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Applying a Positive Theory of Organizations: A Closer Examination of State Environmental Protection Agencies

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APPLYING A POSITIVE THEORY OF ORGANIZATIONS

A CLOSER EXAMINATION OF STATE ENVIRONMENTAL PROTECTION AGENCIES

DISSERTATION

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Martin School of Public Policy and Administration in the Graduate School at the University of Kentucky

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2016

ABSTRACT OF DISSERTATION

APPLYING A POSITIVE THEORY OF ORGANIZATIONS
A CLOSER EXAMINATION OF STATE ENVIRONMENTAL PROTECTION AGENCIES

Why do American states organize as they do for environmental protection? According to Moe (1990), "a positive theory of organizations has two goals: 1) explain where institutions come from and why they take the forms they do, and 2) understand their effects for political and social behavior." This paper will examine Moe's question in terms of state environmental agencies: What influences state adoption of a comprehensive environmental structure? To address this question, I develop a theory of state adoption of organizational structure drawing on organizational theories of public organizations. The latest comprehensive examination of state agency structure in the literature was in 1994 (Jessup, 1994) and provides no analysis, only a summary description of each agency. The most recent evaluation of states adoption of environmental agency structures was in 1975 (Beyle, 1975). My analysis builds on these studies.

This dissertation is structured in eight chapters. I first review the history of state environmental protection agencies in the context of the development of federal and state environmental laws. I also describe, in general, the federal and state government environmental structures and describe the comprehensive and incremental restructuring that states have undergone since 1960.

The second part of the dissertation develops a theory of state administrative agency adoption through a review of the organizational and political literature. Building on a model developed by Beyle (1975), this section describes how state environmental protection agencies develop in response to political motivations, administrative needs, socioeconomic characteristics, and environmental severity. I then test two empirical models based on this theory to understand why states chose to adopt a comprehensive state environmental protection agency and a Mini-EPA or Super-Agency structure.

The third part of the dissertation outlines the theory of state adoption of environmental policies, focusing on the role of decisional systems and specifically the state agency structure. I apply this theory to explore the influence of structure on adoption of environmental policies to address second and third generation pollution problems. These 12 policies are used to create an index of innovativeness. The final chapter summarizes the conclusions from the analyses, and future research prospects.

KEYWORDS: Environmental Policy, Organizational Theory, State Policy, Policy Adoption, State Government

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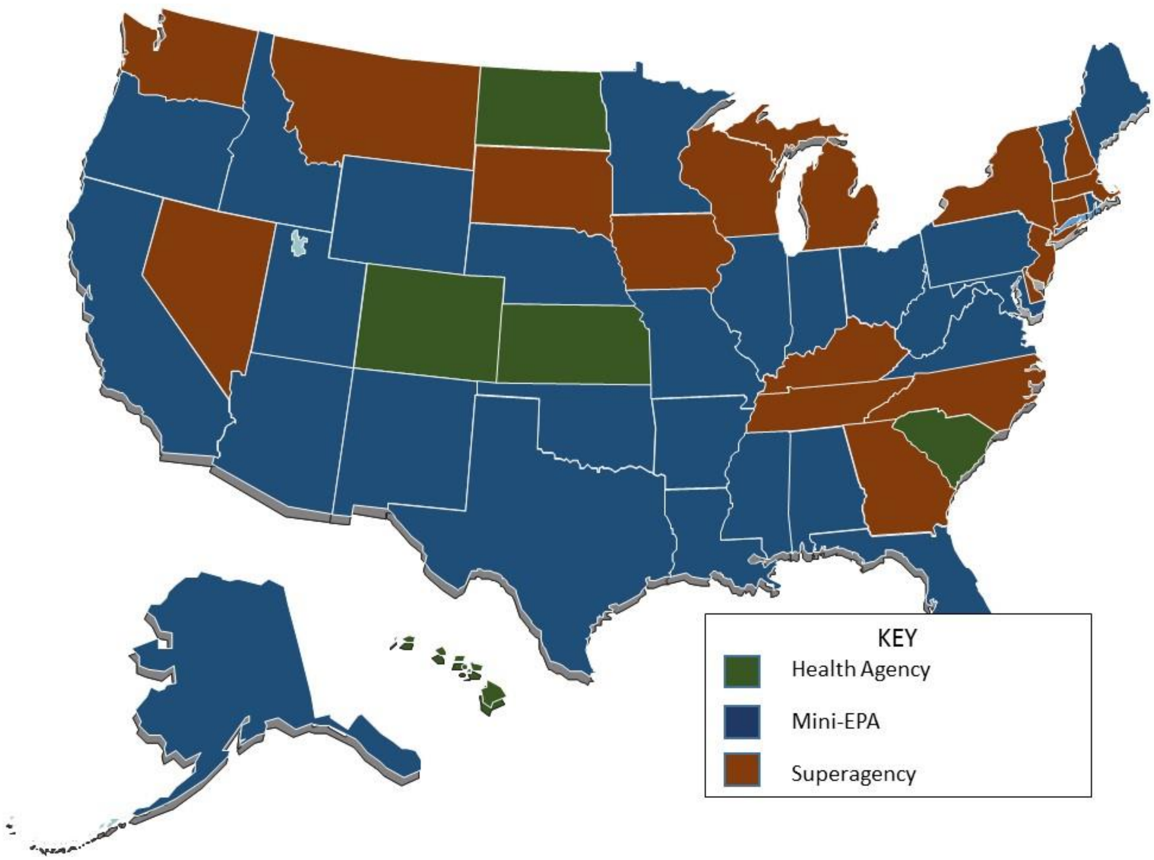
CHAPTER 1: INTRODUCTION

State environmental protection agencies are relatively new compared to more traditional state agencies, such as transportation and agriculture. What started in a handful of states as a patchwork of boards, commissions, and part of health and sanitation agencies, has grown into a national network of executive level agencies with approximately 50,000 employees spending over $4 billion per year. While most states initially housed environmental regulation within public health departments (Health), most now house it within its own stand-alone agency (Mini-EPA) or in superagencies that can include agriculture, natural resources, and/or energy (Super-Agency). Regardless of their location, these agencies develop, implement, and enforce environmental pollution laws. These agencies report to the state governor and legislature, but also the United States Environmental Protection Agency (USEPA) regional and national offices as they implement and enforce both state and federal laws. In addition, these agencies develop their own programs and policies for pollution control (Sapat, 2004). Understanding how these agencies are organized and function is an important component of understanding the diversity of environmental regulations across states.

State executive agencies are a key part of the decisional system component of a policy adoption model. State administration has been described as a hidden component of state government (Jennings & Woods, 2007). The structure that these agencies adopt directly influences their capacity. In addition, the structure will affect the policy priorities, level of enforcement, and level of innovation within the agency. While it is generally accepted that the structure of bureaucratic agencies can affect policy outcomes, few studies include detailed measures of the agency itself in their models. In environmental policy literature, the few studies that have examined state environmental protection agency structure found that the structure can have statistically significant effects on state environmental policies. The most significant effect of structure on environmental policies is whether the environmental protection agency is housed within a public health department. States that house their pollution control functions within the health department have lower levels of policy adoption, expenditures, and enforcement (A. Bacot & Dawes, 1996; Hoornbeek, 2011; Hunter & Waterman, 1996; J. Lester, 1980). Most of these studies examined data prior to 1990; many states have restructured their agencies since 1990. It would be interesting to evaluate the impact on policy outputs and enforcement of those states that moved their programs out of the department of health after 1990.

The current structures of state environmental protection agencies have evolved and developed over the past 50 years. What started as dispersed across multiple agencies and independent boards and commissions has now evolved into primarily three main structures: (1) Mini-EPA, (2) Super-Agency, or (3) Health Department. The environmental and health literatures have depended on this basic typology, shown by state in Figure 1 below (Beyle, 1975; Jessup, 1988; Kotchian, 1997; Ringquist, 1993; Shepherd, West, Hargrove, Schoemaker, & St. Peter, 1999; Sinclair & Whitford, 2012). Most states centralized all pollution control functions (water, air, and land) into one cabinet-level agency by the mid-1970s. However, almost half of states initially centralized pollution control in the department of health. Between 1975 and 2000, 14 states moved their centralized pollution control functions into either the Mini-EPA or Super-Agency structure (Comprehensive Structure).

Figure 1: Current State Environmental Protection Agency Structures



States seem to be continually evaluating and restructuring their pollution control and natural resource management functions trying to find the right fit (Koncelik, 2010; Shepherd et al., 1999). Most commonly, states have added and removed the divisions within the environmental protection agency. However, a few states have changed the type of Comprehensive Structure as well. For example, the state of Michigan consolidated its environmental and natural resource functions into a Super-Agency in

2009 and subsequently in 2011 broke them back into separate agencies (via Executive Orders). No state has moved the pollution control functions out of the Department of Health since 2000.

Research Question

Ideally, public bureaucracies, such as state environmental protection agencies, are designed to be as efficient and functional as possible with the appropriate horizontal and vertical specifications to meet the regulatory mission of the agency. Early rational organizational theorists argued for this type of apolitical design, providing guiding management and structural principles (Gulick, 1937; Taylor, 1911; Weber, 1922). However, in practice, the design of these agencies is subject to the political motivations of those designing them, the sociological context of a state, and the economic constraints at the time of creation. According to Moe (1990a), “a positive theory of organizations has two goals: 1.) to explain where institutions come from and why they take the forms they do, and 2.) understand their effects for political and social behavior (p 215).” The purpose of this dissertation is to examine both of these questions in organizational theory in terms of state environmental protection agencies. The first two empirical analyses address the first goal posed by Moe:

- What factors influence state adoption of a comprehensive environmental structure?
- What factors influence state adoption of a Mini-EPA versus Super-Agency structure?

To address these questions, I develop a theory of state adoption of organizational structure drawing on theories of public organizations.

The third empirical analysis addresses the second goal posed by Moe:

- Does a Super-Agency structure promote state development of innovative environmental policies?

To address this question, I develop a model of policy adoption that draws on internal determinants and the innovation diffusion literature.

Organization of Study

This dissertation is structured in eight chapters. These chapters outline the history of state environmental protection agencies, theories of state agency and state environmental policy adoption, and the three main empirical analyses. This first chapter provides an introduction and overview of the dissertation.

Chapter Two details the history of state environmental protection agencies in the context of the development of federal and state environmental laws. This chapter also describes, in general, the federal and state environmental government structures. Finally, this chapter provides a description of comprehensive and incremental restructuring that states have undergone since 1960.

Chapter Three develops a theory of state administrative agency adoption through a review of the organizational and political literature. Building on a model developed by Beyle (1975), this section describes how state environmental protection agencies develop in response to political motivations, administrative needs, socioeconomic characteristics, and environmental severity.

Chapters Four and Five present the empirical analyses that draw upon the theory developed in the previous section to understand why states chose to adopt a comprehensive state environmental protection agency and a Mini-EPA or Super-Agency structure.

Chapter Six outlines the theory of state adoption of environmental policies, focusing on the role of decisional systems and specifically the state agency structure. Chapter Seven applies this theory to explore the influence of structure on adoption of environmental policies to address second and third generation pollution problems. These 12 policies are used to create an index of innovativeness.

Chapter Eight is a summary of the conclusions from the analyses, and future research prospects.

CHAPTER 2: DEVELOPMENT OF STATE ENVIRONMENTAL PROTECTION AGENCIES

Every level of government in the United States (US) from cities to the federal government is involved in environmental pollution control in a system often described as environmental federalism. This interrelated system of governance has developed both from the bottom up and top down since the first local pollution ordinances were passed in the mid-1800s and the first federal environmental pollution control legislation was passed in 1899.[1] States lie in the center of this federal system, responding to pressure from their citizens, policies of their counties and cities, and federal mandates. The level of authority and discretion exercised by cities, states, and federal government varies across the numerous regulations. Each level of government has developed its own regulatory structures to protect environmental quality in response to political, administrative, and social pressure. The focus of this dissertation is on the structures that have developed at the state level to manage pollution. However, given the interrelation between the levels of government, it is important to understand how state agencies developed within the federal system. This section outlines the history of environmental regulation, focusing on the changing roles of states and the federal government and the development of state environmental protection agencies.

Pollution control has moved through three phases: (1) local control, (2) multi-agency or dispersed state control, and (3) centralized state pollution control (Hines, 1966). As pollution control functions have been adopted at each higher level of

[1] River and Harbors Act of 1899

government, the lower levels of government retain some responsibilities, creating an interrelated, intergovernmental system of governance.

The first pollution control regulations, adopted in the late 1800s, focused on water pollution control.[2] While a few municipalities had adopted air pollution control legislation prior to 1910[3], focus on air pollution developed after water pollution control. During the initial phase, municipalities and counties developed ordinances, primarily focused on health impacts of pollution, in response to local concerns. As the severity of pollution issues and cross-jurisdictional impacts increased, states began to respond with state legislation in a piecemeal fashion, placing authority for regulation in multiple agencies and boards.

Finally, states centralized their management of pollution into a single agency. States were driven by two major influences toward a centralized pollution control system: (1) political pressure to develop more effective pollution control systems to address the complex pollution issues facing states; and (2) political pressure to improve the professionalism and efficiency of state government. These two movements coincided with each other, driving states to move to the final phase of centralized state control. This chapter provides a description of the development of state pollution control structure in context of these two influences.

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[2] Initial water pollution laws prohibited dumping of "poisons" and dead animals and declared discharge of such material a "public nuisance. But these early laws were not very strong or comprehensive. Ohio in 1893 and Pennsylvania in 1905 were first states to adopt a regulatory authority for (non industrial) water pollution (Andreen 2003).

[3] Municipalities first began adopting legislation that declared emissions of smoke to be a public nuisance in1881. Chicago and Cincinnati were the first two cities to adopt such legislation.

Environmental Federalism

The nature of environmental pollution defies the logic of federalism. The American federal system was developed to tie together different levels of government while maintaining "the existence and authority of both" (Elazar, 1984, p. 2). At its heart, American federalism is the lack of centralization – the levels of government may be bigger or smaller, but they do not lie in a hierarchy (Elazar, 1984). Within a federal system, states and localities respond to issues within their borders and are thought to best represent interests of their communities. However, this structure can create obstacles to address environmental pollution, which may be created in one community (providing economic growth) and negatively affect another community. When the first major federal air pollution control legislation was passed in 1955, the responsibilities of each level of government were clearly assigned with little overlap, like a 'layer cake' (USEPA, 1983). At that time, no state had a comprehensive pollution control structure in place, but some states had begun to enhance and develop their pollution control programs. The federal government became involved in pollution control regulation in response to a concern that states lacked the will or capacity to protect environmental quality. Even initially, the federal government refrained from mandating state action, instead using financial and technical assistance to incentivize states.

After the initial federal legislation, that was designed to empower states to develop a regulatory structure, failed to achieve significantly improved state capacity, the federal government increased its role in environmental protection. Starting in 1970, the federal government assumed significant authority to regulate environmental pollution through the passage of over 20 major federal statutes that cover air, water, and land pollution. States, partly in response to federal regulation and political pressure, began to more quickly develop pollution regulatory structures, entering into the final phase of pollution regulation. Since 1970, the regulatory relationship between states and the federal government has been described as coercive federalism, cooperative federalism, creative federalism, creeping federalism, and new federalism. The current system resembles more of a 'marble cake' with overlapping responsibilities across governments that require cooperation between each level of government (USEPA, 1983) and often the private sector.

This increased federal involvement created a hierarchy of regulatory control that runs counter to the traditional theory of American federalism. Proponents of federal involvement argue the Commerce Clause of the U.S. Constitution provides the authority. The question that has dominated environmental policy literature since the 1950s, when the federal government first became involved, is whether state or federal regulation of environmental pollution would lead to the socially optimal level of environmental quality across communities. Legal scholars, economists, and political scientists have all examined environmental federalism over the past 40 years. The primary focus for much of the literature has been an either-or-decision between federal or state control. Proponents of a strong federal role in environmental protection argue that both the nature of environmental problems and types of state government incentives require centralization of control. Without the federal intervention, states would compete in a race-to-the-bottom in environmental regulations to maintain economic development while ignoring the local and interstate externalities associated with environmental pollution. Those scholars arguing for devolution of authority to states dispute that the nature of environmental problems require federal control, as many are local or regional in nature, and are best addressed at those levels where local conditions and public preferences are unique. In contrast, states would not compete in a race-to-the-bottom, but instead as economic conditions improve, the public demand for environmental quality would actually increase.

A 'third generation scholarship' is emerging now that argues that there is a jurisdictional mismatch in many environmental regulations where the federal government has control over local issues and local governments are assuming control over federal issues (Adler, 2005; Esty & Geradin, 2001). Additionally, others are arguing for a 'civic environmentalism' that focuses on partnerships between multiple levels of government and industry and environmental groups to develop and implement regulations that fit the nature of the environmental problem (Durant, Fiorino, & O'leary, 2004). Esty and Geradin (2001) summarize the general consensus in current scholarship: "…regulatory systems should be set up with enough interjurisdictional cooperation (or harmonization) to ensure that transboundary externalities and other market failures are addressed, but with a sufficient degree of regulatory competition to prevent the resulting governmental structure from becoming an untamed, overreaching, or inefficient Leviathan"

Environmental Governance

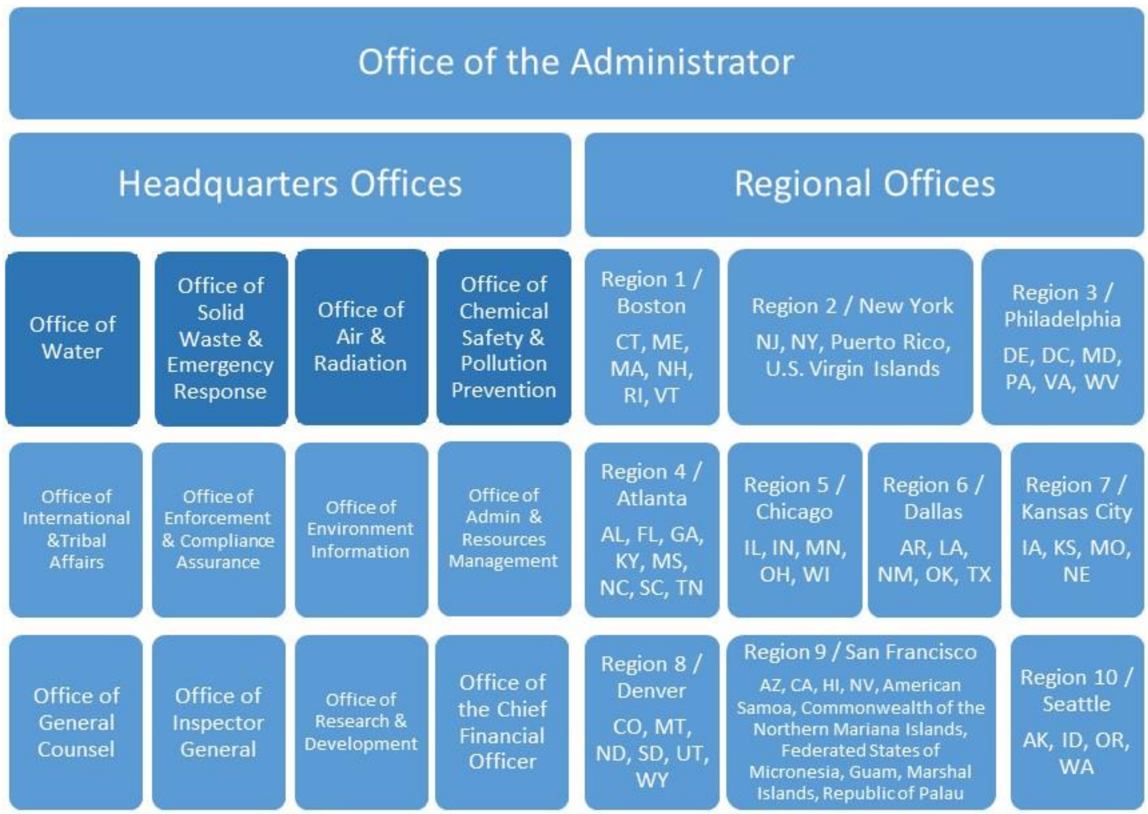
In exploring state environmental protection agencies, it is important to define what is meant by *environmental protection* and how that is different from *natural resource protection*. Environmental protection policies are regulatory policies designed to affect environmental quality, specifically focused on pollution control. Environmental protection policies include the Clean Air Act (CAA), Clean Water Act (CWA), Resource Conservation and Recovery Act (RCRA) that focus on reducing environmental pollution. The goal of natural resource protection, distributive policies, is to conserve resources and allocate public resources to specific groups (i.e. grazing access, mining rights, recreational use) (Kraft, 2007). Generally, natural resource policies are developed to manage resources such as forests and lakes, with a focus on quantity and consumption (Brown & Marshall, 1996). Natural resource protection includes parks and recreation, forest management, and water conservation.

USEPA

The mission of the USEPA is to "protect human health and the environment" (USEPA). The EPA has a main headquarters office in Washington DC, but also has 10 regional offices, adding another interesting layer in the complex intergovernmental relationship. Other federal agencies that have responsibility for environmental governance include the Office of Surface Mining (OSM) in the Department of the Interior, the Public Health Service (prior to creation of USEPA), US Fish and Wildlife Services, Department of Agriculture, Department of State, Department of Transportation, Health and Human Services, Department of Defense, Department of Justice, Council on

Environmental Quality, Homeland Security, Department of Labor, Department of Energy (DOE), Housing and Urban Development (HUD) and the National Oceanic and Atmospheric Administration (NOAA) in the Department of Commerce.

Figure 2: USEPA Organizational Chart



In addition to the various administrative offices, the USEPA is structured around the type of pollution: water, air, solid waste, and chemical safety.

State Environmental Protection Agency

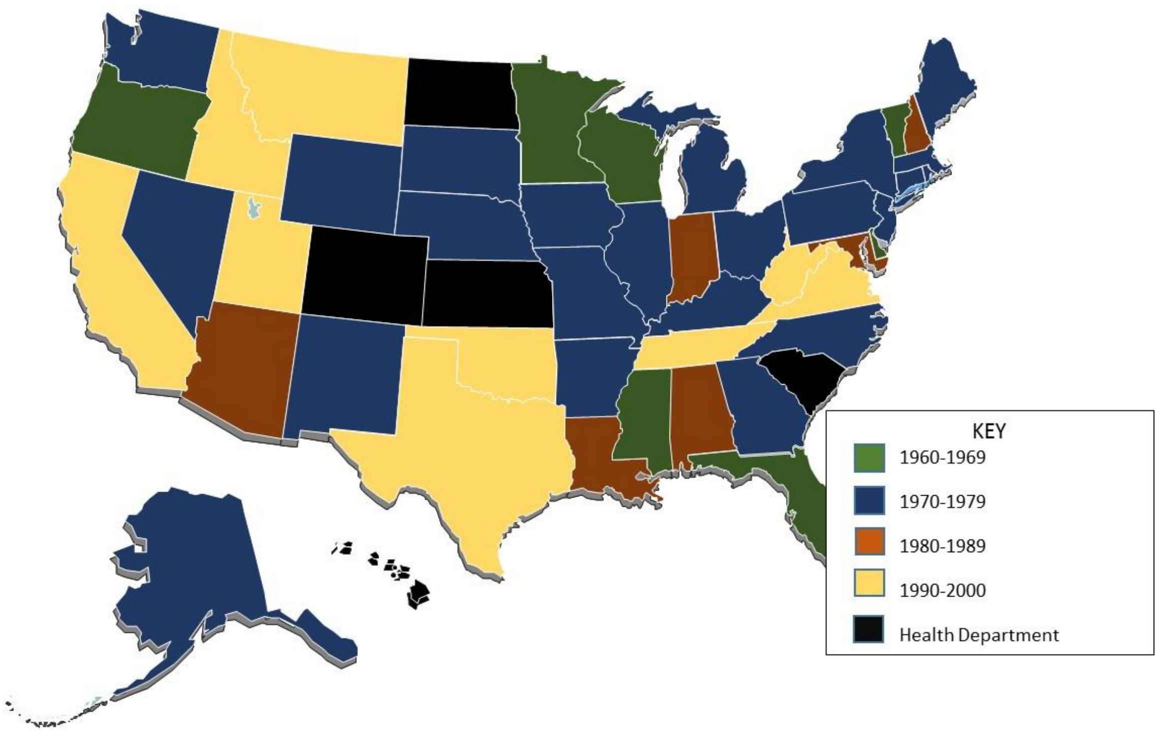
State environmental protection agencies manage pollution control for all major media (water, air, land). Generally, the pollution control functions within a Super-Agency and in a Mini-EPA are structured in a similar structure as the USEPA (the current structure of each state's pollution control, energy, natural resources management, parks and recreation, and agriculture agencies is included in Appendix A). According to Ringquist (1993), state activities in environmental policy fall into five categories: setting goals and standards, designing and implementing programs, monitoring and enforcement, research and development, and funding. The USEPA was initially distrustful of states' ability or capacity to manage environmental policy within any of these categories and did not freely devolve authority to states. However, over time and in response to the general devolution in the 1980s and improvements in state capacity, the USEPA increased environmental devolution to the states (Ringquist, 1993). Under authority granted in U.S. environmental laws, states have assumed primacy for the majority of federal statutes (see table in Appendix D). Even in states that exercise delegated authority, the USEPA does spot inspections and monitoring.

Development of State Pollution Control

Jenks and Wright (1993) identify five stages of state agency development between 1960 and 1990: first generation agencies, second generation agencies, third generation agencies, fourth generations, and emergent agencies. The authors examined the agencies that existed in at least two-thirds of states at the start of each decade. These agencies that the authors identify can be divisions within larger agencies or the agencies themselves. I will use department to describe the larger department (i.e. Department of Environmental Protection) and division to describe subdivisions of the larger agencies (i.e.

mining, water resources, and air pollution). States' pollution control structures developed throughout this time period in a piecemeal fashion adding new divisions and boards to address new issues. As states adopted new responsibilities and divisions, state leaders began consolidating pollution control functions into a Comprehensive Structure. Figure 3 below shows the decade that each state moved its pollution control functions into a Mini-EPA or Super-Agency structure.

Figure 3: State Adoption of Current Environmental Regulation Structure



The following discussion outlines the history of environmental regulation, focusing on the changing roles of states and the federal government and the development of state environmental protection agencies. I have divided the history of environmental regulation into five periods based on multiple sources in the literature (Eisner, 2007; Klyza

& Sousa, 2008; Kraft, 2007; J. Lester, 1995; Ringquist, 1993; USEPA, 1983; Vig & Kraft, 2003). The five periods are: State and Local Control (up to 1960), Creeping Federalism (1960-1969), Federal Activism (1970-1980), Devolution (1980-1990), and Evolving Federalism (1990–current). A list of major federal laws is included in Appendix B.

State and Local Control (Up to 1960)

First generation state executive agencies, created prior to 1960, developed to serve the traditional functions of states, including health, budgeting, and police (Jenks & Wright, 1993). States were more focused on managing natural resources for human consumption through agencies such as agriculture, fish and game, mining, oil and gas, and forestry. After the dust bowl events, states expanded their focus to soil conservation. As the conservation movement gained momentum, state governments expanded to include water resources and parks and recreation divisions. Each of these functions was often housed within separate agencies and/or independent boards with little coordination. Traditionally, state legislatures often created a board or commission to oversee the programs and agencies as an extra measure of maintaining control (Gargan, 1999, p. 17)

Local Control

Prior the 20th century, environmental pollution (air, water, land) was an issue primarily regulated (if at all) by cities and counties (Haskins, 1969; Hatchard, 1962; Melosi, 2000; Stein, 1962; Stern & Professor, 1982). Cities began to develop policies and programs to address smoke, sewage and sanitation issues at the end of the 19th century in response to health effects of pollution. Between 1860 and 1896, over 3,000 public water systems were constructed (Andreen, 2003; Goklany, 1998; E. Ringquist, 1993). The development and growth of the public health movement coincided with many of these local pollution regulations and services. Cities began adopting departments of health, which often assumed responsibility for sanitation, air quality, and sewage. It is important to note that the focus of sanitation programs was on pollution from sewage rather than industrial pollution (Andreen, 2003). New York City established the first municipal health department in 1866 and by 1900 the majority of larger cities had a health department

State Role

States began to take a more active role in pollution control at the turn of the century because "localities were unable to control pollution coming from upstream and had no incentive to control their own pollution" (Davies III, 1970, p. 121). The initial focus of state pollution control was on the health impacts of pollution. Massachusetts created the first state board of health in 1869 and by 1909 all states had a board of health (Andreen, 2003). In response to urban pollution concerns, many states began creating separate divisions or boards for water pollution control and air pollution control (Davies III, 1970). By 1927, almost all states had a sanitary engineering division within their departments of health. More than half of states (28) gave their boards of health regulatory authority for controlling water pollution by 1946 (Melosi, 2000). By 1948, every state had assumed control of water pollution from local governments, placing the administration in the department of health or independent boards. States began to actively develop environmental regulations in the 1950s (Davies III, 1970). States also gave regulatory authority for water quality pollution to other agencies, such as parks and natural resources (Andreen, 2003; Hines, 1966).

Oregon, in 1952, was the first state to pass comprehensive statewide air pollution legislation and to establish a state air pollution control agency (Ringquist, 1993). By 1960, 15 states had passed some type of air pollution control legislation (Aborn & Axelrod, 1967; Hatchard, 1962; Stern & Professor, 1982). In 1950, the US Public Health Service (USPHS) published a *Suggested Water Pollution Control Act*, to encourage states to strengthen their water pollution control laws. Over half of states responded with strengthened state laws and agencies (Andreen, 2003). By 1956, 19 states housed water pollution control in an independent board, commission, or agency, seven states housed it within the department of health, and three states housed it within other existing agencies such as fish and game commissions.

Federal-State Relationship

Prior to the 1950s, states managed environmental pollution problems as part of their policing powers (Anderson & Hill, 1997; Percival, 1995; Ringquist, 1993). The federal government intervened rarely and only if issues dealt with interstate commerce (such as the Refuse Act of 1899 that prevented refuse in interstate rivers). States used the court system to address interstate spillovers of environmental pollution. The issue of environmental pollution was not a salient one in the public dialogue until the 1960s.

The federal government began developing federal regulations to address environmental pollution starting with the Water Pollution Control Act in 1948 and the Air

Pollution Control Act in 1955. These initial federal regulations primarily provided funding to states to encourage them to establish pollution control regulations and infrastructures. "The federal environmental programs…were premised on the notion that environmental problems were the responsibility of state and local governments" (Percival, 1995, p. 1156). The federal government tried to provide states with the tools to develop the capacity and infrastructure to implement a pollution control system while keeping authority and control at the state level. While many states had created some capacity, either housed within health departments or independent air and water pollution control boards, no state had created a comprehensive state agency.

Creeping Federalism (1960-1969)

Second generation agencies developed in the 1960s in response to current issues of the day such as civil rights, citizen activism, "Great Society" policy initiatives, and environmental concerns. The majority of states created an air quality division during this time period (Jenks & Wright, 1993). By 1968, 44 states had passed some type of air quality legislation (Regens & Reams, 1988; Wang, Dennis, & Tu, 2007; Waterman & Meier, 1998). It was not until the late 1960s that states began to create independent agencies that combined air and water quality and solid waste regulation. The majority of states still housed these functions either in independent boards or within the department of health. Eight states adopted a comprehensive structure for environmental regulation in the later part of this decade (1967-1969).

During the 1960s, increasing scrutiny of state pollution programs found four main faults: (1) inadequate statutory authority, (2) lack of forceful administration, (3) inappropriateness of the public health domain, and (4) lack of central authority (Reenock & Poggione, 2004). While the initial focus of pollution control was on the health effects of biological contaminants, increasingly concern had grown for the effects on agriculture and recreation, and the effect of industrial pollution (Scorsone & Plerhoples, 2010). States began consolidating programs and increasing the effectiveness of these programs during this time period. However, there was a wide variation in state administrative capacity in general and in terms of environmental regulation. State spending for air pollution control was 0.0006 percent of total state expenditures in 1962; less than six of the 32 states that had some kind of air regulations were actually enforcing those regulations in 1963; and by 1970, over half of state air pollution control agencies had staffs of fewer than 10 people (Ringquist, 1993).

While the initial federal legislation in the 1950s clearly maintained state responsibility for development and implementation of environmental pollution control laws, the amendments during the 1960s and 1970s ultimately established a federal role in pollution control. The FWQA of 1948 provided states with funding and technical assistance, but the Water Quality Act of 1965 granted the federal government authority to establish water quality standards for interstate waterways. While intrastate waterways were still under state control, these amendments required states to develop water quality standards for interstate waterways within their borders. The Clean Air Act of 1963 authorized the Public Health Service to develop emissions standards and the Air

Quality Act in 1967 authorized the PHS to enforce interstate air pollution standards. However, the process for implementation for these laws was complicated and difficult to enforce.

Federal Activism (1970-1980)

During the 1970s, the third generation agencies that developed, "constituted the administrative foundation stones for state resurgence in the 1980s" (Jenks & Wright, 1993, p. 81). These agencies included energy and environmental protection agencies. The burst of federal environmental regulations drove states to expand their capacity for environmental regulation. States continued developing environmental protection agencies either as stand-alone agencies or as part of new superagencies combined with related functions, such as natural resource management. The majority of the 23 states that adopted a Comprehensive Structure during this decade did so within the first three years after the creation of the USEPA.

While the federal government had been incrementally increasing its role in environmental pollution protection since 1955, it drastically increased its role with a series of laws passed in the early 1970s. As described in the literature, policies generally increase incrementally unless there is some punctuation or focusing event to drive a more dramatic change (Birkland, 1997; True, Jones, & Baumgartner, 2007). The dramatic change was propelled by a "quite phenomenal rise in public concern for the environment" (Jones, 1974, p. 78). One public opinion poll found that the number of people concerned about air pollution between 1965 and 1970 jumped 41 percent (Jones, 1974).

