreases to 222, a loss of 36 observations, or 14% of the sample.

**Table 34: Average Political Propensity of Elected Officials and Residents**

Scale	#	%	
1 (strongly disagree)	15	6.76	
1.5	7	3.15	
2 (somewhat disagree)	27	12.16	
2.5	18	8.11	
3 (neither agree or disagree)	82	36.94	
3.5	16	7.21	
4 (somewhat agree)	32	14.41	
4.5	11	4.95	
5 (strongly agree)	14	6.31	
Obs	222	Variance	1.012
Mean	3.036	Skewness	-0.062
Std. Dev	1.006	Kurtosis	2.735
Min	1		
Max	5		

Finally, regional variation is hypothesized to be a significant factor affecting demand for dual-purpose procurement policies achieving economic, social, and environmental goals. The local government sustainability literature finds that municipalities located in the western part of the U.S., particularly California, are more likely to adopt sustainability policies than other municipalities. In contrast, the PEB literature finds that persons located in the South and Midwest are less likely to support environmentalism, and by extension sustainability more generally, than persons in the West and Northeast. Region is operationalized as having five categories (West, Northeast, South, Midwest, and California). Municipalities are coded as belonging to categories using dummy variables for each Census region and California. Descriptive statistics for the regional dummy variables are provided in Table 35.

**Table 35: Descriptive statistics for regional dummy variables**

	SouthDummy	WestDummy	NortheastDummy	MidwestDummy	CADummy
0	161	168	247	198	202
1	97	90	11	60	56
Obs.	258	258	258	258	258
Mean	0.376	0.349	0.043	0.233	0.217

#### **4.5 Analysis strategy**

Poisson regression is used to estimate the effect of demand and supply conditions on the adoption of dual-purpose procurement policies. Poisson regression is the appropriate method to use when the dependent variable is an event count (Long & Freese, 2014). The estimation technique was also used by Bae and Feiock (2013) in a similar modeling exercise in which they tested a political market model on the number of sustainability issues addressed in municipalities. In addition, alternative estimation procedures of the dependent variables will be conducted using negative binomial regression because an argument can be made that an over dispersion of zeros is better modeled using the regression technique. The alternative estimation procedure will be part of the appendix, in which additional model specifications also are provided for interested readers.

## **CHAPTER 5: RESULTS**

The purpose of this section is to report the results of hypotheses testing a political market explanation of dual-purpose procurement policy. The results of the study are reported in two sections. The first section reports the bivariate correlations between the dependent and independent variables. The second section reports the regression results of the dependent and independent variables and the outcomes of hypothesis tests. An appendix to this chapter reports the results of alternative estimation models and the post-estimation results of the Poisson regressions.

### **5.1 Bivariate correlations**

The purpose of this section is to report the bivariate correlations between the dependent and independent variables. Bivariate correlations reveal the size and direction of relationships between variables. A correlation table is useful to determine whether variables are highly correlated, with correlations higher than .90 indicating potentially problematic levels of correlation and the introduction of multicollinearity in regressions. Multicollinearity attenuates the results of regressions, leading to unstable coefficients. The correlation table between all independent variables is reported in Table 36. The correlation table for all dependent and independent variables is reported in Table 37.

**Table 36: Correlation Matrix – Independent Variables**

Category	Variable	Council Manager	City Pop (2016)	Government size	Sustainability office	% own source revenue	Home Rule	Age (% 25-44)	Race (% white)
Supply	Council Manager	1							
Supply	City Population (2016)	-0.19	1						
Supply	Government size	-0.18	0.3	1					
Supply	Sustainability office	-0.04	0.2	0.35	1				
Supply	% own source revenue	0.25	-0.1	-0.19	-0.06	1			
Supply	Home Rule	0.1	-0.05	0.06	-0.01	0.08	1		
Demand	Age (%25to44)	-0.18	0.2	0.16	0.19	0.09	-0.03	1	
Demand	Race (% white)	-0.13	-0.18	-0.07	0.00	-0.05	0.05	-0.28	1
Demand	Income (poverty%)	-0.12	0.09	0.31	0.14	-0.25	0.1	-0.15	-0.23
Demand	Education	0.00	0.03	-0.05	0.31	0.13	-0.06	0.21	0.3
Demand	%Democratic Votes (2016)	0.03	0.23	-0.04	0.22	0.06	-0.04	0.28	-0.42
Demand	%Democratic Votes (avg1996-2016)	0.00	0.24	-0.02	0.19	-0.03	0.03	0.17	-0.35
Demand	Democratic Propensity	-0.17	0.16	0.3	0.36	-0.13	0.1	0.12	-0.13
Demand	South Region	0.09	-0.05	0.25	0.08	0.04	0.21	-0.02	-0.14
Demand	West Region	0.25	-0.04	-0.23	-0.01	0.27	-0.15	0.07	-0.21
Demand	California	0.26	-0.04	-0.33	-0.15	0.31	-0.23	0	-0.37

**Table 36 (continued)**

Category	Variable	Income (poverty %)	Education	% Democratic Votes (2016)	% Democratic Votes (avg 1996-2016)	Democratic Propensity	South Region	West Region	California
Demand	Income (poverty%)	1							
Demand	Education	-0.36	1						
Demand	%Democratic Votes (2016)	-0.13	0.3	1					
Demand	%Democratic Votes (avg 1996-2016)	-0.05	0.21	0.96	1				
Demand	Democratic Propensity	0.33	0.1	0.31	0.35	1			
Demand	SouthRegion	0.21	-0.06	-0.21	-0.21	-0.01	1		
Demand	WestRegion	-0.25	0.04	0.27	0.18	-0.04	-0.56	1	
Demand	California	-0.23	-0.03	0.31	0.21	-0.14	-0.4	0.71	1

**Table 37: Correlation Matrix - Dependent and Independent Variables**

Category	Variable Name	Aggregate Index	Environmental Index	Social Index	Local Hire/Living Wage	Local Business	Council-Manager	City Population (2016)
DV	Aggregate Index	1						
DV	Environmental Index	0.790	1					
DV	Social Index	0.650	0.090	1				
DV	Local Hire/living wage	0.330	0.120	0.140	1			
DV	Local Business	0.370	0.130	0.270	0.110	1		
Supply	Council-Manager	-0.160	0.000	-0.260	-0.160	0.020	1	
Supply	City Population (2016)	0.180	0.040	0.240	0.160	-0.040	-0.190	1
Supply	Government size	0.250	0.060	0.350	0.160	0.000	-0.180	0.300
Supply	Sustainability office	0.340	0.280	0.200	0.180	0.040	-0.040	0.200
Supply	% own source revenue	-0.040	0.080	-0.160	-0.110	0.050	0.250	-0.100
Supply	Home Rule	-0.070	-0.060	-0.040	-0.020	-0.010	0.100	-0.050
Demand	Age (%25to44)	0.130	0.080	0.090	0.150	0.000	-0.180	0.200
Demand	Race (% white)	-0.090	0.020	-0.110	-0.120	-0.180	-0.130	-0.180
Demand	Income (poverty%)	0.230	0.000	0.360	0.180	0.090	-0.120	0.090
Demand	Education	0.120	0.230	-0.040	-0.030	-0.070	0.000	0.030
Demand	%Democratic Votes (2016)	0.230	0.260	-0.010	0.250	0.100	0.030	0.230
Demand	%Democratic Votes (avg1996-2016)	0.240	0.260	0.010	0.280	0.080	0.000	0.240
Demand	Democratic Propensity	0.380	0.250	0.280	0.300	0.110	-0.170	0.160
Demand	South Region	-0.020	-0.140	0.220	-0.210	-0.040	0.090	-0.050
Demand	West Region	0.050	0.250	-0.280	0.040	0.080	0.250	-0.040
Demand	California	0.070	0.240	-0.230	-0.010	0.170	0.260	-0.040

**Table 37 (continued)**

Category	Variable Name	Government size	Sustainability office	% own source revenue	Home Rule	Age (% 25to44)	Race (% white)	Income (poverty%)
Supply	Government size	1						
Supply	Sustainability office	0.350	1					
Supply	% own source revenue	-0.190	-0.060	1				
Supply	HomeRule	0.060	-0.010	0.080	1			
Demand	Age (%25to44)	0.160	0.190	0.090	-0.03	1		
Demand	Race (% white)	-0.070	0.000	-0.050	0.05	-0.280	1	
Demand	Income (poverty%)	0.310	0.140	-0.250	0.10	-0.150	-0.230	1
Demand	Education	-0.050	0.310	0.130	-0.06	0.210	0.300	-0.360
Demand	%Democratic Votes (2016)	-0.040	0.220	0.060	-0.04	0.280	-0.420	-0.130
Demand	%Democratic Votes (avg1996-2016)	-0.020	0.190	-0.030	0.03	0.170	-0.350	-0.050
Demand	Democratic Propensity	0.300	0.360	-0.130	0.10	0.120	-0.130	0.330
Demand	South Region	0.250	0.080	0.040	0.21	-0.020	-0.140	0.210
Demand	West Region	-0.230	-0.010	0.270	-0.15	0.070	-0.210	-0.250
Demand	California	-0.330	-0.150	0.310	-0.23	0.000	-0.370	-0.230

**Table 37 (continued)**

Category	Variable Name	Education	%Democratic Votes (2016)	%Democratic Votes (avg 1996-2016)	Democratic Propensity	South Dummy	West Dummy	California
Demand	Education	1						
Demand	%Democratic Votes (2016)	0.300	1					
Demand	%Democratic Votes (avg1996-2016)	0.210	0.960	1				
Demand	Democratic Propensity	0.060	0.270	0.320	1			
Demand	South Region	0.140	0.320	0.360	-0.010	1		
Demand	West Region	0.100	0.310	0.350	-0.040	-0.560	1	
Demand	California	-0.060	-0.210	-0.210	-0.140	-0.400	0.710	1

The correlation matrix does not reveal unexpected high levels of correlation among variables. Only one variable has correlations above .9; the 1996-2016 percent average of all Democratic votes is correlated with the 2016 Democratic vote at .96. The implication of the correlations is that, as intended, it is an alternative measure for the same underlying concepts and can be used as substitute measures in regressions.

However, the correlation matrix yields unexpected directions for some of the bivariate relationships. For example, the council-manager form of government (coded 1) is generally considered in the literature as having a positive correlation with sustainability action at the municipal level; however, the bivariate correlation table shows that in the survey sample, the council-manager form of government is negatively associated with higher levels of dual-purpose procurement policy action for the primary and secondary dependent variables except for the environmental dimension (Environmental Index). Similarly, Home Rule allows municipalities greater scope to implement policies suitable to their particular political, social, and economic context than municipalities in “Dillon’s Rule” states. However, the bivariate relationships shown in the correlation table shows that the relationship between dual-purpose procurement policies and home rule is generally negative, indicating that municipalities in Home Rule states are actually less likely to enact these types of policies than municipalities in non-Home Rule states. Both of these correlations are contrary to expectations. One of the goals of the next section is to determine through regression analysis whether the negative correlations are statistically significant.

## **5.2 Multiple regression analysis**

This section provides the results of the regression analysis of the political market model in explaining dual-purpose public procurement policies by U.S. municipalities. The discussion

reports the results of each hypothesis test on the primary and secondary dependent variables, followed by a summary of the hypothesis tests. Alternative models, estimation procedures and the results of the post-estimation analysis for the Poisson regressions reported in Table 38 are provided in the appendix.

