

Exploring Environmental Policy in Austin, Texas

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ABSTRACT

This applied research project focuses on exploring environmental policy at the local government level. The purpose is two fold. First, this study explores the various factors influencing the implementation of local environmental policies, including local pressures, the level of resources, political demands, and administrative capacity. The second purpose is to explore the various strategies used in local environmental policies, including market-based, information-based, and public cost strategies. In order to accomplish this, a case study was performed on the City of Austin's Air Quality Program.

From the data collected, it is clear that all predicted factors were an influence on Austin's Air Quality Program to some degree. The strongest support for the program's implementation was the level of resources influence and administrative capacity, while the political demands and local pressures influence had mixed support. One factor that was not predicted was the influence of an environmental culture in the community. Although environmental groups and interest groups were categorized with administrative capacity influence, the culture in Austin supports environmental preservation and protection. This cultural factor was an influence in the implementation of the program, and its influence on local environmental policy implementation should be further researched.

There was support to some extent for the predicted strategies used for implementation, with the strongest support for information-based policies. Some evidence suggests that market-based strategies and public-cost strategies are used in local

government environmental policy, but there was little evidence to support their use in Austin's Air Quality Program.

CHAPTER 1

INTRODUCTION

Public policy is necessary for a government to function and is most often a reflection of society's collective will and beliefs. Emergency services, fire, and police--to protect and serve society and its property--are the most basic functions of government. Carry that logic out further and what could be more basic than to protect and serve Mother Nature? The environment is the "complex of physical, chemical, and biotic factors such as climate, soil, and living things that act upon an organism or an ecological community and ultimately determine its form and survival."¹ In the twenty-first century environmental policy has its rightful place in national public policy as a *necessity* rather than a luxury. The federal government has made it a priority to keep this country's air, water, and land clean and free from harmful pollutants. Although most environmental policies are, by law, implemented at the federal and state levels of government, more and more local governments are taking the initiative to implement environmental policies without legislative mandate. Municipal leaders have learned that they must be prepared

¹ as defined in Webster's 10th edition collegiate dictionary.

to move ahead of state and federal governments when it comes to pollution.² There are a variety of strategies available to cities for implementation from mandatory to voluntary and from expensive to free, yet there is lack of systematic research that fully explores environmental policies at the local government level (Feiock and West 1994). City councils and municipal managers lack systematic information on environmental management that would help them make the best decision for their constituents.

Environmental damage will not wait for people to prepare. Municipalities are forced to address environmental issues whether they are ready or not. Without research specific to local government environmental policy, policymakers are not equipped with the tools they need to effectively govern their communities.

Environmental policy is a serious and crucial part of public policy and should not be ignored. Thankfully, Austin leaders realize its importance. The City of Austin is among the elite when it comes to setting environmental policy. Over the past fifteen to twenty years the City of Austin has earned hundreds of environmental awards. The following City programs have received national, state, or trade association recognition: Water/Wastewater Department's Dillo Dirt, Keep Austin Beautiful, Water Conservation, Austin Recycles, Energy Conservation, Public Works, Green Builders, and the Propane Program.³ Austin was selected as the case study subject because of the environmental consciousness that exists within the city. Other active City-sponsored environmental

² Austin American-Statesman, Collier, 27 October 1990.

³ Fred Blood, City of Austin, 2004.

programs include alternative fuel technology, teleworking, alternative commuting, tree-planting, sustainable communities and "smart growth" incentives. These environmental initiatives are not just government-led; Austin is one of the most environmentally active communities in the country: The City of Austin was ranked second "greenest" city in the nation by the World Resources Institute (2004). There is a powerful environmental coalition of organizations, with active local chapters of the Sierra Club, National Audubon Society, Environmental Defense, and over fifty other environmental organizations in the city alone.

Whether by choice or by the force of law, environmental issues have always been in the vanguard of local politics in Austin. As an environmentally progressive city, Austin is not entirely federally compliant. This year, Austin-area elected officials, known as the Clean Air Coalition, were surprised to learn the Central Texas area is in danger of violating ozone standards in 2004.⁴ There are two kinds of ozone – *stratospheric ozone* often referred to as "good ozone," and *ground-level ozone*, "bad ozone." Specifically ground-level ozone is a form of oxygen with three atoms instead of the usual two. A combination of weather patterns, sunlight, and emissions interact to form this photochemical oxidant referred to as *ground-level ozone* (1994, p 4). While the ozone layer in our stratosphere prevents harmful ultraviolet radiation from reaching the Earth's surface, ground-level ozone is the main component of the hazy pollution commonly called smog. Smog is created when ozone-forming pollutants released from

neighborhood businesses, consumer products, and motor vehicles mix with sunlight and other elements. Motor vehicles alone are responsible for approximately two-thirds of the pollutants that form ground-level ozone. Exposure to ground-level ozone can cause respiratory infections, can kill trees and reduce crop yields, and can severely aggravate the health conditions of sensitive individuals with asthma and allergies⁵.

Thus, federal standards were established for ground-level ozone to protect the public from exposure to harmful amounts of pollutants. Before 1990 the standard was 125 parts per billion (ppb) for a 1-hour averaging period, not to be at or above that level on more than three days over three years. The Clean Air Act Amendments of 1990 set a new eight-hour standard for ozone of 85 ppb, meaning the average of the fourth highest daily eight-hour maximum over a three-year period is not to be at or above 85 ppb. When the maximum level is violated the Environmental Protection Agency (EPA) classifies the area as *non-attainment*, imposes regulations on pollutant emissions, and designates a deadline which the area must attain the standard. Continued violation of the standard can result in significant new requirements, including more expensive reformulated gasoline, emissions inspections on personal vehicles, and withholding of federal highway funds⁶. Growing communities face an even bigger challenge because growth in population means growth in ozone levels⁷. All of Central Texas now suffers

⁴ Austin American-Statesman, Carmody and Staff, 15 January 2004.

⁵ Texas Department of Transportation website, 2004.

⁶ Texas Commission on Environmental Quality website, 2004.

⁷ Austin American-Statesman, Kirk Watson, 24 January 1992; Texas Department of Transportation website, 2004.

from ozone pollution; ozone is the most widespread air pollution problem in the United States.

The *Clean Air Coalition* is made up of commissioner's courts from five Central Texas counties--Travis, Williamson, Hays, Bastrop, and Caldwell--and the city councils from their largest cities--Austin, Round Rock, San Marcos, Bastrop, and Luling, respectively. Recently, newspapers have reported that the Austin-area would violate federal standards for lung-damaging ozone by 2007 unless the region cuts emissions⁸. This reversed preliminary results that indicated the region would have narrowly met federal ozone standards without any emission reductions planned under a voluntary *Early Action Plan* that the region has with the Environmental Protection Agency (U.S. EPA). The only way to delay the violation is to design an emission-reduction plan for regional implementation that would be approved by the EPA. This plan will first be reviewed and accepted by the state level agency, the Texas Commission for Environmental Quality (TCEQ) and the U.S. EPA. If the regional *Clean Air Action Plan* is accepted then the EPA will defer designating Central Texas as non-attainment until 2007, even if the region violates the ozone standard in 2004.

Unfortunately, many of the counties and cities within the Central Texas area do not have as much experience with environmental policies. This designation depends not only on what Austin does, but what the other five counties and their largest cities do about reducing emissions. This is the problematic situation that stimulated this research

purpose. How will cities decide whether to implement an environmental policy or not? What factors influence their decisions? How can others predict or influence what they will do if they do not know how local environmental policies are implemented? There is no textbook set of factors that influence the implementation environmental policies, nor is there a guaranteed set of strategies that local governments use in environmental policy.

Purpose of Research

The purpose of this research project is to explore the implementation of environmental policies at the local government level. Specifically, the purpose of this research is to explore the various factors influencing the implementation of local environmental policies and the various strategies used in the environmental policies in Austin, Texas. There are several reasons for the selection of this purpose. *Local government* was chosen because environmental damage and policy implementation, for all practical purposes, occurs on a local level. Local governments are directly or indirectly impacted by federal and state regulations, and thus forced to react. In Texas, most cities with populations over 100,000 have environmental policies implemented by their municipal governments. *Austin* was chosen because it has a population over 100,000 and also for its progressive environmental culture and regulatory reputation in the environmental area. Environmental policies are divided into broad categories which address air, water, and waste. *Air quality* was selected because environmental policies to

⁸ Austin American-Statesman, 15 January 2004.

protect air are the most thoroughly developed and most heavily debated.⁹ This research purpose is the most "cutting edge in the environmental arena"¹⁰.

Chapter Summaries

Chapter 2 describes the setting, the environmental and political culture of Austin, and the particular policies and strategies of the selected policy--the Air Quality Program. Chapter 3 provides the historical background of environmental policy. This chapter contributes to the overall purpose of the ARP: to explore the current development of environmental policy in Austin, Texas by providing a reference point from which to compare. Chapter 4 reviews the relevant literature on the environmental policies at the local government level and describes and defends each working hypothesis in a narrative. Chapter 5 discusses and defends the selected methodology, a case study on the City of Austin's Air Quality Program, and provides a table that operationalizes the conceptual framework linking it to the mode of data collection. Chapter 6 presents the results of the case study, analyzes and evaluates the empirical findings for support, or lack of support according to each working hypothesis. Chapter 7 provides conclusions to the research

⁹ Feiock and West 1993, p 399; and U.S. EPA website.

¹⁰ Interview with Carey Fitzmaurice, Senior Policy Analyst for the Office of Air and Radiation at the EPA, 2004.

questions and synthesizes the case study results into the body of research on environmental policy in local government.

CHAPTER 2

SETTING: AUSTIN, TEXAS

This chapter introduces the city that is the focus of the case analysis and its environmental and political culture. As with most communities, it usually takes an environmental activist group remind citizens of the importance of protecting nature and its resources. In some communities these conservation groups act more as crusaders bringing vital issues that would otherwise be overlooked to the forefront of the political agenda. The physical beauty of Austin makes it easy to understand the environmentalist culture:

"Austin is a geological and biological crossroads. The city straddles the Balcones Escarpment, which separates hills to the west and farmland to the east, and is intersected by the Colorado River, with Hill Country to the southwest and plains to the north. Austin hosts a variety of plant communities including juniper shrub-lands and oak forests, pecan woodlands, each with its own unique wildlife. Austin's other chief feature is the Edwards Aquifer, a limestone formation fractured by the fault along the uplifted Balcones Escarpment and eroded by eons of underground seepage. The honeycombed rock that resulted created the aquifer's underground reservoir of cool, clean water that nourishes the surface with springs such as those at Barton Springs Pool, the city's favorite swimming oasis" (Austin American-Statesman, 1992).