Kingdon (1995) argues that there are streams in agenda setting: problem, policy and politics. The beginning of the 1970s was an unusual time when the "problem, policy and politics streams converged" (Kraft, 2007). First, problems captured the attention of policy makers, scientists and public health officials who became aware of the negative health and environmental consequences of water, air, and land pollution. The federal government, during the 1950s and 1960s invested millions of dollars to identify the "problem" of environmental pollution. Second, the policy makers developed policies to address this problem. The federal government passed increasingly more aggressive policies throughout the 1960s to address the problem. However, the final policy stream of politics did not fall into place until 1970 when the problem captured the attention of the public. This section describes how the final policy stream of public opinion converged to dramatically increase the federal role in environmental regulation.

Public opinion was driven by increased availability of information, major environmental disasters, and a nationalization of media, especially television. Major popular works were published about the effects of environmental pollution such as Rachel Carson's *Silent Spring*, in 1962 and Paul Ehrlich's *Population Bomb*, in 1968. These books not only identified the effects of pollution, but also highlighted the limits of the planet to manage human development. In January of 1969, an error on an offshore drilling rig caused up to 100,000 barrels of oil to spill off the coast of Santa Barbara, California. In June of 1969, an oil slick on the Cuyahoga River in Cleveland, Ohio caught fire. While the Cuyahoga River had caught fire previously, a picture appeared on the cover of *Time* magazine that same year (ironically of a previous fire). These two events angered the public and generated public support for environmental regulation. The national media brought images into the homes across the country of the Cuyahoga River on fire and the Santa Barbara oil spill, generating public opinion support for environmental groups (Adler, 2004). The first Earth Day was celebrated in April 1970, drawing even more public attention to the problem of environmental pollution. There was strong bipartisan political support in the US Congress and in the White House to respond to the problem. President Nixon created the USEPA in 1970 via executive order.

It is important to clarify that there was public support not just for a government response to environmental pollution, but more specifically for a federal government response to this problem. The argument at the time was that federal intervention was required to account for the "regional and interstate nature of environmental pollution" and address the concern that variations in state programs could "threaten economic equity and efficiency" (USEPA, 1983). The environmental movement followed the Civil Rights movement and the New Deal, where confidence in the federal government was high; the variation in state response to the Civil Rights Movement had weakened public opinion of the efficacy of state control (Anderson & Hill, 1997). The federal government had given states almost two decades to respond to the problem and the argument was made that the states did not have the ability or will to respond. At this time, only eight states had a comprehensive environmental protection agency to implement regulations.

Many scholars have also highlighted the influence of environmental and industrial interests. In general, at the end of the 1960s, there were no "well-defined" interests lobbying for environmental pollution control (Butler & Macey, 1996). The Sierra Club and

Audubon Society had been established in 1892 and 1905 respectively, but focused on conservation, not environmental pollution. The first interests to focus on environmental pollution, Environmental Defense Fund and the Natural Resources Defense Council were established in 1967 and 1970, respectively (J. Lester, 1995). In response to public opinion, the Sierra Club and Audubon Society were able to expand their mission to include pollution control (Percival, 1995). As a result, the Sierra Club, which had 35,000 members in 1970, had over 180,000 by 1980 (J. Lester, 1995). Finally, as states with the administrative and financial capacity began developing environmental regulations, industry groups pushed for national regulations to reduce their costs of compliance. For example, in response to state vehicle emission standards, the automobile industry pushed for national emission standards (Adler, 2004).

Driven by public opinion and support, the federal government assumed control over pollution control across air, land, and water. Nine major environmental laws were passed and amended many times during this decade. These federal laws increased the federal role in regulating pesticides, mobile and stationary air pollution sources, water pollution sources, noise pollution, mining operations, chemical manufacturing, and hazardous waste management and disposal. The Clean Air Act (CAA) and Clean Water Act (CWA) established a regulatory relationship in which the Federal government establishes standards and the states may then develop and implement a plan to achieve those standards. If USEPA approves the state water quality plan, the state may then assume primacy for enforcement of those standards. States can assume authority for standard setting and enforcement authority if their standards are at least as stringent as the

Federal standards. In addition, under the CAA, each state that wants enforcement authority must develop and update State Implementation Plans (SIP) describing how they will meet the NAAQS that the USEPA must approve. If a state does not submit a SIP, the USEPA will impose a Federal Implementation Plan on that state. The SIP process is an evolutionary process in which states submit plans for specific pollutants, or metropolitan areas, or category of emission sources (Ringquist, 1993).

Devolution (1980-1990)

The high productivity of the Congress in the 1970s in passing environmental legislation faced a threatening political response in 1980 with the election of President Ronald Reagan. In general, President Reagan felt that the federal government was too large, inefficient, and negatively affected economic development. Environmental pollution control was part of the President Ronald Reagan's New Federalism push to devolve authority over regulatory programs back to the states (Percival, 1995; Stewart, 1976). Reagan's New Federalism included (1) administrative initiatives to reduce the burden of current regulations, decrease the number of future regulations, and return power to the states for enforcement of many laws; and (2) consolidation of block grants to provide states more autonomy (Zimmerman, 1991). One strategy used to return power to the states was to push states to assume primacy delegation under the major environmental laws (Crotty, 1987). During the 1980s, states transformed their institutional capacity, including their environmental administrative capacity (J. Lester, 1995; Stewart, 1976). Although the executive branch was working to reduce federal control, Congress enacted many new laws and amendments to the first wave of environmental laws in the 1970s, often strengthening federal control (some speculate this was in response to New Federalism) (Percival, 1995).

States adopted less than 10 new types of divisions during the 1980s (fourth generation) because states focused more on consolidation than creation. (Jenks & Wright, 1993) Again, activities at the federal level impacted state division creation as federal laws related to hazardous waste passed in the late 1970s pushed states to create new related agencies. States created divisions for hazardous waste, groundwater management, and underground storage tanks. Six states adopted a Comprehensive Structure during this decade, and many states applied for and were granted primacy to enforce various federal environmental regulations.

Evolving Federalism (1990-current)

Between 1970 and 1990, states significantly developed their capacity to develop, manage, and enforce environmental laws. By the mid-1990s, seven more states adopted a Comprehensive Structure for environmental regulation. More states were willing to apply for primacy and the USEPA was forced to acknowledge this capacity and facilitate more devolution of authority to states. Within these overlapping responsibilities across governments, like marble cake, states and the federal government have had to evolve in their relationship to cooperate (cooperative federalism) (USEPA, 1983). Since 1990, the relationship between the levels of governments has continuously evolved through cooperation and conflict.

Cooperation

By the mid-1990s, a majority of states had assumed primacy over at least one aspect of the CWA and CAA implementation (See Appendix D for state primacy information). While states pushed for more authority, the USEPA attempted to improve the relationship with the states. During the 1990s, the focus was on improving the working relationships between the federal and state agencies. As states enhanced their capacity during the 1980s and assumed more responsibility for enforcement of federal regulations, tension developed between the USEPA and state environmental protection agencies. States pushed back against “unfunded mandates” that gave states additional regulatory responsibilities without additional funding necessary to implement. The Unfunded Mandate Reform Act (UMRA) was passed in 1995 to reduce the ability of the federal government to impose additional mandates and responsibilities on states without adequate funding. While the UMRA has not completely eliminated unfunded mandates, it has reduced their number and increased focus on to the fiscal effects of federal legislation on state and local governments (Dilger & Beth, 2014). In addition, the USEPA developed the National Environmental Performance Partnership System (NEPPS) to improve federal-state relations. This program was supposed to focus on achieving measurable outcomes, providing states with greater flexibility, and enhancing accountability. Performance Partnerships Agreements (PPAs) were entered into between the federal and state governments; and states were provided with block grants and able to direct that funding toward their own priorities In addition, OSM adopted the REG 8 Directive to improve federal-state relationships in surface mining regulation implementation and enforcement (Scheberle, 2004). Governance literature has examined the impact of these various management activities on environmental policy outputs and outcomes.

Type and Efficiency of Regulations

In addition, an increased focus in the 1990s on the efficiency of environmental regulations, developed in response command and control regulations of the 1970s, led to more cost benefit analyses and new types of regulations (Clean Air Act Amendments 1990). After the early 1990s, very few major federal environmental laws were passed. Under President Clinton, the USEPA began to create and market voluntary programs, such as the lead and radon programs.

Second and Third Generation Pollution Problems

The focus began to shift from first generation pollution problems to second and third generation problems. The environmentally-related divisions created since 1990 are focused on more state-specific characteristics and addressing these types of pollution problems, such as coastal zone management and mining reclamation. States also began to adopt more collaborative management policies and ecosystem management.

"Collaborative public management is a concept that describes the process of facilitating and operating in multi-organizational arrangements to solve problems that cannot be solved by single organizations" (O'Leary & Bingham, 2009). Collaborative government promotes coordination and cooperation across multiple levels of government, multiple government agencies, interests, and private stakeholders. States have adopted collaborative management techniques to address environmental policies that span jurisdictions, are generated by multiple dispersed sources, and cross environmental media.

The focus of environmental and natural resource policy evolved during the 1990s from controlling pollution from a single source or managing a single resource, such as a lake or a park, to a more ecosystem-focused management. This evolution was founded in an understanding that individual resources were part of a larger ecosystem and changes in one part of that ecosystem can affect the whole ecosystem. The USEPA began a transition to ecosystem management in 1993 by convening a working group to investigate "if the agency could use ecosystem management to solve some intractable problems facing it" (Brown & Marshall, 1996). The first comprehensive work on ecosystem management, *Ecosystem Management for Parks and Wilderness*, by James Agee and Darryll Johnson, was published in 1988. This book was a summary of a workshop on the topic cosponsored by the National Park Service and the USDA Forest Service. Since the early 1990s, at least 20 states have adopted a watershed management approach, which is founded in the concept of ecosystem management.

Conflictual

The relationship between the federal and state governments is often conflictual with some states pushing back on some federal regulations and other states moving forward to address pollution problems that the federal government has not addressed. Examples include the conflict over hazardous waste facility siting in the 1990s and the recent court battles over CO_2 regulations that will have a severe impact on coal ("War on Coal"). On the other end, many states have moved forward aggressively with climate change and renewable energy legislation in response to lack of action at the federal level.

Development of the Professionalism and Efficiency of State Government

Since the early 1900s, multiple waves of structural, constitutional, and management reforms have transformed state governments into a more competent, efficient, active, and professional level of government (Bowman & Kearney, 1986; Jenks & Wright, 1993). The reforms did not happen at once, but instead in four distinct waves, with different driving factors and outcomes. The first three waves, driven by reports of federal commissions, focused solely on the executive branch in 1917, 1937, and 1945. The fourth, and longest wave, in the late 1960s and early 1970s, has encompassed reforms to all three branches of the government (Bowman & Kearney, 1986). The executive branch reforms during this time have included reforms to the governor's office and the state bureaucratic structure (Berkman & Reenock, 2004; Bowman & Kearney, 1986; Jenks & Wright, 1993). Bureaucratic reforms include reorganization and consolidation of existing functions, creation of new functions, and increased professionalization. States have made incremental changes since this last wave of reform. One major bureaucratic reform, adopted by over 20 states, was to give the governor power to reorganize the executive branch through Executive Order.

State environmental protection agencies developed within this fourth wave of reforms, and like all other reforms, reflect the characteristics of the state, the existing structure of the bureaucracy, funding available, federal mandates, and changing social pressures (Jenks & Wright, 1993). State environmental protection agencies have developed and changed as part of comprehensive state reorganizations, incremental state reorganizations, and focused environmental regulation reorganizations. It is important to understand the history of state executive branch reorganization and restructuring to understand why states have adopted the different environmental structures.

Comprehensive State Agency Restructuring

Prior to the 1960s, the state executive branch had very little power or authority. Many executive branch officials, in addition to the governor, were elected positions, including the attorney general and secretary of state. While many states still have a number of elected executive branch officials, the strength of the governor's office has increased across all states in terms of appointment power and veto power. State legislatures often established a governing board or commission to oversee programs and agencies, and often these members reported to the state legislature and not the governor (Garga, 2000). Initially, many state environmental regulation functions were housed within these types of boards and commissions.

Between 1965 and 1979, the executive branch in 21 states underwent a comprehensive reorganization (See Appendix C for list of states and reorganization). Twelve states during this time adopted a comprehensive environmental structure during the reorganization. Reforms were directed at addressing duplication and overlap of functions, inefficiency, and a weak executive branch (Garga, 2000). The reorganizations significantly reduced the number of agencies in many states from up to 300 to less than 20 (Conant, 1992). Some factors that drove this reorganization included significant growth in state expenditures, reapportionment of state legislative districts, expansion of state regulatory activities, and federal pressure for improved administration of federal programs (Garga, 2000).

The general goals of reorganization efforts were to increase the strength of the government, and consolidate the executive agencies into departments by function (Garnett, 1980). State executive branches have undergone either comprehensive or incremental bureaucratic restructuring along three types of models: the traditional model, the cabinet model, and the secretary/coordinator model (Bell, 1974; Berkman & Reenock, 2004; Garga, 2000). Table 1 lists the main characteristics of each of these models.

Table 1: Models of State Government

	Cabinet	**Secretary/ Coordinator**	**Traditional**
Number of agencies	Low	Very low	Moderate
Degree of functional consolidation	High	Low/ moderate	Moderate
Gubernatorial appointment of department heads	High	Moderate	Low
Number of departments with single executive	High	High	Low/ moderate
Department executive's control over consolidated department	High	Low	low

The traditional or standard model of government required less restructuring and maintained a large number of agencies. Under this structure, many of the boards and commissions that developed to support and manage agencies are maintained. The agency heads can be appointed by the governor, but many are still elected (commissions and boards) (Bell, 1974; Garnett, 1980). In the cabinet model, the governor appoints the heads of each agency and those managers are responsible to the governor. Divisions tend to be grouped into a smaller number of agencies that manage a wide range of activities (Bell, 1974). Agencies in the secretary/coordinator model incorporate a broad set of divisions and activities and a secretary is appointed by the governor to manage the multiple divisions within the agency (Bell, 1974). This third model consolidates many smaller agencies and generally has the fewest number of agencies. (See Appendix C for state reorganization dates, types, and models used).

Another major wave of state reorganizations during the 1980s was driven more by fiscal stress than duplication or limited executive branch authority and focused on reducing employment and spending (Conant, 1992). Five states underwent reorganizations during the 1980s. While some of these states' reorganizations were driven by the desire to reduce duplication, many were also trying to reduce the size of state budgets.

Incremental State Agency Restructuring

Between 1900 and 1975, approximately 44 percent of state reorganizations were partial or incremental reorganizations (Garnett & Levine, 1980). A partial or incremental reorganization only focuses on one or two departments at a time. For example, Oregon reorganized a few departments over the course of a few years in the late 1960s and 1970s, including their pollution control functions. An environmentally-focused reorganization would be considered an incremental reorganization. Over time, the incremental reorganization reduces the number of agencies and restructures the executive government through focused agency consolidations and reorganizations. However, the size of the reduction of executive branch entities is less under these incremental restructurings than under a comprehensive restructuring (Berkman & Reenock, 2004). The initial states to adopt the Comprehensive Structure (1967-1975) did so as part of an (incremental) environmentally-focused reorganization (Beyle 1975). Sometimes, state leaders find it more politically viable to push through restructuring in an incremental process over a longer period of time (Berkman & Reenock, 2004; Garnett & Levine, 1980).

CHAPTER 3: A THEORY OF STATE AGENCY ADOPTION

The literature examining state adoption of environmental protection agency structures is very sparse (Beyle, 1975; Claveria & Kaito, 1985; Haskell & Price, 1973; Shepherd et al., 1999; Sinclair & Whitford, 2012). The general findings in the literature are that that state environmental protection agencies were initially created to manage the increased magnitude of environmental programs administered by states, meet political demands for change, consolidate power, and respond to increased federal actions and other states' adoption of similar agencies. Many states also adopted the Comprehensive Structure as part of an overall state executive branch reorganization (Beyle, 1975). This section, drawing on these studies and political and organizational theory, develops a theory of state adoption of state agency structure. The theory can be applied to state adoption of a comprehensive environmental protection agency and the specific type of that agency (Mini-EPA or Super-Agency). This theory can also be applied to adoption of other types of state agencies including higher education, health, and transportation.

While early rational organizational theorists argue that public bureaucracies are designed with a focus on efficiency and function, in practice, political motivations, economic constraints, and socioeconomic characteristics of states often drive the development of these agencies. The literature on design of public bureaucracies is primarily theoretical (Hammond, 1986; Moe, 1984, 1990a, 1990b; Williamson, 1981, 1999). The empirical literature that does exist has primarily focused on design of federal and not state bureaucracies (McCubbins, Noll, & Weingast, 1989; Wood & Bohte, 2004;

Wood & Waterman, 1993). The general theory argues that "administrative design reflects the efforts of enacting coalitions to maximize future political benefits while minimizing future potential losses" (Wood & Bohte, 2004).

Agency Structure

Structure is an important component of institutional capacity. Institutional capacity is the "capability of an agency to make and implement policy, net partisan and ideological differences" (Krause & Woods, 2014). This capacity includes financial, capital, and human resources; constitutional and legal authority; and management expertise (Jennings & Woods, 2007). Another way to consider bureaucratic capacity is as resources (budgetary, clientele, and reputational) and structure/processes. Resources provide the input and the structure and processes provide the formal organizational context (Krause & Woods, 2014). According to Honadle (1981), capacity is the ability to:

1. Anticipate and influence change.
2. Make informed, intelligent decisions about policy.
3. Develop programs to implement policy.
4. Attract and absorb resources.
5. Manage resources.
6. Evaluate current activities to guide future actions.

This framework suggests that agency budgets alone are not the only measure of capacity. Instead an agency with high capacity must also be able to manage those financial and human resources to implement policy. An agency's organizational structure and mission will influence an agency's ability to implement these components of the framework. "State government capability has at its core the selection and development of institutional arrangements to carry out a broad range of activities" (Hawkins Jr., 1980).

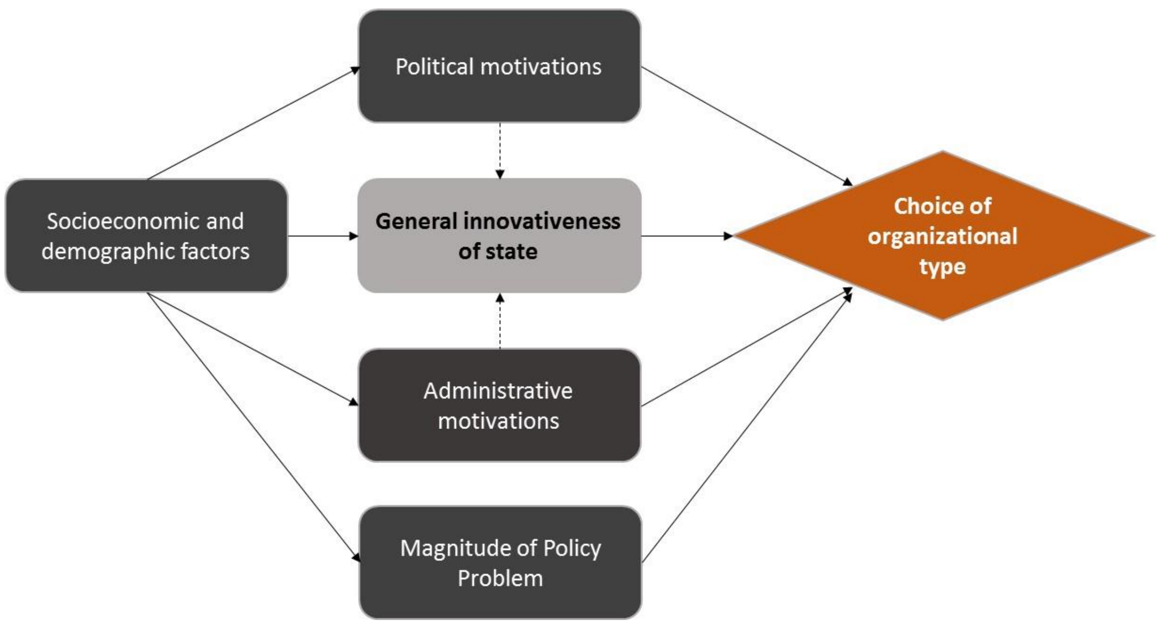
Organizational structure is a normative construction of rules and roles specifying who does what, how they do it, and how each relates to the other (Peters & Pierre, 2003; Scott & Davis, 2007). Organizational structures vary by: size, horizontal and vertical specialization, demography, locus, and level of institutionalization. Of special interest for this analysis is the variance in horizontal and vertical specialization. Horizontal specialization refers to how different specializations (i.e. environmental regulation and natural resources or water quality and water conservation) are coupled or decoupled together (Gulick, 1937). Agencies can be organized by: clientele served, territory, purpose, or function. Vertical specialization describes the level of centralization of the hierarchical structure and the levels of hierarchy within an organization.

Seidman (1970) proposes that public institutions also vary in terms of the directing authority (single headed or multi headed) and existence of an advisory or regulatory council or committee. Many state environmental protection departments report to a regulatory commission. These commissions range from five members to 15 members and include governor appointed experts, citizen representatives, and elected officials. Most of these commissions provide final approval of agency regulations and arbitrate appeals of agency permitting and enforcement decisions. In most states, state agency directors report to the commission; however in Virginia and California, the boards are located within the agency structure.

Model of State Adoption of Structure

Beyle (1975) hypothesizes a relationship between political and administrative motivations and the type of organizational structure chosen by a state. In his model, socioeconomic and demographic factors also provide an indirect effect. Finally, Beyle found that the general innovativeness of a state, as defined by Walker (1969), also seemed to affect adoption. States that were considered more innovative were also some of the first to create a comprehensive agency.

Figure 4: Beyle (1975) Model of Agency Design



I have added magnitude of the policy problem to the model to reflect the influence of the environment pollution problems within a state. Public bureaucracies are designed ultimately to address a perceived public governance issue. While political, administrative, and socioeconomic factors can influence that final design, ultimately the problem itself must be considered.

Political Motivation

According to Moe (1990a), "political institutions arise from politics of structural choice." Politicians play a similar role to the entrepreneur in the private sector in designing political agencies. However, where the private entrepreneur is motivated by efficiency and profit, the political entrepreneur is motivated by reelection. Politicians strive to serve their constituencies, reward financial and political supporters, avoid conflict, and take symbolic stands (Moe, 1984). The political motivations driving policy outputs can be described as political pressure from constituents and interests and individual politician's desire for political control.

Politicians want to be reelected and can respond to pressure from interests and citizens to ensure reelection. Elected officials can also take symbolic stands on issues to appear responsive. Some governors were motivated, initially, to take a symbolic stand in support of environmental protection when they created a new comprehensive environmental protection agency (Haskell & Price, 1973; Rabe, 1986). State environmental policy is driven by competing pressure applied by relevant interests, including manufacturing and mining groups, that want to minimize environmental regulations and environmental groups that want to maximize regulations. Many politicians were partially motivated by a growing environmental movement. "It should be emphasized that the present situation (creation of comprehensive agency) has come about…from intense public concern expressed for the environment recently" (Beyle, 1975). Many of the first states to adopt a Comprehensive Structure were more environmentally-conscious states.

Political control is an area not examined as thoroughly, but should have a significant effect on agency structure. In designing agencies, politicians strive for control over the current system and also future coalition changes. Under new economics of organization and transaction cost theories, agency structure results from strategic choices and political comprises of rational individual actors. The actors include the executive, legislators, and outside interests. The structure of the agency will reflect the level of political uncertainty at the time of creation, share the goals of the enacting coalition (including outside interests), and include controls for bureaucratic drift (McCubbins et al., 1989; Moe, 1984, 1990a, 1990b; Williamson, 1999). In addition, the capacity, power, and professionalism of the legislature and executive branch (bureaucracy and governor) will affect agency design (Krause & Woods, 2014; Reenock & Poggione, 2004).

Ultimately the goal of the enacting coalition is "to maximize policy benefits, given various uncertainties at the time of policy benefits" (Wood & Bohte, 2004). The enacting coalition will put ex post and/or ex ante controls on agency design (and policies for that matter) to control against future coalitional changes (Epstein & O'Halloran, 1999; McCubbins et al., 1989; Wood & Bohte, 2004). For example, a primary goal of the state of Washington in creating a comprehensive agency in 1970 was to reduce the power of the existing independent water and air quality boards whose appointees were not under the control of the governor (Haskell & Price, 1973). Agencies are ultimately designed by the winners who are concerned about creating an effective organization, but also protecting that organization from an uncertain future (Moe, 1990b).

Administrative Motivations

As stated earlier, state adoption of comprehensive environmental protection agencies was often part of larger state reorganizations. Even if the creation of the new agency was a single agency-focused reorganization, both processes are influenced by similar administrative motivations. According to Mosher (1967), reorganization can be motivated by a poor fit between administrative values and actual organizational structure, a changing belief as to the proper role of government in the policy area, and/or changes in organizational programs and tensions about organizational purpose. According to contingency theory, organizations are in a constant process of adjusting to changes in the organizational environment, such as the increase in state responsibility for environmental regulation (Lawrence & Lorsch, 1967). The sheer size of environmental programs and responsibilities that state governments assumed during the 1960s and 1970s required many states to reorganize to increase their institutional capacity to implement these programs (Beyle, 1975). As states assumed more responsibility for environmental regulation, the lack of fit between environmental regulation and public health became more obvious. At the same time the federal government was passing environmental legislation, it also created the Medicare and Medicaid programs which also placed a new and large administrative responsibility on states. The focus of health departments became divided between public health and healthcare management

(Gordon, 1998; Kotchian, 1997). Many states began combining departments of health with departments of public welfare to manage Medicare, Medicaid, food stamps, social security, senior programs, and other welfare programs from one agency.

Institutional theory proposes that organizations facing the same environmental conditions will resemble one another through coercive isomorphism (in terms of public organizations this could be regulatory pressure) and mimetic and/or normative isomorphism (state-to-state). Mimetic isomorphism results from similar responses by organizations to similar levels of uncertainty (technical, environmental). States often have to develop agency structures in response to uncertain and changing information. The level of uncertainty associated with both environmental regulation and healthcare regulation during the 1970s was very high. States were still gathering information about the complexity and nature of environmental pollution problems and the best regulatory solutions to those problems. Mimetic isomorphism describes a process by which organizations begin to resemble each other as they respond to uncertainty (DiMaggio & Powell, 1983). In addition, states interact through professional organizations, chief executive organizations, such as the National Governors Association, and through border-related environmental issues and could therefore begin to adopt similar structures through normative isomorphism. Beyle (1975) identified by region leader states, which were the first states to adopt a Comprehensive Structure that influenced other states. Many later adopters in those regions adopted similar structures (Mini-EPA or superagencies). According to the theory, organizations will imitate organizations that share similar traits and/or those that have had positive outcomes.

Organizations also develop in response to formal and informal pressures (coercive isomorphism) (DiMaggio & Powell, 1983). States developed their environmental and health agency structures in response to increasing federal control and mandates. Formally, states must receive approval from the USEPA to assume primacy for implementation and enforcement of federal environmental mandates. Informally, states function within a regional USEPA system where they interact regularly with their regional USEPA office. It seems likely that this relationship between the USEPA and state environmental agencies would influence states choice to adopt the Mini-EPA structure.

Socioeconomic Factors

Organizations are affected by the broader socioeconomic processes outside the organization itself (Hannan & Freeman, 1986). Socioeconomic characteristics of a state indirectly affect agency design by constraining and enhancing state administrative and political motivations. Wealthier states have greater resources available to support smaller, more focused agencies that poorer states may not be able to afford. Urban, wealthier states tend to be more liberal and supportive of environmental regulation.

Policy Problem

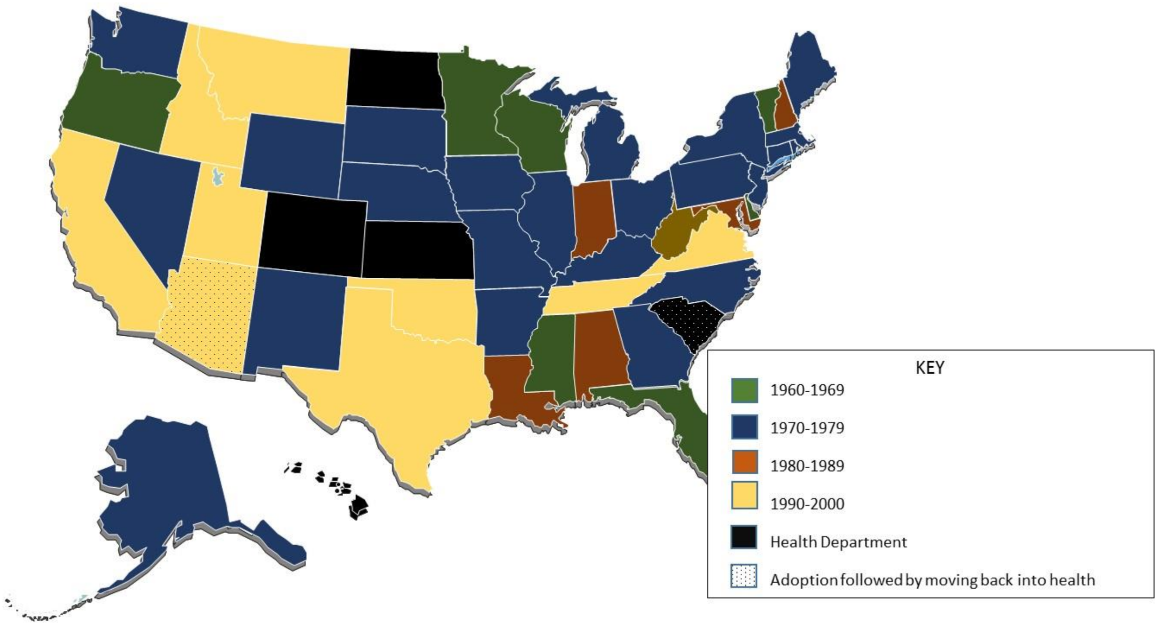
Generally, the environmental literature has found a fit between environmental policies and environmental pollution issues facing the state (Blomquist, 1991; Lowry, 1992). The same fit should exist in terms of a state's choice to create a comprehensive environmental protection agency. States that adopt environmental policies are responding to a need within the state. States with higher levels of groundwater contamination are more likely to adopt groundwater regulations (Blomquist, 1991). States that face more severe environmental pollution issues should be more likely to adopt a comprehensive environmental protection agency to address those issues.

The fit can also be defined as a resource to protect. For example, states that rely more heavily on groundwater for their water supply are more likely to adopt groundwater regulations (Blomquist, 1991). States with higher levels of agricultural land are more likely to adopt innovative NPS programs (Lowry, 1992). States that have greater amounts of natural resources may be more likely to adopt a Super-Agency structure than those with less.

CHAPTER 4: EMPIRICAL ANALYSIS: WHERE INSTITUTIONS COME FROM: PART 1

States made a conscious decision to move their environmental regulation functions out of health departments and/or independent boards into either a Mini-EPA or Super-Agency structure between 1967 and 2000 (Comprehensive Structure). A few states adopted this Comprehensive Structure prior to the environmental movement of the 1970s, while the majority of states adopted the structure during the 1970s. Since the 1970s, 15 states have moved their environmental regulation programs from the state health department into either a Mini-EPA or Super-Agency structure. Generally, once a state adopts a Super-Agency or Mini-EPA structure, they retain that structure over time although the individual divisions within the agency may change. However, a few states have changed their structure over time. For example, Mississippi originally created a Super-Agency in 1978, which was separated into a Mini-EPA and natural resource agency in 1989. Michigan has moved between a Mini-EPA and Super-Agency structure five times since the first creation in 1963. Figure 5 below shows the decade that each state moved its environmental protection functions into a Mini-EPA or Super-Agency structure.

Figure 5: State Adoption of Comprehensive Environmental Regulation Structure



States are driven by two major influences to centralize the pollution control system. Starting in 1970, political pressure to develop more effective pollution control systems to address the complex pollution issues facing states increased dramatically. The majority of states (29) adopted a comprehensive environmental agency structure between 1967 and 1975, when the federal government passed a series of environmental laws and public support for pollution regulations increased dramatically. Starting in 1965, political pressure to improve the professionalism and efficiency of state government also drove 26 states to significantly reorganize and consolidate their executive branch agencies (1965-1995). Almost one-third of states that adopted a Comprehensive Structure between 1967 and 1975 adopted the structure through a comprehensive executive branch reorganization. Additionally, another 10 states that underwent a comprehensive executive branch reorganization later adopted a Comprehensive

Structure (two of the five states that still house pollution prevention in the health department also underwent a comprehensive executive branch reorganization). However, most states that have adopted this structure have not done so as part of a larger state restructuring.

The goal of this chapter is evaluate both of these major drivers, in addition to other characteristics of states, to determine what factors drove states to consolidate their pollution control functions into a comprehensive agency. My analysis will draw on theory described in the previous chapter and build on the existing literature on state environmental and health organizational structure (Beyle, 1975; Burke, Shalauta, Tran, & Stern, 1997; Claveria & Kaito, 1985; Haskell & Price, 1973; Kotchian, 1997; Shepherd et al., 1999; Sinclair & Whitford, 2012). These previous analyses are mostly descriptive in nature and do not provide a comprehensive analysis of state adoption of environmental agency structure over the 34 years that states have reorganized their pollution control function. Beyle (1975) evaluates survey data about states that consolidated their programs between 1967 and 1974. Haskell and Price (1973) rely on detailed case studies to describe the process six states underwent to consolidate their pollution control programs. Two of the studies are descriptions of agency functions and structures (Burke et al., 1997; Jessup, 1988, 1990, 1994). Two studies were conducted for individual states to evaluate the feasibility of moving environmental functions from the Health Department to a Comprehensive Structure (Claveria & Kaito, 1985; Shepherd et al., 1999). The most recent study, (Sinclair & Whitford, 2012) estimates state health and environmental agency structures based on 1965 data using MLN models.