**Table 38: Regression results**

Variable	Full Model	Social	Environment	Local Hire/ Living Wage	Local Business*
<i>Supply Conditions</i>					
council-manager	-0.272 *** (0.079)	-0.502 *** (0.126)	-0.091 (0.124)	-0.051 (0.268)	-0.107 (0.270)
city population	0.000 (0.000)	0.000 * (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
government size	0.083 *** (0.030)	0.161 *** (0.055)	0.059 (0.044)	0.093 (0.098)	0.017 (0.097)
sustainability office	0.267 *** (0.077)	0.096 (0.133)	0.410 *** (0.114)	0.348 (0.260)	0.234 (0.255)
% own source revenue	0.307 (0.339)	-0.125 (0.548)	0.346 (0.517)	0.640 (1.146)	0.219 (1.095)
Home Rule	-0.178 ** (0.089)	-0.269 * (0.150)	-0.167 (0.134)	-0.203 (0.296)	0.157 (0.274)
<i>Demand Conditions</i>					
Age (%25-44)	0.028 *** (0.010)	0.051 ** (0.020)	0.034 ** (0.014)	0.049 (0.033)	-0.005 (0.035)
Race (% White)	0.008 *** (0.002)	0.001 (0.004)	0.019 *** (0.003)	-0.001 (0.007)	-0.007 (0.007)
Income (poverty %)	0.037 *** (0.005)	0.057 *** (0.009)	0.029 *** (0.007)	0.035** (0.017)	0.014 (0.016)
education	0.030 (0.297)	-0.563 (0.597)	0.303 (0.404)	-1.205 (1.031)	-0.224 (0.984)
% Democratic votes (avg 1996-2016)	0.016 *** (0.003)	-0.001 (0.006)	0.025 *** (0.004)	0.026 *** (0.010)	0.001 (0.009)
South region	0.248 *** (0.092)	0.473 *** (0.151)	0.342 ** (0.144)	-0.854*** (0.310)	-0.250 (0.294)
West region	0.125 (0.111)	-0.136 (0.220)	0.408 *** (0.156)	-0.234 (0.329)	-0.174 (0.365)
California	0.458 *** (0.127)	-0.489 (0.308)	0.814 *** (0.170)	-0.227 (0.414)	0.446 (0.409)
Constant	-1.995 *** (0.525)	-2.395 ** (0.957)	-4.350 *** (0.752)	-4.522** (1.785)	-0.676 (1.737)
Pseudo R_squared	0.125	0.199	0.141	0.105	0.024
N	257	257	257	257	257

Note: table reports Poisson regression coefficients and standard errors in parentheses, except the Local Business model. The Local Business model results are Logit Regression  
\*p < 0.10; \*\*p<0.05; \*\*\*p<0.01 (two-tailed)

### 5.2.1 Supply conditions

The political market model conceptualizes supply conditions as a function of managerial, technical, and fiscal organizational capacity, and the policy discretion of municipalities permitted by states to enact policies. Hypothesis 1 is a test of managerial capacity. Hypothesis 1 states that municipalities with council-manager forms of government are more likely to be associated with the adoption of dual-purpose procurement policies than mayor-council municipalities. The hypothesis is rejected for all models. The results of the full model support the conclusion that municipalities with mayor-council government are significantly more likely to be associated with the adoption of dual-purpose procurement policies than council-manager forms, a finding that is significant at the .01 level. The result for the social index model finds is also statistically significant at the .01 level, whereas the results for the environmental and economic models (local hire/living wage and local business) are not significant.

Hypothesis 2 is a test of technical capacity. Technical capacity is conceptualized as a function of municipal population, the number of full-time employees, and the presence of a sustainability office. Hypothesis 2a states that municipalities with larger populations are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with smaller populations. The hypothesis is rejected for all models, except for the social index, which is statistically significant at that the .10 level. Hypothesis 2b states that municipalities with larger numbers of city personnel are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with smaller numbers of city personnel. The results found support for the hypothesized relationship for the full model and social index models, which are statistically significant at the .01 level. The hypothesis is rejected for the environmental and economic (local hire/living wage and local business) models.

Hypothesis 2c states that municipalities with a staffed sustainability office are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities without a staffed sustainability office. The hypothesis is supported for the full and environmental model at the .01 significance level. The hypothesis is rejected for the social and economic (local hire/living wage and local business) models.

Hypothesis 3 is a test of fiscal capacity. Hypothesis 3 states that municipalities with higher levels of own source revenue are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with lower levels. The hypothesis is rejected for all models.

Hypothesis 4 is a test of the multilevel governance concept. Hypothesis 4 states that municipalities in “home rule” states are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities not in home rule states. The hypothesis is rejected for all models. In the full model, home rule is statistically significant at the .05 level, but in the opposite direction of the hypothesis; similarly, home rule is statistically significant at the .10 level for the social index model, but again in the wrong direction. Home rule is not statistically significant for the environmental and the economic (local hire/living wage and local business) models.

### 5.2.2 Demand conditions

Three components make up the demand conditions in the political market model: demographic variables, political variables, and regional difference variables. Hypothesis 5 is a test of demographic variables, measured as a function of age, race, income, and education. Age, race, and income for the full model are statistically significant at the .01 level, while education is not statistically significant. Age is statistically significant at the .05 level for the social and

environmental models, but not statistically significant for the economic model. Race is statistically significant at the .01 level for the environmental model, but not for the social or economic (local hire/living wage and local business) models. Income is statistically significant at the .01 level for the social and environmental model, and at the .05 level for the local hire/living wage model. Education is not statistically significant for any of the models. More formally, hypothesis 5a stating that municipalities with younger populations are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with older populations failed to reject the null hypothesis for the full model at a .01 level of statistical significance, and at the .05 level for the social and environmental models. Hypothesis 5a is rejected for the economic (local hire/living wage and local business) models. Hypothesis 5b stating that municipalities with a larger percentage of white residents are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with a smaller percentage of white residents is supported at the .01 level of statistical significance for the full and environmental model, but is rejected for the social and economic (local hire/living wage and local business) models. Hypothesis 5c stating that municipalities with higher average levels of income are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with lower levels of income is rejected at the .01 level of statistical significance for the full, social, and environmental models, and at the .05 level of statistical significance for the local hire/living wage model.<sup>27</sup> The regression results demonstrate that, contrary to expectations, municipalities with higher rates of poverty are more likely to be

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<sup>27</sup> The alternative specification of income as median household income leads to similar conclusions, with municipalities with higher average levels of income less likely to adopt dual purpose procurement policies. All models are statistically significant at the .01 level, except for the economic model, which is not statistically significant. See appendix.

associated with the adoption of dual-purpose procurement policies than municipalities with more affluent populations. Hypothesis 5d stating that municipalities with higher average levels of education are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with lower levels of education is rejected for all models. The results for all models are not statistically significant.

Hypothesis 6 is a test of the political component of the political demand model. It states that municipalities with politically liberal voting records will be more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with less politically liberal voting records. Various measures are used to test the hypothesis. Please see Table 39.

**Table 39: Results of alternative political measures**

Variable	Full Model	Social	Environment	Local Hire/ Living Wage	Local Business*
% Democratic votes (avg 1996-2016)	0.016 *** (0.003)	-0.001 (0.006)	0.025 *** (0.004)	0.026 *** (0.010)	0.000 (0.013)
% Democratic votes (2016 election)	0.013 *** (0.003)	-0.002 (0.005)	0.021 *** (0.004)	0.023 *** (0.09)	-0.001 (0.011)
Democratic propensity	0.204 *** (0.039)	0.236 *** (0.072)	0.228 *** (0.053)	0.292 ** (0.130)	0.191 (0.171)

Note: table reports Poisson regression coefficients and standard errors in parentheses, except the Local Business model, which are derived using Logit Regression. The full models with alternative specifications are reported in the appendix.

\*p < 0.10; \*\*p<0.05; \*\*\*p<0.01 (two-tailed)

The first measure uses the average percentage of votes received by the Democratic candidate in the county or county equivalent for years 1996-2016. The hypothesis found support for the hypothesized relationship at the .01 level of statistical significance for the full, social model, and local hire and living wage model. The hypothesis is rejected for the environmental and local business model. The second measure uses the most recent presidential election to derive the percent of votes. The hypothesis is supported at the .01 level for the full, environmental model, and the local hire/living wage model; the hypothesis is rejected for the social and local business

model. The third measure uses the respondents' perception of the political propensity of municipal elected officials and residents as the measure of political "liberalness." When the average political propensity of elected officials and residents is used, most models are statistically significant at the .01 level, except for the local hire/living wage model, which is statistically significant at the .05 level. The local business model is not statistically significant.

Hypothesis 7 tests whether regional differences exist in the use of dual-purpose procurement policies among municipalities. The hypothesis states that there is no effect between geographic region and municipalities adopting dual-purpose procurement policies in three specific regions: the South, the West, and California. For the South, the adoption of dual-purpose procurement policies is statistically significant at the .01 level for the full, social, environmental and local hire/living wage models. The results of the regression analysis show that the South is more likely to adopt social and environmental dual-purpose procurement policies, but less likely to adopt dual-purpose procurement policies seeking to achieve local hire/living wage goals, a result that is statistically significant at the .01 level. For the West, all models were not statistically significant. The California regional variable is statistically significant at the .01 level for the full and environmental model, and not statistically significant for all other models.

### 5.2.3 Interpretation of Coefficients

Poisson regression coefficients are interpreted as the change in the log of the expected count when other variables in the model are held constant (UCLA, 2018). The interpretation of coefficients for Poisson regressions is made easier by exponentiating the regression coefficients, which then represent the percentage change in the expected count due to a one unit increase in the independent variable (Beaujean & Morgan, 2016). Table 40 reports the regression coefficients, the exponentiated coefficients (IRR), and the percent change in the expected count

(IRR-1) for the statistically significant independent variables for the main dependent variable reported in Table 38.

**Table 40: Incident Rate Ratios (IRR) and Percent Change in Outcomes**

Variable	Regression Coefficient	IRR	Percentage Change in the Expected Count
council-manager	-0.246	0.782	-21.8
government size**			
100-249 employees (2)	-0.318	0.728	-27.2
250-499 employees (3)	-0.249	0.780	-22.0
500 – 999 employees (4)	-0.008	0.992	-0.8
1,000 – 2,500 employees (5)	-0.072	0.930	-7.0
More than 2,500 employees (6)	0.159	1.172	17.2
sustainability office	0.264	1.302	30.2
Home Rule	-0.172	0.842	-15.8
Age (% 25-44)	0.029	1.029	2.9
Race (% White)	0.008	1.008	0.8
Income (poverty %)	0.036	1.036	3.6
% Democratic votes (avg 1996-2016)	0.015	1.016	1.6
South region	0.240	1.272	27.2
California	0.503	1.654	65.4

\* IRR is derived by exponentiating the regression coefficient. The percentage change in the expected count is derived by calculating IRR-1. \*\* reference category is municipalities with less than 100 employees (category 1)

The results show that council-manager forms of government are associated with a 21.8% decrease in the expected count of dual-purpose procurement policies. Governments with more than 2,500 employees (category 6) are associated with a 17.2% increase in the expected count of dual-purpose procurement policies compared with municipalities with less than 100 employees (reference category). The presence of a sustainability office is associated with a 30.2% increase in the expected count of dual-purpose procurement policies. States with home rule are associated with a 15.8% decrease in the expected count of dual-purpose procurement policies. The expected count of dual-purpose procurement policies increases 2.9% for every unit increase in the percent of the municipal population aged 25-44. The expected count of dual-purpose procurement policies increases 0.8% for every unit increase in the percent of the municipal population that is

non-Hispanic White. The expected count of dual-purpose procurement policies increases 3.6% for every unit increase in the percent of the municipal population in poverty. The expected count of dual-purpose procurement policies increases 1.6% for every unit increase in the percent of the municipal population voting Democratic. Municipalities in the South are associated with a 27.2% increase in the expected count of dual-purpose procurement policies, while municipalities in California are associated with a 65.4% increase in the expected count of dual-purpose procurement policies. Average marginal effects for significant continuous independent variables are reported in Appendix A.

## CHAPTER 6: DISCUSSION

The purpose of this study is to examine the extent to which dual-use procurement policies are adopted by U.S. municipalities and whether a political market model, developed to explain municipal environmental sustainability action, helps explain why they do so. The results of the survey demonstrate variation among American municipalities in their use of procurement to achieve economic, social and environmental goals, with roughly a third of municipalities adopting some form of dual-purpose procurement policies. Local business policies have the highest rates of adoption, with 41% of responding municipalities having adopted a purchasing preference policy for local businesses. Furthermore, the regression analyses reveal that a portion of the variation in adoption levels can be explained by the political market model developed to explain differences in environmental sustainability action at the municipal level. When disaggregated into separate policy domains, the model performs better for the environmental and social dimensions than the economic (local hire/living wage and local business) dimension. In this section, the variation in the municipal use of procurement power to achieve dual-purpose policies is discussed, as are the implications of the regression analysis for better understanding the use of dual-purpose procurement policies among American municipalities.

Table 41 shows municipalities with overall index values greater than 10. The 26 municipalities include large, well-known cities with a reputation for progressive policy adoption like Seattle, Portland, and Philadelphia and smaller, less well-known municipalities like Muncie (IN), Appleton (WI), and Pinellas Park (FL).

**Table 41: Municipalities with composite index values greater than 10**

Municipality	Index	Municipality	Index
San Diego, California	16	McAllen, Texas	12
Sarasota, Florida	16	New Rochelle, New York	12
Lewisville, Texas	15	Philadelphia, Pennsylvania	12
Muncie, Indiana	15	Pinellas Park, Florida	12
Seattle, Washington	15	Roswell, Georgia	12
Scranton, Pennsylvania	14	Dallas, Texas	11
Tallahassee, Florida	14	Tacoma, Washington	11
Appleton, Wisconsin	13	Burbank, California	10
Cathedral City, California	13	Fort Myers, Florida	10
Fayetteville, Arkansas	13	Lexington, Kentucky	10
New Orleans, Louisiana	13	Sacramento, California	10
Portland, Oregon	13	San Ramon, California	10
Raleigh, North Carolina	13	Santa Cruz, California	10

The regression results demonstrate that municipalities with higher index levels are more likely to be young, white, less affluent, Democratic-leaning populations, with mayor-council forms of government than municipalities with lower index levels. Given the results from the municipal-level environmental sustainability literature using a similar political market model, these findings are surprising and somewhat contrary to expectations.

