

2015

Implementing (Environmental) Justice: Equity and Performance in California's S.B. 535

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Recommended Citation

Tokunaga, Meagan, "Implementing (Environmental) Justice: Equity and Performance in California's S.B. 535" (2015). *Pomona Senior Theses*. Paper 137.
http://scholarship.claremont.edu/pomona_theses/137

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IMPLEMENTING (ENVIRONMENTAL) JUSTICE:
EQUITY AND PERFORMANCE IN CALIFORNIA'S S.B. 535

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Claremont, California
May 1, 2015

In partial fulfillment of a Bachelor of Arts Degree in Public Policy
Analysis, Environmental Analysis concentration.

Presented to:

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Acknowledgements

I would like to thank the many people that made this research possible. I could not have done with project without the generous support of Allison Joe and other employees of the Strategic Growth Council. Even in the midst of evaluating hundreds of grant applications, they provided me the guidance and data to evaluate the policy in its earliest stages of implementation.

I would also like to thank the California government employees that guided the research to be of the most practical use as possible. Conversations with Nicolas Heidorn (CalEPA), Michael Larsen (Kearns & West), Allison Joe (Strategic Growth Council), and Jennifer Ward (Western Riverside Council of Governments) have helped form a thesis that will be submitted to implementing agencies in hopes of contributing to environmental justice policy efforts.

Jennifer Ward deserves a separate thank-you for her supervision at the Western Riverside Council of Governments (WRCOG), where I interned in Sustainability, Planning, and Government Affairs. Jennifer incorporated S.B. 535 into my internship, by sending me to workshops on the policy and assigning me the task of writing a policy brief for the WRCOG Executive Committee.

My thesis readers, Professor David Menefee-Libey and Professor Rick Worthington, have provided extensive direction in the writing process, as well as much-appreciated support in realms unrelated to the thesis. I need to thank Hilary LaConte and the Public Policy Analysis Department for guidance, academic and otherwise.

Professor Bowman Cutter should be recognized as an unofficial thesis reader for his unending help at every step of the econometrics chapter. Thank you, Professor Cutter, for answering every one of my questions.

Finally, I need to thank the friends and loved ones whose support facilitated this project. To my roommates, lifetime neighbors, teammates, and of course, dear family: I cannot thank you enough.

Abstract

This thesis evaluates the equity performance of a recent state environmental justice policy, California's Senate Bill 535 (S.B. 535). "Environmental justice" refers to the disproportionate environmental harm imposed on low-income and minority communities. S.B. 535 uses competitive grants to provide funding to these communities. The research is centered around two questions: (1) to what extent has S.B. 535 experienced successful implementation in its first year of operation, and (2) how can policy actors improve implementation while balancing performance and equity goals?

In regards to the first question, I utilize a case study of the policy's implementation within 17 local governments in Riverside County. I find that the number of actors involved and the alignment of their interests prevent the policy from more successful implementation. Local government officials identify staff capacity as a primary concern in the program's implementation.

I then evaluate the policy's balance of program performance and equity with an econometric analysis that characterizes the decisions of local governments to implement the policy. I find impressive equity performance, as low-income and minority populations are more likely to participate. The implementing governments have sufficient capacity to achieve program goals, as larger cities and cities with more staff per capita are more likely to participate.

My findings support the use of competitive grants in environmental justice policies. The S.B. 535 grant program demonstrates the ability to distribute funding to governments with both socioeconomic disadvantage and the capacity for successful implementation. The analysis concludes with policy recommendations.

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PART I: WHAT IS THE POLICY

1. INTRODUCTION

Pollution is not evenly distributed across society, as certain populations face worse environmental quality. Pollution is disproportionately concentrated in low-income and minority areas. “Environmental justice” refers to the unequal distribution of environmental harm in these communities. Environmental justice communities are those with a large “pollution burden”, as defined by high pollution concentrations and high levels of social vulnerability that limit a community’s ability to respond.

Individual battles against pollution burden have emerged into a cohesive movement for environmental justice. Communities organizing their own unique campaigns against polluting industries find support and solidarity from communities facing similar struggles elsewhere. The environmental justice movement formed in the early 1980s as a distinct movement from mainstream environmentalism, which centered on the conservation of nature.

Environmental justice advocates traditionally address the pollution burden associated with local toxic pollution. This pollution consists of chemicals that remain in close proximity to the site of release and pose immediate negative health effects in the surrounding area. More recently, environmental justice advocates shifted their focus from pollution burden to a different type of pollution problem. Climate change represents a major focus of environmental efforts

today. Climate change threatens both environmental quality and human equality in the long-term. The pollution burden associated with climate change differs from typical pollutants in that climate change-inducing greenhouse gases do not impose health threats locally or immediately, but globally and in the long-term.

Like traditional environmental justice issues, climate change is not distributed evenly across society. Low-income communities and communities of color bear a disproportionate share of the burden from climate change, for a few reasons. Poor and minority communities are currently more effected by climate change, as they live in areas that are naturally hotter and work in industries that depend on stable weather conditions (Stern, 2007). Some pollution problems are magnified by a heating climate, and the areas with the worst environmental quality will experience even worse relative environmental quality from other areas. More importantly, these communities are less able to adapt to a changing climate. Economic resources and political representation are required to plan and build the infrastructure necessary for a smooth transition into new climatic conditions. Low-income and minority communities lack the social capital of communities with higher socioeconomic status.

We have already seen these trends take place in California. Low-income and minority communities live near greater pollution exposures; people in poverty are more likely to live near major greenhouse gas-emitting facilities (Pastor, Morello-Frosch, Sadd, & Scoggins, 2010). Pollution follows discriminatory trends: holding income constant, people of color are more likely to reside near these facilities than their white peers (Pastor, Morello-Frosch, Sadd, & Scoggins, 2010). As pollution worsens from increased heat, those already exposed will see their environmental quality decline relative to the average. Smog is an example of an issue that intensifies with climate change, since heat catalyzes the formation of smog. The cities with

California's highest concentrations of smog also have the highest densities of people of color and the poor; climate change facilitates a widening gap in environmental quality (Morello-Frosch, Pastor, Sadd, & Shonkoff, 2009). Communities that face the worst environmental conditions (which will worsen with climate change) are also the least able to adapt, since they have fewer political and economic resources to update their infrastructure. Communities of color and the poor also do not enjoy sufficient infrastructure to adapt to extreme weather events that will become increasingly common with climate instability. In Los Angeles, African Americans are twice as likely to die from a heat wave than other residents (Morello-Frosch, Pastor, Sadd, & Shonkoff, 2009).

Climate change differs from other environmental justice pollution problems. Since the effects on climate change are in the early stages and remain to be fully understood, climate change does not foster the same community-centered campaigns as do previous environmental justice concerns. Environmental justice advocates in California approach climate change through comprehensive policy rather than in individual communities. Six of the state's leading environmental justice organizations formed an alliance to lobby policies in the California Legislature. In part due to their advocacy, California now boasts an impressive climate justice agenda.

California state law allocates a portion of the revenues generated by climate change reduction efforts to environmental justice communities. In 2012, the Legislature enacted Senate Bill 535 (S.B. 535), which directs revenue from the state's greenhouse gas cap-and-trade program to communities subject to both pollution exposure and socioeconomic disparities. S.B. 535: California Global Warming Solutions Act of 2006: Greenhouse Gas Reduction Fund is the policy that mandates the redistribution of funding to environmental justice communities (de

Leon, 2012). S.B. 535 modifies the state's existing climate change legislation in Assembly Bill 32: California Global Warming Solutions Act of 2006 (A.B. 32) (Pavley & Nunez, 2006). A.B. 32 enables the Air Resources Board to create a cap-and-trade program to meet the law's greenhouse gas reduction targets. S.B. 535 is one of three bills that forms the Greenhouse Gas Reduction Fund (GGRF) for all cap-and-trade revenues. S.B. 535 designates GGRF monies for use in projects that help meet A.B. 32 reduction goals and support the transition to a clean-energy economy.

S.B. 535 directs a portion of cap-and-trade revenues to "disadvantaged communities". The bill defines disadvantaged communities under two criteria: social vulnerability and pollution burden. Under S.B. 535, the Air Resources Board created a screening tool to quantify environmental injustice across the state's census tracts. Disadvantaged communities are those communities that received the top 25 percent worst environmental justice scores. S.B. 535 requires that 25 percent of cap-and-trade revenue be spent on programs that *benefit* disadvantaged communities, and that 10 percent be spent on programs *located in* these communities directly.

This policy takes a decentralized approach to addressing environmental justice. S.B. 535 distributes funding to eleven state agencies with varying missions and programs. Agencies determine their own methods of distributing funding to lower levels of government. Many agencies offer competitive grants through separate application processes, guidelines, and criteria. Authority is further decentralized, as local and regional governments are the bodies that provide benefits to constituents. These governments have discretion in preparing applications for cap-and-trade funded projects.

Decentralized policies and competitive grant programs present a set of benefits and challenges as policy tools. This thesis considers the merits of decentralization and grant funding for environmental justice policy, in the case of S.B. 535. The successful implementation of this particular policy has major implications for the environmental justice movement and state environmental policies moving forward, as this policy is in many ways the first of its kind. Specifically, S.B. 535 relates environmental justice and climate change in law, creates a large source of revenue for climate justice, and involves individual communities most harmed by climate change in the decision-making process.

This thesis evaluates the implementation of S.B. 535 in order to assess the merits of grant-based environmental justice policy. The study presents the following research question: should state environmental justice policy efforts follow the S.B. 535 model of providing local control through grants? Two corollary questions emerge in response. First, to what extent has S.B. 535 experienced successful implementation in its first year of operation? Second, how can policy actors improve implementation while balancing performance and equity goals?

My research is framed around the initial research question, which requires consideration of current success and prospects for improvement. The study first asks, “Is the policy successful?” (Part II). I evaluate the policy’s success in a small scale to recognize the nuance in this question. Part II uses an implementation case study to evaluate whether the policy was implemented in an accurate and timely manner. The case study considers whether the 17 cities in the Western Riverside Council of Governments participated in one of the cap-and-trade funded programs. Two factors dictate the policy’s success: the number of actors involved in implementation and the alignment of their interests. Through interviews with government officials across the policy domain, I find that the alignment of interests posed a significant

challenge to implementation. Local governments that value environmental justice often do not prioritize ambitious environmental justice programs. Since program administrators want to achieve their environmental objectives, they may distribute funding to only those communities with sufficient capacity, which prevents benefits from those communities most in need.

I then consider the ability of S.B. 535 to overcome these capacity and interest alignment concerns. Part III asks, “How can the policy be improved?” I use a quantitative analysis to identify the most effective ways for administrators to increase implementation success. A numeric consideration of influences on program administration suggests strategies for the alignment of interests across the policy domain. Econometric statistical analysis weighs program performance with equity outcomes through a multivariate regression model. This section of the thesis describes the weight of various factors in the decision of local governments to implement S.B. 535. I find that program administrators did an impressive job ensuring the program reached the intended audience; poverty and minority populations increased the likelihood of program participation by local governments. That is not to say administrators neglect performance in favor of equity. Capacity is still a concern, and larger cities have an advantage in implementation. This analysis presents a number of recommendations for policy implementation, which I share to conclude the thesis.

The thesis is structured as follows: I first describe the policy in Part I. Chapter 2 provides a background of environmental justice, climate change pollution burden, and environmental policy literature. Chapter 3 is a “Policy Context” that describes the policy’s enactment and intended structure. Part II provides a qualitative analysis of implementation outcomes. Chapter 4 considers implementation success within Riverside County in the first year of the Affordable Housing and Sustainable Communities (AHSC) program. Part III uses quantitative analysis to

consider ways in which the policy can be improved. Chapter 5 reports the results of an econometric analysis of trends in applications to the AHSC program. The study concludes with policy recommendations in Chapter 6.

2. BACKGROUND

This chapter frames the rest of the study by providing a background on environmental justice, climate justice, and corresponding policy solutions. The background section frames my analysis within the environmental justice and public administration literatures. First, I describe “pollution burden” in its original context of environmental justice campaigns against local toxic pollution. Then, I describe the new form of pollution burden relating to climate change. Finally, I detail existing policy solutions to environmental justice, and outline the potential role of policy decentralization in competitive grants.

2.1 POLLUTION BURDEN

The “pollution burden” of an area refers to its exposure to chemical pollutants. Pollution is dispersed into the environment through industrial processes. The industrial production of goods and services releases harmful substances into the air, ground, and water. Often pollution reaches the environment because the cost of pollution is not incorporated into markets.

A community’s pollution burden comprises the toxic chemicals released by industrial facilities and its implications on the people living nearby. These local toxic pollutants do not travel widely and are not diffused evenly across the environment. Common local toxic pollutants

include: nitrogen oxides, particulate matter, ozone, sulfur dioxide, benzene, and lead (World Health Organization, 2010). Some famous local pollutants have been eradicated following advanced understanding of their effects, including: mercury, polychlorinated biphenyl (PCB), and dichlorodiphenyltrichloroethane (DDT).

Pollution imposes negative health effects on the surrounding area. High concentrations of these pollutants correspond to the incidence of disease. Common chemicals in industrial production, such as nitrogen oxides, sulfur dioxide, and particulate matter, have been linked to a variety of health conditions, including: respiratory problems (asthma, bronchitis); cardiovascular problems (cardiovascular disease, heart attacks); various forms of cancer, infant mortality, low birth weight, and birth defects (World Health Organization, 2006). Since the pollutants are concentrated near the site of release, these negative health effects are not felt by the population as a whole, but only those closest to the pollution.

Pollution burden and its related health implications are not evenly distributed across society. High pollution burdens are more likely to be found in areas with certain demographic characteristics, such as low income levels, high levels of racial minorities, and other indicators of social vulnerability. Communities facing social vulnerability and pollution exposure have an impressive record of organizing themselves against polluting industries. When environmental justice campaigns first became common, they usually consisted of individual communities fighting business interests to clean up their polluting facilities. Distinct community campaigns did not form into a more cohesive movement until a few key communities garnered national media attention in the early 1980s. The beginning of the environmental justice movement has been dated to 1982, when protesters in Warren County, North Carolina used non-violent direct action to prevent the siting of a polychlorinated biphenyl (PCB) landfill. Demonstrations soon

spread to remediate pollution from a sewage treatment plant in Harlem, New York, and the industrial corridor deemed “Cancer Alley” in Louisiana (Race, Poverty & the Environment, 2003).

The literature on environmental justice emerged in the late 1980s, as scholars gained interest in community mobilization efforts to fight disparate pollution exposures. The academic field of environmental justice sparked awareness and interest in environmental justice issues beyond those directly affected by pollution. Environmental justice scholarship also supported the growing movement on the local front by providing community organizers with evidence to justify their claims and support their case.

The first major environmental justice study was published in 1987. The United Church of Christ commissioned a report titled, “Toxic Waste and Race in the United States”, which considered trends in the siting of toxic waste facilities. Dr. Benjamin Chavis and Charles Lee conducted the research and identified racial disparities in the location of toxic pollution (Chavis & Lee, 1987). In fact, they found race to be the strongest determinant in polluting industry location decisions.

More academic research on environmental justice followed the publication of the first textbook in the field, “Dumping in Dixie: Race, Class, and Environmental Quality”. In his 1990 classic, Robert Bullard documents the demographic profiles of various communities facing a significant pollution burden (Bullard, 1990). His text includes case studies of five communities in the American South, and finds that each faced racial and economic discrimination in addition to pollution.

A large body of literature emerged to question and improve the methodology of these early claims of environmental racism (Zimmerman, 1993) (Boer, Pastor, Sadd, & Snyder, 1997)

(Sadd, Pastor, Boer, & Snyder, 1999). To this day, scholars debate the existence and extent of discriminatory pollution trends (Wolverton, 2009). Now that I have focused briefly on the research that demonstrates disparities in environmental quality, I turn my attention to the equity issues surrounding policies that address a different type of pollution burden.

2.2 POLLUTION BURDEN OF CLIMATE CHANGE

The environmental justice movement has shifted its focus to address a pressing environmental issue with a different type of pollution burden. Climate change captures the attention of citizens and environmental justice advocates alike. Human-induced climate change poses one of the biggest threats, environmental and otherwise, of our time. Like traditional environmental justice issues, climate change can be linked directly to human industrial processes. The scientific community has come to an overwhelming consensus that climate change is due to human activity (Oreskes, 2004).

The pollutants that cause climate change are known collectively as greenhouse gases. These pollutants are dispersed widely throughout the atmosphere, accumulate over time, and persist long into the future. In order of emissions volume, the most common greenhouse gases that humans produce are carbon dioxide, methane, nitrous oxide, and fluorinated gases (U.S. Environmental Protection Agency, 2014). The sources of these pollutants in the U.S. include electricity (32%), transportation (28%), industry (20%), commercial and residential (10%), and agriculture (10%).

As humans fill the atmosphere with greenhouse gases, the atmosphere traps an increasingly large portion of heat from the sun that would otherwise be returned to space. The Earth's surface temperature has already risen from 1.2 to 1.4°F since 1900; the 10 warmest years

on record (dating to 1850) have all been in the last 15 years (U.S. Environmental Protection Agency, 2014). Rising pollution concentrations correspond to overall heating of the atmosphere and instability of climate patterns, resulting in drought, sea level rise, biodiversity loss, and increased frequency of extreme weather events. Climate change poses a unique environmental problem that merits consideration as a pollution burden that is distinct from toxic local pollutants (Pettit, 2004).

Climate change pollution burden refers to the negative effects of climate change felt in an area. Scientists have identified significant changes to weather patterns that cannot be attributed to natural climatic variations alone; *Nature* published an article in 2008 that claimed, “climate change is having a significant impact on physical and biological systems globally” (Rozenweig, et al., 2008). These physical effects invoke negative changes in economic, social, environmental, and health status resulting from climate change. Climate change pollution burden does not describe pollution alone, but rather combines the unequal distribution of negative climatic changes with the exacerbation of existing pollution disparities.

Climate change challenges human health, both globally and locally. The global threat is significant. A number of diseases thrive under climate change; an article in *Nature* relates climate change to conditions “from cardiovascular mortality and respiratory illness due to heatwaves, to altered transmission of infectious diseases and malnutrition from crop failures” (Patz, Campbell-Lendrum, Holloway, & Foley, 2005). Changing weather patterns jeopardizes the stability of food and water security; food and water scarcity decrease a country’s ability to cope with existing and growing health concerns. Extreme heat is projected to occur more frequently as the climate heats (Easterling, Meehl, Parmesan, Changnon, Karl, & Mearns, 2000). Extreme weather events, like hurricanes and floods, grow in intensity and frequency with higher

greenhouse gas concentrations. Individual events can result in large numbers of injuries and death. Some scholars link climate change to political violence and social unrest related to changing weather patterns (Parenti, 2011).

Though climate change corresponds to broad weather changes globally, it also imposes additional threats to individual climatic systems. The effects of climate change are not distributed evenly across the globe. Scholars project developing countries in the Global South to be most effected by climate change, for three reasons (Stern, 2007). First, these countries are already located in hotter regions, and will more quickly approach dangerous temperature levels. Second, their economies depend more heavily on agriculture, one of the sectors most greatly impacted by climatic instability. Finally, developing countries are the least able to adapt to the adverse effects of climate change, since they currently lack the resources to create infrastructure to cope with these changes.

Even within individual countries, climate change poses health threats that are not evenly distributed across the population. Just as climate effects are distributed unequally across countries, they are distributed unequally within smaller regions. Certain communities are subjected to heightened impacts of climate change, due to their current exposure to heat or reliance on industries that depend on a stable climate (Stern, 2007). A related concern of climate change pollution burden is that climate change will amplify the pre-existing environmental harm in these areas. Like local toxic pollution burden, the effects of climate change are concentrated in areas with particular demographic profiles. As they did for toxic exposures, environmental justice researchers have documented the disproportionate climate-related threats experienced by low-income communities and communities of color (Morello-Frosch, Pastor, Sadd, & Shonkoff, 2009).

