CLIMATE CHANGE PLANNING IN DALLAS-FORT WORTH: DISCOURSE AND PUBLIC PARTICIPATION IN A POLITICALLY CONSERVATIVE REGION

by

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DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy at
The University of Texas at Arlington
May, 2016

Arlington, Texas

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ABSTRACT

CLIMATE CHANGE PLANNING IN DALLAS-FORT WORTH:
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The University of Texas at Arlington, 2016

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Climate change is one of the greatest challenges currently facing our world, and in the field of planning there has been much attention paid to climate action planning by environmental leader cities. However, political controversy surrounds climate change in the United States, making it difficult for some cities and regions to explicitly and effectively respond to climate change. This dissertation examines planning actions related to the federal Energy Efficiency and Conservation Block Grant, and climate change more broadly, in the politically conservative Dallas-Fort Worth region of Texas from 2005 to 2015. In particular, the research strives to better understand the role of conservative politics on the discourse used and the role of public participation on climate change. The qualitative case study draws on planning documents, 36 in-depth interviews, and archival records, and uses coding and memo-writing analytical techniques. The research finds that conservative political groups and perceptions of climate change controversy prevent virtually any explicit discourse of climate change in DFW, as cities either

avoid environmentalism in favor of economic development or frame environmentalism in terms of co-benefits such as saving money or improving public health. Additionally, public participation processes are often avoided due to fear of political controversy, which is realized in several municipalities studied. This represents a missed opportunity for education and involvement of citizens to foster awareness of the threats and solutions to climate change. In order for communities to prepare for the future impacts of climate change, significant changes are necessary in city operations, the design of communities, and in the daily behavior of citizens. This research contributes understanding of climate action planning in politically conservative regions and recommendations for improving discourse and public participation to foster increased climate change action in more communities across the U.S.

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ACKNOWLEDGEMENTS

I would like to extend my thanks to the many individuals who participated in this research through interviews and sharing information with me. This project would not have been possible without their assistance. Andrew Whittemore, my former advisor, provided very useful support and input during development of the research questions and goals. Maria Martinez-Cosio provided valuable assistance with the research design and execution, particularly concerning methodological questions. Colleen Casey provided necessary encouragement to explore the broader implications of my research questions. Yekang Ko, my dissertation advisor, has been an outstanding mentor and guide throughout the dissertation process and graduate program. I am deeply thankful for her advice and support regarding all manner of topics related to research, teaching, and academic success.

DEDICATION

This dissertation is dedicated to my colleagues Nicole Foster and Dian Nostikasari for daily and weekly helping me stay focused, engaged, and productive; to my parents Bill and Helen Wanner for their unquestioning encouragement and love; to my daughter Eleanor, who teaches me perspective and strengthens my resolve to help our world adapt to climate change; and to my husband Frank for his unending support, partnership, and love.

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Introduction

The fifth report of the International Panel on Climate Change, released in 2014, unequivocally asserts that the world's climate is changing in an unprecedented manner and human impacts on this process are clear. Climate change is described as one of the biggest challenges of the 21st century (Wheeler, Randolph, & London, 2009). It is an issue well suited to attention from planners, particularly due to their involvement in land use and zoning decisions, transportation planning, and the design of buildings (Crane & Landis, 2010). Attention to climate change includes both mitigation and adaptation efforts, although mitigation is typically more common on the municipal level than adaptation actions (Wang, 2013). Efforts to mitigate climate change on the municipal level have often included performing an inventory of greenhouse gas (GHG) emissions, setting a reduction target, and planning actions to realize emission reductions (e.g., Boswell, Greve, & Seale, 2010).

A significant method of GHG emissions reduction is decreasing energy use in land uses, transportation, buildings, and power generation on the local level through increased energy efficiency and conservation (Wheeler et al., 2009). To promote widespread energy efficiency, the United States federal government allocated $3.2 billion in funding for the Energy Efficiency and Conservation Block Grant (EECBG) program in 2009. With an emphasis on reducing emissions and energy use, a key goal of the EECBG is "to meet the nation's long-term goals for energy independence and leadership on climate change" (U.S. Department of Energy [DOE], 2009a, p.

6). Energy efficiency and conservation are thereby linked to climate change by the federal government in this program aimed at eligible state, county, and local governments.

Planners have largely played only a limited role in climate change planning (Wheeler et al., 2009), and the political polarization around the issue in the U.S. (Kiley, 2015) may make it difficult for planners to gain the political support needed to address this controversial challenge (Bassett & Shandas, 2010). Research shows that climate action plans are often not created or implemented by planning departments. Instead, environmental, engineering, and public works departments tend to take the lead on climate planning, despite planners' experience in areas related to climate change mitigation and adaptation, including land use, transportation, and solid waste (Bassett & Shandas, 2010).

Much of the planning literature on climate change in the U.S. addresses cities that are leaders on municipal climate protection, also known as pioneer cities. Specifically, research on pioneer cities focuses on evaluating their formal climate action plans, describing the characteristics of these communities, and examining the technical aspects involved in this type of planning. Little attention has been paid to climate change planning in areas without formal climate action plans and where conservative politics oppose climate change action. Although the political controversies surrounding climate change are well known, there has not been extensive research on how planners act within this context or how they can be more involved in climate planning. In particular, little is known about how planners discuss climate change, how they approach climate planning, and the resultant impacts on public participation in politically conservative areas.

Research Questions

In order to better understand the challenges of climate change planning, particularly in the context of political controversy, this dissertation uses a case study approach to examine climate change in cities in the Dallas-Fort Worth (DFW) region. DFW is largely a politically conservative region within a conservative state, although a small number of cities in the region are actively pursuing climate change mitigation and adaptation. The research uses the EECBG program as a starting point, examining the actions of the 31 municipalities eligible for formula EECBG funds in DFW. Because of the connection between energy use and climate change, as well as the use of explicit language by the U.S. Department of Energy linking the EECBG program to climate change leadership, the EECBG research can be extrapolated to better understand climate change planning in DFW. Of the 31 EECBG municipalities in DFW, a subset is selected for further, in-depth study on the discourse of climate change planning and the role of public participation in climate action. In-depth interviews, planning document analysis, and analysis of archival records are used to answer the research questions. The specific research questions are as follows:

1. How does the Energy Efficiency and Conservation Block Grant program foster discourse and awareness of climate change in DFW participating cities?
2. What is the climate change discourse of municipal planning staff, elected officials, and residents in the DFW region? How is this discourse shaped by the politics and conservatism of the DFW region?
3. How are public participation and the implementation of climate change actions affected by the DFW region's politics and climate change discourse?

Context

The Dallas-Fort Worth metroplex is defined by the North Central Texas Council of Governments (NCTCOG) as a 16 county region, centered around the two largest cities of Dallas and Fort Worth. DFW is the fourth largest metropolitan region in the United States, with an estimated population of over 6.8 million people in 2015. The region is growing rapidly, with a 23% increase in population from 2000 to 2010 and a projected 2040 population of 10.5 million (NCTCOG, 2015). While there are some pockets of dense development within the region, most development occurs in a sprawling land use pattern, and the highest rates of population growth can be found in new cities at the edges of urbanized areas (Figure 1.1; NCTCOG, 2011). A 2010 study ranked Dallas as the worst large U.S. city for commuting time and costs (Lindenberger, 2010). In 2011, Texas experienced record breaking heat and drought conditions, with the highest number of days over 100°F ever recorded in DFW (National Weather Service, 2011) and the least amount of rainfall state-wide since 1895, when records were first kept (Combs, 2012). The drought conditions have continued, leading former Governor Rick Perry to declare an emergency drought situation in 2012, which he extended in 2013 and 2014 (Perry, 2014). A recent report rated Texas as the state at the highest risk for extreme heat, droughts, and wildfires of the 48 lower states in the U.S. (States at Risk, 2016). Even in the midst of serious drought conditions, the state has experienced record-breaking rainfall and flooding from extreme storm events (Fritz, 2015) Based on climate modeling and projections, researchers predict that Texas will likely continue to experience significant increases in temperature and extreme storms, and droughts will become more frequent and severe (Schmandt, Clarkson, & North, 2011).

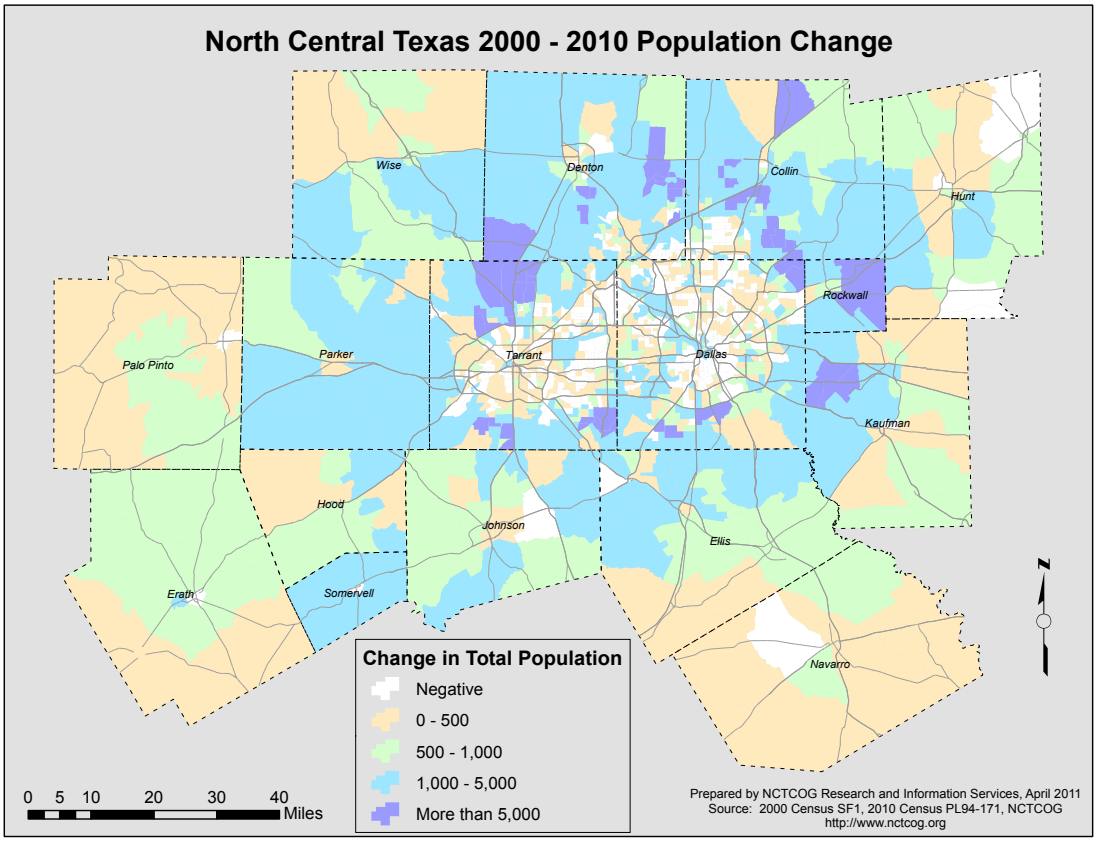

Figure 1.1. Map of DFW region, showing change in population from 2000-2010 and sprawling growth on edges of urbanized areas (NCTCOG, 2011).

Counties in the DFW region are designated non-attainment areas for certain air pollutants, primarily ozone, by the U.S. Environmental Protection Agency (U.S. EPA, 2014), meaning air quality does not meet federal standards. In order to help reduce air pollution and comply with the Clean Air Act, the Texas legislature enacted Senate Bill 12 in 2007, which required municipalities to reduce electricity consumption by 5% a year for six years (Combs, 2008). While air pollution levels have improved slightly in recent years, the American Lung Association still awards DFW a failing grade for ozone levels (American Lung Association, 2014). Electricity use continues to rise in Texas, and in early 2014, electricity suppliers in the

state predicted regular rolling blackouts in the near future if changes are not made (O'Grady, 2014).

Energy is an extremely significant industry in Texas, and the state ranks first in production of crude oil and natural gas, as well as fifth in energy consumption and expenditures per capita, out of the 50 states in the United States. Renewable energy is also on the rise in Texas, particularly solar and wind power, and Texas ranks fifth out of all states for production of renewable energy sources (U.S. EIA, 2014). High production of fossil fuel energy sources, coupled with the need to reduce energy use due to scarcity or air quality, suggest a conflict in Texas that may complicate and politicize efforts by municipalities to pursue energy efficiency and conservation. Zahran, Brody, Vedlitz, Grover, and Miller (2008) show that a high prevalence of employment in carbon industries is correlated with lower levels of municipal climate change planning. Holman (2014, p. 421-422), in her case study of sustainability in two East Texas cities closely linked to the oil industry, describes the strong individualistic and independent nature of Texans, arguing that "it is difficult to imagine places harder to reach [concerning sustainability] than the cities of Texas."

Additionally, the DFW region is affected by recent increases in urban drilling for natural gas using hydraulic fracturing, or fracking, methods, which allow gas drilling to occur in close proximity to developed areas. A study of fracking in Denton, a city within the DFW region, found that residents received only a very small percentage of the economic benefits from drilling activities, while bearing much of the health and environmental risks (Fry, Briggle, & Kincaid, 2015). City governments also tend to receive significant royalties collected for gas drilling on municipal-owned property (Fry, et al., 2015), giving them a financial stake in these drilling operations. Urban natural gas drilling in DFW has increased the area's economic reliance on the

carbon industry, while also creating localized environmental threats. Municipalities across DFW have responded with a range of ordinances allowing, limiting, and banning fracking (Loftis, 2013). Municipalities in Texas enjoy a great deal of freedom, due to the state's home rule status, similar to the devolution of powers from the federal to the state level in the U.S., but this also allows municipalities to avoid many environmental protection actions if they so desire.

Even with increasing heat, drought, air pollution, and energy demands, Texas has no statewide programs aimed at addressing climate change (Center for Climate and Energy Solutions, 2015) and has taken virtually no steps to prepare for future climate change-related threats (States at Risk, 2016). Additionally, former Governor Perry repeatedly questioned the science regarding anthropogenic climate change and the need to take action on this issue. Perry's administration challenged the U.S. Environmental Protection Agency's intention to regulate greenhouse gas emissions (Office of the Governor, 2010), censored references to climate change in a 2011 scientific report on Galveston Bay (Sheppard, 2011), and issued a report on the severe drought that did not mention climate change (Combs, 2012). Conservative state leaders former Governor Perry, Governor Greg Abbott, U.S. Representative Joe Barton, and U.S. Senator Ted Cruz are among the most prominent national figures rejecting climate science.

One way that some DFW cities have sought to reduce energy consumption and improve air quality is with funds from the Energy Efficiency and Conservation Block Grant program. The EECBG was funded in 2009 as part of the federal American Recovery and Reinvestment Act. Of the $3.2 billion in total funding, $2.7 billion was allocated through formula grants, $454 million through competitive grants, and the remaining funds were used for technical assistance (U.S. DOE, 2009a). Incorporated cities with populations of 35,000 and larger, based on the 2000 U.S. Census, were eligible for the formula grant funds, according to calculations based on resident

and commuter populations (U.S. DOE, 2009b). In DFW, 31 cities met the criteria for formula EECBG grants, for a total allocation of $43.5 million (U.S. DOE, 2010b). No competitive grants were awarded in the DFW area (U.S. DOE, 2010a; 2010c). Many of the projects pursued by the DFW cities with EECBG funds have high public visibility, such as upgrading city buildings, developing planning documents, and installing new traffic signals and street lights. In addition to being visible to residents, these types of actions generally require presentation at public meetings and city council votes. Examination of the EECBG process and projects therefore allows examination of discourse and public participation on environmental planning.

Due to high GHG emissions from energy production and consumption, energy use is also closely linked to climate change mitigation. Of the approximately 250 incorporated municipalities in the DFW region, 16 (6.6%) signed the USCM Climate Protection Agreement (CPA), which is a non-binding commitment to reduce GHG emissions. Nine (3.7%) joined the Local Governments for Sustainability's (ICLEI) Cities for Climate Protection (CCP) campaign, which requires annual dues and a commitment to work on mitigation and adaptation to climate change. However, of these nine cities that joined ICLEI's CCP, five subsequently cancelled their memberships, leaving only four active members. For purposes of comparison, approximately one third of all municipalities in the politically liberal Seattle metropolitan region signed the CPA (Dierwechter & Wessells, 2013), significantly more than the 6.6% that signed it in DFW. The majority of municipalities in DFW are not discussing or planning for climate change in explicit or significant ways (Foss & Howard, 2015; Howard & Hurst, 2009). At best, municipal staff may attempt to address related concerns, such as air quality or energy efficiency, by focusing on economic benefits. At worst, planning related to climate change is absent and discussion of

sustainability and environmentalism is challenged in political and planning processes (Whittemore, 2013).

The politics of the DFW region are largely conservative. In the 2012 presidential election, the DFW region voted for the Republican candidate, Mitt Romney, by a measure of 57.1% to 42.5%, a margin of 14.6% (Office of the Secretary of State of Texas, 2012). Dallas County was the only county in the region to vote for the Democratic candidate, Barack Obama (Figure 1.2). If Dallas County is excluded from the tally of the remaining 16 DFW counties, nearly two-thirds of the region (64.5%) voted for Romney. The 2012 election results display increased conservatism and polarization in the region, as the region voted for the Republican candidate in the 2008 presidential election, John McCain, by a margin of only 11.2% (Office of the Secretary of State of Texas, 2016). The conservative politics of the region are significant due to overwhelming evidence that Republicans are more likely to be skeptical about climate change (Kiley, 2015). Democratic areas are also more likely to take action to address climate change. Of over 1,000 mayors who have signed the U.S. Conference of Mayors (USCM) Climate Protection Agreement, approximately 78% are from states that voted for the Democratic candidate in the 2012 presidential election. Additionally, Tea Party groups have been active in DFW in opposing municipal sustainability planning efforts (Whittemore, 2013). The Tea Party, a politically conservative group opposed to governmental regulations, arose nation-wide after the 2008 election of President Obama and has played a role in causing Republican candidates and officials to weaken environmental legislation and question climate change (Skocpol, 2013; Trapenberg Frick, Weinzimmer & Waddell, 2015).

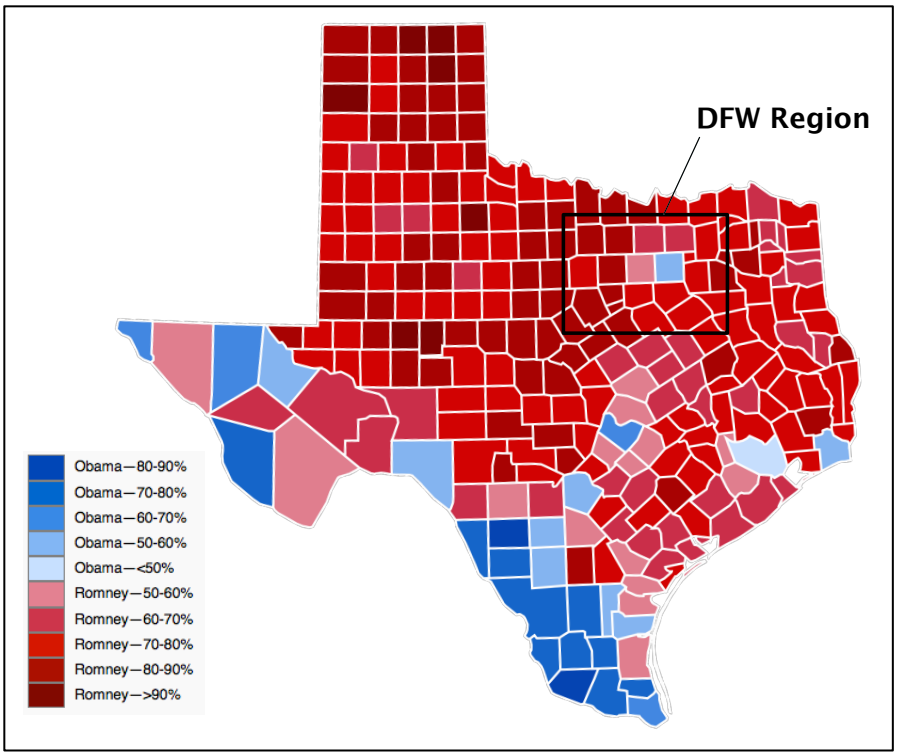

Figure 1.2. Presidential voting patterns in Texas in 2012 (Office of the Secretary of State of Texas, 2012).

The DFW region's rapid growth rates, sprawling land use patterns, conservative politics, and lack of attention to climate change even in the face of increased heat, drought, energy use, and air pollution are characteristics shared by other sunbelt cities and regions across the U.S., making DFW a useful case study to better understand how to plan for climate protection. The economic recession beginning in 2008, political polarization on climate change, and activity of the Tea Party and other groups in opposition to environmentalism combine to make this a significant time period in which to evaluate municipal responses to climate change.

Significance

This dissertation offers three key contributions to the existing research on planning and climate change. First, the range of municipal responses to climate change is examined across a politically conservative region. The conservative politics of DFW are significant due to a stark and growing partisan divide regarding belief in climate change, as revealed by recent national polling data. In 2001, 60% of people identifying as Democrats believed climate change effects were occurring, compared to 49% of people identifying as Republicans, a gap of 11%. By 2010, this gap increased to 41% (McCright & Dunlap, 2011), and this gap has remained steady, with a 2015 Pew Research Center poll finding that 86% of Democrats but only 45% of Republicans believe there is solid evidence in support of climate change (Kiley, 2015). Both Democrats and Republicans experienced a dip in belief in 2008, perhaps related to the rise of the Tea Party and skepticism among Republican politicians and candidates, but Democrats remain overwhelmingly more likely to view climate change as occurring.

The majority of research on municipal climate planning has focused on pioneer cities, which are cities considered climate leaders, such as New York, San Francisco, and Seattle. Pioneer cities include those that have joined national climate networks, such as the U.S. Conference of Mayor's Climate Protection Agreement (USCM CPA) or international climate networks, such as ICLEI's CCP campaign (Dierwechter & Wessells, 2013; Kwon, Jang & Feiock, 2014; Pitt & Randolph, 2009; Sharp, Daley & Lynch, 2011; Wang, 2012, 2013; Zahran et al., 2008). Many of these pioneer cities are located in Democratic-voting states with state-level climate change policies. DFW is a politically conservative region in a politically conservative state with no state-level climate action programs. Information about the opportunities and challenges for climate change planning in DFW could be useful to municipalities in similar

contexts seeking to approach climate planning. The majority of cities in the U.S. cannot be considered climate leaders, and in order to meaningfully tackle climate change, planners need to learn more about addressing climate change in these non-pioneer cities.

Second, the research explores the discourse and narrative framing of climate change. Existing research on municipal climate planning has largely focused on specific actions, such as development of formal climate action plans (Bassett & Shandas, 2010; Millard-Ball, 2013, 2013; Tang, Brody, Quinn, Chang & Wei, 2010; Tang, Wang & Koperski, 2011; Wheeler, 2008), on technical elements, such as performing GHG emissions inventories and establishing targets for emissions reduction (Boswell et al., 2010; Pitt & Randolph, 2009; Stone, Vargo & Habeeb, 2012; Tozer, 2013), and on the socio-economic and demographic characteristics that are associated with a city's likelihood to tackle climate planning (Kwon et al., 2014; Pitt, 2010b; Sharp et al., 2011; Wang, 2012; Zahran et al., 2008). This research generally uses quantitative methods and document evaluation to describe the actions taken by climate leader cities and the cities likely to perform climate planning. While this information is necessary to understand the cities already pursuing climate action planning, the research does not easily translate to cities that are not explicitly discussing climate change or have not yet begun climate planning.

Some research looks beyond pioneer cities and includes qualitative methodologies to assess the rationale for climate planning and the challenges faced in non-pioneer areas (Dierwechter & Wessells, 2013; Foss & Howard, 2015; Hamin, Gurran & Emlinger, 2014; Pitt & Randolph, 2009), but this type of research is less common than the quantitative evaluation of actions. Outside of the field of planning, there is research on the cultural context for discussing climate change, with evidence that liberal and conservative groups apply different arguments for or against climate policies (Nisbet, 2009; Oreskes & Conway, 2010; Skocpol, 2013). These

arguments can be described as narrative frames, or "interpretive storylines that set a specific train of thought in motion, communicating why an issue might be a problem, who or what might be responsible for it, and what should be done about it" (Nisbet, 2009, p. 15).

Identifying successful frames for discussing climate change in a particular location may be quite helpful in engaging diverse representatives from the public and increasing success of climate actions (Adger, Barnett, Brown, Marshall & O'Brien, 2012; Corner, Markowitz & Pidgeon, 2014; Wolf, Allice & Bell, 2013), particularly to combat the social organization of climate change denial, where cultural norms allow citizens and elected officials to ignore or deny clear evidence of a changing climate, thereby limiting discussion of the issue (e.g., Norgaard, 2011). This dissertation research starts by analyzing actions taken by cities with EECBG funds, and then uses qualitative methods to understand the ways energy efficiency, energy conservation, and climate change are discussed by municipal staff, elected officials, and residents within DFW. Examining the way climate issues are discussed internally in cities and are presented publicly to residents helps illustrate challenges as well as new approaches to pursuing this controversial issue.

Finally, the research evaluates the role of public participation in climate change planning in DFW. Meaningful public participation is widely considered to be beneficial and necessary to good planning (e.g., Forester, 1989, 2013; Innes, 1995; 2016; Innes & Booher, 2010). Little has been written about the specific role of public participation in climate planning, but there is evidence that the general public's limited understanding of climate science and confusion due to the political debate surrounding the issue may hamper public involvement (e.g., Wheeler, 2008) and that collaborative planning processes can increase policy adoption for climate change mitigation (Pitt, 2010a). Support for public participation in planning for climate change can also

be seen in studies on environmental planning processes more broadly (e.g., Mandarano, 2008; Moser & Ekstrom, 2011; Pitt & Bassett, 2013).

Research has also found that elite actors, rather than the general public, tend to dominate the process of climate action planning (e.g., Bassett & Shandas, 2010). The most successful attempts to address climate change are those supported by an educated public committed to the issue, but the process of educating and including the public may delay responses to this critical issue (Wheeler et al., 2009). The participation of groups opposed to environmental regulations and controls, such as Tea Party activism in DFW (Whittemore, 2013), may also have detrimental impacts on climate planning. There is evidence that cities in DFW largely avoid discussing climate change (Foss & Howard, 2015; Howard & Hurst, 2009). However, all 31 eligible cities in DFW applied for EECBG funds to pursue energy efficiency and conservation actions, which are at least tangentially related to climate change. If cities pursue climate change-related actions without framing them in terms of climate change, this may limit the extent and quality of public education and participation on issue. This research analyzes how public participation is incorporated on the challenging and controversial topic of climate change and suggests methods for increasing public awareness and involvement in municipal climate planning.