Supply conditions are addressed first. Much is made in the literature of the fact that council-manager forms of government are more likely to be associated with the adoption of innovative policies earlier than mayor-council governments. City managers, it is argued, tend to be policy entrepreneurs (Schneider et al., 1995; Teske & Schneider, 1994) and council-manager forms of government are more likely to adopt more innovative policies earlier (Bowman & Kearney, 2012; Kearney et al., 2000; Kearney & Scavo, 2001; Kearney, 2005) and more extensively (K. L. Nelson & Svara, 2011) than mayor-council municipalities. (Homsy & Warner, 2015) consider the presence of a city manager and council-manager form of government

indicative of managerial capacity and a good predictor of whether local governments adopt environmental sustainability policies. Consistent with these expectations, 16 of the top 26 municipalities with the highest levels of dual-purpose procurement policy use listed in Table 41 were manager-council governments. However, manager-council governments responding to the survey overall were less likely to adopt dual-purpose procurement policies than mayor-council governments. Manager-council governments on average adopted 3.8 dual-purpose procurement policies, while mayor-council governments adopted 5.5 such policies. Furthermore, when disaggregating the full model into economic, social, and environmental components, only the social model had statistically significant results for the municipal form of government. Within the policy domain of purchasing, at least, the results of the current analysis do not support the conclusion that a manager-council form of municipal government is a statistically significant predictor of dual-use procurement policy adoption by U.S. municipalities; to the contrary, the results of the regression analysis point to mayor-council forms being more likely to be associated with the adoption of these types of policies.

Technical capacity measures also had mixed results. Recall that technical capacity refers to an organization's ability to develop and implement policies based on expert advice (Homsy & Warner, 2015), which in past studies had been operationalized as a function of population or the number of government employees. The presumption of this operationalization is that larger municipalities, either those with more population or more employees, are better able to design and implement dual-purpose policies than smaller municipalities. In the regression results, population was not a statistically significant predictor of municipal dual-purpose procurement policy; however, municipal size in terms of the number of employees was statistically significant for the full model, indicating that municipalities with a larger number of employees tended to

have more dual-purpose procurement policies than municipalities with a smaller number of employees. When disaggregating the full index into separate economic, social, and environmental domains, the number of employees was a statistically significant predictor for the social model, but not the environmental or economic (living wage/local hire and local business) models. The presence of a separate sustainability office was a statistically significant predictor of municipal dual-purpose procurement policies for the full and environmental models, but not the economic or social models. This finding is worthy of additional discussion, as the organizational capacity in which to house specific policy initiatives is a topic relevant to other policy areas.

The presence of a separate office and dedicated employees to implement a specific policy is a powerful signal from an executive (whether a manager or mayor) and governing board about the commitment to a policy. Dedicated offices charged with the implementation of initiatives help overcome organizational barriers necessary for successful sustainability policy implementation. In a study of how manufacturers overcame organizational barriers to adopt energy efficiency practices, Brun & Gereffi (2011) found that separate offices, known as “centers of excellence”, staffed with knowledgeable process and technical experts, helped diffuse knowledge across the organization. Further evidence about the importance of separate offices dedicated to policies is reflected in practitioner guides on municipal environmental sustainability action emphasizing the role of sustainability offices as important to embed sustainability within an organization and to drive continual change (EPA, 2000; NASPO, 2015). Previous studies found that municipalities with sustainability offices were more likely to be active in environmental sustainability action (Saha, 2009; Svara et al., 2013). This study finds a similar association with the presence of a sustainability office and the increased likelihood to have dual-purpose procurement policies, notably in the environmental model.

Two additional points should be made about sustainability offices as a measure of the technical capacity of a government. First, the causal direction between the existence of dual-purpose procurement policies and sustainability offices is not clear. In other words, the regression results cannot distinguish whether sustainability offices or dual-purpose procurement offices came first, whether both occurred simultaneously, or whether they are correlated but not causally-linked phenomenon. Municipalities responding to the survey included some with high reported levels of preferred purchasing policies without a separate sustainability offices, while some municipalities with low levels of dual-purpose procurement policies reported that they had sustainability offices. Specifically, among the 26 municipalities with ten or more dual-purpose procurement policies shown in Table 41 (i.e., high levels of dual-purpose procurement policy adoption), 14 had sustainability offices while 12 did not. Furthermore, among the 57 municipalities with no dual-purpose procurement policies, seven municipalities reported having sustainability offices. Thus, the presence of a sustainability office is neither a necessary nor sufficient condition for the enactment of dual-purpose procurement policies, nor can it be determined from the data whether among the set of municipalities with both sustainability offices and high levels of dual-purpose procurement policies the policies or sustainability office came first. Qualitative research could better explain the linkage between the existence of sustainability offices and dual-purpose procurement policies.

The second point is that environmental sustainability offices have primary responsibility for environmental action in the municipality, which may be different than organizational activities related to social equity and economic development. As a result, the existence of a sustainability office is an imperfect measure of the technical capacity of an organization to adopt dual-purpose procurement policies not related to environmental purchasing. For example, in some

municipalities, the existence of an MBE or economic development office may be as, or more, relevant to whether a municipality has social or economic preferred purchasing guidelines, respectively, than the existence of a sustainability office. There is a gap of understanding in the literature regarding the origin and scope of these dedicated municipal offices, their roles in the municipality, and whether the trend among municipalities is to expand or contract the size and number of these specialized offices dedicated to cross-departmental initiatives.

Fiscal capacity measures failed to be statistically significant predictors of municipal dual-purpose procurement policy adoption. Previous studies argued that a secure financial base is essential to support policy change and implementation in local governments. Local governments with greater financial resources are more likely to adopt new policies (Kearney et al., 2000; Kearney, 2005; Svara et al., 2013), especially with regards to a greater range of economic development (Betz et al., 2012) and environmental sustainability policies (Hawkins et al., 2015; Lubell et al., 2002; Sharp et al., 2010; Zahran et al., 2008). Hawkins et al., (2015) used per capita own source revenue as a measure of human and financial capacity to support city-level sustainability policies, but similar to this research did not find statistically significant results for the measure. In short, this study finds that the adoption of dual-purpose procurement policies is not contingent on the financial resources of the municipality.

Demand-side variables in the political market model represent factors hypothesized to be important for residents to request policies in a political entity. The municipal environmental sustainability policy action literature finds that demographic differences help explain differences in environmental policy action, notably age, race, income, and education. As pointed out by Portney (2003), different societal groups may simply have different expectations and needs for sustainability and the demographic makeup of a city may be a good predictor of what

sustainability actions the government will engage in. This study analyzing all three dimensions of sustainability finds that income levels are the most reliable demographic predictor across models, with municipalities with lower average levels of income more likely to be associated with the adoption of dual-purpose procurement policies (except local business policies) than municipalities with higher levels of income. Although the causal mechanism for this statistical finding is unclear, perhaps residents in municipalities with lower levels of income (higher poverty rates) are more likely to demand these policies because they see them as a way to create or maintain wealth in the community.

The statistical significance of other demographic variables is less reliable across models. The regression results find that municipalities with younger populations are more likely to be associated with the adoption of dual-purpose procurement policies than municipalities with older populations overall, and for social and environmental dimensions. However, age is not a significant predictor of policy adoption on the economic dimension (local hire/living wage and local business policies) of dual-purpose procurement policies. Why youth is associated with social and environmental policies, but not economic policies, is unclear. Perhaps it is simply that economic policies have broad support in the population across age categories as something municipal governments ought to do, while policy action on social and environmental policy dimensions tend to be demanded more by younger residents. The variables measuring race and education also have mixed results. Contrary to Lubell et al. (2005), who find that minorities are more likely to support sustainability policies than whites, the results in this study support the conclusion that as the percent of whites increase in a municipal population, so does the number of dual-purpose procurement policies. The finding is statistically significant at the .001 level for both the full and environmental model, and not statistically significant for the social and

economic (local hire/living wage and local business policies) dimensions. The results also contradict those in Bae & Feiock (2013), Homsy & Warner (2015) and Svara et al. (2013), who did not find statistically significant effects for race in their examination of environmental policy action in municipalities. Average education levels in a municipality were not a significant predictor of the number of dual-purpose procurement policies in a municipality across all models, contrary to the findings in Svara et al. (2013).

Municipalities with a greater proportion of voters voting for the Democratic Party are more likely to be associated with the adoption of dual-purpose procurement policies overall than municipalities with a lower proportion of Democratic Party voters. This is true for the full model across all measures used, whether as an average percent of votes received for the Democratic presidential candidate for a twenty year period (1996-2016), the most recent presidential election (2016), or operationalized as the respondents' perception of the average political propensity of municipal elected officials and residents. The political propensity measure is a statistically significant measure across all models, except the local business policy model. The Democratic presidential candidate vote measure (either as a 20-year average or for 2016 only) is statistically significant for all models except the social and local business model. One possible explanation for why the perceptual political propensity measure performs better than the presidential candidate vote measure may be due to different party preferences in national and local elections. For example, while some communities may tend to vote Republican in the presidential election, they may tend to vote for the Democratic candidate in state and local elections, or vice versa. If this is the case, then the presidential election measure would be less reflective of local political ideology than the political propensity measure. Because dual-use procurement policy is a local

action, measures of local political ideology would perform better than national election measures.

The final set of demand conditions is regional difference. The null hypothesis is that regional differences are not significant predictors of dual-purpose procurement policy adoption due to a debate in the literature whether the South, the West, or just California are characteristically different than other regions. The results of the regression analysis demonstrate that the South and California are different than other regions in their adoption of dual-purpose procurement policies. The South is associated with statistically significant higher rates of dual-purpose procurement policy adoption in the social and environmental domains, and statistically significant lower rates in the economic domain. California is more likely to be associated with the adoption of dual-purpose procurement policies overall, with statistically significant results for the full and environmental models.

## CHAPTER 7: CONCLUSIONS

### 7.1 Summary of findings

The purpose of this project is to better understand the extent to which local U.S. governments use procurement to achieve economic, social, and environmental goals, a concept defined as “dual-use” procurement policies. The specific research questions investigated in this project are “what policy goals do U.S. municipalities seek to achieve with their procurements?”, “how prevalent are procurement policies seeking to achieve ‘dual-purpose’ policy goals among U.S. municipalities?”, and “what factors explain the adoption of dual-purpose procurement policy goals among U.S. municipalities?” The answer to the first question regarding the types of policy goals municipalities seek to achieve with procurement was derived from a review of related literature. The literature review found that the public sector uses procurement to achieve economic growth (including technological development), social inclusiveness, and environmental goals.

The second question regarding the prevalence of dual-purpose procurement policies among U.S. municipalities was answered by conducting a survey asking municipalities with 50,000 or more inhabitants whether they had adopted policies with procurement preferences for local businesses, disadvantaged (“DBE”) businesses, and products with beneficial environmental characteristics. Overall, 28% of responding municipalities had one or more “dual-purpose” procurement policy in place. 42% of responding municipalities had a local business purchasing preference policy, 28% had one or more DBE purchasing preference policies, and 28% had one or more environmentally preferred purchasing policy in place. 21% of responding municipalities had local hire and living wage policies in place for government purchasing. Findings indicate that among mid to large sized municipalities, the local business purchasing preference policy was

the most commonly adopted, followed by DBE and environmentally preferred purchasing policies. Local hire and living wage policies were the least adopted.

The third question regarding why local governments adopt dual-purpose procurement policies was answered through the use of a “political-market” model extensively used to explain local government environmental sustainability policy adoption. The model conceptualizes policy adoption as a function of both demand and supply conditions in the governments’ jurisdiction. Demand conditions are a function of demographic, economic, and political factors; supply conditions associated with policy adoption are the managerial, technical, and fiscal capacity of the municipality and the legal environment of the state. Overall, both supply and demand factors were statistically significant predictors of dual-purpose procurement policy adoption. When disaggregating into separate policy dimensions, the model performed best for the social dimension, explaining 20% of the variance in the dependent variable. The model performed the worst for the economic (local business) dimension, with only 2% of the variation explained.

## **7.2 Implications**

The implications of this research are in three categories: implications for the local government sustainability literature, implications for the procurement literature, and implications for the development literature. A summary of implications is provided in Table 42.