The dominant concern that emerged from this research is that the communities that are the most vulnerable to climate change are the least able to adapt to its negative effects. Communities with higher socioeconomic status enjoy better existing infrastructure and are more likely to be able to take care of their emerging climate-related health needs. Disadvantaged areas likely lack the planning resources, such as economic power and political representation, of areas with more socioeconomic status. Affluent communities are in a better position to build infrastructure to ease the future harm and cost of climate change, such as sea walls and extreme heat cooling centers. This thesis considers policy responses to the pollution burden of climate change, and evaluates the ability of policy to remediate disparities in climate change adaptation.

2.3 POLICY SOLUTIONS

The previous section demonstrated the significance of climate change on social injustice. This section considers policy solutions to environmental disparities. Policy is a tool of increasing popularity among environmental justice advocates. Environmental justice organizations recognize greater potential impact in policies that target entire industries or pollutants than in campaigns that concentrate on individual polluting facilities. Professionals in the field of environmental justice law recognize a shift in their work towards policy and away from litigation. A Senior Attorney at one of California's leading environmental justice non-profit organizations, the Center on Race, Poverty, and the Environment, reports a surge in environmental justice lobbying efforts over the last few years (Brostrom, 2015).

Past environmental justice confronted individual companies with pressure or litigation. This approach was utilized because it allowed for the building of communities and the involvement of those most directly affected by pollution in efforts for remediation. As the

environmental justice movement considers shifting to policy-centric approaches, I see two challenges that must be addressed. First, a policy approach accepts the premise of the political system, which many environmental justice communities have come to distrust. Since past efforts have exacerbated inequalities (discussed below), environmental justice advocates have resisted working within the political system for pollution remediation. Second, environmental justice policy relocates power away from local communities. Policies may insufficiently address the pollution issues specific to an individual community. Policies are designed to coordinate action across actors; this process puts into jeopardy the creativity and buy-in that is necessary to address each community's pollution exposure.

Decision makers need to incorporate solutions to these problems in their formation of environmental justice policies. This section considers environmental justice in the context of discriminatory environmental policies, the decentralization of power to local levels, and one policy tool (competitive grants).

Equity in the environmental policy literature. A body of literature has emerged to better understand environmental justice policy efforts. One area of scholarship focuses on policy enactment. Scholars hoping to support the environmental justice movement can make recommendations to increase the enactment of policies. For example, Morello-Frosch, Pastor, and Sadd (2002) argue that incorporating policy frameworks from other fields into environmental justice will push forward the environmental policy agenda.

Another focus of environmental justice policy analysts is the implementation of environmental policies in terms of equity outcomes. Implementation scholarship is particularly important to encourage policy advocacy among environmental justice groups that may distrust state pollution efforts (which I discuss above). This is the area of scholarship I hope to join with

this thesis. I briefly review some of the leading findings in this field in order to identify the contribution of my study.

Environmental justice scholars argue that current environmental policies fail to address (and can even exacerbate) inequality. Bullard was one of the first to make this claim, by suggesting that the U.S. Environmental Protection Agency excludes poor communities color from resources for implementing environmental programs (Bullard, 1990).

Prevailing research focuses on the enforcement of environmental regulations and the compliance of polluting industries (as opposed to policies that specifically address environmental justice, to be discussed later). No consensus has emerged regarding the racial disparities in pollution regulation. Lavelle and Coyle (1992) find racial disparities in the enforcement of toxic waste sites, with faster and more complete responses to toxic pollution for white communities than for communities of color. However, Atlas (2001) criticizes the methodology and findings of these authors. Upon reexamination of toxic waste cleanup data, Atlas finds no evidence of reduced regulation of industries in communities of color.

Other authors demonstrate the lack of consensus regarding the existence of discriminatory environmental policies, even within their own work. Konisky (2009) questions state government performance in minority and low-income areas from 1985-2000 for three major state-implemented federal laws. Konisky finds significantly less enforcement in poor counties, but identifies little evidence of racial disparities in enforcement behavior (Konisky, 2009). However, a study by Konisky and Reenock (2012) supports the existence of discrimination in the form of compliance bias, the lack of enforcement in low-income and minority areas.

Further studies relate environmental policies to discrimination not only in race, but also in other demographic characteristics. Earnhart (2004) considers the effects of community factors

on compliance levels of industrial facilities. His analysis of wastewater regulation in Kansas from 1990-1998 finds that enforcement is significantly influenced by community characteristics. Specifically, inspections are more likely to occur in areas with higher income levels per capita, higher high school graduation rates, and higher voter turnout rates. Inspections are less likely in areas with lower population density and lower Republican voting rate.

The research on environmental justice policy is centered on the enforcement of existing environmental policies rather than the implementation of policies drafted with a goal of environmental justice. As the environmental justice movement successfully enacts more legislation, research is necessary to evaluate equity in the implementation of these new policies. To my knowledge, the literature has yet to assess the distributional impacts of environmental justice-focused policies. This thesis aims to evaluate the equity performance of a policy that targets environmental justice, specifically.

Policy (de)centralization. An important consideration of environmental justice policy is how legislators distribute power among involved actors. Policies are inherently more centralized than traditional environmental justice campaigns, which are organized by those directly affected by their unique pollution problems. Literature is needed to facilitate the structuring of environmental policies that provide sufficient oversight without sacrificing community autonomy. Though the public administration literature has evaluated the social equity performance of policies generally, scholars have yet to apply this analysis to environmental justice policies. This section considers the issue of policy decentralization broadly, in order to frame the issue as it relates to environmental justice.

The concentration of power in a policy can significantly influence its success in implementation. Centralized policies, those that high levels of government administer, provide a

unique set of strengths and weaknesses. Top-down policies are better coordinated than policies that require the collaboration of various parties. Policymakers have greater control in achieving their specified outcomes for centralized approaches than decentralized approaches. However, one might hypothesize that top-down policies are less efficient than policies that use local administrative capacity; higher levels of government may lack the local knowledge of governments closer to citizens. If enactors of the policy face a different set of incentives than officials overseeing its implementation or the government officials at lower levels implementing the policy on the ground, the policy may not reach its full potential as interests are pulled in different directions.

Conversely, decentralized policies offer a different set of benefits. Proponents of government decentralization believe that solutions to local problems require local authority. Policies must be designed with input from those most directly involved in order to achieve intended implementation outcomes. Bottom-up policies encourage participation and buy-in for policy decisions. Local governments that have agency in designing their programs are more likely to pursue successful implementation. Increased participation in the democratic process among stakeholders offers benefits in collaboration and enthusiasm from public officials. Unfortunately, issues in implementing decentralized policies arise regarding the coordination of goals and trends in implementation across many local governments.

This brief discussion of policy centralization identifies some of the important considerations facing decision makers looking to create environmental policies. It is important that research on environmental justice policy consider the balance of power across the policy domain in order to achieve the policy's intended goals. Studies must recognize the potential for issues in coordination and the alignment of incentives in order to plan accordingly.

Competitive grants. Lessons from environmental justice efforts should be applied to specific policy tools. One popular and emerging tool is competitive grant programs. Grants present a number of issues and opportunities for policy analysts to be aware of.

Grant programs are a popular manifestation of government decentralization. Higher levels of government contract organizations at lower levels to provide services to citizens. In the case of competitive grant funding, local governments prepare applications for individual programs, and grant administrators select winning proposals based on a number of criteria. Competitive grant programs are popular because they efficiently distribute limited government resources; Kettl and Fesler (2009) write, “project-based programs permit concentration of limited federal money where it is thought it will do the most good” (Kettl & Fesler, 2009).

The concern with a reliance on grants is that the competition for funding eliminates the even distribution of resources. Certain local governments are more likely to apply for and receive grant awards. Grant administrators may be inclined to select applications from areas that have the capacity and resources to apply for and implement programs. The governments that win grants may not be representative of the entire population. Low-income communities and communities of color lack comparable political representation and could receive less than average grant funding.

Though individual grant awards may have only a marginal impact on social equity, systematic disparities in the ability to apply for grants have the potential for significant inequality. Considering the insurgence of the grant economy – from 340 federal grant programs in the early 1980s to 600 programs today (Kettl & Fesler, 2009) – discrimination in grant administration can have substantial negative distributional effects.

Competitive grants offer an exciting tool for legislators looking to enact environmental justice policy. Public administrators need to be weary of potential disparities in social equity from the competitive grant process. Researchers can work to identify solutions for enhancing equity within grant distribution.

This background chapter has provided context for the important issues that might effect the implementation of this policy: environmental justice, climate change pollution burden, discrimination in environmental policy, policy decentralization, and competitive grants. Now we turn to the specific details of the policy considered in this thesis.

3. POLICY CONTEXT

This chapter provides readers with a background understanding of the policy of this study, S.B. 535. A context of the policy's enactment enables a more grounded evaluation of its implementation. I first provide a legislative history of the policy, before describing the policy's intended implementation and equity implications.

3.1 POLICY ENACTMENT

On September 30, 2012, the California State Legislature enacted S.B. 535: California Global Warming Solutions Act of 2006: Greenhouse Gas Reduction Fund. S.B. 535 mandates the allocation of revenues from the state's GHG cap-and-trade program to communities subject to social vulnerability and disproportionate environmental harm.

State Senator Kevin de León authored S.B. 535. The bill was introduced on February 17, 2011, and was referred to the Senate Committee on Environmental Quality, before being sent to the Committee on Natural Resources and Water. It passed through the Assembly Floor on August 31, 2014, with 43 votes in favor, 29 votes against, and 8 votes not recorded. The Senate approved the bill on the same day, with 25 Ayes, 14 Noes, and one vote not recorded (de Leon, 2012).

S.B. 535 modifies the state's landmark climate change legislation represented by Assembly Bill 32, the California Global Warming Solutions Act of 2006 (A.B. 32). The following excerpt from Section 1 of S.B. 535 describes the relationship between A.B. 32, S.B. 535, and environmental justice:

“Assembly Bill 32 recognizes the disproportionate impacts climate change will have on disadvantaged and low-income communities in California, which already face disproportionate impacts from substandard air quality in the form of higher rates of respiratory illness, hospitalizations, and premature death.... Assembly Bill 32 neither provides a definition, however, for California's most impacted and disadvantaged communities, nor direction on how the state will mitigate adverse impacts from climate change in these communities, nor direction on how the state will ensure these communities can participate in and receive investments from activities taken pursuant to Assembly Bill 32 and not experience disproportionate impacts.... It is the intent of the Legislature that this act continue California's implementation of Assembly Bill 32 by directing resources to the state's most impacted and disadvantaged communities” (de Leon, 2012).

The state seeks to achieve these goals with the revenue from A.B. 32 greenhouse gas reduction strategies. A.B. 32 requires that the California Air Resources Board enforce compliance with a reduction of state greenhouse gas emissions levels to 1990 levels by 2020. The Air Resources Board was provided discretion in achieving this goal through “market-based compliance mechanisms” (Pavley & Nunez, 2006), and elected to start a greenhouse gas cap-and-trade program in which pollution permits were auctioned by the State. The revenues from these quarterly auctions present an ongoing revenue stream for the state budget.

S.B. 535 is part of a three-piece package of bills passed in 2012 that create the Greenhouse Gas Reduction Fund (GGRF). S.B. 1018 directs revenues of cap-and-trade auctions to the GGRF and requires detailed expenditure records (Committee on Budget and Fiscal Review, 2012). A.B. 1532 states guiding principles for the use of GGRF monies and creates a two-step allocation plan (Perez, 2012). Of these three bills, S.B. 535 is the only one that earmarks GGRF funding for specific groups.

State legislation designates GGRF monies for use in projects that help meet A.B. 32 reduction goals and support the transition to a clean-energy economy. A suite of legislation, including the S.B. 852 (State Budget Act of 2014) and S.B. 862 (GGRF trailer bill), allocates GGRF monies to state agencies to implement specific programs in line with the goals of A.B. 32 (Leno, 2014) (Committee on Budget and Fiscal Review, 2014).

S.B. 535 requires that a portion of the GGRF be allocated to ‘disadvantaged communities.’ S.B. 535 updates California Health and Safety Code Section 39711 to require that the California Environmental Protection Agency (CalEPA) identify these communities. The Health Code suggests two general areas for CalEPA to consider when identifying disadvantaged communities. These criteria are not binding, and

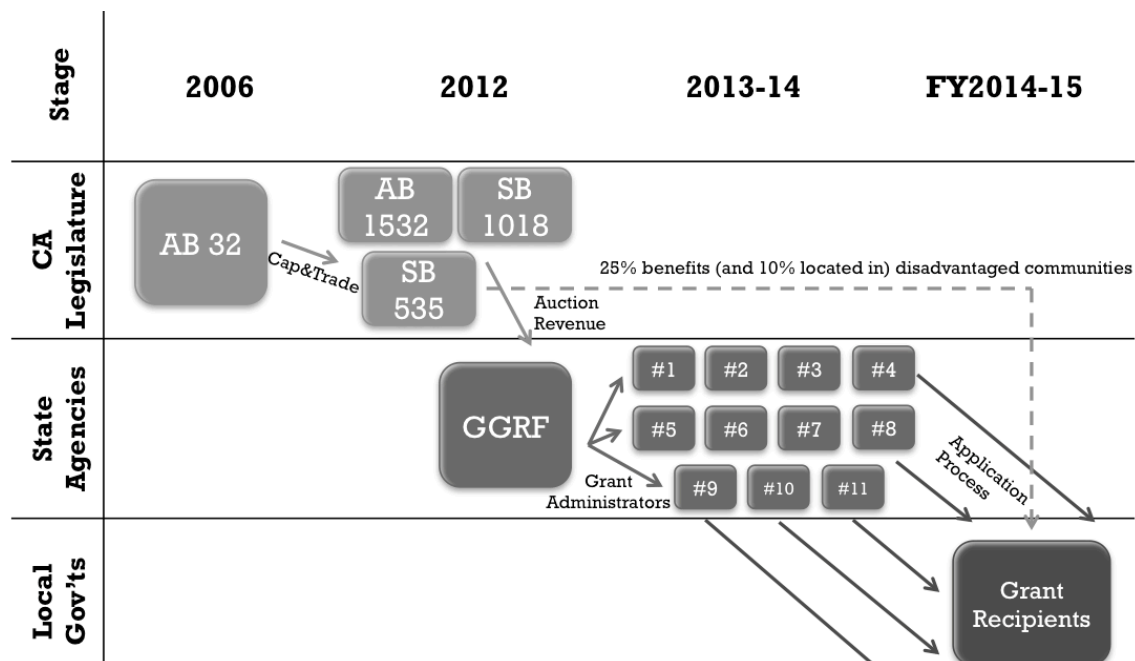
“may include, but are not limited to, either of the following: (1) Areas disproportionately affected by environmental pollution and other hazards that can lead to negative public health effects, exposure, or environmental degradation. (2) Areas with concentrations of people that are of low income, high unemployment, low levels of homeownership, high rent burden, sensitive populations, or low levels of educational attainment” (California Health & Safety Code § 39710-39723).

S.B. 535 also identifies the percentage of GGRF monies that are to be distributed to disadvantaged communities. Twenty five percent of the GGRF must be spent on programs that *benefit* disadvantaged communities, and ten percent must be spent on programs *located in* these communities directly. The ARB is required to work with the public to determine whether projects will qualify for the S.B. 535 disadvantaged community earmark.

3.2 INTENDED IMPLEMENTATION

Before detailing the guiding legislation, this section provides a brief overview of the policy's structure. The State Legislature identified specific procedures for the distribution of the GGRF, including which state agencies will receive funding in the State Budget, and in what amount. The Legislature specifies the types of projects state agencies can fund with cap-and-trade revenue, but allows state agencies to clarify the guidelines of their programs. Each agency creates a process for dispersing funds to lower levels of government. Local governments apply to receive funding to each agency individually, according to their application processes. S.B. 535 requires that across all administering agencies, 25 percent of funding benefit and 10 percent of funding be directly located in disadvantaged communities. Figure 3.1 depicts a policy map of the relationships of the various actors in the first phase of implementation.

Figure 3.1. Statewide Implementation Chart.



A number of formal policies guide funding distribution at each step. The Budget Act of 2014 (S.B. 852) identifies the revenue made available by cap-and-trade auctions in Fiscal Year

2014-15 (Leno, 2014). The bill's Cap-and-Trade Expenditure Plan not only identifies which agencies receive funding, but also the programs these agencies are to administer. Another budgeting bill specifies which programs will receive ongoing allocations of the GGRF. S.B. 862: Greenhouse Gases: Emissions Reduction includes the following ongoing allocations: High Speed Rail Project (25%), the Transit and Intercity Rail Capital Program (10%), the Low Carbon Transit Operations Program (5%), and the Affordable Housing and Sustainable Communities Program (20%) (Committee on Budget and Fiscal Review, 2014). S.B. 862 mandates that these four programs receive these set proportions of the GGRF into the future. All other cap-and-trade funding will be distributed in future years through annual appropriations. Table 3.1 displays GGRF funding allocations under the 2014-15 state budget of S.B. 852, reproduced from the Cap-and-Trade Expenditure Plan (Leno, 2014).

Table 3.1. FY2014-15 Cap-and-Trade Expenditure Plan (Dollars in Millions) (Leno, 2014).

Investment Category	Department	Program	2014-15
Sustainable Communities and Clean Transportation	High-Speed Rail Authority	High-Speed Rail Project	\$250
	State Transit Agency	Low Carbon Transit Operations Program	\$25
	Caltrans	Transit and Intercity Rail Capital Program	\$25
	Strategic Growth Council	Affordable Housing and Sustainable Communities	\$130
	Air Resources Board	Low Carbon Transportation	\$200
Energy Efficiency and Clean Energy	Department of Community Services and Development	Energy Efficiency Upgrades/Weatherization	\$75
	Energy Commission	Energy Efficiency for Public Buildings	\$20
	Department of Food and Agriculture	Agricultural Energy and Operational Efficiency	\$15
Natural Resources and Waste Diversion	Department of Fish and Wildlife	Wetlands and Watershed Restoration	\$25
	Department of Forestry and Fire Protection	Fire Prevention and Urban Forestry Projects	\$42
	CalRecycle	Waste Diversion	\$25
Total			\$832

For the Fiscal Year 2014-15, which runs from October 1, 2014 to September 30, 2015, eleven agencies received funding through the regular state budgeting process. Another state agency was later allocated funding, through S.B. 103: Budget Act of 2013 (Committee on Budget and Fiscal Review, 2014). The governor signed S.B. 103 to appropriate funding from the state budget to address emergency drought conditions; part of the bill appropriated \$40 million of cap-and-trade revenue to the Department of Water Resources for water efficiency projects.

Budgeting bills S.B. 852 (Leno, 2014) and S.B. 862 (Committee on Budget and Fiscal Review, 2014) require that GGRF funding be spent on state agency projects to reduce greenhouse gas emissions. The Air Resource Board Interim Guidance document identifies the types of benefits that GGRF funding must provide, and confines these benefits to specific measures. Across all agencies, these benefits include: increased access to clean transportation, improved transit service, reduced vehicle miles traveled, energy efficiency building upgrades, enhancements for water system infrastructure, land preservation, tree plantings, and anaerobic digestion systems (California Air Resources Board, 2014). Appendix 7.2 includes a description of all of the programs that received funding in FY2014-15.

State legislators created a GGRF distribution structure that relies on lower levels of governments for implementation. When state agencies request applications from local governments, they have limited control over the projects proposed. The lack of coordination between grant administrators and applicants opens the policy to issues of equity.

3.3 EQUITY IN S.B. 535

An attentive reader may ask why this study considers equity outcomes in a policy that already requires an equitable distribution under statute. The key to understanding the state's

distribution mandate is remembering that 25 percent of funding is allocated to “disadvantaged communities” as determined by the state. Pursuant to S.B. 535, the Air Resources Board identifies which communities in the state qualify as disadvantaged. Though the state underwent a detailed process to quantify pollution burden and social vulnerability in the CalEnviroScreen mapping tool, the policy designated areas using a binary distinction of disadvantaged. The policy does not require any distribution among all the communities that qualify as disadvantaged. As such, S.B. 535 allows the communities with the highest socioeconomic status among disadvantaged communities to siphon funding that was intended for communities facing the greatest environmental and social burden.