Overview of Dissertation

In the next chapter, relevant literature is reviewed and discussed to provide an empirical and theoretical framework for the dissertation research. Specifically, the literature review chapter examines the EECBG program, research on municipal climate change planning, the political controversy over climate change, theories of discourse and narrative framing, and the role of public participation in planning. The third chapter details the methodology employed in the

dissertation research, describing data sources and analytical techniques for both phases of the research, the analysis of the EECBG program and the in-depth case study of two municipalities in DFW.

Chapter four presents data collected in the first phase of research, describing in detail the activities pursued by the 31 municipalities in the DFW region that received EECBG funds. The findings presented here directly answer the first research question (*How does the Energy Efficiency and Conservation Block Grant program foster discourse and awareness of climate change in DFW participating cities?*). Chapter five presents data collected in the second phase of research, the in-depth case study of two municipalities who received EECBG funds. By looking closely at the opportunities and challenges faced as these two municipalities attempted sustainability planning with EECBG funds, this case study provides answers to the second research question (*What is the climate change discourse of municipal planning staff, elected officials, and residents in the DFW region? How is this discourse shaped by the politics and conservatism of the DFW region?*) and the third research question (*How are public participation and the implementation of climate change actions affected by the DFW region's politics and climate change discourse?*).

The final chapter discusses key findings and links the data back to the empirical and theoretical framework constructed from the literature review in order to answer the three research questions. Policy recommendations are made to improve climate change planning and action in non-leader and politically controversial settings, with detailed recommendations covering federal grant programs, discourse and narrative framing, and public participation processes. Finally, future recommended research that might enhance and further this study is described, as well as broader implications on the field of planning from research in this area.

Chapter Two

Review of Literature

Introduction

In order to address the three proposed research questions on municipal climate change planning in the DFW region, this literature review constructs both an empirical and theoretical framework. First, background information on the EECBG program is presented to provide context for the first research question (*How does the Energy Efficiency and Conservation Block Grant program foster discourse and awareness of climate change in DFW participating cities?*). Empirical research evaluating state and local climate action plans (CAPs) and the characteristics of cities performing climate change planning are then assessed to provide background for all three research questions. To appreciate the context of conservative politics in this DFW case study, empirical research on the political controversy of climate change and the importance of political context on climate planning are also examined. This information provides context for the second and third research questions.

Theories of discourse and narrative framing are described, followed by discussion of findings from research on discourse, framing, and climate change planning, to provide a theoretical and empirical framework for the second research question (*What is the climate change discourse of municipal planning staff, elected officials, and residents in the DFW region? How is this discourse shaped by the politics and conservatism of the DFW region?*). Finally, theories of communication and participation in planning are described, along with findings from research on climate change and public participation, to provide a theoretical and empirical

framework for the third research question (*How are public participation and the implementation of climate change actions affected by the DFW region's politics and climate change discourse?*). Due to the lack of extensive research on discourse and public participation related to climate change planning, research relating more broadly to sustainability planning is included and extrapolated to better understand the implications for climate change planning.

Overall, the literature review creates a structure for analyzing the EECBG program and establishes the need for additional research on climate change planning in non-pioneer cities and in politically conservative regions. Discourse and communication theories are used to demonstrate the importance of discussion and public participation on planning for climate change.

The Energy Efficiency and Conservation Block Grant Program

The Energy Efficiency and Conservation Block Grant (EECBG) program was authorized in the 2007 Energy Independence and Security Act and funded for the first time by the American Recovery and Reinvestment Act (ARRA) of 2009 (U.S. DOE, 2009a). The ARRA focused on activities that could stimulate the U.S. economy after the recession of 2008, and, accordingly, the priorities of the EECBG program include job creation and community economic development, in addition to more specific goals of reducing fossil fuel emissions, reducing energy use, developing new renewable energy technologies, and improving energy efficiency in areas such as buildings and transportation (U.S. DOE, 2009b). The original EECBG bill was developed to provide federal funds for local climate change strategies, but explicit references to climate change were removed from the formula grant description. This was done due to the controversial nature of climate change and in acknowledgement that the U.S. Congress would be more likely

to approve the bill without reference to climate change (Fisher, 2013). Even though climate change was not mentioned specifically in the formula grant, a key description of the EECBG program provided by the U.S. Department of Energy is that the EECBG "empowers local communities to make strategic investments to meet the nation's long-term goals for energy independence and leadership on climate change" (U.S. DOE, 2009a, p. 6). Eligible activities under EECBG include development of an energy efficiency strategy, building energy audits, energy efficiency retrofits, transportation energy conservation strategies, renewable energy distribution systems, and efficient lighting technologies for traffic signals and street lights (U.S. DOE, 2009b).

A total of $3.2 billion in funding was allocated to the EECBG program (Figure 2.1), with the majority, over $2.7 billion, awarded through formula grants, $453.72 million through competitive grants (which did explicitly mention climate change), and the remaining amount allocated for technical assistance tools to grantees (U.S. DOE, 2009a). The $2.7 billion in formula grants is divided between cities and counties (receiving a total of $1.88 billion), states ($767.5 million), and Indian tribes ($54.8 million) (U.S. DOE, 2009b). Cities eligible to receive the formula grants must have a population greater than 35,000, according to the 2000 U.S. Census, or be one of the ten most populous cities in their state. The exact grant amount is calculated through a formula based on both resident population (weighted at 70%) and commuter population (weighted at 30%) (U.S. DOE, 2009b). Although the formula grants represented entitlement funds, eligible cities were required to submit an application with a detailed proposal of their plans to use the funds.

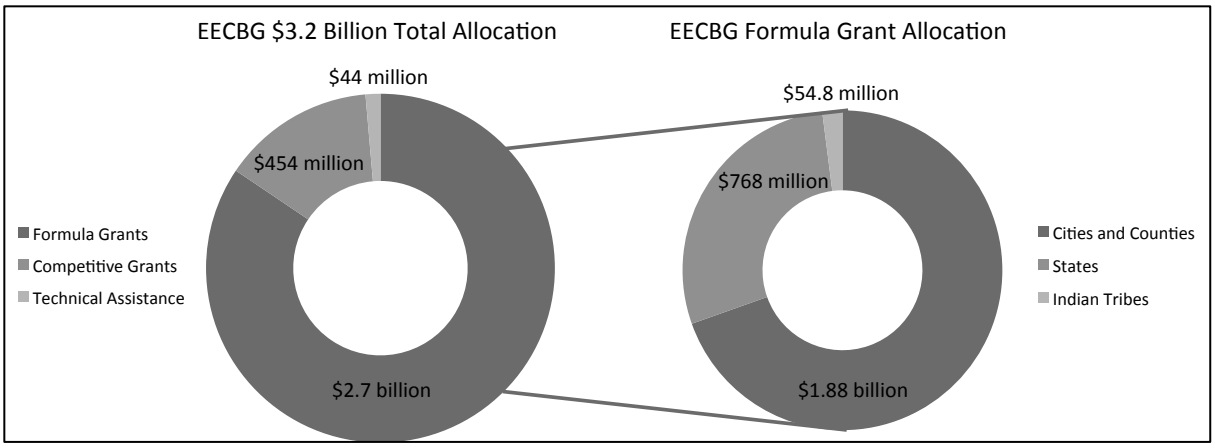

Figure 2.1. EECBG funding allocations (U.S. DOE, 2009a, 2009b).

The competitive grants focused on innovative projects that had potential to significantly transform energy use in the communities where they were implemented. These grants were awarded through two specific topic areas (U.S. DOE, 2009a). The first topic area was related to building energy retrofits, and 25 awardees were announced in April, 2010. A total of $452 million was awarded through these 25 grants, to 12 cities, two counties, five states, and six authorities, such as metropolitan planning organizations and utility providers, across the U.S. (U.S. DOE, 2010a). Two of these competitive grants were awarded in Texas, one to the City of Austin and one to the City of San Antonio. The second topic area was related to general innovation in energy efficiency and conservation, and 20 awardees were announced in June, 2010. A total of $62 million was awarded to six cities, six counties, and ten authorities (U.S. DOE, 2010c). None was awarded in Texas.

The formula grant funding announcement was made in June, 2009, and the opportunity to apply for the funds closed in June, 2010. Recipients were required to obligate all funds within 18 months of receiving the grant and then complete the proposed work and use all awarded funds within three years of receiving the grant, in keeping with the program's goal of stimulating the

U.S. economy during a recession (U.S. DOE, 2009b). A report by the Office of the Inspector General in September, 2011, found that 33% of the allocated funds had not been obligated, even though the deadline had passed (U.S. Office of Audits and Inspections, 2011). This led to some formula grant recipients requiring extensions for their projects, but the majority completed their projects by the end of 2013.

Early reports of EECBG accomplishments from the U.S. Department of Energy focused on jobs created, building upgrades, transportation energy efficiency upgrades, and installation of solar panels (Figure 2.2; U.S. DOE, 2014). A full EECBG program evaluation was commissioned by the DOE in 2015, which focused on the overall energy saved, money saved, renewable energy generated, and jobs created. This report also analyzed the types of projects performed with the funds, and found that energy efficiency retrofits were by far the most common projects (supported by 39% of the total funding), followed by financial incentive programs (18% of total funding) and upgrades to buildings and facilities (10% of total funding) (Oak Ridge National Laboratory, 2015). A survey of USCM member cities conducted in 2011 found similar results, with 83% of cities reporting that EECBG funds were used for implementing new energy technologies. The most common of these new technologies were energy-efficient lighting (73%), new energy technologies in buildings (40%), and photovoltaics (31%) (USCM, 2012). While the EECBG certainly provided funds for cities to increase energy efficiency projects, a study focusing on the EECBG goals of timely implementation and economic stimulus characterize its implementation as "torpid" (Terman & Feiock, 2015, p. 1061). Municipalities lagged behind in reporting deadlines and needed extensions to complete the projects, with the result that the EECBG did not provide the full expected stimulus to the U.S. economy during the great recession (Terman & Feiock, 2015).

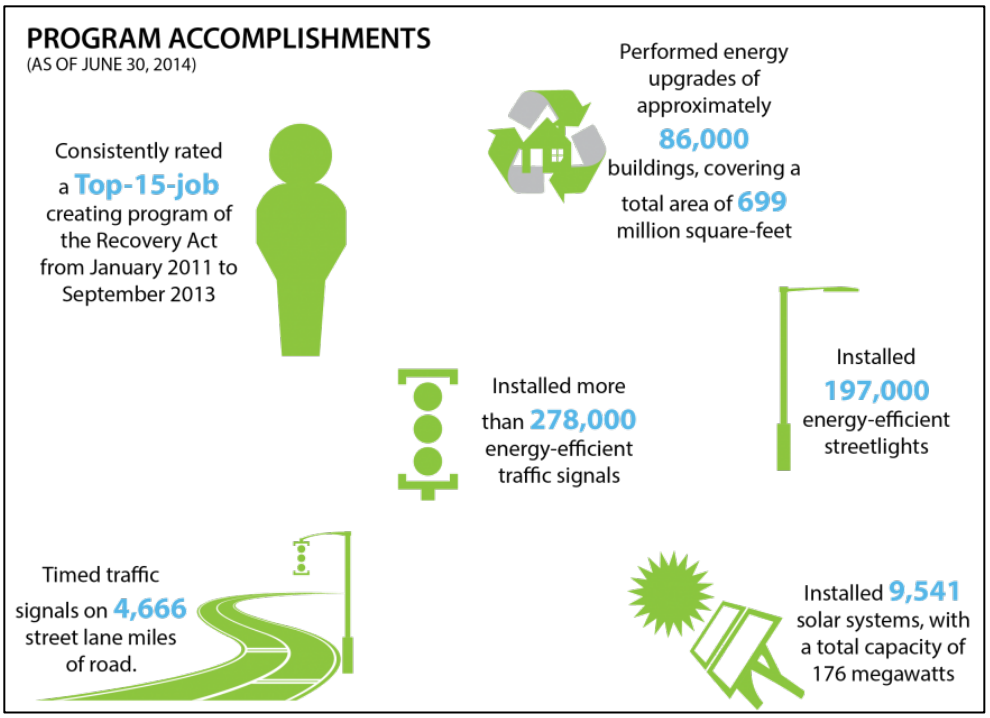

Figure 2.2. EECBG program accomplishments (U.S. DOE, 2014).

An early study of the EECBG focused primarily on the program's original framing by the U.S. Conference of Mayor's CPA as a mechanism to fund climate change mitigation efforts by CPA signatory cities (Fisher, 2013). However, the explicit focus on climate change was dropped as the program's supporters sought its authorization in the 2007 Energy Independence and Security Act and funding in the 2009 American Recovery and Reinvestment Act. Even with the loss of explicit attention to climate change, Fisher (2013) optimistically claimed that as "cities around the United States take steps to address the issue of climate change with the help of federal funding from the EECBG program, local climate politics are expanding" (p. 781). A follow up study, which focused on the competitive grant portion of the EECBG, not the formula grant portion that is the focus of this dissertation, found that cities credited the EECBG funds with starting and continuing energy efficiency projects and building partnerships with non-

governmental entities to support these projects (Galli & Fisher, 2016). While the federal funding program provided accountability and support during project implementation, cities also report being hindered by the tight timeline in which to use the grant funds and the strict reporting guidelines imposed by the federal government (Galli & Fisher, 2016).

These reports and studies provide an important initial understanding of the EECBG program and raise questions about the range of project pursued, the implementation success, and the impact on climate change. Beyond these few studies, there is little known about how the grant was implemented on the local level, including how municipalities decided to use the funds, the impact of political controversy around energy and climate change planning, and the potential impacts on long-term energy independence and climate change action. Studies indicate that local conditions are critical to the implementation of national-level policies and funding, and evidence of uneven policy up-take and action (e.g., Kasa, Leiren & Khan, 2012) suggests that better knowledge of local conditions could improve effectiveness of national policies.

In the U.S., the largest source of GHG emissions is electricity production (31% of all GHG emissions in 2013, the latest year for which data are available), followed closely by transportation (27% of all GHG emissions in 2013) (U.S. EPA, 2015). The EECBG focus on reducing energy use through efficiency and conservation and in buildings and transportation therefore has a direct impact on reducing GHG emissions. Greenhouse gases, particularly carbon dioxide, methane, and nitrous oxide, contribute directly to climate change (U.S. EPA, 2015). For this reason, creating inventories of GHG emissions and setting targets for reducing these emissions is a critical first step in addressing climate change, promoted by the Intergovernmental Panel on Climate Change (IPCC), ICLEI's CCP campaign, and the U.S. Conference of Mayor's CPA. The EECBG program also makes direct reference to investing in climate change leadership

as one of its goals. These strong connections between the EECBG program and addressing climate change, as well as the program's direct funding to municipal planning and activities, make the EECBG program a suitable preliminary step in evaluating climate change planning on the municipal level.

There are no requirements for including public input or participation as part of the use of EECBG funds. However, most municipalities routinely require city council review and approval of budgetary items, including accepting grant funds, such as the EECBG, and authorizing spending of those funds on projects. Additionally, many of the approved actions under the grant are highly visible to the general public, such as installing renewable energy systems on municipal buildings (e.g., putting solar panels on the city library building). One of the approved actions under the EECBG was to create plans addressing energy efficiency, and most municipal planning activities require some form of public review. For example, the Texas Local Government Code (§ 213.003) requires that municipal comprehensive plans be adopted at a hearing where the public is allowed to comment. Many municipalities include opportunities for public review and input throughout the creation and adoption stages of planning documents. Therefore, the EECBG program can be used to examine the role of public participation on municipal climate change related planning and actions.

Analysis of the EECBG program in the 31 DFW municipalities eligible for formula grants is the first phase of research and is used to answer the first research question, focused on how the EECBG program raised awareness of and discourse about planning for energy efficiency, conservation, and climate change. This analysis is performed through detailed examination of the projects pursued with the funds by the 31 municipalities, the municipal actors involved, the extent and type of discussions with staff and residents about energy and climate

change, and opportunities for public input and participation in the proposal and implementation stages of the EECBG projects. In the second phase of the research, two of these municipalities are selected for further, in-depth study of energy efficiency and climate change planning and implementation.

Existing Research on Municipal Climate Change Planning

Learning more about municipal climate change planning is the underlying goal of the entire research project. To provide context for all three specific research questions, this section reviews the existing literature on local level planning in the U.S. related to climate change (see Table 2.1 for an overview of this literature). A growing body of studies have examined and evaluated existing local climate action plans in the U.S. Wheeler (2008) was the first to perform a systematic evaluation of U.S. climate action plans (CAPs), looking at a sample of 35 municipal level plans and the 29 state level plans in existence at the time of study. He is generally optimistic that the plans' very existence indicates serious attention nation-wide to climate change. However, Wheeler (2008) identifies a number of concerns with the plans, including inadequate goals, lack of attention to implementation, and little public awareness or involvement, which are also found in subsequent research.

Table 2.1. Overview of municipal climate change planning literature.

Research Focus	Climate Change Leader Cities	Climate Change Emergent Cities	Non-Leader Cities	Regional Studies	Demographic and Contextual Characteristics
Key Issues	Plan Characteristics Common Proposals Political Support Network Membership Data Availability Implementation	Political Support Data Availability Appropriate Goals Resource Availability Co-benefits	Lack of Capacity Political Opposition Political Support	Regional Patterns Suburban Free Riders Political Climate	Education Income Political Preference Vulnerability State Policies Institutional Resources
Key Studies	Bassett & Shandas, 2010 Boswell et al., 2010 Tang et al., 2010; 2011 Wheeler, 2008	Krause, 2011 Pitt & Randolph, 2009	Crawford & Laurian, 2015 Foss & Howard, 2015 Hamin et al., 2014 Holman, 2014	Dierwechter, 2010 Dierwechter & Wessells, 2013 Foss & Howard, 2015	Boswell et al., 2010 Millard-Ball, 2012 Opp et al., 2013 Pitt, 2010 Wang, 2012 Zahran et al., 2008

Pitt and Randolph (2009) describe municipalities that are leaders on climate change planning as pioneers, cities with a long history of climate change planning and significant available funding. Pioneer cities can also be categorized by an explicit commitment to climate change and sufficient political will to adopt stand-alone, formal CAPs. Research finds that these plans display a high level of knowledge about climate change issues and include a wide variety of proposals and policies to address climate change (Bassett & Shandas, 2010; Boswell et al., 2010; Millard-Ball, 2012, 2013; Tang et al., 2010; Tang et al., 2011; Wheeler, 2008). Common proposals found in many CAPs are related to transportation, energy efficiency, and renewable energy actions within the operations of municipal governments (Bassett & Shandas, 2010; Boswell et al., 2010; Tang et al., 2010). Political will is key to successful CAP creation, as research cites the importance of a political leader to champion the issue (Bassett & Shandas, 2010; Bedsworth & Hanak, 2013; Bulkeley, 2013; Gore & Robinson, 2009; Pitt & Randolph, 2009). However, political will, measured by membership in ICLEI's CCP and signing the USCM's CPA, may not be significantly linked to adopting CAPs of high quality (Tang et al., 2010).

Although researchers are optimistic about municipal leadership on climate change planning, concerns are also expressed about the quality of the CAPs produced to date by pioneer municipalities. Research finds that CAPs set goals too low to adequately address the impacts of climate change (Millard-Ball, 2013; Wheeler, 2008) and often fail to establish a clear link between goals and the actions to meet them (Boswell et al., 2010). Many CAPs use GHG inventories to establish a baseline of city emissions, set targets for lowering emissions, and identify appropriate actions (Boswell et al., 2010). Therefore, the availability of accurate emissions data is critical to successful CAPs (Bassett & Shandas, 2010), as is a clear methodology for performing inventories (Boswell et al., 2010). Consequently, the majority of cities developing GHG inventories and CAPs joined the CCP campaign to access technical tools and support (Bassett & Shandas, 2010; Boswell et al., 2010; Tang et al., 2010; Wheeler, 2008). Since most cities with CAPs were members of CCP and used shared tools, it could be expected that the plans would have a high degree of similarity, which was not found to be the case (Bassett & Shandas, 2010; Wheeler, 2008). The high levels of diversity in plans, often tailored to local contexts and agendas, makes it difficult to compare or evaluate plans and suggests challenges to developing a set of core climate planning principles (Bassett & Shandas, 2010).

Very little data regarding implementation of CAPs has been reported, partially due to how recently most plans have been adopted. The CAPs may also be limited by a lack of attention to implementation. In particular, there is little detail in many of the plans on financing mechanisms to achieve goals (Boswell et al., 2010), on data collection to monitor progress (Bassett & Shandas, 2010), and on reporting requirements (Wheeler, 2008). Additionally, the proposed implementation strategies are often narrow in scope and do not reflect the full range of activities controlled by local governments (Tang et al., 2010). Merely joining an organization

and working on a climate action plan, as many pioneer cities have done, do not necessarily translate into adequate and sustained action or implementation (Kern & Bulkeley, 2009; Kwon et al., 2014). This background on implementation will be particularly helpful in addressing the dissertation's third research question, concerning how politics and discourse affect implementation of climate-related actions.

Many CAPs indicate awareness of the significant impacts of climate change and include public participation in the plan development process (Wheeler, 2008). However, the general public in the CAP cities may not fully understand the ramifications of climate change (Wheeler, 2008) and elite actors often dominate the public involvement process (Bassett & Shandas, 2010). CAPs are often developed by special task forces, public works departments, or environmental services departments, and traditional planning departments do not often play a substantive role (Bassett & Shandas, 2010). Researchers therefore recommend public education campaigns and more involvement by planning departments (Bassett & Shandas, 2010; Wheeler, 2008).

Municipal climate change planning has also been studied more broadly in some research, by looking beyond pioneer cities with formal CAPs to include cities in the beginning stages of climate planning, which can be called emergent climate change cities (Foss & Howard, 2015). This research reveals similar conditions to pioneer cities, such as the importance of elected officials in championing the climate planning process, as well as similar challenges to those in pioneer cities, including difficulty obtaining data, lack of a clear methodology to perform GHG inventories, and failure to set appropriate targets for emission reductions (Pitt & Randolph, 2009). Additional challenges for non-pioneer cities are also evident. It can be difficult for non-pioneer cities to access adequate resources, including funding and staff, to create CAPs (Pitt & Randolph, 2009). While many cities pursue some actions related to GHG emissions reduction,

non-pioneer cities do not tend to frame these actions in terms of climate change or have a formal or explicit plan for addressing climate change (Krause, 2011b). Instead, non-pioneer cities tend to frame climate protection actions in terms of co-benefits, such as cost savings or economic development (Krause, 2011b; Opp, Osgood & Rugeley, 2013; Sharp et al., 2011). This focus on co-benefits is useful to prevent the mobilization of opposition to climate protection (Sharp et al., 2011). However, piecemeal efforts will likely not be sufficient to either mitigate a municipality's contributions to climate change or adapt to future impacts of climate change. These studies suggest that many cities in the U.S. may have difficulty openly discussing climate change planning and may need to focus on other aspects of this issue in order to avoid controversy, although this may limit effective implementation.

Limited research has been done on climate change planning in smaller, non-leader, and politically conservative communities, but it appears these municipalities may face special challenges to climate planning. Studies have found large population size to be a significant positive characteristic related to climate planning (Bedsworth & Hanak, 2013; Krause, 2011a; Opp et al., 2013). A lack of capacity, such as access to information, funding, and staff time, is often described as a barrier to climate planning and action (Crawford & Laurian, 2015; Measham et al., 2011), and capacity can be especially limited in small communities (Hamin et al., 2014; Pitt & Randolph, 2009). As described, strong leadership is a key factor in promoting climate change issues (Bassett & Shandas, 2010; Bedsworth & Hanak, 2013; Bulkeley, 2013; Gore & Robinson, 2009; Pitt & Randolph, 2009), and Crawford and Laurian (2015) found that one of the biggest barriers to sustainability plan implementation was a lack of prioritization by local governments. In a study of small coastal communities in Massachusetts, Hamin et al. (2014)

found both lack of capacity and lack of leadership to be significant barriers to climate change adaptation, as well as lack of public awareness and opposition from private property interests.

Politically conservative municipalities face additional challenges, as leaders may avoid environmental planning discussion and efforts, including those related to climate change, due to fear of limiting economic development and attracting political opposition (Foss & Howard, 2015; Holman, 2014). Municipalities in states without climate change policies, such as Texas, are also at a disadvantage, as state and national level incentives and regulations are critical for spurring local action (Amundsen, Berglund & Westskog, 2010; Bedsworth & Hanak, 2013; Kwon et al., 2014). The combination of being a small municipality and being in a politically conservative area, as is the case for many municipalities in the DFW region and across the United States, is therefore likely to present a particular set of challenges to climate change mitigation and adaptation that are not adequately addressed in existing studies of large and politically liberal cities.

Another approach in the literature on municipal climate planning is to examine it across single metropolitan regions, looking for patterns and trends among different cities in similar contexts. A key finding from this research is the presence of a wide variety of approaches to climate protection (Dierwechter, 2010; Dierwechter & Wessells, 2013). In single regions located in states with strong support for smart growth planning, central cities tend to have active climate change planning, but suburban cities lag behind and act as free riders, enjoying the benefits of actions by the central cities, such as decreased air pollution through reduced GHG emissions, without contributing to the actions (Dierwechter, 2010). Regional research also reveals differences based on political orientation. While the politically liberal Seattle metropolitan area displays routine and open discussion of climate change in most municipalities (Dierwechter &

Wessells, 2013), the politically conservative DFW region has very few municipalities that are explicitly discussing climate change and many municipalities avoid the topic due to fear of political controversy and opposition (Foss & Howard, 2015).

A DFW regional study proposes a typology for characterizing the extent and vigor of explicit climate change mitigation planning by municipalities, with advanced cities, also known as leaders and pioneers, at the most active end of the spectrum; followed by maturing emergent cities, where beginning climate change planning is progressing and expanding; faltering emergent cities, where beginning climate change planning is stalled or abandoned; and laggard cities, where climate change planning has not been discussed or attempted in any form (Foss & Howard, 2015). The municipalities examined in the politically conservative DFW region are primarily located closer to the laggard end of the spectrum than the pioneer end, and faltering emergent cities are common, suggesting significant impacts from politics and controversy on nascent climate protection efforts.