The contamination of Barton Springs is a recent example of activism in the Austin community. Nicknamed "the blue-green heart of Austin," Barton Springs Pool is a 1.9 acre pool fed from underground springs which discharge from the Barton Springs

segment of the ten-thousand year-old Edwards Aquifer. A biologist collecting habitat samples noticed an itchy rash she contracted after visiting the pool. Soon the environmental group Save Our Springs Alliance¹¹ and the local newspaper discovered the story and alleged that the pool was toxic with the environmental contaminants PAH and arsenic, which must have seeped into the water from a nearby development. Regular swimmers of Barton Springs, neighbors, and environmental groups were alarmed that the pool could have been damaged by development even with the regional laws protecting the aquifer. The attention and local pressures led the city manager to seek biological tests from health and environmental authorities on the state and national levels and closed the pool for three months while awaiting the test results. Avid environmentalists and print and TV media stationed their crews at the springs in anticipation of the results, but in the end, the results were nothing out of the ordinary for an urban area. No toxic pollutants were found. The costs to the city for testing and in lost revenue from closing the pool totaled approximately \$135,000; in addition, this environmental crisis cost state and federal agencies hundreds of hours of employee time.¹² On the other hand, the community's assurance of safety and peace of mind, are immeasurable and in a sense, the crisis has confirmed that the governmental priority of protecting and preserving the environment are central to the public interest.

¹¹ Known locally as SOS, it is a community based organization using law, science, and economics to protect the Edwards Aquifer, with special emphasis on the Barton Springs Aquifer.

¹² Austin Chronicle, Apple, 25 April 2003.

CURRENT PROGRAMS AND CONTRACTS: AIR

At the forefront of Central Texans public interest however is planning an acceptable and effective strategy to reduce emissions for cleaner air. One of the current environmental contracts in the Central Texas is the **Early Action Compact** or EAC, an air quality improvement agreement among the local and county governments with the TCEQ and the U.S. EPA designed to develop and implement control strategies, account for growth, and achieve and maintain the 8-hour standard of the Clean Air Act. Those participating are collectively called the Austin/Round Rock Metropolitan Statistical Area (A/RR MSA), and an Air Quality Control Region, divided by the EPA for defining non-attainment area boundaries and are thus treated as one unit when it comes to implementation and enforcement. This partnership helps local governments design early action plans containing necessary elements for a comprehensive air quality strategy, but the plan is tailored to local needs and driven by local decisions. By signing the EAC in 2002 the region committed itself to develop a Clean Air Action Plan that would help comply with the federal air quality standards two year earlier than required. In any county, the commissioners' court and largest city within that county must approve the plan. The EAC is the broader air quality plan, while the CAAP is the more specific plan of implementation declared by each government entity.

One of the strategies discussed as part of the CAAP is tailpipe emission inspections. These inspections have been very controversial because they add at least twenty dollars to annual vehicle inspection costs and across the Central Texas region

approximately thirty-two million dollars in compliance costs to drivers and inspection facilities¹³. Part of the Early Action Compact is a vehicle emissions testing plan. Only the three urban counties Hays, Travis, Williamson and their cities must agree to implement specific strategies to reduce vehicle emissions. Air quality management depends heavily on identifying the source of pollution, and regulating that source accordingly. Motor-vehicle emissions are largely responsible for the ground ozone, and thus transportation planning is an important element of pollution control. The implementation strategies concerning these are often debated among and between cities as to cost-effectiveness, scientific proof, but ultimately each city decides for itself. This case study focuses on the implementation of air quality policies in Austin – more specifically, the City of Austin's Air Quality Program.

¹³ Austin American-Statesman 15 January 2004

CHAPTER 3

HISTORICAL BACKGROUND

For many years environmental damage occurred without much widespread notice, scientific study, or public concern. In the early 1900s man-made air emissions, from industrial operations and electrical power from the combustion of solid fuels, were directly emitted into the atmosphere through chimneys or stacks. After World War II science and machinery advanced as well as our ability to develop pollution-control technology, providing industry with cleaner, more environmentally-friendly options. The United States instituted fuel changes, moving from coal to oil and oil to gas. By the mid-twentieth century, public awareness emerged to shape the general consciousness of environmental conditions. The number and types of pollution sources, however, changed dramatically¹⁴ This pollution evolution is illustrated by Griffin (1994); sulfur oxides and particulate matter containing heavy metals have irreversible effects on plant life. In less than one-hundred and fifty years these air pollutants can completely denude a countryside of pine forests and shrubs and make that land useless for supporting vegetation other than a few grasses. In the early 1950s a unique pollutant was discovered in Los Angeles, California. That pollutant was found in more abundance, with a more immediate, more harmful effect on human health. It was ozone. Ground-level ozone is dangerous to

sensitive population groups, such as those with cardiovascular disease, chronic respiratory disease, the elderly, children, and anyone engaging in athletic activities and in high concentrations it is harmful to everyone. Although the City of Los Angeles made the discovery, ground-level ozone, unfortunately, was not so unique. More and more cities tested positive for ground-level ozone, and the public became aware that air pollution was a problem.

ORIGINS OF ENVIRONMENTAL POLICY

To combat problems of air pollution the U.S. House and Senate passed the Clean Air Act in 1963, making it the first Congressional action and the premiere environmental policy in American history.¹⁵ The primary purpose was simply to protect public health but the passage of the original Clean Air Act was the political culmination of the environmental coming of age. A variety of events stimulated the federal government to pass the Clean Air Act.

A turning point in American environmental awareness came with the spread of Rachel Carson's compelling book *Silent Spring* (1962). Carson raised public awareness of the dangers of pollution, contending that the crop dusting pesticide dichlorodiphenyltrichloroethane (DDT) was detrimental to fish and wildlife, and caused cancer and birth defects in humans. This surge of environmental consciousness in the marketplace led to the cancellation of most uses of DDT, and a sharp decrease in the

¹⁴ Griffin, 1994; Smith, 1995; Schultz and Kasen, 1984; Lachman, 1997.

millions of pounds sold. Public recognition pushed the Department of Agriculture to restrict the use of DDT on crops and home use and eventually led to an onslaught of court battles and hearings between the EPA and environmental organizations¹⁶. Other types of pollution and its sources were carefully analyzed. Air pollution, water contamination and hazardous waste were studied, and the automobile was identified as a major source of air pollution.

Next, the National Environmental Policy Act (NEPA) passed in 1969, the first of its kind in the United States, providing an overarching plan for environmental protection. The NEPA required each president submit to Congress an annual report on environmental quality and created a Council on Environmental Quality, an agency within the Executive Office of the president that develops and recommends policies that promote the improvement of environmental quality. Formulated primarily as a policy document, NEPA's purpose is to promote coordination within the federal government and in the use of federal funds. To help reduce environmental damage, Environmental Impact Statements (EIS's) were a requisite for all federally funded, licensed or sponsored projects (Schultz and Kasen 1984, p 252).

CREATION OF THE EPA

In 1970 under the Nixon administration the federal government reorganized and consolidated the departments of Interior, Health, Education, Welfare and Agriculture,

¹⁵ Schultz and Kasen, 1984; Walton, 2001.

Atomic Energy, Federal Radiation Council, and the Council on Environmental Quality to create the Environmental Protection Agency or EPA. With the creation of the EPA, comprehensive environmental programs were established to protect three key areas in danger of pollution: air, water and waste (Schultz and Kasen, 1984; Walton 2001). The EPA began to promulgate regulations for protection of our resources (air, water, and land). Environmental legislation matured in the 1990s, expanding the liability potential for polluters significantly. The Clean Water Act, the Comprehensive Environmental Response Compensation and Liability Act or CERCLA (42 USC 9601), and the Resource Conservation and Recovery Act or RCRA (42 USC 6901), were the first to put teeth into pollution policy by assigning responsibility. CERCLA applied responsibility for air, water, and waste pollution. RCRA provided "cradle to grave" management of hazardous materials through numerous regulations governing the clean up of hazardous waste sites, and defined four different types of people who would be held liable.

HISTORICAL PROGRESSION OF POLICY

To maintain practical applicability, states had to be included in the formula for environmental policy implementation. EPA administrators delegated the enforcement responsibility to the states, and it was eventually implemented by the regional and local governments in authority¹⁷. The historical progression of the Clean Air Act perfectly

¹⁶ The Washington Post, 26 April 1972.

¹⁷ Harris, 2001; Adler, 2000; Kraft, 2001; Mazmanian and Kraft, 1999; Smith, 1995; Portney and Stavins, 2000; Schultz and Kasen, 1984; Walton 2001.

illustrates the development of strategies for implementation at the state and local level. Environmental regulators began to trace air pollution at its most obvious source, vehicle and industrial emissions. To codify this funding, Congress amended the Clean Air Act and included emission-induced pollution. The EPA established nationwide emission standards for vehicle engines and mandated pollution control devices on new vehicle engines. The 1970 Clean Air Act Amendments introduced a more enforceable, scientific approach by setting National Ambient Air Quality Standards.¹⁸

Ambient Air is the breathable air, the portion of the atmosphere which is in the breathing zone of the inhabitants of the earth's surface or the lower several hundred feet of the earth's atmosphere. The *National Ambient Air Quality Standard* is the concentration of a given air pollutant in the ambient air over a specified period of time below which the U.S. EPA believes there are no long-term adverse health effects. Acceptable ambient air pollution levels differ according to the particular pollutant such as ozone. The contaminants within the ambient air are materials other than permanent gases, which may be accepted as a part of the natural world.¹⁹ By contrast, pollutants are materials derived from mankind's activity. They are a major concern to human health, materials, and vegetation and to society in dealing with air quality and its management (Griffin, 1994, p 5). Health, visibility, and materials or vegetation effects caused by

¹⁸ This study has purposely left out biotechnical discussion about air quality laws, focusing on the policies and strategies themselves, however it is necessary to define a few terms to understand the historical background of policy (Griffin, 1994).

¹⁹ A few examples of natural contaminants include nitrogen (N₂), Oxygen (O₂), and Hydrogen (H₂).

pollutants are the same for those gases, dust, and particles that may be generated by natural processes as well as by grinding operations. Some examples of man-made pollutants include Carbon dioxide (CO₂), Ozone (O₃), and Nitrogen dioxide (NO₂).

HISTORICAL DEVELOPMENT OF POLICY IMPLEMENTATION STRATEGIES

The term "non-attainment" was developed for those areas which fail to achieve the national ambient air quality standards. The Clean Air Act Amendments of 1970 divided up the country into ten atmospheric regions, much like watersheds, grouped according to homogeneous meteorological, climatic and topographical factors. These regions were divided into 247 air quality control areas (AQCAs) composed of groups of communities that would be considered a unit for the implementation of air quality standards. Each AQCA is charged with performing an inventory of emissions from fixed sources every year, and from mobile sources every three years. Within these, states would be designated and penalized non-attainment areas (Walton, 2001; Griffin, 1994).

New funding was available to the states, yet they still lacked the expertise and capacity to meet the regulatory objectives set by the EPA. With the Clean Air Act Amendments of 1977 state governments were deemed as responsible for their state and specifically instructed to develop a State Implementation Plan (SIP) to set out the measures for bringing non-attainment areas into compliance with ambient standards. The penalty if states did not maintain and enforce clean air standards adequately was that the

EPA would assume direct jurisdiction and deny transportation funding (Schultz and Kasen 1984, Griffin 1996, U.S. EPA website).