It would not be a challenge to distribute funding to the target audience if the earmark included only those communities facing the greatest environmental injustice. However, the definition of “disadvantaged” extended to a large portion of the state’s population. State agencies underwent an extensive process to determine the designation of disadvantaged communities. CalEPA held a number of workshops across the state to receive stakeholder comments. The agency also accepted over 100 formal written comments (Rodriquez, 2014). Among stakeholders, there was some disagreement as to the percentage of the state that should qualify for the earmarked funding. Areas with greater pollution burden advocated for a more restrictive definition of disadvantaged, so that their communities would have a greater chance of receiving funding. The Los Angeles workshop advocated for a “disadvantaged community” definition of the top 15-25 percent of CalEnviroScreen scores. Other areas with less pollution burden, such as the Bay Area, lobbied for a more inclusive definition that included from 25-30 percent of the state’s census tracts (Rodriquez, 2014).

Ultimately, the state agreed on a generous definition of disadvantaged communities, which provides funding to census tracts with the top 25 percent of pollution burden scores. California is a large state; restricting funding to one quarter of its population still leaves over 9.5 million people to compete for funding. Clearly, equity among all that qualify for disadvantaged community funding is a significant concern, since the 25 percent cut-off invites the possibility of funding concentration in communities that do not have pressing environmental justice concerns. This thesis evaluates the ability of S.B. 535 to distribute funding to its target audience: communities truly facing environmental justice issues.

This policy context chapter has identified potential issues in the implementation of this decentralized, complex policy. The previous two chapters provide sufficient context to evaluate the implementation of S.B. 535 in the rest of the thesis.

PART II: IS THE POLICY SUCCESSFUL?

4. IMPLEMENTATION CASE STUDY: RIVERSIDE COUNTY

This chapter utilizes a case study of S.B. 535 within one region in order to more fully reveal the nuances in implementation. The case study evaluates the implementation of S.B. 535, in one grant program in one region. This chapter considers grant applications to the Affordable Housing & Sustainable Communities (AHSC) program by the 17 cities in the Western Riverside Council of Governments (WRCOG) subregion. A case study is useful in this setting as a tool for exploring the complex relationships among the many actors involved in the policy domain. It is not meant to describe trends that encompass the policy's implementation across the state, but aims to identify some of the challenges that government officials face that may apply beyond their individual organizations.

4.1 BACKGROUND LITERATURE

The public policy analysis literature provides a framework for evaluating policy in implementation. Authors provide various approaches for assessing implementation, based on their understanding of how policies function. A few dominant authors in the field offer varying explanations of the tools of policy practitioners. To provide a theoretical basis for assessing policy implementation, this section describes three leading conceptions of tools in the field:

Deborah Stone's policy solutions, B. Guy Peter's tools, and Lester Salamon's bundles of attributes.

In *Policy Paradox*, Deborah Stone defines policy solutions as approaches for groups of people to gain power and control policy. She identifies five tools, which she claims are society's main forms of influence (Stone, 2012). These tools include: incentives, rules, facts, rights, and powers. Stone understands tools as broad worldviews through which people try to control policy.

B. Guy Peters offers a more prescriptive explanation of tools in *American Public Policy: Promise and Performance*. Tools are instruments of governments to "influence society and the economy and produce changes in the lives of citizens" (Peters, 2012). Tools are used by governments to achieve a given policy goal. These tools include law, services, money, taxes, other economic instruments, and moral suasion.

Salamon provides another definition of tools in *The Tools of Government: A Guide to the New Governance*: "A tool of public action is an identifiable method through which collective action is structured to address a public problem" (Salamon, 2002). Tools have common features that allow for their identification and grouping, but they also have design features that vary from policy to policy. Each tool actually represents a bundle of four attributes: a good or activity delivered, a delivery vehicle, a delivery system, and a set of rules that governs the delivery system. Tools can be categorized into groups by identifying each of the policy's four attributes.

This definition allows for many possible tools. Thirteen common tools of public action are included in Salamon's discussion. Grants are one tool he considers. Salamon identifies the following three attributes of grants: good or service as the product provided, grant awards as the vehicle, and lower levels of government as the delivery system.

Salamon offers a number of criteria to evaluate the success of a tool in a given circumstance. He identifies the following five criteria for evaluation: effectiveness, efficiency, equity, manageability, and legitimacy (Salamon, 2002). Effectiveness measures whether the policy achieves its intended goals. Efficiency weighs overall results against the costs of achieving them. Equity concerns fairness across all eligible for benefits, as well as sending proportionally more benefits to those currently lacking. Manageability regards the degree of difficulty in operating a policy. Finally, legitimacy refers to the environment and context of implementation.

Of the five criteria, manageability best describes the factors that affect implementation. Salamon uses tool dimensions to assess policy in each of the five evaluative criteria. These tool dimensions include coerciveness, directness, automaticity, and visibility. Coerciveness measures the extent to which a tool restricts, rather than discourages, behavior (Salamon, 2002). Directness measures the extent that the authorizing body carries out a policy. Automaticity refers to “the extent to which a tool utilizes an existing administrative structure for its operations rather than creating its own special administrative apparatus” (Salamon, 2002). The last dimension is the visibility of a tool in the review process, especially pertaining to budgeting.

This study considers two dimensions of particular interest regarding grants: automaticity and directness. Table 4.1 reports Salamon’s predictions of manageability degrees given automaticity and directness.

Table 4.1. Predicted manageability given automaticity and directness.

Independent Variable		→	Dependent Variable
Tool Dimension	Degree of Dimension		Manageability
Automaticity	Low		Moderate/Low
	Medium		Low
	High		High/Moderate
Directness	Low		Low
	Medium		Low
	High		High

Salamon identifies grants as tools with low levels of automaticity and directness, which correspond to moderate/low and low levels of manageability, respectively. Salamon's discussion identifies grants as tools that face challenges in manageability.

4.2 CASE STUDY HYPOTHESES

Malcolm Goggin attempts to guide public policy analysis research towards more systematic social scientific methods (Goggin, 1990). In *Implementation Theory and Practice: Toward a Third Generation*, he uses prompt implementation and implementation without modification as two dependent variables that measure successful implementation. For the purposes of this study, successful implementation will refer to prompt implementation without modification.

Goggin identifies a long list of independent variables that determine whether a policy will be implemented promptly and without modification. These include: characteristics of policymakers' messages, credibility of the policymakers, presence of supportive advocacy coalitions, supportive political actors, number of participating organizational units, number of implementation personnel, program budget, political environment, and salience of the target problem (Goggin, 1990).

Two of Goggin's hypotheses frame the case study's discussion of implementation. First, Goggin writes, "The greater the number of organizational units involved in the implementation process, the greater the likelihood of delay and modification during implementation" (Goggin, 1990).

Second, Goggin (adapted by Menefee-Libey), claims, "The closer the alignment between the interests and values of the implementing organization and the interests and values of the policy-maker, the greater the likelihood of prompt implementation without modification" (Menefee-Libey, 2014).

These hypotheses provide distinct predictions of implementation success in the case of S.B. 535 grant programs in Western Riverside. I predict that a large number of organizational units will decrease the likelihood of prompt implementation without modification. However, I also believe that the cohesive interests and values of involved actors will increase prospects for successful implementation. Given the opposing projections these hypotheses provide, I predict that implementation will experience some delay and modification. Table 4.2 depicts the relationship between the two hypotheses.

Table 4.2. Predicted implementation success given number of actors and interest alignment.

		Number of Actors	
		Low	High
Interests and Values	Aligned	Prompt implementation without modification	Some delay and modification
	Not Aligned	Some delay and modification	Delayed implementation with modification

I predict to find a high number of organizational units with aligned interests and values, which corresponds to an outcome in the upper-right box. My case study considers the following hypothesis: Because S.B. 535 involves many actors with aligned interests and values, the policy is implemented with some delay and modification in the Western Riverside Council of Governments (WRCOG) subregion. Section IV supports this claim; I find evidence of delay, but not modification, in the first round of Affordable Housing and Sustainable Communities (AHSC) grant applications.

4.3 RESEARCH METHODS

I used a variety of methods to gather information on the four dependent and independent variables of my case study. Information on the policy at the state level was found online through the text of relevant state laws, documents submitted to the State Legislature by various stakeholders, and reports and program updates from state agencies. Information regarding individual Greenhouse Gas Reduction Fund (GGRF) grant programs was found on the websites of individual administering agencies, as well as through resources made available to local governments from metropolitan planning organizations (MPOs) or local government advocacy groups.

A large portion of my research was associated with my Internship in Public Affairs through the Pomona College Public Policy Analysis Department. My fall internship with WRCOG began in September 2014 and ended in December 2014. With my internship in the Sustainability, Planning, and Government Affairs programs, I participated in meetings and workshops relating to the GGRF grant programs. One of my assignments was to write a staff report regarding the availability of these funds for WRCOG cities. Also through the internship, I

contacted a number of government officials involved in the implementation of S.B. 535. I conducted five formal interviews with the individuals listed in Table 3.3.

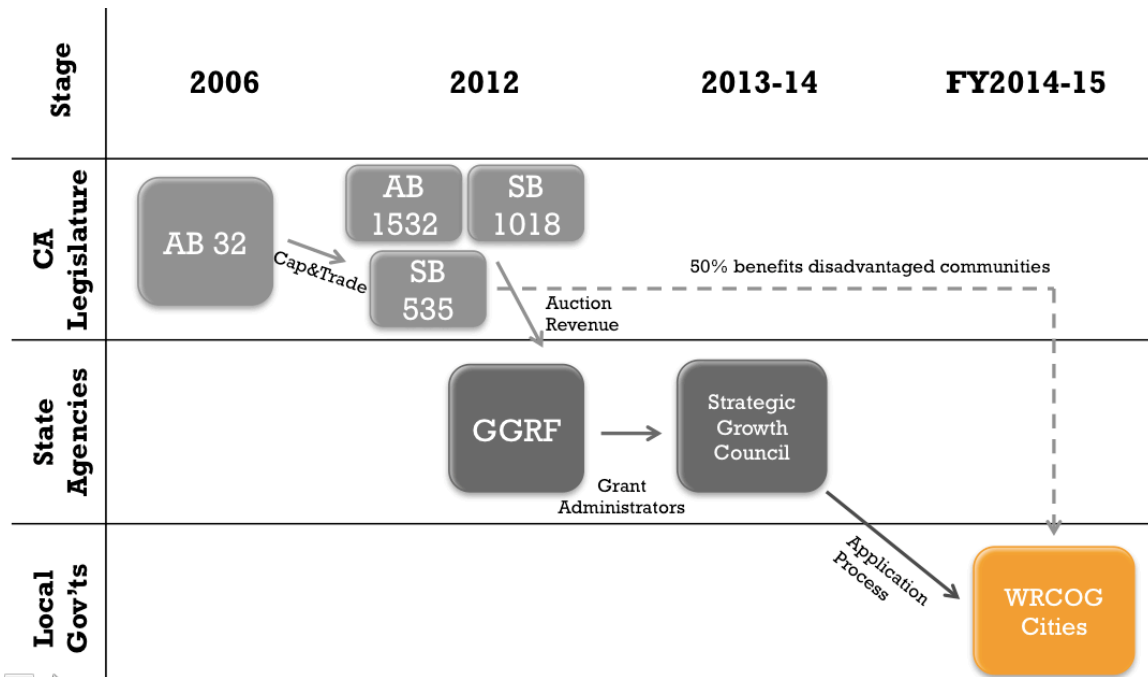
Table 3.3. Interviews with government officials.

Level of Government	Government Agency	Interviewee	Position
State Agency	California Environmental Protection Agency	Nicolas Heidorn	Special Assistant to the Secretary
	Strategic Growth Council	Allison Joe	Deputy Director
Regional	Southern California Association of Governments	Ping Chang	Program Manager, Land Use and Environmental Planning
Subregional	Los Angeles Regional Collaborative	Krista Kline	Managing Director
	Western Riverside Council of Governments	Jennifer Ward	Staff Analyst

4.4 CONTEXT OF FINDINGS

Although S.B. 535 involves the distribution of eleven different grant programs across the state in FY2014-15, this case study focuses on just one grant program in one area, namely Affordable Housing and Sustainable Communities (AHSC) program applications within the Western Riverside Council of Governments (WRCOG) subregion. Figure 4.1 updates the policy map in Figure 3.1 to include only the actors involved in this case study.

Figure 4.1. Case Study Implementation Chart.



After the High Speed Rail Project, the AHSC program receives the largest source of GGRF revenue, with \$200 million in FY2014-15. According to statute, the Strategic Growth Council (SGC) will receive 20 percent of the Greenhouse Gas Reduction Fund (GGRF) to manage the AHSC program in future years. The AHSC deadline for FY2014-15 allocations is expected in April 2015.

The AHSC program funds two strategies for achieving greenhouse gas reductions. The first is to reduce vehicle miles traveled by increasing accessibility to affordable housing through low-carbon transportation options. One category of funded projects targets Transit Oriented Development, which is reserved for “Qualifying High Quality Transit Areas” (Strategic Growth Council, 2014). Transit Oriented Development projects must target high-density areas, be located within one half-mile from a Major Transit Stop, and propose new affordable housing developments. Integrated Connectivity Projects are the other type of project within the vehicle miles traveled reduction strategy. Integrated Connectivity Projects differ from Transit Oriented

Developments in that they seek to connect existing transportation and affordable housing, do not have to be located in high-density areas, and do not require new affordable housing construction.

The second strategy for reducing greenhouse gases in the AHSC program is the preservation of agricultural lands from greenhouse gas “intensive development” (Strategic Growth Council, 2014). The AHSC Draft Guidelines designate this part of the program as a separate entity, referred to as the Sustainable Agricultural Lands Conservation program. Either the Natural Resources Agency or the California Department of Natural Resources will administer this aspect of the program, yet to be determined at the time of writing. The implementation of the Sustainable Agricultural Lands Conservation program is beyond the scope of this study.

The SGC is the organization that manages the AHSC program. The SGC is a unique state organization, in that is charged with coordinating the activities and funding programs of member state agencies. It is classified as a cabinet level committee that support sustainable communities seeking stable economies, social equity, and environmental stewardship (Strategic Growth Council, 2009).

The Strategic Growth Council (SGC) was founded in 2008 following the enactment of S.B. 732: Environment (Steinberg). S.B. 732 established the SGC with funding from the California Natural Resources Agency to “to improve air and water quality, improve natural resource protection, increase the availability of affordable housing, improve transportation, meet the goals of the California Global Warming Solutions Act of 2006, encourage sustainable land use planning, and revitalize urban and community centers in a sustainable manner” (Steinberg).

The SGC consists of ten members, including agency secretaries from “the California Business Consumer Services and Housing Agency (BCSH), California Health and Human Services (CHHS), California Environmental Protection Agency (CalEPA), California State

Transportation Agency (CalSTA), the California Department of Food and Agriculture (CDFA) and the California Natural Resources Agency,” as well as the Director of State Planning and Research, and three public members appointed by the Governor, the Senate Committee on Rules, and the Speaker of the Assembly (Strategic Growth Council, 2014).

This case study considers applications for the AHSC program within Western Riverside County. The WRCOG subregion includes 17 member cities, Eastern Municipal Water District, Western Municipal Water District, March Joint Powers Authority, Riverside County Superintendent of Schools, and the Morongo Band of Mission Indians. Members of the council of governments range in size, economic composition, and natural environment. This case study considers applications to the AHSC programs from cities and county organizations in Western Riverside.

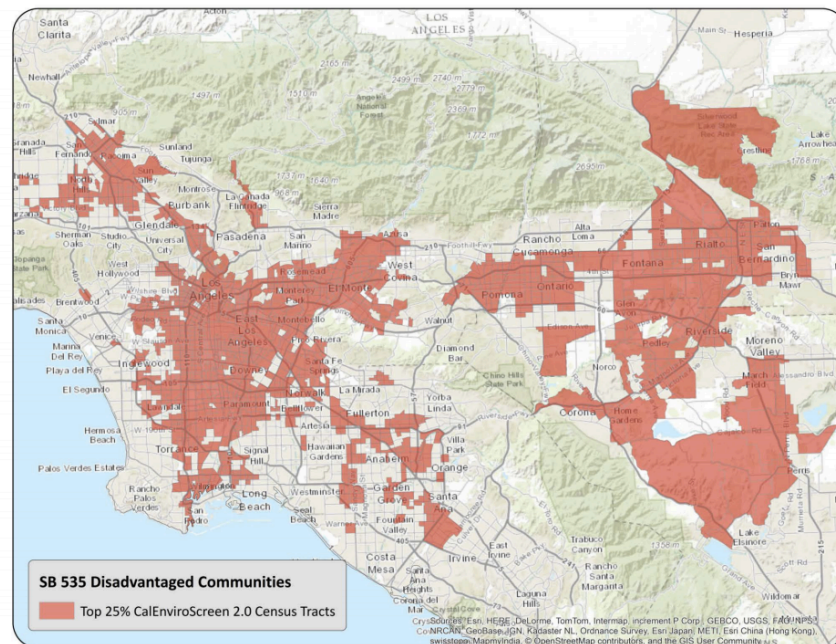
Riverside County represents a historically conservative population (McGhee & Krimm), which is typically not associated with environmental leadership. However, the WRCOG organization has a long track record of successful environmental programs. WRCOG operates a number of programs that have received recognition statewide and extend beyond the borders of Riverside County (Esper, 2014). For example, its home energy retrofit program, HERO, the Governor’s Environmental and Economic Leadership Award in 2013 (Ward, 2012).

Western Riverside County hosts a large number of pollution problems. Many census tracts in the region qualify as disadvantaged communities as defined by the CalEPA S.B. 535 methodology. Of the state’s census tracts that qualify as disadvantaged communities, 4.6 percent are in the WRCOG subregion. WRCOG cities with census tracts that qualify for SB 535 funds are listed below, followed by the number of qualifying census tracts: Corona (10), Lake Elsinore (2), Moreno Valley (15), Perris (8), Riverside (53), and San Jacinto (1).

WRCOG also works closely with many other organizations representing more disadvantaged communities. WRCOG is a member of the Southern California Association of Governments (SCAG) metropolitan planning organization (MPO), which provides resources and collaboration for environmental planning projects. Of the state's disadvantaged community census tracts, 70 percent are represented by SCAG. Figure 3 maps the census tracts in Southern California that qualify for GGRF disadvantaged community funding.

Figure 3. Disadvantaged Communities in Southern California. (Rodriquez, 2014)

Los Angeles Area



S.B. 535 has arguably the biggest influence on the SCAG region of any area in the state. SCAG interest in and resources for S.B. 535 funding may influence WRCOG implementation outcomes; S.B. 535 provides funding for not only individual city governments, but also collaborations among cities and larger organizations that cross jurisdictional boundaries with SCAG assistance.

4.5 FINDINGS

This section reports the findings of my research for each of the two independent variables and two dependent variables used to evaluate the success of the policy's implementation.

Independent Variable: Number of Actors. I found a large number of actors to be involved in the implementation of S.B. 535. Even within one grant program in one area, there are many organizational units are involved in the implementation process.

For a WRCOG member to apply for an AHSC grant, a public agency with jurisdiction over the area must apply, either alone or jointly with a co-applicant. Potential co-applicants include: joint powers authorities, public housing authorities, transit agencies, and school districts (Strategic Growth Council, 2014). To apply, either WRCOG or one of its member cities would have to decide which (if any) of the many possible co-applicants to partner with.

A number of organizations participate in the implementation process by providing potential applicants with resources and information. WRCOG and its member cities have received guidance documents from the California Association of Council of Governments (CALCOG) with details about the application process and where to look for more information (California Association of Councils of Government, 2014). SCAG has also facilitated the communication between grant administrators and potential applicants by hosting workshops (Joe, 2014) and dedicating meetings to GGRF grant opportunities (Parfrey, 2014).

Although local governments submit grant applications to the SGC, other organizations implement these programs. The AHSC program is administered by the SGC but implemented by the Department of Housing and Community Development and the Natural Resources Agency (Strategic Growth Council, 2014).

The SGC has to select grants in line with the protocols determined by other agencies. For example, the SGC is required to allocate half of its AHSC funding to disadvantaged communities, under the California Cap-and-Trade expenditure plan of the FY2014-15 State Budget (Leno, 2014).