Much of the research on municipal climate change planning also includes an evaluation of the demographic and contextual characteristics of the cities. Traditionally, it is believed that urban areas with well-educated, high income, and liberal populations are most likely to pursue environmental actions (e.g., Boswell et al., 2010; Opp et al., 2013), and these characteristics are found by some to be present in CCP member cities as well (e.g., Zahran et al., 2008). Political preference is particularly important, as cities with high levels of Democratic voters are more likely to pursue explicit climate change planning and a wider range of climate change actions (Gerber, 2013; Millard-Ball, 2013; Outka & Feiock, 2012; Wang, 2012). CCP member cities are also more likely to have high vulnerability to one or more climate change impacts, particularly sea-level rise and extreme storm events (Zahran et al., 2008). Additionally, high quality CAPs

are associated with the presence of state mandates for climate change planning and high levels of municipal GHG emissions (Tang et al., 2010), suggesting that external requirements and evidence of contribution to climate change are motivating factors for cities to take meaningful climate action.

However, a less consistent demographic and contextual profile is found in some research, suggesting that cities with climate change polices have more variation in characteristics (Boswell et al., 2010) and that demographic characteristics may not be directly correlated to climate policy adoption (Pitt, 2010b). Instead, political and institutional characteristics may be more significantly linked to climate mitigation policy adoption, particularly staff members dedicated to climate planning, neighboring cities pursuing climate action, community environmental activism, and environmental awareness by the city's government (Pitt, 2010b). However, political context and support for climate protection still appear important for successful climate change planning and action.

The majority of published research on municipal climate change planning has focused on pioneer cities, with explicit plans or actions to address climate change, as well as maturing emergent cities, with on-going, although less well developed, efforts to plan for climate change. While the authors of these studies are generally optimistic about municipal efforts related to climate protection, they find that municipal plans to address climate change are often lacking key components, particularly related to implementation and public involvement. The research on broader samples, beyond just pioneer and maturing emergent cities, suggests challenges in many municipalities to explicitly discuss climate change, pursue climate change planning without a strong political leader or in politically conservative areas, and address climate change consistently across a metropolitan region. Although over 1,000 municipalities have signaled their

commitment to climate protection by signing the USCM CPA, there are many municipalities in the U.S. that likely fall into the faltering emergent or laggard categories. More research is needed on climate change planning in non-pioneer cities and in politically conservative contexts, which will be addressed throughout the research project by all three research questions.

Political Controversy over Climate Change

There is well-documented evidence of political controversy and a partisan divide over the scientific evidence that climate change is occurring and is caused by human actions. This section of the literature review presents research on this controversy and the scant research done on climate change planning in politically conservative regions. This information provides context for the second research question, exploring the role of political conservatism on shaping the discourse of climate change in DFW, and for the third research question, examining the effect of DFW politics on public participation and implementation of climate change planning.

National polling data from 2001 to 2015 reveal an overall partisan divide in the general public regarding belief in climate change (Figure 2.3), with the divide between Democrats and Republicans increasing sharply over this period. In 2001, only 11% more Democrats than Republicans believed climate change effects were occurring, but this gap grew to 41% by 2010 (McCright and Dunlap, 2011). This gap has remained in recent years, as a Pew Research Center survey in 2015 found that 86% of Democrats but only 45% of Republicans believe there is solid evidence in support of climate change (Kiley, 2015).

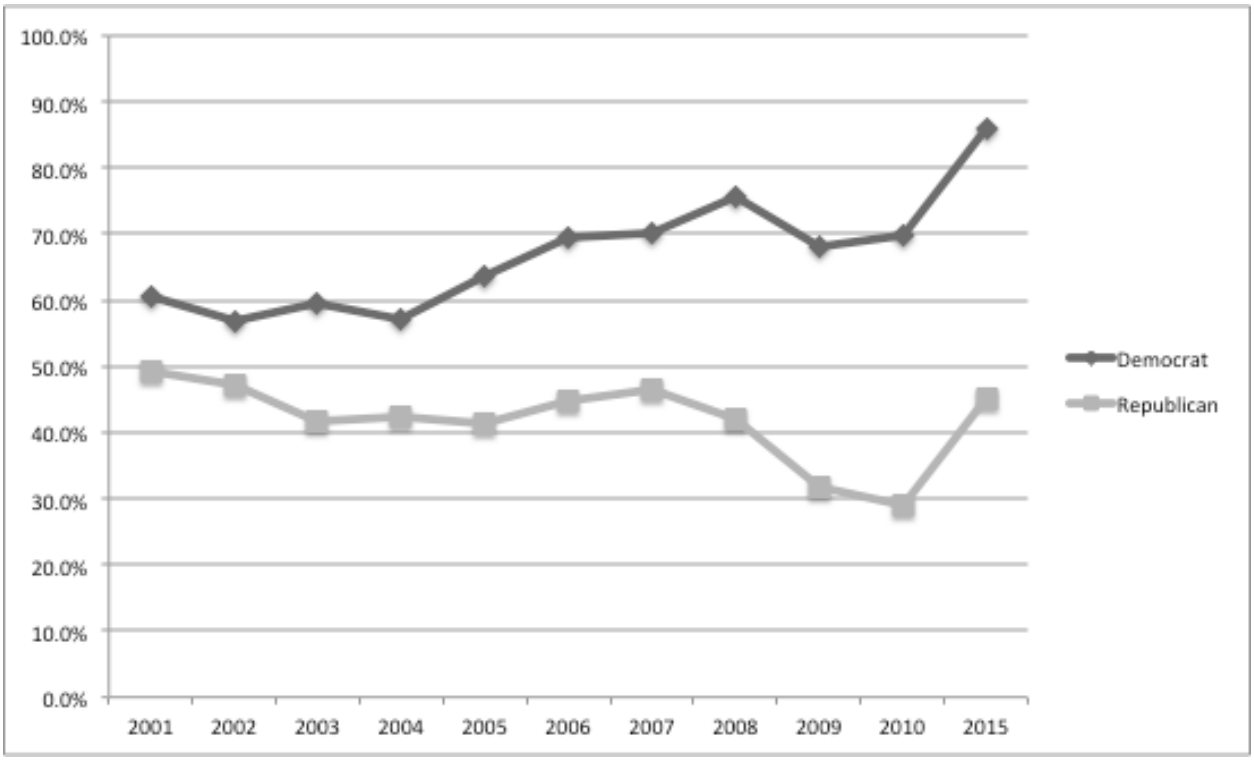

Figure 2.3. Climate change belief by political party affiliation (Kiley, 2015; McCright & Dunlap; 2011).

A similar, although more extreme, pattern can be found in elite partisan positions, based on data from pro-environmental voting records of U.S. Congressional members. These voting records show a fairly consistent difference between Democratic and Republican voting patterns from 1970 to 1990, with Democrats' pro-environment scores averaging less than 30 points higher than Republicans' scores (out of a total score of 100) (Skocpol, 2013). This gap widened to 63.5 points in 2000 and to 73.5 points in 2010, with an average Democrat score of over 80 compared to an average Republican score of approximately 10 points (Skocpol, 2013). Looking directly at Republican elected officials' lack of support for climate change action, after the 2014 elections, 53% of Republicans in the House of Representatives and 70% of Republicans in the Senate denied anthropogenic climate change (Germain, Ellingboe & Kroh, 2015).

This partisan divide appears to play a role in limiting action on the federal level to address climate change. President Obama issued an executive order in 2013 outlining actions to prepare the United States for climate change and in 2014 and 2015 set targets to reduce U.S. greenhouse gas emissions and promote clean power production. However, pushback from federal legislators continues, such as from Senator James Inhofe, chairman of the Senate Environment and Public Works Committee, who memorably expressed his denial of climate change by throwing a snowball on the Senate floor in February 2015.

One reason for this recent, extreme partisan divide can be traced to the rise of the Tea Party after the 2008 election of President Obama and this group's role in causing Republican candidates and officials to question climate change and work to weaken environmental legislation (Skocpol, 2013; Trapenberg Frick, Weinzimmer & Waddell, 2015). During the 2010 elections, 19 out of 20 Republican Senate candidates professed a belief that the science of climate change was either "inconclusive or flat out incorrect" (Ronald Brownstein, quoted in Skocpol, 2013, p. 90). There is also a long history of conservative leaders, think tanks, and industry leaders devoting effort and vast financial resources to combatting the science of anthropogenic climate change (Oreskes & Conway, 2010). By "manufacturing doubt" about the science of climate change, conservative groups seek to diminish public support for climate protection (Oreskes & Conway, 2010), the effectiveness of which is reflected in the growing partisan divides within both the general public and Congressional representatives.

The entrenched nature of climate change denial and its connection to political orientation suggest it may be much more difficult for politically conservative areas to discuss and plan for climate change. However, there is little empirical research on climate change planning in politically conservative regions in the United States to support this claim. As described above,

research shows a leader or political champion is often critical in promoting local climate change planning (Bassett & Shandas, 2010; Bedsworth & Hanak, 2013; Betsill & Bulkeley, 2007; Bulkeley, 2013; Gore & Robinson, 2009; Pitt & Randolph, 2009) and the local political context and government functions can play a large role in shaping responses to climate change (Betsill & Bulkeley, 2007; Gerber, 2013; Millard-Ball, 2013; Outka & Feiock, 2012; Pitt & Randolph, 2009; Wang, 2012). There is some mention of political opposition in reviews of CAPs, particularly as a barrier to plan implementation (Hamin, et al., 2014; Tozer, 2013; Wheeler, 2008), and how politically conservative areas may frame climate planning in economic rather than environmental terms (Bassett & Shandas, 2010; Foss & Howard, 2015; Krause, 2011b; Sharp et al., 2011). Some research on climate change planning from pioneer and maturing emergent cities has included one or two relatively conservative cities. However, a study of the DFW region (Foss & Howard, 2015) provides one of the only detailed evaluations of climate change planning solely in conservative regions of the United States.

Another sign of controversy surrounding climate change can be seen in changes within ICLEI's Cities for Climate Protection (CCP) campaign. In recent years, ICLEI rebranded the CCP, dropping the explicit mention of climate change in favor of a focus on greenhouse gas emissions reduction and improving quality of life. Even so, several DFW municipalities that were members of the CCP dropped their memberships in the early 2010s, and a regional ICLEI representative attributed the pattern of cancelled memberships largely to political controversy around climate change and negative pressure from Tea Party groups (Foss & Howard, 2015).

Looking at research on energy planning also reveals significant challenges for areas that are not environmental planning pioneers. While energy efficiency is often seen as beneficial, particularly for reasons of saving money and economic efficiency, it can be unpopular and

subject to controversy when personal behavior changes are required (Tozer, 2013). Municipalities are much more likely to pursue energy efficiency measures within their own operations, and less likely to promote these activities within the community, such as through programs for energy efficiency in residences and businesses (Pitt & Bassett, 2013). Some obstacles to promoting energy efficiency in non-pioneer areas include lack of support from officials and community members, concerns that funding energy efficiency will divert funds from other key services, and lack of technical expertise (Pitt & Bassett, 2013).

Looking more broadly at sustainability planning, studies find that non-pioneer cities tend to have planning staff who are generally aware of sustainability principles, but the awareness is not pervasive throughout municipal governments, and cities often lack explicit or systemic sustainable development practices (Conroy, 2006). Across the U.S., sustainable development activities are generally piecemeal, most cities lack an explicit sustainability program, and cities struggle to address the complex interactions between the economy, environment, and equity inherent in comprehensive definitions of sustainability (Saha & Paterson, 2008). In the politically conservative DFW region, pursuing sustainability planning is challenging for planners, in part due to actions of local Tea Party activists against municipal sustainability planning efforts (Whittemore, 2013). The research on sustainability planning suggests possible challenges to climate change planning in non-pioneer cities, but more specific information is needed.

The research reviewed in this section uses a variety of measures to describe the political context of cities and regions. These measures include presidential voting patterns (e.g., Foss & Howard, 2015), registered voters (e.g., Wang, 2013), party membership of local, state, and federal elected officials (e.g., Gerber, 2013; Whittemore, 2013), and anecdotes of politicians' positions on climate change (e.g., Millard-Ball, 2013). A selection of these measures is used,

where available, to characterize the political context of cities included in both phases of this dissertation research.

Research illustrates that significant controversy over climate change science is present, and Republicans are more likely to be skeptical about or to deny outright the presence of anthropogenic climate change. Additionally, existing research suggests that political context is a significant element of pursuing climate change planning, and there have been calls for better understanding of the political forces opposing climate planning and research on how to generate political support for climate change (Wheeler et al., 2009). However, there remains a lack of research on climate change planning in politically conservative cities and regions. This dissertation addresses these gaps in the literature by evaluating municipal climate change planning in a politically conservative region, and specifically explores the impacts of political controversy and conservatism on the discourse of climate change and on public participation in climate change planning.

Discourse Theory and Narrative Framing of Controversial and Challenging Issues

The second research question addresses how staff, officials, and residents in DFW discuss climate change, and the role of political conservatism on this discourse. Theories about discourse stem from Foucault's (1980) writings on issues such as prisons and sexuality, in which he examines the historical and contextual creation of meaning. Foucault's concept of discourse can be defined as both language (spoken or written) and actions that construct knowledge based on specific contexts (Hall, 2003). The production of knowledge through discourse is also linked to power creation, describing how power operates in circuits that exist in relations, or discourse,

between people (Foucault, 1980). It is therefore necessary to understand both the process of knowledge production through discourse and the flows of power through discursive practices.

Foucault (1980) identifies several fields intimately involved in regulating knowledge and power within individuals, including philanthropists, social workers, and those in the field of medicine. With its roots in the social reform movements of the 19th century, planning could be considered one of Foucault's regulating fields. Planners working for municipal governments can be described as agents of the state, a position that is typically exercised in the creation of tools such as zoning codes and land use plans. Forester (1989) applies theories of discourse to planning, arguing that planners have an obligation to be advocates for under-represented groups and to use their position to share information and extend power beyond the state and elite interests. He extensively describes the discursive role of planners, which is written, as in planning documents, spoken, as at public hearings, and acted, as in how planners conduct meetings and who they invite to participate. This role also relates to the creation of information, power, and understanding. By sharing information and acting as negotiators for marginalized populations, Forester (1989) describes how planners can construct contextual knowledge through their spoken interactions with different groups and communities. Additionally, due to their position within the state, planners play a role in the production and re-production of social and political relations, putting them in a position of power (Forester, 1989).

Forester (1989) argues that planners must be aware of this position of power, and use their control of information and of the process of planning in a way that extends power. He warns that planners can easily contribute to misinformation and concentration of power by withholding information, distorting communication processes, or failing to consider impacts on all affected populations (Forester, 1989). However, if planners view themselves as mediators in

the planning process, they can serve as conduits for knowledge construction, drawing on Foucault's (1980) idea of the microphysics of power by including a wide range of community members in the planning process. Planners should also be cognizant of their subject-position, whereby they and other participants can produce knowledge through discourse and be objects through which power is relayed (Hall, 2003). Planners cannot stand outside of the power/knowledge relationship or process, so they should acknowledge their role in the creation of discourse, knowledge, and power.

Forester (2013) extends these arguments through examination of how practicing planners work in contentious settings. He recommends that planners use a critical pragmatism approach, pragmatic because it focuses on the practical consequences of planning, and critical because it pays attention to complexities, differences, dispute, and relations of power and authority (Forester, 2013). This approach helps planners acknowledge that groups with significant disagreements can still find common ground and agreement on some issues. Planners should not avoid working in situations with conflict, but should instead acknowledge high emotions, focus on common issues, and strategically design processes that do not allow the loudest group to dominate or derail the process (Forester, 2013). Additionally, planners should attend to both the process taken and the productive outcomes of planning, working to bring groups together to solve problems and move forward. A similar approach is recommended after examination of activism by Tea Party and other groups opposed to sustainability planning, described using the theory of agonism, where participants are encouraged to view those in opposition as legitimate adversaries (Trapenberg Frick et al., 2015). Using an agonistic approach, the end goal is compromise rather than consensus, acknowledging that disparate groups may never agree on key issues, but instead can agree on a path forward for different reasons.

The impact of planners on knowledge, power, and conflict is particularly salient for planners working on complex and controversial issues such as climate change, where power relations may influence how the issue is discussed. Even when residents are aware of and accepting of the science and seriousness of climate change, they may avoid discussing the complexity of the issue, fail to see how it is relevant to their daily lives, and refuse to change their actions to prepare for climate change (Norgaard, 2011). Cultural norms of polite behavior and emotional control, feelings of fear and helplessness, and internal guilt can contribute to the lack of discussion of climate change, creating a situation of socially organized denial where the lack of a response to climate change is "produced through cultural practices of everyday life" (Norgaard, 2011, p. 121). Beyond avoidance of an issue, discourse can also be used to actively oppose an issue, such as the use of conspiratorial rhetoric and skepticism about scientific evidence to derail environmental land use planning (Hurley & Walker, 2004), sustainability planning (Whittemore, 2013), and climate change planning (Oreskes & Conway, 2010).

In situations where discussions on an issue are actively shaping behavior, it is important to be sensitive to local context and understand how key stakeholders can "legitimate certain discourses…over others" (Hurley & Walker, 2004, p. 1533). Planners must frame issues in ways that appeal to local ideals, such as discussing how sustainability practices can enhance property values in areas dominated by concerns over private property rights (Whittemore, 2013). Planners may also be more successful in planning for controversial issues if they avoid jargon and examples from distant or different contexts (Whittemore, 2013). Similarly, in areas traditionally dominated by elite business interests, planners may need to focus on grassroots organizing and increasing the equitable representation of all interests in the planning process, in order to change the existing discourse (Ross, 2011).

Research on the use of narrative frames provides an additional perspective on approaching contentious issues in a context sensitive manner. Studies demonstrate that liberal and conservative groups apply different arguments for or against climate policies (Nisbet, 2009; Oreskes & Conway, 2010; Skocpol, 2013). Nisbet (2009, p.15) describes the arguments as frames, or "interpretive storylines that set a specific train of thought in motion, communicating why an issue might be a problem, who or what might be responsible for it, and what should be done about it." He finds that supporters of climate change action tend to use frames that describe climate change as a looming disaster and a moral obligation that should be addressed through public accountability and government action. Opponents to climate action have successfully used frames that question the scientific evidence of climate change and that suggest negative economic development consequences for environmental protection. Nisbet (2009) proposes three frames that may appeal across party lines: climate action as an opportunity to spur economic development, climate change as a shared moral challenge, and the need to address climate change to improve public health (Nisbet, 2009).

However, pro-environmental moral messages related to climate change can actually have a negative impact on conservatives (Corner et al., 2014). The values held by specific communities and groups within the community therefore should be identified and targeted for effective public engagement on climate change (Corner et al., 2014), and slight differences in group values may require significantly different approaches to framing and engagement (Wolf et al., 2013). Overall, it is necessary to understand and respond to the cultural context because "if the cultural dimensions of climate change are ignored, it is likely that both adaptation and mitigation responses will fail to be effective because they simply do not connect with what matters to individuals and communities" (Adger et al., 2012, p. 116).

Understanding cultural practices and being aware of multiple perspectives on an issue is important to evaluating why, or why not, the issue is being addressed. Additionally, acknowledging local context and utilizing frames that highlight local goals and ideals is useful in planning related to environmental or controversial issues. Theories of discourse and attention to narrative frames help understand how a response to climate change is socially and culturally produced, both through language and actions, in order to address the second research question and are critical to understanding how planners can or should address climate change, particularly in conservative regions.

Public Participation in Planning

The third and final research question asks how public participation and implementation of actions are affected by DFW's politics and climate change discourse. Public participation is widely viewed as necessary to successful planning, as described by communicative action theory. The theory and practice of communicative action planning emphasizes including more people in more meaningful ways throughout the planning and implementation processes (Forester, 1989). Communicative action arose as a response to rational comprehensive planning, developed during the 1940s and 1950s, and was shaped by the economic and social changes of the 1960s and 1970s (Taylor, 2009). Rational comprehensive planning was dominated by a belief in the technical expertise of neutral planners, followed a set process, and typically limited public participation to a review and consent role (Taylor, 2009). In contrast, communicative action planning argues that all stakeholders in the planning process can contribute important information (Innes, 1995). Through communication between all stakeholders, knowledge can be

socially constructed to include the information of experts and ordinary people, both of which are equally valued (Innes, 1995).

Collaboration between stakeholders is another important value of communicative action, which can be described as "inclusionary argumentation," or an active process that relies on the participation of all concerned parties (Healey, 1996). Linking the importance of discourse and of participation, Healey (1996) describes a series of questions that planners should ask themselves throughout a planning process to ensure they are facilitating communicative action, rather than outlining a rational process to be followed in a step-by-step fashion. Planners should address where a discussion is to take place, how people will access the discussion, what style will encourage open discussion, how to sort out arguments and conflicting issues, how to create a new discourse that can be a strategy for action, and how to foster agreement on a strategy, as well as continual reassessment of the strategy (Healey, 1996). These types of actions can help avoid distortions of participation and communication on the face to face and organizational levels, as well as within the larger political and economic system in which planning takes place (Forester, 1989).

The type of communication used in the planning process is very important, and some researchers argue that it should strive to meet the four conditions of ideal speech described by Habermas: comprehensiveness, sincerity, legitimacy, and truth (Forester, 1989; Innes, 1995). In this type of authentic dialogue involving all stakeholders, the planner is seen as an actor, not a neutral expert (Innes, 1995). Additionally, planners can play the role of facilitator and mediator in the participation process, where they contribute their expert knowledge, but also encourage the contributions of others with equal attention (Forester, 1989).

Innes (2016), after years of observing planning processes, details key steps for ensuring rational collaborative processes, which require including diverse participants, as well as both expert and community knowledge, finding common interests, meeting face-to-face, and exploring all options before reaching a decision. She argues that planners cannot serve as facilitators for projects they are involved in because they will not be viewed as neutral, but that they should strive to bring diverse participants together and ensure that the components for collaborative rationality are in place (Innes, 2016). Innes (2016) also continues to argue that the elements of Habermas' ideal speech are necessary for a rational collaborative process to break through contentious issues and produce creative solutions. However, in his more recent work, Forester (2013) argues that Habermasian ideal speech is not always a pragmatic goal. Instead, participants in a planning process should acknowledge that knowledge claims can be imperfect due to history, power relations, and conflict, and therefore participants must listen in a more critical manner. This critical and pragmatic attention to discourse may allow participants to understand each other's positions beyond the stated conflict and therefore work to find common and productive ground in other areas (Forester, 2013).

Communicative action planning also acknowledges that there are different types of participation and strives for the most meaningful and productive. Arnstein (1969) describes eight levels of participation, ranging from nonparticipation or cooption of public input, to mere token forms of input, and finally to citizen power, where the public's input is taken seriously and directly contributes to decision making. As described above, planners are in a position of power, where they can control access to information and permit or deny participation. Forester (1989) believes that planners have an obligation to increase stakeholder participation through

engagement and action, which includes education about significant issues and sharing power to ensure meaningful citizen participation.

While researchers have made recommendations for including more public education and participation in climate change planning (Bassett & Shandas, 2010; Wheeler, 2008), there is not yet a large body of empirical research on the role of public participation in climate protection. As might be expected, support of climate policies from a variety of groups within a community, including elected officials, staff, and residents, raises the likelihood of adoption of such policies (Bedsworth & Hanak, 2013). Additionally, partnerships with other municipalities, regional organizations, and community groups can increase support for climate planning and access to resources (Bedsworth & Hanak, 2013). For these reasons, local governments seeking to plan for climate change should focus on public outreach and engagement to increase community support. However, in conservative areas, a focus on potential vulnerabilities from climate change, as well as on cost savings and other co-benefits resulting from climate protection, may be more effective in outreach campaigns (Bedsworth & Hanak, 2013).

A group of researchers recently expanded this approach of including a diversity of community members to promote climate change discourse and action. Using a theory of cultural cognition, which argues that people depend on others to form opinions, the researchers organized dialogue sessions to educate residents in communities in the southeast U.S., where climate change denial is high (McNeal, Hammerman, Christiansen & Carroll, 2014). They found that people were more willing to learn new information and were more open to new perspectives in settings where discussion went beyond presenting scientific facts, climate change was linked to the values of the group, respect was given to varied views, and participants were allowed to

voice their own views (McNeal et al., 2014). Including more people in the process provides educational opportunities and expands participation on climate action.

Looking more broadly at public participation in sustainability planning, there is a significant relationship between high numbers of sustainability policies and high rates of public participation, such as signing petitions and participating in demonstrations, local reform groups, and neighborhood associations (Portney & Berry, 2010). Local activism on smart growth, either in support or opposition, also plays a significant role on adoption of related policies (O'Connell, 2009). Participation of diverse stakeholders in a collaborative setting can lead to increased trust, understanding of the issues, legitimacy for the process, and social capital for the participants of land use planning processes (Koontz, 2006). Based on these findings, it is recommended that stakeholders are involved throughout the planning process to ensure the public's values and concerns are expressed (O'Connell, 2009), and harnessing public support can be important in countering groups that may oppose planning issues (Portney & Berry, 2010). However, participant expectations should be managed and leaders should be clear about the expected outcomes of the planning process, in order to limit frustration of participants in cases where timely implementation of their recommendations is delayed (Koontz, 2006).

Increased quality and quantity of public participation tailored to the specific local culture may be another way to overcome barriers to climate change planning, particularly in politically conservative areas. Collaborative planning processes that engage local values improve learning, legitimacy, and action on broad environmental issues (Mandarano, 2008), increase policy adoption for climate change mitigation (Pitt, 2010a), and diminish political opposition from conservatives regarding clean energy initiatives (Pitt & Bassett, 2013). Including local government officials, community stakeholders, and scientific experts in the process creates a

sense of accountability and improves implementation of climate change adaptation strategies (Moser & Ekstrom, 2011). In some ways, this process is cyclical—a lack of public concern about climate change contributes to a lack of political support, so raising public awareness may spur local officials to act (Hamin et al., 2014). However, participatory processes with a diverse range of actors may also be influenced by unexpected coalitions between oppositional groups, situations where groups who oppose a plan for different reasons come together over their common goal of derailing the plan (Trapenberg Frick, 2013).

The process must also be locally relevant by describing clear impacts of climate change on the community and citizen's lives (Sheppard et al., 2011). A study of local government actions in the U.S. and New Zealand found that implementation of sustainability actions in the U.S. is most strongly correlated with local public support and in New Zealand with local culture (Crawford & Laurian, 2015). The authors suggest that because public support is difficult for local governments to control, it is better to focus instead on increasing financial resources and linking sustainability to economic development. However, planners are well positioned to facilitate public education and outreach and should strive to integrate culturally specific and locally relevant climate issues into local planning processes (Sheppard et al., 2011).

There is widespread support for including meaningful public participation as a key part of successful planning. Empirical research, though limited on rigorously evaluating the role of public participation on climate planning, points toward the benefits of participation on successful adoption of related policies, such as sustainability, smart growth, and clean energy. However, efforts to increase public participation may be challenging in politically conservative areas, due to the controversy surrounding climate change. The third research question helps fill these gaps

in the literature by addressing the specific role of public participation in climate planning and in politically conservative areas.