While states are primarily responsible for developing and implementing compliance standards, the EPA has the ultimate authority in assuring that those standards are met to protect the health and safety of the public. State environmental agencies must provide necessary assurances that the local or regional enforcement has at least as strict attainment standards as the EPA concerning pollution, regardless even of serious economic considerations such as a company closing its production. Compliance with federal environmental standards might require that for instance, a steel company, a vital economic source of the state, close its plant if it could not pay for pollution control equipment at its sinter wind box. The Clean Air Act reflects the Congressional policy decision that removal of pollutants is more compelling to the national public interest than a state's economic interest in continued operation of a particular facility (U.S. EPA cites the United States v. Wheeling-Pittsburg Steel Corporation. 1987, CA3 Pa).

CHALLENGES TO IMPLEMENTATION AT THE STATE AND LOCAL LEVEL

Pollution is a public problem that often transcends governmental units such as cities, counties, or states; much early environmental legislation began at the federal level. Auto emission standards are an example. A major problem for local governments today is that the pollution boundaries, or affected areas, usually do not fit neatly into municipal boundaries. Air and water pollution both are vulnerable to traveling into another area.

This problem necessitates regional initiatives, and on a larger scale, state and federal governments must address environmental pollution. Although there have been three decades of progress in air quality laws, state and local government find that pollution does not adhere to boundaries. Even if emissions can be contained on the local and state level, downwind states can still violate federal standards because of pollution drifting from other areas²⁰. Not even the EPA has authority to handle interstate pollution (pollution blowing across state lines.)²¹

The cost of compliance includes the cost it takes a firm, company, or individual to comply with an environmental standard. Through the Clean Air Act, Congress has generally authorized innovative federal programs which force offending industries to clean up. But as new policies were implemented in the 1970s and 1980s, Congress' ambitious goals proved to be more difficult and costly to fulfill than anticipated, and state and local governments mirrored those complaints. The EPA reported that America spent well over 2% of GDP on pollution control in 1990, and in 2000 environmental regulations cost more than \$200 billion per year, over 25 percent of the total regulation burden (U.S. EPA website).

While compliance costs for companies were a problem, local governments had financial constraints facing them as well. Implementing the regulations handed down from the State and EPA can be an administrative and economic burden. Some local

²⁰ Austin American-Statesman, 30 Jan 2004.

²¹ The boundary problem continues to exist and will require Congress to revise the Clean Air Act in the next decade in order to make costs of compliance fair for companies downwind.

governments lack the adequate notification, the technical expertise to interpret the regulations, and the financial resources to comply with those regulations. "For decades, small towns and rural communities have struggled to meet unfunded federal environmental mandates" (ICMA, 1995, p1). The EPA did recognize the difficulty in developing policies with such important ramifications. That is why the Agency worked closely in conjunction with state and local governments such as the *O₃ Flex Agreement*-- the *O₃* is ozone, and the *Flex* is flexibility. Central Texas signed an O₃ Flex in 2002, as the Austin/San Marcos MSA²² with TCEQ and the U.S. EPA as to avoid being designated non-attainment while they develop a regional plan to achieve the newest federal standard for ozone.

NEW PURPOSES FOR ENVIRONMENTAL POLICY

Local decisions are a reflection of the community, and the environmental community has matured in its purposes. The concept of sustainability is the more idealistic, more modern purpose of environmental action. In 1987 the United Nation's World Commission on Environment and Development defined "sustainable development" as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Lachman 1997, vii). A sustainable community therefore, is a holistic concept of planning applied to pollution prevention and other issues such as urban sprawl, economic development, conservation

²² The same five-county region as the Austin/Round Rock MSA. The O₃ Flex Agreement was the contract

and more. Pollution prevention has been a major building block for many communities' sustainability projects, and is frequently a goal or guiding principle.

Taking into account the challenges to implementation, including costs of compliance, pollution's disregard for boundaries, and lack of expertise, environmental policy research still has a long way to go before sustainability will be the core factor influencing local governments to implement policy.

is the model for the Early Action Compact which achieves the 8-hour federal clean air standard.

CHAPTER 4

LITERATURE REVIEW

This chapter reviews the relevant literature on the environmental policies at the local government level, and introduces and describes and defends the working hypotheses about local environmental policy implementation. This chapter also presents a table that links the working hypotheses to the literature and the overarching purposes of this study.

Environmental protection is an important field of public policy, though relatively new to the public administration arena. Environmental pollution creates a threat to public health, especially to those vulnerable groups of individuals including those already suffering from chronic respiratory diseases, children, the elderly, those with cardiovascular disease, and those engaging in athletic activities (Walton 2001, Griffin 1994). While environmental policy at the state level has been extensively studied, there has been a lack of similar research on environmental policy at the local government level (Feiock and West, 1993; Harris, 2001). Environmental policy local-level researchers seek to identify the factors that influence the implementation of environmental policies, and types of strategies used in local government environmental programs. Even so, externality remains the distinguishing concept which these sustainable efforts attempt to mitigate. Pollution is a negative externality.

POLLUTION EXTERNALITIES AND ECONOMIC CONCEPTS

A key economic concept in environmental policy is externality (Bromley 1995). **Externalities** are spillover benefits (positive externalities) and costs (negative externalities) that are not accounted for by the market alone. For example, when people become ill because they breathe air polluted by a factory they are paying a cost (pain and suffering). This is a true cost of pollution not borne by the factory that instead, spill over into the community. The effects of the pollution externality can extend beyond the city, county or state it resides in, transcending jurisdictional boundaries. As expected, it is difficult to quantify the consequences of externalities (Economist, 5 Sept 1998).

Externalities also make it problematic for local governments to enforce regulations against certain types of polluting behavior (Bromley, 1995). The pollutants and contaminants created by chemical toxins, factory emissions, and vehicle emissions are not weighed into the prices of the products and services. In a world with many polluters, there is no reliable way to trace how much of a city's lung disease and peeling paint can be attributed to the smokestack at a particular plant. The unanswerable question is: If the plants' owners spend millions to reduce harmful emissions by twenty percent, to what extent those problems would be alleviated? Thus, negative externalities are not quantified (Economist 5 Sept 1998).

A negative externality is also an action by one individual that imposes costs on others. Vehicle emissions illustrate this concept effectively. Although each motorist will weigh only his/her own personal costs, that decision to drive leads to higher costs, in both

time and out-of-pocket expenditure, for everyone else on the road. Also in that sense, a car that commutes regularly is analogous to a factory that spews smoke into the air. The external costs to society and the environment are not weighed into the costs to drive or maintain the car.

As another example, fossil fuel energies in the United States have for the most part, always been inexpensively made and sold. Yet, their market price has never reflected the negative externalities such as air pollution. While solar and wind energy have fewer negative externalities associated with production, their market prices remain higher than fossil fuel energies. To complicate matters, the cost to upgrade factory machines for pollution control is frequently *more* expensive than the cost to continue polluting and pay a penalty from the government, or than to reimburse a neighbor or the public. The true total cost of manufacturing, refining, etc. would be much higher if its negative externality (pollution) were taken into account. The cost for the company or firm to continue its production would definitely be higher than the current cost, and likewise the sale price of that product would be increased. Realistically, monetary penalties charged to a polluting firm are not as detrimental as they are intended to be by the regulating agency.

Conceptual Framework

The conceptual framework used is working hypotheses because the research purposes are exploratory. Shields asserts that working hypotheses are guides to early-

stage investigations (1998, 57). Table 1 and 2 present the working hypotheses and list of sources used to develop each hypothesis. The narrative of the conceptual framework tables will explain these hypotheses.

Factors Influencing Implementation of Environmental Policy

The first purpose of this study is to explore the factors influencing the implementation of environmental policies at the local government level. The factors are summarized in working hypothesis one and in its four defining sub-hypotheses. The hypotheses are derived from the literature and link directly to this research purpose. The overarching hypothesis is

WH1: Various factors influence local governments to implement environmental policies. (See Table 2.1 for framework.)

LOCAL PRESSURES FACTOR

The first factor that influences local environmental policy is Local Pressures. Communities are under local pressures when **severe pollution problems exist**, indicating a need for environmental policy. Regional and municipal governments in Texas often must mitigate air, water, and waste pollutants aggressively because of the harmful impacts on quality of life.²³

²³ Feiock and West, 1993; Griffin, 1994; Lachman, 1997; Lester et. al, 1983; Longhurst et. al, 1996; O'Ryan, 1994; Zerlauth and Schubert, 1999; Walton, 2001.

The elements of Local Pressures such as **rapid population growth** and **increased consumption** create pressure on local services. More motor vehicle traffic, smog and landfills at capacity are also elements that can influence cities to implement environmental policies.²⁴ Unfortunately, the more populated an area is, the more polluted it is. The literature supports this hypothesis even on a more micro level: poor air quality episodes tend to occur with greater frequency and severity in heavily populated urban and industrial zones (Longhurst et. al, 1996). Growth of population often influences the expansion of government activities, such environmental policies and programs. Local Pressures however, require a technological policy response from local government.

The Local Pressures influence the implementation of environmental policy also with extensive industrialization, which triggers an **increase in pollutants**. These elements make up Local Pressures, which in turn bring about strong pressures from the local community in favor of environmental protection policies. Lester et. al. affirms that regulatory policy differences are often due to the severity of pollution (1983, 258). Many concur with Lester that pressures at the state and local level are an influence on policy.²⁵ Thus one would expect the following:

WH1a: Local pressures influence the implementation of local governmental policies.

²⁴ Feiock and West, 1993; Longhurst et. al, 1996; Zerlauth and Schubert, 1999.

²⁵ Feiock and West, 1993; Griffin, 1994; Lachman, 1997; Longhurst et. al, 1996; O'Ryan, 1994; Walton, 2001; Zerlauth and Schubert 1999.

LEVEL OF RESOURCES FACTOR

The **Level of Resources** is the second factor that contributes to a local community's ability to implement environmental policy. The level of **economic wealth** sets limits on, or provides opportunities for the provision of public goods and services by a government and its constituents (Lester, 1983, p 258). If the City's tax base is poor, the citizens and companies cannot afford to pay expensive regulatory taxes. Further, the overall level of economic resources of a community is usually taken into account when local governments consider implementation. In a worst case scenario, a fiscally strained local industry may be pushed into bankruptcy by strict new environmental regulations. There is a direct relationship between the socioeconomic resource base of a local political system and levels of policy outputs.²⁶

The discussion of how to manage environmental policy in an era of shrinking public budgets has led local governments, especially small governments, to shy away from regulation that would financially burden vital industries and employers. Further defining the level of resource factor is **regulatory affordability**, or the ability of a city to afford expensive regulations within the Level of Resources factor. A community without a significant tax base cannot afford to implement environmental policies because of the effects on their industry. For example in Los Angeles, California, where the environmental regulations are the strictest within the entire USA, air quality has improved, yet ozone levels are still designated as non-attainment according federal

government standards (Zerlauth and Schubert, 1999). Local regulators try to reach attainment by imposing stricter regulations, leading to a strain on the level of resources. Firms in the Los Angeles area have had to bear very expensive compliance costs due to the stringent environmental policy. At the time of implementation, the average abatement cost for one ton of nitrogen dioxide emitted by power plants in Los Angeles was five times that of the average costs in the US total (p 270).