Model

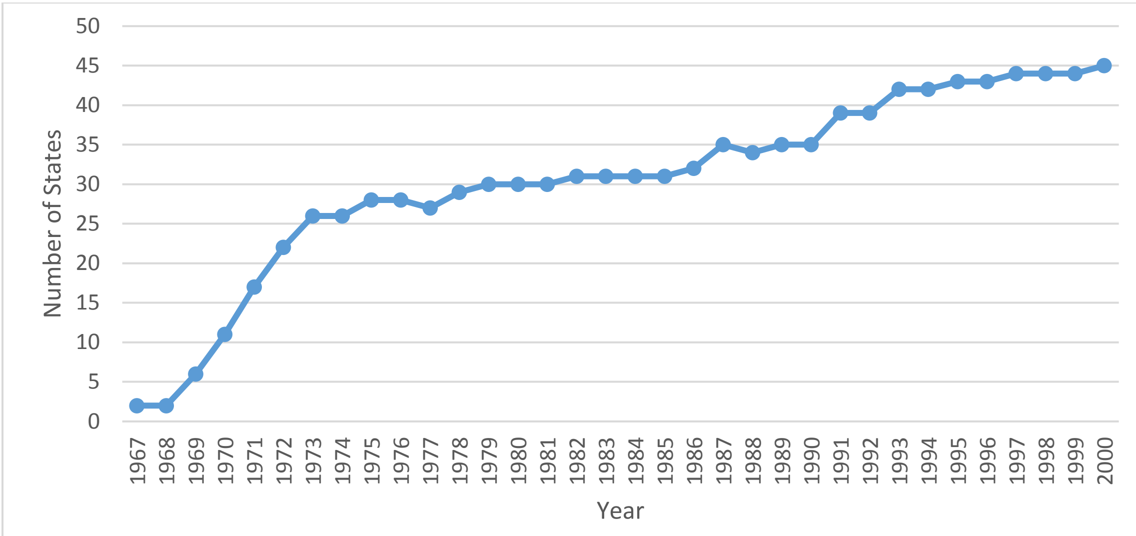
The goal of this event history analysis is to determine what factors influence a state adoption of a comprehensive environmental agency structure between 1967 and 2000. The empirical model is based on the model of Organizational Type Adoption described in the previous chapter and includes 49 states and 34 years.[4]

P(adopt) = f(POLITICAL, ADMINISTRATIVE, SOCIOECONOMIC, POLICY PROBLEM,)

State adoption of a Comprehensive Structure should be driven by political factors, including political control, political uncertainty, and political preferences; internal and external administrative pressures, the socioeconomic characteristics of a state, and the pollution problems faced by the state. Figure 6 below shows state adoption of a Comprehensive Structure over time.

[4] Nebraska is excluded from analysis because it has a unicameral legislature and so does not have turnover or unified government data.

Figure 6: State Adoption of Comprehensive Structure



There was an initial burst of state adoptions between 1967 and 1975. From 1975 to 2000, states adopted the Comprehensive Structure at a slower pace. The majority of states had adopted a Comprehensive Structure by 1975.

Dependent Variable

The dependent variable, or risk set, is the probability that a state *i* will adopt a Comprehensive Structure in a given year *t* or not. Once a state adopts the Comprehensive Structure, it is dropped out of the risk set.[5] The adoption data was compiled from a number of sources, including reviewing states websites, documents, and archives (Haskell

[5] Two states adopted Comprehensive Structure and then returned pollution control functions back to the department of health. South Carolina adopted a Mini-EPA structure from 1971-1973, but returned functions to the Department of Health. New Mexico adopted a Mini-EPA structure in 1970, but returned pollution functions to the Department of Health in 1977. In 1991, New Mexico then readopted a Mini-EPA Structure. In the model, these states are dropped out of the model after their initial adoption.

& Price, 1973; Hunter & Waterman, 1996; Jessup, 1988, 1990, 1994; Reenock & Poggione, 2004; Ringquist, 1993) (See Appendix E for list of sources used to develop adoption data).

Explanatory Variables

The explanatory variables in the model measure political motivations, administrative motivations, socioeconomic characteristics, and policy problem measures. Summary statistics for each variable are listed in Table 2. The following section describes these variables in more detail.

Political Motivations

Political motivation variables evaluate the effect of the political entrepreneur in both the executive and legislative branch on state adoption of a Comprehensive Structure. Both branches of the state government play an important role in designing state agencies and so the model includes measurements of both as it pertains to measuring levels of political uncertainty during this time period. Governors and legislators are influenced by political support from competing interests impacted by pollution control policies and both strive to maintain political control. Finally, each policy maker has their own political motivations and ideologies that drive their choices.

Political Uncertainty

The theoretical literature proposes that politicians respond to the level of political uncertainty in the current government and controlling for future uncertainty (Moe, 1990b). Politicians are less likely to adopt significant policies when the level of uncertainty is high. States in which the executive and legislative branches are controlled by the same political party are more likely to undergo an executive branch reorganization (Garnett, 1980). Executive-legislative conflict (*Unified Government*) measures whether the governor and the legislative bodies are under control of different parties (0), or same party (1). The level of uncertainty is reduced when there is lower executive-legislative conflict and preference alignment (Volden, 2002; Wood & Bohte, 2004). States with a unified government will be more likely to adopt a Comprehensive Structure. In addition, higher turnover of individual members of the legislature can also increase the level of uncertainty. *Legislative Turnover* measures the percent of the legislature that changes over time. States with high membership turnover will be less likely to adopt a Comprehensive Structure.

Political Control

Designing a state agency structure involves strategic decisions by the controlling coalition to maximize control over policy outcomes. More professional legislatures are less likely to impose ex post controls on an agency (Reenock & Poggione, 2004). In addition, legislators are more likely to delegate more authority to the executive branch when they have confidence in the capacity of the agency (Krause & Woods, 2014). During the time period of this study, the power and professionalism of the governor and legislature increased. Governors in 26 states gained the power to reorganize executive branch agencies through an executive order (see Appendix D for list of states). The strength of the governor's office (*Governor Power*) is an institutional score of governor's overall power. States with more powerful governors, will be more likely to adopt a Comprehensive Structure. This measure includes an average of scores for tenure potential, appointment powers, budgetary power, and veto power. *Legislative professionalism* is measured by the Squire Index, which includes three variables: legislator pay, staff per legislator, and total days in session. States with more professional legislatures will be more likely to adopt a Comprehensive Structure.

Political Pressure

Politicians are ultimately motivated by reelection and will respond to both the interests that supported them and the constituencies that elected them. Political pressure is measured as the percentage of gross state product (GSP) of three relevant interests: manufacturing, mining, and agriculture (*Manufacturing GDP, Mining GDP, and Agriculture GDP)*. These three interests are directly affected by pollution control legislation. It is unclear what effect groups representing these interests will have on consolidation of pollution functions. Industry groups tend to favor more uniform legislation (often pushing for federal control to unify across states). However, consolidating functions into a single agency could increase the strength of pollution control regulations. In addition, the model includes a measure of E*nvironmental Group Strength* as the number of members of the Sierra Club per 1000 people in a state. Environmental group membership and influence increased significantly during this time period. The model also includes a dichotomous variable that indicates data that was obtained directly (electronically) from the Sierra Club (Personal Communication Sierra

Club information@sierraclub.org May, 5, 2015). The Sierra Club data before 1982 was extrapolated from membership data retrieved from the Colby Library at University of California – Berkley, which houses the Sierra Club files. The membership data was listed by club name (which initially included many states). I assigned membership to each state based on the overall proportion by state in the data from 1982-2012 provided by the Sierra Club electronically.

Constituency pressure is measured using a *Citizen Ideology* index. This index ranges on a scale from zero to 100 with the higher scores indicating a more liberal citizenry (W. D. Berry, Ringquist, Fording, & Hanson, 1998). Sinclair and Whitford (2012) found that more liberal states were more likely to adopt separate agencies for environmental protection and health. It is expected that more liberal states would prefer a consolidated pollution agency.

Politicians' Preference

Finally, politicians also have their own ideology and political preferences, which influence their choices. Political preferences is measured by the Berry et al (1998) *Government Ideology* index. Similarly to the citizen ideology index, this index ranges on a scale from zero to 100 with higher scores indicating a more liberal legislative and executive branch (W. D. Berry et al., 1998). As with the *Citizen Ideology*, it is expected that states with a more liberal government will prefer adoption of a comprehensive agency.

Administrative Motivations

Politicians are also influenced by both internal and external administrative concerns in designing state agencies. Organizations are in a constant process of adjusting to changes in the organizational environment (Lawrence & Lorsch, 1967). The organizational environment for pollution control and public health/healthcare has changed drastically over the past 60 years. States have responded to internal administrative pressures, but also states often respond to choices neighboring or similar states have made. In a report analyzing whether the state of Kansas should move their pollution control functions out of the health department, Shepherd et al. (1999) described five states of similar environmental and agricultural issues to help in the decision-making process.

Internal Administrative

Based on his survey data, Beyle (1975) found that states adopted a comprehensive agency structure partly in response to the increased state administrative and regulatory responsibilities for states in terms of pollution control. Between 1970 and 1980, the federal government passed nine major environmental laws that instituted major regulatory responsibilities on states. During this same time period 26 states comprehensively reorganized the executive branch. A dichotomous variable (*Executive Reorganization*) is included in the model to measure whether a state created the comprehensive environmental agency structure as part of an overall state restructuring event (1) or as an incremental environmentally-specific organization (0). States that have undergone an executive reorganization will be more likely to adopt a Comprehensive

Structure. Many states reorganized individual agencies or functions over this same time period in response to changing demands and financial constraints. A measure of the *Fiscal Health* of a state is include as measured by the annual difference (measured in $100,000) between total expenditures and total revenues (Wang et al., 2007). States may be more likely to consolidate functions and reduce the size of the bureaucracy as a way to save money if they are under fiscal stress. States with better fiscal health may be more likely to adopt a comprehensive structure as a way to maintain that fiscal health as well. Thus, it is unclear what the effect of fiscal health will be on a state's adoption of a Comprehensive Structure.

As states were restructuring their pollution control functions, they were also restructuring their health departments into either independent public health departments or health superagencies that included public health, welfare, and healthcare management. The focus of public health has changed drastically with the passage of Medicare and Medicaid (Gordon, 1998). States assumed the regulatory responsibility to manage these programs. While environmental health was initially a primary focus of state health departments, over time managing of healthcare began to divide the focus of health departments (Kotchian, 1997). States either created independent agencies for public health, welfare, and healthcare or created a health super-agency to manage both health and welfare. State creation of a *Health Superagency* should increase the likelihood that a state would move pollution control functions out of the Health Department. This is a dichotomous variable measuring whether a state has a Health Superagency (1) or not (0).

External Administrative[6]

In addition, there was regulatory pressure from the federal government to implement environmental regulations that could have contributed to states reorganizing their environmental regulation functions (Beyle, 1975; Mosher, 1967). The majority of the 28 states that adopted a Comprehensive Structure between 1967 and 1975 adopted the structure following the creation of the USEPA. In the American federal system, states face both horizontal and vertical influences in their policy and structural choices. The model measures the percentage of a state's contiguous neighbors that have adopted a Comprehensive Structure to measure horizontal influences (*Neighbor Adoption)*. The federal government has a huge influence on state environmental policy and would likely influence state adoption of a comprehensive environmental agency. Federal influence is measured by the federal share of overall state revenue measured as a percentage (*Federal Revenue)*. Measuring federal influence is difficult because of availability of data.[7]

Socioeconomic and Demographic Factors

Socioeconomic and demographic factors can have an indirect influence on state agency design by providing constraints and resources to the state. The state policy diffusion literature has found that socioeconomic factors can influence the ideology and policy priorities of a state, including adoption of environmental policies (A. Bacot &

[6] External administrative pressures are vertical and horizontal administrative pressure, due to mimetic and normative isomorphism. These pressures are traditionally considered political pressures in policy adoption models. I include them here to be consistent with organizational literature – in describing how organizations respond to other organizations in the same organizational field.

[7] An earlier version of the model included a measure of EPA Region to capture USEPA influence on state structure. However, this measure was not statistically significant and a little skewed in that some regions only included 2 states, while others included more than five states.

Dawes, 1996; A. H. Bacot & Dawes, 1997; Bromley-Trujillo, 2012; E. Ringquist, 1993). Beyle (1975) found that urban (*Urbanization)* and wealthier states (*Per Capita Income* in thousands) were more likely to adopt a Comprehensive Structure. Many initial state pollution control regulations originated as a response to urban smoke and sewage, so likely more urban states. Sinclair and Whitford (2012) found that states with larger populations (*Population in millions)* and larger physical size (*Land Area in thousand square miles)* were more likely to adopt separate health and environmental agencies. Larger and wealthier states likely have more resources available to develop more independent agencies. The wealth of a state might also indirectly influence adoption of a Comprehensive Structure as poorer states might increase the level of Medicaid recipients and more demand for a separate health agency. [8]

Policy Problem

Ideally, the model would include a measure of environmental quality or pollution severity. Unfortunately, no consistent and reliable measure exists for the time period of the data. I have included a measure of the total vehicle miles (in thousands) driven per capita per state as a proxy measurement of air pollution (*Vehicle Miles).*

In addition, the model includes measures of natural resources within a state and consumption of those resources to try to capture the policy problem within a state. The following resource variables are included in the model: *Water area* of each state

[8] In 2016, 11 states housed Medicaid/Medicare in a Health Superagency (Health and Welfare), seven states housed them within the Health Department, 13 were within a Department of Human Services, and 19 had stand-alone agencies. However, these structures have evolved over time and initially many states housed Medicaid/Medicare in the Department of Health.

measures the percentage of a state that is covered with surface water. The model also includes a measure of *Surface Water Usage* and *Groundwater Usage*, both in billion gallons per day, to capture resource demand of states. It is assumed that states that use more water will also be more likely to adopt a comprehensive agency structure.

Table 2 below lists the summary statistics for the explanatory variables and the expected influence on state adoption of a Comprehensive Structure. The dataset includes 49 states and 34 years of data.

Table 2: Summary statistics for Comprehensive Structure

Variable	Expected Direction	Mean	Standard Deviation	Minimum	Maximum
Political Motivations					
Political Control Variables					
Governor power	(+)	3.609	0.700	1.800	5.000
Legislative professionalism	(+)	20.878	12.002	3.400	65.900
Political Uncertainty Variables					
Unified Government	(+)	0.480	0.500	0	1
Legislative Turnover	(-)	0.178	0.272	0	2.183
Political Pressure Variables					
Manufacturing (%)	(+/-)	19.179	8.554	1.957	44.772
Mining (%)	(+/-)	3.607	7.109	0	49.656
Agriculture (%)	(+/-)	3.232	3.722	0.151	37.193
Sierra Club Members (#/100	(+)	1.070	1.022	0	8.110
Sierra Club Dummy		0.559	0.497	0	1
Citizen ideology	(+)	46.681	16.156	4.261	93.912
Political Preference Variable					
Government ideology	(+)	48.501	23.095	0	97.917
Administrative Motivations					
Internal Administrative Variables					
Fiscal Health ($)	(+/-)	0.953	2.041	-1.614	24.655
Executive Reorganization	(+)	0.043	0.202	0	1
Health Superagency	(+)	0.356	0.479	0	1

Table 2: Summary statistics for Comprehensive Structure (continued)

Variable	Expected Direction	Mean	Standard Deviation	Minimum	Maximum
External Administrative					
Adoption by Neighbors (%)	(+)	0.594	0.347	0	1
Federal Revenue (%)	(+)	0.225	0.051	0.062	0.567
Socioeconomic Variables					
Urbanization (%)	(+)	0.679	0.146	0.321	0.944
Per capita income (thousands)	(+)	13.587	8.154	2.052	42.198
Population (millions)	(+)	4.760	5.090	0.278	33.988
Size of a state (square miles)	(+)	71.831	91.720	1.212	656.424
Policy Problem Variables					
Vehicle Miles Per Capita (in	(+)	7.854	1.965	3.063	16.730
Resource Variables					
Water area (%)	(+)	0.054	0.078	0	0.719
Resource Demand					
Surface water usage (mgd)	(+)	6.406	6.089	0.069	35.777
Groundwater usage (mgd)	(+)	1.501	2.850	0.024	21.000

Results

Table 3 below includes the results of the event history model. As the results show, state adoption of a comprehensive model is driven by political motivations, administrative motivations, socioeconomic conditions, and the policy problem.

Table 3: Effect of Political, Administrative, Socioeconomic, and Policy Problem Variables on Adoption of Comprehensive Agency Structure (Event History Model Hazard Ratios and Standard Errors)[9]

	Model	
Specific Measure	*Hazard Ratio*	*Standard Error*
Political Motivations		
Political Control Variables		
Governor power	-0.810	0.277
Legislative professionalism	1.027	0.029
Political Uncertainty Variables		
Legislative Turnover	-0.177 *	0.164
Unified Government	3.274 ***	1.325
Political Pressure Variables		
Manufacturing (% GDP)	1.094 ***	0.037
Mining (% GDP)	-0.958	0.049
Agriculture (% GDP)	1.085	0.058
Citizen ideology	1.024	0.017
Sierra Club Membership (per 1000 residents)	1.692	0.602
Sierra Club Dummy	-0.909	0.685
Political Preference Variables		
Government Ideology	-0.990	0.010
Administrative Motivations		
Internal Administrative Variables		
Fiscal Health (per $100,000)	-0.711	0.244
Comprehensive State Restructuring	5.123 ***	2.281
Health Superagency	2.330 *	1.022
External Administrative Variables		
Adoption by Neighbors (%)	-0.628	0.516
Federal Revenue Share	-0.986	0.043
Socioeconomic Motivations		
Urban Percentage (%)	-0.983	1.809
Per Capita Income ($)	-0.896	0.080
Population	1.258 **	0.114
Area of a State (sq miles)	1.008 ***	0.003

[9] *Significant P≤0.10 **Significant P≤0.05 ***Significant P≤0.01

Table 3: Effect of Political, Administrative, Socioeconomic, and Policy Problem Variables on Adoption of Comprehensive Agency Structure (Event History Model Hazard Ratios and Standard Errors) (continued)

	Model		
Specific Measure	*Hazard Ratio*		*Standard Error*
Policy Problem			
Vehicle Miles Driven	1.153		0.240
Resource Variables			
Water Area	-0.249		0.598
Resource Demand Variables			
Groundwater usage	-0.695	***	0.084
Surface water usage	-0.933		0.054
Constant	-0.0000	***	0.00008
p (time dependence in the Weibull distribution)	2.547		
Wald X^2 (24)	78.62		
Prob > X^2	<0.001		
Log Likelihood	-31.374		

The model overall is statistically significant (Wald X^2 (24) =78.62, $\rho<0.0001$). The estimated Weibull shape parameter, p, shows an increasing hazard over time ($\rho=2.547$), which is statistically significant ($\rho<0.001$). Variables within almost all categories are statistically significant supporting the Model of Agency Design. Table 4 shows the marginal effects of the explanatory variables to help facilitate comparison of effects.

Table 4: Marginal Effects of Political, Administrative, Socioeconomic, and Policy Problem Variables with Respect to Estimated Average Duration until Adoption of a Comprehensive Structure[10]

	Model		
Specific Measure	*dydx*	*Standard Error*	*z*
Political Motivations			
Political Control Variables			
Governor power	1.508	2.505	0.600
Legislative professionalism	-0.193	0.210	-0.920
Political Uncertainty Variables			
Legislative Turnover	12.398 *	7.527	1.650
Unified Government	-8.492 **	3.667	-2.320
Political Pressure Variables			
Manufacturing (% GDP)	-0.643 **	0.271	-2.380
Mining (% GDP)	0.304	0.372	0.820
Agriculture (% GDP)	-0.584	0.381	-1.530
Citizen ideology	-3.767	2.856	-1.320
Sierra Club Membership (per 1000 residents)	0.686	5.368	0.130
Sierra Club Dummy	-0.173	0.117	-1.470
Political Preference Variables			
Government Ideology	0.074	0.069	1.070
Administrative Motivations			
Internal Administrative Variables			
Fiscal Health (per $100,000)	2.437	2.577	0.950
Comprehensive State Restructuring	-11.698 ***	4.721	-2.480
Health Superagency	-6.057 *	3.461	-1.750
External Administrative Variables			
Adoption by Neighbors (%)	3.335	5.413	0.620
Federal Revenue Share	0.098	0.309	0.320
Socioeconomic Motivations			
Urban Percentage (%)	0.119	13.171	0.010
Per Capita Income ($)	0.787	0.636	1.240
Population	-1.644 **	0.765	-2.150
Area of a State (sq miles)	-0.057 **	0.024	-2.420

[10] *Significant P≤0.10 **Significant P≤0.05 ***Significant P≤0.01

Table 4: Marginal Effects of Political, Administrative, Socioeconomic, and Policy Problem Variables with Respect to Estimated Average Duration until Adoption of a Comprehensive Structure (continued)

	Model		
Specific Measure	*dydx*	*Standard Error*	*z*
Policy Problem			
Vehicle Miles Driven	-1.022	1.611	-0.630
Resource Variables			
Water Area	9.952	17.253	0.580
Resource Demand Variables			
Groundwater usage	2.607 **	1.184	2.200
Surface water usage	0.493	0.428	1.150

The marginal effects show the increased probability of a state adopting a Comprehensive Structure, at the means of all other explanatory variables. For example, the probability of a state adopting a Comprehensive Structure is 11.698 greater for a state that has undergone an executive branch comprehensive restructuring process.

The Political Motivation variables that are statistically significant include: unified government, legislative turnover, and manufacturing interests. States with a unified government and higher dependence on manufacturing and agriculture are more likely to adopt a Comprehensive Structure. States with a high legislative turnover are less likely to adopt a Comprehensive Structure. The Administrative Motivations variables that are statistically significant include: comprehensive restructuring and Health Superagency. States that have undergone a comprehensive restructuring and have a Health Superagency (including welfare) are more likely to adopt a Comprehensive Structure. The percentage of contiguous neighbors with a comprehensive structure was not a statistically significant factor in state adoption, nor was federal share of revenue. The socioeconomic variables that were statistically significant were population and size of state. Larger states with larger population were more likely to adopt. Finally, of the variables measuring the magnitude of the policy problem, only groundwater was statistically significant. States with a higher reliance on groundwater are less likely to adopt a Comprehensive Structure.

Discussion

In general, the results support the model of state agency design described above. This section includes a general discussion of the results, while highlighting areas where the model could be improved. The choice to adopt a Comprehensive Structure is driven by both administrative and political motivations. Internal motivations and factors exert a greater influence on state adoption of a Comprehensive Structure than external pressures. A state's socioeconomic characteristics also affected state choices to adopt a Comprehensive Structure.

Political Motivations

Of the political motivation variables, the political uncertainty and political pressure variables have statistically significant influence on state adoption. The political preference variable of government ideology was not statistically significant. A measure of this variable that is focused more on political preferences for environmental regulation, such as the League of Conservation Voters (LCV) Scorecard rating, might better capture this variable. Overall, however, the analysis supports the theoretical literature that agency design is a heavily political process.

States with high levels of political uncertainty, those without a unified government and with high legislative turnover, are less likely to adopt a Comprehensive Structure. This result is in the expected direction, supporting the conclusion that it is easier to pass major restructuring legislation with a unified government. What is more interesting is that states with a higher percentage of GDP from manufacturing are more likely to adopt a Comprehensive Structure. This data could be capturing more of a response to policy problem than political pressure. Another possibility is that manufacturers benefit from a more comprehensive and consolidated pollution control program. Literature has found that industry interests tend to support federal control of regulatory programs because it provides consistency across states. This concept could be at work here, in that industry prefers to have one agency to regulate pollution, rather than multiple agencies.

Administrative Motivations

Looking at internal administrative motivations, the financial health of a state did not statistically significantly influence whether a state adopts a Comprehensive Structure. However, as predicted, whether a state had undergone an executive branch reorganization did influence state adoption of a Comprehensive Structure. States that have undergone an overall state restructuring, are more likely to adopt a Comprehensive Structure than states that have not reorganized their government. States that adopted a Health Superagency (including welfare) are also more likely adopt a Comprehensive Structure.

States were not influenced by external administrative motivations to adopt a Comprehensive Structure. Neither the measure of neighbor adoption nor the federal revenue share was significant. It is surprising that none of the external administrative measures were statistically significant; however, perhaps the measures used are not the best measures of federal influence or neighbor influence in a state.

Socioeconomic and Demographic Factors

The socioeconomic or demographic factors that were statistically significant in adoption were size and population of a state. The first pollution control laws at the state and local level were in response to problems in urban areas, so it is surprising that the level of urbanization did not have a statistically significant effect on adoption. In Beyle's model, these factors are indirect effects, so it is likely that the effects of these characteristics are captured through more direct measures in the model.

Policy Problem

As discussed above, a policy problem can be defined by environmental quality and as a resource to protect. The model does not include a measure of environmental quality because such a measure does not exist for the entire time period of the analysis. The measure we included in the model to try to capture environmental quality, Vehicle Miles Driven, was not statistically significant. However, there are a few measures of resources that had a statistically significant influence on state adoption of a Comprehensive Structure including groundwater and surface water withdrawal. States with a higher reliance on groundwater are less likely to adopt a Comprehensive Structure. Western states are more reliant on groundwater than eastern states.

Conclusion

What influences state adoption of a comprehensive environmental agency structure? The analysis in this chapter tells us that a little bit of everything affects state adoption. While political motivations do influence the choice of structure, overall administrative drivers also affect that choice. The analysis supports the adapted model of state organizational type – that administrative, political, socioeconomic, and policy problem all influence the selection of agency structure. States were driven by three major influences toward a comprehensive environmental agency: (1) political pressure to develop more effective pollution control systems to address the complex pollution issues facing states; (3) administrative pressure to manage the Medicare and Medicaid programs, and (2) political pressure to improve the professionalism and efficiency of state government. While state environmental agency design is not a strictly apolitical process as early rational organizational theorists supported (Gulick, 1937; Taylor, 1911; Weber, 1922), it is not a strictly political process either. In addition, as organizational theorists propose, state agencies are responding to their organizational environment. This section highlights a few key points from the analysis, highlights areas where the model could be improved, and future research to build on the analysis in this paper.

Comprehensive Reorganization

States that have undergone a comprehensive reorganization are 85 percent more likely to adopt a Comprehensive Structure than those states that have not. Clearly, the choice to consolidate environmental programs is being made in the larger context in state government organization overall. Choices made in other areas of government can affect pollution control. The overwhelming influence of comprehensive reorganization could help explain why the ideology variables were not statistically significant.

Interest Pressure

Surprisingly, states with a higher dependence on agriculture and manufacturing were more likely to adopt a Comprehensive Structure. These are two industries that would be most affected by enhanced pollution control regulations and enforcement that could accompany a consolidated regulatory agency. It could be that interests' preference for a consistent and central regulatory authority rather than multiple regulatory agencies overpowers their desire to minimize regulations. An alternative explanation is that the size of the interest in a state indicates the magnitude of the environmental pollution problem in a state.

Improvements to Analysis

The empirical analysis could be enhanced with additional or alternative variable measures and addressing limitations to the current model

- *Administrative Response to Federal Regulation*: Currently, the model does not have a measure that captures the increased responsibilities placed on states between 1967 and 2000. Over 20 federal laws were passed with additional amendments requiring compliance from states.

- *Environmental Quality*: Not having any consistent measure of environmental quality makes it difficult to assess to what extent the severity or nature of the pollution problem affect state adoption of agency structure.
- *Environmental Group Pressure*: Presumably, one of the main drivers of state centralizing their pollution functions and adopting a Comprehensive Structure of any type was political pressure from environmental groups. I include a measure of Sierra Club membership per state, but the literature suggests this may not be the most valid measure of environmental group membership (Andrews, 1998; Bosso, 2003; Wikle, 1995). A measure that includes membership of a number of environmental groups would be more robust, as would other measures of mobilization.
- *Influence of other states*: Beyle (1975) found in his analysis that states were influenced by their neighbors. In a study for the State of Kansas about whether to move pollution programs out of the state health department, Shepherd et al. (1999), described the agency structures other states with similar populations, economies, and levels of urbanization had adopted. In the mid-1980s, the State of Hawaii looked at what other structures other states adopted to determine whether to move their pollution programs out of the Department of Health (Claveria & Kaito, 1985) A better measure of the influence of other states on a

state agency design could be found using a dyad analysis (comparing each state to each state).

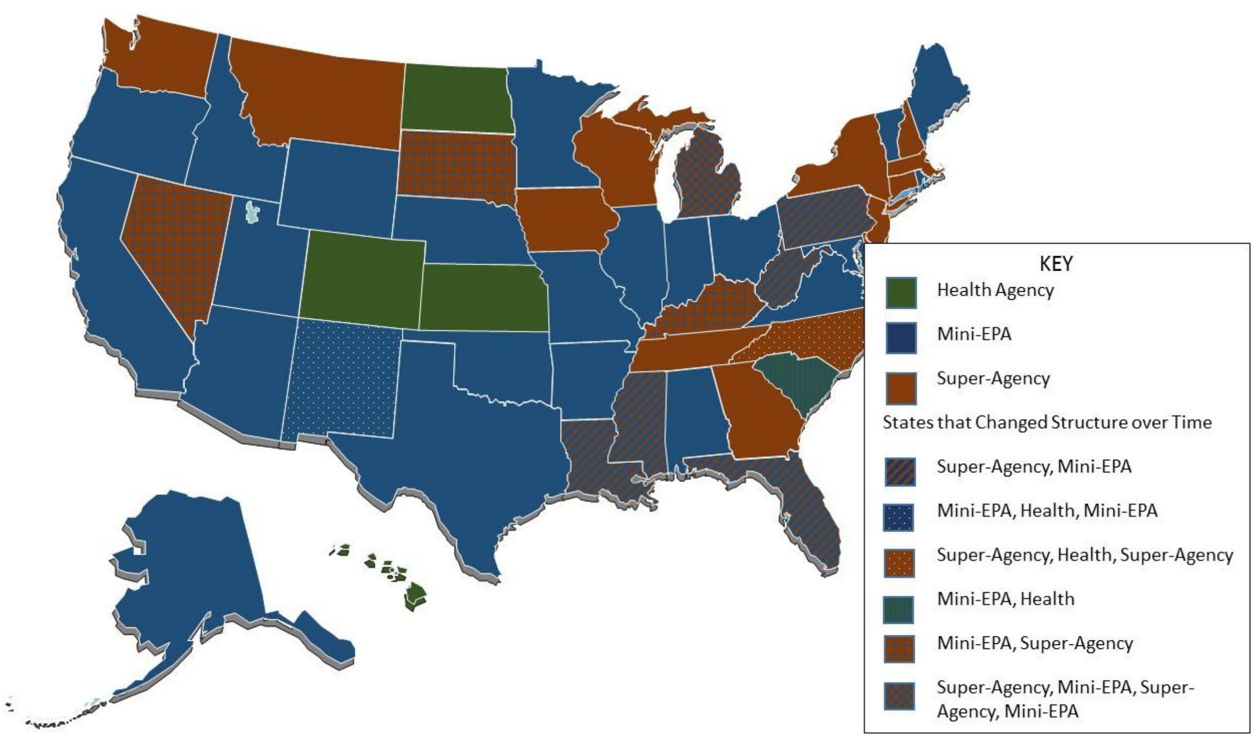
- *Board/Commission*: As discussed in more detail in Chapter Seven, 34 states still have a board that serves either in a regulator or an advisory role. Initially, the majority of states had either independent pollution control boards or these boards were connected to the department of health. The model could be enhanced by an inclusion of these boards, and even might help explain the influence of the citizen ideology variable.
- *Exceptions to the model*: One of the main limitations of the model is that it does not capture the changing structures within two states (South Carolina and New Mexico). While these two states should not substantially change the results, the fact that their changes between a Comprehensive Structure and health are not captured means the model is not complete

Adding these measures to the model could provide a clearer picture of what has influenced state adoption of environmental agency structures.

CHAPTER 5: EMPIRICAL ANALYSIS: WHERE INSTITUTIONS COME FROM: PART 2

Just as states made a conscious decision to move their environmental regulation functions out of health departments or stand along boards into a Comprehensive Structure over the past 50 years, they have also chosen the type of comprehensive agency to house the environmental protection functions. The primary two Comprehensive Structures used by states are: (1) Mini-EPA and (2) Super-Agency. The environmental and health literature have depended on this basic typology, shown by state in Figure 7 below noting those states that changed their type of Comprehensive Structure (Beyle, 1975; Jessup, 1988; Kotchian, 1997; Ringquist, 1993; Shepherd et al., 1999; Sinclair & Whitford, 2012)

Figure 7: State Environmental Protection Agency Structures



Typology

Today, the majority of states have moved their environmental protection divisions into either a stand-alone Mini-EPA organization or within a larger Super-Agency. Most states have adopted a structure for the pollution control agencies and not changed that structure over time. However, there are a few exceptions. Figure 7 above shows those states that have adopted more than one structure since 1967. Five states initially adopted a Super-Agency structure, but later adopted a Mini-EPA structure (Florida, Louisiana, Mississippi, Pennsylvania, and West Virginia). Michigan has reorganized its environmental agencies multiple times since it first adopted a Super-Agency structure in 1973. It has fluctuated between a Mini-EPA structure (1995-2009, 2011-current) and a Super-Agency structure (1975-1995, 2009-2011). North Carolina, New Mexico, and South Carolina have fluctuated between a Comprehensive Structure and a health department. Kentucky, Nevada, and South Dakota initially adopted a Mini-EPA structure and then changed to a Super-Agency. Each of the three structures to house pollution control functions has strengths and weaknesses.