**Table 42: Summary of contributions**

Literature Addressed	Contribution of current study
Local government sustainability literature	<ul style="list-style-type: none"> <li>• Helps validate existing political market models to a new domain (procurement) with new data (survey conducted for this study)</li> <li>• Adds economic and social dimensions to the previously analyzed environmental dimension of sustainability.</li> <li>• Finds that dual-purpose procurement policies are subject to similar “political-market” dynamics as are environmental sustainability policy action in municipalities.</li> </ul>
Government procurement literature	<ul style="list-style-type: none"> <li>• Shows how government procurement is relevant to major normative questions regarding the role of the state in promoting efficiency and equity. Argues that the efficiency-equity debate is resolved at a local level dependent on local political market dynamics.</li> <li>• Demonstrates how procurement practice can be explained using theories from other domains in ways useful to both theory and practice domains.</li> </ul>
Development policy literature	<ul style="list-style-type: none"> <li>• Demonstrates the role of government contracting and purchasing in affecting sustainable and inclusive economic development</li> <li>• Illustrates the active role of cities in sustainable and inclusive economic development</li> </ul>

The implications of this research for the government sustainability literature is to help answer the question posed by Portney (2003) about why some cities take sustainability seriously while others do not. The answer resulting from this project is that municipalities taking sustainability “seriously” - particularly as it relates to social and environmental policies - are those with both constituent demand and the organizational capacity to supply sustainability policies.

Consequentially, when demand and supply conditions are not present in the political economy of a municipality, sustainability policy action does not occur. Demand by itself is not sufficient because the organization does not have the capacity to design and implement an effective policy, although over time of course it could develop it. Similarly, “supply-side” efforts to initiate organizational capacity in the sustainable procurement arena without the requisite demand in the political-economy to support the policy will leave municipalities with little to show for their efforts. Both demand and supply are necessary conditions for municipal sustainability policies, but neither demand nor supply alone is sufficient for municipal sustainability policy to occur. In terms of the practical implications of this research to municipal MBE and sustainability officials,

perhaps the single most important lesson is that these policies require both a fertile ground in terms of demographics, political preferences, and region, and the organizational capacity in the municipality to implement the policies. On the supply-side, the greatest percent changes are associated with mayor-council form of government (+22%), municipal size (+17% for very large municipalities), the presence of a sustainability office (+30%), and whether the municipality is in a home-rule state or not (-16%). On the demand side, the greatest percent changes are associated with the municipality being located in California (+65%), the South (+27%) and various demographic and political variables. To put these demographic and political variables in perspective, a 1% increase in age, race, income, and the percent voting Democratic results in a 3%, 0.8%, 4%, and 1.6% increase (respectively) in the expected count of dual-purpose procurement policies adopted by municipalities. Thus, large, Democratic-voting municipalities are much more likely to be associated with the adoption of these policies than smaller, Republican-voting municipalities in the U.S. This is especially true for social and environmental purchasing preference policies than for local business preference policies, which the political market model explains poorly.

The second implication of this research for the government sustainability literature is the placement of procurement as central to the sustainability concern. In the U.S., the procurement and sustainability literatures have been like Longfellow's two ships passing in the night. The procurement literature recognizes the need for more theory in its research, yet is uncertain how to connect the practical and practitioner centered research which has dominated the literature up to now with theories that assist, rather than hinder, understanding (Flynn & Davis, 2014). Meanwhile, scholars investigating local government sustainability have developed a number of theories to explain local government policy adoption, yet have not considered how public

procurement can be used to achieve the local government sustainability goals they seek. As evidence of this fact, none of the major articles on local government sustainability (Bae & Feiock, 2013; Hawkins et al., 2015; Homsy & Warner, 2015; R. M. Krause, Feiock, & Hawkins, 2016; Saha, 2009; Svara et al., 2013; Wang et al., 2012) and the surveys on which their results rely, have asked local governments whether and how they use procurement strategically to achieve their “triple bottom line” sustainability goals.

Instead, the local government sustainability literature has focused, perhaps excessively, on the environmental aspects of the sustainability concept without sufficient attention to how local governments can better achieve economic development and social equity goals. A comprehensive reading of the local government sustainability literature leads to the conclusion that environmental concerns are privileged over economic and social concerns. As succinctly summarized by (Wang et al., 2012), the studies to date “found that local sustainability is tied to local governments’ need to deal with environmental pressures and the characteristics of local governance” (841). Thus, the literature primarily deals with policies that reduce environmental impact, and has not given sufficient attention to how economic development and social equity concerns can be addressed in the context of local government sustainability policies. To the extent that the definition and inquiry into sustainability are about all three goals, the procurement domain is well suited to examine local government sustainability action because dual-purpose procurement policies include economic, social, and environmental dimensions.

Overlooking the economic and social dimensions of sustainability, as well as the general inattention to procurement by the municipal sustainability literature, provides an opportunity for validating existing models to these new domains. The empirical portion of this project makes use of this opportunity and finds that the existing political market model does help explain dual-

purpose procurement policies. Although the political market model performs reasonably well at explaining municipal sustainable procurement policies overall, the model performs better at explaining the environmental and social dimensions of dual-purpose procurement policies than they do in explaining the economic dimensions. The results from this project suggest that the demand and supply factors hypothesized in the local government environmental sustainability literature are not well suited to explaining local business preference policies by municipalities. Future research could help better establish the factors leading municipalities to adopt local business preference policies.

This study also has implications for the procurement literature. One of the major normative debates in Public Administration addresses the relative weight governments ought to give to achieving efficiency and equity. Although Public Administration historically has been grounded in achieving efficiency in government [e.g., Gulick (1937)] others have pointed to the importance of achieving greater equity in the access to public goods (Rawls, 1971, 2009) and outcomes (Frederickson, 2015; Norman-Major & Wooldridge, 2011; Wooldridge & Gooden, 2009). At the heart of the debate regarding dual-purpose procurement policies, which is reflected in the policy statements of the two major government procurement organizations (NASPO and NIGP) and the legal debate about the permissibility of these policies at the local, state, and national level, is whether governments should seek to achieve low-cost acquisition or use procurement to achieve other goals, even if the consequence is higher financial costs. Two experiences during the course of this project exemplify these tensions. In the survey comments section, one city manager from a large, North Texas municipality stated that he fundamentally disagreed with the ‘politicization’ of procurement and that it should have no other goal than lowest cost acquisition. A second comment, provided during an NIGP Forum in which the results

of the current study's survey were provided in a webinar for over 400 NIGP members, illustrates the opposite end of the spectrum. The procurement officer from a medium-sized municipality in Virginia stated that the purpose of these policies was not about whether they cost the government more, but rather whether they helped create wealth in communities that historically had not been permitted to participate in bidding and contracting. These tensions about policy priorities exist in municipal governments throughout the U.S. What this project hopes to contribute to that debate is that municipalities make their own decisions, through the political process, about where they reside on the spectrum of choice between efficiency and equity. For some municipalities, the preference for low-cost acquisition and efficiency will not lead to the development of dual-purpose procurement policies. For other municipalities, a preference for enhanced economic development and social equity will provide a basis for the development of dual-purpose procurement policies. For the environmental domain, it is also true that the decision to achieve both efficiency and a reduced environmental footprint for the organization is not necessarily in conflict, especially if the total cost of ownership is taken into the purchasing decision (Coggburn, 2004).

The second implication of this project to the procurement literature is to demonstrate how procurement practice can be explained using theories from other research areas in ways useful to both theory and practice domains. Although this study used the political market model to understand the adoption of purchasing preference policies by municipalities, other theoretical perspectives could be applied. Examples of alternative theories that could be applied to procurement are economic models predicting that policy adoption would occur if the expected utility of adopting is greater than the expected utility of not adopting (Becker, 2013; Milgrom & Roberts, 1988); psychological theories predicting that the perceived legitimacy, fairness, and

consistency with organizational norms of policies is essential to policy adoption (Sutinen & Kuperan, 1999; Tyler, 1990); stakeholder theory highlighting the role of internal and external organizational interests to explain why public procurement is concerned with achieving economic, social, and environmental goals (Freeman, 1984; Scholl, 2002), and sociological theories stressing the importance of peer organizations adopting similar policies as essential to policy adoption (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). Many of these theories have been usefully applied to the sustainable supply chain management (SSCM) literature to develop and test hypotheses about why private sector organizations adopt SSCM, most notably by Carter & Rogers (2008). As the public procurement literature is notoriously undertheorized (Flynn & Davis, 2014), using one or more of these theories to better understand the drivers for adopting procurement policies with economic, social, and environmental goals by local governments in the U.S. would improve understanding.

Finally, this project has implications for the development literature examining the role of the state in economic development and related concerns regarding inclusive (economic and social) and environmentally sustainable (economic and environmental) development. Procurement may be a particularly powerful tool to achieve development goals, because, as parties to a contract, governments can control the purchasing procedures and qualifications of bidders. Unlike other tools for development seeking enhanced backward or forward linkages, and which depend on the relative bargaining power of states and private firms (Coe, Hess, Yeung, Dicken, & Henderson, 2004; Dicken, 2011; Henderson, Dicken, Hess, Coe, & Yeung, 2002), procurement is a relatively simple tool. It merely states the requirements under which a government entity will purchase items from a contractor or supplier, to which a third party may either agree or not agree to as part of the contracting relationship. Furthermore, by establishing that U.S. municipalities are actively

using procurement to achieve economic, social, and environmental goals, the research addresses the debate about the role of cities in development. The argument from a number of quarters is that due to either the inability of national governments to achieve consensus and implement sustainable development policies, or the fact that an increasing percentage of the world population lives in cities, municipalities are increasingly important actors in affecting the quality of life of their inhabitants. Because municipalities have different decision-making processes than nation-states, the policies they have in place represent more closely the preferences of their citizens than nation-states who are both farther removed from the day-to-day lives of people and have a greater number of veto-points to initiate and implement policy. Thus, policy activism at the municipal level is important to understand because it demonstrates the preferences of citizens who increasingly look to cities to provide the quality of life they desire and because more people live in cities. Like municipal environmental activism (Svara et al., 2013), it is too early to tell whether more municipalities will implement dual-purpose procurement policies over time; however, the concern about how governing authorities can improve the economic, social, and environmental sustainability of their organizations is likely to be a growing concern for governance.<sup>28</sup>

### **7.3 Limitations**

This project on the use of government procurement by American municipalities to achieve economic, social, and environmental goals has important limitations that should be addressed in future research. First, it is clear that the political market model is limited in explaining the economic dimension of dual-purpose procurement policies. Although local business policies are

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<sup>28</sup> A recent example of how questions of economic, social, and environmental considerations affect municipal governance can be found in Chasan (2018).

adopted by more than 40% of municipalities responding to the survey, the political market model performs poorly in explaining the adoption of these policies. Better understanding why municipalities adopt local business policies is required. A first step in this regard would be to interview municipalities with these policies in place to better understand their history and origination as a means to develop generalizable propositions concerning the adoption of local business policies. Perhaps one explanation worth examining is simply that incentives to local businesses have a broader base of support across political, economic, and demographic dimensions than either social or environmental incentive policies.

Second, disentangling cause and effect in the development of the organizational capacity to implement dual-purpose procurement policies is required. The creation of separate offices for policy initiatives that require cross-departmental cooperation to implement is a powerful signal from municipal executives and governing boards regarding the seriousness of their intent to achieve policy goals within a policy domain. Sustainability, MBE, and economic development offices are examples of separate offices that municipalities create to implement and monitor the achievement of dual-purpose procurement policies. However, as is clear from the survey responses, the presence of a sustainability office is neither a necessary or sufficient condition for the adoption of dual-purpose procurement policies. Some municipalities with high levels of dual-purpose procurement policy adoption did not have sustainability offices while others with sustainability offices reported low levels of dual-purpose procurement policy adoption. Furthermore, for those municipalities with both high levels of dual-purpose procurement policy adoption and sustainability offices, the data gathered and the statistical model cannot determine which came first. Qualitative research could better explain the linkage between the existence of sustainability offices and dual-purpose procurement policies. More generally, there is a gap of

understanding in the literature regarding the origin and scope of these specialized municipal offices, their roles in the municipality, and whether the trend among municipalities is to expand or contract the size and number of these offices dedicated to cross-departmental initiatives.

#### **7.4 Future research**

The existing study highlights three areas for future research. One opportunity for future research is to address the evaluation and effectiveness of dual-purpose procurement policies. What evaluation and monitoring mechanisms are used by U.S. municipalities to measure whether they are meeting their economic, social, and environmental purchasing goals? More generally, are dual-purpose procurement policies effective in achieving greater participation of local and MBE businesses in government procurement and in reducing the environmental footprint of municipal organizations? Even more broadly, if part of the program theory for dual-purpose procurement policies is to increase wealth and reduce inequality, are they effective in doing so? The literature on municipal environmental policy has to date devoted the majority of its attention to policy initiation and implementation and generally overlooked the role of monitoring, evaluation, and questions of policy effectiveness. Examinations of the effectiveness of municipal procurement policies aimed at improved economic development and social equity are similarly overlooked by the academic and practitioner-oriented literature.