Chapter Three

Methodology

This dissertation uses a two-phase case study of the DFW region to examine municipal planning for energy efficiency, energy conservation, and climate change, and the role of discourse and public participation. The first phase of the research focuses on the 31 cities in DFW that were eligible for EECBG funding, in order to address the first research question (*How does the Energy Efficiency and Conservation Block Grant program foster discourse and awareness of climate change in DFW participating cities?*). Information is gathered from primary data through interviews with planning staff in each city and through analysis of city documents, as well as secondary socioeconomic and demographic data from the U.S. Census. Data is analyzed to describe the process followed and actions taken by the DFW cities awarded EECBG funding. By examining the types of project pursued, who was involved in the process, how it was presented and discussed within the city and to the public, and what public input or participation methods were employed, if any, the role of the EECBG program in raising awareness of and participation in planning for energy efficiency and conservation and for climate change is evaluated.

The second phase of the research addresses the second research question (*What is the climate change discourse of municipal planning staff, elected officials, and residents in the DFW region? How is this discourse shaped by the politics and conservatism of the DFW region?*) and third research question (*How are public participation and the implementation of climate change actions affected by the DFW region's politics and climate change discourse?*) This phase focuses

more specifically on politics, discourse, and public participation in climate change-related planning through an in-depth study of two of the 31 cities studied in phase one. The case study cities are chosen using a purposeful selection process based on pursuit of community planning projects with EECBG funds, amount of public participation associated with these projects, and extent of explicit climate change discourse. This process and these criteria allow examination of how public participation and discourse affect implementation of community planning related to climate change. Data is gathered from interviews with planning staff, elected officials, and community members and from archival analysis of planning documents and meeting minutes. These data are analyzed using qualitative techniques to illustrate the successes and challenges related to discussing, planning for, and involving the public in climate change planning and policy development. All human subjects data collection and research are conducted according to a research protocol approved by the Institutional Review Board (IRB) at the University of Texas at Arlington.

Phase One: Analysis of the EECBG Program in DFW

The methodology of phase one is designed to understand energy policy implementation, the role of politics and discourse used in municipalities on environmental planning issues, the impacts on public participation, and the potential for climate change planning in politically conservative regions. A total of 31 municipalities in DFW were eligible for EECBG formula grants, for a total of $43,540,300 in potential funding, and all of these municipalities applied for and were awarded funds by the end of 2009. The grant funds were required to be used by the end of 2012, although several municipalities received extensions of one additional year. The 31 municipalities range in population size from over 1,000,000 to just over 36,000, according to the

2010 U.S. Census, and are located primarily in the four central counties of the DFW metropolitan region: Collin, Dallas, Denton, and Tarrant counties (Figure 3.1). During the first phase of the research, data is gathered on the 31 cities in order to analyze the process of applying for and using the funds, the types of projects pursued, the actors involved, the type of discourse used around energy efficiency and conservation, the inclusion of public participation, and the outcomes of the program.

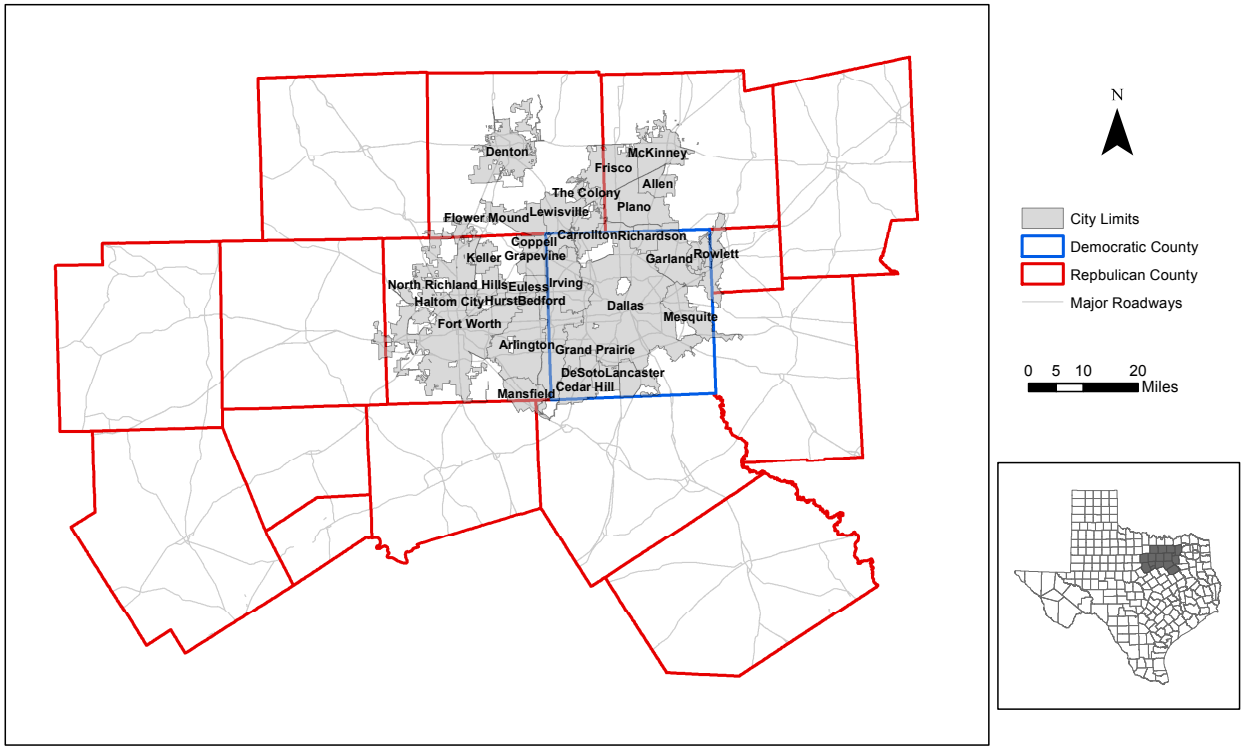

Figure 3.1. Map of DFW region and 31 EECBG municipalities.

U.S. Census data for 2010 is gathered for each municipality, including population size, age, race and ethnicity, education levels, income, and housing tenure, for comparative purposes. Each municipality's website is systematically searched for documents related to the EECBG funds, including ordinances, meeting minutes, applications, and reporting forms. Data for each

municipality are also downloaded from the U.S. federal website that provides information on how ARRA funds were utilized (recovery.gov). This information is used to make a preliminary determination of how the funds were used and how the EECBG program was publicized and discussed at municipal meetings. Based on data in municipal and federal documents, one staff member from each municipality who was heavily involved with the EECBG program is identified and contacted for an interview in order to complement the data gathered from the document analysis.

Municipality staff members are recruited for participation in the interview via email and telephone calls, using a recruitment script approved within the UTA IRB protocol. Extensive attempts are made to conduct an interview with the appropriate staff member from as many of the 31 municipalities as possible. A total of 27 interviews are conducted with representatives from 25 of the 31 municipalities (81% response rate). Of the six municipalities in which interviews are not conducted, two no longer employ staff members who worked on the EECBG and four failed to respond to multiple requests for interviews. Interviews took place in person and over the telephone during 2013 and 2014, and the author conducted all of the interviews. The interviews range in length from 15 minutes to three hours, with the average being approximately 40 minutes in length.

The interview questions, approved by the IRB protocol, are semi-structured and include both Likert scale and open-ended questions in order to learn more about the EECBG experience. Specifically, Likert scale questions are used to allow direct comparison across all municipalities, and these questions asked interviewees to characterize their municipality's interest in EECBG, involvement of citizens during implementation of projects, how the grant raised awareness for staff, officials, and residents, and an overall measure of success of the EECBG projects. Open-

ended questions prompt interviewees to describe the EECBG projects, the actors involved, motivations behind applying for the funds, how the grant and projects were framed and discussed, and citizen reactions and participation during the EECBG application process and project implementation (Appendix A). All but one of the interviews were audio-recorded and transcribed by the author (see Interview Techniques section below for more details).

All interviewees are guaranteed confidentiality to encourage candor during the interviews. For this reason, data are presented in the aggregate, rather than linking specific data to individual municipalities. Data from the census, documents, and Likert scale interview questions are quantitatively tallied to describe the characteristics of the municipalities receiving EECBG funds in DFW. Document and interview data are also analyzed qualitatively to illustrate patterns in the process, the roles played by different stakeholders, and successes and challenges encountered in applying for and using the EECBG funds (see Data Analysis Techniques section below for more details).

In order to examine climate change-related discourse, public participation, and implementation in more depth and answer the second and third research questions, two municipalities are selected from the 31 that received EECBG funds for in-depth study. A purposeful selection process is used to identify the two municipalities. First, municipalities are identified that pursued community planning projects with EECBG funds (n=6), to allow analysis of an actual planning document and its implementation. From this sub-group, municipalities that conducted extensive public participation processes related to these planning projects are identified (n=3) in order to examine the process. Of the three municipalities that fit these two criteria, two did not have any explicit discussion of climate change related to the EECBG projects. The vast majority of the 31 municipalities did not pursue any explicit discussion of

climate change related to the EECBG, so these two municipalities were selected as representatives of the normal condition in DFW. Both of the selected municipalities have a strong history of environmental protection actions. One of these municipalities did not experience any opposition to its EECBG-funded community planning process and the plan was adopted. The other municipality did experience opposition and its plan was not adopted. The fact that the two municipalities have many similarities but experienced opposite outcomes with the EECBG-funded community plans allows a close and fruitful comparison of discourse, public process, and planning implementation.

Phase Two: Case Study of Climate Change-Related Planning in Two DFW Municipalities

The second phase of the research consists of an in-depth study of the two selected municipalities that pursued community planning projects with extensive public participation processes funded by the EECBG. In this phase, the scope of inquiry is widened beyond the EECBG-funded projects to include discussions and actions broadly related to climate change mitigation and adaptation from 2005 to 2015 in areas such as land use, transportation, urban design, and open space. Due to the controversy surrounding climate change and environmental planning more broadly in DFW, participants in this phase of the research are also guaranteed confidentiality and the names and some identifying characteristics of the two municipalities are changed.

The municipalities are described using the pseudonyms ‘Natureville’ and ‘Boomtown’. Natureville is located in the southeastern portion of DFW, where population growth and land development has historically been slower than in other areas of the region. The city’s population is approximately 50,000, and the population growth rate was approximately 7% from 2010 to

2014. Natureville is experiencing increased growth pressure and is actively seeking to manage future growth. Boomtown is in the northeastern portion of DFW, where population growth and land development has happened at a very rapid pace for the last 20 years. The city's population is just over 100,000, and the population growth rate was approximately 20% from 2010 to 2014. Boomtown is projected to continue to grow rapidly in the near future. Natureville is more racially diverse, with African Americans making up more than 10% of its population, which is roughly the average of Boomtown, while the Texas state average is 12%. Both Natureville and Boomtown have a smaller percentage of Latino population than the Texas state average of 38%. Home ownership is higher in both cases compared to the Texas state average (64%). Educational attainment and mean household income is also higher in both cases compared to Texas averages, although Boomtown is also significantly higher than Natureville in both categories. Overall, Natureville is smaller, with a more racially diverse population and reasonably high educational attainment and household incomes. Boomtown is larger, less diverse, and its population has quite high levels of education and income.

In-depth, semi-structured interviews are conducted by the author with municipal staff, elected officials, and residents from each municipality, identified through snowball sampling starting with the initial interviewee from phase one and a focus on individuals heavily involved in environmental planning within each municipality. A total of nine interviews are conducted, with two staff members, one elected official, and one resident from Natureville; three staff members and one member of the city manager's office in Boomtown; and one citizen who lives outside Boomtown but who participated in the EECBG-funded community planning process there. This range of interviewees provides a variety of perspectives within each city. Interviews took place in person and over the telephone from February 2015 to June 2015, and they averaged

40 minutes in length (ranging from 35 minutes to 55 minutes). Interviewees were informed that neither their identity nor the municipality's identity would be revealed in any reports of the research, to encourage them to speak honestly about environmental issues and challenges faced (see Interview Techniques section below for more details).

Interview questions begin by asking about the actors, framing, and public participation related to environmental planning projects and energy efficiency activities, and then turn to questions about climate change. Open-ended questions guide the interviewee to describe actions, discourse, public participation, and support or opposition to climate change-related issues. The questions provided in Appendix A provide a guide to the topics that are addressed in these interviews, although questions are personalized to reflect the position and experience of each interviewee.

A variety of archival documents is analyzed, including relevant plans, ordinances, meeting minutes, and council records from 2005 to present, in order to trace the evolution of climate-related discussions and actions, as well as the role of resident participation in these discussions and actions. A total of 11 plan documents are analyzed, five from Natureville and six from Boomtown. The current comprehensive plan from each municipality is evaluated, as well as downtown plans and sustainability plans from both. An open space plan from Natureville is also evaluated, as well as a small area vision plan and bicycle plan from Boomtown. All documents gathered and analyzed are publicly available via the two cities' websites. In the analysis, city pseudonyms are used and all information that links the documents to a specific city are removed from notes made on the document. The document analysis focuses on the structure and content of each plan, paying particular attention to how environmental issues were framed and how public input was incorporated. A search is performed in each document for key terms,

including climate change, global warming, energy efficiency, energy conservation, greenhouse gas emissions, and sustainability. Details on the public participation process, actors involved, projects proposed are gathered. Attention is also given to the vision statement, main themes, and evidence of political support within each plan.

Local news outlets and blog sites of local citizen groups are identified and searched electronically for reporting on sustainability planning in each municipality. Key words used in the searches include climate change, global warming, energy efficiency, energy conservation, greenhouse gas emissions, and sustainability. No citizen blog sites are identified in Natureville. Two citizen blog sites are identified in Boomtown, and material from these sites is downloaded and coded to identify key themes.

Interview Techniques

The identity of all interviewees from phases one and two are kept confidential, in order to allow interviewees to anonymously discuss controversial issues. In phase one, data gathered from the interviews are reported in an aggregate form, rather than by individual city. Anonymity is ensured in phase two by creating pseudonyms for the two cities and by slightly changing identifying information, in addition to keeping interviewee identities confidential. A total of 36 interviews are completed, with 27 occurring during phase one and nine during phase two. Interviewees are recruited via targeted emails and telephone calls, directed in phase one by data collected from relevant documents and online reports, and in phase two through snowball sampling and recommendations from interviewees in phase one.

Each interviewee is provided with an informed consent document, approved by the UTA IRB, prior to the interview, with details regarding the interview process and research project.

When reviewing the consent document at the beginning of each interview, permission is asked to audio record the interview. All but two of the interviews were audio recorded using a digital recorder. One interviewee in phase one declined to be recorded, and one interview in phase two experienced technological difficulties that prevented recording. During all interviews, written notes are taken, which serve as a backup to the audio recording or serve in lieu of audio recordings. Following each interview, the audio recording is transcribed and written notes are summarized, which serve as the official record of the interview for analysis purposes.

The identity of all interview subjects is kept confidential after the interview. Digital audio recordings of interviews are stored on an encrypted hard drive and will be destroyed at the end of the research study. Interview transcripts, summaries, and notes are assigned a random identifier code, at which point interviewee names and identifying information are removed from the documents. A single document matching the identifier codes to the subjects' names is kept in a separately encrypted file, and this document will be destroyed when the research study is complete.

Data Analysis Techniques

In phase one of the research project, data from relevant documents are quantitatively tabulated, including the type and number of projects pursued, the type and number of actors involved, the amount of funding used, and the length of time for implementation of funds. Answers to Likert scale interview questions are also tabulated, covering issues including the municipality's interest in the grant program, extent of citizen involvement, raised awareness among staff and residents, and the overall success of the EECBG program. These data, together

with socioeconomic data from the U.S. Census, are presented using descriptive statistics calculated with Excel.

Qualitative analysis techniques are used in both phases of the research project. Interview transcripts and notes are analyzed through a coding and memo-writing process that begins with open coding and progresses to more focused and theoretical coding. Coding is performed using the online software program Dedoose. The open coding process identifies main subjects and issues discussed during the interview, even those issues that do not appear directly related to the research questions. Focused coding identifies key issues and emergent themes related to energy efficiency, climate change, discourse, and public participation, based on the review of relevant literature, that are discussed in the interviews. This process of open and focused coding allows comparison to existing research on municipal energy efficiency and climate change, as well as development of new issues perhaps unique to this case study or not yet developed in the existing literature. Memo writing is used as an analytical technique to more fully explore each code, develop patterns among the data, and link data to theoretical foundations found in the related literature (Charmaz, 2006). Planning documents, meeting minutes, historical records, and blog sites are also systematically searched, coded, and evaluated through memo-writing.

The combination of interview, document, and website data allow for triangulation of information, which increases reliability of the findings presented in this dissertation. Using a largely qualitative case study approach allows for the rich illustration of patterns in the EECBG process and examination of nuanced successes and challenges encountered in pursuing broader environmental planning and climate change planning activities.

Methodological Limitations

Methodological limitations to the research project stem from three main concerns: the political sensitivity of the subject, researcher bias, and the small sample size of the case study. Since climate change is a controversial subject, particularly in the politically conservative DFW region, steps are taken to ensure the anonymity of all participants in the research project. The identities of all interviewees are kept confidential and the names and identifying information of the two municipalities studied in phase two are withheld. These measures to protect confidentiality help provide assurance to interviewees to speak honestly and openly about their opinions and actions related to energy efficiency and climate change.

Attempts to limit and acknowledge researcher bias include soliciting reviews of the data analysis and interpretation by peers external to the research project. Discussing coding and analysis of key themes with peers is used throughout the project to identify researcher bias early in the processes and minimize bias in the final reporting. As the researcher, I am aware that I have biases and a strong personal belief in the importance of openly discussing and planning for climate change. However, I was careful to construct recruitment materials and interview questions to be neutral, non-leading, and open-ended, to give participants in this research project the ability to answer honestly with their own beliefs and experiences. I believe this was helpful in avoiding situations where participants were influenced by my biases or felt compelled to answer my questions in a certain way.

The extensive data collection and analytical processes of document analysis and interview transcribing, coding, and memo-writing suggests a small sample size in order to make the project feasible for one researcher to complete. However, the small sample size may limit the generalizability of the findings. In order to ensure validity within the small sample size, data

triangulation is pursued through the use of multiple data sources, including interviews with a range of individuals and a wide variety of archival documents. By systematically seeking to reveal bias and triangulate data, the methodological limitations of the research project are minimized.

Chapter Four

Energy Efficiency and Conservation Block Grants in Dallas-Fort Worth

The United States federal government allocated $3.2 billion in funding for the Energy Efficiency and Conservation Block Grant (EECBG) program in 2009. With an emphasis on reducing energy use and greenhouse gas (GHG) emissions, additional broad goals of the program included national energy independence and climate change leadership (U.S. DOE, 2009a). This chapter examines the use of EECBG funds in Dallas-Fort Worth to answer the first research question, understanding how this grant fostered discourse and awareness of climate change in participating municipalities. Additionally, this research provides preliminary data to answer the second and third research questions, regarding the role of politics on the discourse used by municipal staff and officials and opportunities for public participation related to climate change planning in conservative regions. Thirty-one municipalities in the DFW region received formula allocations of EECBG funds, totaling $43.5 million.

The chapter first examines the socio-economic and demographic characteristics of the municipalities participating in the grant. Then, the projects pursued and actors involved in the EECBG are reported. The discourse used by municipal staff and officials related to the EECBG funds and the impact of conservative politics on this discourse is presented. Since the way planners and other government actors discuss and present projects to the public may affect public awareness and participation (Bassett & Shandas, 2010; Whittemore, 2013), this research then examines implications for education and participation of the public. Successful planning for energy efficiency and climate change will likely require significant changes by municipalities

and citizens (Tozer, 2013; Wheeler et al., 2009), suggesting that public awareness and education on these issues are critical. EECBG data are then extrapolated to explore the impacts of politics on the potential for climate change planning. In the absence of significant federal policies and action on climate change in the U.S., municipalities are often seen as climate action leaders, but little is known about how this agenda is pursued outside of a handful of environmental leader cities (Foss & Howard, 2015). This analysis of the EECBG in DFW contributes to a better understanding of the potential successes and challenges with climate change planning and action in non-leader areas.

Socioeconomic and Demographic Characteristics

Data on the socioeconomic and demographic characteristics of the 31 municipalities in DFW receiving EECBG funds are obtained from the 2010 U.S. Census (Appendix B). The population of the municipalities varies significantly, ranging from the largest municipality with a population of 1,197,816 to the smallest municipality with a population of 36,328. Other characteristics with notable variation include:

- Racial diversity, signified by the percentage of the population that identifies as white (minimum 20.4%, maximum 89.6%, mean 64.8%, median 66.9%)
- Percentage of owner-occupied housing (minimum 38.4%, maximum 90.1%, mean 64.4%, median 63.6%)
- Educational attainment, signified by the percentage of the population that has a bachelor's degree or higher (minimum 13.6%, maximum 63.9%, mean 35.2%, median 32.5%)

- Mean household income (minimum $49,356, maximum $136,202, mean $82,397, median $76,855)
- Percentage of the population below the poverty level (minimum 2.4%, maximum 23.2%, mean 10.5%, median 10.0%)

There are also some notable differences between the EECBG-receiving municipalities in DFW and the Texas State averages. The 31 municipalities in the sample on average have a higher educational attainment (35.2% of the population has a bachelor's degree or higher) than the state average (25.5% with a bachelor's degree or higher). Several economic characteristics are also higher for the sample municipalities compared to Texas: median household income ($66,957 for the sample v. $50,010 for Texas), percent of the population below the poverty line (10.5% for the sample v. 17.9% for Texas), and percent of the population unemployed (7.0% for the sample v. 8.3% for Texas).

Studies find that communities with well-educated, high income, and liberal populations are most likely to support environmental protection (e.g., Boswell et al., 2010; Krause, 2011a; Opp et al., 2013). Overall, the municipalities receiving EECBG funds in DFW have higher educational attainment and higher incomes than the state average. Additionally, among the sample in DFW, some municipalities have populations with significantly higher education and incomes, suggesting that they might be more likely to address energy efficiency, conservation, and climate change issues. However, while Dallas County voted for the Democratic candidate in the 2012 presidential election, the remainder of the region heavily supported the Republican candidate, and it is likely that few of the municipalities outside some of those in Dallas County have significantly liberal populations.

One study also found that a high percentage of the population employed in carbon industries, which they define as agriculture, forestry, mining, construction, manufacturing, transportation, warehousing, and utilities, may be less likely to support climate change action (Zahran et al., 2008). In the 31 DFW municipalities, there is up to 14% of the population employed in natural resources, construction, and maintenance industries (minimum 3.5%, maximum 14.1%, mean 8.0%, median 8.1%). A high percentage of the population working in these industries may be related to municipalities pursuing fewer actions related to energy efficiency, conservation, and climate change.

EECBG Projects

Data on the types of projects pursued with EECBG funds were gathered from at least two out of three possible sources (municipality website search, federal reporting website, and interviews) for all 31 municipalities in the sample and categorized into one of six types: municipal building updates, transportation, renewable energy, planning projects, outreach, and residential energy efficiency (Table 4.1).

Table 4.1. EECBG project types.

Most Common Projects	Number of Municipalities*	Percentage of Muncipalities
Municipal Building Updates	26	84%
Transportation	11	35%
Renewable energy	10	32%
Planning Projects	9	29%
Outreach	8	26%
Residential Energy Efficiency	5	16%

*n=31

Number of projects pursued. Of the six different types of projects, the average number of projects pursed by the 31 municipalities was 2.1 (maximum=5, minimum=1). Fifteen of the municipalities (48%) pursued only one type of project, and these municipalities were mostly the smaller ones in the sample. Several interviewees talked about their decision to pursue multiple projects, rather than one big project, or the "bullet versus the buckshot" debate. Two interviewees stated that one big project would have been easier, but they decided to go with the buckshot approach in order to have a broader reach and greater impact through a variety of projects. The grant application and instructions do not require doing more than one project, and it is understandable that many municipalities, particularly the smaller ones with limited staff and funds, would choose one type of project for ease of implementation.

Types of projects. Municipal building updates, such as energy efficiency upgrades for lighting or HVAC systems, were the most prevalent projects for municipalities in the sample, with 26 out of 31 municipalities (84%) performing these types of projects (Table 4.1). The next most prevalent projects were related to transportation, such as designing a traffic management system or energy efficiency updates to city fleet vehicles, with 11 municipalities (35%), and renewable energy, including installing solar panels on municipal buildings or solar lights, with ten municipalities (32%). Nine municipalities (29%) pursued planning projects with the grant funds, such as a plan related to energy efficiency in municipal operations. Six of these municipalities completed some type of community plan, such as a Sustainability Action Plan. Eight municipalities (26%) did some kind of outreach activity, such as hiring staff or establishing a new department related to the environment or sustainability. Finally, five municipalities (16%) performed projects related to increasing residential energy efficiency, typically for low-income residents.

When asked about how their municipality decided to use the EECBG funds, many interviewees indicated that their municipality focused on projects that needed to be done and were ready to complete quickly, with minimal debate or discussion over the project decision. Some interviewees also stated that projects were limited by the amount of funds the municipality was allocated through the formula, which prevented them from doing projects that would yield greater efficiencies or savings. One interviewee, whose municipality did energy efficiency updates to city hall with the funds, indicated that they would have liked to replace the HVAC system, but only received enough funding to replace lighting.

However, several interviewees described a debate over short-term or long-term projects and internal or external projects when asked about the decision process. Four interviewees talked about how they designed projects that would have short-term impacts, such as replacing HVAC units or other municipal building updates, and longer-term impacts, such as installing solar panels or creating a community sustainability plan. Interviewees also described this debate as between doing internal (municipality-focused) projects and external (community-focused) projects. The fact that six municipalities created community plans and five municipalities hired staff to do outreach activities may also be evidence of a focus on external and long-term projects among some of the sample in DFW. Finally, three interviewees described using the EECBG funds to pursue projects that allowed their municipality to experiment with new technologies, such as solar power generation, another example of projects that might have a long-term impact on energy use in the municipality. These data are indicators that at least a portion of projects in some of the municipalities may have contributed to the grant's long-term goals of energy independence and climate change leadership.