While local governments' need to enforce and implement protective regulations cities widely promote free-market economic policies. Many of the provisions developed by federal lawmakers are handed down to local governments to enforce on a day-to-day basis. Environmental plans created by bureaucratic agencies are difficult to implement because those plans come into direct conflict with local economies. The free-market society calls for government to not burden businesses with expensive regulations that are a disincentive to development and production (Harris 2001). In Portney's assessment of economics as it relates to the Clean Air Act, he explains that policymakers should be practical by considering the cost of the regulation to each citizen as compared to the health benefit provided. If the costs do not exceed the health benefits, then a city has adopted a policy according to its regulatory ability. A local government must determine if the costs of implementation and burden on society are exceeding the practical health benefits. Portney's (1990) overall argument is that local governments may be burdened with anti-pollution regulations that they are ill-prepared to pay for.

²⁶ Anderson, 2000; Feiock and West, 1993; Gormley, 2000; Griffin, 1994; Harris, 2001; Hays, 2000;

The **loss or gain of incentives** is another element within the level of resources factor. Local governments that do not comply with environmental standards such as the Clean Air Act can have their federal transportation funding and grant money revoked. Grant money indicates that federal level environmental regulators recognize that the level of resources is a factor in upgrading to expensive new pollution controls, and that federal funding is often an element that local governments depend on (Harris 2001, Portney 1990). Therefore, considering the elements--economic wealth, regulatory affordability, and the loss or gain of incentive--one would expect,

WH1b: The Level of Resources influences the implementation of local environmental policies.

POLITICAL DEMANDS FACTOR

The third factor which influences local environmental policy is Political Demands. This factor takes into account that environmental politics has become a major feature of local public affairs, including liberal and conservative differences. The most common generalization is that policy implementation is explained by **political party differences**.²⁷

Political-party competition is a related but different element of the Political Demands Factor because it explains the problem of ambiguity that politicians try to avoid. Democratic Party officials and candidates are commonly perceived to be more

Lachman, 1997; O'Ryan, 1994; Portney, 1990; Zerlauth and Schubert, 1999; Walton et. al, 2001.

earth-conscious than their Republican counterparts.²⁸ In political terms, environmentalist means liberal even if the democratic candidate has a history of being pro-business and conservative. To move this concept further, being deemed "green" or environmentally friendly is a type of political demand that influences policy. Each candidate vies for the prize of a political endorsement by an environmental group in order to seem like a well-rounded, candidate who is for economic growth but not at the cost of the environment. Even if the more liberal, environmental candidate loses the election, the public retains the memory of the competition and that can demand that environmental policy come to the forefront of the new agenda.²⁹

Another element of this factor is **interest group influence**.³⁰ Non-conventional interest groups play significant roles in the implementation of environmental policy (Hays, 2000, p 1). And Adler admits that "far more often than is commonly realized, the purpose and effect of environmental regulation is to serve narrow political and economic interests" (Anderson, 2001). Political demands are still a strong influence on implementation (Adler 2000, Gormley 2000, Walton 2001). For example, in the South Coast Air Quality Management District in California the early 1990s were a time for reviewing local plans to coincide with the 1990 Clean Air Act Amendments. Interest groups on both sides of the issue were vocal. Industry groups and their representatives heavily oppose tighter environmental standards on air quality management plans, and

²⁷ Adler, 2000; Feiock and West, 1993; Gormley, 2000; Griffin, 1994; Harris, 2001.

²⁸ Feiock and West, 1993; Hays, 2000; Zerlauth and Schubert, 1999.

²⁹ Feiock and West, 1993; Griffin, 1994; Hays, 2000.

alternative ways to reach the goals were considered. Governmental agencies and environmental groups influenced the process too. Together the industry groups and the environmental lobbies delayed any changes to the plan for three years (Zerlauth and Schubert 1999). This study further expects to find

WH1c: Political Demands influence the implementation of city environmental policies.

ADMINISTRATIVE CAPACITY FACTOR

The fourth and final factor, Administrative Capacity, influences policy implementation through structural consolidation, bureaucratic expertise in science, professionalism of policymakers, and intergovernmental considerations.³¹ Consolidation or centralization of a bureaucracy increases its power to influence pollution control regulations.

The **structural consolidation** can greatly influence policy. Local policy is necessary because pollution is more complex. Despite smog reductions there are still new air quality challenges. Emissions from primary source pollutants are subsequently transforming chemically into new secondary pollutants such as ozone. However, pollution controls implemented only by the national level end up with fragmented results at the local level. Local initiatives will be sensitive to local conditions and information requirements in contrast to the priorities of national government further fragmenting the

³⁰ Adler 2000; Hays, 2000; Portney, 1990; Walton et. al, 2001; Zerlauth and Schubert, 1999.

policy implementation. Fragmentation of authority and fiscal resources may prevent or the enactment of environmental legislation, or greatly limit effectiveness.

Environmental policy has been structured with separate government departments and their associated agencies controlling different emissions sources, and implementing different strategies (Longhurst et. al 1996, 3975). These contemporary problems call for a more integrated and holistic approach to air pollution control.

Lester (1983, p 263) argues that "institutional fragmentation of bureaucracy has a negative impact on pollution control regulations". A single-purpose pollution control agency may well encourage the adoption of a tougher regulatory approach by concentrating fiscal resources and bureaucratic expertise into a single (state or federal) agency, which then may be applied to the particular environmental problem at hand.

Administrative and legislative reforms such as consolidation of the bureaucracy and centralization can also explain public policy outputs. Local air quality management can only be successful at controlling air quality when local authorities have the appropriate resources and powers to enable them to influence the actors and agencies involved in determining air quality, and the knowledge of available strategies used in environmental policies.

Bureaucratic expertise, an agency's ability to provide proof for bureaucratic decision making, influences the implementation of environmental policy and is an important element of Administrative Capacity. Most environmental policies use a

³¹ Lester et. al, 1983; Longhurst et. al, 1996; O'Ryan, 1994; Walton et. al, 2001.

Command-and-control system, making parallel organizational provisions necessary to cope with various problems. Reporting pollution levels, promulgating rules, researching and developing policies all requires significant administrative support (Zerlauth and Schubert 1999). Policymakers oftentimes depend on staff to produce drafts of environmental policy for them to review, and select their favorite parts. Given the increasingly important role played by bureaucratic decision makers in the policy process, they deserve careful attention in any policy analysis.³²

The **intergovernmental relations** definitely influence the implementation process on the local level. States delegate roles they have received from the federal government and now run most environmental programs. Likewise, states now depend on local governments to fulfill their end of a voluntary agreement with the EPA, such as an Early Action Compact. Cities and regions must pass ordinances and set up programs that will reduce emissions, and then those policies are included in the State Implementation Plan. Administrators collect each region's local action plans, and submit that as one holistic attainment plan for the whole state. Without successful government relations between these administrators, the plan would fail.³³

Not surprisingly, the United States is environmentally progressive in relation to other industrialized countries such as the United Kingdom. J. W. S. Longhurst et. al (1996, p 3980) commends the American structure of environmental policy implementation as "one of the most well developed procedures for air quality

³² Griffin, 1994; Hays, 2000; Lester et. al, 1993; Longhurst et. al, 1996.

management". Specifically, Longhurst considers the State Implementation Plan (SIP) as a model, which sets the regulatory framework for each state to demonstrate to the federal government that they are on the path to attaining the national ambient air quality standards. The U.S. SIP was a brand new framework in itself. The potential problems in implementing a new framework must by its nature involve multiple actors, some of which may have conflicting priorities and little if any inter-communication (Longhurst et. al, 1996, p 3976).

The **professionalism in policymakers** is an influence. State legislative advisory capabilities in the science and technology area (or professionalism) are instrumental in facilitating policy formation involving complex issues. There is a consistent explanation in the literature that professionalism of policymakers influences environmental policy implementation.

WH1d: Administrative Capacity influences the implementation of city environmental policies.

Table 3.0 Summarizes the working hypotheses designed to focus inquiry into environmental policy implementation.

³³ Gormley, 1987; Griffin, 1994; O'Ryan, 1994; Walton et. al, 2001; Zerlauth and Schubert, 1999.

Table 3.0: Links to the Literature for Purpose 1: To explore the various factors influencing the implementation of environmental policies in Texas local government.

<u>Working Hypothesis</u>	<u>Literature</u>
<p>WH1: Various factors influence the implementation of local environmental policies.</p>	<p>Griffin (1994), Lester et. al (1983), Feiock and West (1993), Lachman (1997), Gormley (1987), Harris (2001), Portney (1990), O'Ryan (1994), Zerlauth and Schubert (1999), Longhurst et. al (1996), Walton et. al (2001)</p>
<p>WH1a: Local Pressures influence the implementation of local environmental policies.</p>	<p>Griffin (1994), Lester et. al (1983) Feiock and West (1993) Lachman (1997), O'Ryan (1994), Zerlauth and Schubert (1999), Longhurst et. al (1996), Walton et. al (2001)</p>
<p>WH 1b: The Level of Resources influences the implementation of local environmental policies.</p>	<p>Griffin (1994), Feiock and West (1993), Hays (2000), Anderson(2000), Lachman (1997), Gormley (2000), Harris (2001), Portney (1990), O'Ryan (1994), Zerlauth and Schubert (1999) Walton et. al (2001)</p>
<p>WH1c: Political Demands influence the implementation of local environmental policies.</p>	<p>Griffin (1994), Feiock and West (1993) Hays (2000), Adler (2000), Gormley (2000), Portney (1990) Zerlauth and Schubert (1999) Walton et. al (2001)</p>
<p>WH1d: Administrative Capacity influences the implementation of local environmental policies.</p>	<p>Griffin (1994), Lester et. al (1983) Feiock and West (1993), Lachman (1997), Gormley (1987) Harris (2001), Portney (1990), O'Ryan (1994), Zerlauth and Schubert (1999) Longhurst et. al (1996), Walton et. al (2001)</p>

Strategies Used in Environmental Policy

The second purpose of this research project is to examine those environmental strategies used at the local government level. Longhurst (1999, p 3979) attests that there are distinct strategies³⁴ for control of air quality which can be used in isolation, or as a package. The literature points out many different strategies on the state and federal level, but fewer on the local level (Griffin 1994, Walton et. al 2001). The overarching working hypothesis for purpose 2 is the following:

WH2: Local governments use various strategies in environmental policy.