The process for identifying disadvantaged communities required the collaboration a large number of actors in itself. CalEPA identified the Office of Environmental Health Hazard Assessment (OEHHA) as the party responsible for creating a screening tool, called the California Communities Environmental Health Screening Tool (CalEnviroScreen), to rank the state's census tracts by environmental harm and social vulnerability. The Secretary for Environmental Protection determined that the S.B. 535 definition of disadvantaged communities would include census tracts with the top 25 percent highest pollution vulnerability scores. The Air Resources Board determined the classification of "benefits to" and "location in" disadvantaged communities in its *Interim Guidance to Agencies Administering Greenhouse Gas Reduction Fund Monies* document (California Air Resources Board, 2014). The already complex process of distributing cap-and-trade revenue is forced to involve even more actors because of its earmark for disadvantaged communities.

Of course, the implementation of the AHSC program must consider other grant programs funded by the GGRF. Because the AHSC program is just one of eleven included in the Cap-and-Trade Expenditure Plan (Leno, 2014), the attention of local agencies to track grant opportunities is diverted across all of the new programs. Each program has its own program focus, application process, and application timeline. The large number of actors involved in not only the AHSC program, but the other GGRF programs as well, complicates the application process for local governments.

The involvement of many organizations in the implementation process opens the policy up to potential weakness. However, I find evidence that the policy is able to overcome many of these challenges. Interestingly, an official at the SGC informed me that the delegation of roles across many actors at the state level does not threaten successful implementation.

Allison Joe, Deputy Director of the SGC, stated in an interview, “I find that there’s better communication with the number of actors. The number of people involved just necessitates better coordination and better communication” (Joe, 2014). Members of state agencies believe they can overcome the complexity of the program. One factor that contributes to increased implementation outcomes is the strong alignment of interests across implementing organizations.

Independent Variable: Alignment of Values. In this case study, I consider the alignment of interests separately from the alignment of values of implementing organizations. Interest alignment refers to the support of various organizations in the AHSC goal of reducing greenhouse gas emissions by connecting affordable housing with low-carbon transportation. Value alignment refers to organizations’ support of the policy goals of S.B. 535, namely, to direct resources to the state’s communities most impacted by climate change. I find that each participating organization has generally aligned values, but divergent interests. I consider each in turn, beginning with values.

All five of the government officials I spoke with regarded S.B. 535 as a unique and important policy. S.B. 535 is a landmark piece of legislation for its implications on environmental and climate justice. The bill not only recognizes the disparate impacts of pollution burden and climate change on low-income and disadvantaged communities, but requires the state to create a screening tool that identifies these communities. Further, the law makes a significant source of revenue available for projects proposed by local governments representing these

communities. My interviews demonstrate the alignment of government employees with the goals of S.B. 535, as well as a level of recognition of the importance of the policy.

State level officials indicate interest in environmental justice and cap-and-trade revenue allocation to disadvantaged communities. In an interview with Nicolas Heidorn, Special Assistant to the Secretary of CalEPA, I found evidence of state-level research interests relating to environmental justice (Heidorn, 2014). Nicolas Heidorn expressed the interest of CalEPA to enhance CalEnviroScreen to increase accessibility and use by not only state government officials, but also local governments and community organizations. CalEPA has used S.B. 535 to further its environmental justice objectives; my interview with Nicolas Heidorn confirms the organization's commitment to the goals of S.B. 535.

SGC officials also demonstrated a commitment to environmental justice. My interview with Allison Joe, Deputy Director, indicated the Council's support for and stake in S.B. 535. Allison Joe noted that she has seen increased collaboration among state agencies because of S.B. 535 and the GGRF. Regarding the relationship between the SGC, local governments, and environmental justice, she claimed,

“To the extent that the intent of the [AHSC program] goals actually do align with the policies that the local governments have already enacted... I think that they do generally align... Overall the issue of equity is really important. To be able to reduce environmental harms and improve the conditions of those who have been affected by them is really important and critical to what we do” (Joe, 2014).

This regard for collaboration continues at the regional and subregional levels. Krista Kline, Managing Director of the Los Angeles Regional Collaborative for Climate Action and Sustainability, also noted unprecedented collaboration among implementing agencies because of S.B. 535. Of this heightened collaboration, she said, “I don't think it's ever happened before”

(Kline, 2014). She attributed this collaboration to the recognized need to address environmental justice.

Ping Chang, Program Manager of the Southern California Association of Governments (SCAG) Land Use and Environmental Planning department, voiced similar sentiments of the importance of S.B. 535. He articulated the importance of S.B. 535 for environmental justice as the following: “This policy doesn’t just define disadvantaged communities, but also provides funding and other financial mechanisms to support these communities. This year, \$832 million [was available], but in future years, it could be billions! That is substantial” (Chang, 2014). Ping Chang also noted that GGRF funding availability has increased SCAG’s efforts to understand the different types of environmental justice issues facing the region.

Within the WRCOG subregion, local governments have voiced their commitment to environmental justice. Jennifer Ward, WRCOG Staff Analyst, noted support from cities containing disadvantaged communities (Ward, 2014). She also said that cities are currently seeking funding to help meet their sustainability goals prescribed by the state.

All of my interviews indicate strong value alignment across the actors. This common commitment to environmental justice increases the likelihood of successful implementation, and helps overcome the complexity of the program associated with the large number of actors involved.

Independent Variable: Alignment of Interests. One major challenge facing the implementation of the AHSC program is the divergent interests of the SGC and local governments.

In some ways, the interests of state agencies and local governments are necessarily distinct. Allison Joe of the SGC identified the agency’s objectives as interagency coordination

for sustainability issues, rather than the planning efforts of individual communities. She continued, “The SGC was created with the objectives to focus on sustainability. Local governments have sustainability interests and objectives but they have the larger directive of health and safety. I think [interests] do align fairly well, but they don’t always exactly align” (Joe, 2014). Because grant administrators and applicants approached the GGFR funding availability with different priorities, the interests of these organizations have the potential to conflict.

S.B. 535 provides the SGC with a substantial amount of authority in shaping the purpose of its AHSC grant program. The SGC was required to create a program in line with its mission of reducing greenhouse gas emissions by increasing access to affordable housing and public transportation. The SGC decided to create a funding program that met the planning needs it identified across the state; the AHSC program is designed to connect affordable housing and low-carbon transportation through new development projects. In my research, I came across tension between the SGC and local authorities that question whether the program guidelines are too narrow to fit their needs.

Jennifer Ward of WRCOG expressed concern that the SGC program guidelines did not address the needs of disadvantaged communities in Western Riverside County. The SGC program requires local governments to apply for funding for new affordable housing and transportation development. According to Jennifer Ward, city governments are more focused on securing funding for existing sustainability programs than creating new programs. She explained that city governments within WRCOG that have less capacity are unlikely to prepare detailed grant applications, especially for a grant program with narrow guidelines for new projects. Jennifer Ward stated,

“With these particular grants, there is a lot of confusion right now regarding what’s available, what type of projects cities should apply for. The effort needed to prepare an application is beyond what the cities have time for. Even though disadvantaged communities have a special pot of funding, they still have to prepare an application like everyone else, and it takes so much effort to apply for a grant” (Ward, 2014).

Jennifer Ward explained that WRCOG jurisdictions do not currently have a good understanding of who is administering grant programs, where to look for information, and what types of projects will be funded.

When asked about these concerns of local governments regarding capacity issues, Allison Joe confirmed the commitment of SGC to its “narrow” grant application guidelines. She communicated her regard for local concern, but largely accepted the difference in opinions regarding the focus of the grant program. The SGC seeks to challenge local governments to think creatively about housing and transportation planning. She said the program is not meant for local governments to “shoehorn” their existing projects and specific needs to fit AHSC guidelines (Joe, 2014).

The goal of the AHSC program is not to continue existing sustainability efforts, but to fund new efforts in line with the goals of the SGC and guiding state legislation. Joe spoke to the difficult challenge facing the SGC to balance administrative objectives and local government capacity. Joe recognized the tension between local government desires and grant funding requirements, but ultimately referred to some level of compromise as the “obligation” of local governments to secure necessary funding and resources (Joe, 2014). The disagreement between subregional and state organizations on the scope of cap-and-trade-funded projects represents a significant challenge in implementation from the perspective of local governments.

Dependent Variable: Implementation Without Modification. This case study uses two variables to characterize successful implementation. The first is implementation without

modification, which refers to the acceptance of local governments of the program. Modification is measured by local government attempts to change the program guidelines by submitting comment letters to the grant administrator, the SGC.

No WRCOG member cities submitted comment letters to the SGC regarding the AHSC program, which were due October 31, 2014. No other county agencies submitted comment letters on their behalf. Even though Jennifer Ward expressed concern regarding local capacity to propose AHSC-eligible projects, she noted willingness of WRCOG member cities to adapt to the program guidelines in the future. The region has closely followed cap-and-trade funding availability, and is excited by the large amount of funding available to GGRF programs (Ward, 2014).

It is difficult to determine whether the lack of modification attempts is due to acceptance of AHSC guidelines, lack of capacity to draft comment letters, or lack of interest in the program. Further research is necessary to assess the motivation of WRCOG member cities in refraining from submitting comment letters.

Though imperfect, the content of comment letters submitted by nearby councils of governments (COGs) provides a point of reference for concerns of local governments in Southern California. Through WRCOG, I was provided access to the comment letters of two nearby COGs.

One comment letter focused on definitional issues in the program guidelines (Unnamed Council of Governments 1 (Confidential), 2014). First, the COG urged the SGC to reassess vehicle miles traveled as the metric of GHG reductions, since pedal and electric vehicles release fewer GHG emissions. Second, the COG recommended that the AHSC program include Zero Emission Vehicles in their definition of low-carbon transportation. Neither of these concerns

suggests on major changes to the program's requirement of new development or emphasis on the interconnectivity of affordable housing and public transportation.

The second COG provided two suggestions in its comment letter (Unnamed Council of Governments 2 (Confidential), 2014). First, it recommends that the SGC provide technical and financial assistance to disadvantaged communities, to meet the goal of distributing funds to communities in need. Second, the COG asks that the SGC review the CalEnviroScreen methodology of selecting disadvantaged communities. Again, neither of these suggestions seeks to drastically modify the AHSC grant program.

As far as these comment letters suggest, even if WRCOG cities had submitted comment letters, they would not likely recommend fundamental program modification. The modification metric indicates moderate success for the program in its first year.

Dependent Variable: Prompt Implementation. The second metric of successful implementation is prompt implementation, which I define as intent to apply for AHSC funding in the FY2014-15 round of grants.

Jennifer Ward does not expect WRCOG cities to submit applications for the AHSC April deadline (Ward, 2014). She hopes that county agencies will pursue AHSC and other GGRF programs for this year and in future years. Because no applications are likely to be submitted this year, this study finds that implementation within WRCOG was not prompt.

However, WRCOG member cities have expressed their continued interest in the AHSC program. When asked if she foresees WRCOG cities submitting AHSC applications in future years, Jennifer Ward responded, "If the funding is available. If we could find good partners to fill out the grant requirements and we can have some more developed proposals, then yes, we would definitely do that" (Ward, 2014). The ability of member cities (and the agencies that represent

them) to submit applications in the program's first year does not necessarily predict a lack of grant applications in future years.

Further, applications from the WRCOG region do not reflect applications from other areas. WRCOG represents only 17 cities, and is not necessarily an accurate representation of the policy implementation elsewhere. In fact, both Jennifer Ward and Allison Joe anticipate far more grant applications than can be funded across the state (Ward, 2014). Allison Joe expects the program to receive more than enough applications to fund qualified programs and meet the disadvantaged community benefit requirement (Joe, 2014).

4.6 CONFIRMATION OF HYPOTHESES

In Section 4.2: Case Study Hypotheses, I predicted that a large number of organizational units decreases the likelihood of prompt implementation without modification. However, I also thought that the cohesive interests and values of involved actors would increase prospects for successful implementation. Given the opposing projections these hypotheses provide, I predicted that implementation would experience some delay and modification.

For the most part, my findings verify these expectations for the policy's implementation. I identified many organizations involved in the administration of S.B. 535. The large number implementation actors complicated the application process for local governments, although the SGC viewed the number of actors involved as an opportunity for collaboration. In a number of ways, the complexity of the policy was resolved through the strong alignment of values across implementing organizations. However, the divergent interests of the grant administrator and grant applicants did prevent participation in the program.

As this discussion demonstrates, the findings indicate mixed implementation outcomes. I found delay and minimal modification in implementation. Local governments in the WRCOG subregion did not attempt to modify the policy through comment letters. However, no local governments in the WRCOG jurisdiction are expected to apply to the program; in Western Riverside County, the AHSC program was not implemented promptly. Overall, the degree of delay and limited modification support my hypotheses.

4.7 EVALUATION

This study finds only limited success in implementation, as defined by hypotheses regarding the number of actors and alignment of interests. The evaluation of this policy has been a useful exercise in judging the ability of the policy to achieve its intended goals in one region. Beyond simply assessing the policy's success, this case study has illuminated potential barriers to implementation. The interviews with staff in the organizations administering and applying for the grant program revealed a lack of alignment of interests across actors. While the grant administrator spoke to the goals of her organization to pursue ambitious environmental justice goals, the local government employee noted that environmental justice is not a top priority. Local governments have to attend to their immediate objectives, such as providing basic services for residents. Capacity issues provide an explanation for the misalignment of interests among actors, despite similar values in favor of environmental justice. Areas that are most interested in environmental justice may be subject to the least economic resources and governmental capacity to pursue projects to remediate their disproportionate environmental harm.

Efforts to solve the problem of divergent interests among policy actors raise an important question: how can state actors achieve their performance goals when the communities they target

lack the capacity to participate in their programs? In the case of S.B. 535, the grant administrator has two potentially conflicting goals: managing an ambitious grant program and ensuring the equitable distribution of funding. Research should consider the extent to which grant administrators balance program performance with equity. Further analysis is necessary to measure the effectiveness of increasing government capacity in achieving program goals. From this line of reasoning emerge two corollary questions: what additional factors increase the alignment of interests among actors, and what factors increase program success independent of capacity? A quantitative analysis can provide insight into the best methods for improving program success, both in terms of performance and equity. The next chapter uses an econometric model to identify areas for improvement, which are later crafted into policy recommendations.

PART III: HOW CAN THE POLICY BE IMPROVED?

5. PERFORMANCE AND EQUITY: ECONOMETRIC MODEL

This chapter uses the tools of econometric statistical analysis to evaluate the equity performance of S.B. 535 in its first year of operation. A multivariate regression assigns weight to various factors in the decision of local governments to apply for a grant. Though the main focus of this chapter is the balancing of equity and performance by grant administrators, a number of other implications emerge regarding implementation success.

5.1 LITERATURE REVIEW

This study considers the distribution of funding for an environmental justice grant program. Though many factors affect the distribution of grants, I focus primarily on the role of governmental capacity and community economic need. The literature review first identifies the principal investigation of the study, namely, the balance of governmental capacity and economic need in a grant program with social equity goals. I then draw on the public administration literature to identify the different types of factors that impact grant allocation generally. I discuss governmental capacity and economic need at depth, before turning to other influences on application submission, such as race and political capacity. I then consider other potential influences on environmental grants by applying the environmental policy literature to grant

program implementation. A number of variables increase the implementation of environmental policy, such as civic engagement, educational attainment, and city size. Finally, I consider the potential role of environmental quality in grant applications.

Grants are an important tool for all levels of government. State and federal governments can use grant funding to influence the behavior of smaller governments. At the local level, grants make up an important revenue source for local projects. When distributed efficiently, grants can have a meaningful impact on the lives of citizens. In order to achieve their program objectives, grant administrators distribute funding to the local governments most likely to implement projects successfully. However, awarding grants to governments with sufficient staff and financial resources does not ensure an equitable distribution of funding. The desire to achieve the performance goals of their grant program may inhibit program administrators from an equitable distribution of funds. Though individual grant awards may have only a marginal impact on social equity, systematic disparities in the ability to apply for grants have the potential for significant inequality. If grants are awarded to areas with the most government capacity, grant programs may exacerbate existing inequalities in disadvantaged communities rather than actively remediate them.

The fundamental challenge in ensuring social equity through competitive grants is the balance of capacity and need: how can program administrators distribute funding to areas that both need the funding and have the capacity to utilize it? This paper explores an attempt by grant administrators to balance governmental capacity and economic need in a program with explicit social equity goals. While the literature has thoroughly investigated social equity performance of grant programs in general, I contribute an analysis of income equality in a program with a social

equity requirement. By considering a program with explicit equity goals, we can evaluate prospects for equity in competitive grant programs more broadly.

The public administration literature suggests a number of factors that influence grant application submission. The literature supports capacity as a strong predictor of a local government's ability to apply for and receive grants. Grant administrators seek to maximize the use of their resources by supporting local governments with the sufficient capacity to manage successful programs. Previous studies indicate that both local financial resources and local administrative capacity are strong determinants of grant awards to local governments (Hall, 2008). Hall (2008) finds that the size of a government's budget and the number of staff members per constituent increase the likelihood of federal grant application submission by local governments. Other studies support the positive impact of financial resources on grant application rates, through a variety of variables including property taxes per capita (Dull & Wernstedt, 2010), percent intergovernmental revenue per capita (Lubell et al., 2009), and percent of the budget raised within the community (Kwon et al., 2014).

The literature has also addressed the hypothesis that grants are awarded to areas with the greatest economic need, following the assumption that areas with greater need will benefit proportionally more from increased funding. Even though we would expect to find more frequent grant awards in areas with lower income, prior research has found the opposite. Economic need has been shown to decrease the likelihood of receiving grants. Dull and Wernstedt (2010) study the EPA Brownfields Program and predict that the EPA's recent focus on equity would increase grant applications from areas with demonstrated need. Their findings indicate that financial need was negatively correlated with the winning of grant awards, even controlling for government capacity (as measured by property taxes). Collins and Gerber (2008) also question the

distributional impact of competitive grants, by analyzing the social equity performance of different grant structures. They find that competitive grants fail to achieve equitable outcomes, by concentrating resources in more wealthy areas.

One would expect to find a correlation between economic need and governmental capacity; economic distress (measured by poverty rate, income, and unemployment rate) should reduce tax revenue and governmental capacity by default. Yet, I have not encountered research that fully accounts for this seemingly contradictory relationship. Though Hall (2008) notes that local capacity and economic need appear to be inversely related, he does not explicitly describe this relationship. This information is vital to enhancing the equity outcomes of grant programs, as it enables program administrators to best target their assistance to broaden their applicant pool.

Of course, local governmental capacity and economic need are not the only two variables that affect grant application submission. Race is an important factor in considering the social equity dimensions of any government program. Research on grant applications shows that percentage Hispanic and African American actually have a positive effect on grant awards for a local government (Collins & Gerber, 2008). However, the literature disputes this finding. Other scholars find that the incidence of racial discrimination within grant programs aligns with evidence of racial discrimination within public administration more generally. Frederickson (2008) provides evidence of these racial disparities throughout the history of public administration, such as reduced participation in public decision-making by racial minorities, low-income individuals, or immigrants (34). He claims public administrators have the ability and responsibility to provide just outcomes within our laws as they are written.

Another strong influence on the distribution of grant funding is political capacity. The political affiliation of a local government, with respect to the party in power at higher levels of government, significantly impacts the likelihood that a local government receives funding. The alignment of political interests from grant applicant to grant distributor increases the allocation of funding (Hall, 2008). Hall suggests that localities represented by members of the minority party in Congress may receive less grant funding both because of political punishment and a misalignment of priorities (466).

A separate set of factors influence the implementation of environmental policy more broadly. Although the environmental policy literature does not focus on grant programs, the factors that influence their implementation should be considered in the case of grants. The local governments applying for grant funding are also likely to implement environmental policies. Both grant applications and environmental policies require governmental capacity, a factor associated with a number of demographic patterns previously discussed.

One important factor that influences environmental policy adoption is the demographic characteristics of a given community. Local interest in environmental protection has a strong influence on the environmental activity of governments. Earnhart (2004) finds that community pressure has a significant impact on both government regulation of pollution and polluter compliance with existing policies. Earnhart measures community pressure with population size, political attitudes, and wealth. Citizen awareness of environmental issues and participation in the management of natural resources have been shown to improve environmental quality, as demonstrated by de Loe and Kreutzwiser's (2005) study of groundwater contamination in Ontario, Canada. Areas with higher levels of citizen participation in the democratic process are more likely to have a stronger commitment to sustainability policies. Portney and Berry (2010)

find that “participatory places” (as indicated by petition signing, attending demonstration, and involvement in neighborhood associations) have more advanced sustainability efforts.