Mini-EPA

Mini-EPA agencies are generally called "Department of Environmental Quality" or "Department of Environmental Protection." Proponents of this structure argue that a state agency that is structured similarly to the federal agency facilitates state-federal coordination. In addition, having a smaller, more focused agency allows that agency to address the relevant issues without competing with other divisions. A Mini-EPA structure allows for a clearly-defined mission as a purely regulatory agency. However, separating pollution control from other environmentally-focused agencies can hinder integration and coordination with those agencies. States with a Mini-EPA structure may not be able to successfully implement ecosystem management programs. Environmental quality outcomes could be affected if one agency is managing water development and another is trying to regulate water pollution control, for example. Since the mid-1980s, most states have adopted the Mini-EPA structure. Currently, 27 states use this structure.

Super-Agency

The Super-Agency structure is used by 18 states to combine environmental protection functions with other functions, such as natural resource management, agriculture, and/or energy. These agencies house divisions with differing missions, which could either complement or compete, depending on the issue. Proponents of this structure argue that it promotes integration and coordination for a more "ecological perspective" (Haskell & Price, 1973). Opponents argue that housing pollution control functions into larger natural resource agencies could minimize the effectiveness of these programs. The resource management (e.g., forestry, recreation, and mining) focus of the agency could take priority over pollution control.

Health Department

Only five states still house their environmental regulation functions in the Department of Health. Proponents of this structure argue that there is an overlap in programs between public health and environmental regulation that support this structure. "The public health model is critical to environmental issues because all environmental issues are environmental health issues" (Shepherd et al., 1999, p. 27). Figure 8 shows that environmental health activities overlap both programs.

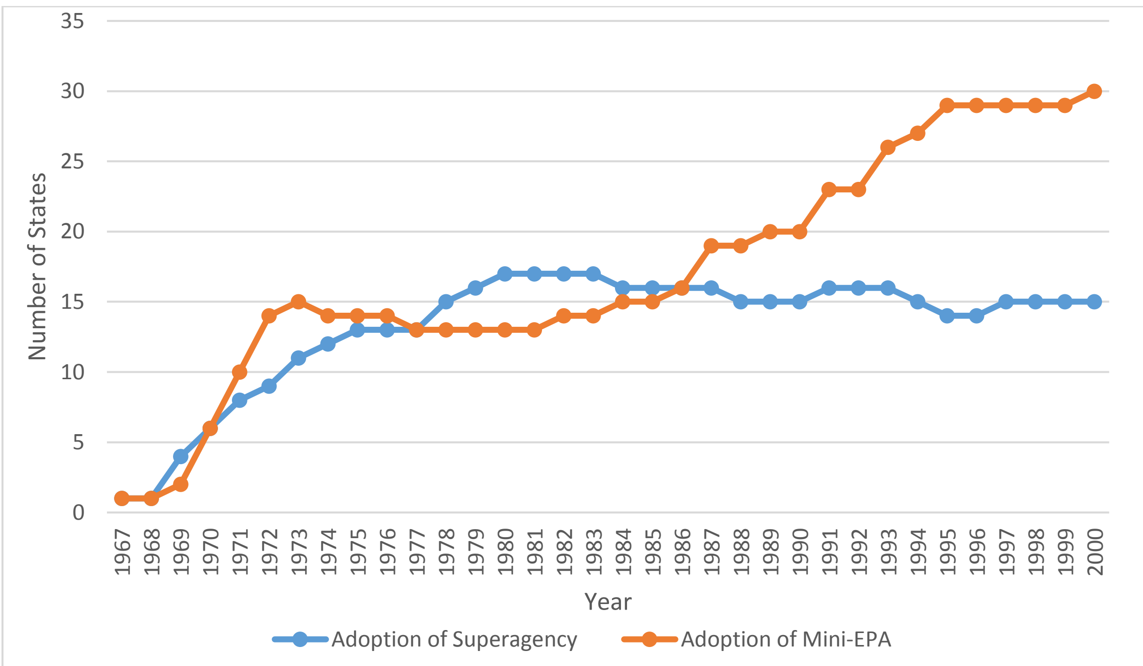
Figure 8: Environmental Regulation: Public Health Overlap (Shepherd et al., 1999)

Many health departments grew out of state sanitation departments that managed solid waste disposal within the state. As population and urbanization levels increased, the responsibilities were expanded to include air and water quality. "Historically, public health and its environmental component were inseparably interwoven" (Gordon, 1998, p. 32). The fit seemed reasonable initially because public health departments had a monitoring and enforcement structure that could be useful to environmental regulations. However, state health departments shared responsibility for healthcare, disease prevention, and health promotion, which increasingly consumed the focus of state health departments. Public health employees tended to be physicians, while environmental regulatory agencies relied on engineers (Beyle 1975).

Model

Initially, states adopted the Super-Agency and Mini-EPA structure at similar rates. However, as is clear in Figure 9 below, over time, more states have adopted the Mini-EPA structure than the Super-Agency structure. Between 1975 and 1985, more states used the Super-Agency structure, but since 1986, the majority of states now use a Mini-EPA structure.

Figure 9: State Adoption of Super-Agency Structure vs. Mini-EPA Structure



The empirical model is based on the model of Organizational Type Adoption described in the previous chapter and includes 49 states and 34 years.[11]

P(adopt) = f(POLITICAL, ADMINISTRATIVE, SOCIOECONOMIC, POLICY PROBLEM)

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[11] Nebraska is excluded from analysis because it has a unicameral legislature and so does not have turnover or unified government data.

The analysis looks at state adoption of agency structure (Mini-EPA and Super-Agency) from 1967 to 2000. The analysis relies on two models, with two different dependent variables.

Dependent Variables

In Model 1, the dependent variable or risk set is the probability that a state *i* will adopt a Super-Agency structure in a given year *t* or not. Once a state adopts the Super-Agency structure, it is dropped out of the risk set. The dependent variable in Model 2 is the probability that a state *i* will adopt a Mini-EPA structure in a given year *t* or not. Once a state adopts the Mini-EPA structure, it is dropped out of the risk set.[12] The adoption data was compiled from a number of sources, including reviewing states websites, documents, and archives (Haskell & Price, 1973; Hunter & Waterman, 1996; Jessup, 1988, 1990, 1994; Reenock & Poggione, 2004; Ringquist, 1993).

Explanatory Variables

The explanatory variables in the model measure the same explanatory variables as the model described in Chapter 4: political motivations, administrative motivations, socioeconomic characteristics, and policy problem measures. Summary statistics for each variable are listed in Table 4. The following section describes how these explanatory variables will affect the adoption of either a Mini-EPA or Super-Agency structure.

[12] Model does not account for states that have changed their structure between a Mini-EPA and a Super-Agency structure over time. Once a state adopts one structure it is dropped out of the risk set.

Political Motivations

Similarly to the model in Chapter 4, political motivation variables evaluate the effect of the political entrepreneur in both the executive and legislative branch on state adoption of a specific structure: Super-Agency or Mini-EPA. The level of political uncertainty, struggle for political control, strength of political pressure, and individual politician's preferences should influence the design of pollution control agencies into a stand-alone regulatory agency (Mini-EPA) or a division within a larger natural resources or recreation agency (Super-Agency).

Political Uncertainty

Executive-legislative conflict (*Unified Government*) measures whether the governor and the legislative bodies are under control of different parties (0), or same party (1). A unified government reduces political uncertainty. States with a unified government were more likely to adopt a Comprehensive Structure in the previous analysis. It seems logical then, that states with a unified government will also be more likely to adopt either a Mini-EPA or Super-Agency structure. However, many governors chose to adopt a Mini-EPA initially as a political statement (Beyle, 1975; Haskell & Price, 1973). I expect that states will be more likely to adopt a Mini-EPA structure than a Super-Agency structure under a unified government. In addition, higher turnover of individual members of the legislature can also increase the level of uncertainty. *Legislative Turnover* measures the percent of the legislature that changes over time.

Political Control

The strength of the governor's office (*Governor Power*) is an institutional score of governor's overall power. This measure includes an average of scores for tenure potential, appointment powers, budgetary power, and veto power. *Legislative professionalism* is measured by the Squire Index, which includes three variables: legislator pay, staff per legislator, and total days in session. Neither political control variable was statistically significant in the previous model. However, placing pollution control functions in a stand-alone regulatory agency versus as part of a larger Super-Agency would provide governors and legislators differing levels of control. In addition, legislators are more likely to delegate more authority to the executive branch when they have confidence in the capacity of the agency (Krause & Woods, 2014).

Political Pressure

As in the previous model, political pressure is measured as the percentage of gross state product (GSP) of three relevant economic interests: manufacturing, mining, and agriculture (*Manufacturing GDP, Mining GDP, and Agricultural GDP)*. These three interests are directly affected by pollution control legislation. It seems that industries would likely prefer a Super-Agency structure, where the mission of the regulatory agency could be diluted by the overall mission of the agency (mining, forestry, agriculture). In addition, the model includes a measure of E*nvironmental Group Strength* as the number of members of the Sierra Club per 1000 people in a state. I have also included the dichotomous variable, *Sierra Club Dummy*, that indicates data retrieved prior 1982 (0) and after 1982 (1) to indicate the source of membership data described in previous chapter.

While *Environmental Group Strength* was not statistically significant in the last model, I expect states with higher environmental group membership are more likely to adopt a Mini-EPA structure than a Super-Agency structure. Constituency pressure is measured using a *Citizen Ideology* index. This index ranges on a scale from zero to 100 with the higher scores indicating a more liberal citizenry (W. D. Berry et al., 1998). It is expected that more liberal states would prefer a Mini-EPA structure.

Politicians' Preference

Finally, politicians also have their own ideology and political preferences, which influence their choices. Political preferences are measured by the Berry et al (1998) *Government Ideology* index. Similarly to the citizen ideology index, this index ranges on a scale from zero to 100 with higher scores indicating a more liberal legislative and executive branch (W. D. Berry et al., 1998). As with the citizen ideology, it is expected that states with a more liberal government will prefer adoption of a Mini-EPA structure.

Administrative Motivations

Politicians are also influenced by both internal and external administrative concerns in designing state agencies. Just as administrative motivations influenced state adoption of a Comprehensive Structure, they also should affect a state's adoption of a specific type of Comprehensive Structure (Mini-EPA or Super-Agency). Likely internal administrative pressures should drive states toward adopting a Super-Agency structure, while external administrative pressures should push states toward a Mini-EPA structure.

Internal Administrative

A dichotomous variable (*Executive Reorganization*) is included in the model to measure whether a state created the comprehensive environmental agency structure as part of an overall state restructuring event (1) or as an incremental environmentally-specific organization (0). States that have undergone an executive reorganization will be more likely to adopt a Super-Agency structure, as the goal of most reorganizations was consolidation of agencies. A measure of the *Fiscal Health* of a state is include as measured by the annual difference, in $100,000, between total expenditures and total revenues (Wang et al., 2007). States may be more likely to consolidate functions and reduce the size of the bureaucracy as a way to save money if they are under fiscal stress. Therefore, states with poorer fiscal health are more likely to adopt a Super-Agency structure. Finally, states that adopted a *Health Superagency* would be more likely to adopt a Super-Agency (environmental pollution and natural resources). Again, as in the previous chapter, the dichotomous variable indicates a state does have a Health Superagency (1) or it does not (0).

External Administrative

In the American federal system, states face both horizontal and vertical influences in their policy and structural choices. The model measures the percentage of a state's contiguous neighbors that have adopted either a Mini-EPA or Super-Agency structure to measure horizontal influences. The federal government has a huge influence on state environmental policy and would likely influence state adoption of a comprehensive environmental agency. Federal influence is measured as the federal share of state annual revenue (*Federal Revenue*).

Socioeconomic and Demographic Factors

Socioeconomic and demographic factors can have an indirect influence on state agency design by providing constraints and resources to the state. Beyle (1975) found that larger (*Size in thousand square miles)* and wealthier states (*Per Capita Income in thousands*) were more likely to adopt a Super-Agency structure. More *Urban* states were equally likely to maintain pollution control in a health department or to adopt a Super-Agency structure. In addition, larger states and wealthier states likely have more resources available to develop more independent agencies. I expect states with more people (*Population*), measured in thousands, will also be more likely to adopt a Super-Agency structure

Policy Problem

Ideally, the model would include a measure of environmental quality or pollution severity. Unfortunately, no consistent and reliable measure exists for the time period of the data. I have included a proxy measure of *Vehicle Miles, measured in thousands,* driven by population to try to capture pollution levels. In addition, the model does include measures of natural resources within a state and consumption of those resources to try to capture the policy problem within a state. The following resource variables are included in the model: *Water area* of each state measure the percentage of a state that is covered with surface water. The model also includes a measure of *Surface Water*

Usage and *Groundwater Usage*, both in billion gallons per day, to capture resource demand of states.

Table 5 below lists the summary statistics for the explanatory variables and the expected influence on state adoption of a Mini-EPA or Super-Agency Structure.

Table 5: Summary statistics

Variable	Expected Direction	Mean	Standard Deviation	Minimum	Maximum
Political Motivations					
Political Control Variables					
Governor power	(+)	3.61	0.69	1.8	5.00
Legislative professionalism	(+)	2.09	1.20	0.34	6.59
Political Uncertainty Variables					
Unified Government	(+)	0.48	0.50	0	1
Legislative Turnover	(-)	0.18	0.27	0	2.18
Political Pressure Variables					
Manufacturing (%)	(+/-)	19.18	8.55	1.96	44.77
Mining (%)	(+/-)	3.61	7.11	0.00	49.66
Agriculture (%)	(+/-)	3.23	3.72	0.15	37.19
Sierra Club Members (#/100	(+)	1.07	1.02	0	8.11
Sierra Club Dummy	(+/-)	0.56	0.50	0.00	1.00
Citizen ideology	(+)	46.68	16.16	4.26	93.91
Political Preference Variable					
Government ideology	(+)	48.50	23.09	0.00	97.92
Administrative Motivations					
Internal Administrative					
Fiscal Health ($) (millions)	(+/-)	0.95	2.04	-1.61	24.66
Executive Reorganization	(+)	0.04	0.20	0.00	1.00
Health Superagency	(+)	0.36	0.48	0.00	1.00
External Administrative					
Adoption Super by Neighbors	(+)	0.31	0.29	0.00	1.00
Adoption Mini by Neighbors	(+)	0.28	0.26	0.00	1.00
Federal Revenue (%)	(+)	22.47	5.09	6.00	57.00

Table 5: Summary statistics (continued)

Variable	Expected Direction	Mean	Standard Deviation	Minimum	Maximum
Socioeconomic Variables					
Urbanization (%)	(+)	0.68	0.15	0.32	0.94
Per capita income (1000s) ($)	(+)	13.59	8.15	2.05	42.20
Population (per 1000 people)	(+)	4.76	5.09	0.28	33.99
Size of a state (square miles)	(+)	71.83	91.72	1.21	656.42
Policy Problem Variables					
Vehicle Miles per Person	(+)	7.85	1.97	3.06	16.73
Resource Variables					
Water area (%)	(+)	5.35	7.79	0.04	71.86
Resource Demand					
Surface water usage (bgd)	(+)	1.50	2.85	0.02	21.00
Groundwater usage (bgd)	(+)	6.41	6.09	0.07	35.78

Results

Table 6 below includes the results of the event history model. As the results show, state adoption of a Super-Agency or Mini-EPA Structure is driven by political motivations, administrative motivations, socioeconomic motivations, and policy problem.

Table 6: Effect of Political, Administrative, Socioeconomic, and Policy Problem Variables on Adoption of Super-Agency (Model 1) and Mini-EPA Adoption (Model 2)[13]

	Model 1 (Super-Agency)		Model 2 (Mini-EPA)	
Specific Measure	*Hazard Ratio*	*Standard Error*	*Hazard Ratio*	*Standard Error*
Political Motivations				
Political Control Variables				
Governor power	-0.666	0.276	1.488	0.611
Legislative professionalism	1.335	0.574	1.059	0.305
Political Uncertainty Variables				
Legislative Turnover	-0.157	0.195	-0.121 *	0.134
Unified Government	2.905 **	1.530	4.648 ***	2.320
Political Pressure Variables				
Manufacturing (% GDP)	1.085 *	0.054	1.062	0.045
Mining (% GDP)	1.001	0.007	1.015	0.045
Agriculture (% GDP)	1.022	0.097	1.103	0.069
Sierra Club Membership (per 1000 people)	-0.160 *	0.156	1.707 *	0.547
Sierra Club Dummy	-0.762	0.807	3.666 *	2.834
Citizen ideology	1.037	0.024	1.019	0.020
Political Preference Variables				
Government Ideology	-0.993	0.015	-0.971 ***	0.010
Administrative Motivations				
Internal Administrative Variables				
Fiscal Health	-0.729	0.192	-0.685	0.220
Comprehensive State Restructuring	6.712 ***	4.249	5.613 ***	3.035
Health Superagency	4.494 **	3.198	1.292	0.600
External Administrative Variables				
Super Adoption by Neighbors (%)	-0.597	0.759	-0.397	0.544
Mini Adoption by Neighbors (%)	3.942	4.878	1.056	1.230
Federal Revenue	1.062	0.083	-0.968	0.047
Socioeconomic Motivations				
Urban Percentage (%)	1.133	3.003	-0.824	1.788
Per Capita Income ($)	1.094	0.138	-0.873 *	0.077
Population	1.337 **	0.187	1.169	0.107
Area of a State	1.000	0.006	1.008 **	0.003

[13] *Significant P≤0.10 **Significant P≤0.05 ***Significant P≤0.01

Table 6: Effect of Political, Administrative, Socioeconomic, and Policy Problem Variables on Adoption of Super-Agency (Model 1) and Mini-EPA Adoption (Model 2) (continued)

	Model 1 (Super-Agency)		**Model 2 (Mini-EPA)**	
Specific Measure	*Hazard Ratio*	*Standard Error*	*Hazard Ratio*	*Standard Error*
Policy Problem				
Vehicle Miles Driven	-0.625	0.215	1.195	0.254
Resource Variables				
Water Area	1.007	0.029	-0.992	0.030
Resource Demand Variables				
Groundwater usage	-0.903	0.183	0.807 *	0.095
Surface water usage	-0.893	0.090	0.963	0.059
Constant	-0.00003 **	<0.001	-0.00004 **	<0.001
p (time dependence in Weibull distribution)	2.619		1.819	
Wald X^2 (26)	64.83		53.33	
Prob > X^2	0		0.0008	
Log Likelihood	-30.890		-41.323	

Both models overall are statistically significant (Model 1: Wald X^2 (25) = 64.83, $\rho>0.0001$; Model 2: Wald X^2 (25) = 53.33, $\rho=0.0008$). The estimated Weibull shape parameter, p, shows an increasing hazard over time for both models. Variables within each category are statistically significant supporting the Model of Agency Design. Table 7 below lists the marginal effects of the explanatory variables on the estimated average duration until adoption of the two agency structure.

Table 7: Marginal Effects of Political, Administrative, Socioeconomic, and Policy Problem Variables with Respect to Estimated Average Duration until Adoption of a Super-Agency and Mini-EPA Structure[14]

	Model 1 (Super-Agency)			Model 2 (Mini-EPA)		
Specific Measure	*dydx*	*Std Error*	*z*	*dydx*	*Std Error*	*z*
Political Motivations						
Political Control Variables						
Governor power	7.402	8.559	0.860	-8.601	10.154	-0.850
Legislative professionalism	-5.254	8.461	-0.620	-1.242	6.255	-0.200
Political Uncertainty Variables						
Legislative Turnover	33.672	28.636	1.180	45.590	33.466	1.360
Unified Government	-19.402	13.777	-1.410	-33.222 *	20.653	-1.610
Political Pressure Variables						
Manufacturing (% GDP)	-1.488	1.213	-1.230	-1.305	1.009	-1.290
Mining (% GDP)	-0.249	1.216	-0.210	-0.324	0.974	-0.330
Agriculture (% GDP)	-0.397	1.751	-0.230	-2.115	1.538	-1.380
Sierra Club Membership (per 1000 people)	33.311	27.784	1.200	-11.560	9.370	-1.230
Sierra Club Dummy	4.950	19.158	0.260	-28.090	25.657	-1.090
Citizen ideology	-0.666	0.543	-1.230	-0.416	0.424	-0.980
Political Preference Variables						
Government Ideology	0.135	0.274	0.490	0.646 *	0.368	1.760
Administrative Motivations						
Internal Administrative Variables						
Fiscal Health	5.762	5.656	1.020	8.168	8.352	0.980
Comprehensive State Restructuring	-34.634 *	21.212	-1.630	-37.302 *	22.272	-1.670
Health Superagency	-27.336	21.348	-1.280	-5.547	9.912	-0.560
External Administrative Variables						
Super Adoption by Neighbors (%)	9.381	21.200	0.440	19.965	27.608	0.720
Mini Adoption by Neighbors (%)	-24.952	29.962	-0.830	-1.176	25.438	-0.050
Federal Revenue	-1.094	1.609	-0.680	0.713	1.146	0.620
Socioeconomic Motivations						
Urban Percentage (%)	-2.270	48.072	-0.050	4.178	47.032	0.090
Per Capita Income ($)	-1.627	2.743	-0.590	2.928	2.406	1.220
Population	-5.281	3.601	-1.470	-3.376	2.629	-1.280
Area of a State	-0.002	0.105	-0.020	-0.176	0.115	-1.520

[14] *Significant P≤0.10 **Significant P≤0.05 ***Significant P≤0.01

Table 7: Marginal Effects of Political, Administrative, Socioeconomic, and Policy Problem Variables with Respect to Estimated Average Duration until Adoption of a Super-Agency and Mini-EPA Structure (continued)

	Model 1 (Super-Agency)			Model 2 (Mini-EPA)		
Specific Measure	*dydx*	*Std Error*	*z*	*dydx*	*Std Error*	*z*
Policy Problem						
Vehicle Miles Driven	8.553	7.127	1.200	-3.845	5.653	-0.680
Resource Variables						
Water Area	-12.815	52.777	-0.240	16.608	64.974	0.260
Resource Demand Variables						
Groundwater usage	1.860	3.707	0.500	4.628	3.536	1.310
Surface water usage	2.058	2.007	1.030	0.815	1.392	0.590

Model 1: Super-Agency

The Political Motivation variables that are statistically significant include: unified government, Sierra Club membership, and manufacturing interests. States with a unified government and higher dependence on manufacturing are more likely to adopt a Super-Agency structure. States with more Sierra Club members are less likely to adopt the Super-Agency structure. The Administrative Motivations variables that are statistically significant are comprehensive restructuring, Health Superagency. States that have undergone a comprehensive restructuring and/or have adopted a Health Superagency were more likely to adopt a Super-Agency structure. Of the Socioeconomic Factors, the size of the population is statistically significant, increasing the likelihood of state adoption. Urbanization does not have a statistically significant impact on state adoption of a Mini-EPA or Super-Agency structure. Finally, none of the variables measuring the magnitude of the policy problem were statistically significant.

Model 2: Mini-EPA

The Political Motivation variables that are statistically significant include: unified government, legislative turnover, Sierra Club members, and government ideology. States with a unified government, larger numbers of Sierra Club members, and a liberal citizenry are more likely to adopt a Mini-EPA structure. States with more liberal governments and high legislative turnover are less likely to adopt a Mini-EPA structure. The Administrative Motivations variable that is statistically significant is comprehensive restructuring. States that have undergone a comprehensive restructuring were more likely to adopt a Mini-EPA structure. The Socioeconomic Factors that affect the likelihood of state adoption of the Mini-EPA structure include per capita income and the size of the state. Of the variables measuring the magnitude of the policy problem, only groundwater usage was statistically significant. States with a higher reliance on groundwater are less likely to adopt a Mini-EPA. Adoption by neighbors was not statistically significant.

Discussion

In general, the results support the model of state agency design described above. This section includes a general discussion of the results, while highlighting areas where the model could be improved. The choice to adopt a Super-Agency structure appears to be strongly motivated by administrative pressures in the executive branch. Political uncertainty, pressure and preference had a greater influence on the adoption of a Mini-EPA structure than a Super-Agency Structure.

Political Motivations

States with a unified government were more likely to adopt either a Mini-EPA or a Super-Agency structure. This result, as in the previous chapter, confirms what has been found in the literature – that it is easier to reorganize the executive branch when one political party controls both branches of government. While government ideology does not affect adoption of a Super-Agency structure, it does affect adoption of a Mini-EPA structure. In addition, states with higher legislative turnover are less likely to adopt a Mini-EPA structure; but legislative turnover does not affect adoption of a Super-Agency. This difference could be due to the more political nature of a Mini-EPA structure. Counter to what was expected, states with more liberal governments are less likely to adopt a Mini-EPA structure. Perhaps, environmentalists and liberals support the Super-Agency model more than the Mini-EPA model. Those states that adopted a Mini-EPA after 1980 tended to be more conservative states, which may be adopting the Mini-EPA structure in hopes of better gaining approval to manage their own programs.

As in the previous chapter, industry groups influence agency design. However, the manufacturing variable is only statistically significant in the Super-Agency model. States with greater dependence on manufacturing were more likely to adopt a Super-Agency structure. This result seems to confirm the idea that locating pollution control functions in a larger agency could dilute the overall power or mission of the pollution control functions. Further supporting this idea, states with more Sierra Club members were less likely to adopt a Super-Agency structure, but more likely to adopt a Mini-EPA structure.

The fact that the Sierra Club membership affects the adoption of the Mini-EPA confirms finding in the literature that many states adopted the Mini-EPA structure to make a political statement of the state's commitment to environmental protection (Beyle, 1975; Haskell & Price, 1973)

Administrative Motivations

As in the previous model, the financial health of a state did not statistically significantly influence whether a state adopts either a Mini-EPA or Super-Agency structure. However, as predicted whether a state had undergone an executive branch reorganization did influence state adoption of both a Super-Agency and Mini-EPA structure. States that have undergone an overall state restructuring, are more likely to adopt both types of structure than states that have not reorganized their government.

States that adopted a Health Superagency were, as expected, more likely to adopt a Super-Agency structure, but not a Mini-EPA structure. This result makes sense because as a state combined health with welfare, it is logical to then move environmental protection out to another agency.

States do not appear to be influenced by external influences in choosing between a Super-Agency and a Mini-EPA structure. The federal share of state revenue does not have a statistically significant effect on adoption. In addition, a state's likelihood of adoption of either structure does not increase as the percentage of its neighbor's adoption increases.

Socioeconomic and Demographic Factors

Of all the socioeconomic or demographic factors, only the population was statistically significant in state adoption of a Super-Agency Structure and PCI and state size were statistically significant in the adoption of a Mini-EPA. It is unclear why state size would affect Mini-EPA adoption but population would affect Super-Agency adoption. The fact that PCI only affects the adoption of the Mini-EPA makes sense in that states with higher PCI more likely are wealthier states that are able to create more focused agencies.

Policy Problem

As discussed above, policy problem can be defined by environmental quality and as a resource to protect. The model does not include a measure of environmental quality because such a measure does not exist for the entire time period of the analysis. The proxy measure, vehicle miles driven, was not statistically significant. However, there are a few measures of resources that had a statistically significant influence on state adoption of either a Mini-EPA or Super-Agency structure. States that rely on groundwater are less likely to adopt a Mini-EPA structure.

Conclusion

This chapter set out to not only determine what influences state adoption of either a Super-Agency or Mini-EPA environmental agency structure, but also evaluate if the factors are significantly different between the two structures. The analysis supports the Agency Design model - that administrative, political, socioeconomic, and policy problem all influence the selection of agency structure. The results are especially interesting in the highlighting the differences between states that adopted a Super-Agency Structure and those that adopted a Mini-EPA structure. The choice to adopt a Super-Agency Structure seems to be more influenced administrative motivations, while the Mini-EPA adoption is more influenced by political motivations. States are more influenced by their neighbors in adopting the Super-Agency structure than in adoption of the Mini EPA structure. The level of uncertainty in the legislature reduced the likelihood of a state adopting a Mini-EPA, but not in adopting a Super-Agency. This result is likely due to the more political nature of the Mini-EPA structure.

Improvements to Analysis

The empirical analysis could be enhanced with additional or alternative variable measures and addressing limitations to the current model. These enhancements are similar as in the previous chapter.

- *Administrative Response to Federal Regulation*: Currently, the model does not have a measure that captures the increased responsibilities placed on states between 1967 and 2000. Over 10 federal laws were passed with additional amendments requiring compliance from states.
- *Environmental Quality*: Not having any consistent measure of environmental quality make it difficult to assess to what extent the severity or nature of the pollution problem affect state adoption of agency structure. The model includes a measure of vehicle miles driven, which is an indirect measure of environmental emissions.

- *Environmental Group Pressure*: One of the main drivers of state centralizing their pollution functions and adoption of a Comprehensive Structure of any type was political pressure from environmental groups. The model includes a measure of the Sierra Club membership, which may not be the most completely measure of environmental group activity (Andrews, 1998; Bosso, 2003; Wikle, 1995)
- *Influence of other states*: Beyle (1975) found in his analysis that states were influenced by their neighbors. It is surprising that neighboring states had no effect in the previous chapter or in these two models. A better measure of the influence of other states on a state agency design could be found using a dyad analysis (comparing each state to each state).
- *Board/Commission*: As discussed in more detail in Chapter Seven, 34 states still have a board that serves either as rulemaking or advisory entity. Initially, the majority of states had either independent pollution control boards or these boards were connected to the department of health. The model could be enhanced by an inclusion of these boards, and even might help explain the influence of the citizen ideology variable.
- *Exceptions to the model*: One of the main limitations of the model is that it does not capture the changing structures within many states. While the number of states that changed their structure between a Super-Agency and Mini-EPA is small, the model could be enhanced by inclusion of a measure of these changes

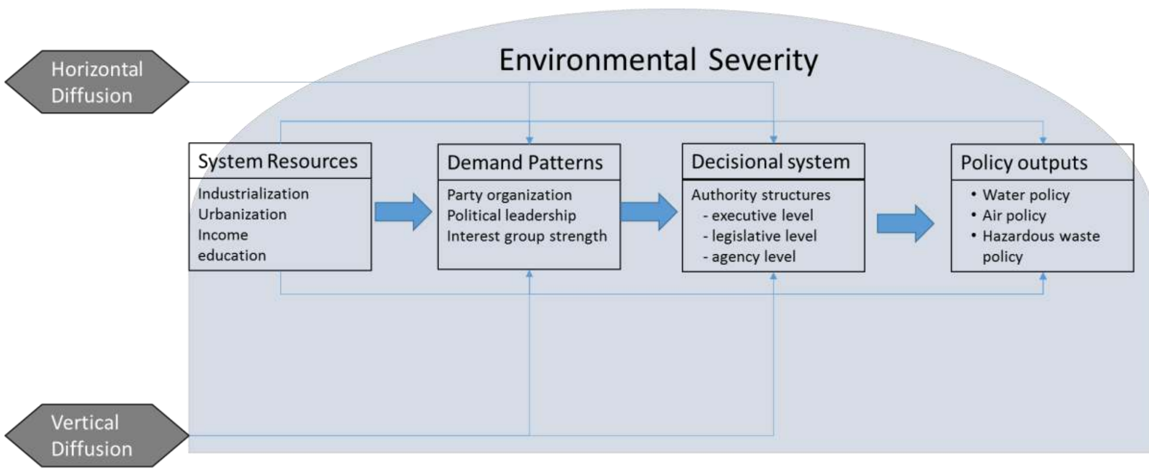
Adding these measures to the model could provide a clearer picture of what has influenced state adoption of environmental agency structures.

CHAPTER 6: STATE ADOPTION OF ENVIRONMENTAL POLICIES

In describing his theory of public organizations, Moe (1990) argued that the design of agencies and the impact of that design are linked, in that, politicians design agencies to implement their political goals. In the late 1960s, as states were facing increased local and federal pressure to address environmental pollution, scholars argued that the existing organizational structures were not adequate to address the pollution problem (Haskell & Price, 1973; Hines, 1966). The next two chapters explore the second goal of a positive theory of organizations: understand the effect of the structure on policy adoptions. The small literature that has examined the role of state environmental protection agency structure has found that it does have a statistically significant impact on policies, enforcement, and expenditures of a state (A. Bacot & Dawes, 1996; A. H. Bacot & Dawes, 1997; Hoornbeek, 2011; Hunter & Waterman, 1996; J. Lester, 1980). The goal of this chapter is to place the environmental agency structure within the context of the wider environmental policy adoption literature and develop theory of how bureaucratic structure affects policy adoption. The next chapter tests that theory empirically.

States policy adoption is influenced by internal characteristics of states and external influences outside of states. Internally, state policies develop through interactions between system resources, demand patterns, and decisional systems (Salisbury, 1968). A state's socio-economic, political, and ideological characteristics impact state policy outputs. (F. S. Berry & Berry, 1990, 1991; Gray, 1973; Volden, 2006; Volden, Ting, & Carpenter, 2008; Walker, 1969). States also respond to policies adopted by other states (F. S. Berry & Berry, 1990; Gray, 1973). The effect of political, economic, and ideological characteristics of a state is mediated through the decisional system of that state, as is shown in Figure 11 below. This model is developed from a model of policy adoption first proposed by Salisbury (1968) and later amended by Lester (1980) and Ringquist (1993a).

Figure 10: Model of Environmental Policy Adoption (J. Lester, 1980; Ringquist, 1993; Salisbury, 1968)



Environmental policy adoption literature has generally focused on the effect of system resources, demand patterns, and environmental problem severity influences on policy outputs (Bromley-Trujillo, 2012; Daley & Garand, 2005; Hays, Esler, & Hays, 1996; E. Ringquist, 1993). Ultimately, the adoption of an environmental policy is made within the decisional system of a state that includes the executive and legislative branches of the government. Decisional systems describe the structure and capacity of the executive and legislative branch to use system resources to translate demand patterns and environmental severity into policy outputs (J. Lester, 1980). When studies do include a measure of the decisional system, the measure focuses on the capacity of the legislative branch, rather than the agency design.