Interviewees were also asked if the EECBG-funded projects led to any related energy efficiency and conservation projects in their municipality, after the life of the EECBG. Of the 25 municipalities interviewed, 20 (80%) were pursuing related efforts, such as completing projects identified in municipal energy efficiency plans or installing LED lights as part of standard maintenance. Interviewees suggested two different paths that led to these related efforts. First, in some municipalities, it appeared that the EECBG goals and projects fit in with energy efficiency measures the municipality was already pursuing, prior to and independent of the EECBG. In these cases, the EECBG provided additional resources to further these municipal activities. Second, in other municipalities, it appeared that the energy efficiency goals of the EECBG were new to the municipality. In these cases, the grant provided the impetus for the municipality to move along a path toward considering energy efficiency in current and future operations. Both approaches speak to the influence the EECBG funds had on future energy efficiency and conservation improvements in many of the recipient municipalities.

Interview length. As described in the Methodology Chapter, the 27 interviews conducted ranged in length approximately from 15 minutes to three hours, with the average length being 40 minutes. This average length allowed for basic factual data to be gathered about the use of EECBG funds, as well as time for interviewees to respond to open-ended questions with more rich detail. There were four interviews that were significantly longer than the average (over one hour in length), and in three of these four municipalities, the EECBG funds were used for many different types of projects, which required more time to describe and discuss. In the fourth, the interviewee was a planner who was very interested in discussing the broader planning implications of the projects pursued by the municipality with the grant funds.

There were also six interviews that were significantly shorter than the average (under 20 minutes in length). Four of these six interviews were conducted with staff from the less populous municipalities in the sample, with population sizes under 60,000 and receiving less than $500,000 in EECBG funds. These four municipalities also each pursued only one type of project with the grant funding, which meant there was less to discuss. One of the other municipalities with a short interview, although larger in population size, also pursued only one type of project. The final municipality with a short interview was larger and pursued a range of projects, but in this case, two separate short interviews were conducted with different staff members in order to collect the necessary data. Although some of the interviews were quite short and somewhat perfunctory, they still yield valuable data regarding the types of projects, actors involved, and motivation for pursuing the EECBG funds that help complete the full portrayal of the use of EECBG funds in DFW.

EECBG Actors

Data on actors involved in the EECBG program are drawn from the 25 municipalities in which interviews were conducted, since complete and reliable data on the actors involved were not available from the municipal website search or federal reporting website. Actors are identified according to the departments in which they work (Table 4.2). Overall, the departments involved and their prevalence matches fairly well to the types and prevalence of projects pursued. The city manager's office was the most common department for actors on EECBG, with 14 municipalities (56%) relying on staff in this office to complete the application, projects, and paperwork. Financial departments were involved in nine municipalities (36%), typically to assist with the federal requirements related to procurement, payments, and paperwork. The other

most prevalent departments were public works (13 municipalities, 52%), facilities (12 municipalities, 48%), transportation (9 municipalities, 36%), and parks and recreation (8 municipalities, 32%), reflecting the high number of projects that focused on municipal buildings and transportation.

Table 4.2. EECBG actors.

Department of Actor	Number of Municipalities*	Percentage of Municipalities	Number of Interviewees	Percentage of Municipalities
City Manager's Office	14	56%	5	20%
Public Works	13	52%	6	24%
Facilities	12	48%	2	8%
Financial Departments	9	36%	-	-
Transportation	9	36%	2	8%
Parks and Recreation	8	32%	2	8%
Community Services	6	24%	3	12%
Engineering	6	24%	-	-
Environmental	6	24%	3	12%
Utilities	5	20%	1	4%
Planning	4	16%	-	-
Information Technology	3	12%	-	-
Economic Development	2	8%	1	4%
Fire and Police	1	4%	-	-
Library	1	4%	-	-

*n=25

Only four municipalities (16%) involved the planning department in the EECBG projects, although six municipalities (24%) involved the community services department, which might have similar functions to planning in some municipalities. Seven municipalities (28%) report using an outside consultant for help with some parts of grant administration, project management, and project completion, although this number may be higher, as interviewees were not specifically asked about the use of consultants.

All municipalities had two or more different groups involved in the use of the EECBG funds, although in some cases the two groups were an internal municipal department and an outside consultant. When asked if representatives from different departments were involved in designing the EECBG projects, one interviewee, whose municipality engaged the services of an outside consultant, said, "No, that was actually myself. We have a very small organization and being the Assistant City Manager, I wear probably ten different hats, and one of the hats I wear is our energy efficiency person." Seven (28%) of the 25 municipalities interviewed had more than four groups or departments involved. Several interviewees mentioned the importance of teamwork and coordination between departments and staff, and some municipalities either assigned oversight of the EECBG projects to an existing municipal committee or established a committee to guide the EECBG projects. One interviewee, from a municipality that involved nine different departments, said, "It was definitely a team effort. I mean, this committee that we put together, like I said, came from all facets of our departments and our governmental structure there, and by them working together, it made it a lot easier on me as a project manager."

While many municipalities had staff from multiple departments work on the EECBG projects, in most cases there was a key staff member who was involved from start to finish and in all aspects of the grant. Every attempt was made to ensure that this "main" actor was interviewed, and the departments of the interviewees are also shown in Table 4.2. The most common department for the interviewee was public works (6 municipalities, 24%), followed closely by the city manager's office (5 municipalities, 20%). Interviewees also came from community services and environmental departments (3 municipalities, 12%, each), facilities, transportation, and parks and recreation departments (2 municipalities, 8%, each), and utilities

and economic development departments (1 municipality, 4%, each). None of the main actors for EECBG projects came from planning departments.

EECBG Discourse

Of the ways in which interviewees reported that their municipalities discussed the EECBG and projects, four key themes emerge as dominant (Table 4.3). The most common type of discourse established by municipalities around the EECBG funds and projects was related to saving energy, mentioned by interviewees in 22 out of 25 municipalities (88%). The goal of reducing energy use was clearly stated in the federal grant application documents, and municipalities in the DFW region made this a key focus. This discourse is typified by one interviewee, who said the reason their municipality applied for the EECBG "was basically just to reduce our electricity consumption."

Table 4.3. EECBG discourse themes.

Discourse Theme	Number of Municipalities*	Percentage of Municipalities
Save Energy	22	88%
Save Money	19	76%
Air Quality	10	40%
Economic Issues	10	40%

*n=25

A discourse of saving money was the second most common in the sample, mentioned by interviewees in 19 out of 25 municipalities (76%), with interviewees telling me things like: "the sweet spot…when we present this is obviously going to be energy efficiency and cost savings for

the city"; "the economic benefit of reducing energy consumption was really emphasized"; and "of course, trying to reduce the city's liability for energy was our number one priority, trying to reduce our electric bills." The grant was seen by municipalities as "free money" because no municipal match was required. Additionally, many municipalities had necessary projects, such as updating inefficient HVAC systems, which they were struggling to pay for out of their general fund or capital improvement budget, and this grant was seen as a direct cost savings for the projects the municipality needed to complete. One interviewee told me, "we had already identified some projects, we didn't have a funding source, wanted to be more efficient, wanted to find ways to save money. So, when the EECBG grant program came out, it seemed like a perfect marriage for what we were trying to do."

After saving energy and saving money, the next most prevalent type of discourse related to the EECBG was around air quality, mentioned by interviewees in ten out of 25 municipalities (40%). The discourse of air quality was most often related to emissions caused by vehicular traffic and was often linked to the DFW region's status as a federal non-attainment area for certain air pollutants, with one interviewee saying, "air quality is always a priority…I'm always looking for federal funding so we can get cars off the road…to deal with attainment of the air quality standard."

Ten interviewees (40% of municipalities) also mentioned a discourse around economic issues, beyond just saving money. This discourse was related to the responsible use of funds, gaining a good return on the EECBG investment, and stimulating the local economy. Given the timing of the grant during an economic recession, some interviewees mentioned challenges with maintaining basic municipal service provision and feeling heightened pressure to be good stewards of public funds. One interviewee said, "any time there's an opportunity to improve our

facilities and utilize federal funding to initiate some cost savings on an ongoing basis, I think we have a responsibility to our taxpayers and our elected officials to pursue those grant opportunities." Similarly, another interviewee said, "the economics of the country were not looking so good at this time. And so, there was a lot of concern on the part of the council to be as efficient as we possibly could be with our municipal funds, and there was a lot of pressure to be sure that we weren't raising taxes, we weren't raising utility rates." One interviewee revealed that the economic goals of the grant were more attractive to their municipality than the environmental goals, saying, "we are a very conservative city, so energy efficiency and sustainability is not one of our council priorities. But, healthy neighborhoods, healthy economy is. Wise stewardship of public funds." Another interviewee revealed the importance of the economic benefits of the grant when asked about the success of the EECBG, saying, "I guess it depends on how you define success. If it's to raise…awareness about climate change and energy efficiency and reducing carbon footprint, I would…rate the success as probably a two or a three [on a scale of 1 to 5, with 5 being highest]. But in terms of injecting and infusing some money into the local economies and allowing cities to undertake some projects that did actually benefit us…i.e., reducing our electric bill, I would…give it a 4 in terms of success." This suggests that at least some municipalities focused more on the economic benefits of the EECBG than on the environmental benefits.

Interviewees from less than one quarter of municipalities (6 out of 25 municipalities, 24%) mentioned a discourse related to seeking both short-term and long-term goals with the EECBG funds, but this group of municipalities reports a serious attempt to either pursue both short-term and long-term projects with the grant funds or to pursue a long-term project that the municipality would not have been able to complete without the grant assistance. For example,

one interviewee told me, "we tried to divide it up between some initial implementation projects that would have immediate paybacks…and we had one project in particular…which was looked at as more of a longer term project that would provide benefits but not in a short time frame." Two municipalities that pursued solar energy production with the grant funds also mentioned that local governments can be reluctant to try new technologies that do not have a quick payback of initial investment, so the EECBG was used for these projects. In these cases, both short-term and long-term benefits, as well as economic and environmental benefits, were considered with the EECBG.

EECBG and Conservative Politics

The impact of politics on the EECBG process was measured in one way by an interview question regarding the presence of support or opposition for the grant and its projects. The majority of interview respondents were unaware of any specific support for or opposition to the EECBG funds and projects (Table 4.4). In 13 municipalities (out of 23 that answered this interview question, 57%), interviewees did not experience or were not aware of any support to the EECBG. In 18 municipalities (78%), interviewees did not experience or were not aware of any opposition to the EECBG. Among the municipalities that did not experience either support or opposition, 12 also did not involve residents during the implementation of the EECBG projects and nine did not publicize the projects. It is possible that the lack of support and opposition in some of these municipalities was simply because residents were unaware of the EECBG and projects.

Table 4.4. EECBG and presence of support or opposition.

	Yes	No/Unaware
Support	10	13
Opposition	5	18

n=23

Ten municipalities (out of 23 that answered this interview question, 43%) reported support, and for many of these, support came from involved staff within the municipality and from elected council members. Five of these municipalities specifically mentioned resident support for the EECBG projects, mostly in the form of approval from residents who attended public meetings on the projects or appreciative comments after a project was complete.

Five municipalities (22%) reported opposition directed at the EECBG, including opposition to acceptance of federal stimulus funds, a perceived link between EECBG and the United Nations Agenda 21 program (a voluntary plan designed to promote sustainable development), and sustainability projects pursued with the EECBG funds. Three of the five municipalities that reported opposition pursued community planning projects with the EECBG funds, suggesting that the engagement of the public on community plans may have attracted opposition.

While many municipalities constructed a discourse around the EECBG as beneficial to their local economy, several interviewees described a sentiment against federal funds popular among conservatives more broadly across Texas at this time. One interviewee said, “there was a perception that pursuing so much federal grant funding was not a fiscally responsible thing to do,” and another interviewee reported that Tea Party members picketed at the civic plaza against accepting federal stimulus funds. A third interviewee said their municipality avoided involving

residents in the EECBG projects because "there developed both nationally and regionally a relatively strong culture against the ARRA stimulus funding."

In addition to negative perceptions of federal funding, interviewees also mentioned the role of conservative politics in characterizing the opposition to EECBG experienced in their municipalities. Installing solar panels was controversial, with one interviewee saying, "we had some people who are just extremely conservative" and concerned about the long time it would take for solar panels to generate enough electricity to justify the installation cost. In this municipality, the conservative viewpoint resulted in "certainly some backlash." Another interviewee characterized their municipality as "a very conservative city" four times during the course of the interview to explain the opposition to the EECBG that they experienced. Sustainability was also seen as a controversial issue in several communities in the region. One interviewee described how some residents saw actions to make their city more sustainable as a "kind of a political movement…a greater agenda to modify behavior", which led to resident opposition. These examples suggest that politics are active in shaping discourse in DFW municipalities.

Beyond just influencing discussions, politically motivated opposition influenced municipal actions in some cases. Describing local opposition to an EECBG project, another interviewee said, "it was really a function of national politics…very much conservative parties that just filtered down to the local level." In this municipality, "a political movement…[by] a smaller but more vocal group" against an EECBG-funded planning document led the interviewee to say that the plan "has pretty much been shelved." In another municipality, a local Tea Party association is "a very well organized group" that actively opposed the municipality's sustainability and land use planning activities. This municipality joined ICLEI's Cities for

Climate Protection campaign, but the interviewee described how protest from a local Tea Party group, who "think that ICLEI is the hand maiden of Satan…the United Nations' way of infiltrating local communities with Agenda 21," forced the municipality to rescind their membership. These examples illustrate the fear of political opposition being realized and preventing planning actions.

EECBG and Public Participation

The role of public participation was assessed through several interview questions about public presentations during the EECBG application process, citizen involvement during implementation of projects, the EECBG's role in raising awareness of energy efficiency issues, and publicity of impacts after projects were complete. Of the 25 municipalities interviewed, all but three (88%) had presentations on EECBG made to city council at sessions open to the public. However, none of the interviewees recalled substantial resident input or discussion by residents at city council meetings regarding the acceptance of the EECBG funds or the types of projects to pursue. As one interviewee said, "there was no involvement [of residents] other than their ability to speak at council meetings regarding the proposed resolution to apply for the grant." Interviewer: "But nobody did speak, as far as you know?" Interviewee: "That is correct."

Citizen involvement during implementation was determined using a Likert scale question, where answers were given on a scale of 1 to 5, with 1 being very low and 5 being very high (Table 4.5). The average response for citizen involvement was 0.76 out of 5, lower than 1 since many interviewees responded with a 0 due to no citizen involvement during project implementation. However, the answer to this question from municipalities that pursued community planning projects (n=6) with EECBG funds was much higher, with an average of

2.75 out of 5, reflecting public meetings held for these planning projects, but this was a minority of the sample. The vast majority of municipalities reported that there was no citizen involvement during implementation of the projects. As mentioned above, several interviewees stated that the municipality did not seek citizen involvement partially due to the national and regional culture against federal funding such as EECBG. In other cases, municipalities explained that there was no resident involvement because it wasn't required by the grant or because the projects were internal to municipal operations and therefore did not directly impact residents.

Table 4.5. EECBG public participation (data from municipalities that did community planning projects with the EECBG funds are highlighted in gray).

Question	Average Response*	Median	Standard Deviation	Number of Responses
How involved were residents in the implementation of projects? (all respondents)	0.76	0.00	1.44	23
How involved were residents in the implementation of projects? (respondents that reported community planning projects)	2.75	2.75	1.57	6
How much do you think the EECBG projects raised awareness for efficiency and/or conservation issues among residents? (all respondents)	2.76	3.00	1.35	21
How much do you think the EECBG projects raised awareness for efficiency and/or conservation issues among residents? (respondents that reported community planning projects)	3.08	3.00	1.10	6

*On a scale of 1 (low) to 5 (high).

One interviewee declared that while their municipality did not seek citizen involvement during project implementation, citizens would have been unlikely to participate if given the chance. Comparing the EECBG to the federal Community Development Block Grant program (CDBG), which provides funding largely for municipal housing projects, the interviewee said,

"part of that process [with the CDBG] is that we have public hearings and we present projects and we give the community the opportunity to present projects or give us some feedback, and in the seventeen or sixteen and a half years I've been at the city, not a single person has come forward at our annual CDBG public hearing and presented a project or even had any comments about the project. So, I suspect, even if we would have had community involvement, inviting people to talk about the energy efficiency block grant, there probably would have been no response." This interviewee's opinion reveals a broader issue within the field of planning regarding perceived or actual lack of citizen interest and involvement. In many cases, there was some surprise on the part of interviewees over the question about citizen involvement, as many interviewees seemed to believe it was not necessary or appropriate to include residents for projects that were largely internal to the municipality's operations.

A Likert scale question was used to assess the role of EECBG projects in raising awareness of energy efficiency and conservation issues among residents, and the average response was 2.76 out of 5 (Table 4.5). Many interviewees said that residents were generally not very aware of the projects, particularly in the municipalities that did projects related to internal operations only. As one interviewee said, "I'd give [raising resident awareness] a one or a two [on a scale of 1 to 5]. Really [the project is] not something they could actually see and gravitate towards." When the project was highly visible, such as solar panels on a municipal building, interviewees were more inclined to believe that residents had their awareness of energy efficiency issues raised by the EECBG projects. However, this awareness was limited by geography, as one interviewee said, "I think inherently the people that live near [the project] are going to be the ones that are more impacted, because they see it every day. But not everyone that lives on the west side of [the city] goes over to the east side all that often." When interviewees

responded with a high score for this question, in some cases the high score appeared to reflect the existing level of awareness, not how much awareness was raised by EECBG. One interviewee told me that sustainability, broadly, is "already up on people's brains…So it's hard for me to say that our EECBG grant funds [made an impact]…it's just an extension of what I think is already been a philosophy held for certain components of our citizenry for some time." The six municipalities that did community planning projects had a slightly higher response to this question, with an average response of 3.08 out of 5. However, as mentioned above, three of the municipalities that pursued community planning projects also experienced opposition from residents.

One way that resident awareness could have been raised was through publicity of EECBG projects. Just over half of the municipalities interviewed (13 out of 25 municipalities, 52%) publicized at least some of the EECBG projects or impacts from projects to their residents. Some municipalities held public ribbon cutting ceremonies for visible projects, such as installing solar panels on a municipal building, and several municipalities installed a publicly accessible display showing impacts from EECBG projects, such as energy generated from solar panels. The most common form of publicity was an announcement or update in a municipal newsletter, utility bill, or website. However, can be quite difficult for municipalities to measure resident awareness of their projects. As one interviewee said, "as far as the residents, in total, I would say they were informed, if they read the press, if they read the articles…Just like anything else, when we put that material out there, we're hoping that people read it. So, if they were reading that, the assumption would be that they were informed." Even in the municipalities that made an effort to publicize impacts of the projects, staff was unaware how many residents were reached and educated by these efforts. It was also common for municipalities to publicize some of their

projects, but not all of them. For example, internal operation projects might not be publicized while a public project, such as energy efficient retrofits at a community center, would be publicized.

The other 12 municipalities (48%) did not publicize EECBG projects or impacts in any way, although some municipalities did track the impacts on their internal operations, especially how projects saved money on electricity bills. One interviewee told me "we really haven't done as much post-grant publicity other than just using the information for our own knowledge." Most of the interviewees from these municipalities reported matter-of-factly that they were not aware of any efforts to publicize the EECBG projects or their impacts. When asked about publicity of impacts, one interviewee said, "I haven't really thought about that. Since our grant ended, I don't think anybody is waking up and going to bed thinking about stuff like that. So, no." This absence of publicity may represent a missed opportunity for increasing public awareness and education.

EECBG and Climate Change

There is a clear connection between energy use and climate change, and the DOE explicitly linked the EECBG to the reduction of fossil fuel emissions and to climate change leadership (Fisher, 2013). However, in my sample of 25 municipalities in DFW, only one municipality (4%) reported explicit discussion of climate change in relation to the EECBG funds and projects. In this case, the interviewee told me, climate change "was such a big topic at that time…it was definitely a topic that we spoke about a lot. And I'm sure—I can't remember a specific opportunity where we spoke about it, but I can imagine that we did." Even though the interviewee reports talking about climate change "a lot", it is not clear to what extent the issue was discussed related to the EECBG. Three other municipalities (12%) reported some discussion

of climate change among staff, but not at the level of elected officials, such as city council, or specifically related to EECBG. One interviewee said, "I think we probably discussed some of that [climate change] at some point…but it wasn't really, I must admit, a consideration or big factor." Another interviewee from one of these municipalities indicated that climate change was discussed, but not with city council, saying, "I think there are folks on the council that would still need a lot of convincing to come to a point that they felt that [climate change] was something that existed or was worth us spending money on." The remaining 21 municipalities (84%) that were interviewed reported no discussion of climate change, and most of these interviewees responded with a matter-of-fact 'no' when asked if they discussed climate change with the EECBG projects. One interviewee, when asked if climate change came up in any discussions, said: "No. No. No. Not at all. We are a very pragmatic group here." This response shows that discussion of climate change was not considered a wise or practical action for the municipality.

Some interviewees provided additional explanations of why they did not discuss climate change. Several talked about being in politically conservative communities and in a politically conservative region as reasons why they did not discuss climate change. One interviewee said that they were in a "very conservative community and that [climate change] discussion would probably not occur at a council level and public forum. If it did occur, it would occur, in my opinion, privately, outside of official duties." This interviewee went on to say, "when you talk about global warming…it's political in nature in many respects. Whether it should be or shouldn't be, I'm not here to debate, but it's a reality. And so it has a political connotation attached to it…So we just don't go down the [climate change] path, it's just probably not going to be as effective." Another interviewee, when asked if climate change came up in discussions, said, "yes, I do know whether it came up or not. It did not come up, and I do know why…I find

it—there are people who don't necessarily believe that climate change is a real thing. And rather than sidetrack [EECBG] onto that [climate change] issue [the topic was avoided]." This interviewee went on to suggest that this is due to the politically conservative region, saying "it would be different if I were doing it in a different [geographical] area."

Interviewees mentioned other reasons to avoid discussion of climate change, such as how it is a global, not local, issue and therefore not appropriate for municipalities to address, and how the negative politics of climate change cause staff to avoid talking about it to avoid attention and opposition. When asked if climate change was discussed with the EECBG projects, one interviewee told me, "no, it wasn't. We didn't feel as though we were going to have an impact on climate change, global climate change." Another interviewee also said climate change was not discussed because "it's a conservative community, I don't know if they see [climate change] as a local government issue, per se, as much as it is a global issue." One interviewee said, "there are people who don't necessarily believe that climate change is a real thing…we didn't go into global warming [with the EECBG projects], we have talked a little bit about the [urban heat] island effect, so there are ways that we skip over seemingly controversial items…we have been very cautious about some of those things and … cognizant of who the constituents are." In yet another municipality, after experiencing Tea Party opposition, an interviewee told me, "we had to be very careful as to what we said and how we did it." These examples suggest that at least some municipalities actively avoided a discourse of climate change with the EECBG projects.

Other interviewees explained that economic issues were significantly more important than issues like climate change in their municipalities. One interviewee told me "since 2008, our sales tax and our property values plummeted, and most cities were laying off people. Our number one priority was not climate change. Our number one priority is how do we fund the

budget without cutting services, and how do we continue to fund police and fire and EMS and keep our parks open and our recreation programs open, given the financial constraints that the recession was putting on our budget. That was our number one priority." In this case, pursuing climate change was seen as being in conflict with trying to stabilize the municipality's economic status.

Demographic Characteristics and EECBG Projects

At the beginning of this chapter, key socio-economic and demographic characteristics of the 31 municipalities receiving EECBG funds in DFW are presented. After the above examination of EECBG projects, it is possible to review whether there is a pattern of municipalities with high education, high income, and low employment in carbon industries being more successful with the EECBG. For this comparison, success with the EECBG is defined by pursuing a wide range of project types and including a focus on the community, beyond just municipal operations, measured by the number of project types pursued and the use of EECBG funds to develop a community plan. Municipalities with high education and income are defined by the percent of population with a Bachelor's degree or higher and by average household income, where both statistics are above the full sample averages (n=11). Low carbon industry employment is defined as the municipalities that have populations with a percent employment in carbon industries below the average for the full sample (n=15).

The first measure of success is pursuing more than the full sample average number of project types, or more than two project types, with the EECBG. At total of 12 municipalities pursued more than two project types, and close to half of these municipalities (42%) fell into the high education and income category (Table 4.6). Additionally, close to half (42%) also fell into

the low employment in carbon industry category. The second measure of success is funding a community plan with the EECBG, which was done in a total of six municipalities. Only one of these six (17%) fell into the high education and income category, and three (50%) fell into the low employment in carbon industry category. There is no overwhelming pattern of high education, high income, and low carbon industry employment municipalities being more successful in environmental planning, as measured by EECBG projects. However, two thirds of municipalities pursuing more than two project types and municipalities developing community plans were in the top 10 most populous municipalities in the sample. The more populous municipalities received higher levels of funding from EECBG, and it appears that the larger capacity and resources available in municipalities with larger populations may make it easier for them to pursue environmental planning activities (Bedsworth & Hanak, 2013; Krause, 2011a; Opp et al., 2013).

Table 4.6. EECBG success and demographic characteristics.

	Demographic Characteristic		
Measure of EECBG Success	High education and income	Low employment in carbon industry	Large population size
Pursued more than 2 project types (n=12)	42%	42%	67%
Developed community plan (n=6)	17%	50%	67%

Notes:
High education and income defined as municipal average above full sample average (n=11)
Low employment in carbon industry defined as municipal average below full sample average (n=15)
Large population size defined as the top 10 most populous municipalities in the full sample (n=10)

Summary

The analysis of the EECBG program in DFW was designed to answer this dissertation's first research question: *How does the Energy Efficiency and Conservation Block Grant program*

foster discourse and awareness of climate change in DFW participating cities? Since my research found that the vast majority of municipalities receiving EECBG funds in DFW did not even mention climate change in relationship to the grant, the direct answer to this research question is: the EECBG program did not foster any discourse or awareness of climate change in DFW participating municipalities. However, there were some key benefits of the EECBG program that may contribute to future climate change planning and action.

The 31 DFW municipalities that received EECBG funds ranged widely in size and therefore also in fund allocation, which in turn affected the types and scope of projects the municipalities were able to pursue. The most populous municipalities were also more likely to pursue a larger number of project types and to develop community plans with EECBG funds. Most municipalities focused the funds on municipal building updates, favoring projects that were needed and "shovel ready" in order to fit within grant requirements that funds be used quickly to help stimulate the economy. However, a portion of the municipalities did focus on community issues, such as community sustainability plans or residential energy efficiency programs, and longer-term actions, such as testing new solar technologies. Additionally, 80% of municipalities report that they are pursuing related energy efficiency and conservation efforts after the life of the grant, which will likely contribute to climate change mitigation through reduced energy consumption and reduced greenhouse gas emissions. In this way, the EECBG was able to contribute to climate change action, albeit not in an explicit manner. With this focus, it is not surprising that most municipal staff and officials used a discourse centered around saving energy and saving money to describe the grant and funded projects.