A factor related to civic engagement that influences environmental policy activity is the educational attainment of a city. Since educational attainment contributes to civic engagement, we would expect to find that areas with higher levels of high school or college graduation rates have more advanced environmental policies in place. Opp, Osgood, and Rugeley (2013) support this hypothesis, as they find that cities with higher rates of college degrees score higher on their environmental policy index.

Another factor related to civic engagement is the size of a city, both in terms of geographic size and in terms of population density. As mentioned above, the pressure a community puts on its government to pursue environmental protection is in part related to the total number of citizens living in a community (Earnhart 2004). Independently of community pressure, the population density of a city also has a strong impact on environmental policy action. Lubell, Feiock, and Handy (2009) find city size (measured by geographic area and total population) to be the best predictor of high environmental policy index scores, controlling for other factors like fiscal capacity and socioeconomic background. The authors hypothesize that larger and more populous cities are more likely to implement environmental policies because they are more economically developed than smaller cities.

Other studies of environmental policy indicate that the demographic characteristics of a community increase its government’s activity in environmental issues. Lavelle and Coyle (1992) find racial disparities in the enforcement of toxic waste sites, with faster and more complete responses to toxic pollution for white communities than for communities of color. (It is worth noting that the methodology of these authors has been questioned by more recent literature,

including an article by Atlas (2001) that re-examines toxic waste cleanup and finds no evidence of disparate treatment of racial minorities.) Beyond racial discrepancies, other studies consider the economic groups that benefit from environmental policies. Konisky (2009) analyzes state enforcement of three pollution reduction laws and finds that poor counties are subject to less stringent enforcement. Konisky's study does not find strong evidence of racial disparities in enforcement, which further suggests the need for continued research to clarify the role of race in grant distribution.

One area that has received little consideration is the influence of environmental quality on the activity of local governments in environmental protection. One would expect communities with worse environmental quality to address their pollution through enhanced environmental policy activity. Dull and Wernstedt (2010) support this finding, by reporting that areas with more contaminated land are more likely to receive an EPA brownfield grant to remediate polluted property. However, further research is needed to delineate the relationship between environmental quality and other factors that influence grant applications, such as socioeconomic status and governmental capacity.

Though the literature review has identified many factors with a significant impact on the distribution of environmental grant programs, this paper will focus on the potentially inverse relationship of economic need and governmental capacity in grant applications and awards. Understanding the influence of government capacity on grant applications, as well as the factors that enhance government capacity, are essential in distributing grant funding as intended. Increasing local capacity can help administrators achieve the mission of a given grant program, be it social equity or environmental protection. All of the other variables that likely affect the implementation of grant programs and environmental policies will be included as controls in this

study's model. The analysis will then consider the secondary relationships between the two variables of interest (local government capacity and economic need) and some of the control variables, such as environmental quality and local environmental initiatives.

The Dull and Wernstedt (2010) paper is the study that is most closely related to this analysis. The authors analyze the EPA Brownfields Program, which provides local governments with resources to clean up contaminated land. The authors consider both applications and awards across the country from 2003 to 2007. Their model produces a number of variables that significantly increase application likelihood, including poor environmental quality, property taxes, college education, and percent of the population nonwhite. Poverty and home values reduce the likelihood of application submission. When considering awarded projects, the authors detect a positive impact on application acceptance from poor environmental quality and property taxes, and a negative impact from poverty rate. Interestingly, the nonwhite percentage of the population significantly reduces the likelihood of a community to receive a grant award. The Brownfields program displays poor racial and economic equity performance, despite the stated emphasis of the EPA on program equity.

My analysis seeks to build upon the work of Dull and Wernstedt (2010) in a various aspects. First, this study gives special attention the relationship between economic need and government capacity. Second, the study will consider the relationship of environmental quality and environmental policy on each of these variables of interest. Importantly, this study considers not only whether a community applied for a grant, but the amount that they applied for. This metric indicates whether capacity and need correspond to requested grant amounts. Finally, the study evaluates the social equity performance of a grant program with explicit environmental justice goals.

5.2 THEORY TO EQUATIONS

This research considers the likelihood of a local government to apply for an environmental justice grant. Various channels of influence affect the likelihood of a city government to apply for such a grant. Numerous public administration scholars (Collins & Gerber, 2008; Dull & Wernstedt, 2010; Hall, 2008) demonstrate that local governmental capacity and economic need are influential in grant applications. These factors form the variables of interest for my analysis. The literature identifies a number of other determinants on grant applications that must be controlled for. A simplified conceptual model can be constructed as follows:

$$Application = \beta_1 GovtCapacity + \beta_2 EconomicNeed + controls + \mu$$

I divide these controls into a few broad channels of influence, included in an expanded model:

$$Application = \beta_1 GovtCapacity + \beta_2 EconomicNeed + \beta_3 Race + \\ \beta_4 PoliticalCapacity + \beta_5 EnvPolicyCapacity + \beta_6 EnvQuality + \mu$$

The dependent variable (*Application*) measures the probability of a local government to submit a grant application. Specifically, this variable considers the likelihood of a city government to submit a Concept Proposal for the Affordable Housing and Sustainable Communities FY2014-15 program. Since the dependent variable represents a probability, I use a probit regression for my model. Each beta represents the effect of a given variable on the probability of a government to submit a grant application. The betas communicate the effect on application probability given a unit increase in the respective variable at its mean.

The main focus of this study is the role of two variables of interest on grant application submission: government capacity and economic need. My model also controls for other factors that influence political capacity, environmental policy adoption, and environmental quality. The expanded regression will be:

$$\begin{aligned} Application = & \beta_1 GovtStaff + \beta_2 \log(Income) + \beta_3 Poverty + \beta_4 AfrAmer + \\ & \beta_5 Hispanic + \beta_6 VoterAlign + \beta_7 \log(Population) + \beta_8 VoteRate + \\ & \beta_9 Education + \beta_{10} EnvVote + \beta_{11} \log(Pollution) + \mu \end{aligned}$$

The following sections further describe the different channels of influence on application submission.

Variables of Interest

The public administration literature has considered the influence of government capacity and economic need on grant applications independently. This study seeks to consider the relationship of these two variables of interest on grant application submission, in the case of an environmental grant.

Government capacity. Government capacity is expected to increase the amount of funding a local government receives from a higher level of government. Local governments with higher levels of capacity are in a better position to apply and receive grant funding. These governments can devote the staff time necessary to prepare competitive applications. Well-staffed governments are in a better position to pursue additional projects beyond their regular operations.

I include a measure of government staff capacity per capita in my regression. My government capacity variable (*GovtStaff*) considers full time city government staff members per 1,000 city residents. The expected coefficient on *GovtStaff* is positive; better-staffed governments are more likely to apply for this grant.

Economic need. Economic need is another well-documented influence on grant distribution. Grant programs often target areas with demonstrated economic need. However, the ability of administrators to target low-income areas may conflict with the ability of these areas to apply. Though grant administrators intend to distribute funding to areas with economic need, administrators' pursuit of their performance goals may limit redistribution efforts.

My model uses a logarithmic transformation of median household income ($\log(\text{Income})$) to represent economic need. I expect the effect of income on grant applications to have diminishing marginal returns; at higher income levels, additional income has a proportionately smaller influence on grant application decisions. Though the coefficient of $\log(\text{Income})$ is unclear from the literature, I predict a positive coefficient that represents the poor social equity performance of competitive grants. I expect governments with higher income residents to be more likely to prepare grant applications.

The grant program considers not only median income, but poverty as well. I include a variable for poverty rate, as measured by percentage of a city population below the federal poverty line (*Poverty*). Dull and Wernstedt (2010) find an increase in poverty rate to reduce the likelihood of grant application submission. Thus, I expect the coefficient on the poverty variable to be negative, for the same social equity performance reasons cited above.

Control Variables

Previous studies consider other factors that influence the distribution of competitive grant funding and the implementation of environmental policy. My analysis isolates the influence of government capacity and economic need by controlling for the other factors that likely affect grant application submission.

Race. Race is a factor widely considered by the public administration literature. Grant programs designed to promote social equality target minority areas with their funding. Studies have demonstrated that racial diversity (measured by percent African American and Hispanic) increase grant funding for a given community (Collins & Gerber, 2008). However, other scholars find that minority areas are more likely to receive grants, but receive lower grant awards compared to the average (Dull & Wernstedt, 2010). I expect a positive correlation between racial diversity and application submission. Race is included in this model with two variables, percent of the population African American (*AfrAmer*) and percent of the population Hispanic (*Hispanic*).

Political Capacity. “Political capacity” refers to the alignment of political views from grant applicants to higher levels of government (Hall, 2008). Political capacity has been shown to increase the likelihood of a government to receive a grant award (Hall, 2008). Grant administrators may choose to reward city governments with similar political interests, in order to punish the minority party.

In this regression, I measure political capacity with a variable (*VoterAlign*) that considers the party alignment of grant applicants and the legislative body that authorized the grant program. This variable measures the percentage of a city’s population that voted for the administration that created the grant program (i.e. the party in power at the state level at the time

of program creation). The voter alignment variable reports the percentage of voters in favor of the winning governor at time of program enactment. I expect a positive effect of voter alignment on the likelihood of grant applications, which will be represented by a positive coefficient.

Environmental Policy Capacity. The literature presents four primary factors that explain the implementation of environmental policy at the local level. The first is city size. Larger cities are more likely to implement both environmental policies and grant programs because they have more overall government capacity and are in a better position to provide services to their citizens. City size is included in the regression as a logarithmic transformation of total population ($\log(Population)$), in order to capture the likely diminishing marginal effect of population on application submission. This variable is expected to have a positive coefficient on grant application submission.

The second factor that influences environmental policy adoption is the civic engagement of citizens. Governments that represent engaged citizens are more likely to provide environmental protection. Citizens in these communities are better positioned to hold their governments accountable for environmental harm. Like previous studies, this regression uses voter turnout (*VoterTurnout*) as a proxy for civic capacity. Voter turnout is presented as a presentation of citizens in a city that voted in the last presidential election in 2012. I anticipate cities with high voting rates to be more likely to pursue environmental grants; the expected coefficient on *VoterTurnout* is positive.

Educational attainment is the third factor that influences the implementation of environmental policy. Higher rates of college degrees correspond to more advanced environmental policies in a city (Opp, Osgood & Rugeley, 2013). The regression includes

educational attainment as the rate of college degrees in a city (*Education*), which is expected to have a positive coefficient on application likelihood.

Finally, environmental track record strongly influences the implementation of environmental policies. Cities that have already adopted environmental policies are more likely to pursue future environmental policies, for two potential reasons. These cities have demonstrated their underlying preferences for environmental protection, and created institutional pathways for environmental policy implementation. Scholars show that a government's participation in environmental organizations increase a city's implementation of environmental policies (Kwon, Jang, & Feiock, 2014). This regression includes previous environmental action as the percentage of a city's voting residents (*EnvVote*) that voted to uphold state environmental policy in a recent election. The coefficient of this variable is expected to be positive.

Environmental Quality. Policies that seek to remediate environmental harm target areas with poor environmental quality. This study considers whether pollution exposure increases participation in this policy. Poor environmental quality (as represented by carbon monoxide emissions) has been demonstrated to increase a city's implementation of environmental policies (Kwon, Jang, & Feiock, 2014). Pollution exposure has also been shown to increase the resources dedicated from environmental grants to areas with poor environmental quality. (Dull & Wernstedt, 2010).

Environmental quality is included in the regression as a measure of pollution burden score ($\log(Pollution)$) from the California Communities Environmental Health Screening Tool (CalEnviroscreen Version 2.0). Pollution is expected to have diminishing marginal returns on application submission; I use a logarithmic transformation to describe the data. Higher pollution

burden scores are expected to increase the likelihood that a city government will apply to the grant program; the coefficient on *Pollution* is positive.

Additional Model for Grant Amount

In addition to the first regression that considers the likelihood of a city to apply for a grant, this study includes an additional model that predicts requested grant amounts. Whereas the submission of a grant application suggests a binary decision, requested grant amount addresses variation in the size of proposed projects. Though submission of a grant application indicates that a government is able to implement its proposed project, submission alone does nothing to evaluate the impact of the potential project on citizens. Grant amount measures the ability of governments to take on big projects to provide substantial impact for their citizens.

The addition of this additional model identifies any discriminatory trends in the requested grant amounts. Grant awards are important because they indicate potential disparities within the applicant pool. This regression identifies the weight of various factors in a government's decision of how much funding to request. Because this model will use the same variables as the grant submission regression, we can directly compare the coefficients to determine the relative effect of a factor from application submission to award size.

The expanded regression will mirror the original model, with a replacement of dependent variables:

$$\begin{aligned} GrantAmount = & \beta_1 GovtStaff + \beta_2 \log(Income) + \beta_3 Poverty + \beta_4 AfrAmer + \\ & \beta_5 Hispanic + \beta_6 VoterAlign + \beta_7 \log(Population) + \beta_8 VoteRate + \\ & \beta_9 Education + \beta_{10} EnvVote + \beta_{11} \log(Pollution) + \mu \end{aligned}$$

The dependent variable (*GrantAmount*) measures the predicted funding request of applicants to the grant program. Specifically, the variable reports the total funding requested (in thousands of dollars) among submitted Concept Proposals to the Affordable Housing and Sustainable Communities FY2014-15 grant program. Unlike the original model, the dependent variable represents a unit amount rather than a probability.

I use a Heckman two-step regression to consider grant amount decisions among applicants. The Heckman regression controls for bias in the error term of the application probit regression. The amount of money that a government applies for is not randomly distributed across the sample of California city governments, but is determined by the factors that influence application submission.

Modeling the Decision to Apply as a Cooperating Entity

A question that emerges from this study is how cities actually prepare their applications for grant programs. Do cities submit their own applications, in their own name? Or do they serve as cooperating entities in the applications of another organizations, like development corporations? Incorporating this decision into the study allows for an additional level of analysis of equity and program performance. Beyond the initial decision to apply for a grant, are there trends in government capacity related to how a local government submits its application? Do cooperating entity applications pursue more ambitious projects, or correspond to higher socioeconomic status? If so, the findings from this research will help grant administrators best target their resources to ensure equity and performance.

I model the factors that affect the decision to apply as a cooperating entity in the following regression, which updates the main probit regression with cooperating entity applications as the dependent variable:

$$\begin{aligned} CoopEntity = & \beta_1 GovtStaff + \beta_2 \log(Income) + \beta_3 Poverty + \beta_4 AfrAmer + \\ & \beta_5 Hispanic + \beta_6 VoterAlign + \beta_7 \log(Population) + \beta_8 VoteRate + \\ & \beta_9 Education + \beta_{10} EnvVote + \beta_{11} \log(Pollution) + \mu \end{aligned}$$

This probit regression considers the likelihood that a city applicant will decide to apply as a cooperating entity (rather than in their own name). This regression includes only those cities that applied for the grant program. Whereas the first regression analyzes the decision to apply at all, this regression evaluates the binary decision of whether or not to apply through a development corporation.

I expect cities with fewer resources to apply through another organization, as they likely lack the resources to complete a grant application by themselves. The expected coefficients on government staff, income, poverty, and population are negative, while the race coefficients are expected to be positive.

Secondary Regression on Government Capacity

I am primarily interested in the effect of government capacity and financial need on the decision to apply for a grant. However, my variables of interest are likely correlated with the other channels of influence on grant applications. The effect of government capacity on grant applications may be underrepresented by the inclusion of these correlated controls. To identify factors that increase government capacity, and therefore encourage grant application submission,

I include a secondary regression with government capacity as the dependent variable. A simplified conceptual model is:

$$GovtCapacity = \beta_1 EconomicNeed + \beta_2 Race + \beta_3 EnvPolicy + \beta_4 Pollution + \mu$$

The full regression includes the following specifications:

$$\begin{aligned} GovtStaff = & \beta_1 \log(Income) + \beta_2 Poverty + \beta_3 AfrAmer + \beta_4 Hispanic + \\ & \beta_5 VoterAlign + \beta_6 \log(Population) + \beta_7 VoteRate + \beta_8 Education + \\ & + \beta_9 EnvVote + \beta_{10} \log(Pollution) + \mu \end{aligned}$$

The dependent variable is full-time staff members for a given city government. Economic need will likely reduce the number of employees in a city government; income has a positive expected coefficient while percent below the poverty line has a negative expected coefficient. The public administration literature that documents racial inequality in government operations predicts racial minorities to be underrepresented in local government (Frederickson, 2005). Minority populations, as measured by percent Hispanic and African American, likely reduce the number of staff in a city government. These variables have negative expected coefficients. The four factors that influence environmental policy implementation – civic capacity (measured by voter turnout rate), educational attainment, population, and environmental track record – are all expected to increase government employment, with positive expected coefficients. Finally, poor environmental quality is likely associated with reduced governmental resources. Pollution burden may extract wealth from a community and reduce its political representation. The coefficient of pollution burden on government staff is expected to be negative.

5.3 DATA ANALYSIS

This research considers applications for the Affordable Housing and Sustainable Communities (AHSC) program in Fiscal Year 2014-15. The data approximate the characteristics of local governments at the time of application submission, and range in date from 2010 to 2014. I use a variety of sources to assemble my dataset. While I created the dependent variable from a list of grant applicants, I downloaded the independent variable data from other sources. This section identifies the sources of these data and discusses initial relationships between the dependent variables and grant applications. All reference figures are included in Appendix 7.3. Table 5.1 presents summary statistics of the findings.

Table 5.1. Summary statistics.

Variable	N	Mean	Std. Dev.	Min	Max
DEPENDENT VARIABLES					
Indicator Variables					
Applications, city applicants alone	478	0.07	0.26	0.00	1.00
Applications, cities as cooperating entities alone	478	0.06	0.23	0.00	1.00
Applications, city applicants or cooperating entities	478	0.11	0.31	0.00	1.00
Continuous Variables					
Grant amount, city applicants alone (mil \$)	34	34.00	4.84	0.67	19.02
Grant amount, cities as cooperating entities alone (mil \$)	25	25.00	9.74	1.00	33.29
Grant amount, city applicants or cooperating entities (mil \$)	51	51.00	8.00	0.67	46.30
INDEPENDENT VARIABLES					
Government staff (full time) per 1000 people	478	5.00	3.73	0.00	32.08
Median household income (\$1000s)	478	67.35	33.21	22.68	239.89
Poverty rate (individuals below federal poverty line)	478	14.97	8.83	1.50	51.70
African American (%)	478	3.86	5.09	0.00	43.12
Hispanic (%)	478	35.17	25.37	1.61	98.09
Voter alignment (% of voters in favor of winning governor)	477	52.76	15.00	19.79	91.69
Voter turnout rate	474	60.65	10.13	8.67	81.66
Education (% with at least some college)	478	60.55	19.03	13.30	95.30
Population total (1000s)	478	65.45	200.90	0.15	3827.26
Environmental vote (% in favor of environmental proposition)	477	60.16	10.75	33.75	92.54
Pollution burden (percentile of state scores)	441	45.10	26.01	0.55	97.79

Dependent Variable

This study measures the effect of a number of factors on a city government's decision to apply for a grant. I use application data from the Affordable Housing and Sustainable Communities FY2014-15 grant program. This information was made available by the administering agency, the Strategic Growth Council. The grant program uses a multi-step application process in which applicants first submit concept proposals to the agency, the agency invites a portion of applicants to submit full applications, and finally, the agency does a full review of applicants to select award winners. My application variable is an indicator variable that reports whether or not a city government submitted a Concept Proposal. Concept Proposals were due to the Strategic Growth Council by February 19, 2015.