Environmental Severity

Public policies are designed to address a perceived policy problem. The primary intention of environmental regulation is to reduce levels of environmental pollution. Environmental severity can be described as the quality of state physical resources (air, land water) and as the threat of contamination to a resource. Studies have found that there is a level of “matching” in state environmental policy making, even controlling for the socioeconomic, political, and structural systems within a state (A. Bacot & Dawes, 1996; Daley & Garand, 2005; J. P. Lester, Franke, Bowman, & Kramer, 1983; Lowry, 1992; Sapat, 2004). In addition, studies have found that states adopt certain types of environmental policies in response to the importance of a resource within a state. For example, states that have adopted groundwater protection innovations tend to have larger quantities of groundwater supplies (Blomquist, 1991). Hoornbeek (2011) found that coastal states are more likely to have active nonpoint source pollution programs.

System Resources (industrialization, urbanization, income, education)

System resources describe the resources available to a state. The socioeconomic conditions within the state will influence policy adoption (Dawson & Robinson, 1963; Dye, 1979; Jennings, 1979). Socioeconomic conditions include citizen characteristics such as income and education, and macro-economic conditions including gross state product and unemployment rates. Walker (1969) argued that there are leading or pioneering states that are constantly innovating and developing new solutions to policy problems. He found that leader or innovating states were more industrialized and urban (Walker, 1969). Analysis in environmental policy literature has found that states with more wealthy, educated, and liberal citizens are more likely to adopt environmental protection policies (Ringquist, 1993, 1994). Wealthier states have the financial resources to manage more robust environmental programs (A. H. Bacot & Dawes, 1997; Bromley-Trujillo, 2012; Daley & Garand, 2005; Konisky & Woods, 2012). Bromley-Trujillo (2012) found that states with a higher per capita income were more likely to adopt innovative environmental policies.

Demand Patterns (party organization, political leaderships, interests)

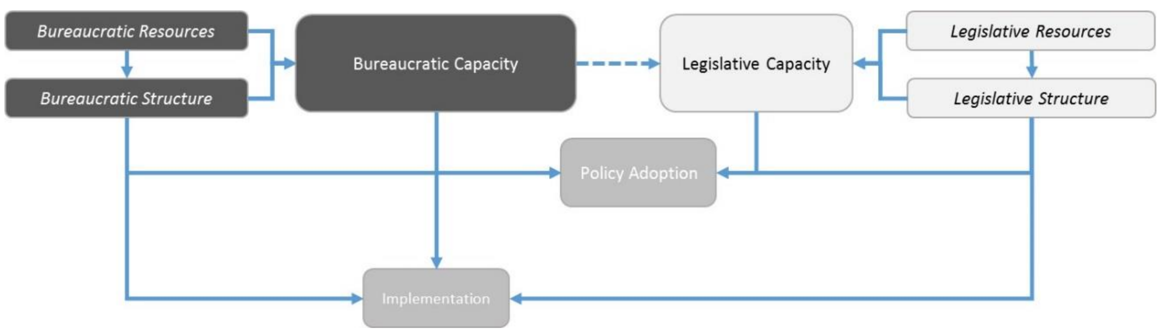
Demand patterns describe the political demand for policies within a state. As stated earlier, elected officials are motivated by reelection and can be influenced by political pressure from constituents and interests. This demand is measured by citizen ideologies and level and types of interests active within a state. More liberal governments and citizens generally demand more environmental regulations. Citizen demand can be measured by general citizen ideology indices or by public opinion surveys. Many studies of how public opinion about environmental quality is translated to policy focus on national level surveys, with few examining the process at the state level. National studies have found that, unlike other issues, environmental issues are not generally 'wedge issues' in that they determine who an individual votes for in an election (Davis & Wurth, 2003; Guber, 2001). Using data from the 2007 Cooperative Congressional Election Study (CCES), (Konisky, Milyo, & Richardson, 2008), found that public opinion about the environment varies based on the geographic scale of the environmental issue. The public cares more about national and local issues (drinking water quality, smog) than global issues (climate change, ozone depletion) and the majority would support either 'a lot' or 'a little bit more' government effort to address various environmental issues (Konisky et al., 2008).

In addition, the power of environmental and the affected industry interests will also influence the adoption of environmental protection policies (Oates, 2004). Theories of political economy propose that interests could impact the stringency of state environmental regulations as elected officials try to assess public opinion. The two main interests that could influence environmental regulations are industry groups and environmental (green) groups. In addition, theories of political control argue that bureaucrats are motivated to increase their budget and maximize political support from elected officials. Many studies have attempted to determine the level of influence that these groups (interests and elected officials) have on regulators. These studies include surveys of interests, elected officials, and state environmental regulators; and cross-sectional and panel data analysis of state regulatory decisions. For example, (Potoski, 2001) found that the number of environmental groups per 1000 residents in a state had a statistically significant impact on state decisions to exceed USEPA criteria pollutant standards, while the power of industry did not.

Decisional Systems

"Public policy is made by institutions within the political system" (E. Ringquist, 1993). The decisional systems component of a policy adoption model measures the institutions within the state. The decisional system describes the capacity of the legislative and administrative branches, which is measured as resources (financial, capital, and human) and the structure. Figure 11 below, shows how the executive and legislative branches of the government affect policy adoption.

Figure 11: Bureaucratic Structure Direct and Indirect Effects



Each branch of government can directly adopt new policies; and indirectly influence the adoption of policies. Both branches of government influence policy adoption, but are not always included in models of environmental policy adoption.

Legislative Capacity

The primary measure of the decisional system in environmental policy literature is one of legislative capacity. The majority of major policies are adopted by the legislature rather than administrative agencies, so the capacity of that branch of government should have a significant impact on the types and number of policies adopted. Legislatures with more resources and "professional capacity" are more likely to adopt more innovative policies (Huber, Shipan, & Pfahler, 2001; Walker, 1969). Legislators have more time and staffing support to process more information and consider more policy options. Studies have found that legislative professionalism can affect the level of environmental commitment among states (Bromley-Trujillo, 2012; Hays et al., 1996; Konisky & Woods, 2012).

Bureaucratic Capacity

Bureaucratic capacity matters. While the legislature is the primary policy adopter in states, many state agencies also adopt new policies outside of the legislature and influence legislative decisions. Capacity has been measured as agency staffing levels, financial resources, and agency design. While Bacot and Dawes (1996) found no statistical relationship between the capacity of the agency, as measured by number of employees and level of environmental expenditures, Sapat (2004) found that agencies with more hazardous waste employees adopted more hazardous waste policies. The focus of the empirical analysis in the next chapter is on agency structure. The level of influence of bureaucratic structure on state policies varies based on agency, culture, and capacity (Barrilleaux, Feiock, & Crew Jr, 1992; Jennings & Woods, 2007; Krause & Woods, 2014). While much of the bureaucratic agency literature evaluates the effect of structure at the federal level, there has been some analysis at the state level. Much of the literature at the state level has focused on higher education structures and their direct effect on policy outputs (Knott & Payne, 2004; Nicholson-Crotty & Meier, 2003; Volkwein & Tandberg, 2008). A small number of scholars have found that agency structures affect environmental policy adoption, enforcement, and outcomes (A. Bacot & Dawes, 1996; A. H. Bacot & Dawes, 1997; Hoornbeek, 2011; Hunter & Waterman, 1996; J. Lester, 1980). The structure of public agencies has a direct effect on the capacity of agencies to enforce and implement policies. It makes sense, then, that studies have found that the structure of environmental protection agencies can affect the level of enforcement activities and environmental quality (Hoornbeek, 2011; Hunter & Waterman, 1996). In addition, many agencies have flexibility to develop innovative programs to address broader pollution issues, such as hazardous waste, climate change, and nonpoint source water pollution. However, studies have found that agency structure can affect more than just direct actions by the agencies themselves. Agency structure can also affect legislative policy adoption and levels of environmental expenditures (A. H. Bacot & Dawes, 1997; Hoornbeek, 2011). Legislators respond to agency capacity and structure in designing policies (Jennings & Woods, 2007; Krause & Woods, 2014).

Direct Impact

Bureaucratic structure directly impacts how resources are allocated, how information is processed, and what priorities are pursued. In addition, public organizational structures can also determine the level of influence of special interests and legislators. For example, the greater the centralization of an agency structure, the lower the transaction costs for individuals seeking to influence that agency (Nicholson-Crotty &

Meier, 2003). In terms of environmental policy, the impact of structure can be seen in level of enforcement activity, development of innovative programs, and environmental quality outcomes. Previous studies generally found that horizontal specialization does impact policy outputs and outcomes. States that located their environmental regulation programs within health departments had lower environmental innovation (J. Lester, 1980), had lower levels of nonpoint source pollution activism (Hoornbeek, 2011), and fewer number of enforcement actions (Hunter & Waterman, 1996). Hunter and Waterman (1996) also found that states that located environmental regulations in a health department had lower water quality outcomes. Interestingly, when delving deeper into specific regulatory permit stringency, Hoornbeek (2011) found that non-health agencies actually had less stringent water permits related to whole effluent toxicity (WET) policies than health agencies. He theorized that this difference could be attributed to the fact that WET is more common in the health field than in environmental fields. WET describes the aggregate toxic effect of a water sample, or its impact on the health of an organism.

Indirect Impact

Legislators respond to agency capacity and structure in designing policies (Jennings & Woods, 2007; Krause & Woods, 2014). Legislators, rational individuals motivated by reelection and maintaining power, design and support policies that align with their own political views, please their constituencies, and are effectively implemented by the executive agency (Moe, 1990a). Depending on how specifically a statute defines a policy and implementation, the agency may have a lot of discretion in implementation which leads to uncertainty. Structural design is especially influential in reducing the level of implementation uncertainty, or ability of an agency to coordinate and implement specific policies (O'Toole Jr & Meier, 2003). Structural design can improve the efficiency and effectiveness of an agency. Therefore, more effective agencies with high levels of capacity will likely have more discretion in implementation and also be delegated more complicated or innovative policies. Under the agency theory, legislators have to protect against bureaucratic drift and a more centralized agency structure reduces the chances of bureaucratic drift (Moe, 1990a). In a state where the executive and legislative branches are managed by different political parties, legislators will consider how politically insulated an agency is in terms of management appointments, existence of oversight boards and commissions, and funding. (Krause & Woods, 2014).

Horizontal and Vertical Diffusion

Horizontal and vertical influences from outside of the state will also influence policy adoption. Diffusion of innovations in public institutions occurs as a process of learning and conformity (F. S. Berry & Berry, 1991) and competition. States seek to simplify the complex processes of decision making by looking at how other states are addressing problems and learning lessons (Shipan & Volden, 2008). States are influenced by other states through national communications networks (Gray, 1973; Walker, 1969) and regional influences (F. S. Berry & Berry, 1990). The adoption of an innovation by a state's neighbors can influence the probability that a state will also adopt it (Balla, 2001;

Mintrom, 1997). In addition to these various forms of horizontal diffusion patterns, states will also implement innovations under mandated or implied pressure from the federal government in a vertical diffusion pattern (F. S. Berry & Berry, 1990).

CHAPTER 7: EFFECTS OF INSTITUTIONS ON POLICIES: ENVIRONMENTAL INNOVATION

The structures of public agencies "set the rules of the game…advantage some groups over others" (Nicholson-Crotty & Meier, 2003). By its very nature, organizational structure shapes the goals pursued and policy choices considered relevant. The structure creates information networks based on who is located where on the hierarchy. Hammond (1986) proposes that public bureaucratic structure functions in the same way a legislative agenda acts by defining "what options [are] to be compared, in what sequence, and by whom." Moe (1990) argued that politicians select an agency structure to further their political goals. Therefore, the choice to place pollution prevention within a stand-alone agency or house it within a health agency or other natural resource agency is made with policy goals in mind.

Each agency will have its own mission statement, internal hierarchy, and strengths and weaknesses. These agency characteristics will either facilitate or hinder its ability to respond to pollution challenges within the state – whether from large stationary polluters or from small dispersed sources that span geographic and political boundaries. The later types of pollution, called second and third generation pollution problems, require innovation, flexibility, coordination across government agencies (horizontally and vertically), and collaboration with the private sector. Those states with Mini-EPAs should be better able to innovate because there are no other conflicting missions and demands. However, if a Super-Agency is functioning as envisioned, with integration and cooperation between the pollution control and natural resource functions, it might be more able to respond to pollution challenges that span geographic areas.

The focus of this analysis is on policy outputs, rather than policy outcomes. The theory in the literature is that policy outputs lead to policy outcomes. Environmental policy outcomes include environmental outcomes, political outcomes, and economic outcomes. Environmental outcomes are changes in environmental quality within a state, such as improvements in air quality or reduction in asthma rates. Political outcomes include effects on political participation (civic engagement), political power of various interests (environmental groups vs. industry groups), the electoral well-being of elected officials and political parties, and effects on interagency and intergovernmental dynamics (state agency cooperation and state-federal cooperation). Finally, economic outcomes measure effects of policies on state economic and financial conditions (J. Lester, 1995; Ringquist, 1993). The focus of environmental literature is generally on policy outputs, often due to data limitations for measuring outcomes. Ringquist (1993) found a connection between policy outputs and environmental outcomes. States with a stronger regulatory air quality and water quality program reduced the concentration of many common air and water pollutants.

Literature Review

The few studies that have explored a relationship between agency structure and policy adoption have found conflicting results, but these studies have also used different policy indices to measure *policy adoption*. Bacot and Dawes (1997) used the Fund for Renewable Energy and the Environment (FREE) index of environmental policies and found no effect of agency structure on state ranking along this index. However, Lester (1980), using an *Index of Environmental Control* (he created), found states that retained pollution control in their health department were less likely to adopt the policies included in his index (i.e. adoption of wetlands management, adoption of floodplain management legislation, and severity of requirements for statewide environmental impact statements). Most recently, Hoornbeek (2011) found that states that housed their pollution control functions outside of the department of health were more active in adopting nonpoint source (NPS) policies (measured by an index he created).

Each of the three studies discussed above developed their policy indices from data measuring state policy adoption during different time periods (1967-1975; 1987; 1997-2002). The number of states that had not adopted a Super-Agency or Mini-EPA structure varies across these time periods, as do the policies included in the indices. In addition, these studies each used cross-sectional data, rather than time-series. This chapter will build on these early studies to explore the impact of agency structure on state policy adoption over time. Specifically, I want to evaluate what effect agency structure has on state adoption of environmental policies that address second and third generation pollution problems.

First Generation vs Second and Third Generation Pollution Problems.

The original environmental pollution control regulations in the 1970s tended to address first generation pollution problems. First generation environmental problems primarily deal with clean air and water and are caused by pollutants that remain in one medium (i.e. water, air) and often come from large, concentrated sources (Fiorino, 2006;

E. Ringquist, 1993). This type of pollution can be described as smokestack and water pipe types of problems that are generally addressed with pollution control technology on the pipe or stack. The Mini-EPA and USEPA structures developed primarily to address first generation pollution problems that fell within a specific category (air, water, land) and were regulated at the source through the permitting process.

Second generation pollution problems are caused by pollutants that easily move through multiple media and stem from small, dispersed sources. Groundwater pollution from poor hazardous waste disposal would be an example of these types of problems. Regulating underground storage tanks and solid waste programs (such as electronics recycling) target both land pollution and potential groundwater contamination. Reducing contamination from lead paint targets millions of individual homeowners rather than a few large private companies. These externalities "require a coordinated and integrated approach to environmental protection" not considered when the traditional environmental regulations were developed (E. Ringquist, 1993). The regulations that have been passed to address these issues have incorporated partnerships with private industries and local governments. Both public and private green building standards are developed to target the millions of buildings, rather than specific industries.

Finally, third generation environmental problems are problems that have cross media impacts, but also can have an effect at regional, national, and global levels. These problems include acid rain, tropical deforestation, and climate change (E. Ringquist, 1993). Many of the energy-related polices adopted by states since the 1990s are primarily driven by concern for climate change. Many scholars argue that second and third generation problems require a new federal-state relationship that could also include partnerships with private industry to address these problems more "cooperatively, holistically, and cost-effectively in the long-run" (Durant et al., 2004). The USEPA and states have adopted and promoted ecosystem-based and watershed management programs to address the regional nature of many pollution issues.

Model

To evaluate the effect of agency structure on environmental policy adoption, I use a regression model with state fixed effects.[15] I develop two indices of environmental policy: an *Index of Environmental Policy Adoption* and a *Dispersed Sources Pollution Policy Index*. These indices are developed around 12 different environmental policies adopted by states between 1988 and 2012. These policies were adopted to address second and third generation pollution problems. Using a fixed-effects regression, I test two internal determinants models to determine the effect of agency structure on policy adoption. In this analysis, I am interested in the level of policy adoption by a state. I am examining the question of whether the structure of the agency facilitates policy adoption. Future analyses that could build on this model would pull out individual policies to examine the effect of structure on adoption of those policies using a Hazard Model.

[15] My model has heteroskadasticity and therefore, I use robust standard errors. While some of the variables are collinear, this multicollinearity does not pose a significant issue due to my large sample size.

The empirical model is based on the Model of Environmental Policy Adoption described in the previous chapter and includes 49 states and 25 years.[16] The dependent variable ADOPTION, is a categorical variable measuring the policy adoption index for a state *i* in year *t*.

$$ADOPTION_{it} = \beta_1 SEVERITY_{it} + \beta_2 RESOURCES_{it} + \beta_3 DEMAND_{it} + \beta_4 SYSTEM_{it} + \alpha_i + \mu_{it}$$

In this regression model, *β'*s are estimated coefficients; SEVERITY measures the problem severity, RESOURCES, measures the system resources available in a state; DEMAND measures citizen and interest group demand; finally SYSTEM measures the decisional system within a state. α is the unknown intercept for each state (*i*) and μ is the error term. I am assuming that the error terms across states are not correlated.

Dependent Variables

The dependent variables in this analysis are additive indices of policy adoption. I have developed two individual indices, based on a factor analysis, to evaluate the effect of agency structure on policy adoption: Policy Adoption Index and Dispersed Pollution Sources Policies Index. Table 8 below describes the policies included in these indices. The Policy Adoption Index includes all 12 policies in the table. Based on the factor analysis, seven policies loaded especially strongly together with a very high alpha. Therefore, I created an additional index the capture the unique characteristic of these policies. The Dispersed Pollution Sources Index only includes the first seven policies. I chose to use indices, rather than individual policies, because I wanted to measure a wide

[16] Nebraska is excluded from analysis because it has a unicameral legislature and so does not have turnover or unified government data.

range of environmental policies that would benefit from different types of departments and look at overall innovation rather than just an individual policy.

Table 8: State Adoption of Environmental Policies

Policy	Description	Number of States	Media	Time Period
Electronics Recycling	State have adopted mandatory electronics recycling statutes.	24	Land	2003-2011
Mercury Ban	State has adopted at least one statute banning either sale, use, or disposal of a mercury-containing product (i.e. thermometers, lighting, switches)	29	Land/ Water	1992-2011
Net Metering	For electric customers who generate their own electricity, net metering allows for the flow of electricity both to and from the customer – typically through a single, bi-directional meter.	42	Air	1983-2010
Public Benefit Funds	Developed during the electric restructuring to ensure continued support for renewable energy, energy efficiency and low-income energy programs. Funds are supported through a very small surcharge (systems benefits charge) on electricity consumption	28	Air/Equity	1994- 2011
Renewable Portfolio Standards	Mandates that electric utilities generate a certain percentage of electricity from renewable or alternative energy sources by a certain date	39	Air	1994-2011
Vehicle Emissions[17]	State has adopted a mandate that new vehicles reduce emissions by given percentage by a target year	15	Air	2002-2012

[17] Two states, Arizona and New Mexico, initially adopted these standards but in 2011 and 2012, respectively, they choose not to pursue these vehicle emission standards.

Table 8: State Adoption of Environmental Policies

Policy	Description	Number of States	Media	Time Period
Green Public Building Standards	Energy standards for public buildings that include green building standards, energy-reduction goals, equipment-procurement requirements, and/or the use of on-site renewable energy.	50	Land/ water/ air	1996-2012
Authorized Lead Program	State has authorization from USEPA to train and certify lead abatement providers	39	Air	1988-2011
Underground Storage Tanks	States have USEPA-approved UST programs.	38	Land/ Water	1991-2012
Environmental Justice	State has adopted an environmental justice program, either through Executive Order or statute.	32	other	1993-2007
Groundwater Quality Statute	State has some type of groundwater quality statute (i.e. state-wide monitoring, quality standards, or permit system)	46	Water	1967-2004
Radon Requirements	State requires disclosure of radon testing and/or certification of radon professionals	20	Air	1988-2011

I selected these policies to represent a cross-section of environmental health, pollution, and resource management policies adopted by states over the past 25 years. In addition, the policies have been adopted by agencies, legislatures, or through the governor's executive order. States have adopted some of these policies in response to federal mandates, but other policies are in response either to USEPA promotion (via information and financial incentives) or in response to political pressure from citizens and lack of federal action.[18] Finally, these policies address second and third generation pollution issues that affect land, water, and/or air.

[18] The model does not control of federal mandates or promotion of policies.

Developing the Indices

To test the effect of structure on policy adoption, I wanted to develop valid and reliable indices. I used statistical analyses to evaluate the relationship between a set of policies to test the reliability and validity of my index. I set out to answer three questions:

1. Are these policies correlated with each other (Tetrachoric Correlation Analysis)?
2. What is the relationship among the policies (Factor Analysis)?
3. What is the best way to group these policies to measure environmental policy adoption (Factor Analysis)?

Based on the analyses, I developed two indices. The *Environmental Policy Adoption Index* and *Dispersed Pollution Sources Index* were developed based on the correlation and factor analysis. [19] While I used the factor analysis to analyze and test the validity of my indices, I do not use the factors generated as my dependent variable in my model. I am interested in the total number of policies not a level of "environmentalism". An index using the factor scores would pull out the "environmentalism" that is shared among the policies and not necessarily the total adoption of the policies themselves. In addition, the previous studies that have used an index of policy adoptions have used an additive index, and not a factor score. As I am building on these studies, I wanted to be consistent with these other studies. However, I felt that it was important to ensure that the policies I have chosen share some common factors and have some relationship with

[19] Two policies: Watershed Management and energy efficiency codes for private buildings were removed from the analysis based on these analyses because they were so statistically different than the rest of the policies.

each other. I used the factor analysis to confirm the policies I chose have some common factors, which they do. But I am more interested in the effect of structure on adoption of these main policies, promoted by USEPA, that address second and third generation pollution problems. In the future, if I am interested in measuring the innovativeness or level of "environmentalism of a state, I will use the factor scores.[20] In addition, the previous studies that I am building upon, use additive indices to measure the effect of structure on policy adoption. Therefore, I use an additive index or the sum of the total policies (1-12).

Policy Correlations

There is a large variation in the level of correlation among the 12 policies. Table 9 below shows the tetrachoric correlations among the individual policies.[21] The correlations among policies range from 0.01 to 1.0. Every policy is at least moderately correlated with at least one other policy. I have highlighted those correlations that are close or equal to one.

[20] I ran an alternative analysis using the factor scores and found that some of the results varied, the variables of interest: Decision System variables do not change.

[21] I use the tetrachoric correlations rather than Pearson correlations because I am looking for correlation coefficients for dummy variables. Pearson correlations cannot estimate the entire range of correlations (plus/minus one) because the distribution is limited.

Table 9: Tetrachoric Correlations[22]

	RPS	PBF	Vehicle Emissions	Netmeter	Mercury	Ecycling	Green Public Bldg	Lead	UST	Ground-water	Radon	EJ Program
RPS	1.0											
PBF	*0.8*	1.0										
Vehicle Emissions	*0.8*	*0.8*	1.0									
Netmeter	*0.8*	*0.6*	*0.5*	1.0								
Mercury	*0.7*	*0.6*	*0.8*	*0.6*	1.0							
Ecycling	*0.8*	0.6	*0.7*	*0.6*	*0.7*	1.0						
Green Public Bldg	*0.8*	*0.6*	*0.8*	*0.7*	*0.8*	*0.9*	1.0					
Lead	*0.5*	*0.5*	0.2	0.3	*0.5*	*0.5*	*0.4*	1.0				
UST	0.4	0.2	0.2	0.3	0.2	0.4	*0.4*	*0.7*	1.0			
Ground-water	0.4	*1.0*	*1.0*	*0.5*	*1.0*	*1.0*	*0.4*	*0.4*	*0.2*	1.0		
Radon	0.3	*0.5*	0.3	0.4	0.4	0.3	0.2	0.2	0.0	*0.5*	1.0	
EJ Program	0.4	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.6*	0.4	0.3	*0.5*	0.2	1.0

Not surprisingly, the energy-related policies (RPS, PBF, Netmetering, and Green Public Buildings) are highly correlated. There are some interesting correlations across policies. For example, groundwater quality policies are highly correlated with other policies that are developed to address groundwater pollution: mercury abatement and electronics recycling. There is a strong correlation between underground storage tank

[22] Correlations above 0.5 are in italics. Correlations between 0.5 and 0.7 are considered moderate positive correlations. Correlations above 0.7 are italics and outlined in a black line. Correlations between 0.7 and 0.9 are considered high positive correlations; those above 0.9 are very high positive correlations.

policies and lead abatement policies. These are both policies that address older buildings and sites. Groundwater policies are perfectly correlated with vehicle emissions and PBF. I am not sure why groundwater quality policies would be so closely correlated with vehicle emissions and PBF.

Factor Analysis

Correlations can show whether policies have some type of relationship, but further analysis is needed to evaluate what that relationship looks like. I used factor analysis to determine the relationship among policies and develop the indices. The results of the factor analysis supported a general relationship among these policies. All policies load on the first factor indicating that there is an underlying environmental factor within each policy. [23] The policies fall into four primary factors (see Table 10 below). The model is statistically significant (chi^2 (66) = 4,193.66) at the $p<0.0001$ level. The first factor explains over 35 percent of the variance and combined the first four factors explain over 65 percent of total variance.

[23] I used 0.32 as a cutoff to include a variable as loading on a factor for the unrotated matrix. For evaluating the rotated factor matrix, I used 0.50. The unrotated matrix is included in Appendix G.

Table 10: Factor Analysis

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	4.277	2.938	0.356	0.356
Factor2	1.338	0.233	0.112	0.468
Factor3	1.106	0.240	0.092	0.560
Factor4	0.865	0.079	0.072	0.632
Factor5	0.787	0.044	0.066	0.698
Factor6	0.743	0.062	0.062	0.760
Factor7	0.681	0.103	0.057	0.816
Factor8	0.578	0.053	0.048	0.865
Factor9	0.525	0.126	0.044	0.908
Factor10	0.399	0.035	0.033	0.942
Factor11	0.364	0.026	0.030	0.972
Factor12	0.337	.	0.028	1.000

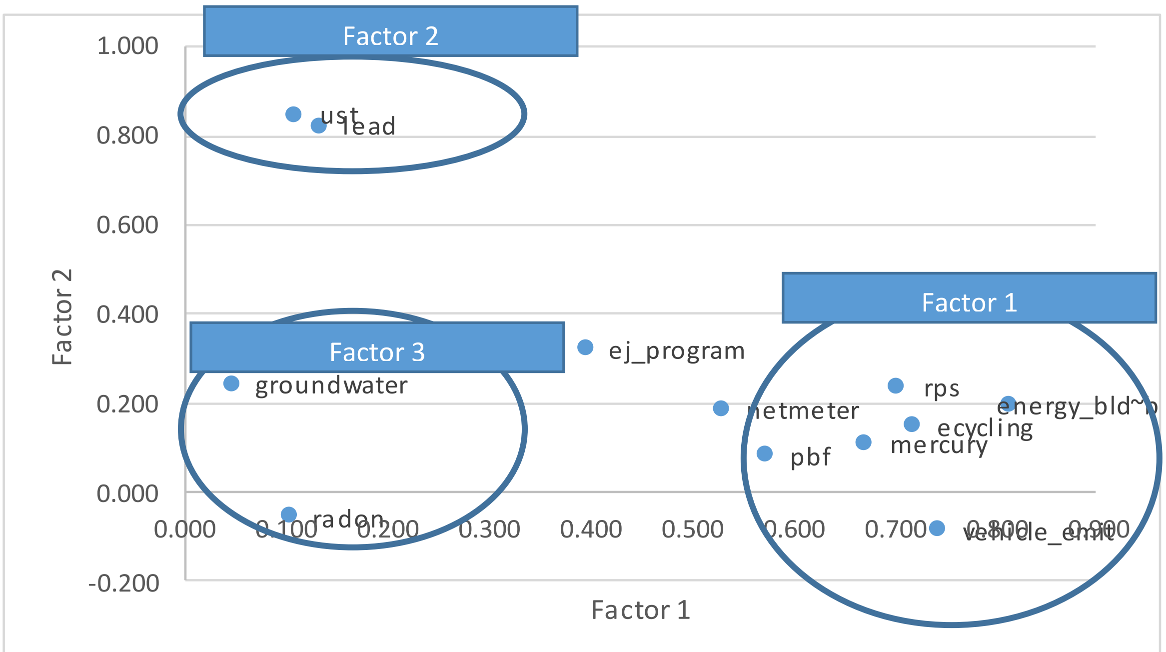
I rotated the factor matrix in Table 11 to make the relationship between the policies and factors clearer. The first factor includes PBF, RPS, Vehicle Emissions, Mercury bans, net metering, electronics recycling, and green building codes for public buildings. There is something unique among these policies that warrants further investigation. These policies all relate to pollution from individuals (many dispersed sources) rather than large factories (few concentrated sources). I used these seven policies to create a separate summative index, called the *Dispersed Pollution Sources Index*.

Table 11: Rotated Factor Matrix

Variable	Factor 1	Factor 2	Factor 3	Uniqueness
RPS	0.703	0.239	0.194	0.411
PBF	0.572	0.085	0.421	0.488
Vehicle Emissions	0.744	-0.082	0.083	0.432
Net Metering	0.530	0.189	0.340	0.568
Mercury	0.670	0.113	0.253	0.474
Ecycling	0.719	0.150	-0.040	0.459
Public Green Buildings	0.815	0.199	0.000	0.297
Lead	0.134	0.824	0.149	0.282
UST	0.109	0.848	-0.060	0.266
Groundwater	0.047	0.246	0.636	0.533
Radon	0.104	-0.053	0.792	0.359
EJ program	0.395	0.323	0.168	0.711

Factor 2 includes policies that address pollution on buildings and grounds including UST policies and lead abatement policies. Factor 3 includes radon abatement certification and groundwater quality programs. To help understand how the policies are loading, I graphed the first two rotated factor below in Figure 14.

Figure 12: Rotated Loading Factors (Factor 1 and Factor 2)

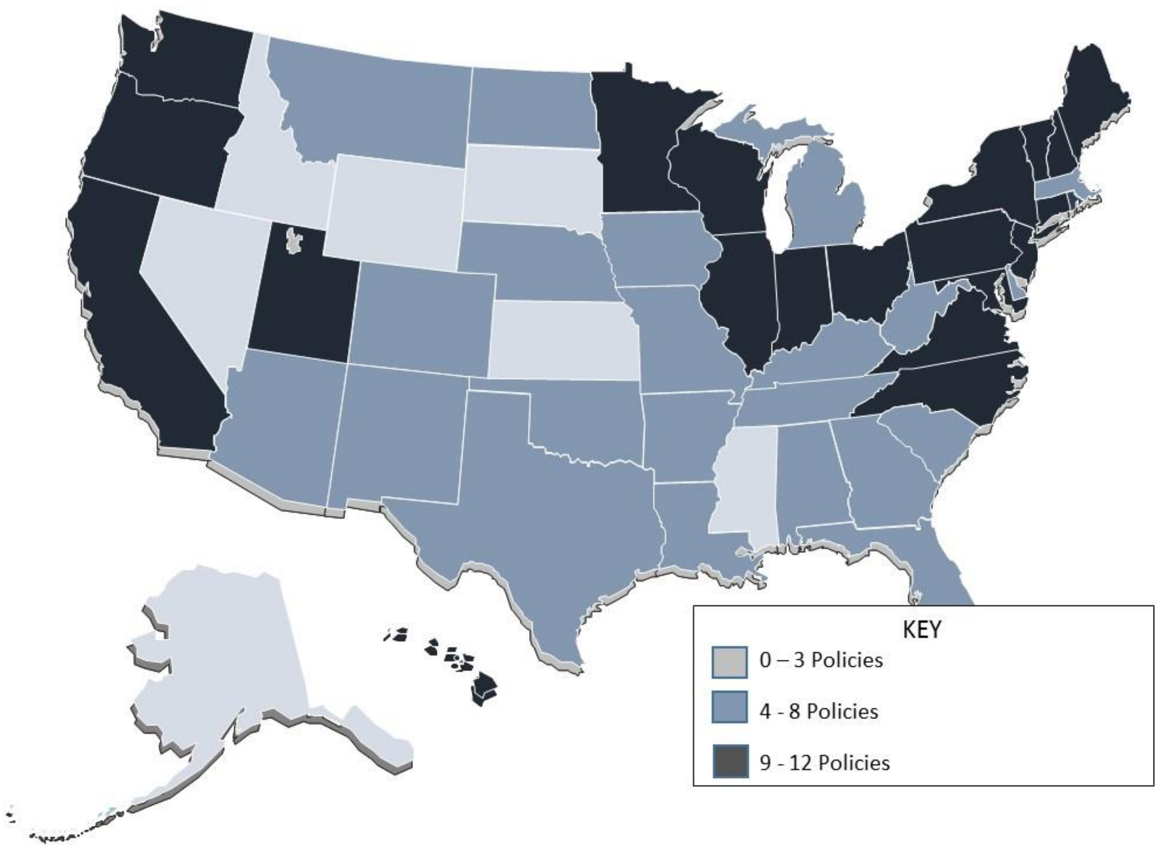


The third factor includes groundwater quality and radon abatement. These policies seem to be clustered together because they are somehow different than the other policies. These policies are tied closely to natural resources – water and land (radon is related to rock formations). These two policies also tend to include other agencies (health, natural resources) and relate to the geography and resources of a state. While all the policies load on the first factor, the policies above in the graph that are clustered together on the right all load the heaviest and are all second and third generation pollution problems and many relate to climate change. Finally, environmental justice is not clustered with any other policies and does not load on any other factor. Of all the variables, environmental justice has the highest uniqueness value (see table 9) of over 70 percent. While this policy is an environmental policy - it is also a unique type of policy.