MARKET-BASED STRATEGIES

The term market-based is a characteristic of strategies or regulatory instruments, used to encourage environmentally responsible behavior through market signals rather than explicit directives.³⁵ More specifically, there are market-based incentives, market-based allowance programs, **tradable permit systems**, marketable credits, emissions credits, and allowance trading systems used today, but all are market-based strategies. In a permit or emission trading program, the goal is the attainment of given standards of environmental quality. That standard is the National Ambient Air Quality standard established by the US EPA, which also sets ecologically necessary limits on the economy (Zerlauth and Schubert 1999, 270). There is a compatible volume of total allowable

³⁴ this can also be environmental programs.

emissions computed for an area. With regard to air quality for example, the total volume of emissions is predetermined annually and called an emission cap, which defines the maximum number of pollution credits that can be used in a given year. Polluters are allocated a share of these credits which they can emit to the maximum volume allowed, or can sell in a market for pollution rights if they have a surplus (270). If the polluter exceeds the allowable volume of credits then additional credits must be purchased. The system provides an incentive to lower emissions in order to be able to sell superfluous credits in the market (Zerlauth and Schubert 1999, 270).

In political terms market-based instruments have moved to center stage. Market-based instruments exercise of the capability of markets to coordinate decisions that achieve more efficient solutions, while introducing processes for environmental quality (270). The interest in market-based strategies for environmental protection has greatly increased in part because traditional strategies are perceived as burdensome and not cost-effective. Market-based instruments have become the new conventional wisdom among policy makers in the U.S. environmental realm. An example is the Los Angeles-area's *R.E.C.L.A.I.M.* or *REgional CLean Air Incentive Market*" program. RECLAIM targeted large high-emitting utility power plant such as coal or oil-fired facilities and set national cap. Portney and Stavins (2002, p 2) argue that it was the most important application ever made of a market-based instrument for environmental protection. By the year 2000 the total sulfur dioxide (SO₂) emissions nationally were forced down to half the level

³⁵ Griffin, 1994 Lachman, 1997; Longhurst et. al, 1996; Portney and Stavins, 2000; Walton, 2001; Zerlauth

indicated in 1980, by ten million tons less, and the compliance cost far lower than predicted (2). The RECLAIM program in the Los Angeles-area, also the single worst air quality region in the US, was focused on sulfur dioxide and nitrogen dioxide (NO₂) emission reductions from stationary sources (Zerlauth and Schubert 1999, p 270).

Harris (2001) proposed a tax shift rather than increase, calling permits on polluters or environmental taxation an important "market-based instrument." He also asserted that eco-taxes and permit systems have been successfully implemented in a variety of places in the United States. The Ozone Depleting Substance Tax and Chlorofluoro-Carbon (CFC) permit System is one example implemented on the local level in 1990. CFC policies smoothly enforce the phase out of CFC's to combat ozone depletion (302). Kraft supports this theory by referencing other environmental experts, Hardin, Roodman and (NAPA) National Academy of Public Administration; all encourage emission credits as techniques to reverse the tragedy of common poll resource pollution (2001).

WH2a: Market-Based Strategies are used by local governments in environmental policy.

INFORMATION-BASED STRATEGIES

The second strategy found in the literature is information-based strategies. Information-Based Strategies require firms to **provide information** pertinent to the

and Schubert, 1999.

environment or health of the public, such as water and energy efficiency of products (Portney and Stavins 2000). Another example of this strategy is the **labeling** of products that are hazardous to the ozone, such as on aerosol cans. Federal legislation paved the way for locals to use information-based policies. Here are a few examples.

The 1989 U.S. Toxins Release Inventory (T.R.I.) mandates that firms report to local emergency planning agencies information on use, storage, and release of hazardous chemicals. The U.S. Energy and Conservation Act (EPCA) of 1975 require household appliances to have labels with energy efficiency and costs, and cars to have fuel efficiency labels. Another example of a federal program is the Energy Policy Act of 1992 added to EPCA the requirement for water flow info on showerheads, toilets and faucets. "Such information serves compliance and enforcement purposes, but also may increase public awareness of firms' actions" (3). Thus one expects to find

WH2b: Information-Based Strategies are used by local governments in environmental policy.

PUBLIC-COST STRATEGIES

A third and final environmental strategy used by local governments are public-cost policies. These strategies are implemented upon the entire community population such as **eco-taxes**, **best available technology**, and **emissions testing** of vehicles (Harris 2001, Lachman 1997, Portney 1990). Usually unpopular policies: double or triple gasoline tax to create and disincentive for citizens to buy large cars, and some believe an

incentive to buy smaller cars. The concept is for the market to follow suit with this disincentive; as gasoline tax increases, the cost to the consumer who drives a big car, and cost of the producer of big cars would also increase. Also in the Public-Costs Policies strategy includes using the **Best Available Technology**, or Pollution Control Machinery. Feiock and West (1993) and Portney (1990) attest that the economists of the nation should be more involved in analysis of environmental policies. Cost of remodeling or adding pollution control devices can be excessive. The U.S. is generally unwilling to make polluters change their behavior if the penalty will impose great economic costs.

In some communities, **ozone reduction** and **emissions laws** are considered important to the overall public health, even regardless of financial implications. This can be done through local ordinances and adopted as a regional strategy. Mandatory recycling on commercial and high-density residential buildings, and cut and replace a tree programs are also public-cost policies that local governments implement onto the entire community. Finally, this research expects the following to be true:

WH2c: Public-cost strategies are used by local governments in environmental policy.

Table 3.1 summarizes working hypotheses designed to focus inquiry into environmental policy implementation.

Table 3.1: Links to the Literature for Purpose 2: To explore the various strategies used city environmental policies.

<u>Working Hypothesis</u>	<u>Literature</u>
<p>WH2: Local governments use various strategies in environmental policy.</p>	<p>Griffin (1994), Portney and Stavins (2000), Feiock and West (1993) Lachman (1997), Harris (2001), O’Ryan (1994) Zerlauth and Schubert (1999) Longhurst et. al (1996), Walton et. al (2001)</p>
<p>WH2a: Market-Based Strategies are used by local governments in environmental policy.</p>	<p>Griffin (1994), Portney and Stavins (2000) Feiock and West (1993), Lachman (1997), Harris (2001), O’Ryan (1994) Zerlauth and Schubert (1999) Longhurst et. al (1996) Walton et. al (2001)</p>
<p>WH2b: Information-Based Strategies are used by local governments in environmental policy.</p>	<p>Griffin (1994), Feiock and West (1993) Portney and Stavins (2000) Longhurst et. al (1996) Walton et. al (2001)</p>
<p>WH2c: Public-Cost Strategies are used by local governments in environmental policy.</p>	<p>Griffin (1994), Portney and Stavins (2000), Harris (2001) Lachman (1997), Portney (1990) O’Ryan (1994), Longhurst et. al (1996) Walton et. al (2001)</p>

In summary, this literature review has sought to describe the most common set of factors which influence environmental policy. The expert opinion and empirical literature (Lester et. al, Feiock and West, Gormley) agree that these are the factors influencing the implementation of environmental policy in government: **Local Pressures, Level of Resources, Political Demands, and Administrative Capacity**, have been transformed into working hypotheses. The second research purpose was to explore the strategies used in local environmental policy, which led us to **Market-Based Strategies, Information-Based Strategies, and Public-Cost Strategies**. This chapter provided an overview of the relevant literature, and outlined the conceptual map for the entire research project. The next chapter explains the selected methodology and operationalizes the hypotheses to explore the influences and strategies implemented in Austin, Texas.

CHAPTER 5

METHODOLOGY

This chapter examines the case study methodology used to explore the City of Austin's Air Quality Program. The data collection methods (interview questions and document analysis) used to test the working hypotheses are operationalized.

Methodology

Table 5.1 shows how WH1 is operationalized. WH1 has four sub-hypotheses and each will be tested by interviews and document analysis. WH2 is operationalized in Table 5.2. WH2 has three sub-hypotheses and each will be tested by interviews and document analysis. The remainder of this chapter provides a justification for the selected methodology.

Table 5.1

WORKING HYPOTHESIS	INTERVIEW QUESTIONS	DOCUMENTS TO ANALYZE	EVIDENCE SUPPORTING HYPOTHESIS
WH1: Various Factors Influence the City of Austin's Air Quality Program	1. How have <i>various factors</i> influenced your organization's environmental policy?	City of Austin Air Quality Program mission and comments	Multiple goals, and purposes of the program.
WH1a: Local Pressures Influence the City of Austin's Air Quality Program	2. How has <i>population growth</i> influenced your organization's environmental policy?	City of Austin Air Quality Budget	Increase in population served
	3. How has <i>increase in motor vehicle traffic</i> influenced your organization's environmental policy?	City of Austin Air Quality Budget	VMT
	4. Was there an evident <i>increase in air pollutants</i> according to federal standards?		Ground Level Ozone increased
WH1b: The Level of Resources Influences the City of Austin's Air Quality Program	5. How has the <i>economic wealth</i> of Austin influenced your organization's environmental policy?	City of Austin Air Quality Budget	Community's ability to bear regulatory cost
	6. How has the <i>regulatory affordability</i> influenced your organization's environmental policy?	Clean Air Force minutes	Cost of compliance
	7. How has the <i>loss or gain of funds</i> influenced your organization's environmental policy?	City of Austin Air Quality Budget	Grant or transportation funding considered
WH1c: Political Demands Influence the City of Austin's Air Quality Program	8. How have <i>political demands</i> influenced organization's environmental policy?	City of Austin Program Policies	Elected officials create/cite pressure from the community
	9. How has <i>political competition</i> influenced your organization's environmental policy?	Clean Air Force minutes	Candidates compete to distinguish themselves as environmentally friendly.
	10. How have <i>interest groups</i> influenced your organization's environmental policy?	TPS Commission minutes	Environmental or business groups are actively involved
WH1d: Administrative Capacity influences the City of Austin's Air Quality Program	11. How has <i>structural consolidation</i> influenced your organization's environmental policy?		The existence of other agencies on different levels of government.
	12. How has <i>scientific expertise</i> influenced your organization's environmental policy?	Early Action Compact agreement	Administrators have or seek scientific expertise.
	13. How has the <i>professionalism of policymakers</i> influenced your organization's environmental policy?	O3 Flex	Elected officials and policymakers are professional.
	14. How has <i>intergovernmental relations</i> influenced your organization's environmental policy?	all of the above	Guidance and working relationship with the EPA and TCEQ present.