A second area for future scholarly attention is to better understand the problems in the use of dual-purpose procurement policies. Research on the organizational and inter-organizational problems faced during implementation and key success factors in overcoming these organizational challenges could be useful for both academic researchers and practitioners. The development of practitioner guides capturing lessons-learned from implementing dual-purpose procurement policies could perhaps be the most useful in terms of improved

professional practice. Insights from the adoption of energy efficiency by organizations (Brun & Gereffi, 2011) may provide useful initial guides about the types of organizational barriers faced when implementing cross-departmental initiatives and effective approaches to overcoming them.

A third area for future research is to expand the theoretical basis for understanding dual-purpose procurement policies. This project was based on a premise that the political-market model developed to understand municipal environmental policy action could help explain the adoption of dual-purpose procurement policy by municipalities. Although technical improvements to the political-market model could improve understanding, the use of different theoretical bases to examine dual-purpose procurement policies would provide alternative explanations for municipal activity in this domain. As previously discussed, economic, psychological, sociological and organizational theories could be used to derive explanations for dual-purpose procurement policies. For example, Carter & Rogers (2008) use resource dependence theory, transaction cost economics, population ecology, and the resource-based view of the firm to develop propositions about why firms adopt sustainable supply chain management practices. A similar approach could be used to better understand why municipalities adopt procurement policies that seek to achieve economic, social, and environmental goals and implications about different theoretical perspectives for managers.

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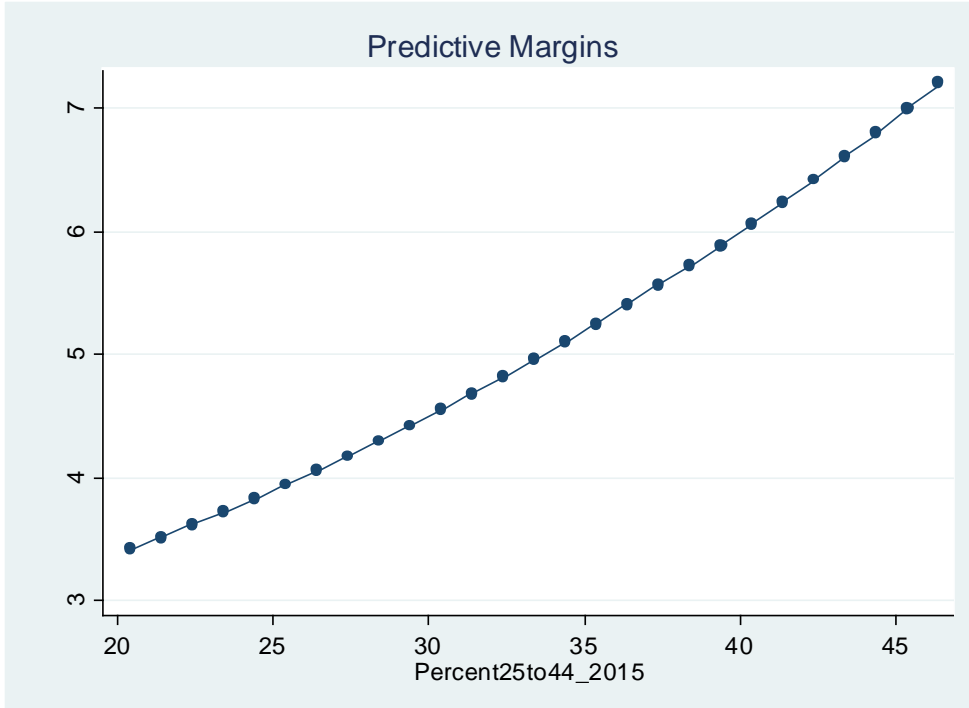
## APPENDICES

## Appendix A: Average Marginal Effects for Main Dependent Variable

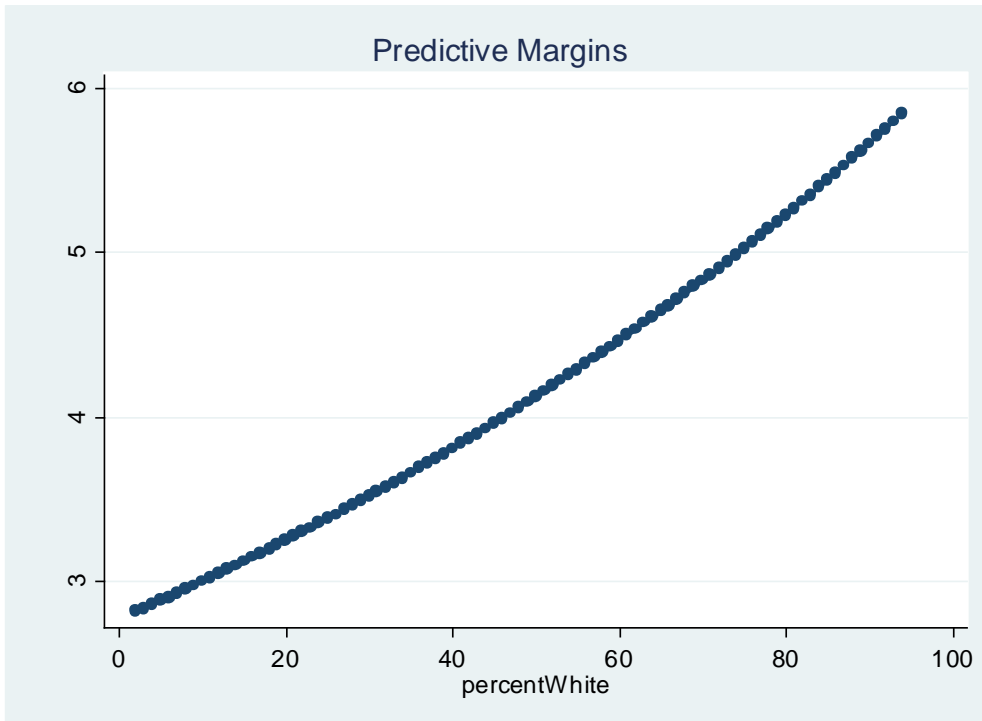
Average Marginal Effects (AMEs) measure how the changes in an independent variable affect change in the dependent variable when holding all other variables constant (Long & Freese, 2014). AMEs can be calculated at the means of the independent variables or at specific values. For this project, interquartile ranges for the significant continuous independent variables for the main dependent variable were calculated and the AMEs were derived using STATA's "margins" command and graphed. Please see Table 43. Figures 7 through 10 illustrate the AMEs for the statistically significant continuous independent variables for the main dependent variable political market regression.

**Table 43: Interquartile Ranges**

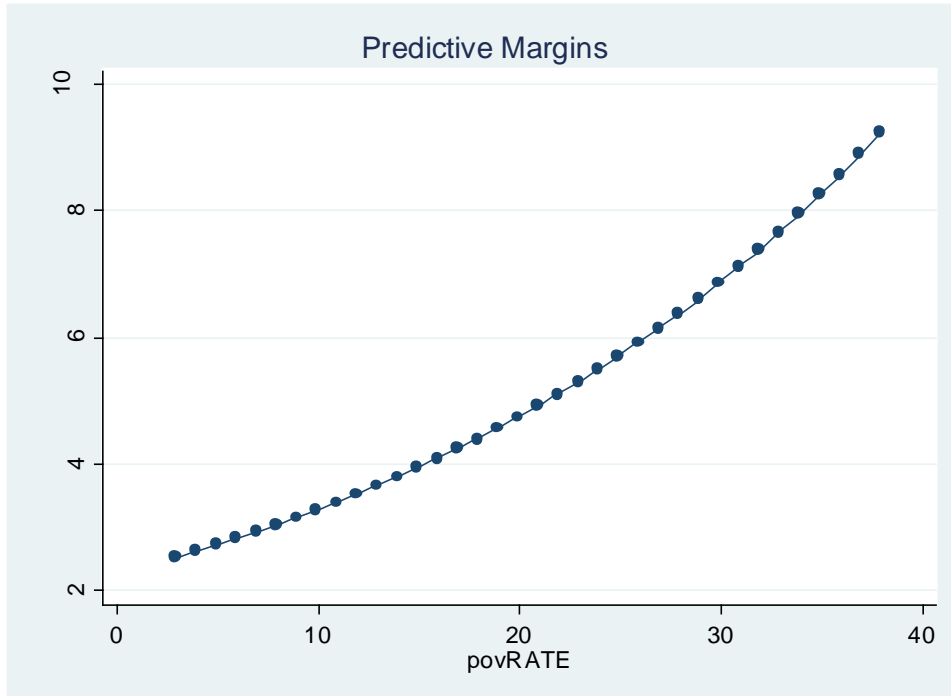
Variable name	Min (0)	25%	50%	75%	Max (100)
Percent 25-44	20	26	27	30	47
Percent white	2	45	59	73	94
Poverty Rate	3	11	16	22	38
Percent Dem Votes (avg 1996-2016)	16	44	52	62	86



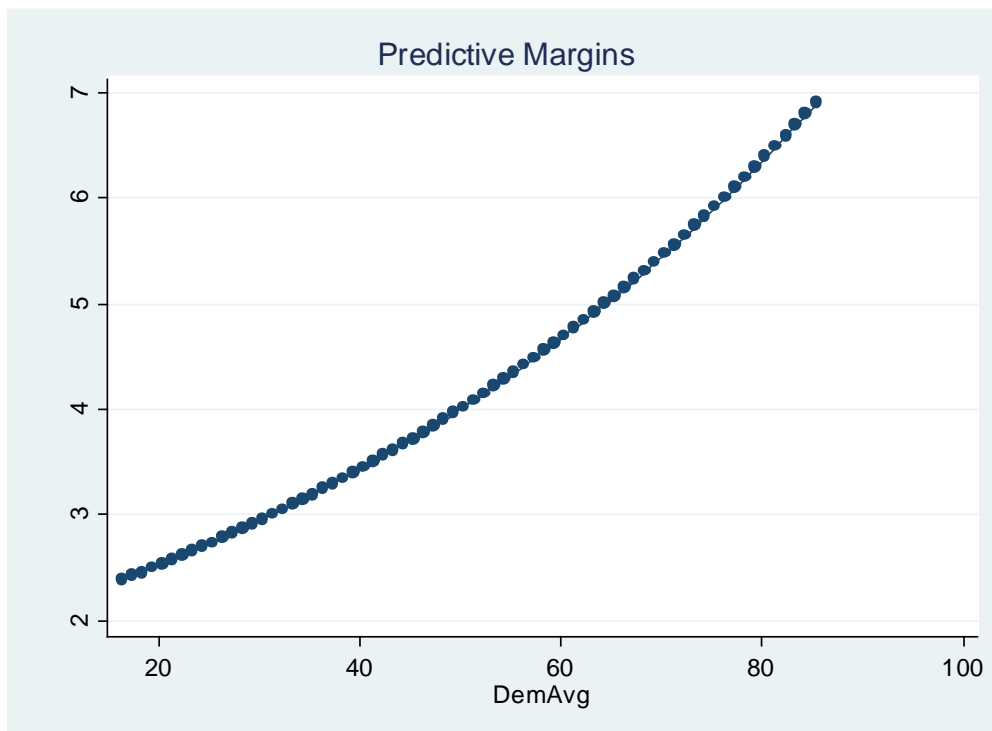
**Figure 7: Predictive margins for percent of population 25-44**



**Figure 8: Predictive margins for percent white**



**Figure 9: Predictive margins for poverty rate**



**Figure 10: Predictive margins for percent Democratic votes (average 1996-2016)**

## Appendix B: Alternative Model Specifications for Main Dependent Variable

**Table 44: Alternative Model 1 - Percent Democratic Votes (2016)**

Independent Variable	Coefficient (std. error)	
<b><i>Supply Conditions</i></b>		
council-manager	-0.280 (0.079)	***
city population	0.000 (0.000)	
government size	0.082 (0.030)	***
sustainability office	0.268 (0.078)	***
% own source revenue	0.180 (0.336)	
Home Rule	-0.151 (0.089)	*
<b><i>Demand Conditions</i></b>		
Age (%25-44)	0.025 (0.010)	**
Race (% White)	0.008 (0.002)	***
Income (poverty %)	0.037 (0.005)	***
education	-0.078 (0.312)	
% Democratic votes (2016)	0.013 (0.003)	***
South region	0.234 (0.092)	**
West region	0.112 (0.111)	
California	0.445 (0.128)	***
Constant	-1.665 (0.507)	***
Pseudo-R2	0.122	
N	257	

**Table 45: Alternative Model 2 - Percent Democratic Votes (Average Political Propensity)**

Independent Variable	Coefficient (std. error)
<b><i>Supply Conditions</i></b>	
council-manager	-0.180 ** (0.083)
city population	0.000 (0.000)
government size	0.083 *** (0.032)
sustainability office	0.300 *** (0.082)
% own source revenue	0.046 (0.366)
Home Rule	-0.130 (0.094)
<b><i>Demand Conditions</i></b>	
Age (%25-44)	0.016 (0.010)
Race (% White)	0.003 (0.002)
Income (poverty %)	0.023 *** (0.005)
education	0.360 (0.304)
% Democratic votes (avg. political propensity)	0.204 *** (0.039)
South region	0.107 (0.095)
West region	-0.020 (0.119)
California	0.605 *** (0.132)
Constant	-0.822 * (0.494)
Pseudo-R2	0.144
N	221