Policy Adoption Index

The *Policy Adoption Index* includes all 12 policies listed in Table 6 above. The Cronbach Alpha for this index is 0.8097, indicating a strong relationship across these policies. Second and third generation pollution problems often require innovative and collaborative management programs because they span multiple media and multiple sources.

Figure 13: Environmental Innovation Index

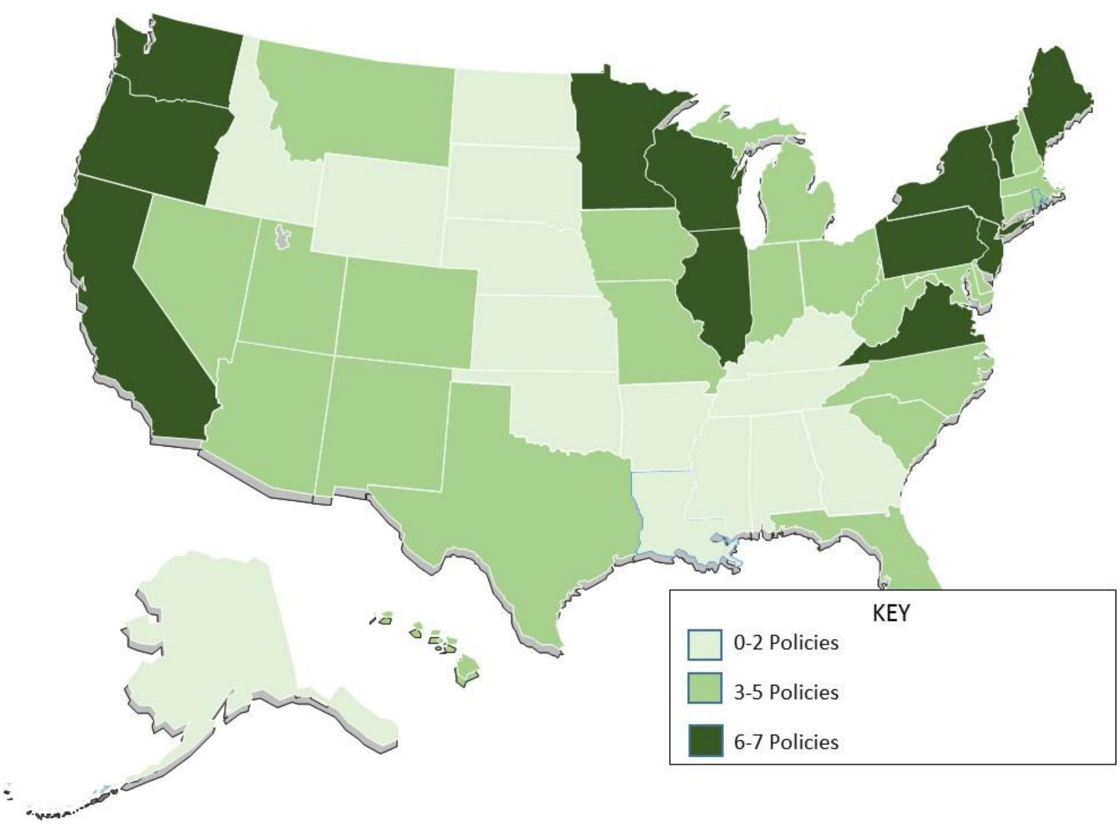


States that have adopted the most policies tend to be coastal states and traditionally liberal states. However, there are few states that score high on the index, which are not generally thought of as environmental or liberal states, including, Utah and Indiana. All states have adopted at least one of these policies.

Dispersed Sources Pollution Policies Index

The *Dispersed Sources Pollution Index* includes seven policies adopted in the last 20 years to address second and third generation pollution problems from large numbers of dispersed sources and includes: PBF, RPS, net metering, ecycling, mercury bans, vehicle emissions, and green building standards for public buildings. The Cronbach Alpha for this index is 0.8372, indicating a strong relationship across these policies Figure 14 below shows which states have adopted the most of these policies.

Figure 14: Dispersed Sources Pollution Policies Index



Those states that have adopted the most policies tend to be the coastal and more liberal states, including California, New York, and Illinois.

Explanatory Variables

The explanatory variables can be divided into four categories: environmental severity variables, system resources variables, demand variables, and decisional system variables. Summary statistics for each variable are listed in Table 11. The following section describes these variables in more detail.

Environmental Severity

Environmental Severity variables measure the environmental quality within a state using two pollution variables and three resource variables. In general, the environmental literature has found a level of matching between polices and environmental quality – that environmental policies are adopted in response to perceived environmental problems (Daley & Garand, 2005; J. P. Lester et al., 1983; Lowry, 1992). In those studies that have included a measure of agency structure, the results have been mixed (A. Bacot & Dawes, 1996; Hoornbeek, 2011; J. Lester, 1980; J. P. Lester et al., 1983). According to Lombard and Lester (1990), the pollution severity argument is that increased industrialization increases pressure for environmental policy responses. Those studies that have found a positive relationship between problem severity and policy adoption. However, the results depend on the measure of problem severity. Studies that include a direct measure of pollution levels or environmental quality find a positive relationship, while studies with an indirect measure generally find a negative relationship (A. Bacot & Dawes, 1996; J. Lester, 1986; Sapat, 2004).

The two pollution variables used in this analysis are indirect measures of environmental pollution. The first pollution variable is total releases (air, water, land) from the Toxic Release Inventory data from the USEPA (*Toxic Release Data)*. The Toxic Release Date is measured as 10 million pounds per person. It is expected that states with higher quantities of toxic releases will adopt more of the environmental policies. However, in two studies that have included TRI release data and agency structure, higher quantities of TRI releases reduces the likelihood of policy adoption (A. Bacot & Dawes, 1996; Hoornbeek, 2011). In addition, a measure of the total vehicle miles travelled within a state is included as an estimate of air pollution within that state (*Vehicle Miles*). *Vehicle Miles* is measured as thousand vehicle miles per person. It is expected that as number of vehicle miles increases, policy adoption will also increase, especially because so many of these policies are related to air emissions and climate change.

The following resource variables are included in the model: water area, surface water usage, and groundwater usage.[24] *Water area* of each state measure the percent of a state that is covered with surface water. The model also includes a measure of *Surface Water Usage* and *Groundwater Usage*, both in billion gallons per day, to capture resource demand of states. States with greater water area and higher reliance on surface and groundwater will be more likely to adopt environmental policies.

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[24] As described in the previous chapter, I have divided the Environmental Severity variables into two categories: policy problem (pollution measurement) and the type and quantity of environmental resources in a state (water, land, etc).

System Resources Variables

The system resources included in this model capture the wealth of the population and the wealth and resources available to the state government. Socioeconomic and demographic factors can have an indirect influence on state agency design by providing constraints and resources to the state. Larger (*Size* and *Population)* states with greater wealth (*Per Capita Income*) should be more likely to adopt environmental policies. Size of states is measured in ten-thousand square miles. Population is measured in number of people in ten-thousands. Per Capita Income is measured in thousands. More *Urban* states should also be more likely to adopt environmental policies. In addition, states with higher levels of debt (*Fiscal Health*), should be less likely to adopt new environmental policies. Fiscal Health is measured as annual revenues minus expenditures in millions. Studies that have included system resource and agency structure variables have found differing influence of system resources. Bacot and Dawes (1997) found that state fiscal health had no statistically significant effect on policy adoption. However, Hoornbeek (2011), found that per capita income and population increased the likelihood of state NPS policy activism.

Demand Variables

Demand variables measure the demand from constituency and interests. Constituency pressure is measured using a *Citizen Ideology* index. This index ranges on a scale from zero to 100 with the higher scores indicating a more liberal citizenry (W. D. Berry et al., 1998). It is expected that more liberal states would adopt more environmental policies. Interest group demand is measured as the percentage of gross state product (GSP) of three relevant interests: *manufacturing, mining,* and *agriculture*. These three groups are directly affected by pollution control legislation. It is expected that as the reliance on one of these industries increases, states will be less likely to adopt environmental policies. Environmental interest demand is measured as Sierra Club members per 1000 residents per state (*Sierra Club).* It is expected that states with higher membership levels will be more likely to adopt environmental policies. Previous studies have found that environmental interests have a statistically significant effect on policy adoption; while industry interests do not (A. Bacot & Dawes, 1996; Hoornbeek, 2011).

Decisional Systems Variables

Decisional system variables measure the strength of the governor's office, capacity of the legislature, the political orientation of the government and the agency structure. The strength of the governor's office (*Governor Power*) is an institutional score of governor's overall power. This measure includes an average of scores for tenure potential, appointment powers, budgetary power, and veto power. States with more powerful governors will likely be more likely to adopt environmental policies. *Legislative professionalism* is measured by the Squire Index, which includes three variables: legislator pay, staff per legislator, and total days in session. States with more professional legislatures should be more likely to adopt environmental policies. The political orientation of the decision system is measured as *Government Ideology.* It is expected that more liberal governments are more likely to adopt environmental policies.

Agency Structure

This paper uses the generally accepted typology of state agencies-- *Mini-EPA*, *Super-Agency*, *and Health*-- to measure agency structure. Proponents of each structure find characteristics of each that make their structure the most effective in promoting environmental quality and health. While it is expected that there will be a relationship between the agency type and type of environmental policies adopted, it is unclear which type of agency will most affect the overall *Policy Adoption Index*. Based on the literature, it is expected that states with their pollution control functions in the department of health will be less innovative.

Advisory or Rulemaking Board

Many states (33) have an environmental board or commission that either serves in an advisory role or in a rulemaking role or to hear appeals *(Board)*. The *Board* variable is a dichotomous variable where states that have an appeals, advisory, or rulemaking board (1) or have no such board (0). These boards, generally appointed by the governor and confirmed by the senate, include citizen representatives, experts, and sometimes government officials. These boards or commissions vary across states, as is clear in Table 12 below. It is expected that states with a board will be less likely to adopt environmental policies. These boards often include members of the affected industries and therefore would be more cautious in adopting regulations.

Table 8: State Adoption of Environmental Policies

State	Advisory Commission	Members	Terms	Appointment	Advisory or Rulemaking
Alabama	Environmental Management Commission	7	6-year	Appointed by Governor, confirmed by Senate	Rulemaking
Arkansas	Pollution Control and Ecology Commission	13	4-year	Appointed by Governor	Rulemaking
California	Air Resources Board	11	N/A	Appointed by Governor	Rulemaking
	Water Resource Board	5	4-year	Appointed by Governor, confirmed by Senate	Rulemaking
Colorado	Water Quality Control Commission	9	3-year	Appointed by Governor, confirmed by Senate	Rulemaking
	Air Quality Commission	9	3-year	Appointed by Governor, confirmed by Senate	Rulemaking
	Solid & Hazardous Waste Commission	9	3-year	Appointed by Governor, confirmed by Senate	Rulemaking
Connecticut	Council on Environmental Quality	9	8-year	5 by Governor 2 by the Senate 2 by the House.	Advisory
Florida	Environmental Regulation Commission	7	4-year	Appointed by Governor	Rulemaking
Illinois[25]	Pollution Control Board	5	3-year	Appointed by Governor, confirmed by Senate	Rulemaking
Indiana	Environmental Rules Board	16	4-year	Appointed by Governor	Rulemaking
Iowa	Environmental Protection Commission	9	4-year	Appointed by Governor, confirmed by senate	Rulemaking
Kentucky	Environmental Quality Commission (EQC)	7	4-year	Appointed by Governor	Advisory
Maine	Environmental Improvement Commission	7	4-year	Appointed by Governor, confirmed by legislature	Rulemaking

[25] The Illinois Pollution Control Board is an independent agency, separate from the Illinois Environmental Protection Agency, whereas the rest of the rulemaking and advisory boards are connected to the environmental agency. Wyoming Environmental Quality Council also functions as an independent agency.

Table 8: State Adoption of Environmental Policies (continued)

State	Advisory Commission	Members	Terms	Appointment	Advisory or Rulemaking
Massachusetts	Water Resources Commission	13	3-year	Appointed by Governor	Advisory
Minnesota	Legislative-Citizen Commission on Minnesota Resources (LCCMR)	17	4-year	5 by the Governor, 1 by the Senate 1 by the House.	Advisory
Mississippi	Commission on Environmental Quality	7	7-year	Appointed by Governor, confirmed by Senate	Rulemaking
Missouri	Clean Water Commission	7	4-year	Appointed by Governor, confirmed by senate	Rulemaking
	Air Conservation Commission	7	4-year	Appointed by Governor, confirmed by senate	Rulemaking
	Hazardous Waste Management Commission	7	4-year	Appointed by Governor, confirmed by senate	Rulemaking
	Solid Waste Advisory Board	25	3-year	Appointed by Director of Department of Natural Resources	Advisory
	Safe Drinking Water Commission	9	4-year	Appointed by Governor, confirmed by senate	Rulemaking
Montana	Board of Environmental Review	7	N/A	Appointed by Governor	Rulemaking
	Clean Air Act Advisory Committee	N/A	N/A	N/A	Advisory
	Solid Waste Advisory Committee	11	N/A	N/A	Advisory
	Water Pollution Control Advisory Council	11	N/A	Appointed by Governor	Advisory
Nebraska	Environmental Quality Council	17	4-year	Appointed by Governor, confirmed by Legislature	Rulemaking
Nevada	State Environmental Commission	11	N/A	Appointed by Governor	Rulemaking
New Jersey	Clean Air Council	18	4-year	Appointed by Governor	Advisory

Table 8: State Adoption of Environmental Policies (continued)

State	Advisory Commission	Members	Terms	Appointment	Advisory or Rulemaking
New Mexico	Water Quality Control Commission	14	4-year	Appointed by Governor	Rulemaking
	Environmental Improvement Board	7	5-year	Appointed by Governor	Rulemaking
North Carolina	Environmental Management Commission	15	4-year	Appointed by the Governor, the Senate Pro Tempore & the Speaker of the House.	Rulemaking
Ohio	Environmental Review Appeals Commission (ERAC)	3	6-year	Appointed by Governor	Appeals
Oklahoma	Environmental Quality Board	13	5year	Appointed by Governor, confirmed by Senate	Rulemaking
Oregon	Environmental Quality Commission	5	4-year	Appointed by Governor	Rulemaking
Pennsylvania	Environmental Quality Board	20	N/A	Members state agencies, legislature, and Citizens Advisory Council	Rulemaking
	Citizens Advisory Council	20	3-year	The Governor, Speaker of the House of Representatives, & President Pro Tempore of the Senate each appoint 6 members	Advisory
	Environmental Hearing Board	5	6-year	Appointed by Governor, confirmed by Senate	Appeals
South Carolina	Board of Health & Environmental Control	7	4-year	Appointed by Governor, confirmed by Senate	Rulemaking/ Appeals
South Dakota	Water Management Board	7	4-year	Appointed by Governor	Rulemaking
	Board of Water & Natural Resources	7	4-year	Appointed by Governor	Advisory
	Board of Minerals & Environment	9	4-year	Appointed by Governor	Rulemaking

Table 8: State Adoption of Environmental Policies (continued)

State	Advisory Commission	Members	Terms	Appointment	Advisory or Rulemaking
Tennessee	Air Pollution Control Board	14	4-year	Appointed by Governor	Rulemaking
	Underground Petroleum Storage Tank & Solid Waste Disposal Board	14	4-year	Appointed by Governor	Rulemaking
	Board of Water Quality, Oil, & Gas	12	4-year	Appointed by Governor	Rulemaking
Texas	Commission on Environmental Quality	3	4-year	Appointed by Governor, confirmed by Senate.	Rulemaking
Utah	Water Quality Board	9	4-year	Appointed by Governor, confirmed by Senate	Rulemaking
	Air Quality Board	9	4-year	Appointed by Governor, confirmed by Senate	Rulemaking
	Drinking Water Quality Board	9	4-year	Appointed by Governor, confirmed by Senate	Rulemaking
	Waste Management & Radiation Control Board	12	4-year	Appointed by Governor, confirmed by Senate	Rulemaking
Virginia	Waste Management Board	7	4-year	Appointed by Governor	Rulemaking
	Water Pollution Control Board	7	4-year	Appointed by Governor	Rulemaking
	Air Pollution Control Board	7	4-year	Appointed by Governor	Rulemaking
West Virginia	Air Quality Board	7	5-year	Appointed by Governor, confirmed by Senate	Appeals
	Surface Mine Board	7	5-year	Appointed by Governor, confirmed by Senate	Appeals
	Environmental Quality Board	5	5-year	Appointed by Governor, confirmed by Senate	Appeals
Wyoming[10]	Environmental Quality Council	7	4-years	Appointed by Governor, confirmed by Senate	Rulemaking

Many of the states with rulemaking boards originally housed their pollution control functions in independent boards prior to consolidation of functions into one department.

Table 13 below lists the summary statistics for the explanatory variables and the expected influence on state scores on both policy adoption indices (*Policy Adoption Index and Dispersed Pollution Sources Index)*.

Table 13: Summary Statistics

Variable	Expected Direction	Mean	Standard Deviation	Minimum	Maximum
Environmental Severity Variables					
TRI (total release per	(+)	32.005	109.258	0.267	1,450.000
Vehicle Miles (miles/year/population)	(+)	9.990	1.808	5.091	18.296
Water area (%)	(+)	0.076	0.092	0.001	0.662
Surface water usage (billion gallons per day)	(+)	6.358	5.961	0.089	35.777
Groundwater usage (billion gallons per day)	(+)	1.511	2.467	0.025	15.395
System Resources Variables					
Urbanization (%)	(+)	0.713	0.148	0.322	0.950
Per capita income (per $10,000)	(+)	29.041	9.241	11.685	59.687
Population (per 10,000)	(+)	5.654	6.173	0.453	38.000
Size of a state (sq mile) (1000s)	(+)	74.225	94.902	1.231	665.384
Fiscal Health (per $1,000,000)	(+/-)	1.098	7.570	-140.703	66.998
Demand Variables					
Manufacturing (%)	(-)	0.150	0.066	0.018	0.315
Mining (%)	(-)	0.029	0.061	0.000	0.397
Agriculture (%)	(-)	0.018	0.020	0.001	0.126
Sierra Club (per 1000 residents)	(+)	1.944	1.181	0.292	8.113
Citizen ideology	(+)	50.707	15.051	8.450	95.972

Table 13: Summary Statistics (continued)

Variable	Expected Direction	Mean	Standard Deviation	Minimum	Maximum
Decision System					
Adoption of Super-Agency	(+/-)	0.364	0.481	0	1
Adoption of Mini-EPA Structure	(+/-)	0.489	0.500	0	1
Adoption of Health Structure	(+/-)	0.131	0.338	0	1
Adoption of other type of	(-)	0.016	0.124	0	1
Board/Commission	(+/-)	0.540	0.499	0	1
Government ideology	(+)	50.540	27.001	0	99.167
Governor power	(+)	3.448	0.426	2.300	4.700
Unified Government	(+)	0.448	0.498	0	1
Legislative professionalism	(+)	0.196	0.128	0.027	0.659
Legislative turnover	(-)	0.214	0.278	0.000	2.161

Model 1: *Policy Adoption Index* Results

Overall, the theory of policy adoption is supported by the model, meaning the environmental quality, system resources, demand for policies, and decisional system all influence state adoption of environmental policies. In general, as well, the model supports conclusions from previous studies of environmental policy adoption that more liberal, wealthier states are more likely to adopt environmental policies. The results, summarized in Table 14 below, support the model of policy adoption. While none of the agency structure variables was statistically significant, the presence of a board reduced the likelihood of adoption of these policies.

Table 14: Summary of Environmental Policy Adoption Index Results[26]

	Total Policy Index	
Specific Measure	*Coefficient*	*Robust Standard Error*
Constant	-8.699	7.439
Environmental Severity		
Toxic Inventory Release (total release per population)	-0.003 **	0.001
Vehicle Miles	-0.394 ***	0.140
Water Area	0.026	1.739
Groundwater usage	0.216	0.186
Surface water usage	-0.044	0.066
System Resource Variables		
Fiscal Health (per $100,000)	-0.007 *	0.004
Urban Percentage (%)	0.093	10.505
Per Capita Income (per $1000)	0.235 ***	0.030
Population	0.381 **	0.160
Area	0.027 *	0.014
Demand Variables		
Manufacturing (% GDP)	-0.094 *	5.450
Mining (% GDP)	-0.139 ***	3.031
Agriculture (% GDP)	0.025	9.131
Sierra Club Membership (per 1000 people)	0.139	0.227
Citizen ideology	-0.001	0.007
Decisional System Variables		
Mini-EPA Structure	0.460	0.540
Health Structure	0.407	0.648
"Other" structure	0.021	0.517
Board/Commission	-1.370 **	0.680
Government Ideology	0.009 ***	0.004
Unified Government	0.066	0.133
Governor Power Index	0.303	0.335
Legislative Professionalism	-1.954	1.550
Legislative Turnover	-0.239 ***	0.089

[26] *Significant P≤0.10 **Significant P≤0.05 ***Significant P≤0.01

The model explains 95 percent of the variance of the policy index and overall supports the model of policy adoption described in the previous chapter. Of the Environmental Severity variables, the toxic release inventory, vehicle miles, and water area variables are statistically significant. States with greater toxic releases and more vehicle miles travelled are less likely to adopt these environmental policies. The water area of a state had the most significant effect on the Environmental Policy Adoption Index, with a one-percentage increase in water area resulting in an increase in the expected index of 2.57. States with more water as a percent of the total area are more likely to adopt these policies. The System Resources that are statistically significant include per capita income, population, and size of state. Larger, wealthier states are more likely to adopt these environmental policies. An increase in population of one unit increases the index by 0.381. The Demand variable that is statistically significant is mining as a percent of GDP. States with greater reliance on mining are less likely to adopt these policies. Of the Decision System variables, the presence of a rulemaking or advisory board, government ideology, and legislative turnover were statistically significant. States with a board or commission reduce their expected index by 1.370.

Discussion

In general, the results of the Environmental Innovativeness Index support the theory of policy adoption, but they fail to identify an effect of agency structure.. This section includes a general discussion of the results, while highlighting areas where the model could be improved. Variables measuring each aspect of the Model of Policy Adoption (described in Chapter 6) were statistically significant.

Environmental severity

As discussed above, environmental severity can be defined by environmental quality and as a resource to protect. The measure included in these models, total toxic releases to land, air, and water was statistically significant and negative. This result is surprising, but may be explainable. The TRI measures large “smokestack” industry releases, while these policies are directed at addressing more dispersed sources of pollution. States that have large pollution releases may be focusing on developing policies to address those releases, rather than the second and third generation pollution sources included in this model. Bacot and Dawes (1997) found that TRI releases positively influenced state environmental expenditures, but negatively affected state environmental activism rankings (states that were more environmentally active as measured by an index, will have lower levels of releases). In addition, Hoornbeek (2011) also found that TRI had a negative effect on non-point source policy activism. It is also possible that states with higher pollution levels face higher industry pressure and economic concerns to reduce regulation.

The *Vehicle Miles* variable had a similar negative impact on policy activism. This result was unexpected, given many of the policies relate to air emissions. If states were responding to the level of environmental severity in the state, the relationship should be positive. When examining the data more closely, those states that have the highest vehicle miles per person are larger, more rural states, such as Wyoming, Mississippi, and

North Dakota. Likely, this variable is not exactly capturing levels of environmental pollution.

System resources

As expected, generally states with more system resources are more likely to adopt environmental policies. This result is consistent with the environmental policy literature. Larger, wealthier and more populous states are more likely to adopt environmental policies.

Demand

Only one demand variable is statistically significant: mining. States with a greater reliance on mining were less likely to adopt these policies. The mining industry result is consistent with the literature that has found that states with a greater dependence on polluting industries will be less likely to adopt more aggressive or innovative policies.

Decisional system

One element of the decisional system of a state did have a statistically significant influence on policy adoption. The presence of an advisory or rulemaking board had a statistically significant negative effect on policy adoption. These boards often include a diverse group of individuals, including representatives from industry, who may influence the types of policies adopted by the agency. The board may just increase caution within the agency and state itself.

The surprising result is that the agency structure itself did not have a significant effect. My model differs from other models, in that I separate out Mini-EPA and Super-Agency, but also I have included a category for other, which includes those states that housed their pollution functions across a number of agencies. In addition, the policies chosen may be less likely to be influenced by agency structure, since they address second and third generation problems.

The variables measuring political uncertainty, legislative turnover and unified government, were not statistically significant. The power of the governor's office and legislative professionalism were not statistically significant. Lester (1980), found that states with a more professional legislature were more likely to adopt environmental policies, while Hoornbeek (2011) found no statistically significant impact on policy adoption.

Model 2: Dispersed Sources Index Results

As with the *Policy Adoption Index Model*, this model also supports the Environmental Policy Adoption Model (described in Chapter 6). Elements of environmental quality, system resources, demand for policies, and the decisional system all influence state adoption of these seven dispersed sources policies. The results are summarized in Table 15 below.

Table 15: Summary of Dispersed Sources Index Results[27]

	Dispersed Sources Policy Index	
Specific Measure	*Coefficient*	*Standard Error*
Constant	8.026 *	4.447
Environmental Severity		
Toxic Inventory Release (total release per 10 million)	-0.002 *	0.001
Vehicle Miles	-0.692 ***	0.086
Water Area	0.031 ***	1.154
Groundwater usage	-0.011	0.144
Surface water usage	-0.090	0.058
System Resource Variables		
Fiscal Health (per $100,000)	-0.007 *	0.004
Urban Percentage (%)	-0.094	6.201
Per Capita Income (per $1000)	0.201 ***	0.019
Population	0.244 *	0.135
Area	0.004	0.008
Demand Variables		
Manufacturing (% GDP)	-0.050	4.084
Mining (% GDP)	-0.250 ***	3.182
Agriculture (% GDP)	2.495	5.542
Sierra Club Membership (per 1000 people)	0.119	0.173
Citizen ideology	0.006	0.006
Decisional System Variables		
Mini-EPA Structure	0.134	0.299
Health Structure	-0.108	0.331
"Other" structure	0.611 *	0.347
Board/Commission	-1.217 ***	0.344
Government Ideology	0.010 ***	0.002
Unified Government	0.119	0.091
Governor Power Index	0.106	0.199
Legislative Professionalism	0.236	1.532
Legislative Turnover	-0.026	0.061

[27] *Significant P≤0.10 **Significant P≤0.05 ***Significant P≤0.01

The model explains 86 percent of the variance of the *Dispersed Pollution Sources Index*. Of the Environmental Severity variables, the TRI, vehicle miles, and water area variables are statistically significant. Again, water area has the most significant effect on the index score with a one-percentage increase in water area resulting in an increase of the Dispersed Pollution Sources Index of 0.031. States with more vehicle miles travelled and greater toxic releases are less likely to adopt dispersed pollution source policies. States with greater quantity of water are more likely to adopt these policies. The System Resources that are statistically significant include PCI and population. Larger (population), wealthier states are more likely to adopt these policies. Mining as a percent of GDP is the only Demand variable that is statistically significant. A one-percentage increase in mining as a percent of GDP results in a decrease of the Dispersed Pollution Sources Index by 8.866. Of the Decision System variables, adoption of the "Other" structure, the presence of a rulemaking or advisory board, government ideology were statistically significant. Liberal states government are more likely to adopt these policies. However, states with a board or commission and an "Other" structure are less likely to adopt these policies. States with a board or commission have 1.217 lower expected Dispersed Pollution Sources Index score.

Discussion

In general, the results of the *Dispersed Pollution Sources Index* support the theory of policy adoption. This section includes a general discussion of the results, while highlighting areas where the model could be improved. While many of the same factors affected adoption of these specific policies, there were some clear differences in the results between this model and the *Policy Adoption Index* model. Political characteristics of a state were much more influential in adoption of these policies than in the *Policy Adoption Index.*

Environmental severity

As in the *Policy Adoption Index* model, the level of toxic releases and the number of vehicle miles travelled in a state had a statistically significant effect on policy adoption and none of the resource variables were statistically significant. States with higher number of vehicle miles and higher toxic releases were less likely to adopt polices included in this index. This finding is consistent with the literature, in that states with higher level of pollution tend to have lower policy adoption (A. H. Bacot & Dawes, 1997).

System resources

As in the *Policy Adoption Index* model, wealthier, more populous states are more likely to adopt environmental policies. However, the physical size of the state does not affect the adoption of these policies. These results are consistent with the environmental policy adoption literature. As in the first model, states with poorer fiscal health were less likely to adopt these policies. This result is also consistent with the literature.

Demand

The only demand variable that was statistically significant was mining as a percent of GDP. States with a greater reliance on mining were less likely to adopt these policies, as was found in the *Policy Adoption Index*. However, while manufacturing was statistically significant in the first model, it does not have a statistically significant effect on the adoption of the policies in the *Dispersed Pollution Sources Index*. Surprisingly, given the type of policies included in this index, the ideology of the citizenry does not have a statistically significant impact on adoption of the policies.

Decisional system

The decisional system of a state did have a statistically significant influence on policy adoption. As with the *Environmental Innovativeness Index*, the presence of an advisory or rulemaking board had a statistically significant negative effect on policy adoption. However, states with an “Other” structure were more likely to adopt these policies. This result is a little difficult to interpret because “Other” generally means that the pollution functions are not housed in a single agency. Texas and California are good examples of this “Other” structure as they did not consolidate their functions into a single agency until the 1990s. States with more liberal governments are more likely to adopt environmental policies overall, which again seems logical.

Conclusion

Does agency structure affect policy adoption? Ultimately, this analysis shows that bureaucratic structure matters. Organizational theorists argue that structure defines the goals pursued and policy choices preferred. This section highlights a few key points from the analysis, highlights where the model could be improved, and identifies future research to build on the analysis in this paper.

Advisory/Rulemaking Board

One of the most interesting results, was the significant influence that an advisory or rulemaking board can have on policy adoption. None of the previous studies of environmental agency structure included a measure of the presence of a board. The literature on the role of boards and commissions on policy adoption at the state level is very limited and non-existent in environmental policy literature. However, other studies of structure have found that this type of a board can affect agency outcomes (Knott & Payne, 2004; Meier, 1980; Mitchell, 1997). Often these boards are created as a way to protect a political priority against future uncertainty (Volden, 2002). Meier (1980) found that departmental regulatory agencies tend to be more supportive of regulation than independent regulatory commissions. Agencies have larger budgets and more decentralization than a regulatory commission. Therefore, they are more flexible to adopt new policies. In addition, studies have found that boards can tend to serve particular interests (Mitchell, 1997). Depending on the members of the board, a board could be influenced by interests that are resistant to policy adoption. In higher education literature, states with more centralized boards have lower tuition and overall costs (Knott & Payne, 2004). In addition, just having to find an agreement among the diverse interests represented on the board could be challenging, leading to no new policies being adopted. These boards vary significantly across states, with some having more power to manage the agency and others acting strictly in a support capacity. The diversity of these boards and the influence over time would be a very interesting area for future research. Many of these boards began as stand-alone agencies and their role and place in the hierarchy has changed over time

Agency Structure

Based on these analyses, the structure of an agency does not significantly affect adoption of these environmental policies. The only structure variable that had a statistically significant affect was the "Other" structure. This result is interesting, given that previous studies found that both Mini-EPA and Super-Agency structures facilitated policy adoption (A. Bacot & Dawes, 1996). It would be interesting to see what effect structure has on more traditional first-generation pollution policies, such as air or water emissions levels.

Environmental Severity

The two environmental severity measures had an opposite effect on policy adoption than was expected. States with more vehicle miles driven (and assumed higher levels of vehicle emissions) and higher levels of toxic releases (air, land, and water) were less likely to adopt these policies. It is unclear if this result is because the variable is not the best measure of the type of environmental pollution problems these policies are developed to address, or if states with higher levels of pollution are less likely to adopt innovative policies. States with higher levels of pollution could be less likely to adopt innovative policies due to economic pressure from industry groups.

Improvements to Analysis

This empirical model could be improved with additional variables, better measures of certain variables, and a more detailed typology of agency structure. In addition, the model only measures internal characteristics of a state, and does not account for horizontal or vertical influences on state policy adoption. The models capture between 78 and 88 percent of the variation in the indices; it is likely that external influences would capture that missing variation. Future analysis could use event history models to examine each individual policy to evaluate the role of diffusion in adoption of these policies.

Variables

While the model performed relatively well, there are a few variables that could be improved upon to better measure the characteristics of a state in the model. Those variables include environmental quality, environmental group pressure, and citizen political preference for environmental policy.

- *Environmental Quality*: Finding a consistent, relevant measure of environmental quality for this time period is a challenge. The TRI and vehicle measure was negatively significant in the models. Perhaps a measure that addresses the type of pollutants these policies are addressing would enhance the model.
- *Environmental Group Pressure*: As stated above, the Sierra Club membership variable is only capturing one aspect of environmental group participation, and inclusion of member data from additional national or local groups would better capture this characteristic of the Demand.

Typology

The model relies on the generally accepted typology in the literature for environmental agency structure. However, this typology may not be the most accurate way to capture agency structure. This typology does not completely account for the role of a rulemaking board, may oversimplify the diversity of the Super-Agency category, and may not reflect the competing priorities within the agencies. I have added the presence of an advisory or rulemaking board into the model, an addition that no previous study has included. A more accurate typology would label agencies with a rulemaking board as a type of hybrid-agency because of the strength of the board. The way my model currently captures the board combines advisory and regulatory boards together. I assume that each type of board would have a different impact on policy adoption. The "Super-Agency" category can include combined functions of agriculture, energy, or natural resources which all could have different impacts on policy outcomes. Both Massachusetts and Connecticut have added a division of energy to their Super-Agency in the past five years.