Only one municipality reported any discussion of climate change with the EECBG program, while an additional three interviewees stated that their municipalities sometimes have

internal discussion of climate change, but these discussions were not related to the EECBG and did not happen with elected officials or at public meetings. The remaining 27 municipalities reported no mention of climate change, and interviewees gave reasons for avoiding climate change discourse that included lack of belief in climate change, viewing it as a global not a local issue, priority placed on economic development, climate change discourse being ineffective or not pragmatic, and conservative politics. While most interviewees were unaware of any direct citizen support or opposition to the EECBG, 22% of municipalities did report opposition, which interviewees largely attributed to the conservative nature of the region and common conservative viewpoints. These viewpoints include opposition to federal stimulus funding, to U.N. Agenda 21, and to sustainability planning in general. Additionally, some interviewees stated that their municipalities purposefully avoided a discourse of climate change to avoid opposition.

One manifestation of this fear of opposition and conservative political backlash to EECBG projects is the lack of public participation opportunities with the EECBG. The majority of municipalities made presentations on the EECBG at public city council hearings, but report little or no public input or participation during the grant term. Reasons given for this include that public participation was not required by the grant, interviewees felt residents would not be interested, and fear of opposition if the grant and projects were more publicly discussed. While just over half of the municipalities did publicize the grant projects, such as through municipal newsletters or websites, interviewees did not know how many residents were reached through these publicity efforts. Additionally, planning departments, which often are accustomed to pursuing public participation processes, were not heavily involved in the EECBG program in most municipalities.

The EECBG program provided useful funding for municipalities in DFW to make energy efficiency upgrades and pursue renewable energy projects that seem likely to help mitigate the region's climate change contributions. In all 31 municipalities, the grant funds were spent and projects were completed, indicating that the grant's goal of economic stimulus and job growth was met. In many municipalities, energy efficiency and conservation activities continue to be pursued, suggesting that the grant also achieved its goal of helping to "meet the nation's long-term goals for energy independence". However, the lack of climate change discourse and lack of public participation opportunities related to the EECBG show that the grant's additional goal of "leadership on climate change" was not met.

Chapter Five

Case Study of Divergent Responses to Sustainability and Climate Change Planning in Dallas-Fort Worth

The experiences of two municipalities in DFW discussing climate related issues, using collaborative citizen participation, and implementing environmental planning goals are explored in this chapter. Since very few municipalities in DFW are pursuing explicit climate change planning, this case study uses sustainability and environmental planning efforts as an entry point to examine these issues. Both municipalities have undeveloped land within their boundaries that is characterized by natural amenities, such as lakes, riparian corridors, and wooded areas. Both also have a history of environmental planning efforts and both have experienced recent high growth rates and resultant development pressures. Based on data from planning documents and interviewees, natural amenities are valued by the citizens of both municipalities and efforts have been made over the years to preserve these amenities from development pressures. Explicit planning for environmental preservation and protection manifest in both municipalities in the late 2000s with support for these efforts coming from citizens, staff, and elected officials. Both municipalities allocated a portion of their federal Energy Efficiency and Conservation Block Grant funds to the creation of community sustainability plans that included public outreach and participation processes. However, the outcomes from these two planning processes were quite different.

Boomtown, located in northeast DFW, is larger, less diverse, and has a population with quite high levels of educational attainment and household incomes. Natureville, located in

southeast DFW, is smaller, has a more racially diverse population, and has reasonably high educational attainment and household incomes. Boomtown experienced significant opposition to sustainability planning in 2011, and robust environmental goals, including any mention of climate change, have largely been absent in subsequent planning efforts. Natureville has not experienced opposition to similar sustainability planning, and the municipality followed a purposeful approach that avoided controversial topics, including climate change. This chapter explores how these two municipalities, with similar histories and profiles, both located in the same metropolitan region, have opposite responses to attempted sustainability planning. Particular attention is paid to the impact of politics on discourse, public participation, and implementation of planning projects related to climate change.

The chapter begins with an overview of the socio-economic and political characteristics of the two municipalities. Next, analysis of planning documents from both municipalities related to sustainability and climate change issues is presented to understand the recent planning concerns and processes pursued across a range of plans. Drawing from the document analysis and in-depth interviews, the public participation process for the EECBG-funded community sustainability plans in each municipality is examined. This allows analysis of how the discourse used by municipal staff and elected officials impacts public participation, including how that discourse is shaped by the politics of the DFW region. Then, the discourse related to environmental issues, as well as growth and development issues, used in each municipality is explored to understand how narrative frames are shaped and brought to bear on public participation and implementation of environmental planning actions. Finally, the research is extrapolated from sustainability planning to understand the impacts of politics, discourse, and

public participation processes on potential for climate change planning and action in politically conservative regions, in order to answer the second and third research questions.

Socio-economic and Political Characteristics

As described in the Methodology Chapter, Boomtown and Natureville have several key socio-economic similarities, as well as differences. Both municipalities have grown quickly in recent years and are seeking to prepare for and guide future development. Boomtown is larger, with a population slightly above 100,000 and a growth rate of approximately 20% from 2010 to 2014. Boomtown is also less racially diverse and has very high levels of homeownership, educational attainment, and household income, compared to Texas State averages. Natureville is smaller, with an approximate population of 50,000, and its growth rate was approximately 7% from 2010 to 2014. Natureville has a higher than average percentage of African American residents, and while its levels of homeownership, educational attainment, and household income are high compared to Texas State averages, they are not as high as in Boomtown. Based on previous research about socio-economic characteristics and environmental preferences, both cases might be expected to have greater support for environmentalism than the surrounding DFW region, due to higher education and income levels (e.g., Boswell et al., 2010).

Political preference is also found to be a significant predictor of environmentalism and climate change action (Gerber, 2013; Millard-Ball, 2013; Outka & Feiock, 2012; Wang, 2012), with liberal areas generally supporting more environmental policies and actions. A wide variety of measures of political preference have been used in the literature, often because this data can be difficult to ascertain on the municipal level. In Texas, presidential election voting records are reported on the county level, and in DFW, Dallas County was the only county to vote for the

Democratic candidate in 2012, Barack Obama, with 57% of the vote for Obama and 42% for the Republican candidate, Mitt Romney. Natureville is located primarily in Dallas County, so it is possible that its residents may be more politically liberal. Boomtown is located primarily in Collin County, where 65% of the vote went to Republican Romney and 34% went to Democrat Obama, suggesting that Boomtown's residents may be more politically conservative.

Examining the National and State elected representatives from the districts comprising the two municipalities provides a more nuanced illustration of political affiliation. Natureville is part of a larger district that elects two members to the U.S. House of Representatives, one of which is a Republican and one is a Democrat. This pattern holds for Natureville's elected State Senators, as one is a Republican and one is a Democrat. Finally, Natureville's State Representatives are one Republican and one Democrat. Overall, this supports the finding that Natureville's population may be more politically liberal. Boomtown's elected officials, two U.S. Representatives, two State Senators, and four State Representatives, are all Republicans. This strongly supports the finding that Boomtown's population is more politically conservative.

Planning Document Analysis

A total of 11 planning documents are analyzed for this section, in order to provide background on planning processes and actions in both municipalities. The most recent comprehensive plan in both municipalities was analyzed, as well as all plans from approximately the past ten years related to environmental issues. These criteria yielded four additional plans from Natureville and five additional plans from Boomtown.

Plan overview. The five plans analyzed from Natureville are shown in Table 5.1, along with their adoption date, page length, and preparers. The plans were all completed between 2008 and 2014, and all were formally adopted or approved by city council. They range considerably in length, from the Downtown Sustainability Plan at 36 pages to the Parks and Recreation Plan at 331 pages. External consultant firms were instrumental in the creation of all plans, although a committee of municipal staff members participated heavily in the creation of the Municipal Sustainability Plan. A brief description of each plan and how it relates to environmental and sustainability issues follows:

- Comprehensive Plan: covers issues of transportation, land use, livability, community facilities, housing and neighborhoods; while it does not cover an extensive range of issues, the issues that it does cover are covered in detail and are tailored to the context of the municipality; addresses sustainability and growth issues beyond matters of economic development.
- Downtown Sustainability Plan: created with EECBG funds; brief vision document highlighting a transit-oriented development and form-based planning approach; focuses on economic development as well as natural beauty and community building.
- Municipal Sustainability Plan: focuses on a narrow set of environmental sustainability goals for municipal operations and provides detail for these goals, but does not address many issues related to economic development or social equity aspects of sustainability.
- Parks and Recreation Plan: covers issues of parks, recreation, trails, open space, streetscape design, and branding; the plan is detailed, fairly extensive, and tailored to the municipality.

- Downtown Development Plan: covers issues of economic development, environmental sustainability, and enhancing the municipality's unique characteristics to create a downtown that appeals to a wide diversity of people and uses; fairly detailed plan that provides clear implementation steps for the municipality.

Table 5.1. Natureville plan document overview.

Plan Document Name	Data Adopted	Length	Prepared By
Comprehensive Plan	2008	221 pages	External consultant firms
Downtown Sustainability Plan	2010	36 pages	External consultant firm
Municipal Sustainability Plan	2011	100 pages	Internal staff and external consultant firms
Parks and Recreation Plan	2012	331 pages	External consultant firm
Downtown Development Plan	2014	167 pages	External consultant firms

The six plans analyzed from Boomtown are shown in Table 5.2, along with their adoption date, page length, and preparers. The plans were all completed between 2004 and 2015, and five of the six were formally adopted or approved by city council. They range in length from the Downtown Vision Plan at 84 pages to the Comprehensive Plan at 236 pages. External consultant firms were instrumental in the creation of all plans, and municipal staff members were involved in the creation of four of the six plans. A brief description of each plan and how it relates to environmental and sustainability issues follows:

- Comprehensive Plan: covers issues of land use, transportation, parks and recreation, water and wastewater, urban design, education facilities and services, and economic development; provides a high level view of development issues without extensive detail;

because the plan has been updated over the years, some sections are more detailed than others and some information is more up-to-date.

- Downtown Vision Plan: detailed and extensive vision plan that establishes a framework for future actions; strives for a balance of preservation and redevelopment in the municipality's historic downtown area.
- Energy Efficiency and Conservation Strategy: created used funds from the federal Energy Efficiency and Conservation Block Grant; details projects that are tailored to the municipality and prioritizes actions that should be funded with remaining EECBG money; includes a greenhouse gas emissions inventory for municipal operations.
- Sustainability Plan draft: created with EECBG funds; covers a very wide range of sustainability issues and recommended actions for municipal operations and community practices; addresses economic, environmental, and equity issues of sustainability; does not include details on implementing the recommended actions; plan was never formally adopted by the municipality.
- Bicycle Master Plan: created with EECBG funds; focuses on detailed actions for improving on-street bicycling in the municipality; plan actions and implementation steps are tailored to the local context of the municipality.
- Small Area Future Growth Plan: focuses on economic development and natural amenity preservation visions for a largely undeveloped, large area of the municipality and its extra-territorial jurisdiction (ETJ); fairly detailed and tailored to the local context of the municipality.

Table 5.2. Boomtown plan document overview.

Plan Document Name	Data Adopted	Length	Prepared By
Comprehensive Plan	2004, with updates in 2005, 2006, 2008, 2010, 2012, 2013, 2015	236 pages	Internal staff and external consultant firms
Downtown Vision Plan	2008	84 pages	External consultant firms
Energy Efficiency and Conservation Strategy	2011	89 pages	Internal staff and external consultant firm
Sustainability Plan Draft	not adopted; drafted in 2011	172 pages	Internal staff and external consultant firm
Bicycle Master Plan	2012	151 pages	External consultant firms
Small Area Future Growth Plan	2015	138 pages	Internal staff and external consultant firms

Plan discourse. A key part of the plan document analysis is to trace the evidence of topics related to climate change, which was performed, in part, by a search of key terms used in the plan. The search terms include climate change and global warming, energy efficiency and conservation, and greenhouse gas emissions, due to their direct relationship to climate planning and action issues. Also included are air quality, air pollution, health, and sustainability, which are topics demonstrated in related literature to be used in co-benefit arguments for plans and projects more loosely linked to climate change. Finally, the search terms cost and fund are included to help illustrate attention paid in the plans to funding and implementing proposed actions.

The five planning documents analyzed from Natureville (Table 5.3) display virtually no mention of climate change or global warming, beyond one brief mention in the Municipal Sustainability Plan. However, references to energy efficiency and conservation are more common across all plans, except for the Parks and Recreation Plan, and greenhouse gas emissions are at least mentioned in three of the five plans, demonstrating the municipality's awareness of these related issues. Air quality and pollution topics are almost absent from the Natureville plans, but health issues are discussed in all plans except the Municipal Sustainability

Plan. All plans have at least several mentions of sustainability, and most plans use the term quite widely, illustrating the importance of sustainability for the municipality. Finally, the terms cost and fund are used quite frequently in most plans, suggesting that some attention has been paid to implementation of the actions within each plan.

Table 5.3. Natureville plan document search term counts.

	Count of Search Term							
Plan Document Name	**Climate Change/ Global Warming**	**Energy Efficiency/ Conservation**	**Greenhouse Gas Emissions**	**Air Quality/ Air Pollution**	**Health**	**Sustain/ Sustainability**	**Cost**	**Fund**
Comprehensive Plan	0	4	0	2	13	42	10	13
Downtown Sustainability Plan	0	5	2	1	1	14	6	0
Municipal Sustainability Plan	1	13	15	0	0	>50	35	37
Parks and Recreation Plan	0	0	0	0	6	7	>50	31
Downtown Development Plan	0	7	4	0	7	39	21	29

Looking at the six Boomtown plans (Table 5.4) across the climate change and global warming, energy efficiency and conservation, and greenhouse gas emissions terms, a clear pattern emerges where these terms are absent from the majority of plans, with the exception of the Energy Efficiency and Conservation Strategy and the Sustainability Plan draft. These two plans, both developed with EECBG funds, include only a few outright mentions of climate change or global warming, but have very high use of energy efficiency and conservation and greenhouse gas emissions, which makes sense given their funding source. The co-benefit terms of air quality, air pollution, and health are also used in these two plans, particularly widely in the Sustainability Plan draft, although, again, this plan was never adopted by the municipality. These co-benefit terms are also used in the Bicycle Master Plan, which was a plan recommended by the

EECBG-funded study. The health and sustainability terms are prevalent across the plans, appearing in all except the Small Area Future Growth Plan.

The terms cost and fund are also used in almost all Boomtown plans, showing attention to implementation of actions, although to a more limited degree in the Downtown Vision Plan, which might be appropriate for a vision-oriented document, and the Small Area Future Growth Plan, which is also more a vision document. A final note about the Small Area Future Growth Plan, which is the most recent planning document analyzed from Boomtown and also the only one produced entirely after the EECBG funding period. This plan has no evidence of any of the search terms, outside of a few mentions of cost and fund, which represents quite a departure from earlier plans that included many mentions of at least some of the other terms, particularly health and sustainability, perhaps illustrating a shift in Boomtown away from the use of terms related to sustainability, energy, climate change, and associated co-benefits.

Table 5.4. Boomtown plan document search term counts.

	Count of Search Term							
Plan Document Name	**Climate Change/ Global Warming**	**Energy Efficiency/ Conservation**	**Greenhouse Gas Emissions**	**Air Quality/ Air Pollution**	**Health**	**Sustain/ Sustainability**	**Cost**	**Fund**
Comprehensive Plan	0	0	0	0	16	12	31	15
Downtown Vision Plan	0	0	0	0	5	13	0	6
Energy Efficiency and Conservation Strategy	3	>50	10	5	2	25	22	24
Sustainability Plan Draft	2	>50	15	>50	>50	>50	>50	41
Bicycle Master Plan	0	2	2	21	26	19	35	29
Small Area Future Growth Plan	0	0	0	0	0	0	2	1

Planning public participation. Another key part of the plan document analysis is exploring how public participation processes were used in conjunction with plan document creation in both municipalities. In Natureville, the Comprehensive, Downtown Sustainability, and Downtown

Development Plans used a Citizen Advisory Committee for public input (Table 5.5). These committees typically consist of a group of approximately 20 people, including residents and business owners, as well as staff and officials representing the municipality. The committees met at regular intervals throughout the plan development process to provide insight on community needs and goals and give feedback on draft plan elements. The Parks and Recreation Plan used a more extensive process that included focus group meetings with different stakeholders, one open public workshop for citizens, and both telephone and paper citizen surveys. The Municipal Sustainability Plan did not have any mechanism for public input, and its development was guided by a committee made up of internal staff members and representatives from the consulting firm hired to assist with the plan.

Table 5.5. Natureville plan documents and public participation processes.

Plan Document Name	**Public Participation Process**
Comprehensive Plan	Citizen Advisory Committee
Downtown Sustainability Plan	Citizen Advisory Committee
Municipal Sustainability Plan	Internal Staff Committee
Parks and Recreation Plan	Focus Groups, Public Workshop, Citizen Surveys
Downtown Development Plan	Citizen Advisory Committee

In Boomtown, large open public workshops were used as part of the public process for all plans, with the exception of the Energy Efficiency and Conservation Strategy (Table 5.6). Similar to the Municipal Sustainability Plan in Natureville, this plan in Boomtown was developed by a committee of internal staff members and officials from the municipality, working with an external consultant firm. The public workshop format used in Boomtown is typically a series of three open meetings, held at key points throughout plan development, often at the beginning, to kick off the project and form a vision, in the middle, to review preliminary plan

elements, and near the end, to review the full plan draft. Not all plans specified how well attended these events were, but public workshops for some of the plans were attended by several hundred people. In addition to the public workshops, the Comprehensive Plan process was supplemented with input from a citizen advisory committee and citizen surveys via telephone and paper, the Bicycle Master Plan was supplemented with focus group meetings and interviews with citizens who use bicycles in the municipality, and the Small Area Future Growth Plan was supplemented by focus group meetings with property owners in the area being studied.

Table 5.6. Boomtown plan documents and public participation processes.

Plan Document Name	**Public Participation Process**
Comprehensive Plan	Citizen Advisory Committee, Public Workshops, Citizen Surveys
Downtown Vision Plan	Public Workshops
Energy Efficiency and Conservation Strategy	Internal Staff Committee
Sustainability Plan Draft	Public Workshops
Bicycle Master Plan	Focus Groups, Public Workshops, Citizen Interviews
Small Area Future Growth Plan	Focus Groups, Public Workshops

Overall, the plan document analysis reveals some key differences between the discourse and public participation processes used in the two municipalities. For public input on plans, Natureville tends to use citizen advisory committees to represent residents while Boomtown tends to hold large public workshops, often supplemented with focus groups and citizen surveys. Plans in both municipalities tend to be prepared by external consultant firms, although municipal staff contribute formally to some plans, as well as informally on all plans. Natureville's plans display the use of energy efficiency and conservation, greenhouse gas, and health discourses to frame their environmental planning efforts, and the use of a sustainability discourse is widely

evident. The use of these discourses appears to be fairly consistent over time in Natureville's plans. In Boomtown, discourses of health and sustainability are commonly used in the plans, while energy efficiency and conservation, greenhouse gas, and air pollution frames are absent, except in the plans funded by the EECBG program. However, the plan with the greatest use of these terms was not adopted, and all of these topics are absent in Boomtown's most recent plan, perhaps signifying a shift away from these explicitly environmental arguments and related co-benefits. Mentions of cost and funding are prevalent in most plans in both municipalities, illustrating attention to implementation, which is critical to strong and effective plans. Finally, there is virtually no discussion or even mention of climate change or global warming in any of the plans analyzed. Even in plans that discuss energy, greenhouse gas, and sustainability issues heavily, there is no attempt made to link these topics to the closely related topic of climate change, illustrating a gap in the environmental discourses used in planning for these municipalities.

Sustainability Planning and Public Participation

Informed by the initial plan document analysis, in-depth interviews in both municipalities provide a more detailed picture of the role of public participation in the creation of sustainability and related plans. Interviewees reveal nuanced information about how the processes unfolded and the motivation behind the approach used, as well as how the plans have been implemented after the planning process was complete and the plan adopted.

Open public workshops in Boomtown. Boomtown established a fairly traditional public participation process to support the Sustainability Plan draft, with a series of three open public

meetings held at key stages during plan creation, as well as a public meeting specifically tailored for high school student engagement and input (Figure 5.1). A citizen who attended the public meetings described it as "a great process…[with] huge turnout in terms of numbers of people, it seemed like a very broad based group of people that were attending, they were very enthusiastic." The final public meeting was designed as a review of the draft plan so citizen input could guide final edits. This meeting was attended by members of a local chapter of the Freedom Advocates, a group linked to the Tea Party that promotes personal liberty and protection of private property rights. These group members saw the Sustainability Plan draft as government over-reach and were intent on disrupting the process and preventing plan adoption. A blog post by a resident of Boomtown and member of this group describes the Sustainability Plan draft as "eco sustainability nonsense perpetuated by the eco terrorists trying to hook [the municipality] into spending money we don't have, regulations we don't need, restrictions that are unconstitutional!"

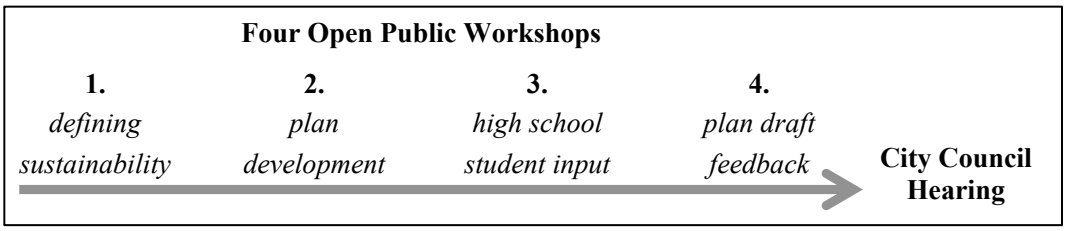

Figure 5.1. Boomtown Sustainability Plan draft public participation process: public workshops.

Conversely, blog posts by residents who support the plan characterize the process as "a yearlong crafting of a sustainability proposal…[that] involved local citizen input…citizens who took the time out of their lives to volunteer and participate in a civic duty to propose ideas and areas of concern as our city grows." The plan supporters also describe the Freedom Advocates

members as “people hell bent on thinking [the plan] came from some scary place on high…[people who] showed up and caused trouble and had to be escorted out by police…their goal is to stop it in its entirety…no compromise, just stop it.” One of Boomtown’s planners described the Sustainability Plan draft as “a little forward thinking and some of the concepts were probably not fully vetted in terms of what their cost would be to the city or to our taxpayers.” Large groups of both supporters and opponents attended a city council hearing held shortly after the final public meeting, where a vote on the plan was delayed. It was determined that staff would review the plan for feasibility and funding implications. Although a group of supporters continued to follow up for months with municipal staff regarding the plan review, the Sustainability Plan draft never again came before city council and was never adopted.

Two plans related to sustainability issues were developed in Boomtown since the Sustainability Plan draft was abandoned. The Bicycle Master Plan funded by the EECBG was developed concurrently and discussed at the same public meetings. A staff member in the city manager’s office said the Bicycle Master Plan “met a lot of resistance, only because it was tied to sustainability…[citizens] fought against this bicycle plan as some plot to make people stop using their vehicles.” However, the Bicycle Master Plan was adopted by city council, and the staff member went on to say, “now that it’s in place and we have a plan for bike lanes and shared bicycle/vehicle lanes and trails, I think people have bought into that.” This city manager staff member characterizes this case as one where citizens were opposed to an idea due its framing using the term sustainability, but are happy with the end results. However, a planning staff member suggested that implementation of the Bicycle Master Plan has not been extensive, saying “the plan is approved, everybody pays a lot of lip service to it, but we’ve not gotten a whole of support to actually spend some money to put bike lanes out on some of our

streets…there's sort of a bit of conflict there." This disconnect between promoting a plan and then actually implementing the actions is a key challenge for environmental planning.

The Small Area Future Growth Plan was recently adopted in Boomtown to create a vision for an undeveloped section of the municipality possessing many natural amenities. The planning process used a combination of large, open public workshops and small focus group meetings with property owners and developers interested in the area. This process was designed to capture input from two distinct groups—citizens living in the area interested in protecting their small hobby farms and developers interested in the development potential and process. However, a planning staff member revealed that both groups had similar end goals, although stemming from different motivations. "Natural beauty out here is of the utmost importance and people want to embrace it and maximize it. Maybe for different reasons…the development community might want to embrace the natural landscape and the natural features because they can get a higher price point in the market…[while the small landowners] want to preserve the natural features and the natural landscape because…[it's] where they came to get their slice of heaven."

Both groups wanted to preserve the area's natural beauty, and the resulting plan is an economic development strategy to foster high quality growth, where preserving natural amenities is incorporated to garner higher price points for development and protect property values for existing residents. The Small Area Future Growth Plan was presented at a city council meeting, where it was formally adopted with little discussion either in support or opposition. A planning staff member, when asked if any citizens came out to support the plan, said, "more so than having a group of people following it that helps it along, I think it was more important that we didn't have a group in opposition to it…if nobody stands up and is a champion for it or against it, that's sometimes a good thing because that means that people are satisfied with it." Boomtown

gathered citizen input during the planning process and then had no vocal supporters or opponents at the time of plan adoption.

Citizen advisory committees in Natureville. Natureville established a different type of public participation process for the Downtown Sustainability Plan. The city council appointed a temporary citizen advisory committee, which is a common practice for the municipality. A planning staff member in Natureville said, "Council almost always does a steering committee…[which is responsible for] guiding the consultant…[and the committee] is the one that is going to make the recommendation to the city council." Planning staff made recommendations to city council regarding the make up of the advisory committee, and it consisted of approximately 20 community stakeholders from related fields, such as architecture, planning, historic preservation, and finance. The advisory committee met with consultants and municipal staff throughout the planning process, providing input on the vision statement, goals, and objectives of the plan. Once the plan was complete, it was presented to city council by planning staff in a briefing session, and formally adopted (Figure 5.2). Natureville city council briefing sessions are open meetings and an agenda is posted, but they are held in a small conference room within the municipal internal offices, not in the formal council chambers. I was invited to attend one of these briefing sessions and was welcomed by staff who knew me, but attending such a small and informal meeting might be intimidating for an interested but unaffiliated member of the public.