The different types of grant applications complicate the classification of whether a city applied for a grant. The grant program welcomes applications from a number of entities: city governments, subregional governments, county governments, transit agencies, and private and non-profit development corporations. Each application is submitted by individual applicants, who have the option of listing cooperating entities as partners in the proposed project. City governments are not the largest applicant group. Of 147 applications, development corporations represent the majority of applicants. This study considers cities as both primary applicants and cooperating entities to development corporation proposals. Cities are considered cooperating entities if a city government or city department are listed as cooperating entity. The main application variable reports whether a city submitted at least one application, as primary applicants or cooperating entities. Separate variables for city applicants and city cooperating entities are included for the secondary regressions. Only 34 cities submitted applications

themselves, while 27 cities served as cooperating entities. Overall, 51 cities applied through either methods.

The variable for grant amounts reports the total amount requested by a city across the applications submitted on their behalf (either as applicants or cooperating entities). Although individual projects range from a minimum of \$500,000 to the maximum of \$15 million, cities are involved in as many as seven applications for a maximum total of \$46 million. The histogram of grant amounts in Figure 7.1 (Appendix 7.3) shows that the data are concentrated in applications less than \$10 million but a few large grant amounts drive the mean above the median. The mean grant amount was \$4.8 million for cities alone, \$9.7 million for cities as cooperating entities, and \$8.0 million overall. Cities appear to be less able to pursue larger projects if they apply on their own, since the total requested grant amount is about twice as much for cities that apply as cooperating entities for development corporation applications. This finding contradicts my expectation that cities with insufficient capacity are more likely to apply as cooperating entities.

Explanatory Variables

Government Capacity. I use full-time city government employment to represent government capacity. The government staff variable records the number of employees on a city's payroll, according to the U.S. Census of Governments. The data were downloaded from the 2012 Census of Governments Employment dataset for all 482 municipalities in California. I divide the number of full-time employees by population reported in the American Communities Survey of the Census (discussed below) to find government employees per capita.

While most cities employ only a few staff members per 1000 residents in their city governments, a few cities have many times more employees per capita than the mean. One such

city, Vernon, California, has an extremely large government given its size of 5.2 square miles and a population of 60 people. The city is an industrial center, hosting 1,800 businesses that employ 50,000 people; the city government's 270 staff members serve many more people than the 60 that reside in the city, which is not captured by the government staff per capita measure. My analysis excludes Vernon and three other government capacity outliers (with over 50 government staff per 1000 residents). These outliers are identified in the scatter plot of government staff and income in Figure 7.2.

After removing these outliers, the mean number of government staff per thousand people is five. There is a large range of government representation, from zero to 32 government staff per thousand residents. Figure 7.3 presents a histogram of government staff, which shows a concentration of staff around four per thousand residents.

The data present preliminary evidence of a correlation between government capacity and grant application decisions. Figure 7.4 presents a scatterplot of government staff and requested grant amounts. This graph indicates a positive relationship between governmental capacity and the size of grant application requests.

Income. The U.S. Census provides a large portion of the data in this study. I downloaded data for each city or town in California from the American Communities Survey 2013 5-year estimates data. The Census denotes cities and towns as “places” within counties.

To find variables related to income, I downloaded the ‘Selected Economic Characteristics’ data. I used this dataset’s measures of median household income and percentage of people below the federal poverty line. The income variable had a mean of \$67,351, a minimum of \$22,864, and a maximum of \$239,886. The histogram of median household income in Figure 7.5 depicts the non-normal nature of the income distribution. The histogram confirms

the need for a logarithmic transformation of the income variable. Summary statistics for the poverty variable are presented in Table 5.1.

The data do not present a clear relationship between income and grant applications. Applicants had a \$10,000 lower average median household income than non-applicants (see Table 5.2). The scatterplot in Figure 7.6 shows the relationship between income and grant amount. No strong trends in the data are presented, with only a slightly negative trend line that does not fit the data very well. Three outliers in this chart applied for the largest grants despite their moderate income levels. Even though the graph indicates a negative trend between income and requested grant amount, this relationship is skewed by the presence of outliers.

The box and whisker plot in Figure 7.7 depicts the distribution of income across applicants and non-applicants. Non-applicants have a much larger range, with many points well above the median. This graph indicates that the grant program did not draw application from the richest cities in the state, which bodes well for equity purposes.

One goal of this paper is to explore the relationship between government capacity and economic need. I compare city median household income and government staff in the scatterplot in Figure 7.8. I find no strong relationship between the two; one cannot use median household income to predict a city's government staff per capita. Of note, the governments with the most staff per resident all fall within median household incomes of \$30,000 to \$80,000.

Table 5.2. T-tests comparing cities that applied and did not apply for grants.

CROSSTAB STATISTICS: CITY APPLICANTS VERSUS NON-APPLICANTS

	Mean		T-Test of Difference		
	Did not apply	Applied	t-statistic	degrees of freedom	p-value (two-tailed)
Total applications by cities	425	53			
Government staff per 1000 residents	4.91	5.68	-1.423	476	0.1554
Median household income (\$1000s)	68.42	58.77	2.001	476	0.0460**
Poverty rate (%)	14.55	18.32	-2.953	476	0.0033***
African American (%)	3.37	7.67	-5.982	476	0.0000***
Hispanic (%)	34.05	44.15	-2.753	476	0.0061***
Voter Alignment (%)	51.49	62.97	-5.407	475	0.0000***
Voter turnout rate (%)	61.26	55.79	3.753	472	0.0002***
Education (% with at least some college)	61.15	55.74	1.96	476	0.0505*
Population (1000s)	43.73	239.6	-7.024	476	0.0000***
Environmental vote (%)	59.47	65.34	-3.997	475	0.0001***
Pollution burden (percentile)	44.3	50.94	-1.747	439	0.0813*

*** p<0.01, ** p<0.05, * p<0.1

Population. Population for each city was obtained through the 2013 U.S. Census American Community Survey. My population variable uses the population statistic in the Census ‘Hispanic Origin by Race’ dataset. The mean population across California cities was 65,000, with a minimum population of 150 people and a maximum of 3.8 million. Population is not normally distributed, with the highest frequency of cities with small populations and a few megacities bringing up the average. This demonstrates the need for a log transformation of the population variable.

Analysis of the population variable reveals a strong relationship between population and application decisions. Cities that submitted applications were very significantly larger than cities that did not, with mean populations of 44,000 and 340,000, respectively (Table 5.2). Figure 7.9

further demonstrates the relationship between population and application submission with a box-and-whisker plot of population by application submission. Every population outlier, i.e. every major city in the state, applied for the grant program. Population also had a strong positive relationship with grant amount requested, which is displayed in the scatter plot in Figure 7.10. Larger cities applied for larger grants, which may be attributed to their greater combined resources.

I further explore the relationship between population and government capacity in Figures 7.11 and 7.12. Figure 7.11 is a scatterplot of population and government staff that simply demonstrates the correlation between population and total government employment. Not surprisingly, the two variables have a strong positive relationship. Figure 7.12 compares population with government staff per capita. Interestingly, we see a positive, though weak relationship between population and government staff per capita, which means that larger cities are better resourced per person as well as overall. The results section will further investigate the influence of population on application decisions, holding other factors constant.

Demographic Data. Information on race is found in the 2013 American Community Survey dataset titled, “Hispanic or Latino Origin by Race.” The Census’ general race dataset did not include a separate category for Hispanic, but incorporated Hispanic into the White category. The “Hispanic Origin by Race” dataset separates Hispanic from other race categories and reports Hispanic individuals that identify with other races as well. My Hispanic variable sums all of the Hispanic categories except for individuals that identify as both Hispanic and African American. The African American variable sums non-Hispanic African Americans and Hispanic African Americans. The sums for Hispanic and African American are divided by the total population numbers listed in this dataset to find percentage Hispanic and African American.

I find that grant administrators attracted a diverse set of cities to their program. Table 5.2 reports t-tests of differences among African Americans and Hispanics living within applicant and non-applicant cities. About twice as many African Americans live in cities that applied for grants as compared to those that did not (a highly significant difference). Applicant cities were on average 44.2% Hispanic, as compared to the 34.1% Hispanic population of non-applicants, a difference that is significant at the 1% level.

The educational attainment variable draws from the “Educational Attainment” dataset in the 2013 American Communities Survey. This dataset provides the percentage of individuals who have completed various levels of education. To find the percentage of people that completed ‘some college’, my educational attainment variable sums the variables for ‘some college’, Associate’s degree, Bachelor’s degree, and graduate or professional degree. Cities that applied for grants had a slightly lower rate of educational attainment than non-applicants, by a margin of 4.3%, a result that is significant at the 10% level (Table 5.2).

Voting Information. For the variables relating to voting behavior, I downloaded information from the California Secretary of State’s website. I use state results data from the November 2, 2010 General Election.

My measure of political capacity reports the alignment of voters with the party in power. A majority Democrat state legislature created the Affordable Housing and Sustainable Communities (AHSC) grant program; the voter alignment variable uses the percentage of city voters that voted in favor of the winning candidate in the gubernatorial election. These results are listed by city in the “Governor Results, Political Districts Within Counties” dataset. The number of votes for each of the top six candidates is listed by city. To find the percentage that voted for the winning governor, Jerry Brown, I divide votes for Brown by the sum of the six candidates by

city. Table 5.2 compares city characteristics among applicants and non-applicants. Grant applicants were more likely (by a margin of 11.5%) to vote for Governor Brown, the Democratic governor who was in power at time of the grant program's inception.

I also use voting behavior to present a city's affinity for environmental protection. I use results for a state proposition on an environmental issue to measure environmental protection values. Proposition 23 in the 2010 General Election asked whether California voters would suspend A.B. 32, the Global Warming Solutions Act of 2010. A.B. 32 is the State's primary climate change legislation. If the bill had passed, it would suspend A.B. 32 until the state's unemployment remained below 5.5% for four quarters in a row. Since a "yes" vote would support the suspension of A.B. 32, a "no" vote indicates an affinity to environmental protection. I found the percentage of voters in a city that voted against Prop. 23 by downloading the "State Ballot Measures, Political Districts Within Counties" dataset. I divided the number of votes against Prop. 23 by the number of people that voted on the proposition. Cities that submitted grant applicants had as statistically significant higher average percentage of voters that voted in favor of environmental protection (65.3%) as compared to cities that did not submit applications (59.5%) (Table 5.2).

Voter turnout is used in this study as a representation of civic engagement. I calculate the voter turnout for the 2010 gubernatorial election by dividing the number of recorded votes by the number of registered voters in each city. I use the same governor results data to find the total number of votes for any of the top six gubernatorial candidates in the 2010 election. Voter registration information is available as a part of the state's voter registration database. I used the 2010 General Election "60 Day Report of Registration" from September 3, 2010. The political subdivision by county dataset includes the total number of registered voters in each city. The

voter turnout rate was significantly lower for cities that applied for grants compared to those that did not, at a margin of 5.5% (Table 5.2).

Pollution Statistics. This study's data on pollution is derived from the state's recent efforts to quantify pollution burden. In order to distribute greenhouse gas cap-and-trade revenue to communities facing environmental and social harm, the California Legislature required the state's Office of Environmental Health Hazard Assessment (OEHHA) to create an index to apply across the state. The California Communities Environmental Health Screening Tool (CalEnviroScreen) combines 12 indicators of exposure to environmental hazards, including: ozone, particulate matter (PM_{2.5}), diesel particulate matter, pesticides, drinking water contaminants, toxic releases, traffic density, cleanup sites, groundwater threats, hazardous waste, impaired water bodies, and solid waste facilities.

CalEnviroScreen Version 2.0, updated in October, 2014, provides each census tract in the state with a pollution burden score ranging from 0 (light pollution burden) to 10 (heavy pollution exposure). It also lists the census tract's percentile of state scores. In order to match the state's 8,035 census tract with its 482 cities, I averaged pollution burden scores across all of the census tracts with a matching city name. The dataset's "city name" variable included unincorporated areas, military bases, and national parks, so I only included pollution information for incorporated cities in the state.

CalEnviroScreen is directly related to the distribution of grants, since the grant administrator is required by law to distribute 50% of funding to communities with the top 25% of CalEnviroScreen overall scores. Pollution burden makes up half of the CalEnviroScreen score; the other half is calculated with population characteristics (children and elderly populations, low weight births, asthma rates, educational attainment, linguistic isolation, poverty, and

unemployment). One would expect applicants to have high CalEnviroScreen scores, since a large portion of the funding is reserved for these high-need areas. This study considers the pollution burden half of the overall CalEnviroScreen score, in order to determine whether areas with poor pollution are able to submit applications, independently of their social vulnerability.

The means comparison indicate that the grant program fields applications from cities facing greater pollution burden. Cities that applied to the grant program had, statistically significant higher percentiles of pollution burden score (Table 5.2). Both the applicant mean percentile (50.9) and the non-applicant mean percentile (44.3) were considerably high, considering 50% of the funding is required to be distributed to cities with overall CalEnviroScreen scores in at least the 25 percentile. The histogram in Figure 7.13 displays two peaks in the pollution burden percentiles, one around 25 and another around 80 percent. These results justify the log transformation of the pollution variable.

These data provide an opportunity for an analysis of the relationship between pollution and factors that affect public administration, such as income and government capacity. I graph government capacity by pollution burden in the scatter plot in Figure 7.14. This graph identifies a declining trend in government capacity as pollution burden increases, above a threshold of 11 government staff members per 1000 residents. As pollution increases, cities are less likely to have government capacity above 11 staff members per 1000 residents. The graph in Figure 7.15 charts income across pollution burden percentiles. No strong relationship emerges between pollution and income. Though this finding is not central to the study, it is important for acknowledging the lack of income discrimination in pollution in the state.

5.4 RESULTS

This section interprets the results of the various regressions I run in this study. Each of the four different models can be found in Tables 5.3-5.6.

Table 5.3. Probit regressions for the probability of a city to apply for a grant.

APPLICATION LIKELIHOOD PROBIT REGRESSIONS					
VARIABLES	Simple Model (1)	Race (2)	Primary Model (3)	Demographic Controls (4)	Full Model (5)
N	478	478	441	441	440
Pseudo R-squared	0.2043	0.2244	0.2122	0.2656	0.2686
Government staff per 1000 residents	0.0043 (0.003)	0.0050* (0.003)	0.0059* (0.003)	-0.0005 (0.003)	-0.0011 (0.003)
log (Median household income)	-0.0951*** (0.032)	-0.0456 (0.037)	-0.0490 (0.047)	0.0140 (0.070)	0.0119 (0.069)
Poverty rate (%)	-	-	-	0.0050* (0.003)	0.0053* (0.003)
log(Population)	0.0697*** (0.010)	0.0595*** (0.010)	0.0669*** (0.012)	0.0611*** (0.012)	0.0635*** (0.013)
African American (%)	-	0.0041** (0.002)	0.0048** (0.002)	0.0013 (0.002)	0.0018 (0.002)
Hispanic (%)	-	0.0007 (0.001)	0.0009 (0.001)	0.0002 (0.001)	0.0002 (0.001)
Voter alignment (%)	-	-	-	0.0031*** (0.001)	0.0023 (0.003)
Education (% with at least some college)	-	-	-	0.0013 (0.002)	0.0006 (0.002)
Voter turnout rate (%)	-	-	-	-	0.0018 (0.002)
Environmental Vote (%)	-	-	-	-	0.0013 (0.003)
log(Pollution score)	-	-	0.0090 (0.018)	0.0188 (0.016)	0.0277* (0.016)

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Main Regression: Probability of a City to Apply

This study's main focus is a model that predicts whether city governments will apply for an Affordable Housing & Sustainable Communities grant. A probit regression reports the effect of each independent variable on an individual government's decision to apply. Table 5.3 displays coefficients for the marginal effect of each variable on the probability of application submission.

Simple Model. The simplest model considers the effect of three variables on application decisions: median household income, population, and government staff per capita (Table 5.3, Model 1). The income variable had a coefficient of -0.1, which was significant at the 1% level. Interestingly, every percentage increase in household income reduced the likelihood of application submission by 10%. Though I was not sure what to expect regarding the grant administrator's ability to distribute funding to areas with economic need, this result indicates that the program drew applications from areas with lower income. This finding bodes well for the ability of grant programs to achieve equity goals.

The population variable was also economically and statistically significant, with a coefficient of 0.07. Every percentage increase in population increased the likelihood of application submission by 7%. Larger cities are more likely to apply than smaller cities and towns, other factors held constant. It is unclear why the data present this relationship. One hypothesis is that governments that represent larger cities enjoy economies of scale in their ability to take on ambitious projects. Since larger cities have more government staff overall, they may be better positioned to apply for grants.

The government staff variable was not statistically significant, though the 0.004 coefficient did have a p-value of 0.16. As we will see below, the inclusion of other independent variables changes the significance of government staff on application submission.

Including Race Indicators. The second model of the probit regression includes indicator variables for racial minorities (African American and Hispanic). The African American variable had a statistically significant coefficient of 0.004; every percentage point increase of a city's African American population increases the likelihood of its application submission by .4% (Table 5.3, Model 2). Again, this result demonstrates the ability of the grant program administrators to redistribute funding to areas in need.

The Hispanic indicator variable was not statistically significant. It is interesting that African American more strongly influenced grant application decisions; this could be due to the larger percentage of Hispanics than African Americans in California cities, with means of 35% and 4%, respectively. An F-test demonstrates that, when taken together, the two race variables are jointly significant (with a p-value of 0.028).

The inclusion of the race variables causes income to no longer be statistically significant. Accounting for differences in race, income does not significantly affect the likelihood of application submission. Conversely, the government staff variable, which was not significant in the first model, is significant in the model with race indicators. Every increase in government staff per 1000 residents increases the likelihood of an application by 0.5%. Controlling for race, government staff positively affects the ability of a government to apply for a grant.

Including Pollution: Primary Model. The regression in Model 3 (Table 5.3) adds a variable for pollution. The effect of pollution on application submission is insignificant. Grant administrators do not effectively target pollution burden for their program; pollution burden is

not a major determinant of a city's decision to apply for the grant. The program does not draw applications from cities exposed to more pollution, even though this was one of the program's intentions. Table 5.2 provides a T-test of difference in between the applicant and non-applicant pools and finds that applicants had significantly lower pollution burdens. Though the AHSC grant program appears to achieve its goals of economic and racial redistribution, it does not direct funding with disproportionate environmental harm.

I use this model, with government staff, income, race, and pollution as the primary model of this study. The relationship in the previous model is preserved, as the addition of pollution does not drastically alter the coefficients of the other variables. This model has an appropriately small number of independent variables given the small sample size. The pseudo- R^2 of this model is 0.2122. Though slightly lower than the other probit models, each model has a pseudo- R^2 between 0.2043 and 0.2686. The primary model is used in the secondary regressions discussed below.

The takeaway for policymakers from the first three models is that population is the strongest determinant of application submission, followed by African American populations. Income is significant until race is added to the model, which means low income is a consideration in decisions, albeit minor. Government capacity increases the likelihood of application submissions, while pollution does not.

Adding Selected Demographic Controls. I also ran regressions that include demographic controls that are not central to this study (Table 5.3, Model 4). This model adds variables for poverty, voter alignment, and education. The poverty variable is significant at the 10% level, with a coefficient of 0.005: a percentage point increase in a city's poverty rate corresponds with a 0.5% increase in the probability of application submission. It is worth noting

that including poverty reduces the coefficient on median income. Income and poverty are strongly correlated, with a correlation coefficient of -0.73. Including both variables under-represents the full influence of either variable on application submission.

To reduce the number of variables in this model, I decided to include a select number of the controls outlined in the theory to equations. I tested the correlations between four potential variables to decide which would be included in this stage of the model. Of the four variables, I identified two sets of highly correlated variables: voter alignment with environmental vote and education and voter rate, with correlation coefficients of 0.86 and 0.71. To avoid the issue of collinearity, I included only voter alignment and education. The education variable was neither statistically nor economically significant. This finding shows that neither education nor civic engagement (as measured by voter turnout rate) significantly affected program participation.

The voter alignment variable was statistically significant at the 1% level, with a coefficient of 0.003. Every percentage point increase of votes for the party in power increases the likelihood of a city's application by 0.3%. Though this variable is intended to encompass political capacity (the increased political power that state governments give to local governments of the same party), it may represent other causal influences. The voter alignment variable records the percentage of a city that voted in favor of Democratic Governor, Jerry Brown. Democratic values overlap with preferences for environmental protection (hence, the correlation coefficient of 0.86). While the voter alignment variable is strongly significant, we cannot attribute the significance to political capacity more than an affinity environmental protection.