**Table 46: Alternative Model 3 - Household Income and Percent Democratic Votes**

Independent Variable	Coefficient (std. error)	
<b><i>Supply Conditions</i></b>		
council-manager	-0.309	***
	(0.079)	
city population	0.000	
	(0.000)	
government size	0.065	**
	(0.031)	
sustainability office	0.279	***
	(0.077)	
% own source revenue	0.332	
	(0.340)	
Home Rule	-0.207	**
	(0.090)	
<b><i>Demand Conditions</i></b>		
Age (%25-44)	0.017	*
	(0.010)	
Race (% White)	0.003	
	(0.002)	
Income (Median HH income)	0.000	***
	(0.000)	
education	1.038	***
	(0.351)	
% Democratic votes (1996-2016 average)	0.016	***
	(0.003)	
South region	0.178	*
	(0.092)	
West region	0.136	
	(0.112)	
California	0.461	***
	(0.128)	
Constant	-0.066	
	(0.461)	
Pseudo-R2	0.121	
N	257	

**Table 47: Alternative Model 4 - Household Income and Percent Democratic Votes**

Independent Variable	Coefficient (std. error)	
<b><i>Supply Conditions</i></b>		
council-manager	-0.318	***
	(0.078)	
city population	0.000	
	(0.000)	
government size	0.065	**
	(0.031)	
sustainability office	0.282	***
	(0.077)	
% own source revenue	0.205	
	(0.337)	
Home Rule	-0.178	**
	(0.089)	
<b><i>Demand Conditions</i></b>		
Age (%25-44)	0.013	
	(0.010)	
Race (% White)	0.003	
	(0.002)	
Income (Median HH income)	0.000	***
	(0.000)	
education	0.935	***
	(0.362)	
% Democratic votes (2016)	0.013	***
	(0.003)	
South region	0.161	*
	(0.092)	
West region	0.122	
	(0.112)	
California	0.446	***
	(0.128)	
Constant	0.292	
	(0.440)	
Pseudo-R2	0.116	
N	257	

**Table 48: Alternative Model 5 - Household Income and Percent Democratic Votes**

Independent Variable	Coefficient (std. error)	
<b><i>Supply Conditions</i></b>		
council-manager	-0.206	**
	(0.083)	
city population	0.000	
	(0.000)	
government size	0.077	**
	(0.033)	
sustainability office	0.314	***
	(0.081)	
% own source revenue	0.014	
	(0.365)	
Home Rule	-0.145	
	(0.094)	
<b><i>Demand Conditions</i></b>		
Age (%25-44)	0.008	
	(0.010)	
Race (% White)	0.001	
	(0.002)	
Income (Median HH income)	0.000	***
	(0.000)	
education	0.788	**
	(0.377)	
% Democratic votes (avg political propensity)	0.211	***
	(0.039)	
South region	0.069	
	(0.095)	
West region	-0.030	
	(0.119)	
California	0.598	***
	(0.132)	
Constant	0.322	
	(0.456)	
Pseudo-R2	0.138	
N	221	

**Table 49: Negative Binomial Regression Results for Main Dependent Variable**

Independent Variable	Coefficient (std. error)	
<b><i>Supply Conditions</i></b>		
council-manager	-0.304	*
	(0.166)	
city population	0.000	
	(0.000)	
government size	0.053	
	(0.062)	
sustainability office	0.330	**
	(0.156)	
% own source revenue	0.075	
	(0.692)	
Home Rule	-0.158	
	(0.174)	
<b><i>Demand Conditions</i></b>		
Age (%25-44)	0.028	
	(0.023)	
Race (% White)	0.007	
	(0.005)	
Income (poverty %)	0.042	***
	(0.011)	
education	0.131	
	(0.606)	
% Democratic votes (1996-2016 average)	0.015	***
	(0.006)	
South region	0.264	
	(0.191)	
West region	0.149	
	(0.220)	
California	0.455	*
	(0.258)	
Constant	-1.760	
	(1.073)	
Pseudo-R2	0.037	
N	257	

## Appendix C: Survey

### Local Government Procurement Practices Survey

#### Q1 Informed Consent Form

##### **What are some general things you should know about research studies?**

You are being asked to take part in a research study. Your participation in this study is voluntary. You have the right to be a part of this study, to choose not to participate or to stop participating at any time without penalty. The purpose of research studies is to gain a better understanding of a certain topic or issue. You are not guaranteed any personal benefits from being in a study. Research studies also may pose risks to those that participate. In this consent form you will find specific details about the research in which you are being asked to participate. If you do not understand something in this form it is your right to ask the researcher for clarification or more information. A copy of this consent form will be provided to you. If at any time you have questions about your participation, do not hesitate to contact the researcher(s) named below.

##### **What is the purpose of this study?**

The purpose of the study is to better understand how local governments use procurement to achieve economic, social, and environmental goals for their jurisdictions. As an area of emerging practice, the goal of the study is to understand what policies local governments have in place to achieve these goals, how prevalent the policies being adopted are, and factors that lead to their adoption by local governments.

##### **What will happen if you take part in the study?**

If you agree to participate in this study, you will be asked to participate in an online survey that will take approximately twelve (12) minutes to complete.

##### **Risks**

The survey will ask you questions about your local government's procurement practices. There is minimal risk to you for your involvement.

##### **Benefits**

Although there is no direct benefit expected to the subject, knowledge may be gained that could help others in municipal positions and the academy to better understand how governments use procurement policy to achieve multiple policy goals.

##### **Compensation**

You will not receive any compensation for participating.

##### **What if you have questions about this study?**

If you have questions at any time about the study or the procedures, you may contact the researcher, Lukas Brun, at 919-921-2364.

##### **What if you have questions about your rights as a research participant?**

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Deb Paxton, Regulatory Compliance Administrator at [dapaxton@ncsu.edu](mailto:dapaxton@ncsu.edu) or by phone at 1-919-515-4514.

##### **Consent To Participate**

"I have read and understand the above information. I agree to participate in this study with the

understanding that I may choose not to participate or to stop participating at any time without penalty or loss of benefits to which I am otherwise entitled.”

---

Q2 I have read and understood the above consent form and desire of my own free will to participate in this study.

- Yes (1)
- No (2)

*Skip To: End of Survey If I have read and understood the above consent form and desire of my own free will to participate i... = No*

**End of Block: Default Question Block**

---

**Start of Block: Default Question Block**

Q3 In what state and county is your municipality located?

State: (1)

County: (2)

▼ Alabama (1) ... Wyoming ~ Weston County (3145)

---

Page Break

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Q4 What is the population of your municipality?

- less than 50,000 (1)
  - 50-75k (2)
  - 75-100k (3)
  - 100-150k (4)
  - 150-200k (5)
  - 200-250k (6)
  - 250-500k (7)
  - 500k - 1 million (8)
  - more than 1 million (9)
-

Q5 What is the form of government of your municipality?

- Mayor-Council (1)
- Council-Manager (2)
- Other (3)

---

Page Break

Q6 How many FTE employees does your municipality have?

- under 100 (1)
- 100-249 (2)
- 250-499 (3)
- 500-999 (4)
- 1,000 - 2,500 (5)
- more than 2,500 (6)

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Page Break

Q7 Does your municipality have a staffed sustainability office?

- Yes (1)
- No (2)
- Don't know (3)

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*Display This Question:*

*If Does your municipality have a staffed sustainability office? = Yes*

Q8 How many FTEs, if any, are dedicated to the sustainability effort in your municipality?  
FTEs (1)

▼ 0 (1) ... more than 15 (17)

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Page Break

Q9 The next set of questions asks about the procurement practices in your municipality as they relate to *preferred purchasing*.

*Preferred purchasing* includes providing price preferences, bid-discounts, or procurement specifications that seek to achieve economic, social, or environmental goals through local government procurement. *Examples* of these goals could include promoting economic development, incentivizing socially inclusive development, or reducing the environmental footprint of the municipality.

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Page Break

Q10 Does your municipality have preferred purchasing goals for any of the following business categories?

	Yes (7)	No (8)	Don't know (9)
<b>locally</b> -owned business (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>minority</b> -owned business (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>women</b> -owned business (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>disabled</b> -owned business (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>veteran</b> -owned business (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>small</b> business enterprise (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Page Break

*Display This Question:*

*If Does your municipality have preferred purchasing goals for any of the following business categories? = Yes*

Q11 Do preferred purchasing goals apply to goods, services, or construction procurement, or all three categories? (Please select as many as apply.)

Goods (1)

Services (2)

Construction (3)

---

Page Break

*Display This Question:*

*If Does your municipality have preferred purchasing goals for any of the following business categories? = Yes*

Q12 Are the preferred purchasing goals mandatory or voluntary?

Mandatory (1)

Voluntary (2)

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Page Break

*Display This Question:*

*If Does your municipality have preferred purchasing goals for any of the following business categories? = Yes*

Q13 What is the participation goal for the following business categories, if any?

<p><i>Does your municipality have preferred purchasing goals for any of the following business categories? = Yes</i></p>	<p>▼ not established/don't know (13) ... &gt;25% (59)</p>
<p><b>overall</b> program goal (49)</p>	
<p><i>Does your municipality have preferred purchasing goals for any of the following business categories? = &lt;strong&gt;locally&lt;/strong&gt;-owned business [ Yes ]</i></p>	<p>▼ not established/don't know (13) ... &gt;25% (59)</p>
<p><b>locally</b>-owned business (1)</p>	
<p><i>Does your municipality have preferred purchasing goals for any of the following business categories? = &lt;strong&gt;minority&lt;/strong&gt;-owned business [ Yes ]</i></p>	<p>▼ not established/don't know (13) ... &gt;25% (59)</p>
<p><b>minority</b>-owned business (2)</p>	
<p><i>Does your municipality have preferred purchasing goals for any of the following business categories? = &lt;strong&gt;women&lt;/strong&gt;-owned business [ Yes ]</i></p>	<p>▼ not established/don't know (13) ... &gt;25% (59)</p>
<p><b>women</b>-owned business (3)</p>	
<p><i>Does your municipality have preferred purchasing goals for any of the following business categories? = &lt;strong&gt;disabled&lt;/strong&gt;-owned business [ Yes ]</i></p>	<p>▼ not established/don't know (13) ... &gt;25% (59)</p>
<p><b>disabled</b>-owned business (4)</p>	
<p><i>Does your municipality have preferred purchasing goals for any of the following business categories? = &lt;strong&gt;veteran&lt;/strong&gt;-owned business [ Yes ]</i></p>	<p>▼ not established/don't know (13) ... &gt;25% (59)</p>
<p><b>veteran</b>-owned business (5)</p>	
<p><i>Does your municipality have preferred purchasing goals for any of the following business categories? = &lt;strong&gt;small&lt;/strong&gt; business enterprise [ Yes ]</i></p>	<p>▼ not established/don't know (13) ... &gt;25% (59)</p>
<p><b>small</b> business enterprise (6)</p>	

Q14 How were the participation goals for businesses established in your municipality? (Select as many as apply)

- Municipal ordinance (1)
- Disparity study (3)
- Best practices study (4)
- Other (5)
- Don't know (6)

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*Display This Question:*

*If How were the participation goals for businesses established in your municipality? (Select as many... = Other*

Q15 Please describe the other ways your municipality established participation goals

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Page Break

*Display This Question:*

*If Does your municipality have preferred purchasing goals for any of the following business categories? = Yes*

Q16 How do you apply preferred purchasing policies in your municipality? Bid discount (% reduction on bid), tie-bid preference (preference only applies if bid is equal), absolute preference (all purchasing is designated to preference category), or other?

- Bid-discount (1)
  - Tie-bid preference (2)
  - Absolute preference (3)
  - Other (4)
  - Don't know (5)
-

*Display This Question:*

*If How do you apply preferred purchasing policies in your municipality? Bid discount (% reduction on... = Other*

Q17 Please describe other ways your municipality encourages compliance with preferred purchasing policies.

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Page Break

*Display This Question:*

*If How do you apply preferred purchasing policies in your municipality? Bid discount (% reduction on... = Bid-discount*

Q18 What is the bid-discount offered by your municipality to companies in specific business categories?

amount (%) (1)

▼ Not established (1) ... (27)

---

*Display This Question:*

*If Does your municipality have preferred purchasing goals for any of the following business categories? = <strong>locally</strong>-owned business [ Yes ]*

Q19 Do you know the specific year in which preferred purchasing policies for **locally**-owned businesses were first implemented in your municipality?