Table 5.2

WORKING HYPOTHESIS	INTERVIEW QUESTIONS	DOCUMENTS TO ANALYZE	EVIDENCE SUPPORTING HYPOTHESIS
WH2: The City of Austin uses Various Strategies in its Air Quality Program	1. How does your organization use various strategies in its environmental policy?	O3 Flex Agreement Clean Air Action Plan	Description of Air Quality policies
WH2a: The City of Austin uses Market-Based Strategies in its Air Quality Program	2. How does your organization use financial incentives in its environmental policy?	Copy of City of Austin Ozone Reduction Strategies	Financial Incentives for businesses to comply
	3. How does your organization use pollution charges in its environmental policy?	Clean Air Action Plan	Violations/Fines for polluters
WH2b: The City of Austin uses Information-Based Strategies in its Air Quality Program	4. How does your organization use <i>community outreach</i> and education in its environmental policy?	Copy of Citizen's Participation Guide to Cleaner Air	Existence of information provided for community education, mailouts
	5. How does your organization <i>disseminate</i> information on high ozone to the community?	O3 Flex Agreement	Statistics on ozone levels are available to public via city website, newsletter
	6. How does your organization inform the community when the air quality is hazardous?	Clean Air Action Plan	Ordinance/procedures requiring notification to the community.
WH2c: The City of Austin uses Public-Cost Strategies in its Air Quality Program	7. How does your organization bear the cost of its air quality policies with public funding?	City of Austin Ozone Reduction Strategies: Final Report	Tax on pollution-causing activity
	8. How does your organization use emissions-testing?	O3 Flex Agreement	Emissions/Tailpipe testing
	9. How does your organization promote Best Available Technology in its environmental policy?		Best available technology is promoted

Unit of Analysis

The working hypotheses will be tested using a single city, Austin, Texas. Thus, the City of Austin is the unit of analysis. The working hypotheses were operationalized taking that into account.

Research Technique

The research technique selected is a **case study** of the City of Austin's Air Quality policies, including **interviews** of environmental regulators, and **document analysis**.

Case study methodology is used for several reasons. A case study lends itself to multiple approaches, and is therefore a comprehensive research strategy. The case study methodology also uses a real-life context to unearth certain phenomena (Yin 2003, 13). The research will use multiple sources of evidence, pattern matching, and a case study protocol. This exploratory case study uses two methods each addressing the weakness of the other.

INTERVIEWS

The interview questions were selected as the main research technique because they focus directly on the case study topic, and they provide perceived causal inferences. As Yin (2003, 89) attests, interviews are essential sources of case study information. Some of the inherent weaknesses of interviews include "bias due to poorly constructed

questions, response bias, inaccuracies due to poor recall, and reflexivity." To address these weaknesses the short and open-ended questions will follow a pattern derived from the literature review, and will stem directly from the conceptual frameworks. The interview questions were designed to test the working hypotheses. For example, WH1a – Local Pressure influences the City of Austin's Air Quality Program, is tested using these questions.

- How has population growth influenced your organization's environmental policy?
- How an increase in motor vehicle traffic influenced your organization's environmental policy?
- Was there an evident increase in air pollutants?

Each of these questions deal with local factors (population, traffic) discussed in the literature review.

SAMPLING METHODOLOGY

Selection of the regulators to be interviewed will be chosen with snowball sampling, starting with one regulative authority, asking that person for more practitioners to interview, then interviewing those individuals. Interviews were collected over the telephone or in person of three interviewees on the local, state, and federal governmental levels respectively.

- **Mr. Fred Blood**, Air Quality Program Director and Sustainability Officer for the City of Austin, Transportation, Planning, and Sustainability Department (TPSD). Interview was approximately ninety minutes by phone.
- **Ms. Tamra Shea-Oatman**, Environmental Assistance Manager for the Texas Commission on Environmental Quality (TCEQ), Small Business and Local Government Assistance division. Interview was approximately forty-five minutes by phone.
- **Ms. Carey Fitzmaurice**, Senior Policy Analyst for the Environmental Protection Agency (EPA), Office of Air and Radiation and Office of Policy Analysis and Review (OPAR). Interview was approximately forty-five minutes in person at the EPA.

DOCUMENT ANALYSIS

Document analysis is used to help confirm the findings from the interviews because the stability, unobtrusiveness, exactness, and broad coverage will address the weakness of reflexivity of interviews. A variety of administrative documents such as agreements, agendas, other written reports of events, progress reports, and proposals will be included in the document analysis. Yin asserts that "newspaper accounts are excellent sources for covering certain topics;" which will also be used as documents for analysis.

As a method, document analysis does have inherent weaknesses such as irretrievability, biased selectivity, reporting bias, and access (Yin 2003, 86). Reporting bias will be tackled by having key informants review the draft of the applied research project. The data collected from the interviews and the documents will indicate support of the working hypotheses if the information is corroboratory. Statistics are not relevant to this study.

CHAPTER 6

RESULTS

This chapter presents the results of the research--the various factors influencing the implementation of local environmental policies, and the various strategies used in the environmental policies in the Air Quality Program at the City of Austin. This chapter examines and evaluates the empirical data collected from the interviews and document analysis according to the working hypotheses.

Various Factors Influence Policy

INTERVIEWS

The interviews provided evidence that various factors do influence the City of Austin's Air Quality Program. A combination of factors influence the implementation of this program including the political will of the public officials and of interest groups, aggressive leaders inside government, and the bureaucratic expertise of science within the department.

DOCUMENT ANALYSIS

The primary document analyzed for WH1, was the Air Quality Program comments online and mission statement.³⁶ Goals and missions are the written purposes of government programs, and as such, are the documented influences on the implementation of programs. The Air Quality Program website cites the "declining air quality in Central Texas was indicated as a result of increased polluting activities in this area and the regional airshed," and the mission of the program is "to develop and implement programs that reduce the impact of our business activities on regional air quality; promote air quality education and outreach to citizens and local businesses; and work with regional partners to promote healthy air in Central Texas." Clearly the document analysis echoes the interview results, citing various factors influencing the program. Table 6.1 summarizes the results of the document analysis for WH1.

Table 6.1 Linking Document Analysis to WH1
Various Factors Influence the City of Austin's Air Quality Program

Various Factors	Evidence	Document	Evidence Support
	Multiple goals and purposes of the program	Mission Statement/goals	Strong

Local Pressures Influence

INTERVIEWS

The interviews with Blood, Shea-Oatman, and Fitzmaurice all agreed that population growth and increased traffic flow pressured the City of Austin to implement

an Air Quality Program. Motor vehicle traffic increased ozone-creating pollutants and although the City was not non-attainment, it was on the edge. Ms. Fitzmaurice indicated that Austin was motivated by the desire to maintain a good public perception. In fact, all interviewees said that Austin wants to be progressive in environmental protection in order to maintain "small town" quality of life. Unlike some other cities, Austin accepts that there is an air pollution problem, and is more than willing to change. Regularly the city measures ozone levels, and performs tests with photochemical modeling, in order to help estimate the increase or decrease of pollution levels for the immediate and long-term future.

DOCUMENT ANALYSIS

Governmental budgets must explicitly explain where funding goes, what that funding will be used to accomplish, and why it must be accomplished. The Transportation, Planning and Sustainability Department (TPSD) budget was analyzed because Austin's Air Quality Program is under that department.³⁷ Part of the department goals are directly linked to the National Ambient Air Quality Standards, and the Early Action Compact: "to increase the Vehicle Miles Traveled (VMT) avoided by City employees by 2007 to 44,000 miles avoided daily, and by 2007, to ensure that the Region exceeds the ozone standard by no more than three days per year." Also, one of the key

³⁶ Online version, located at City of Austin Air Quality Program <http://ci.austin.tx.us/airquality>.

indicators and related performance measures in the budget is the "number of days per year when the Austin region exceeds the ozone standard".³⁸ TPSD budget states that "the purpose of the Air Quality activity is to design and implement programs for the City and region in order to reduce the formation of ground-level ozone and the release of ozone depleting chemicals."³⁹ Local pressures such as increased vehicle traffic, increase in ozone are an influence on the City of Austin's Air Quality Program. Table 6.2 summarizes the results of the document analysis for WH1a: **Local Pressures** influence the City of Austin's Air Quality Program.

Local Pressures	Evidence	Document	Evidence Support
Population growth exists	Increase in population served	Program Budget	Somewhat
Increase in Motor vehicle traffic and emissions	Vehicle Miles Traveled	Program Budget	Strong
Increase in air pollutants	Ground-level ozone increases	Budget, ozone reports	Strong

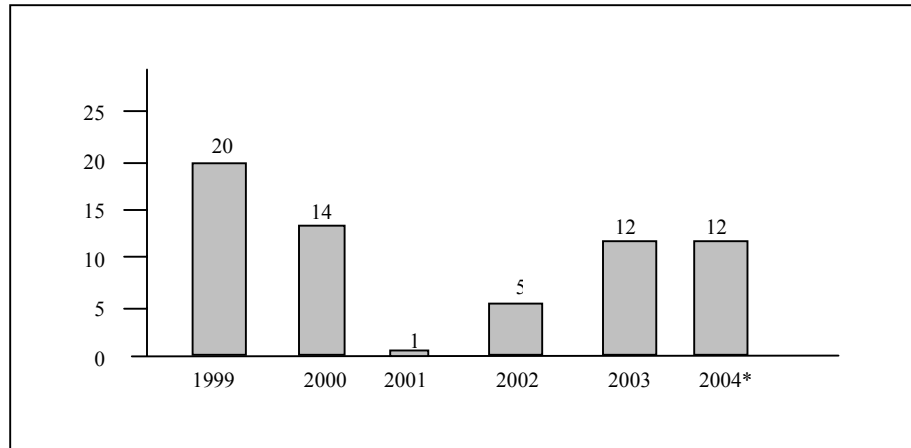
The influence of the ozone levels factor on the Air Quality Program is evident in the budget. Similar to the one in the TPSD budget, Graph 6.1 illustrates the number of days the Austin region exceeds the ozone standard.

³⁷ The TPSD budget is made up of separate funds and grants working in cooperation to achieve collaborative sustainability goals. The Air Quality Program receives funding from the General Fund, Expense Refunds, and Grants totaling \$207, 221.00 for the 2003-04 approved budget.

³⁸ City of Austin 2003-04 budget, Executive Summary, TSPD, page 319 of 744.

³⁹ TPSD budget, page 21 of 37.

Graph 6.1



Source: Transportation, Planning, and Sustainability Dept. Budget 2003.
*2004 shows the projected ozone levels.

Level of Resources Influence

INTERVIEWS

Blood, Shea-Oatman, and Fitzmaurice all consistently mentioned that the cost of compliance was a significant influence on air quality program initiatives. Shea-Oatman and Fitzmaurice have a great deal of experience helping communities adopt and implement proactive policies, and deal with enforcement issues. These TCEQ and EPA administrators further stated that regulatory cost and local economy was probably the most significant barrier to implementation of environmental policy by a municipal government. Moreover, these interviews said the level of resources is an influence the implementation of any environmental policy - air, water, or waste. Both also indicated that the voluntary agreements (O₃ Flex Agreement and EAC) allow for communities to choose different strategies according to their abilities and economics. Austin, although

aggressive in its policy, is no exception; it takes into account the regulatory burden for businesses and citizens like all other city government's do.

The local administrator, Fred Blood described that his department looked at clean air action plans from other cities,⁴⁰ and then evaluated and selected the strategies according to the highest **cost-efficiency** for the most emission reductions. One example of a strategy directly tied to cost-efficiency is the Telework/Flextime concept, which Blood is credited with bringing to Austin. Telework/Flextime has little or no cost to the City to implement; departmental managers must simply work it out with their employees. Teleworking is a strategy that encourages employees to work from home a few days of the week in order to reduce Vehicle Miles Traveled, thus reducing emissions. Since 1999 the goals have included working to have five percent of eligible workforce telecommuting at least one day of the week in the summer months, and ten percent telecommuting in the fall months.