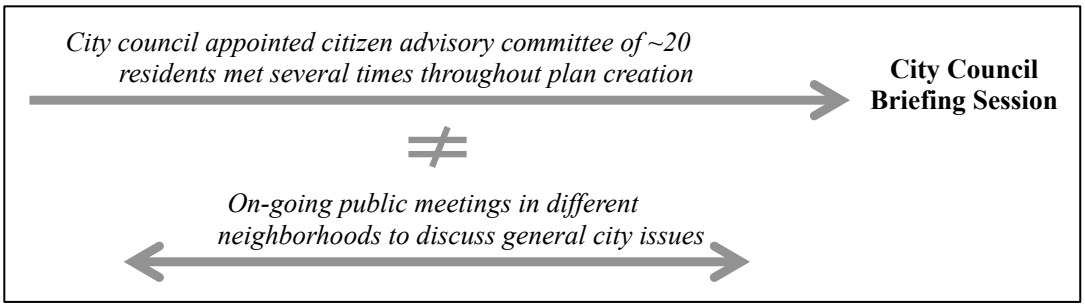

Figure 5.2. Natureville Downtown Sustainability Plan public participation process: citizen advisory committee.

Natureville's Municipal Sustainability Plan covering select municipal operations was developed by an advisory committee consisting of five municipal staff members and three external consultants. The plan was viewed by the municipality as an internal plan, and no public meetings were held and no citizen input was solicited for this plan. An annual update on the plan's progress is made to city council in a briefing session.

Natureville's Downtown Sustainability Plan led to a more detailed Downtown Development Plan, adopted in 2014. The public participation process was quite similar to that used for the original Downtown Sustainability Plan. A temporary advisory committee of approximately 20 elected officials, citizens, and business and property owners gave input at a series of six meetings with planning staff and external consultants, held throughout the plan development process. At a city council briefing session after plan adoption, the city manager described the Downtown Development Plan as designed to create a balance in Natureville between protecting natural beauty and absorbing projected regional growth in a way that enhances the unique characteristics of the municipality. This is reflected in the plan document, which addresses three key aspects of sustainability—environmental protection, economic development, and quality of life for a diverse population.

After the two downtown plans were adopted, elected officials and staff held a series of public meetings to discuss the actions in the plans, as well as other current issues for the municipality (Figure 5.2). Instead of at city hall, the meetings were held at different locations around the municipality. The mayor said, "a lot of cities will have a town hall meeting, and say 'everybody come here'. We turn it around and say, 'let's have a town hall meeting, we'll come to you'…it's staying connected to the neighborhoods, community building." This is a standard practice in Natureville, with elected officials and staff going out into neighborhoods on a regular basis each year, sharing information and gathering citizen input.

The other recent plan related to sustainability issues in Natureville is a Parks and Recreation Plan adopted in 2012. The public participation process for this plan diverged somewhat from the municipality's typical advisory committee format. The Parks and Recreation Plan did have an advisory committee appointed by city council, which met to provide input throughout the planning process, but there were also focus group meetings held with various stakeholders, an open public workshop, and telephone and online questionnaires to gather detailed citizen input. Overall, the public input from these various methods was used to identify community priorities and needs for recreation amenities.

In 2014, Natureville formed a permanent citizen advisory board covering beautification and sustainability topics, which the city manager describes as an indicator for the municipality's focus, saying, "it makes it a public policy priority when you create a citizen board on it." A citizen member of this board describes how the municipality's website and phone calls are used to inform residents, but says, "there's still a significant portion of the residents who just aren't aware of what's going in the city. And I think part of our task as the board is going to be how do

we involve the residents." The use of a permanent citizen board signifies an on-going commitment to these issues on the part of the municipality and the residents.

Cultural Context, Discourse, and Narrative Frames

Although Boomtown has grown more quickly in recent years, both municipalities are experiencing growth pressures. Representatives from each municipality expressed a desire to learn from what they perceived as mistakes made by surrounding municipalities where rampant growth was permitted, and each municipality is seeking to manage growth to enhance itself. Both Boomtown and Natureville see their natural amenities as important resources to protect. However, each municipality uses different discourse and narrative frames regarding growth and the environment.

Economic development and quality of life in Boomtown. Economic development—attracting it, managing it, and supporting it—came up in interviews as the top priority for Boomtown. A planning staff member characterized economic development as the main concern that gets attention in the municipality, saying that city council is "trying to market and cater to potential economic development opportunities, which is a huge deal for our council." Part of this is clearly pragmatic and necessary due to projected growth pressures. A staff member from Boomtown's economic development corporation argues because "people that are interested in economic development here look at our community that's only 38% built out development-wise and we're going to have another potential 200,000 people moving to our community, it's absolutely paramount that we're smart about future development." Several interviewees described how preservation of natural amenities is part of the growth model in Boomtown, but a staff member

in the city manager's office revealed that economic development ultimately takes precedent over environmental protection. He described how the municipality's Comprehensive Plan originally had requirements for protecting creek corridors, but "the development community, they have some investment backed expectations for how much of their land they can develop, and the council at that time decide they did not want to modify those expectations…So, it became a little less dictated and more recommended in terms of preservation of creek corridors."

Enhancing quality of life is a second discourse used often in Boomtown. According to a planning staff member, within planning and development activities, the municipality strives to achieve "quality placemaking—really recognizing that as growth and development occur, people…enjoy and respect being able to have a sense of place and quality of life." Maintaining quality of life is important for current residents as well as for attracting future businesses, and this includes elements such as the public schools, retail options, and cost of living. An economic development staff member says Boomtown's quality of life is about "the good school system…[and] it's the parks, it's the infrastructure, and it's about affordable housing and what your downtown looks like and what your mobility, or your access to mobility is." He sees this quality of life and the business climate as the most important elements in attracting people to Boomtown, and therefore the most important aspects to maintain and enhance. There is also a strong desire to protect quality of life and attract growth to compete with surrounding municipalities. Texas collects no state income tax, and municipal budgets therefore rely more heavily on property tax revenues, making economic development critical to funding service provision. A citizen who participated in sustainability planning Boomtown described competition between municipalities, saying cities are "competing for economic development and accommodating growth and most cities are thinking about themselves." A staff member in

economic development highlights tension between economic development and quality of life as a municipality grows, wondering "is it the almighty dollar that you're going after or is it really the quality of life that you're trying to maintain in the community?"

Climate change in Boomtown. As staff in Boomtown plan for growth and strive to preserve natural amenities, environmental issues such as adequate water resources and minimizing traffic congestion are discussed, but mention of climate change is absent. All staff members interviewed said they had never participated in a meeting or discussion at the municipality where climate change was mentioned. A planning staff member detailed the pressing concerns related to growth in Boomtown, including utility provision, water supply, and repairing and extending infrastructure, and concluded that "you have so many other things that take up such a big portion of the thought process that [climate change is] not at the forefront of our minds." A staff member in the city manager's office reiterated the fact that climate change is not a priority for the municipality, seeing it as "something that is a little bigger picture than we typically deal with on the city basis." This staff member went on to describe attending the national conference for the American Planning Association and realizing that planners outside of Texas are confronting climate change explicitly in their communities, saying "planners in other parts of the country, a lot of their policies are geared directly towards climate change issues. And I don't think we're ever adopted any program in [Boomtown] that was specifically to combat climate change." Boomtown, and the entire DFW region, is growing rapidly and facing serious environmental threats, including water shortages. This would be an ideal time to incorporate environmentally sensitive development patterns and regulations, but these issues are almost completely absent from discussions about economic development in Boomtown.

Environmental stewardship and public health in Natureville. In every interview with representatives from Natureville, a clear sense of the intrinsic value of nature is expressed. Residents, staff, and elected officials see the natural amenities of Natureville as what makes the municipality unique in a metropolitan region with over 240 incorporated municipalities and believe they must protect these resources. The city manager said of the municipality's natural environment, "there's a big desire to want to keep that and also be good stewards of that…One, [citizens are] proud of it, second, they feel like they belong to it, and third, they take this very custodial, paternal kind of view towards it." The mayor described how "we are blessed with this natural beauty" which requires that the municipality "capitalize on it without destroying it". This priority of environmental stewardship informs other planning decisions, particularly promoting high density development in the municipality's downtown in order to remove development pressure from natural areas.

Planning actions in Natureville are also framed in terms of public health and enhancing the quality of life. Preserving natural areas is justified by the city manager "because people are craving places where it's not just miles and miles of concrete. They're healthier places. Just healthier. Better places to raise families, better places to work, better places to be human." The mayor describes the municipality's preservation of natural areas as important because "people can find the benefits to their spirit and their health through environmental engagement." Although residents disagree about some issues, the municipality has been able to find common ground around environmental protection. The mayor describes this process as community building, saying, "what do we have in common? Well, people love the hill, they love the trees…So, then, let us focus on maintaining and being good stewards of these things. And then, when differences come up, they are small in comparison to the things you work together on."

This discourse of environmental stewardship to enhance public health and build community have been successful, allowing Natureville to pursue sustainability planning and actions in a region where this topic is often contested.

Climate change in Natureville. Even though Natureville has a strong connection to environmental issues and protection, which extends to topics such as water conservation and energy efficiency, framing actions in terms of climate change is a non-starter, just as in Boomtown. A planning staff member takes a darkly pessimistic view of addressing climate change, saying, "I am appalled by the lack of knowledge, belief, interest on the part of the general public in climate change…I don't know how to address the ignorance I'm faced with…We are not prepared to tackle the debate over climate change." A citizen serving on the municipality's beautification and sustainability advisory board describes how the board has not discussed climate change in their meetings, alluding to a lack of expertise on the topic. The citizen also mentions political controversy, saying, "there is still very much a political aspect to [climate change], so that's not a topic that we've delved into." Political controversy is also mentioned by Natureville's mayor, who describes climate change as "an igniter" for opposition, as well as an issue that "most citizens, most people feel they can do nothing about." The mayor professes to a pragmatic approach to climate change issues, acknowledging that it is a controversial topic and therefore choosing instead to "focus on what we can do something about." Preserving open space is something that citizens in Natureville support, so this is where the municipality focuses its efforts. The city manager describes how issues related to climate change are framed in a palatable way for Natureville, avoiding certain terminology but focusing on action, saying "people tend to shy away from [climate change], because it sort of labels you

as this or that. And it's seen more as a political issue more than it's a life issue." The city manager goes on to say about climate change, "you might not see it put in terms of 'what's your carbon footprint' but [citizen] behavior is changing…it just takes a, maybe a, Texas-ified version." This is a clear acknowledgement that municipal officials and staff in Natureville purposely avoid framing policies and actions in terms of climate change, and it illustrates a need to develop discourses that will be successful in the specific cultural context of a city, region, and state.

Summary

The case study analysis of Natureville and Boomtown was designed to build upon data collected through analysis of the EECBG program in order to answer this dissertation's second research question: *What is the climate change discourse of municipal planning staff, elected officials, and residents in the DFW region? How is this discourse shaped by the politics and conservatism of the DFW region?* and third research question: *How are public participation and the implementation of climate change actions affected by the DFW region's politics and climate change discourse?* While neither of the two municipalities examined in the case study are explicitly pursuing climate change planning or action, they both pursued sustainability planning and action, including many issues closely related to climate change, such as energy efficiency, greenhouse gas emissions, air quality, and land development patterns. These cases therefore allow extrapolation to opportunities and challenges for climate change discourse, public participation, and implementation in the politically conservative DFW region.

Natureville and Boomtown have similar histories of valuing natural amenities and wanting to protect environmental resources from growth pressures. Both municipalities pursued

community sustainability planning with EECBG funds, but only Natureville was successful in terms of adopting and implementing the plan. Boomtown has a larger population size and high levels of homeownership, educational attainment, and household incomes, characteristics that are often found in environmentally active communities. However, Boomtown is politically conservative, as all elected officials representing Boomtown on the state and national level are Republicans. Natureville has a smaller population size and lower levels of homeownership, educational attainment, and household income (although still higher than the Texas state averages), but is also more politically liberal, as half of all elected officials representing Natureville on the state and national level are Democrats. This suggests that political affiliation may be a key indicator of success with environmental planning.

The analysis of planning documents from the two municipalities reveals stark differences in the discourse used and public participation processes favored. While climate change is virtually absent from all planning documents analyzed, and air quality/pollution is also absent from most, the Natureville plans have many more mentions of energy efficiency/conservation and greenhouse gas emissions, topics which are closely related to climate change. These topics are only mentioned widely in Boomtown's Energy Efficiency and Conservation Strategy, which was an internal document, and the draft Sustainability Plan, which was never adopted. Most plans from both municipalities use discourses around health, sustainability, and cost/fund as a proxy for implementation. The Natureville plans also show a fairly consistent pattern of discourse over time, while the most recent Boomtown plan, the Small Area Future Growth Plan, included virtually none of the search terms, perhaps showing a move away from sustainability and climate change-related topics in Boomtown.

In terms of public participation, Natureville favors the use of citizen advisory committees, which provide limited and controlled resident input on specific plans, coupled with neighborhood public meetings held regularly to address broad community issues not linked to a specific plan. Boomtown, on the other hand, tends to use of series of large, open public workshops to gather resident input at key stages of plan development. In the case of Boomtown's Sustainability Plan draft, this process was susceptible to disruption by opposition groups.

Finally, the discourse and narrative frames used by municipalities for topics related to environmental protection and growth management are quite different. Natureville uses frames of environmental stewardship and public health, while Boomtown uses frames of economic development and quality of life. In both cases, climate change is actively avoided, with interviewees citing that it is too big of an issue to address at the local level, they lack the expertise to discuss it, the public's ignorance, and climate change being an igniter for opposition. Therefore, both municipalities see avoidance of explicit climate change discourse as a pragmatic choice, deciding instead to focus on issues that their residents can agree on rather than courting opposition.

The case study supports the finding from the EECBG analysis that there is very little climate change discourse in municipalities in DFW, and this discourse is avoided at least in part due to conservative politics and political opposition to climate change. Natureville has been successful in implementing plans and actions related to climate change, but, in addition to avoiding explicit climate change discourse, the municipality has also avoided open public participation processes, perhaps minimizing opposition and limiting opportunities for raising awareness and education of climate change among residents, staff, and elected officials. Boomtown's use of an open public participation process for the Sustainability Plan draft was not

successful, and the municipality appears to have moved away from a focus on planning and action on climate change related issues. This analysis suggests that the DFW region's conservative politics limits climate change discourse, which in turn limits public participation and implementation of climate change planning and action.

Chapter Six

Discussion and Recommendations

This document describes my dissertation research on energy efficiency, energy conservation, and climate change planning in the DFW region, focusing on the discourse used to frame these issues and the role of public participation on controversial issues within a politically conservative region. The DFW region is the fourth largest metropolitan region in the United States, is growing in a sprawling manner, has experienced severe heat and drought conditions, and is characterized by conservative politics. The majority of cities in the region are doing little or nothing to plan for climate change. The existing literature on climate change planning at the local level focuses primarily on cities that are proactively addressing the issue, often through the creation and adoption of formal climate action plans. Much of this literature also has an emphasis on the technical aspects of climate change planning, such as inventorying greenhouse gas emissions, developing plans to reduce emissions, and implementing these plans. However, in order for U.S. communities to prepare for the future impacts of climate change, significant changes are necessary in municipal operations, the design of urban spaces, and in the daily behaviors of citizens. Citizen education and awareness of climate change is necessary to garner support for these types of necessary changes.

Little research has been done on planning for climate change in politically conservative regions, in cities without formal climate action plans, on the ways in which planners frame discussions of climate change issues, and on the role of public participation. Existing research on climate change planning suggests that political partisanship on the issue may make it more

difficult for conservative areas to garner support for climate change planning or actions, but also that public awareness and support are important to successful climate protection. The research performed for this project is therefore helpful to better understand how planners can navigate this controversial issue in conservative regions and in cities with no history of climate change planning to increase meaningful discussion and public participation.

In order to understand the range of opportunities and challenges to climate change planning in politically conservative areas, actions taken by the 31 municipalities eligible for EECBG funds in the DFW region are analyzed, followed by an in-depth case study of climate change planning, discourse, and public participation in two municipalities that displayed unique successes and challenges with the EECBG program. Data is collected from interviews, planning documents, and historical records and analyzed through quantitative tabulation and qualitative coding, memo-writing, and document analysis. These methods allow detailed examination of the discourse used by planners on energy efficiency and climate change, the role of public participation in these municipal actions, and implications for implementation. The data analyzed reveal that municipalities in the politically conservative DFW region have virtually no official, explicit discourse on climate change. However, some municipalities have been successful in crafting narrative frames implicitly related to climate that appeal to their residents and strategically using public participation to foster resident support for environmental actions. This research contributes to gaps in the existing literature related to climate planning in non-pioneer cities and in political conservative areas, the impact of discourse, and the role of public participation, and also demonstrates the usefulness of qualitative research methods on a topic currently dominated by quantitative methods.

This chapter reviews and discusses key findings from the research in order to answer each of the three research questions and draw implications for climate change planning in politically conservative areas. In order to support this planning goal, policy recommendations are crafted for federal grants related to climate change, the creation of context sensitive discourse and narrative frames, the use of robust public participation processes to enhance citizen education and awareness, and the role of planners in addressing climate change more productively. Finally, future research is described that might further these findings and policy recommendations.

The EECBG and Climate Change

This research project used the 2009 federal Energy Efficiency and Conservation Block Grant as an entry point to understand what municipalities in DFW are doing related to climate change planning and action, as well as how the EECBG program fostered discourse and awareness of climate change in participating cities. In many ways, the EECBG contained goals that were in conflict with each other. On the one hand, the program was linked to U.S. "long-term goals for energy independence and leadership on climate change" (U.S. DOE, 2009a, 6). On the other hand, the grant was funded through ARRA to provide immediate resources to stimulate local economies and increase employment opportunities. For this reason, the EECBG funds had to be allocated within 18 months and fully spent within three years, which favored "shovel-ready" projects that required little planning or study to enact. The results of this time pressure can perhaps be seen in the fact that the most prevalent types of project in DFW were municipal building updates. Some interviewees described an effort to include both short-term and long-term projects in their EECBG approach, but this did not occur in the majority of

municipalities. Interviewees explained that most municipalities always have necessary maintenance and operation projects, many of which qualified for funding through EECBG, and so these projects were the easiest to pursue. While these projects certainly reduced current municipal energy consumption, it is unclear how much these actions would impact long-term energy independence or climate change leadership.

One third of municipalities did pursue some type of renewable energy projects, which would hopefully support future energy independence. However, interviewees pointed out that the size of the project was limited by the funds they were allocated, so, for example, one solar array installed on a city hall provides only a small percentage of the total energy use of the building. The two project types perhaps more likely to have broad long-term impacts—planning and outreach projects—were pursued by less than 30% of the municipalities in DFW. Additionally, the most direct resident opposition to EECBG projects were seen with broad sustainability planning projects, which suggests a further barrier to achieving the long-term goals of EECBG.

With the emphasis on long-term goals and climate change leadership, it seems natural that planning departments, tasked with the long range planning for cities, would be involved in the EECBG projects. However, only four of the 25 municipalities interviewed had representation from their planning departments in some aspect of the EECBG projects and none of the main actors on the EECBG were from planning departments. This may represent a missed opportunity to coordinate among departments within each municipality and expand the reach of the grant through making connections between the EECBG projects and other ongoing long-term projects or plans within the municipalities. However, just over a quarter of the municipalities had more than four departments involved in the grant projects, suggesting that, in at least some cases, the EECBG fostered coordination and attention to energy efficiency and conservation more broadly

throughout the municipality. Another potential drawback to the lack of planning department involvement is that planning departments traditionally have experience with public participation processes, which were largely absent with the EECBG projects.

Interviewees reported that their municipalities avoided mention of controversial issues, such as climate change, in order to avoid attention or opposition, which represents one way politics can shape the discourse of municipal staff. This fear of opposition is supported by the finding that almost a quarter of municipalities interviewed reported direct opposition from elected officials or residents, including opposition from conservative Tea Party groups, opposition to accepting EECBG funds, and opposition to the specific projects pursued with the funds. While many interviewees reported no opposition, many also reported no support. The majority of municipalities in DFW used the EECBG funds for internal projects related to municipal operations and did not actively involve residents in the projects. Interviewee responses suggest that at least some municipalities purposefully kept the EECBG projects quiet or focused on municipal projects that resulted in clear cost savings in order to avoid conflict.

The lack of awareness by interviewees of support or opposition can perhaps be explained in part by the lack of resident outreach and involvement with the EECBG projects. There was essentially no resident participation in the application or implementation stages of EECBG projects. Half of the municipalities interviewed had some form of resident outreach regarding completed projects or impacts, primarily through municipality newsletters or websites. While this is better than no outreach, these actions constitute fairly passive forms of resident engagement (Arnstein, 1969), likely provide limited educational benefit on the issues of energy efficiency and climate change, and do not provide a direct means for residents to provide input and direction on these municipal actions.

Nation-wide, the EECBG program was effective at promoting municipal energy efficient retrofits and building upgrades (Oak Ridge National Laboratory, 2015), and one study optimistically claimed that it helped expand local climate change policies (Fisher, 2013). While this may well be the case in some areas, my research shows that barely any DFW municipalities linked their EECBG funded actions to climate change, even in internal discussions. Instead, most municipalities primarily discussed the EECBG in terms of energy savings and cost savings, focusing on the short-term and economic stimulus related goals of the grant. The matter-of-fact way most interviewees responded that there was no discussion of climate change with the EECBG projects suggests that staff at these municipalities did not even consider the grant to be related to climate change. In the DFW region, the EECBG did not help expand overt climate change discourse and awareness, even if projects performed with EECBG funds in DFW did contribute in some way to climate change mitigation and adaptation through the reduction of energy use or promotion of renewable energy. However, many DFW municipalities report that energy efficiency and renewable energy practices are being used in projects after the EECBG. In this way, the EECBG did help change organizational behavior by promoting discussions and longer-term change related to energy efficiency and conservation, which may be an important first step leading to climate change mitigation and adaptation practices in this politically conservative region.

Climate Change Politics and Discourse

Political controversy was demonstrated with the EECBG projects, with one result being that virtually all the municipalities receiving EECBG funds in DFW avoided a discourse of climate change in any way related to the grant funds and projects. This impact of conservative

politics on discourse is also displayed in the case studies of Boomtown and Natureville. Although similar in many aspects, these two municipalities experienced very different outcomes to environmental planning efforts. Examining the political culture and discourse used in both municipalities helps explain these different outcomes.

Boomtown is an affluent and rapidly growing municipality located in a section of the DFW region where development pressures over the last several decades have been quite strong. Like the majority of the region, Boomtown is also politically conservative, with all elected officials on the state and national level identifying as Republicans. Boomtown has a history of pursuing environmental protection of natural amenities and undeveloped land, manifest clearly in the municipality's decision to use a portion of their EECBG funds on a community Sustainability Plan in 2011. However, this plan attracted significant opposition from a Tea Party group and was never adopted by the city council. A Bicycle Master Plan, also funded by the EECBG, was adopted but appears to be lagging in implementation. The most recent plan adopted in Boomtown, a Small Area Future Growth Plan, has no mention of any themes related to sustainability and climate change seen in previous plans, suggesting a shift away from environmentalism in the municipality. This is reinforced by interview evidence revealing that the discourses most commonly used and supported in Boomtown are promoting economic development and enhancing quality of life. Although staff members are aware of the importance of environmental protection and issues related to climate change, such as the reality of water shortages in the drought-stricken region, these concerns are typically linked back to quality of life and development frames. This provides an opportunity to develop a narrative frame that links climate change and economic development potential (Nisbet, 2009). Interviewees indicate that it is important for Boomtown to maintain some key natural amenities to protect the quality of life

for citizens who desire a more pastoral setting, and the drought is a concern primarily in terms of marketing the municipality to developers, who may worry that water shortages could affect their development potential. In many ways, quality of life is also directly linked to economic development, in terms of maintaining a desirable municipality in order to attract new residents and businesses.

Natureville is a smaller and less affluent municipality located in a portion of the DFW region that historically saw little growth and development. However, the area around Natureville has been growing recently and projections suggest that growth pressures will continue. Natureville is also more politically liberal, with equal numbers of Republicans and Democrats elected to state and national offices. Natureville has significant natural amenities, and, similar to Boomtown, has a history of environmental protection of these amenities that manifest in the use of a portion of the EECBG funds in Natureville for a Downtown Sustainability Plan, adopted in 2010. The Downtown Sustainability Plan was followed by the Downtown Development Plan, adopted in 2014 to guide implementation of downtown growth and development in a sustainable manner. Many of the actions included in these plans, such as increased density in the downtown to promote walkability and to allow preservation of undeveloped land in other parts of the municipality, are at least tangentially related to climate change. Natureville's planning documents illustrate a fairly consistent trend of discourses and attention to sustainability and topics related to climate change, such as energy efficiency and greenhouse gas emissions. According to interview data, as Natureville continues to plan for future projected growth, the municipality uses discourses around environmental stewardship and public health. Natureville sees protection of its natural resources as a way of making itself unique within the region, in effect, a type of marketing strategy. Interviewees also linked public health to environmental

stewardship in Natureville, where preservation of open spaces and natural amenities create healthier places for people to live and encourage people to get outside and exercise. This also provides an opportunity for Natureville to increase discussion of climate change, by including it in a narrative frame centered around public health benefits (Nisbet, 2009).

In the construction of different narrative frames around growth, specifically economic development and quality of life in Boomtown and environmental stewardship and public health in Natureville, both municipalities are marketing themselves and responding to regional competition for growth. There are over 240 separate municipalities in the DFW region, many of which compete for new residents, businesses, industry, and entertainment. In their different discourses, Boomtown and Natureville are responding to this regional competition and seeking to support their growth and development goals. One part of these competition and marketing efforts appears to be avoidance of a climate change discourse. Environmentalism is often seen as being at odds with economic development, and this is clearly seen in Boomtown. Even in Natureville, which uses environmentalism as a marketing strategy, this environmentalism is limited to 'accepted' discourses, such as preserving attractive natural amenities, which do not include climate change. Interviewees from both municipalities see climate change as a controversial topic that is best to avoid in the DFW politically conservative region.

Public Participation and Climate Change

Public participation around project selection or implementation was not widely pursued in the DFW municipalities receiving EECBG funds. Some interviewees reported that public awareness and participation were absent in order to avoid controversy or opposition. In several cases, the use of extensive public participation processes did lead to negative citizen attention

and opposition to planning activities. Boomtown and Natureville are two of the municipalities that pursued community sustainability planning with EECBG funds and incorporated public participation processes in the creation of sustainability plans. The two municipalities illustrate different approaches to the participation process and the impacts of politics and discourse on these processes.