Neither government capacity nor African American is still significant in this model. It is unclear why the inclusion of these demographic controls would have this effect. One simple

explanation is that the sample size (441) is too small to present more than a few significant coefficients.

Full Model: Including Other Demographic Controls. The last probit regression (Table 5.3, Model 5) includes the demographic controls that were excluded from Model 4, environmental vote and voter turnout rate. Not surprisingly, including these highly correlated controls eliminated significance from the other two demographic variables. The pollution burden variable has a statistically significant coefficient in this model. However, this result should be taken lightly, given the inclusion of highly correlated variables.

Heckman Regression for Requested Grant Amounts

I use a two-step Heckman regression to consider the influence of my independent variables on the total requested grant amount (see Table 5.4). The Heckman uses the primary model in Table 5.2 to select for the cities that applied for grants.

Table 5.4. Heckman regression for requested grant amounts.

GRANT AMOUNT TWOSTEP HECKMAN REGRESSION			
	Grant amount (mil \$)	Application Submission	mills
VARIABLES	(1)	(2)	(3)
N (Uncensored, Censored, Total)	51	388	439
Government staff per 1000 residents	1.941 (2.584)	0.044* (0.025)	
Log (Median household income)	-20.130 (29.461)	-0.349 (0.370)	
log(Population)	20.401 (28.856)	0.471*** (0.091)	
African American (%)	1.268 (2.164)	0.032** (0.016)	
Hispanic (%)	0.197 (0.519)	0.006 (0.005)	
log(Pollution score)	4.434 (11.028)	0.078 (0.146)	
lambda			51.314 (84.107)
Constant	-119.663 (389.384)	-3.322 (4.034)	
Standard errors in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			

None of the results from the Heckman grant amount regression were statistically significant. In fact, the lowest p-value was 0.452 (for the government staff variable). These results do not reveal disparities among applicants in the size of their proposed projects. However, the findings are limited because of the small sample size of 53 total city applicants. A larger sample size is necessary to identify trends in grant amount requests.

One point to note about the Heckman regression: two variables provide a small degree of economic significance. The population variable produced an impressively large beta, at \$20.8

million of grant funding per each percentage increase in population. The income variable was also large, with a percent increase in income corresponding to a reduction of \$20.1 million in requested grant amount. Income has an unexpected relationship with not only the probability of application submission, but of the amount requested in the application.

Secondary Regression to Compare City and Cooperating Entity Applications

In order to compare the effects of my independent variables on different types of applications, I test a regression that compares city applications by cities directly and as cooperating entities on development corporation applications (Table 5.5). This regression considers all cities that applied for grants through either method. The dependent variable represents whether the applying city decided to apply as a cooperating entity on a different organization's application. Each coefficient represents the influence of each factor on the decision to apply as a cooperating entity rather than as a primary applicant.

Table 5.5. Regression of the likelihood of a city to apply as a cooperating entity (as opposed to submitting an application in their own name).

CITIES AS COOPERATING ENTITIES
APPLICATION PROBIT REGRESSION

VARIABLES	Application Submission (1)
N	53
Pseudo R-squared	0.1729
Government staff per 1000 residents	0.150* (0.082)
Log (Median household income)	0.144 (1.022)
African American (%)	0.022 (0.020)
Hispanic (%)	0.001 (0.011)
log(Population)	0.247 (0.167)
log(Pollution score)	0.251 (0.430)
Constant	-6.320 (11.670)
Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

Only one variable produced significant coefficients for this regression. These findings do not reveal trends in the decision of cities to apply as cooperating entities. However, the lack of significance may be attributed to the small sample size; this regression considers only the 53 cities that applied. Future studies may find significant influences of these independent variables with a larger sample.

The one significant variable was government staff, which positively increased the likelihood that a city would apply through another organization rather than in their own name.

This result is not one I expected; I lack an explanation as to why better-staffed governments would be more likely to contract outside work rather than apply from within. Though amount is not included in this regression, due to the small sample size of 25 cooperating entity applications, I compare the requested grant amounts in the T-tests in Table 5.6. Cities that applied through other organizations requested significantly more in grant funds, with almost double that of cities that applied by themselves.

Table 5.6 T-tests comparing cities that applied as cooperating entities versus their own name.

DIFFERENCES IN CITY APPLICANTS VERSUS CITIES THAT APPLIED AS COOPERATING ENTITIES

	City Applicants	Cities as Cooperating Entities	T-Test of Difference		
	Mean	Mean	t-statistic	degrees of freedom	p-value
Total Applications	34	27			
Grant amount requested (mil \$)	4.84	9.74	-2.9258	57	0.0049***
Government staff per 1000 residents	4.79	7.22	-2.1266	59	0.0376**
Median household income (\$1000s)	57.45	59.84	-0.5171	59	0.607
Poverty rate (%)	18.43	18.15	0.1366	59	0.8918
African American (%)	6.30	9.44	-1.3823	59	0.1721
Hispanic (%)	45.17	40.74	0.7068	59	0.4825
Voter alignment (%)	61.24	64.06	-0.7182	59	0.4755
Voter turnout rate (%)	55.47	55.46	0.0029	59	0.9977
Education (% with at least some college)	54.89	57.57	-0.6107	59	0.5437
Population (1000s)	229.47	383.57	-0.8553	59	0.3959
Environmental vote (%)	64.30	66.57	-0.8413	59	0.4036
Pollution burden (percentile)	50.04	51.92	-0.3312	59	0.7417

*** p<0.01, ** p<0.05, * p<0.1

Secondary Regression on Government Capacity

Finally, I create a model to measure the influences on government capacity in order to evaluate the causal influences of grant application submission. The results are reported in Table 5.7. This regression identified three statistically significant influences on government capacity.

Table 5.7. Second regression on government capacity (staff per 1000 residents).

<u>GOVERNMENT CAPACITY REGRESSION</u>	
	Government staff per 1000 residents
<u>VARIABLES</u>	<u>(1)</u>
N	441
R-squared	0.213
Log (Median household income)	-4.964*** (1.083)
Poverty rate (%)	0.005 (0.034)
log(Population)	-0.184 (0.252)
African American (%)	-0.050 (0.032)
Hispanic (%)	0.022 (0.022)
Voter alignment (%)	0.061*** (0.016)
Education (% with at least some college)	0.151*** (0.034)
log(Pollution score)	-0.059 (0.265)
Constant	48.702*** (11.091)
Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

The income variable was significant at the 1% level, but in the opposite direction than anticipated. Each percent increase in median household income corresponds to a reduction of government employees by five per 1000 residents. It is unclear why government staff per capita and income share an inverse relationship. Further studies are needed to explore this question. One possible explanation is that median income is not proportional with the tax revenue that a government collects; perhaps areas with higher income pay relatively less in taxes and therefore have governments that have less staff capacity per capita.

Two other significant influences on government capacity are education and voter alignment. Education had a significant and positive coefficient. Every percent increase in a city's population that has had at least some collegiate study corresponds to a .15 increase in government staff members per 1000 residents. Voter alignment was also statistically significant at the 1% level; a percentage point increase in votes for Democrat Governor Brown increases government staffing by .06 staff per 1000 people.

This regression is a good result for equity in governmental representation, as most of the variables did not have a significant impact on government staffing. In fact, the income variable indicates that city governments more sufficiently represent lower income areas. However, the regression did reveal preference in representation by education and voter alignment.

The results from this regression support the findings in the probit regressions, since most of the variables do not have a significant impact on government staff. The insignificant results justify their inclusion of the full model. Though I include income in the full regression because it is one of the primary variables of interest in this study, the significantly negative effect of income on government staffing puts into question the independence of the relationship between the two factors. Income has a negative impact on both government staff and grant application

submission; this regression challenges the assumption of the policy analysis literature that economic need and government capacity contradict one another (Hall, 2005).

5.5 CONCLUSION

This study considers the factors that affect local government grant application decisions, in order to evaluate the ability of grant administrators to achieve performance and equity goals. This paper focuses primarily on the balance between government capacity and need (both economic and racial), under the premise that grant administrators may distribute grants to governments with sufficient capacity to utilize the funds at the expense of redistributive goals. The policy analysis literature speculates the existence of an inverse relationship between government capacity and economic need (Hall, 2005). This study puts this theory to test in the context of an environmental justice grant program.

The results of the study are largely positive for equity in grant distribution. Grant administrators successfully draw applications from areas in need; low income levels and racial minority populations increase the likelihood that a local government will apply for a grant. Administrators seem to have successfully designed a program that can distribute funding to their target audience.

That is not to imply that government capacity does not matter. Holding other factors constant, government staff per capita increases the likelihood of a grant application. Better-resourced governments have an advantage in their ability to apply for (and perhaps, receive) grants. This finding suggests the effective use of increased government capacity to encourage grant applications (see Policy Recommendations, Chapter 6). Administrators may be able to further increase equity goals by targeting areas with low staff to citizen ratios.

An unexpected story that emerges is the overwhelming role of population in grant application decisions. Population was the single greatest determinant of grant application submission. Larger cities are at an advantage compared to smaller cities. This grant program can be improved in terms of geographic equity if outreach efforts are concentrated in rural areas.

Even though the grant program was created as an environmental policy, this study finds limited results in terms of the program's ability to remediate disproportionate environmental harm. Pollution burden had no significant effect on application decisions. Applicants were exposed to only slightly more pollution on average than cities that didn't apply, significant at a 10% level (Table 5.2). If the remediation of existing environmental harm remains a goal of the program, administrators should restructure the program to encourage more applications from polluted areas.

This study would be bolstered by a larger sample size, which would both confirm the results in this paper and provide an opportunity for more significant results. While this study uses application submission to measure the potential for equity outcomes, future studies should include a measure of equity that evaluates the selection decisions of administrators. Though low-income and racial minorities may increase application submission, they may decrease the likelihood of winning a grant. Conversely, equity outcomes may be better in the actual distribution of funds than in application collection.

6. POLICY RECOMMENDATIONS

This concluding chapter is structured as follows: first, a brief recapitulation of the argument up to this point, followed by implications of the study for policy, and finally, specific policy recommendations.

6.1 IN REVIEW

This thesis was prompted by the establishment of policy as a tool of environmental justice. Environmental justice advocates have shifted the movement's focus towards policy in recent years, which has led to the emergence of exciting policy efforts. Scholars need to take this opportunity to learn from early environmental justice policies in order to identify areas of improvement, which will improve environmental justice outcomes from those communities most disadvantaged.

California's S.B. 535 provides a prime educational opportunity, both from its importance and its ambition. S.B. 535 is a landmark piece of environmental justice legislation for a number of reasons. The policy defines environmental justice in state law, and requires the state government to quantify environmental justice across California. This policy relates directly to an environmental problem of growing importance: climate change. S.B. 535 provides for

environmental justice remediation through the appropriate funding source, namely industries responsible for pollution. Finally, it generates a substantial source of funding for environmental justice projects.

This thesis first asked whether the policy was successful, before identifying areas for improvement. To address the first question, I evaluate the implementation of the policy at a small scale. At this level of analysis, I can apply theories from the public administration literature regarding individual governments. I utilize a case study of the policy's implementation within 17 local governments in Riverside County. I found that the number of actors involved in the policy, and especially the alignment of their interests, prevented the policy from more successful implementation in my case study. Local government officials identified staff capacity as a primary concern in the program's implementation.

My research then focuses more fully on the factors that directly affect implementation outcomes, namely, the government capacity issues identified in the previous chapter. I consider the ability of grant administrators to balance program performance and equity, on one hand, and government capacity and economic need, on the other. I use a quantitative econometric analysis to identify the factors that most directly influence application decisions by local governments. I find that low-income and minority populations increase the likelihood of a city to apply for a grant. Government capacity and total population are also strong determinants of application submission. I am impressed with the ability of program administrators to balance equity with performance, since it appears they target governments that have government capacity despite socioeconomic disadvantage.

6.2 POLICY IMPLICATIONS

These results are positive for the implementation of this specific program, which is significant in itself given the amount of funding and number of people effected. The positive results also indicate the merits of the competitive grant structure for environmental justice policy broadly: the California state government has set an example for effective environmental justice policy that can be adapted and applied elsewhere.

The key to success in S.B. 535 is the careful consideration of equity in grant distribution. California has shown that an equitable competitive grant distribution is possible, but not without checks built into implementation. S.B. 535 mandates that 25 percent of overall funding be distributed to top 25 percent of environmental justice communities in the state; this allocation in statute is fundamental to the redistribution of funding. Competition in grant programs introduces a level of uncertainty for administrators; administrators have minimal control over the applicant pool and could be forced to distribute funding inequitably if certain kinds of cities decide not to apply. S.B. 535 creates a functioning system of distribution, but for the competitive grant structure to be replicated, certain measures need to be put in place to ensure the policy reaches its intended audience.

6.3 POLICY RECOMMENDATIONS

To conclude my study, I provide a number of policy recommendations to improve the implementation of S.B. 535 in future years. These recommendations vary in scope and practicality. Though they pertain specifically to S.B. 535, they allow for interpretation for future environmental justice policy in California and beyond.

Recommendation 1: Centralize the policy to compensate for the large number of actors involved in implementation. One of the main issues in implementation identified by the case study was the large number of actors that have to cooperate to implement the policy. As it is currently structured, 11 state agencies receive cap-and-trade funds and distribute funding to local governments through separate programs with unique application processes and timelines. While there is merit in utilizing existing policy structures, especially in tight implementation timelines, I think that better coordination is an easy solution.

One suggestion is for the 11 agencies to synchronize their application deadlines in a fashion suitable to local governments. Whether cities prefer deadlines to be in the same period, or staggered throughout the year, I see potential improvement in program reach by facilitating program coordination across administering agencies.

Another recommendation is to host all of applications under one organizational umbrella. At the very minimum, a website can be dedicated to centralize information regarding the program applications. A more ambitious suggestion is to create an application server where applications for all programs are submitted directly. Even more ambitious is to have one organization be responsible for application selection for all cap-and-trade funds to ease the tracking process for local governments (and provide the oversight for equity across all of the programs).

Recommendation 2: Target cities with limited government capacity for outreach and application assistance. Government capacity was determined to be a significant deterrent from application submission in the implementation case study. The econometric analysis shows that increasing government capacity increases the likelihood of a city to submit an application. Bigger cities with more total government staff, as well as cities with more government staff per

capita, are more likely to submit applications to the program. I recommend that grant administrators focus attention on governments with limited capacity – both small cities with fewer staff overall and cities with low staff to resident ratios. Administrators should concentrate outreach efforts in these areas, since these governments may be less able to track grant opportunities despite their interest in program objectives. Informational workshops can be held in geographic regions with less government capacity.

Recommendation 3: Provide low-capacity governments with application assistance.

Administrators can also provide more direct assistance to governments with limited capacity beyond making them aware of funding opportunities. State agencies can consult low-capacity governments in making their applications more competitive. Perhaps grant administrators can provide low-capacity governments with additional comments on application concept proposals before full applications are submitted. Further, a portion of cap-and-trade revenues can be reserved for assisting applicants with technical assistance. Administrators can set aside funding to contract grant writing consultants to low-capacity governments that will be included in the grant proposal should an applicant be awarded a grant.

Recommendation 4: Redefine the funding earmark to give greater priority to small cities. Population size provides cities with a significant advantage in the ability to apply for a grant. The econometric model in this study found that population was the greatest predictor of application submission. The policy’s design should be altered to account for this disadvantage of small cities.

The distinction of communities that qualify for earmarked funds can be updated to level application likelihood across city size. The policy’s equity requirement mandates that 25 percent of cap-and-trade revenue be distributed to “disadvantaged” communities that receive the top 25

percent of scores in CalEnviroScreen. As CalEnviroScreen is currently designed, population is not incorporated into the calculation of environmental and social vulnerability (Office of Environmental Health Hazard Assessment, 2014). Including a population variable in CalEnviroScreen scores would put smaller cities in a better position to receive earmarked funds, which would increase the yield of applications from small cities.

Recommendation 5: Restructure the policy to more directly address pollution. S.B. 535 is designed as an environmental justice policy that seeks to remediate the disproportionate environmental harm on low-income and minority communities. However, the way that the policy is currently structured does not ensure that funding is directed to communities facing the greatest pollution burden. The econometric analysis reveals that the program does not significantly target pollution; as pollution exposure increases, cities are not significantly more likely to apply for a grant.

S.B. 535 provides an opportunity for significant remediation of existing environmental harm. The policy does not currently prioritize pollution burden over the other dimension of environmental justice. CalEnviroScreen weighs the pollution burden and social vulnerability scores equally in determining overall disadvantaged community status (Office of Environmental Health Hazard Assessment, 2014). Pollution burden is not translating to application decisions, which means cities that are subject to social vulnerability but only limited environmental harm receive a disproportionate share of the S.B. 535 funds. I recommend that the methodology of identifying disadvantaged communities be updated to give pollution burden greater weight in the final CalEnviroScreen score.

Recommendation 6: Limit the communities eligible for disadvantaged community funding to those most in need. The text of S.B. 535 mandates that funding be distributed to

“disadvantaged communities” and charges CalEPA with determining which communities qualify. After an extensive process with stakeholders, CalEPA determined that the funding earmark would be extended to the top 25 percent of the state’s census tracts according to CalEnviroScreen scores. There is a wide variation of environmental quality and social vulnerability within this quarter of the state’s population, which includes over 9.5 million people. I propose that CalEPA change its distinction of disadvantaged communities to only census tracts with the top 10 percent of CalEnviroScreen scores.

The success of the policy will not be jeopardized if funding is limited to communities facing bigger environmental justice threats. This study has demonstrated that the state has many capable environmental justice communities submitting applications for cap-and-trade funding. The governments that submit grants are more likely to have low-income and racial minority populations. Administrators can afford to limit earmarked funds to communities with worse environmental justice issues, since these communities appear to be more than capable of submitting applications and implementing programs. Limiting the pool of potential applicants for earmarked funds should increase the number of applications at more extreme CalEnviroScreen scores, and ensure that funding is distributed to the communities facing the worst environmental discrimination.

Although these recommendations are meant to address S.B. 535 currently, I hope that they may also inspire other solutions into the future. This thesis was intended to spark conversation among professionals and academics in the field of environmental justice policy. Further research is necessary to support this emerging and important issue.