Blood also discussed the costs of compliance for the community. A clean air strategy that raises concerns about cost-efficiency is emissions inspections. Emissions inspections add about twenty dollars more to the annual inspection cost, unless a vehicle fails. If a vehicle fails, the owner has fifteen days to "fix" the problem, which can range from ten dollars to pay for a new air filter, up to three-hundred dollars to install a gas recirculation valve. However, Blood estimated that only ten to fifteen percent of vehicles in Austin would fail, most of those would be older vehicles. Mr. Blood perceives the

costs of compliance as simply a changing of cash flow through the economy. This is the fairest way to attribute a cost to the true source of emissions, off-road and on-road area point source pollution.

DOCUMENT ANALYSIS

Documents analyzed included the **O₃ Flex Agreement**, the Austin/Round Rock MSA Clean Air Action Plan, and the TPSD budget. The Executive Summary of the O₃ Flex Agreement provides strong evidence that the level of resources is an influence in Austin and Central Texas:

"Recognizing the varied social and **economic characteristics** of Central Texas, not all measures can or should be implemented by every entity. Also, given contrasts imposed by **budget cycles**, not all entities will be able to implement measures before the 2002 ozone season. Each of the signatory parties has reviewed the menu of programs and committed to implementing those strategies which are most appropriate and suitable given their individual capabilities and **resources**."⁴¹

The level of resources in Austin is more affluent than other Central Texas cities, and logically, Austin has selected to implement most of the strategies in the O₃ Flex menu of programs. The **Clean Air Action Plan** also provided descriptions of economic and budgetary conditions for municipalities, including Austin. The **TPSD budget** provides ample evidence that the level of resources was an influence. In fact, the Ozone

⁴⁰ Various regional action plans approved by TCEQ can be found online at TCEQ's website.

⁴¹ Page 5, section 1.1.

Depleting Chemicals Permit was eliminated because it was not cost-efficient for the community. The permitting system was more stringent than the EPA standards and "permit holders are at a disadvantage" economically. The city clearly changed the ordinance in favor of the cost of compliance and level of resources. The city analyzed the economic impacts of the permitting system, and clearly it was not worth the burden to the economy. Table 6.3 summarizes the document analysis WH1b: **The Level of Resources** influences the City of Austin's Air Quality Program.

Table 6.3 Linking Document Analysis--The Level of Resources Influences Air Quality Program			
Level of Resources	Evidence	Document	Evidence Support
Economic wealth	Community tax base	Budget	Strong
Regulatory affordability	Compliance costs	Budget	Strong
Loss or gain of funds	Federal Transportation funding	EAC, O ₃ Flex	Strong

Political Demands Influence

INTERVIEWS

The environment is the cultural issue in the city. Austin's Air Quality Program is unique because it was started ten years ago, before the regional clean air action plans were adopted. All three interviewees indicated that the political will of the community, and the political leaders have somewhat of an influence on the Air Quality Program. Local and federal interviewees agreed that interest groups for the environment and for business are an influence on the culture and on environmental programs at the City of

Austin. The state interviewee pointed to community volunteers as an important influence in initiation of other environmental programs.

DOCUMENT ANALYSIS

The documents included the Clean Air Program policies, the O₃ Flex, the Early Action Compact's Austin/RR MSA Clean Air Action Plan, and minutes from volunteer organizations and partnerships involved in the EAC such as the CLEAN AIR Force.

Table 6.4 summarizes the Document Analysis of WH1c: **Political Demands** influences the City of Austin's Air Quality Program.

Table 6.4 Linking Document Analysis–Political Demands Influence Air Quality Program			
Political Demands	Evidence	Document	Evidence Support
Political Demands	Elected officials create/cite pressure from community	Policies, CLEAN AIR Force minutes	Somewhat
Political competition	Candidates compete to distinguish themselves as environmentally friendly	Policies, CLEAN AIR Force minutes	Somewhat
Interest groups	Community initiatives	EAC, O ₃ Flex	Somewhat

Administrative Capacity Influence

INTERVIEWS

Ms. Fitzmaurice was especially helpful since she has experience working on the intergovernmental issues between the federal and state governments. She has experienced the effects of structural fragmentation and bureaucratic expertise while

waiting for the regulations she wrote to be approved from the EPA. She contends that the connections "or lack thereof" between TCEQ and the EPA have delayed local air quality programs before in other cities. Local leaders from the City of Austin have traveled to Washington regularly to talk about their issues with her, indicating the professionalism of policymakers and intergovernmental relations factor. However she pointed out that by participating in the first Early Action Compact ever, Austin and the state of Texas was, and is miles ahead of other states. In order to accomplish that landmark, guidance and a good relationship with the EPA and TCEQ were and continue to be present.

Both Blood and Shea-Oatman agreed that acceptance by the public were important influences on the city's Air Quality Program. Blood described how the structure of the program has changed over the past fourteen years. Blood was involved as the Chair of the Environmental Board for four years, and then in 1994 became one of four employees on the City of Austin's Air Quality program. Today the program is run by two employees. Fragmentation on the local level is present but is not really a problem, since many of the strategies are outside the department anyway, such as Commuter Solutions, Telework and Flextime.

DOCUMENT ANALYSIS

Documents analyzed for Administrative Capacity influence included the EAC and the O₃ Flex. These documents provided evidence that strongly supports the hypothesis. One example is the presence of bureaucratic expertise at the City of Austin and the

Austin area for photochemical modeling, a highly precise and skilled scientific activity required to adequately monitor and predict ozone levels. Also present in the documents was discussion with and guidance from TCEQ and EPA administrators on emissions reduction goals and research provided on policy implementation possibilities and examples. The O₃ Flex and EAC provide strong support for the structural consolidation and intergovernmental relations elements as well. Table 6.5 summarizes the document analysis for WH1d: **Administrative Capacity** influences the City of Austin's Air Quality Program.

Table 6.5 Linking Document Analysis–Administrative Capacity Influences Air Quality Program			
Administrative Capacity	Evidence	Document	Evidence Support
Structural Consolidation	Organization takes initiative from central agency (EPA)	EAC	Strong
Bureaucratic Expertise	Administrators have/seek scientific expertise	EAC	Strong
Professionalism of policymakers	Elected officials and policymakers are professional	EAC, O ₃ Flex	Strong
Intergovernmental relations	Guidance from EPA, TCEQ present	All of the above	Strong

Various Strategies are Used

INTERVIEWS

Blood, Shea-Oatman, and Fitzmaurice all confirmed that there are various options available to municipal governments for implementation, and the City of Austin's Air Quality Program utilizes a broad variety of strategies spanning across departments.

DOCUMENT ANALYSIS

The documents analyzed included the policies and descriptions, confirming the interview results that there are many strategies used at the Air Quality Program including information-based, voluntary, mandated permitting, and more as mentioned earlier in Chapter 2. Table 6.6 displays the results of the document analysis for WH2: The City of Austin uses **various strategies** in its Air Quality Program.

Table 6.6 Linking Document Analysis–Air Quality Program Uses Various Strategies			
Various Strategies	Evidence	Document	Evidence Support
	Description of strategies	Policies	Strong

Market-Based Strategies Used

INTERVIEWS

Ms. Fitzmaurice's extensive background with TCEQ included writing rules for policy implementation on an emissions trading program for the Houston area. Although the City of Austin does not use this market-based strategy, it is a viable strategy used by local governments. Mr. Blood explained that market-based strategies are not as popular in Austin because the situation is more serious than it used to be concerning air quality. With the new 8-hour ozone standard for only 85 ppb and the summer 2004 ozone season approaching Austin has not sought for implementation of market-based strategies.

DOCUMENT ANALYSIS

The Clean Air Action Plan specifically outlines the strategies that each city and county will implement for the EAC partnership, however, there was only weak evidence of any market-based strategies in Austin's column. The TPSD budget did not have any evidence of currently used fines or penalties that would be considered under the market-based category but evidence was apparent in the budget that one permitting program was being eliminated. Table 6.7 displays the results of the document analysis for WH2a: The City of Austin uses **Market-Based Strategies** in its Air Quality Program.

Table 6.7 Linking Document Analysis–Air Quality Program Uses Market-Based Strategies			
Market-Based Strategies	Evidence	Document	Evidence Support
Financial Incentives	Financial incentives for businesses to comply	CAAP Ozone reduction strategies	Weak
Available Technology used	Technology promoted		Weak
Pollution charges	Violations/fines for polluters	Budget	Somewhat

Information-Based Strategies Used

INTERVIEWS

There was strong support from those interviewed that Information-Based Strategies were present in the Austin Air Quality Program. Fitzmaurice cited that the Austin-area was among the first to publish the "Ten things you can do for cleaner air,"

now used in public education brochures and mail-outs. Blood and Shea-Oatman each discussed public outreach and citizen involvement as a large part of their work. On the state level public participation is measured according to regions, and citizens are rewarded for their environmental efforts. Both Blood and Shea-Oatman said that Austin's progressive information and education campaigns on the environment help citizens understand how their actions directly affect the air quality and how they can change those actions accordingly.

DOCUMENT ANALYSIS

The Citizens Guide to Cleaner Air and the *Do Something* brochure were analyzed to confirm the interview results. These include a variety of easy strategies that can be used by one person or many. Other information-based strategies used include the broadcasting of Ozone Action Days announced by the CLEAN AIR Force on days when the air quality is moderate or poor. The regional newspapers, City of Austin newsletter, and a plethora of online resources are host to the City of Austin/CLEAN AIR Force's air quality readings.

Commuter Solutions also publicizes with Capitol Area Metro that rides on the public city bus for free on those Ozone Action Days. Ordinances exist that mandate that the City of Austin has a plan for communication to warn the community when air quality is hazardous to human health. The State Implementation Plan (SIP) verifies these information-based strategies. The system works in partnership with the Clean Air

Coalition, the CLEAN AIR Force, the Greater Austin Chamber of Commerce, and many other regional partners to disseminate the news as soon as possible. Fortunately Austin has not had to exercise that system because the hazardous level has not been reached so far. Table 6.8 displays the results of the document analysis for WH2b: The City of Austin uses **Information-Based Strategies** in its Air Quality Program.

Table 6.8 Linking Document Analysis–Air Quality Program Uses Information-Based Strategies			
Information-Based Strategies	Evidence	Document	Evidence Support
Community Outreach	Info provided for community education	Copy of <i>Citizens Guide to Cleaner Air</i>	Strong
Disseminates Information on pollution	City distributes information on pollution sources	Copy of <i>Do Something</i> brochure	Strong
Inform community when air is hazardous	Procedures requiring notification to community, website, newsletter, newspaper, emails from City	Ordinance on notification, SIP	Strong

Public-Cost Strategies Used

INTERVIEWS

Those interviewed did not think that there were many public-cost strategies implemented at Austin's Air Quality Program, although the emissions testing will be implemented in the next few years. There are not many opportunities to implement Eco-taxes because of the problems with the economy, and the public acceptance that would be necessary. Typically when a facility pollutes it is the obvious culprit and the community

demands accountability from that company by the city council, mayor, and city administrators. Citizens in Austin have not been supportive of strategies that require the public as a whole to pay for pollution clean up from a source that is at fault.