Yes (1)

No (2)

---

*Display This Question:*

*If Do you know the specific year in which preferred purchasing policies for locally-owned businesses... = Yes*

Q20 Year preferred purchasing policies for **locally**-owned businesses were first implemented in your municipality:

Year (1)

▼ 1945 (1) ... 2016 (72)

*Display This Question:*

*If Do you know the specific year in which preferred purchasing policies for locally-owned businesses... = No*

Q21 Approximately how long ago were preferred purchasing policies for **locally**-owned businesses first implemented in your municipality?

- in the past 5 years (1)
- in the past 10 years (2)
- in the past 20 years (3)
- more than 20 years ago (4)
- don't know (5)

*Display This Question:*

*If Does your municipality have preferred purchasing goals for any of the following business categories? = <strong>minority</strong>-owned business [ Yes ]*

Q22 Do you know the specific year in which preferred purchasing policies for **minority**-owned businesses were first implemented in your municipality?

- Yes (1)
- No (2)

*Display This Question:*

*If Do you know the specific year in which preferred purchasing policies for minority-owned business... = Yes*

Q23 Year preferred purchasing policies for **minority**-owned businesses were first implemented in your municipality:

Year (1)

▼ 1945 (1) ... 2016 (72)

*Display This Question:*

*If Do you know the specific year in which preferred purchasing policies for minority-owned businesses... = No*

Q24 Approximately how long ago were preferred purchasing policies for **minority**-owned businesses first implemented in your municipality?

- in the past 5 years (1)
- in the past 10 years (2)
- in the past 20 years (3)
- more than 20 years ago (4)
- don't know (5)

*Display This Question:*

*If Does your municipality have preferred purchasing goals for any of the following business categories? = <strong>women</strong>-owned business [ Yes ]*

Q25 Do you know the specific year in which preferred purchasing policies for **women**-owned businesses were first implemented in your municipality?

- Yes (1)
- No (2)

*Display This Question:*

*If Do you know the specific year in which preferred purchasing policies for women-owned businesses w... = Yes*

Q26 Year preferred purchasing policies for **women**-owned businesses were first implemented in your municipality:

Year (1)

▼ 1945 (1) ... 2016 (72)

*Display This Question:*

*If Do you know the specific year in which preferred purchasing policies for women-owned businesses w... = No*

Q27 Approximately how long ago were preferred purchasing policies for **women**-owned businesses first implemented in your municipality?

- in the past 5 years (1)
- in the past 10 years (2)
- in the past 20 years (3)
- more than 20 years ago (4)
- don't know (5)

---

*Display This Question:*

*If Does your municipality have preferred purchasing goals for any of the following business categories? = <strong>disabled</strong>-owned business [ Yes ]*

Q28 Do you know the specific year in which preferred purchasing policies for **disabled**-owned businesses were first implemented in your municipality?

- Yes (1)
- No (2)

---

*Display This Question:*

*If Do you know the specific year in which preferred purchasing policies for disabled-owned business... = Yes*

Q29 Year preferred purchasing policies for **disabled**-owned businesses were first implemented in your municipality:

Year (1)

▼ 1945 (1) ... 2016 (72)

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*Display This Question:*

*If Do you know the specific year in which preferred purchasing policies for disabled-owned business... = No*

Q30 Approximately how long ago were preferred purchasing policies for **disabled**-owned businesses first implemented in your municipality?

- in the past 5 years (1)
- in the past 10 years (2)
- in the past 20 years (3)
- more than 20 years ago (4)
- don't know (5)

---

*Display This Question:*

*If Does your municipality have preferred purchasing goals for any of the following business categories? = <strong>veteran</strong>-owned business [ Yes ]*

Q31 Do you know the specific year in which preferred purchasing policies for **veteran**-owned businesses were first implemented in your municipality?

- Yes (1)
- No (2)

---

*Display This Question:*

*If Do you know the specific year in which preferred purchasing policies for veteran-owned businesses... = Yes*

Q32 Year preferred purchasing policies for **veteran**-owned businesses were first implemented in your municipality:

Year (1)

▼ 1945 (1) ... 2016 (72)

---

*Display This Question:*

*If Do you know the specific year in which preferred purchasing policies for veteran-owned businesses... = No*

Q33 Approximately how long ago were preferred purchasing policies for **veteran**-owned businesses first implemented in your municipality?

- in the past 5 years (1)
- in the past 10 years (2)
- in the past 20 years (3)
- more than 20 years ago (4)
- don't know (5)

---

*Display This Question:*

*If Does your municipality have preferred purchasing goals for any of the following business categories? = <strong>small </strong>business enterprise [ Yes ]*

Q34 Do you know the specific year in which preferred purchasing policies for **small** business enterprises were first implemented in your municipality?

- Yes (1)
- No (2)

---

*Display This Question:*

*If Do you know the specific year in which preferred purchasing policies for small business enterpris... = Yes*

Q35 Year preferred purchasing policies for **small** business enterprises were first implemented in your municipality:

Year (1)

▼ 1945 (1) ... 2016 (72)

---

*Display This Question:*

*If Do you know the specific year in which preferred purchasing policies for small business enterpris... = No*

Q36 Approximately how long ago were preferred purchasing policies for **small** business enterprises first implemented in your municipality?

- in the past 5 years (1)
- in the past 10 years (2)
- in the past 20 years (3)
- more than 20 years ago (4)
- don't know (5)

---

Page Break

*Display This Question:*

*If Does your municipality have preferred purchasing goals for any of the following business categories? = Yes*

Q37 How important are preferred purchasing policies to the procurement decisions in your municipality?

	Extremely important (1)	Very important (2)	Moderately important (3)	Slightly important (4)	Not at all important (5)
<p><i>Does your municipality have preferred purchasing goals for any of the following business categories? =</i>  <strong>locally</strong>-owned business [ Yes ]</p> <p><b>locally</b>-owned business (1)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p><i>Does your municipality have preferred purchasing goals for any of the following business categories? =</i>  <strong>minority</strong>-owned business [ Yes ]</p> <p><b>minority</b>-owned business (2)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p><i>Does your municipality have preferred purchasing goals for any of the following business categories? =</i>  <strong>women</strong>-owned business [ Yes ]</p> <p><b>women</b>-owned business (3)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p><i>Does your municipality have preferred purchasing goals for any of the following business categories? =</i>  <strong>disabled</strong>-owned business [ Yes ]</p> <p><b>disabled</b>-owned business (4)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p><i>Does your municipality have preferred purchasing goals for any of the following business categories? =</i>  <strong>veteran</strong>-owned business [ Yes ]</p> <p><b>veteran</b>-owned business (5)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Does your municipality have preferred purchasing goals for any of the following business categories? = **small** business enterprise [ Yes ]

**small** business enterprise (6)

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Page Break

*Display This Question:*

*If Does your municipality have preferred purchasing goals for any of the following business categories? = Yes*

Q38 How does your municipality promote compliance with your preferred purchasing policies? (Select all that apply)

- Public database of registered businesses (25)
- Contractor's assistance center (26)
- Active matchmaking (27)
- Contractor audit (28)
- Other (29)
- Don't know (30)

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*Display This Question:*

*If How does your municipality promote compliance with your preferred purchasing policies? (Select al... = Other*

Q39 Please describe other ways your municipality encourages compliance with preferred purchasing policies.

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Page Break

Q40 Does your municipality have environmentally preferable purchasing goals for any of the following product categories?

	Yes (1)	No (2)	Don't know (4)
products with recycled content (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
products that can be recycled (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
products that can be reused (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
products produced with alternative fuels (e.g., wind, solar) (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
energy efficient products (e.g. "Energy Star") (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
water efficient products (e.g., low-flow toilets) (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
hybrid fuel vehicles (gas & electric) (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
alternative fuel vehicles (LNG, electric, hydrogen) (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

*Display This Question:*

*If Does your municipality have environmentally preferable purchasing goals for any of the following... = Yes*

Q41 Are the environmentally preferred purchasing goals mandatory or voluntary?

Mandatory (1)

Voluntary (2)

Page Break

*Display This Question:*

*If Does your municipality have environmentally preferable purchasing goals for any of the following... = Yes*

Q42 Do you know the specific year in which environmentally preferred purchasing policies were first implemented in your municipality?

- Yes (1)
- No (2)

*Display This Question:*

*If Do you know the specific year in which environmentally preferred purchasing policies were first i... = Yes*

Q43 Year environmentally preferred purchasing policies were first implemented in your municipality:

Year (1)

▼ 1945 (1) ... 2016 (72)

*Display This Question:*

*If Do you know the specific year in which environmentally preferred purchasing policies were first i... = No*

Q44 Approximately how long ago were environmentally preferred purchasing policies first implemented in your municipality?

- in the past 5 years (1)
- in the past 10 years (2)
- in the past 20 years (3)
- more than 20 years ago (4)
- don't know (5)

*Display This Question:*

*If Does your municipality have environmentally preferable purchasing goals for any of the following... = Yes*

Q45 How important are environmentally preferred purchasing policies to the procurement decisions in your municipality?

	Extremely important (1)	Very important (2)	Moderately important (3)	Slightly important (4)	Not at all important (5)
<p><i>Does your municipality have environmentally preferable purchasing goals for any of the following... = products with recycled content [ Yes ]</i></p> <p><b>products with recycled content (1)</b></p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p><i>Does your municipality have environmentally preferable purchasing goals for any of the following... = products that can be recycled [ Yes ]</i></p> <p><b>products that can be recycled (2)</b></p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p><i>Does your municipality have environmentally preferable purchasing goals for any of the following... = products that can be reused [ Yes ]</i></p> <p><b>products that can be reused (3)</b></p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Does your municipality have environmentally preferable purchasing goals for any of the following...  
= products produced with alternative fuels (e.g., wind, solar) [ Yes ]*

**products produced with alternative fuels (e.g., wind, solar) (4)**

*Does your municipality have environmentally preferable purchasing goals for any of the following...  
= energy efficient products (e.g. "Energy Star") [ Yes ]*

**energy efficient products (e.g. "Energy Star") (5)**

*Does your municipality have environmentally preferable purchasing goals for any of the following...  
= water efficient products (e.g., low-flow toilets) [ Yes ]*

**water efficient products (e.g., low-flow toilets) (6)**

*Does your municipality have environmentally preferable purchasing goals for any of the following...  
= hybrid fuel vehicles (gas & electric) [ Yes ]*

**hybrid fuel vehicles (gas & electric) (7)**

*Does your municipality have environmentally preferable purchasing goals for any of the following... = alternative fuel vehicles (LNG, electric, hydrogen) [ Yes ]*

alternative fuel vehicles (LNG, electric, hydrogen) (8)

*Display This Question:*  
*If Does your municipality have preferred purchasing goals for any of the following business categories? = Yes*

Q46 How do you promote compliance with your environmentally preferred purchasing policies? (Select all that apply)

- Supplier audit (25)
- External certifications (ISO, Energy Star, etc.) (26)
- Program evaluation (30)
- No existing compliance mechanism (27)
- Other (29)
- Don't know (28)

*Display This Question:*  
*If How do you promote compliance with your environmentally preferred purchasing policies? (Select al... = Other*

Q47 Please describe other ways your municipality encourages compliance with environmentally preferred purchasing policies.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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Page Break

Q48 The next set of questions asks about *local hiring* and *living wage* policies that apply to government contracting in your municipality.

*Local hiring* policies require contractors of publicly-funded projects to recruit a certain proportion of the people working on the project from a particular area. *Living wage* policies require contractors of publicly-funded projects to pay a wage at or above the federal or state poverty level. Living wages are typically higher than the federal minimum wage in most communities.

Q49 Does your municipality have local hiring or living wage policies that apply to government purchasing and/or contracting?

	Yes (1)	No (2)	Don't know (3)
local hiring (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
living wage (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Page Break

*Display This Question:*

*If Does your municipality have local hiring or living wage policies that apply to government purchas... = local hiring [ Yes ]*

Q50 Do local hiring policies apply to goods, services, or construction procurement, or all three categories? (Please select as many as apply)

- goods (1)
- services (2)
- construction (3)

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Page Break

*Display This Question:*

*If Does your municipality have local hiring or living wage policies that apply to government purchas... = local hiring [ Yes ]*

Q51 Are local hiring policies mandatory or voluntary?

- mandatory (1)
- voluntary (2)

---

Page Break

*Display This Question:*

*If Does your municipality have local hiring or living wage policies that apply to government purchas... = local hiring [ Yes ]*

Q52 Do you know the specific year in which local hiring policies were first implemented in your municipality?

- Yes (1)
- No (2)

---

*Display This Question:*

*If Do you know the specific year in which local hiring policies were first implemented in your munic... = Yes*

Q53 Year local hiring policies were first implemented in your municipality:

Year (1)

▼ 1945 (1) ... 2016 (72)

---

*Display This Question:*

*If Do you know the specific year in which local hiring policies were first implemented in your munic... = No*

Q54 Approximately how long ago were local hiring policies first implemented in your municipality?