7. APPENDICES

7.1 LIST OF ACRONYMS

A.B. 1532 – California Global Warming Solutions Act of 2006: Greenhouse Gas Reduction Fund

A.B. 32 – Assembly Bill 32: California Global Warming Solutions Act of 2006

AHSC – Affordable Housing and Sustainable Communities Program

CALCOG – California Association of Councils of Governments

CalEnviroScreen – California Communities Environmental Health Screening Tool

CalEPA – California Environmental Protection Agency

COG – council of governments

GGRF – Greenhouse Gas Reduction Fund

MPO – Metropolitan Planning Organization

OEHHA – Office of Environmental Health Hazard Assessment

S.B. 1018 – Senate Bill 1018: Public Resources

S.B. 103 – Senate Bill 103: Budget Act of 2013

S.B. 535 – Senate Bill 535: California Global Warming Solutions Act of 2006: Greenhouse Gas Reduction Fund

S.B. 732 – Senate Bill 732: Environment

S.B. 852 – Senate Bill 852: Budget Act of 2014

S.B. 862 – Senate Bill 862: Greenhouse Gases Emission Reductions

SCAG – Southern California Association of Governments

SGC – Strategic Growth Council

TOD – Transit Oriented Development

WRCOG – Western Riverside Council of Governments

7.2 GREENHOUSE GAS REDUCTION FUND PROGRAM DESCRIPTIONS

Greenhouse Gas Reduction Fund Programs

Appropriations	Potential Projects Identified by Implementing Agencies	2013-14 (M)	2014-15 (M)	2015-16 (%)	% of 2014-15 Funds Benefitting Disadvantaged Communities
High Speed Rail (HSRA) Construction of the initial construction segment in the Central Valley and further environmental and design work on the statewide system. The Budget also provides an ongoing commitment that allows for the advancement of the project on multiple segments concurrently, which yields cost savings and creates an opportunity for earlier potential private sector investment. These investments in the high-speed rail system will alleviate pressure on California's current transportation network and will provide both environmental and economic benefits.	Planning/Design		\$59	25%	0-25%
	Right-of-way acquisition of Initial Operating Segment		\$191		
	Construction of Initial Operating Segment				
Transit and Intercity Rail Capital Program (CalSTA) Competitive grant program for rail and bus transit operators for capital improvements to integrate state and local rail and other transit systems, including those located in disadvantaged communities, and those that provide connectivity to the high-speed rail system. The Transportation Agency will prepare a list of projects recommended for funding, to be submitted to the California Transportation Commission for programming and allocation.	Connectivity to existing/future rail systems by adding new rail cars/engines		\$25	10%	25% (in statute)
	Increase service and reliability of intercity and commuter rail systems				
	Encourage multi-modal transit via integrated ticketing / scheduling				
Low Carbon Transit Operations Program (Caltrans to local agencies) Support new or expanded bus and rail services, with an emphasis on disadvantaged communities. Expenditures are required to result in an increase in transit ridership and a decrease in GHG emissions.	New/expanded bus or rail services or expanded intermodal transit facilities		\$25	5%	50% (in statute)
	Service or facility improvements, e.g. equipment, fueling, and maintenance				
Affordable Housing and Sustainable Communities (SGC and member agencies) Implementation of sustainable communities strategies required by SB 375, and to provide similar support to other areas with GHG reduction policies, but not subject to SB 375 requirements. Projects that benefit disadvantaged communities will be given priority. Also, projects will reduce GHG emissions by increasing transit ridership, active transportation (walking/biking), affordable housing near transit stations, preservation of agricultural land, and local planning that promotes infill development and reduces the number of vehicle miles traveled.	Intermodal affordable housing		\$130	20%	50% (in statute)
	Transit capital projects				
	Active transportation/complete streets				
	Transit-oriented development				
	Agricultural land preservation				
Low Carbon Transportation (ARB) Accelerate the transition to low carbon freight and passenger transportation, with a priority for disadvantaged communities. This investment will also support the Administration's goal to deploy 1.5 million zero-emission vehicles in California by 2025. ARB administers existing programs that provide rebates for zero-emission cars and vouchers for hybrid and zero-emission trucks and buses. These expenditures will respond to increasing demand for these incentives, as well as provide incentives for the pre-commercial demonstration of advanced freight technology to move cargo in California, which will benefit communities near freight hubs.	Local planning and implementation				
	Passenger ZEV rebates		\$30	\$200	50%
	Heavy duty hybrid/ZEV trucks and buses				
	Freight demonstration projects				
	Pilot programs (car sharing, financing, etc.) in disadvantaged communities				

9/29/2014

SUMMARY DEVELOPED BY THE CALIFORNIA AIR RESOURCES BOARD

1

Appropriations	Potential Projects Identified by Implementing Agencies	2013-14 (M)	2014-15 (M)	2015-16 (%)	% of 2014-15 Funds Benefitting Disadvantaged Communities
Weatherization Upgrades/Renewable Energy (CSD) Installation of energy efficiency and renewable energy projects in single and multifamily low-income housing units within disadvantaged communities. Weatherization measures typically include weather-stripping, insulation, caulking, water heater blankets, fixing or replacing windows, refrigerator replacement, electric water heater repair/replacement, and heating and cooling system repair/replacement. Renewable energy measures include installation of solar water heater systems and photovoltaic systems.	Single-Family Weatherization		\$75		100%
	Multi-Family Weatherization				
	Solar PV and Water Heating				
Energy Efficiency in Public Buildings (CEC) Energy efficiency and energy generation projects in public buildings, including the University of California, the California State University, and courts. Energy savings projects will include lighting systems, energy management systems and equipment controls, building insulation and heating, ventilation, and air conditioning equipment.	Energy audits		\$20		<25%
	Building retrofits for energy efficiency				
	Energy generation				
Agricultural Energy and Operational Efficiency (CDFA) Projects that reduce GHG emissions from the agriculture sector by capturing greenhouse gases, harnessing greenhouse gases as a renewable bioenergy source, improving agricultural practices and promoting low carbon fuels, agricultural energy, and operational efficiency.	Water use and energy use efficiency	\$10	\$15		<25%
	Dairy digesters				
	Alternative and renewable fuels				
Water Action Plan - Water-Energy Efficiency (DWR) Funding for grants that support water use efficiency and conservation projects, leak detection and repair projects that reduce GHG emissions, with additional consideration given to disadvantaged communities. The funding will also support projects at the Thermalito and Hyatt State Water Project facilities.	Efficient hydro energy turbines	\$30			<25%
	Water conservation and efficiency grants				
Water Action Plan - Wetlands and Watershed Restoration (DFW) Implement projects that provide carbon sequestration benefits, including restoration of wetlands (including those in the Delta), coastal watersheds and mountain meadows. In addition to furthering the goals of AB 32, these types of projects are integral to developing a more sustainable water management system statewide.	Delta coastal wetlands		\$25		0-25%
	Mountain meadows				
	Water use efficiency in wetlands				
Sustainable Forests (CAL FIRE) Urban forests in disadvantaged communities and forest health restoration and reforestation projects that reduce wildfire risk and increase carbon sequestration. These expenditures will enhance forest health and reduce fuel loads in light of climate change increasing wildfire intensity and damage.	Urban and community forestry		\$18		100%
	Fire risk reduction/ improved forest management		\$24		0-25%
	Forest health				
Waste Diversion (CalRecycle) Financial incentives for capital investments that expand waste management infrastructure, with a priority in disadvantaged communities. Investment in new or expanded clean composting and anaerobic digestion facilities is necessary to divert more materials from landfills. These programs reduce GHGs and support the 75% solid waste recycling goal.	Organics composting/ anaerobic digestion		\$25		<25%
	Increased recycling manufacturing				
	Organics and recycling project loans				
Total		\$70	\$832	60%	
General Fund Loan Repayment			(\$100)		

7.3 FIGURES

Figure 7.1. Grant amount histogram.

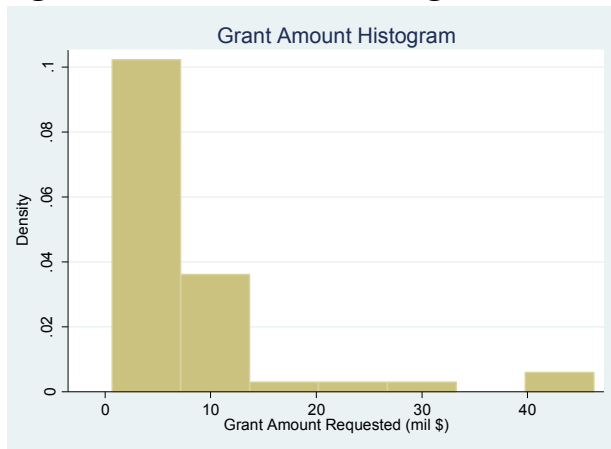


Figure 7.2. Government staff histogram.

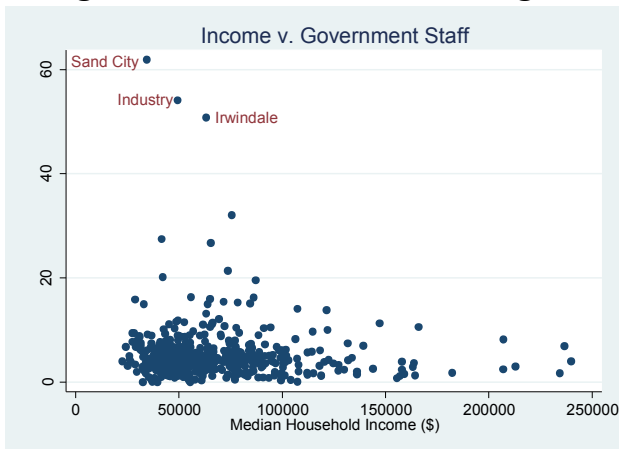


Figure 7.3. Government staff histogram.

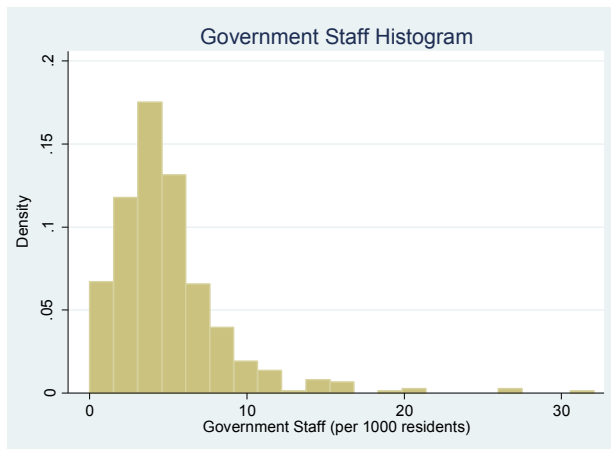


Figure 7.4. Government staff versus grant amount.

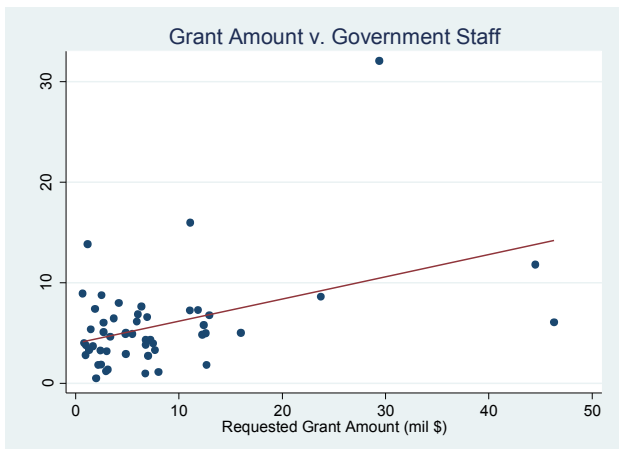


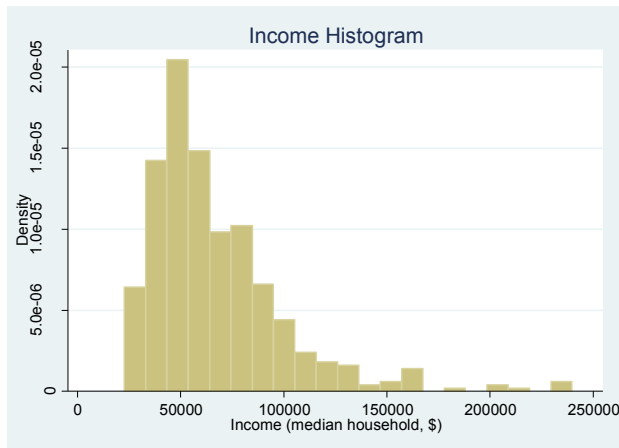
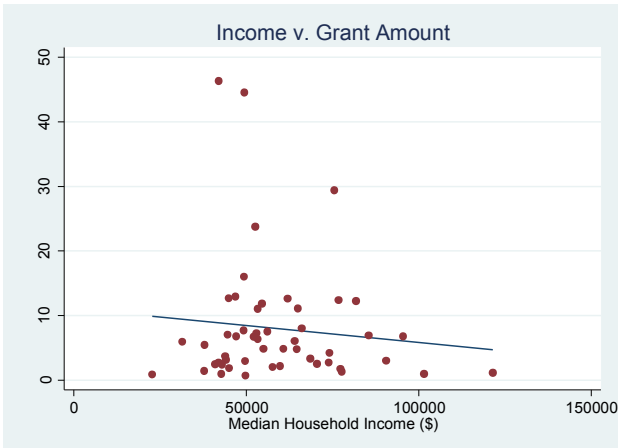
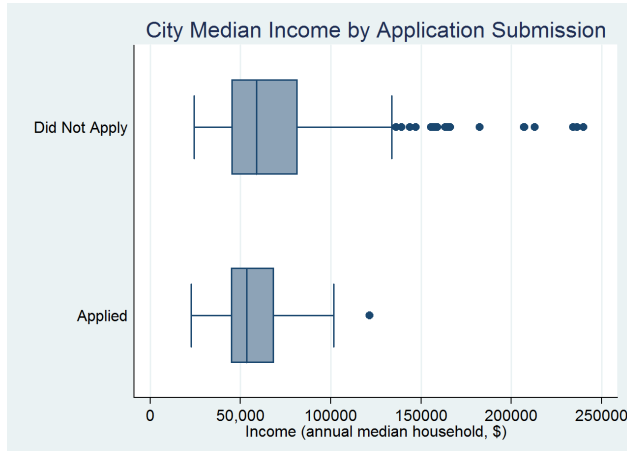
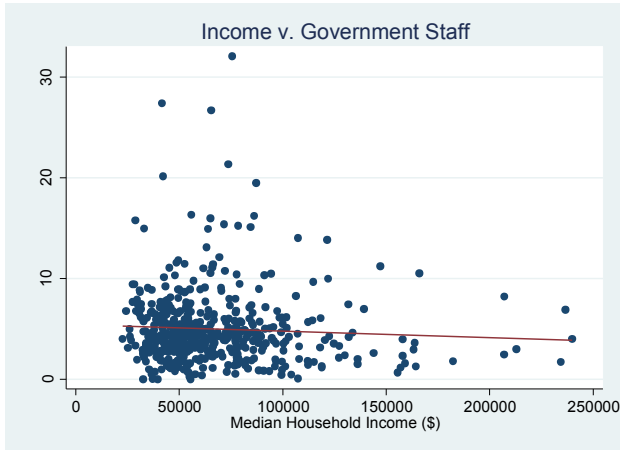
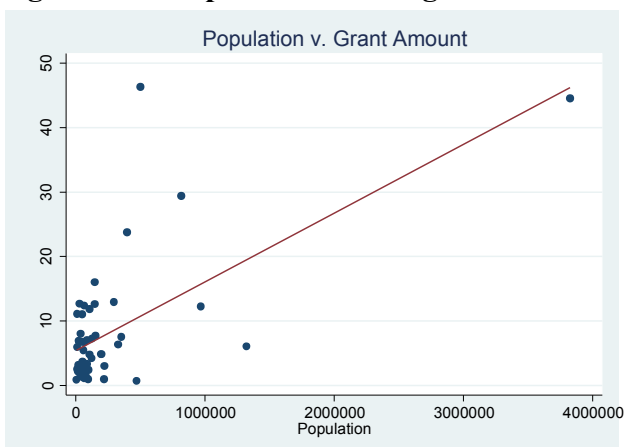
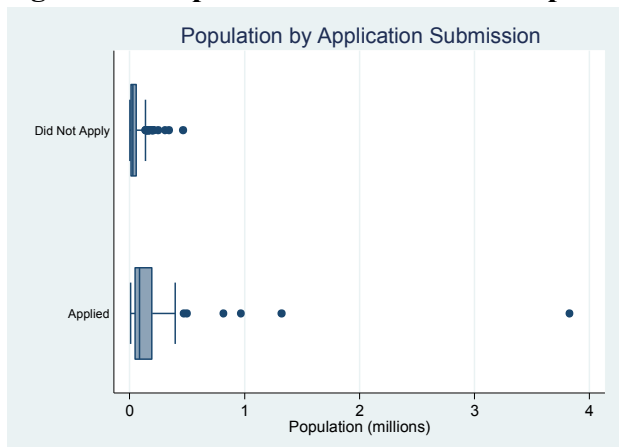
Figure 7.5. Median income histogram.**Figure 7.6. Income versus grant amount.****Figure 7.7. Income box and whisker plot.****Figure 7.8. Income versus government staff.****Figure 7.9. Population box and whisker plot. Figure 7.10. Population versus grant amount.**

Figure 7.11. Population versus total government staff.

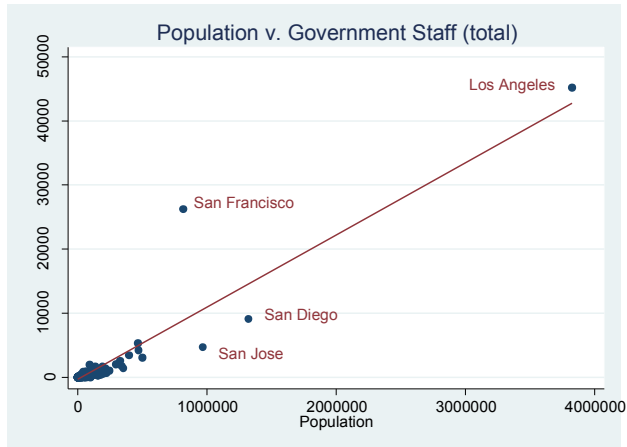


Figure 7.12. Population versus government staff per capita.

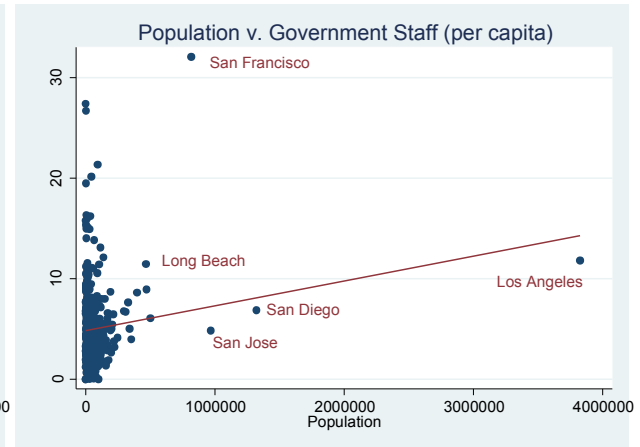


Figure 7.13. Pollution histogram.

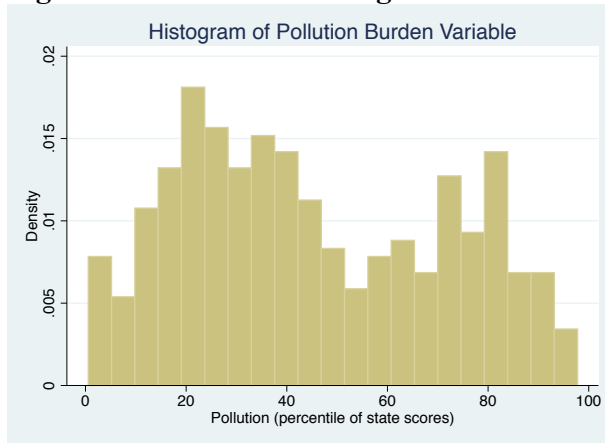


Figure 7.14. Pollution versus government staff.

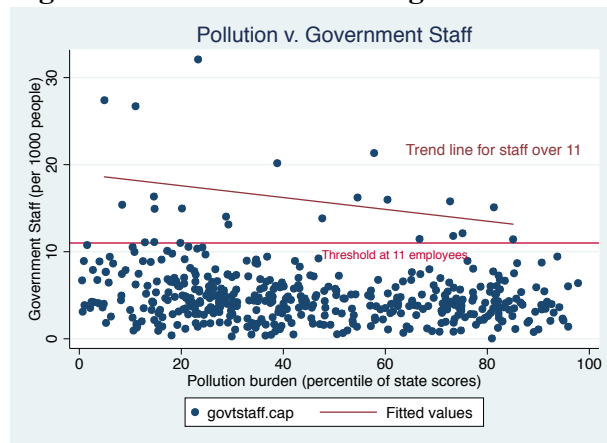
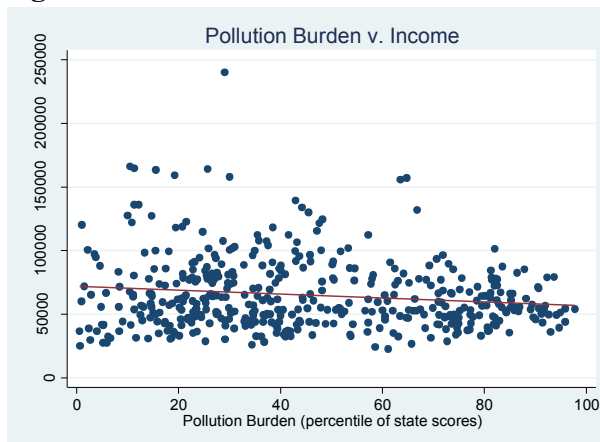


Figure 7.15. Pollution burden versus income.



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