DOCUMENT ANALYSIS

The O₃ Flex, EAC, and Clean Air Action Plan reduction strategies report were somewhat more supportive of the public-cost strategy existence. Emission reductions are being implemented in the next few years, and power plant reductions in emissions will require the public to offset the costs. Low sulfur gasoline will be continued throughout the MSA. The region also pays indirectly through taxes for the photochemical modeling and for the Air Quality staff and activities. Table 6.9 displays the results of the document analysis for WH2c: The City of Austin uses **Public-Cost Policies as Strategies** in its Air Quality Program.

Table 6.9 Linking Document Analysis–Air Quality Program Uses Public Cost Policies			
Public Cost Policies	Evidence	Document	Evidence Supports
Program funding source	Tax on pollution-causing activity	Ozone reduction strategies report	Somewhat
Emissions-testing	Tailpipe testing with car inspections	O ₃ Flex, EAC	Somewhat

CHAPTER 7

CONCLUSION

This chapter summarizes the applied research project, which attempted to explore the implementation of environmental policy in local government through a case study on the City of Austin's Air Quality Program and provides conclusions to the research questions; what factors influence the implementation of environmental policies, and what strategies are used. As the final chapter, it also synthesizes case study results into the general body of research on environmental policy in local government.

The strongest support for the program's implementation was the level of resources influence and administrative capacity, mainly because of the budgetary implications and the intergovernmental relations aspects associated with air quality programs. Political demands and local pressures influence had mixed support. The document analysis and interviews indicate support for the local pressures hypothesis mostly as it pertains to federal ozone standards.

One factor that was not predicted was the influence of an environmental culture in the community. Although environmental and interest groups were categorized with administrative capacity influence, the culture in Austin supports environmental preservation and protection. This cultural factor was an influence in the implementation of the program, and its influence on local environmental policy implementation should be further researched.

Working Hypothesis		Sub-Working Hypothesis Support		Working Hypothesis Support	
		Interview	Documents		
WH1	Various factors influence the implementation of the City of Austin's Air Quality Program.				Strong
	WH1a	Local Pressures influence the implementation of the City of Austin's Air Quality Program.	Strong	Somewhat	
	WH1b	The Level of Resources influences the implementation of the City of Austin's Air Quality Program.	Strong	Strong	
	WH1c	Political Demands influence the implementation of The City of Austin's Air Quality Program.	Somewhat	Somewhat	
	WH1d	Administrative Capacity influences the implementation of the City of Austin's Air Quality Program.	Strong	Strong	
WH2	The City of Austin uses various strategies in its Air Quality Program.				Somewhat
	WH2a	The City of Austin uses Market-Based Instruments in its Air Quality Program	Somewhat	Weak	
	WH2b	The City of Austin uses Information-based strategies in its Air Quality Program.	Strong	Strong	
	WH2c	The City of Austin uses Public-cost strategies in its Air Quality Program.	Weak	Somewhat	

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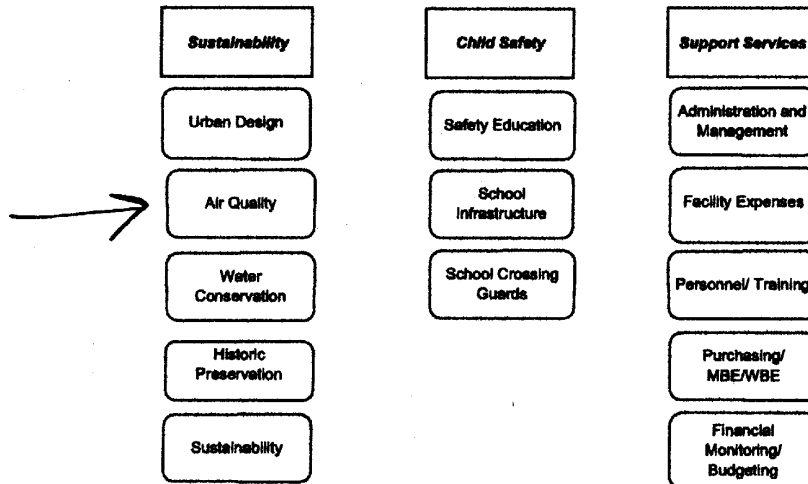
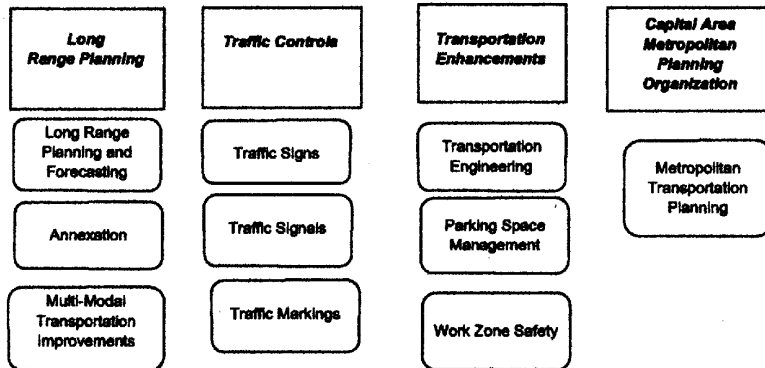
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Transportation, Planning & Sustainability — 2003-04



Transportation, Planning and Sustainability-2003-04

Activity: Air Quality
Activity Code: 63AQ
Program Name: SUSTAINABILITY

Activity Objective: The purpose of the Air Quality activity is to design and implement programs for the City and region in order to reduce the formation of ground level ozone and the release of ozone depleting chemicals.

Requirements and FTE	2001-02 Actual	2002-03 Amended	2002-03 Estimate	2003-04 Proposed	2003-04 Approved
Total Requirements	\$346,253	\$278,969	\$295,160	\$207,876	\$207,221
Full-Time Equivalents	3.55	4.50	4.50	2.50	2.50

Activity Performance Measures:		2001-02 Actual	2002-03 Amended	2002-03 Estimate	2003-04 Proposed	2003-04 Approved
Performance Measures:	Type					
Cost/Impression for public outreach and education	Efficiency	N/A	N/A	N/A	\$0.10	\$0.10
Annual increase in Impressions made by Regional Public Outreach and Education	Output	N/A	N/A	N/A	3%	3%
Annual percentage increase in ozone precursors avoided and tracked	Result	N/A	N/A	N/A	3%	3%
Number of days per year where the Austin region exceeds the Ozone Standard	Result	5	12	12	12	12
Number of Impressions achieved through internal tracking	Result	N/A	N/A	N/A	55,000	55,000
Number of Impressions by Public Outreach and Education	Result	N/A	N/A	N/A	2,000,000	2,000,000

Services of the Activity:

Core Services: N/A

Semi Core Services: Respond to inquiries from citizens and local businesses; Participate in the Clean Air Force and other appropriate organizations; Investigate options and develop strategic frameworks from which to implement transportation demand management, commute solutions and telework, and flexible work programs

Transportation, Planning and Sustainability-2003-04

Activity: *Air Quality*

Activity Code: 63AQ

Program Name: *SUSTAINABILITY*

for City employees; Produce air quality public service announcements; Work in unison with neighboring jurisdictions, governmental entities and public/private institutions in an effort to increase regional air improvement planning efforts

Service Enhancements: N/A

do something...

cool.



On hot summer days temperatures in Austin can be 2°-9°F warmer than the surrounding countryside.

Everyone talks about the heat, maybe you can do something about it.

Plant and protect urban shade trees.
Pave with light-colored materials. Install light-colored, reflective roofing.

You can do something for healthier air.

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keep Austin cool

The Urban Heat Island effect increases the risk to public health during heat waves, energy use, and the conditions that cause smog. The good news is there are simple ways to reduce the Urban Heat Island in Austin.

by planting trees

Trees are our biggest defense against the heat. Austin is losing as many as nine trees for every one planted. Trees provide shade, absorb solar energy, and cool the air around them (evapotranspiration). They clean pollutants from air and water, provide flood protection, reduce soil erosion, and provide oxygen, food and improved health for humans and other living creatures. For tree rebate information check out www.cityofaustin.org/watercon/, and to learn more about trees go to www.treefolks.org.

and lightening up.

Install light-colored, reflective roofing. Dark roofs tend to absorb heat from the sun, and transfer it into the interior of the building. Buildings with light-colored, reflective roofs use up to 40% less energy for cooling than buildings with darker roofs. For rebate information go to www.austinenergy.com.

Pave with light-colored materials. Roads and parking lots are frequently paved with black asphalt and other dark materials. This surface acts like a giant solar collector that absorbs and retains heat leading to surface temperatures of 160° F or hotter.

do something.

A city-wide effort combining these three strategies can cool the entire region. To learn more about Urban Heat Island check out <http://eetd.lbl.gov/HeatIsland/>.

Para tener esta información enviada a usted en español, llama 494-9400.



for more information, please contact:
City of Austin Air Quality Program
(512) 974-1898
www.cityofaustin.org/airquality

do something...

at home.



Even the most routine habits can affect our air quality.

You can make a difference from your own backyard.

Change your routine and help clean the air.

For More Information

Check Out

www.cityofaustin.org/airquality

You can do something for healthier air.



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in the car,

Drive Clean. Tune up your car, drive less by combining trips, and avoid idling. Don't fill up your gas tank until early evening when it's cooler outside and ozone is less likely to form. For more information visit www.drivecleanacrosstexas.org.

in the home,

Save energy with compact fluorescent lights. Turn off TVs and computers when not in use. Look for ENERGY STAR appliances when buying, and visit www.austinenergy.com for rebate information.

Save water and money with efficient shower heads, toilets and washing machines. Find rebate guidelines and water-wise tips at www.cityofaustin.org/watercon.

and in the yard

Be old-fashioned. Use a rake instead of a gas leaf blower. Stick with hand (not power) tools, and paint with rollers or brushes instead of sprays to cut fumes.

Grill smart with an electric or chimney starter instead of lighter fluid on your charcoal grill.

Grow green with xeriscaping and native plants to reduce water use and mowing. Find landscaping rebate information at www.growgreen.com.

your actions matter.

Every little bit counts. Even seemingly routine chores can affect our air quality. If it takes energy, water or fire, chances are it contributes to air pollution. Think about the impacts of your actions and look for better ways to enjoy your home and yard.

do something.

Talk. Spread the word to friends and family about what you do to help prevent ground-level ozone. It's the best thing you can do for healthier air.

Para tener esta información enviada a usted en español, llama 494-9400.



for more information, please contact:

City of Austin
Air Quality Program
(512) 974-2635

www.cityofaustin.org/airquality