- in the past 5 years (1)
- in the past 10 years (2)
- in the past 20 years (3)
- more than 20 years ago (4)
- don't know (5)

---

Page Break

*Display This Question:*

*If Does your municipality have local hiring or living wage policies that apply to government purchas... = living wage [ Yes ]*

Q55 Do living wage policies apply to goods, services, or construction procurement, or all three categories? (Select as many as apply)

- goods (1)
- services (2)
- construction (3)

---

*Display This Question:*

*If Does your municipality have local hiring or living wage policies that apply to government purchas... = living wage [ Yes ]*

Q56 Are living wage policies mandatory or voluntary?

- mandatory (1)
- voluntary (2)

---

Page Break

*Display This Question:*

*If Does your municipality have local hiring or living wage policies that apply to government purchas... = living wage [ Yes ]*

Q57 Do you know the specific year in which living wage policies were first implemented in your municipality?

- Yes (1)
- No (2)

---

*Display This Question:*

*If Do you know the specific year in which living wage policies were first implemented in your munici... = Yes*

Q58 Year living wage policies were first implemented in your municipality:

Year (1)

▼ 1945 (1) ... 2016 (72)

---

*Display This Question:*

*If Do you know the specific year in which living wage policies were first implemented in your munici... = No*

Q59 Approximately how long ago were living wage policies first implemented in your municipality?

- in the past 5 years (1)
- in the past 10 years (2)
- in the past 20 years (3)
- more than 20 years ago (4)
- don't know (5)

---

*Display This Question:*

*If Does your municipality have local hiring or living wage policies that apply to government purchas... = Yes*

Q60 How does your municipality encourage compliance with local hire or living wage policies?

	Contractor audit (during contract) (1)	Contractor audit (after contract) (2)	Other (3)	No existing compliance mechanism (4)	Don't know (5)
<p><i>Does your municipality have local hiring or living wage policies that apply to government purchas... = local hiring [ Yes ]</i></p> <p><b>Local hiring (1)</b></p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><i>Does your municipality have local hiring or living wage policies that apply to government purchas... = living wage [ Yes ]</i></p> <p><b>Living wage (2)</b></p>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Display This Question:*  
*If How does your municipality encourage compliance with local hire or living wage policies? = Other*

Q61 Please describe other ways your municipality encourages compliance with local hire and/or living wage policies

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Page Break

Q62 The next questions ask about *Project Labor Agreements (PLAs)*, *Community Based Agreements (CBAs)* and *Development Agreements (DAs)* that apply to construction projects paid for, in part or entirely, with local government funds.

*Project Labor Agreements (PLAs)* govern the work rules, pay rates, and dispute resolution processes for every worker on a construction project. PLAs contractually establish the key terms of hiring procedures and working conditions between a construction or development company and union or nonunion trades. *Community Based Agreements (CBAs)* are legally binding contracts between a developer and community organizations defining specific benefits received by the community in return for a release of claims and support of the project by the organizations. Targeted hiring policies and job training are among the most common commitments included in CBAs. *Development Agreements (DAs)* are contracts between a government entity and one or more developers establishing the terms of a single development project or series of related development projects. The contracts detail the developer’s plans, land use information, development criteria, terms and conditions for approval of the project, and local government subsidies to the project.

Q63 Does your municipality use Project Labor Agreements, Community Based Agreements, or Development Agreements that apply to construction projects paid for, in part or entirely, with local government funds?

	Yes (1)	No (2)	Don't know (3)
Project Labor Agreements (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Based Agreements (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Development Agreements (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Display This Question:*

*If Does your municipality use Project Labor Agreements, Community Based Agreements, or Development A... = Yes*

Q64 How frequently does your municipality use Project Labor Agreements, Community Based Agreements, or Development Agreements for construction projects paid for, in part or entirely, with local government funds?

	Always (1)	Most of the time (2)	About half the time (3)	Sometimes (4)	Almost never (5)	Don't know (6)
<i>Does your municipality use Project Labor Agreements, Community Based Agreements, or Development A... = Project Labor Agreements [ Yes ]</i> <b>Project Labor Agreements (1)</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Does your municipality use Project Labor Agreements, Community Based Agreements, or Development A... = Community Based Agreements [ Yes ]</i> <b>Community Based Agreements (2)</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Does your municipality use Project Labor Agreements, Community Based Agreements, or Development A... = Development Agreements [ Yes ]*

**Development Agreements (3)**

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Page Break

*Display This Question:*

*If Does your municipality use Project Labor Agreements, Community Based Agreements, or Development A... = Yes*

**Q65 How does your municipality promote compliance with Project Labor Agreements, Community Based Agreements and/or Development Agreements?**

	Contractor audit (during project) (1)	Contractor audit (after project) (2)	Other (4)	No existing compliance mechanism (3)	Don't know (5)
<i>Does your municipality use Project Labor Agreements, Community Based Agreements, or Development A... = Project Labor Agreements [ Yes ]</i> <b>Project Labor Agreements (1)</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Does your municipality use Project Labor Agreements, Community Based Agreements, or Development A... = Community Based Agreements [ Yes ]</i> <b>Community Based Agreements (2)</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Does your municipality use Project Labor Agreements, Community Based Agreements, or Development A... = Development Agreements [ Yes ]*

**Development Agreements (3)**

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Page Break

*Display This Question:*

*If How does your municipality promote compliance with Project Labor Agreements, Community Based Agre... = Other*

**Q66 Please describe other ways your municipality encourages compliance with Project Labor Agreements, Community Based Agreements and/or Development Agreements.**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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Page Break

Q67 How strongly do you agree or disagree with the following statements?

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Promoting economic development is the most important topic in my local government (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Promoting social equity is the most important topic in my local government (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Promoting environmental sustainability is the most important topic in my local government (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Page Break

Q68 How strongly do you agree or disagree with the following statements?

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Elected officials in my local government are politically liberal or progressive (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Residents of my local government are politically liberal or progressive (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Page Break

Q69 The survey is almost finished. Please complete the following information regarding your municipality, position and availability for a follow-up interview.

Q70 Name of your city

---

Q71 Your position

---

---

Q72 How many years of experience do you have in government procurement?

Years (1)

▼ less than 1 (1) ... more than 20 (22)

Q73 Over the past year, how much influence did you have on procurement decisions in your municipality?

- I was the sole decision-maker on procurement decisions (1)
  - I was part of a team making procurement decisions (2)
  - I make recommendations to decision-makers about procurement decisions (3)
  - I do not influence procurement decisions (4)
- 

Q74 Are you willing to participate in a 15 minute follow-up interview about the procurement practices in your municipality?

- Yes (1)
  - No (2)
- 

*Display This Question:*

*If Are you willing to participate in a 15 minute follow-up interview about the procurement practices... = Yes*

Q75 Please provide a telephone number or email address to contact you.

Q76 Please provide any comments you wish to share with the research team.

End of Survey

## Appendix D: NC State University Institutional Review Board Approval

Date: July 14, 2016

IRB Protocol 7781 has been assigned Exempt status

Title: The Dual Role of Public Procurement

PI: Nowell, Branda

Dear Lukas Brun:

The research proposal named above has received administrative review and has been approved as exempt from the policy as outlined in the Code of Federal Regulations (Exemption: 46.101. Exempt b.2). Provided that the only participation of the subjects is as described in the proposal narrative, this project is exempt from further review. This approval does not expire, but any changes must be approved by the IRB prior to implementation.

1. This committee complies with requirements found in Title 45 part 46 of The Code of Federal Regulations. For NCSU projects, the Assurance Number is: FWA00003429.
2. Any changes to the protocol and supporting documents must be submitted and approved by the IRB prior to implementation.
3. If any unanticipated problems or adverse events occur, they must be reported to the IRB office within 5 business days by completing and submitting the unanticipated problem form on the IRB website: <http://research.ncsu.edu/sparcs/compliance/irb/submission-guidance/>.
4. Any unapproved departure from your approved IRB protocol results in non-compliance. Please find information regarding non-compliance here: [http://research.ncsu.edu/sparcs-docs/irb/non-compliance\\_faq\\_sheet.pdf](http://research.ncsu.edu/sparcs-docs/irb/non-compliance_faq_sheet.pdf).

Please let us know if you have any questions.

Thank you,  
The IRB Team

## Appendix E: Email Messages Sent to Survey Participants

### **Beta-test group email**

Dear [first name]:

My name is Lukas Brun and I am a Ph.D. student at North Carolina State University and Senior Research Analyst at Duke University. I am currently completing my dissertation, which focuses on how public procurement can be used by local governments to achieve economic, social, and environmental goals. I am especially interested in how organizational capacity and external factors affect the willingness of local governments to use procurement to achieve these goals.

In emailing you today, I hope you will consider assisting me with my research by completing a brief web-based survey, or designating someone in your organization appropriate to answering the survey.

The survey should take no more than 12 minutes to complete. The survey is in the “beta-testing” phase and is currently open to only a handful of randomly selected respondents. The full survey will be open later in the summer to all municipalities in the US. Your thoughts and opinions are very important to my research, especially at this initial phase of my research.

Please follow this link to the Survey:

<<Take the Survey>>

<<Or copy and paste the URL below into your internet browser:>>

Thank you for considering this request. And please do not hesitate to contact me with any questions about this research.

Lukas Brun, MPA  
Ph.D. Student  
Department of Public Administration  
North Carolina State University

**Invitation Email**

Dear [First Name]:

My name is Lukas Brun and I am a Ph.D. student at North Carolina State University and Senior Research Analyst at Duke University. I am currently completing my dissertation, which focuses on how public procurement can be used by local governments to achieve economic, social, and environmental goals. I am especially interested in how organizational capacity and external factors affect the willingness of local governments to use procurement to achieve these goals.

In emailing you today, I hope you will consider assisting me with this research by completing a brief web-based survey, or designating someone in your organization appropriate to answering the survey. Your thoughts and opinions are very important to my research. The survey should take about 12 minutes to complete.

The survey should take no more than 5 minutes to complete. The survey will open on <date open> and close on <date close>. Please follow this link to the Survey:

<<Take the Survey>>

<<Or copy and paste the URL below into your internet browser:>>

Thank you for considering this request. And please do not hesitate to contact me with any questions about this dissertation.

Lukas Brun, MPA  
Ph.D. Student  
Department of Public Administration  
North Carolina State University

**Reminder Email 1**

Dear [First Name]:

In late August, you were invited to participate in my dissertation research by completing a brief web-based survey concerning municipal procurement practices. The project investigates how organizational capacity and external factors affect the willingness of local governments to use procurement to achieve economic, social, and environmental goals. However, according to my records, your municipality has not yet completed the survey.

In emailing you today, I hope you will again consider assisting me with my research by completing the survey, or designating someone in your organization appropriate to answering the survey. The survey should take about 12 minutes to complete.

I very much hope you will still consider helping me with this project as my sample was carefully constructed to be a representative of U.S. municipalities. Your participation is essential in deriving valid results for the project, and I would sincerely appreciate your participation.

Please follow this link to the Survey:

<<Take the Survey>>

<<Or copy and paste the URL below into your internet browser:>>

Thank you for considering this request. And please do not hesitate to contact me with any questions about the research. I would look forward to hearing from you.

Lukas Brun, MPA  
Ph.D. Student  
Department of Public Administration  
North Carolina State University

**Reminder Email 2**

Dear [First Name]:

In early October, you were invited to participate in my dissertation research by completing a brief web-based survey concerning municipal procurement practices. The project investigates how organizational capacity and external factors affect the willingness of local governments to use procurement to achieve economic, social, and environmental goals. However, according to my records, your municipality has not yet completed the survey.

In emailing you today, I hope you will again consider assisting me with my research by completing the survey, or designating someone in your organization appropriate to answering the survey. The survey should take about 12 minutes to complete.

I very much hope you will still consider helping me with this project as my sample was carefully constructed to be a representative of U.S. municipalities. Your participation is essential in deriving valid results for the project, and I would sincerely appreciate your participation.

Please follow this link to the Survey:

<<Take the Survey>>

Or copy and paste the URL below into your internet browser:

<<Survey Link>>

Thank you for considering this request. And please do not hesitate to contact me with any questions about the research. I would look forward to hearing from you.

Lukas Brun, MPA  
Ph.D. Student  
Department of Public Administration  
North Carolina State University

## **Final Email**

In late 2016, I asked your assistance in completing a survey on local government procurement practices. The survey asked municipalities to report on their activities in using government purchasing to achieve economic development, social equity, and environmental sustainability goals.

I am pleased to report that, due to your efforts and cooperation, the survey had a very good response rate. As thanks for your assistance, I wanted to share with you the aggregate results of the survey, which can be downloaded <<here>> or at the following link:  
<<link to survey results >>

Thank you again for your help in the survey. Please feel free to contact me with any follow-up questions.

Warmest regards,  
Lukas

Lukas Brun, M.P.A.  
Ph.D. Candidate  
Department of Public Administration  
North Carolina State University