While the USEPA, has divisions focused on air quality, radiation protection, hazardous waste prevention, solid waste, and water quality (includes drinking water, surface water, coastal water, and groundwater), states' Mini-EPA agencies can include additional functions. For example, while the Montana Department of Environmental Quality regulates mines in that state, the Iowa Department of Agriculture regulates mines within its borders. Figure 15 below lists the state agencies that can house some or all of related functions. The various functions related to environmental protection and the state agencies that house these various functions.

Figure 15: Types of Agencies and Functions

Some of these functions in the diagram are environmental protection functions, while others are related to environmental protection and often combined in super agencies. The initial focus of state governments was on air quality and water quality. However, as these agencies matured, new issues arose, and the federal government passed more environmental laws, the focus began to expand. Each state has combined these functions into its own state structure based on its goals and needs.

CHAPTER 8: SUMMARY, CONCLUSIONS, RESEARCH PROSPECTS

"They (political institutions) arise out of a politics of structural choice in which the winners use their temporary hold on public authority to design new structures and impose them on the polity as a whole. These structures are simply vehicles by which they pursue their own interest, often at the expense of losers" (Moe, 1990a).

Rational organizational theorists argued that public bureaucracies should be designed efficiently to meet the regulatory mission of the agency (Gulick, 1937; Taylor, 1911; Weber, 1922). However, as Moe (1990a) argued, in practice, the design of public bureaucracies is a political exercise to achieve political goals. This dissertation set out to answer two main questions in terms of the design of state pollution prevention agencies:

1. How are the agencies designed?
2. What is the impact of that design on policy adoption?

Following the introduction and historical overview, the dissertation is designed around answering the two main questions above. Chapter 3 develops a theory of state administrative agency adoption based on organizational and political literature. Chapters 4 and 5 empirically test this theory to understand why states adopted a comprehensive environmental agency and then more specifically why a state would adopt either a Super-Agency or Mini-EPA structure. Chapter 6 develops a theory of state adoption of environmental policies and Chapter 7 uses that theory to empirically examine what role agency structure plays in environmental policy adoption. This conclusion reviews the general findings of the dissertation, policy implications of the findings, and limitations of the analyses and potential future research directions.

Dissertation Summary

Bureaucratic structure does matter. Because structure affects agency outcomes, the design of agencies is a political exercise. Governors and legislators have designed state environmental agencies to either aggressively reduce pollution within a state, or "balance" pollution prevention with economic and recreational interests within a state. In addition, in accordance with organizational theory, state environmental and health agencies responded to changes in the organizational environment. As states faced greater administrative responsibilities from the USEPA and from the Medicare and Medicaid programs, the conflicting missions required an organizational change. Finally, environmental programs were redesigned as part of a larger push to create a more professional, competent and efficient state government. Table 16 below provides a summary of policy adoption by state, agency structure type, and year that state consolidated their pollution control functions outside of the department of health. In addition, the table lists what percentage of the total index each individual type of policies comprises.

Table 16: Summary of Policy Adoption, Agency Structure, and Consolidation Year

State	Structure	Structure Adopted	Innovation Index
Maine	Mini-EPA	1972	12
New Jersey	Super-Agency	1970	12
Pennsylvania	Mini-EPA	1970	12
Oregon	Mini-EPA	1969	12
Virginia	Mini-EPA	1993	11
New Hampshire	Mini-EPA	1987	11
Washington	Super-Agency	1970	11

Table 16: Summary of Policy Adoption, Agency Structure, and Consolidation Year (continued)

State	Structure	Structure Adopted	Innovation Index
New York	Super-Agency	1970	10
North Carolina	Super-Agency	1971	10
California	Mini-EPA	1991	10
Connecticut	Super-Agency	1971	10
Illinois	Mini-EPA	1970	10
Indiana	Mini-EPA	1986	10
Minnesota	Mini-EPA	1967	10
Utah	Mini-EPA	1991	10
Vermont	Super-Agency	1969	10
West Virginia	Mini-EPA	1989	9
New Mexico	Mini-EPA	1991	9
Rhode Island	Mini-EPA	1978	9
Colorado	Health	N/A	9
Hawaii	Health	N/A	9
Maryland	Mini-EPA	1987	9
Massachusetts	Super-Agency	1975	9
Texas	Mini-EPA	1993	9
Wisconsin	Super-Agency	1967	9
Delaware	Super-Agency	1969	8
Michigan	Super-Agency	1973	8
Florida	Mini-EPA	1969	8
Iowa	Super-Agency	1972	8
Montana	Super-Agency	1995	8
Ohio	Mini-EPA	1972	8
Missouri	Mini-EPA	1974	7
South Carolina	Health	N/A	7
Tennessee	Super-Agency	1991	7
Arkansas	Mini-EPA	1971	6
Georgia	Super-Agency	1972	6
Louisiana	Mini-EPA	1979	6
Oklahoma	Mini-EPA	1993	6
North Dakota	Health	N/A	5
Alabama	Mini-EPA	1982	5
Arizona	Mini-EPA	1987	5
Kentucky	Super-Agency	1972	5
South Dakota	Super-Agency	1973	4
Idaho	Mini-EPA	2000	4

Table 16: Summary of Policy Adoption, Agency Structure, and Consolidation Year (continued)

State	Structure	Structure Adopted	Innovation Index
Kansas	Health	N/A	4
Mississippi	Mini-EPA	1978	4
Nevada	Super-Agency	1973	4
Alaska	Mini-EPA	1971	2
Wyoming	Mini-EPA	1973	2

Looking at the data in the table above, of those states that adopted 10 or more policies, approximately 56 percent use the Mini-EPA structure and adopted that structure prior to 1975. There are also two states with their pollution prevention functions within the department of health that have adopted at least 10 of the policies.

Policy Implications

There are two primary policy implications of the research in this dissertation: aspects of bureaucratic structure matters and its design is influenced by more than efficiency or politics. While the political pressure to respond to environmental pollution did drive states to consolidate their pollution control functions into a single agency, additional administrative pressures also strongly influenced agency design. While initially, many governors pushed for a single agency as a political statement in support of environmental protection or political control over unaffiliated boards (Haskell & Price, 1973), many agencies also developed out of statewide restructuring efforts.

The structures of state environmental agencies did not have a statistically significant impact on policy adoption. However, the more consistent influence on policy adoption was the presence of an advisory or rulemaking board. This board is a significant influence on policy adoption across agency types and seems to reduce policy adoption. While the analysis does not differentiate between rulemaking and advisory or inclusion of politicians versus experts on the board, the role of this board should not be underestimated.

Limitations and Future Research

The empirical analysis provide interesting insight into the development of bureaucratic structure at the state level and the impact that structure has on policy adoption. However, there are a few primary limitations and areas where the analysis could be enhanced and expanded upon in the future.

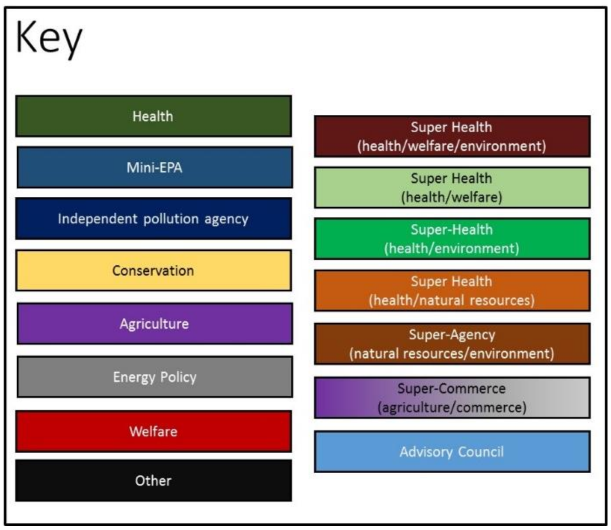
The analyses are limited by the lack of consistent, reliable measure of many of the primary variables for the entire time period. It is difficult to ascertain how environmental quality has impacted state adoption of environmental agency structure, and whether states that faced high levels of pollution were more or less likely to adopt a Comprehensive Structure. In addition, while anecdotally we know that the growth in membership and activity of environmental groups influenced state politicians, without a strong measure of this membership for the entire time period, this influence cannot be estimated.

In addition, the dissertation relies on the accepted typology in the literature of Health, Mini-EPA, and Super-Agency. However, as is clear from the impact of the board/commission variable, there is additional variation in structure across states that may be captured more accurately in a better typology. It may be that structure does play more of a role in policy adoption than is estimated using this typology. The typology used in this analysis is a very high-level classification that may not capture the variety across states. For example, my typology includes in the Super-Agency classification those states with and without a secretariat system. It is likely these two types of Super-Agencies actually function very differently and the pollution department within the Secretariat system has much more autonomy than within the other types of systems.

Finally, the policy adoption model is an internal determinants model and does not measure external influences on policy adoption. The analysis included in Chapter 7 uses policy indices to measure levels of policy activism within a state. An event history analyses could help capture the role of the external influences on policy adoption. The trade-off between the model used here and the event history analysis is between capturing external influences and measuring policy adoption of specific policies and overall levels of policy activism.

APPENDIX A: STATE ENVIRONMENTAL AGENCY STRUCTURE HISTORIES

Appendix A includes, for each state, executive branch organizational charts that summarize all the following agencies within each state: health, environmental, natural resources, conservation, welfare, energy-related, and agricultural. In addition, this appendix includes a diagram that shows the flow and development of each states' environmental pollution programs through the various agencies to the current structure. Below is a key to the diagrams.



Alabama

Department of Environmental Management

Mission Statement

Responsibly adopt and fairly enforce rules and regulations consistent with the statutory authority granted to the Alabama Environmental Management Commission (AEMC) and the Alabama Department of Environmental Management (ADEM) to protect and improve the quality of Alabama's environment and the health of all its citizens. Monitor environmental conditions in Alabama and recommend changes in state law or revise regulations as needed to respond appropriately to changing environmental conditions.

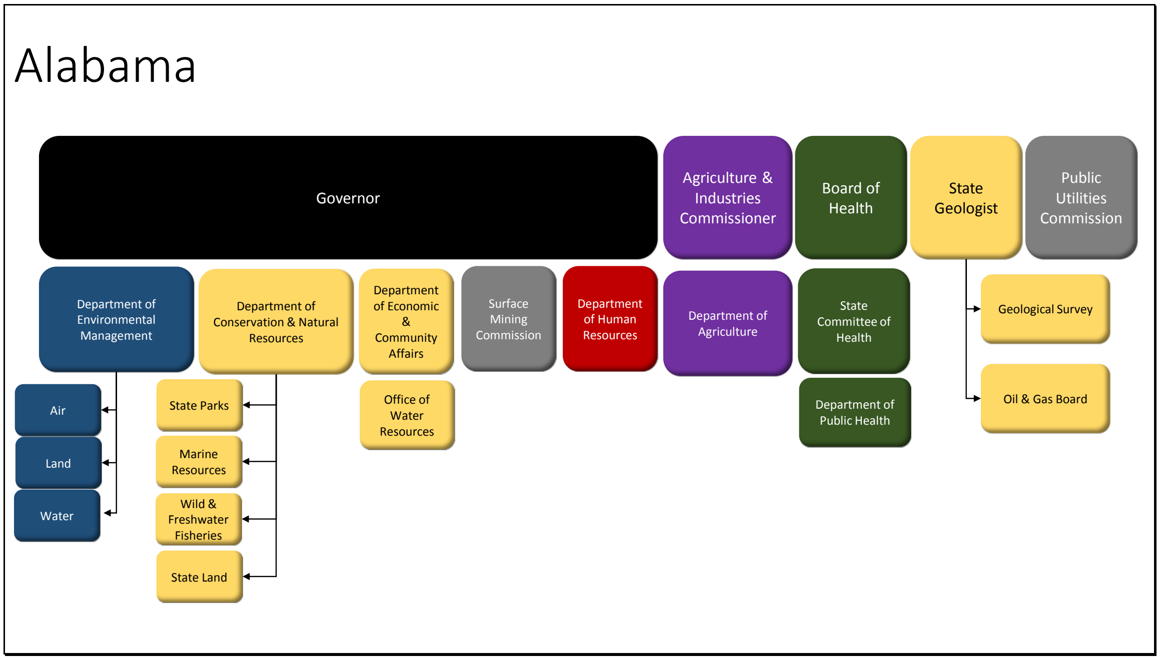
History and Budget Information

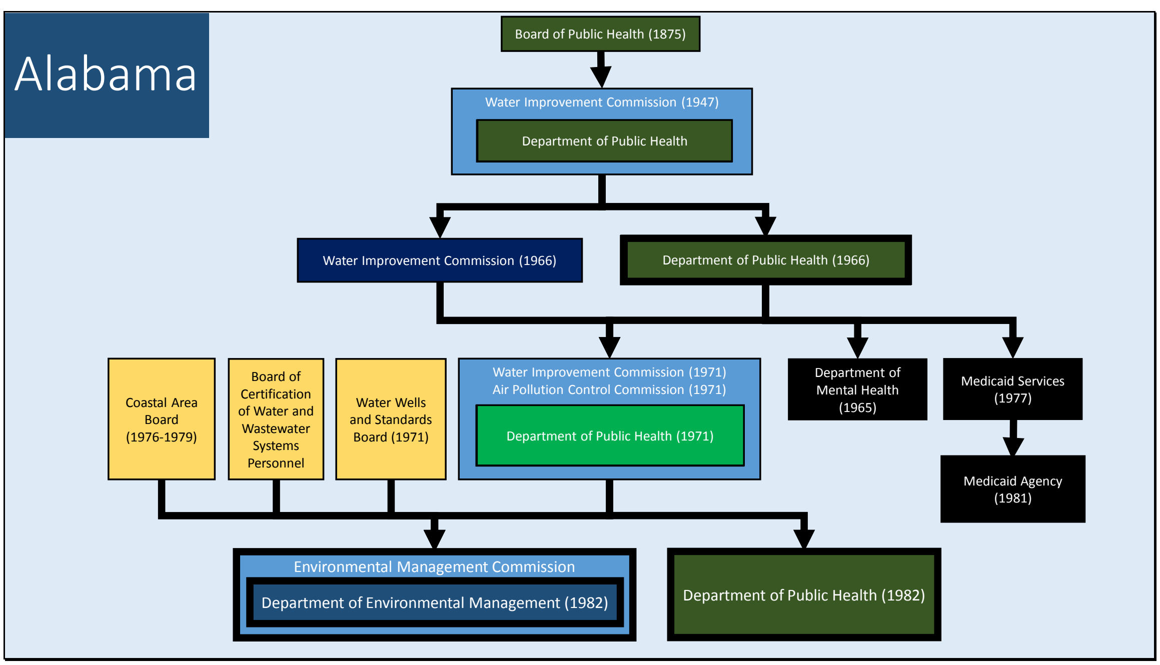
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	N	N	1982	N/A	587

Operating Budget 2015/16	Federal Funding	Federal Share
$63,437,811	$18,376,418	29.0%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y (disposal)	Y	N	N	N


Alabama
Governor
Agriculture & Industries Commissioner
Board of Health
State Geologist
Public Utilities Commission
Department of Environmental Management
Department of Conservation & Natural Resources
Department of Economic & Community Affairs
Surface Mining Commission
Department of Human Resources
Department of Agriculture
State Committee of Health
Geological Survey
Air
State Parks
Office of Water Resources
Department of Public Health
Oil & Gas Board
Land
Marine Resources
Water
Wild & Freshwater Fisheries
State Land


Alabama
Board of Public Health (1875)
Water Improvement Commission (1947)
Department of Public Health
Water Improvement Commission (1966)
Department of Public Health (1966)
Coastal Area Board (1976-1979)
Board of Certification of Water and Wastewater Systems Personnel
Water Wells and Standards Board (1971)
Water Improvement Commission (1971)
Air Pollution Control Commission (1971)
Department of Public Health (1971)
Department of Mental Health (1965)
Medicaid Services (1977)
Medicaid Agency (1981)
Environmental Management Commission
Department of Environmental Management (1982)
Department of Public Health (1982)

Alaska

Department of Environmental Conservation

<u>Mission Statement</u>

To conserve, improve, and protect its natural resources and environment and control water, land, and air pollution, in order to enhance the health, safety, and welfare of the people of the state and their overall economic and social well-being.

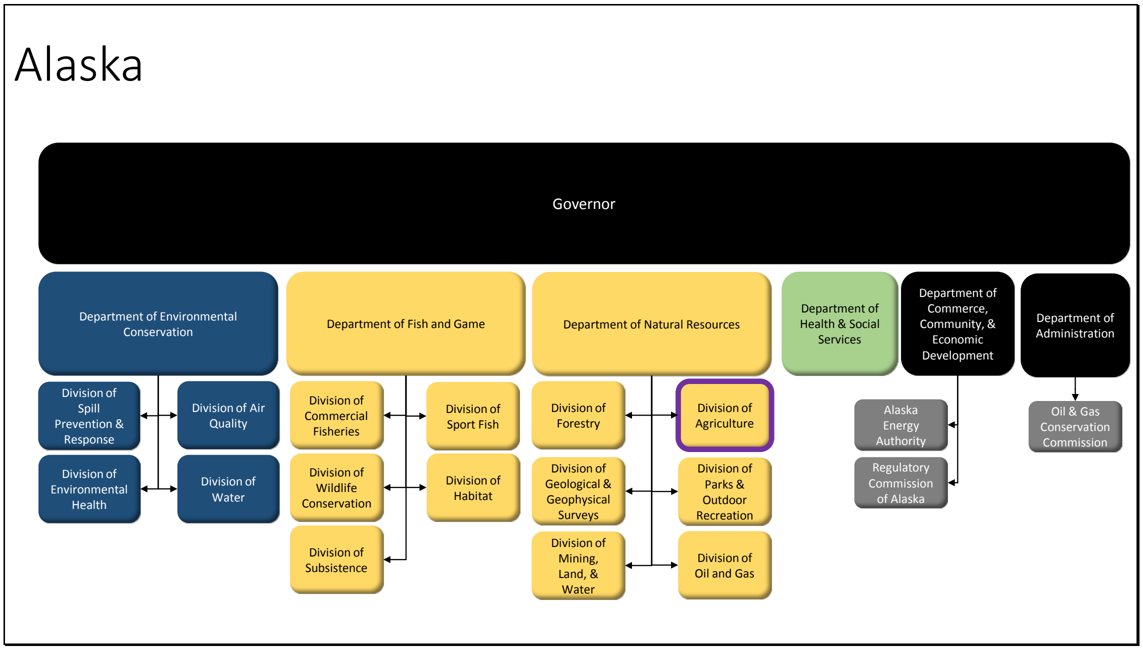
<u>History and Budget Information</u>

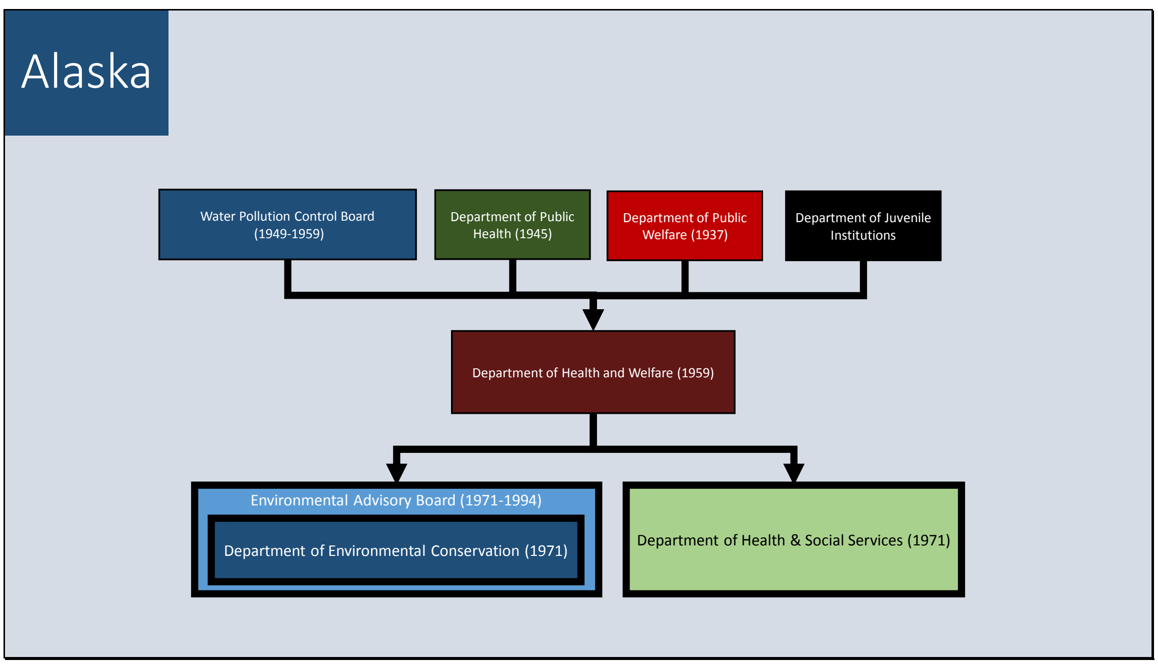
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	N	N	1971	N/A	511

Operating Budget 2015/16	Federal Funding	Federal Share
$ 85,353,600	$ 2,362,890	27.7%

<u>Agency Responsibilities</u>

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	N	Y	Y	Y	N	N	N


Alaska
Governor
Department of Environmental Conservation
Division of Spill Prevention & Response
Division of Air Quality
Division of Environmental Health
Division of Water
Department of Fish and Game
Division of Commercial Fisheries
Division of Sport Fish
Division of Wildlife Conservation
Division of Habitat
Division of Subsistence
Department of Natural Resources
Division of Forestry
Division of Agriculture
Division of Geological & Geophysical Surveys
Division of Parks & Outdoor Recreation
Division of Mining, Land, & Water
Division of Oil and Gas
Department of Health & Social Services
Department of Commerce, Community, & Economic Development
Alaska Energy Authority
Regulatory Commission of Alaska
Department of Administration
Oil & Gas Conservation Commission


Alaska
Water Pollution Control Board (1949-1959)
Department of Public Health (1945)
Department of Public Welfare (1937)
Department of Juvenile Institutions
Department of Health and Welfare (1959)
Environmental Advisory Board (1971-1994)
Department of Environmental Conservation (1971)
Department of Health & Social Services (1971)

Arizona

Department of Environmental Quality

Mission Statement

DEQ's goal is to lead Arizona and the nation in protecting and enhancing the environment and improving the quality of life for the people of our state. The agency helps Arizonans respect the balance between the natural world and the people who depend on it for sustenance, prosperity and a fulfilling quality of life.

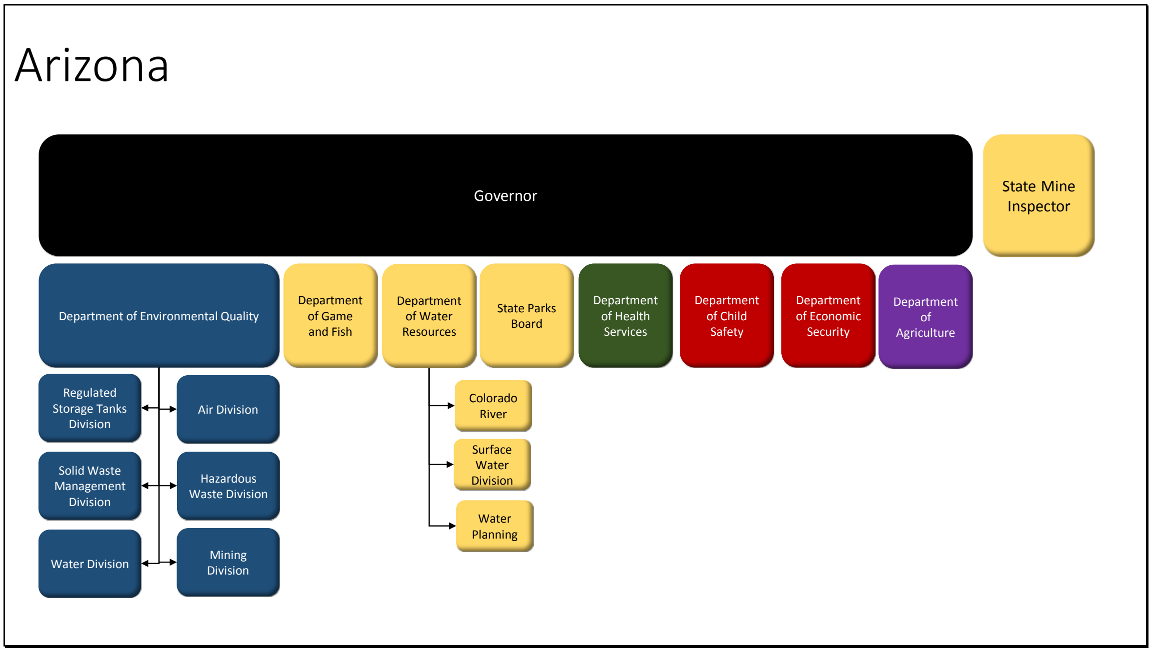
History and Budget Information

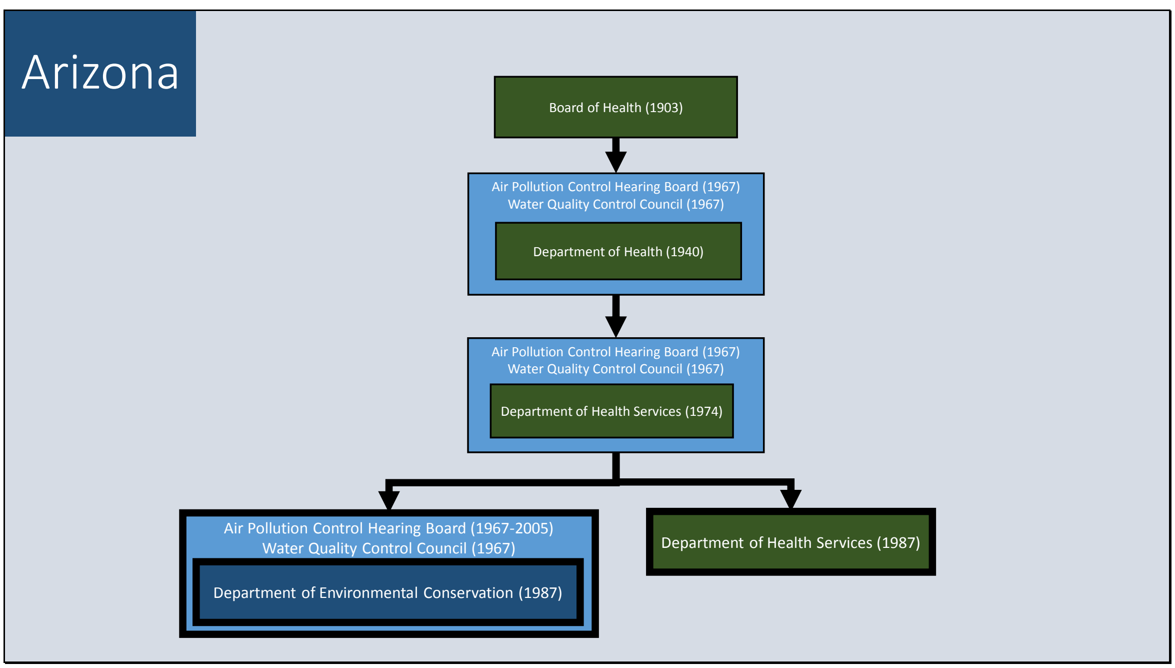
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	N	N	1987	N/A	612

Operating Budget 2015/16	Federal Funding	Federal Share
$ 129,268,000	$ 15,204,000	11.8%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	Y	Y	Y	N	N	N


Arizona
Governor
State Mine Inspector
Department of Environmental Quality
Department of Game and Fish
Department of Water Resources
State Parks Board
Department of Health Services
Department of Child Safety
Department of Economic Security
Department of Agriculture
Regulated Storage Tanks Division
Air Division
Solid Waste Management Division
Hazardous Waste Division
Water Division
Mining Division
Colorado River
Surface Water Division
Water Planning


Arizona
Board of Health (1903)
Air Pollution Control Hearing Board (1967)
Water Quality Control Council (1967)
Department of Health (1940)
Air Pollution Control Hearing Board (1967)
Water Quality Control Council (1967)
Department of Health Services (1974)
Air Pollution Control Hearing Board (1967-2005)
Water Quality Control Council (1967)
Department of Environmental Conservation (1987)
Department of Health Services (1987)

Arkansas

Department of Environmental Quality

Mission Statement

We protect, enhance and restore the natural environment for the well-being of all Arkansans.

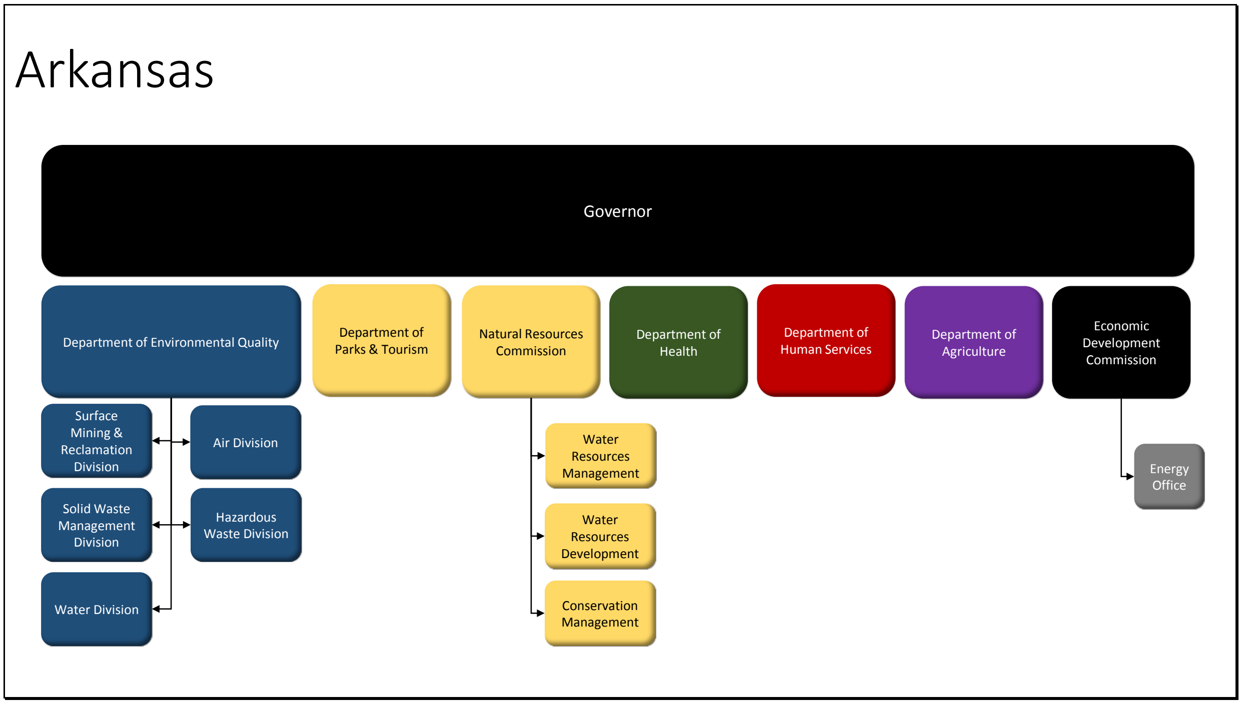
History and Budgetary Information

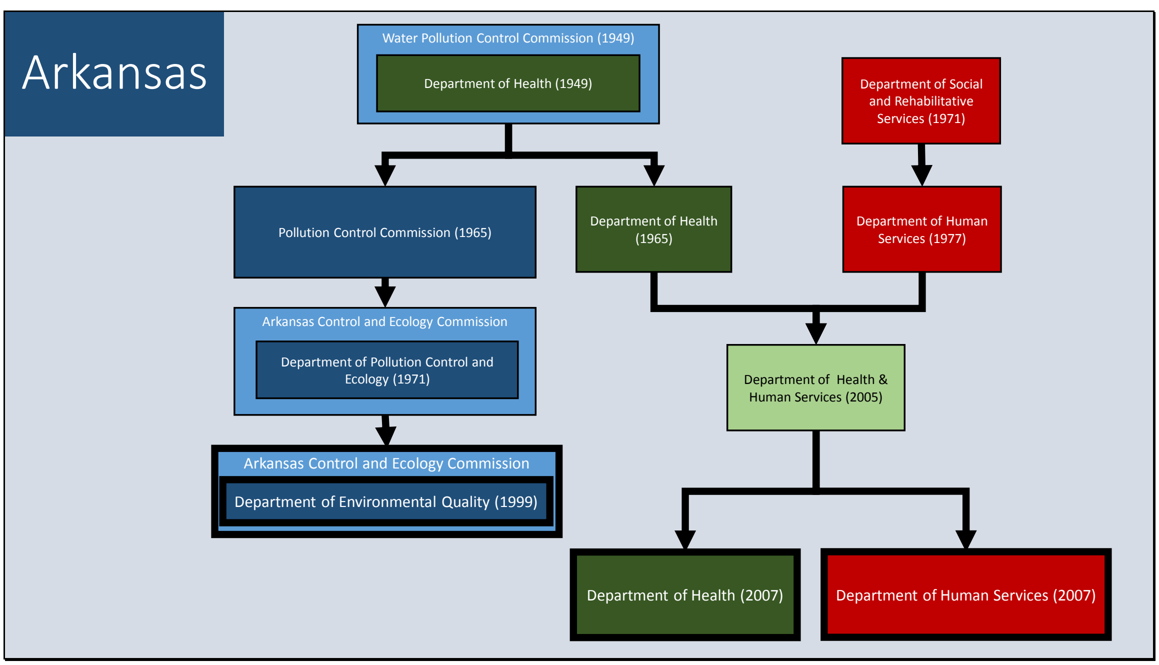
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	N	N	1971	N/A	337