For its Sustainability Plan draft, Boomtown used a traditional approach to public participation—a series of large open workshops held at key points in the planning process. A total of four workshops were held, including one designed to engage high school students in the process and gain their input. Public workshops of this sort can vary widely in terms of the quantity and substance of public input, but interviewees suggested that it was a robust engagement in Boomtown, with many dedicated citizens. Certainly, including a meeting for high schools students suggests a commitment to resident education that is beyond the typical public workshop process. While this approach allowed input from a wide range of citizens, in the end, oppositional groups were able to easily sabotage an otherwise productive process. By attending the final public workshop and subsequent city council hearing, a Tea Party group was able to disrupt the public participation process and cause city officials to question the validity of the Sustainability Plan draft. These opponents were not interested in contributing; they only wanted to stop the plan. Although a small group compared to plan supporters, they were well organized and vocal, and they were able to over-rule citizens who supported the plan. And, since the opponents were focused only on stopping the plan, there was no leverage or investment that other citizens or Boomtown staff members could use to compromise or negotiate with them. In this case, a politically conservative group opposed to sustainability planning was able to

significantly disrupt the traditional public participation process, which resulted in the Sustainability Plan draft never coming before Boomtown's city council for adoption hearings.

For its Downtown Sustainability Plan, as well as other for other plans, Natureville favors the use of temporary, appointed citizen advisory committees to provide input on individual plan creation. These committees are typically composed of approximately 20 stakeholders from the community, including residents, business owners, municipal staff, and experts in fields related to the plan topics, and members are appointed by city council. The citizen advisory committee for the Downtown Sustainability Plan met multiple times on a regular basis during plan creation to give representative citizen input, and the plan was formally adopted by city council. This is a tightly managed method of input, which only allows the views of appointed members to be heard. Interviewees suggest that the use of advisory committees creates support and a sense of ownership for the plan among committee members, which is helpful in fostering broader citizen support and in appealing to city council for plan adoption. Natureville also incorporates broader citizen input through community outreach meetings held in different neighborhoods throughout the year. These meetings address a broad range of issues for the community and bring staff and elected officials out into the community to meet directly with residents. This allows for consistent and on-going communication between residents and municipal officials on a range of issues of interest. Additionally, these community outreach meetings are not linked to a specific plan or one specific issue, which may help avoid disruption by individuals or groups opposing a single plan or agenda item.

Carefully designed public participation processes that reach different segments of the community and that are well attended by staff and elected officials, like those pursued by Natureville, appear to be most successful for supporting environmental planning in the politically

conservative DFW region. Outreach in multiple neighborhoods creates opportunities for citizen education, and the use of advisory committees fosters citizen investment and support while minimizing the ability of opposition groups to derail the entire process. This approach addresses two key barriers to climate change planning—lack of public awareness and opposition from private property owners. A more informed and involved citizenry can help build the political and institutional support necessary for successful and collaborative climate action planning (Hamin et al., 2014). However, since Boomtown and Natureville avoid any explicit discourse related to climate change due to political controversy, opportunities are lost for engaging and educating residents on climate change through public participation processes. Additionally, the small group of citizens participating in advisory committees may limit wide and diverse citizen input, and therefore may not achieve the ideal of a fully communicative planning process (Forester, 1989, 2013; Healey, 1996; Innes, 1995; 2016).

Policy Recommendations to Improve Climate Change Planning and Action

This research on the EECBG program in DFW and the case study of sustainability planning in two municipalities suggests several recommendations for improving planning and action related to energy issues and climate change, as well as for increasing discourse and public participation on these topics, particularly in politically conservative regions.

Federal grants. Focusing specifically on national-level grant funding for energy efficiency and climate change, it may be helpful to require the creation of detailed, community-focused planning documents as part of the grant requirements. The EECBG specified that cities receiving funds should create an Energy Efficiency and Conservation Strategy to guide use of the grant

funds, but few requirements were provided concerning the depth or breadth of this strategy. Many municipalities in DFW created a straightforward spreadsheet or matrix to rank potential projects, but these documents were generally only used internally. A required community planning document would help spread the energy and climate change focus of the grant beyond municipal operations to foster citizen awareness of these issues.

Additionally, a requirement to include planning departments in the administration of the grant would help ensure the grant focused on longer-term actions in line with municipal planning operations, contributing, in the case of the EECBG, to goals related to energy independence and climate change leadership. Requirements for the incorporation of public planning processes would enable citizen input into grant projects and further long-term impacts. The involvement of residents would foster education on global climate change, local risks and opportunities, and related issues, which may in turn increase citizen support for the actions pursued with grant funds. In addition to providing support for long-term goals of energy independence and climate change leadership and to helping increase citizen awareness and meaningful participation, these requirements might facilitate inter-departmental coordination on energy and climate related municipal and community projects.

Finally, there was a great deal of variety in the types of projects pursued by municipalities in DFW with EECBG funds, and the lasting impact of these projects. Much of this variety is due to the different amounts of funding received by municipalities, as determined by population size. There was also a wide variety in the types of projects permitted by the grant requirements, which municipalities found helpful as they attempted to fit pre-existing and necessary projects into the grant parameters. However, a tightening of the permitted projects may

help to increase the EECBG's long-term impact and ensure more consistent implementation of national policy goals on the local level (Kasa et al., 2012).

Discourse and narrative framing. For the 31 municipalities receiving EECBG funds in DFW, the most prevalent discourses centered around saving energy and saving money. The lack of discourse beyond these two themes, as well as the almost total absence of climate change discussion, indicates a need to increase and expand environmental discourse on the local level in this politically conservative region. Energy and climate related issues should be framed in ways that highlight topics of interest to local constituents, such as job creation, responsible use of taxpayer funds, or improving air quality. Municipalities in this study focused on the cost savings related to energy efficiency actions, and describing cost savings can be an effective co-benefit to climate change mitigation actions (Bedsworth & Hanak, 2013). Additionally, some interviewees responded that climate change is not a local issue. Energy efficiency actions and related grants may provide a good opportunity to describe the local relevance of and need for climate change mitigation and adaptation. Relating climate change to economic efficiency and conservation may also be a method for making climate change discourse more pragmatic in areas with economic concerns. Emphasis on publicly visible projects may also help foster resident awareness and support.

Discussion of future climate change impacts and risks should be tailored to the specific region and care should be taken to focus on concrete ways in which the daily behavior of residents could diminish the negative impacts of climate change, in order to make it a local and relevant issue (Whittemore, 2013). For example, in DFW, municipal staff could focus on how residential energy efficiency projects can help reduce the risk of electrical blackouts during heat

waves, which are predicted to increase due to climate change, and improve air quality to comply with federal standards. Determining successful methods for talking about climate change with citizens in conservative regions will contribute to public awareness and education on this issue.

Linking climate change discourse to existing and successful narrative frames may be one method of expanding discussion and action on climate change. In Boomtown, economic development and quality of life are popular narrative frames for the municipality. Therefore, staff, officials, and citizens in Boomtown trying to advance climate change issues should be able to clearly and persuasively describe how local climate change mitigation and adaptation can improve economic development and quality of life in the city. In Natureville, environmental stewardship and protecting public health are successful frames, which should be linked to local climate change discourse. Talking about global impacts, sea level rise, and moral obligations (Corner et al., 2014) will likely get very little traction in communities like Boomtown or Natureville.

However, even with locally specific knowledge and context sensitive cultural frames, discussing climate change in many communities will still be very difficult. Mention of climate change is currently non-existent in both Boomtown and Natureville, even though staff members do appear to understand the importance of the issue. Citing pragmatism, some municipal staff may believe it is not necessary to talk about climate change, preferring instead to quietly take actions behind the scenes to address this challenge. Particularly in regions where climate change is a contentious issue, the instinct may be to avoid explicit discussion of climate issues to avoid opposition. However, pursuing actions without linking them to climate change is a missed opportunity to educate citizens and elected officials and promote both individual behavior changes and broad community actions that will be necessary to fully respond to climate change.

Planners would benefit from techniques and methods to facilitate polarized discourse on contentious issues and to move fractious groups toward common ground for action (Trapenberg Frick et al., 2015). This would allow planners to create productive spaces for enhanced and explicit discourse on climate change and other challenging issues, particularly in politically conservative regions.

Public participation. Achieving meaningful and substantive public participation that is representative of the entire community is still a significant challenge for the field of planning. Boomtown's public participation process for the Sustainability Plan was easily sabotaged by an oppositional group, and Natureville's use of a citizen advisory committee for the Downtown Sustainability Plan limited public input to a small, handpicked group of residents. In order to design a more effective public participation process, citizen power should be the main goal, allowing residents to contribute directly to the decision making process and the final outcomes (Arnstein, 1969). In Natureville, the citizen advisory committee met often throughout plan creation and made recommendations directly to city council, suggesting a high degree of power for this particular group of citizens. However, there should also be efforts to ensure that a diversity of residents participate, in order to learn from the experiences of different residents in the community (Innes, 2016). Boomtown held open public workshops that were publicized throughout the municipality and targeted high school students for one workshop, but did not track whether attendees at the workshop were representative of all groups in the community, including different economic, ethnic, or age groups, for example.

Having a large and diverse representation of citizens in the public participation process may increase support for the plan throughout the community, while also minimizing opposition

from small groups of vocal citizens (Bedsworth & Hanak, 2013). Especially for contentious projects, planners should consider hiring trained facilitators who can foster conditions of Habermasian ideal speech, emphasizing comprehensiveness, sincerity, legitimacy, and truth (Forester, 1989; Innes, 1995), as well as pragmatically guide groups with different opinions to find common solutions (Forester, 2013; Innes, 2016). This may have prevented the Boomtown process from being derailed and may have allowed for more creative ideas to be developed in the Natureville process.

Including opportunities for meaningful public participation on plans for sustainability and climate change will also increase citizen awareness. Public participation processes should be tailored to increase education of the public (as well as elected officials), which may hopefully facilitate citizen behavior changes and pressure on elected officials to increase actions. These processes should also be tailored to local values and narrative frames, to improve learning, legitimacy, and action (Mandarano, 2008), particularly in politically conservative areas, where opposition may be higher. Adequately preparing for climate change requires a 'all-hands-on-deck' approach, which is still very far from being realized in many communities across the U.S.

As planning continues to grapple with the challenges of creating representative and authentic processes for community engagement, there are opportunities for new models. Developing better models of engagement can help with pragmatic outcomes, such as educating a community on issues like climate change and fostering support that will aid adoption and implementation of plans. Enhanced engagement can also help planners better understand and advocate for the diverse and often conflicting public interest, working to increase social justice and positive change in our communities. Planners should continue to theorize and test methods

to improve the public participation process, strengthening planners' ability to respond to challenges such as climate change.

Role of planners. Planners face an interesting challenge in the face of a changing climate. While many believe planners are well positioned to address this challenge through the design and operation of our communities (e.g., Wheeler et al., 2009), many of the planners interviewed in the DFW region are not taking action on climate change because they do not believe it is a local issue or because of a lack of directives from citizens or elected officials. This relates to a larger debate about the role of planners generally—how planners navigate their bureaucratic role as functionaries of city councils and their aspirational role as advocates for the public interest and disadvantaged persons (American Planning Association, 2016). As our communities face complex challenges like climate change, it may be necessary to rethink the role of planners and of city planning departments to foster greater attention to the needs of the general public.

Municipal planners should seek both internal and external partnerships in their work related to climate change. Within cities, planners should work closely with other departments to develop coordinated plans and actions that integrate climate change mitigation and adaptation throughout municipal operations. This 'silo-busting' approach will likely have benefits beyond climate change preparations, as increased communication across city departments will streamline efforts across many challenges. Planners should also reach out to community groups, nonprofit organizations, and local institutions of higher education, developing relationships with key community stakeholders to promote climate planning and action. This will help planners learn more about the needs of diverse citizens and benefit from research and action already underway in the community. It may also be appropriate for planning departments to take a larger role in

grant writing and seeking funds to pursue climate related actions. Programs similar to the EECBG would provide necessary financial and technical support for cities to try new approaches to climate sensitive design and operations.

The field of planning has an opportunity and obligation to acknowledge the risks of climate change and help proactively prepare communities through discourse and public engagement. Planners should be developing plans that specifically enable their communities to reduce GHG emissions and other forms of climate change mitigation, as well as position their communities to be resilient in the face of future changes. In areas where climate change discourse is not politically acceptable, planners should strive to educate their constituents and elected officials on this challenge and practical methods to address it. While this may need to start with small steps, planners should continue to press forward with an explicit climate agenda.

Recommended Research

This research in DFW has implications for future research in DFW and in other regions in the U.S. and other countries trying to promote energy efficiency and climate change planning. The research recommended below focuses on improving discourse around climate change, constructing locally relevant narrative frames and actions, designing useful public participation processes, and increasing the reliability and generalizability of findings through research methods.

A discourse of energy and money savings was quite productive for the EECBG projects in DFW, and these types of savings may be useful co-benefits to highlight with climate change discussions and actions for many areas. However, in some conservative areas, mention of climate change and sustainability may be contentious enough to derail energy reduction efforts that could

potentially save money. Additionally, economic development goals may be powerful enough to override actions related to climate change even in areas that profess support for reducing GHG emissions (Drake, 2013). More study is needed to identify practical co-benefits and narrative frames for building support of energy and climate actions in conservative regions worldwide. Practicing planners should be educated on these arguments so they can craft their discourse accordingly. Research assessing the long-term success of programs that are not explicitly linked to climate change compared to programs that are explicitly linked to climate change may also provide information useful to the construction of planners' discourse.

More research and knowledge is also needed on successful place-based mitigation and adaptation actions. Climate change planning and actions from different regions across the U.S. and world should be examined to learn from their successes and challenges. This type of comparative research will help identify context specific and locally relevant narrative frames and actions that may be adapted for use in regions with similar values and goals. The ability to identify and develop useful narrative frames may help planners bring more diverse groups to the planning process and help groups with different ideals or values find common ground and solutions.

Designing and implementing more effective public participation processes can be especially important in educating the public, building broad support for climate change actions, and minimizing the impact of opposition groups. Different types of public participation approaches to sustainability and climate change planning should be studied, and their strengths and weaknesses should be evaluated. This research could also be linked to implementation, analyzing patterns between the types of process used and the implementation outcomes achieved by the plan. Development of best practices for public participation on climate change and other

contentious topics would help the field of planning improve this historically challenging area. Research on innovative practices by planners, such as collaboration with other municipal departments, partnering with community stakeholders, and advocating for disadvantaged groups, may also provide insight into ways the field of planning can change to meet new challenges.

This dissertation research focused on qualitative research in one politically conservative region, including an in-depth cases study of two municipalities. The reliability and generalizability of the findings presented here would be increased by comparative research across different regions and by examining a larger number of municipalities. This could be achieved with both qualitative and quantitative methodological approaches. More qualitative research on the discourses and public processes used in other municipalities and in other regions would expand understanding of the nuances of talking and doing something about climate change. Comparative research might benefit from more quantitative analysis of energy efficiency and climate change planning and actions pursued across municipalities and regions, including the types of plans and projects made, the actors involved, and citizen awareness of these issues.

Summary

This dissertation presents findings and conclusions from a largely qualitative case study of planning and action related to climate change in the politically conservative Dallas-Fort Worth region of Texas. The first research question asked how the Energy Efficiency and Conservation Block Grant program fostered discourse and awareness of climate change in DFW participating cities. I found that while the grant supported actions related to climate change, such as energy efficiency and renewable energy technologies, there was virtually no explicit discourse of climate change in the 31 municipalities receiving EECBG funds in DFW. Therefore, it is likely

that very little awareness about climate change was raised in DFW with the grant program, although the grant did support some municipal behavior change regarding energy efficiency and conservation strategies and technologies. The second research question asked about the climate discourse of municipal planning staff, elected officials, and residents in the DFW region, and how their discourse is shaped by the politics and conservatism of the region. Looking beyond the EECBG program to the sustainability planning efforts in two municipalities, I again found virtually no explicit discourse of climate change. Interviewees revealed that the term climate change is avoided due to controversy over the topic and the politically conservative nature of the region.

The third research question asked how public participation and the implementation of climate change actions are affected by the DFW region's politics and climate change discourse. Public participation processes were not widely pursued for the EECBG projects but were used in both municipalities analyzed in the case study. While public participation was successful in gaining citizen input to the planning process, because climate change was not explicitly discussed, there was a missed opportunity for education on this topic. Additionally, in Boomtown, a conservative political group disrupted the public participation process and prevented adoption of the Sustainability Plan, significantly limiting implementation of actions related to climate change. Fear of controversy and conservative political opposition drive municipalities in DFW to avoid explicit discourse of climate change, which in turn prevents inclusion of climate change in public participation and can limit implementation of actions by individuals and communities.

The significance of this research is three-fold. First, it expands our understanding of how climate change is, or is not, pursued in politically conservative, non-leader cities and regions in

the U.S. Understanding the opportunities and challenges for climate change in these types of areas will hopefully increase awareness of how to approach climate planning and action in a larger and more diverse set of communities. Second, the research uses qualitative methods and presents information related to the discourse and narrative framing of climate change, enriching previous research that tended to focus on quantitative analysis and technical elements of climate change planning. Developing context sensitive and productive discourses around climate change that are linked to values and frames already used by a community will enhance a community's ability to discuss this controversial issue, raise awareness among citizens, and move toward action. Third, the research evaluates the role of public participation in climate change planning, suggesting approaches to design more inclusive and meaningful processes. Including more people and empowering them to make decisions will increase awareness of climate change and foster support for implementation of climate change actions. Overall, this research suggests productive approaches for planners to more directly tackle the challenge of climate change in municipalities across the United States.

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Appendix A

Interview Questionnaires

Phase One Interviews with Municipal Staff on EECBG Funds

Interview questions are open-ended and may lead to follow-up questions.

Tell me about the EECBG application process:

1. Why did your city decide to apply for the funds and what did you propose to accomplish? Who prepared the application?
2. How was the EECBG proposal presented to elected officials and/or citizens at Council meetings and/or public meetings? Did the presentations include any discussion of how energy efficiency is linked to related issues, such as air pollution or climate change?
3. Who participated in the decision-making about the EECBG funds and why were they involved? How did those involved discuss the project?
4. How would you characterize the city's interest in the grant program? (*On a scale of 1 to 5, with 5 being very interested.*) What types of support or opposition did you encounter and from whom?
5. Did your city receive any state EECBG funds? If so, how were they used, briefly?

Once you received the EECBG funds:

6. Who was responsible for administering the funds and overseeing the projects?
7. Were the EECBG projects linked to any other related actions, such as reducing vehicle emissions or water conservation efforts or climate change?
8. How involved were citizens or community groups in the implementation of the projects? (*On a scale of 1 to 5, with 5 being very involved.*) If any, which groups were involved, why, and did they support or oppose the projects?
9. Have you completed all of the projects and did you use the full amount of your allocated funds? Were there any projects you did not perform or complete as originally planned, and if so, why?

After implementation of the EECBG funds:

10. Are you tracking the impacts of any of your projects (e.g. monitoring energy savings after installing new HVAC system)? If so, have any of these impacts been publicized?
11. How much do you think the EECBG projects raised awareness for efficiency and/or conservation issues among staff, elected officials, and/or residents? (*On a scale of 1 to 5, with 5 being very much.*)
12. Have the EECBG projects led to any other related projects, or do you think they might? Why or why not?
13. How successful do you think the EECBG projects have been? (*On a scale of 1 to 5, with 5 being very successful.*) Why?

Phase Two Interviews with Municipal Staff, Elected Officials, and Residents on Energy Efficiency and Climate Change

Interview questions are open-ended and may lead to follow-up questions. Questions were tailored slightly to each interviewee's position and experience.

1. What types of energy efficiency activities are pursued by your city, such as upgrading the HVAC in city buildings, installing LED traffic lights, or performing a greenhouse gas inventory? Why do you think the city is pursuing these activities?
2. Are these energy efficiency actions linked to climate change in any way? Why or why not?
3. Do you partner with anyone on these activities, including other staff within the city, other cities, local organizations, or citizen groups?
4. How would you describe the awareness of and commitment to energy efficiency on the part of elected officials, staff, and residents in your city? Why?
5. Are there any mechanisms or events for public education or participation on energy efficiency?
    a. If so, what are these events, how often do they occur, and how many residents are involved?
    b. If not, why?
6. Is the topic of climate change mentioned within your city outside of energy efficiency?
    a. If not, why do you think this topic is not discussed?
    b. If so, by whom (elected officials, staff, residents) and how is it discussed?
7. What is your city doing to address climate change mitigation or adaptation in areas such as land use, transportation, building design, or solid waste?
    a. Why is the city pursuing these actions?
    b. If nothing, why not?
8. How would you describe the awareness of and commitment to climate change on the part of elected officials, other staff, or residents in your city? Why?
9. Is there any mechanism in the city for public education, input, or participation on climate change actions?
    a. If so, what are these events, how often do they occur, and how many residents are involved?
    b. If not, why?
10. Do you think there is or would be support or opposition in your city to planning for climate change? Why, and who might be vocal on this issue?
11. If your city decided to address climate change, how do you think this topic would be pursued? What actions would the city take, who would be involved, and why?

Appendix B

Demographic Data for Municipalities Receiving EECBG Funds in DFW

Municipality	Total population	Median age (years)	White (%)	Latino (%)	Average household size	Owner-occupied housing units (%)	High school graduate or higher (%)	Bachelor's degree or higher (%)	Median household income (dollars)	Mean household income (dollars)	People below the poverty level (%)	Percent Unemployed	Employed in natural resources, construction, and maintenance (%)
Allen	84,246	34.7	72	11.2	3.02	79.4	95.4	49.2	$92,717	$106,468	4.3	5.2	3.5
Arlington	365,438	32.1	59	27.4	2.72	57.4	84.1	28.4	$51,260	$66,587	14.5	8.6	9.9
Bedford	46,979	40.3	81.1	12.5	2.22	56.1	94	33.8	$60,985	$76,855	7.3	4.8	6.6
Carrollton	119,097	35.6	63.6	30	2.74	63.1	85.7	36.7	$67,030	$83,251	9.4	6.8	8.5
Cedar Hill	45,028	34.1	35.4	18.7	2.89	73.9	91.2	31.6	$63,725	$77,978	7.5	8.1	6.7
Coppell	38,659	37.7	73.8	11.3	2.8	73.5	95.3	63.9	$101,510	$123,809	2.4	3.7	4.6
Dallas	1,197,816	31.8	50.7	42.4	2.57	44.1	73.1	28.8	$41,011	$66,620	23.2	8.6	13.1
Denton	113,383	27.1	73.8	21.2	2.45	46.4	85.1	35.5	$45,177	$59,614	19.2	7.6	6.6
DeSoto	49,047	37.8	23.2	12.1	2.68	66.8	91.5	26	$56,332	$67,867	10.1	7.8	5.3
Duncanville	38,524	35.4	50.4	35	2.89	68	82	25.9	$55,089	$67,412	14.6	7.1	12.4
Euless	51,277	34.4	66	19	2.38	45.3	88.3	28.3	$56,014	$69,288	10.1	8.6	10.6
Flower Mound	64,669	38.1	83.9	8.4	3.07	90.1	97.7	57.7	$112,334	$136,202	3.4	4.3	4.5
Fort Worth	741,206	31.2	61.1	34.1	2.77	59.2	78.3	25.6	$48,970	$64,403	17.9	8.9	10.7
Frisco	116,989	33.9	75	12.1	2.93	76.6	95.5	56.8	$103,373	$120,252	4.8	6.1	3.8
Garland	226,876	33.7	57.5	37.8	2.99	65.2	76.1	22.2	$51,810	$63,880	13.2	9.3	14.1
Grand Prairie	175,396	31.3	52.6	42.7	3.01	62.8	77.6	20.4	$50,213	$62,302	15.5	9.2	11.2
Grapevine	46,334	37.5	81.1	18	2.49	58.5	92.4	45	$71,219	$90,606	9.5	6.3	3.6
Haltom City	42,409	31.7	66.5	38.9	2.77	55	70.7	13.6	$40,242	$49,356	19.3	10	12.4
Hurst	37,337	38.8	80.9	20.1	2.53	64.9	88.1	27.3	$54,795	$71,675	11.7	6.6	9.2
Irving	216,290	31.3	53.1	41.1	2.61	38.4	78	32.5	$46,354	$65,566	17.5	9.2	10.2
Keller	39,627	39.9	89.6	7.4	2.91	84.3	95.9	50.1	$114,207	$130,779	3.8	5.6	5.4
Lancaster	36,361	32.3	20.4	17	2.88	66	84.2	19.2	$53,750	$56,828	13.7	11.6	8.6
Lewisville	95,290	30.9	65.3	29.2	2.53	45.7	85.5	29.2	$56,075	$71,003	9	6.4	8.3
Mansfield	56,368	34	73.5	15.4	3.06	78.7	91.9	40.2	$90,417	$102,664	6.1	3.9	5.9
McKinney	131,117	32.7	74.8	18.6	2.91	71	92.5	44.8	$77,826	$92,964	10	4.9	5.7
Mesquite	139,824	32.3	59	31.6	2.88	61.4	80.9	18.1	$49,873	$61,074	12.2	7.2	11.6
North Richland Hills	63,343	38.3	83.8	15.6	2.54	63.6	90.9	28.9	$61,490	$78,086	7.4	6.5	8.4
Plano	259,841	37.2	66.9	14.7	2.61	63	93.2	53.9	$80,210	$104,026	7.9	5.8	4.6
Richardson	99,223	36.8	67.1	16	2.54	62	90.8	50.2	$66,899	$86,264	10.8	7.2	6.3
Rowlett	56,199	36.7	71.8	16.5	3.04	88.2	92.6	33.6	$80,551	$94,665	4.8	6.2	8.1
The Colony	36,328	33.1	75.4	21.2	2.76	68.5	93.1	33.7	$74,211	$85,962	3.4	5.1	7.9
Minimum	**36,328**	**27.1**	**20.4**	**7.4**	**2.22**	**38.4**	**70.7**	**13.6**	**$40,242**	**$49,356**	**2.4**	**3.7**	**3.5**
Maximum	**1,197,816**	**40.3**	**89.6**	**42.7**	**3.07**	**90.1**	**97.7**	**63.9**	**$114,207**	**$136,202**	**23.2**	**11.6**	**14.1**
Median	**64,669**	**34.1**	**66.9**	**18.7**	**2.77**	**63.6**	**90.8**	**32.5**	**$60,985**	**$76,855**	**10.0**	**6.8**	**8.1**
Mean	**155,823**	**34.6**	**64.8**	**22.5**	**2.75**	**64.4**	**87.5**	**35.2**	**$66,957**	**$82,397**	**10.5**	**7.0**	**8.0**
Texas State Average	25,145,561	33.6	70.4	37.6	2.75	63.7	79.9	25.5	$50,010	-	17.9	8.3*	-
U.S. National Average	308,745,538	37.2	72.4	16.3	2.58	65.1	86.3	27.3	$51,144	-	15.3	9.4*	-

Source: U.S. Census, 2010

*Source: Bureau of Labor Statistics, 2011