Operating Budget 2015/16	Federal Funding	Federal Share
$ 102,927,734	$ 18,626,685	18.1%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	N	N	Y	Y	Y	N	N


Arkansas
Governor
Department of Environmental Quality
Department of Parks & Tourism
Natural Resources Commission
Department of Health
Department of Human Services
Department of Agriculture
Economic Development Commission
Surface Mining & Reclamation Division
Air Division
Solid Waste Management Division
Hazardous Waste Division
Water Division
Water Resources Management
Water Resources Development
Conservation Management
Energy Office


Arkansas
Water Pollution Control Commission (1949)
Department of Health (1949)
Department of Social and Rehabilitative Services (1971)
Pollution Control Commission (1965)
Department of Health (1965)
Department of Human Services (1977)
Arkansas Control and Ecology Commission
Department of Pollution Control and Ecology (1971)
Department of Health & Human Services (2005)
Arkansas Control and Ecology Commission
Department of Environmental Quality (1999)
Department of Health (2007)
Department of Human Services (2007)

California

Environmental Protection Agency

Mission Statement

To restore, protect, and enhance the environment, to ensure public health, environmental quality, and economic vitality

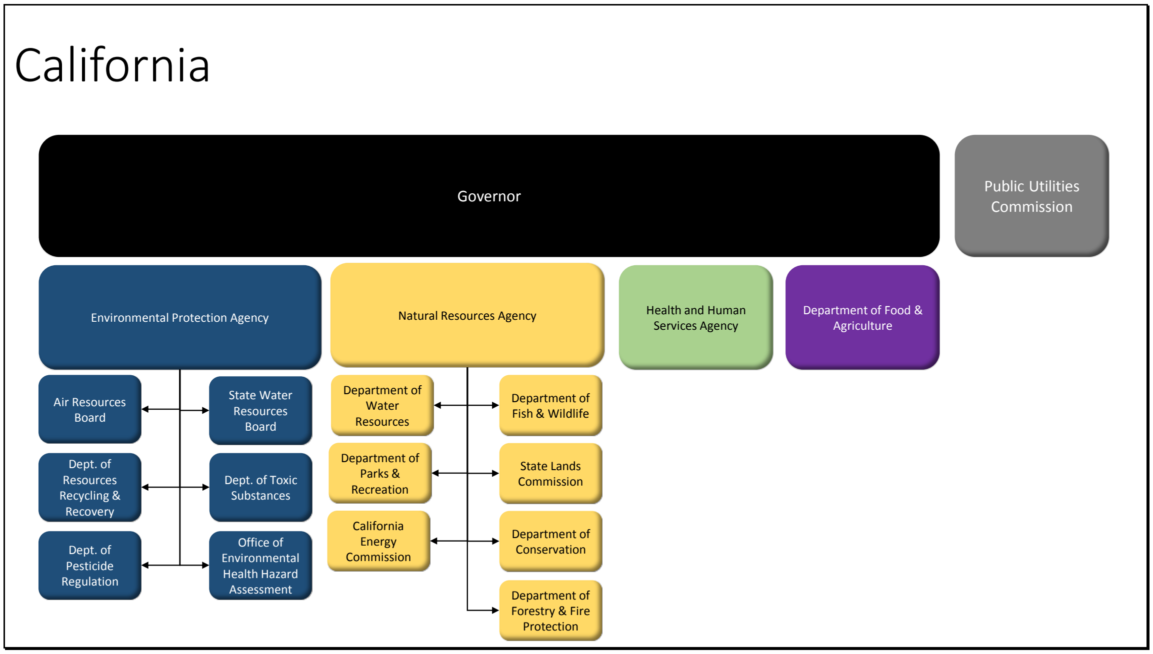
History and Budgetary Information

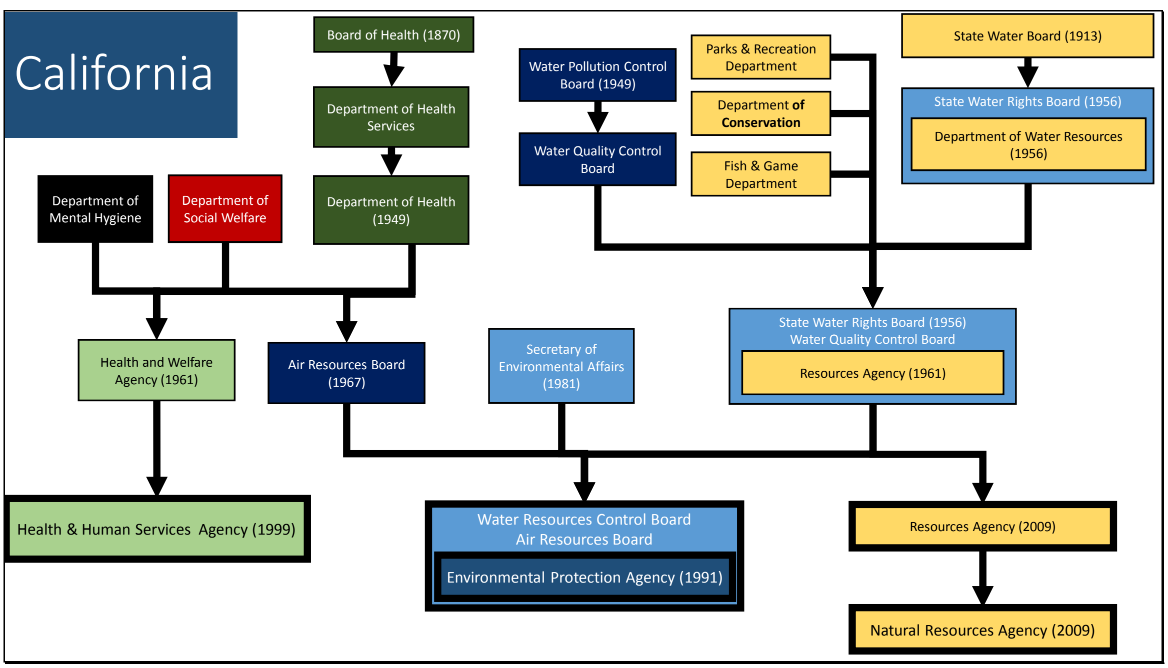
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	N	Y	N	1991	N/A	5810

Operating Budget 2015/16	Federal Funding	Federal Share
$ 4,285,033,000	N/A	N/A

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	N	N	N


California
Governor
Public Utilities Commission
Environmental Protection Agency
Natural Resources Agency
Health and Human Services Agency
Department of Food & Agriculture
Air Resources Board
State Water Resources Board
Dept. of Resources Recycling & Recovery
Dept. of Toxic Substances
Dept. of Pesticide Regulation
Office of Environmental Health Hazard Assessment
Department of Water Resources
Department of Fish & Wildlife
Department of Parks & Recreation
State Lands Commission
California Energy Commission
Department of Conservation
Department of Forestry & Fire Protection


California
Board of Health (1870)
Department of Health Services
Department of Health (1949)
Department of Mental Hygiene
Department of Social Welfare
Water Pollution Control Board (1949)
Water Quality Control Board
Parks & Recreation Department
Department of Conservation
Fish & Game Department
State Water Board (1913)
State Water Rights Board (1956)
Department of Water Resources (1956)
Health and Welfare Agency (1961)
Air Resources Board (1967)
Secretary of Environmental Affairs (1981)
State Water Rights Board (1956)
Water Quality Control Board
Resources Agency (1961)
Health & Human Services Agency (1999)
Water Resources Control Board
Air Resources Board
Environmental Protection Agency (1991)
Resources Agency (2009)
Natural Resources Agency (2009)

Colorado

Department of Public Health and Environment

Mission Statement

The mission of the Colorado Department of Public Health and Environment is to protect and improve the health of Colorado's people and the quality of its environment.

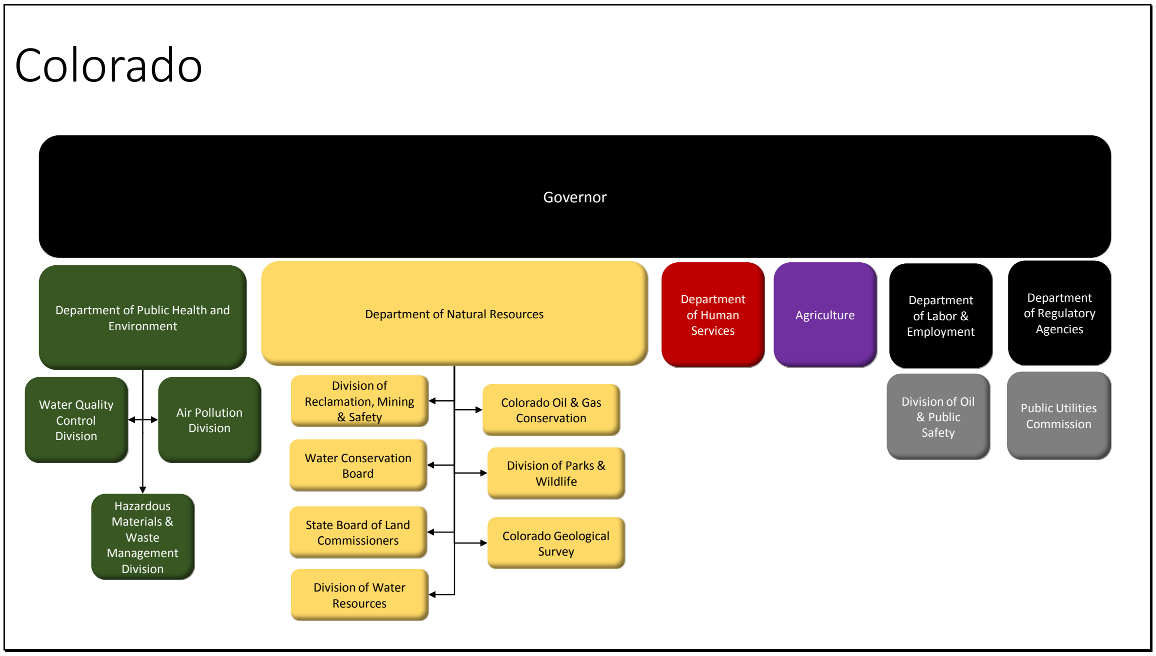
History and Budgetary Information

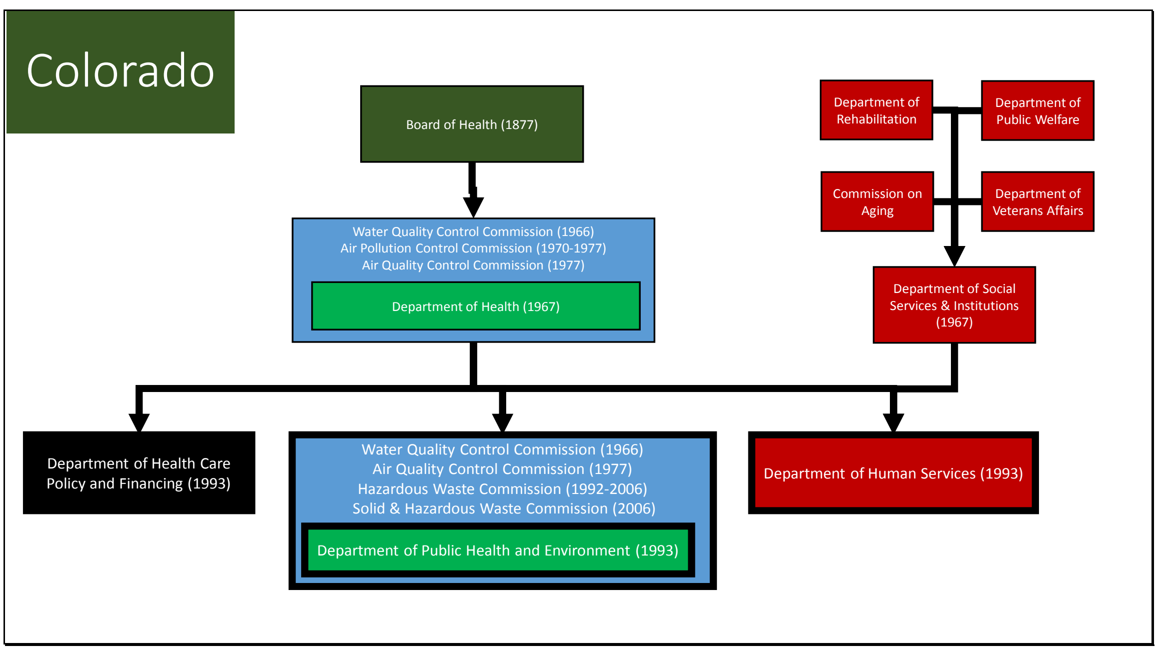
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Health	Y	N	N	N/A	N/A	1276

Operating Budget 2015/16	Federal Funding	Federal Share
$ 548,628,367	$ 292,816,022	53%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	Y	Y	Y	N	N	N


Colorado
Governor
Department of Public Health and Environment
Department of Natural Resources
Department of Human Services
Agriculture
Department of Labor & Employment
Department of Regulatory Agencies
Water Quality Control Division
Air Pollution Division
Hazardous Materials & Waste Management Division
Division of Reclamation, Mining & Safety
Colorado Oil & Gas Conservation
Water Conservation Board
Division of Parks & Wildlife
State Board of Land Commissioners
Colorado Geological Survey
Division of Water Resources
Division of Oil & Public Safety
Public Utilities Commission


Colorado
Board of Health (1877)
Water Quality Control Commission (1966)
Air Pollution Control Commission (1970-1977)
Air Quality Control Commission (1977)
Department of Health (1967)
Department of Rehabilitation
Department of Public Welfare
Commission on Aging
Department of Veterans Affairs
Department of Social Services & Institutions (1967)
Department of Health Care Policy and Financing (1993)
Water Quality Control Commission (1966)
Air Quality Control Commission (1977)
Hazardous Waste Commission (1992-2006)
Solid & Hazardous Waste Commission (2006)
Department of Public Health and Environment (1993)
Department of Human Services (1993)

Connecticut

Department of Energy and Environmental Protection

Mission Statement

Charged with conserving, improving and protecting the natural resources and the environment of the state of Connecticut as well as making cheaper, cleaner and more reliable energy available for the people and businesses of the state. The agency is also committed to playing a positive role in rebuilding Connecticut's economy and creating jobs – and to fostering a sustainable and prosperous economic future for the state.

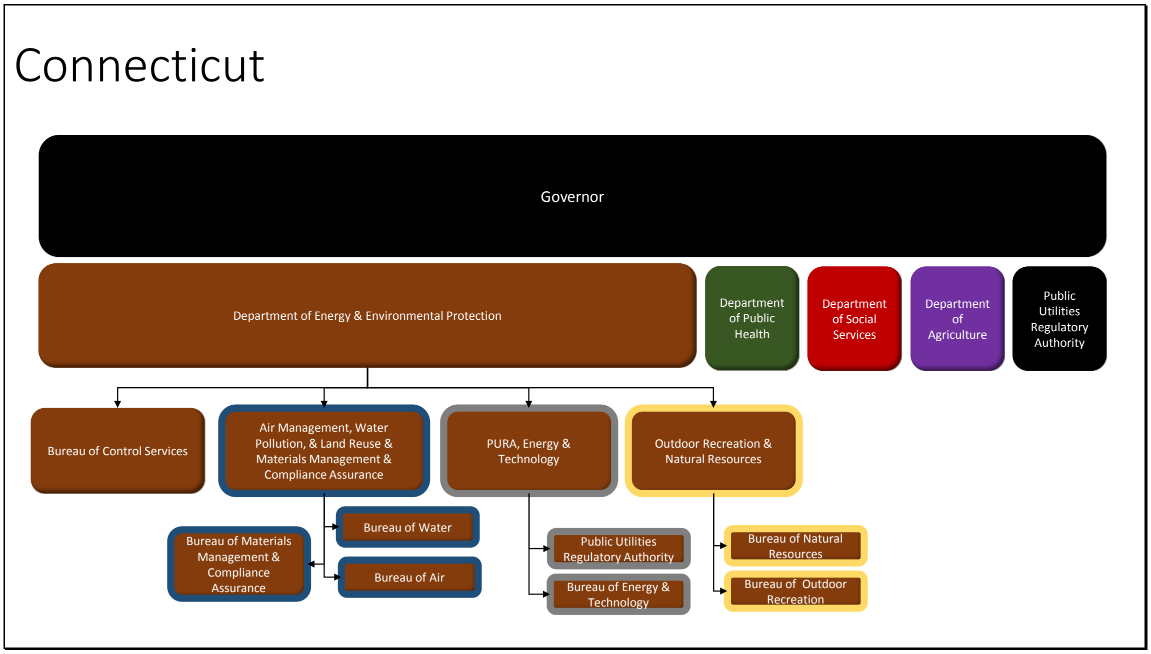
History and Budgetary Information

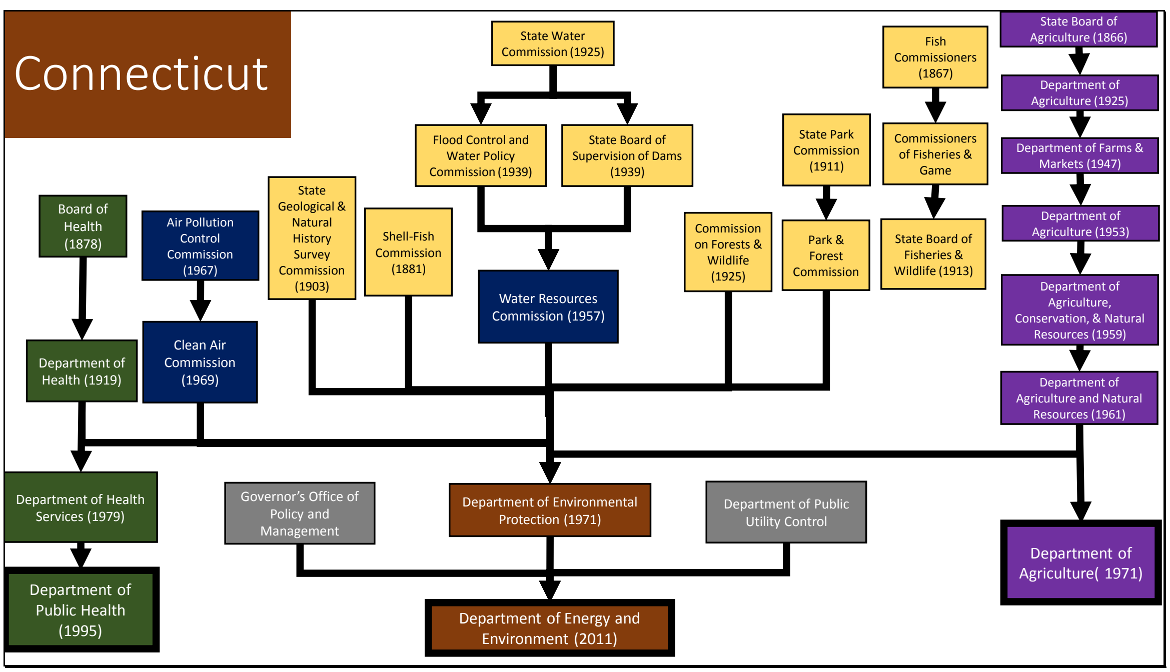
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	N	Y	N	1971	2011	1022

Operating Budget 2015/16	Federal Funding	Federal Share
$169,630,775	$35,434,518	20.9%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	N	Y	N


Connecticut
Governor
Department of Energy & Environmental Protection
Department of Public Health
Department of Social Services
Department of Agriculture
Public Utilities Regulatory Authority
Bureau of Control Services
Air Management, Water Pollution, & Land Reuse & Materials Management & Compliance Assurance
PURA, Energy & Technology
Outdoor Recreation & Natural Resources
Bureau of Water
Bureau of Materials Management & Compliance Assurance
Bureau of Air
Public Utilities Regulatory Authority
Bureau of Energy & Technology
Bureau of Natural Resources
Bureau of Outdoor Recreation


Connecticut
State Water Commission (1925)
Fish Commissioners (1867)
State Board of Agriculture (1866)
Department of Agriculture (1925)
Flood Control and Water Policy Commission (1939)
State Board of Supervision of Dams (1939)
State Park Commission (1911)
Commissioners of Fisheries & Game
Department of Farms & Markets (1947)
Board of Health (1878)
Air Pollution Control Commission (1967)
State Geological & Natural History Survey Commission (1903)
Shell-Fish Commission (1881)
Commission on Forests & Wildlife (1925)
Park & Forest Commission
State Board of Fisheries & Wildlife (1913)
Department of Agriculture (1953)
Water Resources Commission (1957)
Department of Agriculture, Conservation, & Natural Resources (1959)
Department of Health (1919)
Clean Air Commission (1969)
Department of Agriculture and Natural Resources (1961)
Department of Health Services (1979)
Governor's Office of Policy and Management
Department of Environmental Protection (1971)
Department of Public Utility Control
Department of Agriculture(1971)
Department of Public Health (1995)
Department of Energy and Environment (2011)

Delaware

Department of Natural Resources and Environmental Control

Mission Statement

The mission of the Delaware Department of Natural Resources and Environmental Control is to protect and manage the state's vital natural resources, protect public health and safety, provide quality outdoor recreation and to serve and educate the citizens of the First State about the wise use, conservation and enhancement of Delaware's environment.

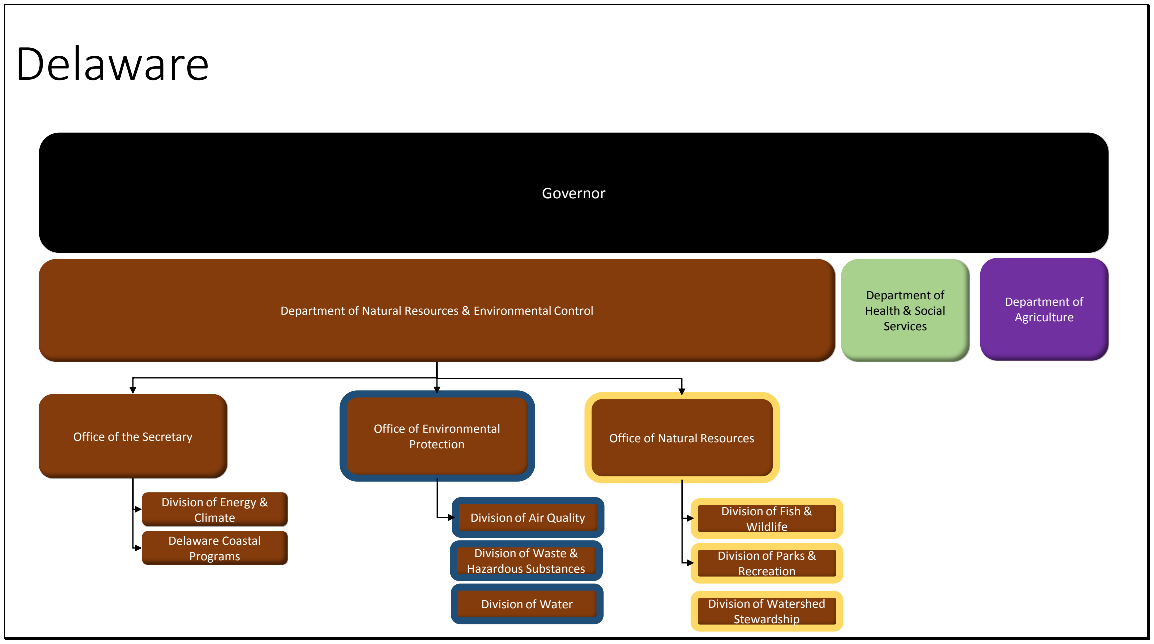
History and Budgetary Information

Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	N	Y	N	1969	N/A	772

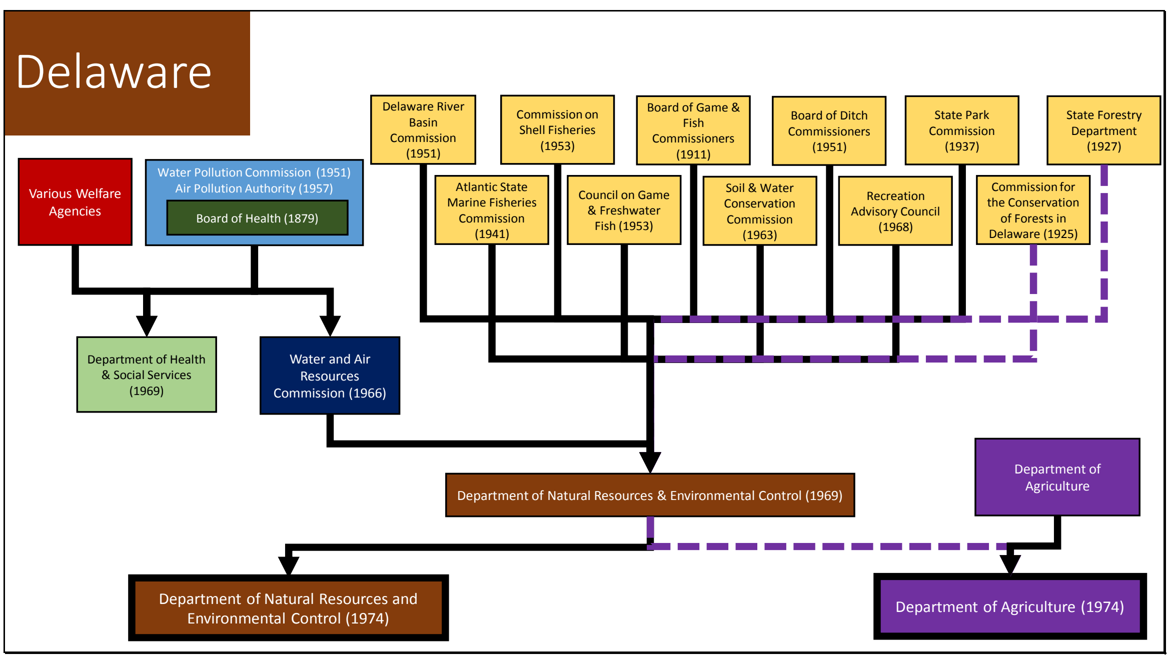
Operating Budget 2015/16	Federal Funding	Federal Share
$133,572,900	N/A	N/A

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	N	Y	Y	Y	N	Y	N



Delaware
Governor
Department of Natural Resources & Environmental Control
Department of Health & Social Services
Department of Agriculture
Office of the Secretary
Office of Environmental Protection
Office of Natural Resources
Division of Energy & Climate
Delaware Coastal Programs
Division of Air Quality
Division of Waste & Hazardous Substances
Division of Water
Division of Fish & Wildlife
Division of Parks & Recreation
Division of Watershed Stewardship



Delaware
Delaware River Basin Commission (1951)
Commission on Shell Fisheries (1953)
Board of Game & Fish Commissioners (1911)
Board of Ditch Commissioners (1951)
State Park Commission (1937)
State Forestry Department (1927)
Various Welfare Agencies
Water Pollution Commission (1951)
Air Pollution Authority (1957)
Board of Health (1879)
Atlantic State Marine Fisheries Commission (1941)
Council on Game & Freshwater Fish (1953)
Soil & Water Conservation Commission (1963)
Recreation Advisory Council (1968)
Commission for the Conservation of Forests in Delaware (1925)
Department of Health & Social Services (1969)
Water and Air Resources Commission (1966)
Department of Natural Resources & Environmental Control (1969)
Department of Agriculture
Department of Natural Resources and Environmental Control (1974)
Department of Agriculture (1974)

Florida

Department of Environmental Protection

Mission Statement

The Department of Environmental Protection (DEP) protects, conserves and manages Florida's natural resources and enforces the State's environmental laws.

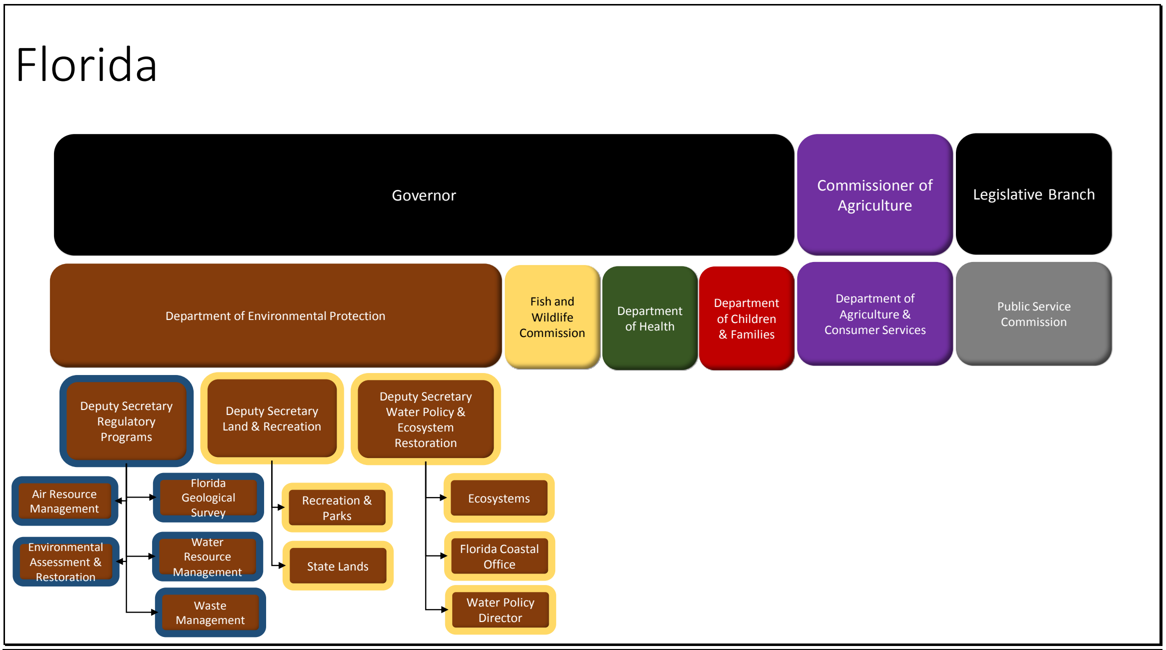
History and Budgetary Information

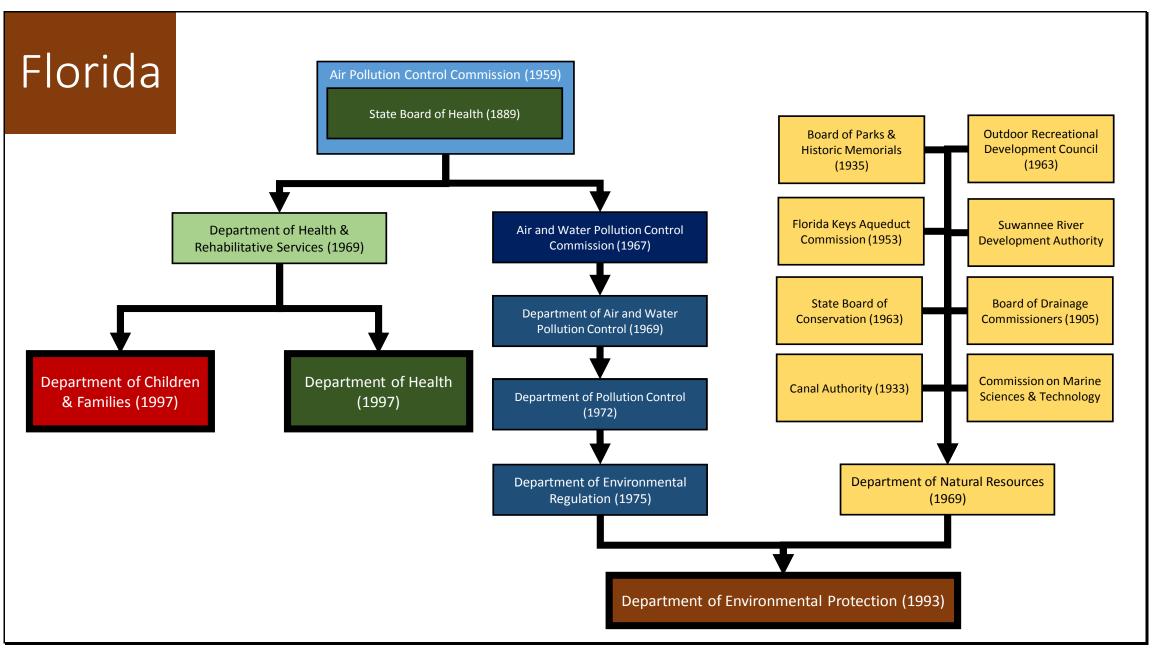
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	N	Y	N	1969	1993	2822

Operating Budget 2015/16	Federal Funding	Federal Share
$1,522,137,513	N/A	N/A

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	N	N	N


Florida
Governor
Commissioner of Agriculture
Legislative Branch
Department of Environmental Protection
Fish and Wildlife Commission
Department of Health
Department of Children & Families
Department of Agriculture & Consumer Services
Public Service Commission
Deputy Secretary Regulatory Programs
Deputy Secretary Land & Recreation
Deputy Secretary Water Policy & Ecosystem Restoration
Air Resource Management
Florida Geological Survey
Recreation & Parks
Ecosystems
Environmental Assessment & Restoration
Water Resource Management
State Lands
Florida Coastal Office
Waste Management
Water Policy Director


Florida
Air Pollution Control Commission (1959)
State Board of Health (1889)
Department of Health & Rehabilitative Services (1969)
Air and Water Pollution Control Commission (1967)
Department of Air and Water Pollution Control (1969)
Department of Pollution Control (1972)
Department of Environmental Regulation (1975)
Department of Children & Families (1997)
Department of Health (1997)
Board of Parks & Historic Memorials (1935)
Outdoor Recreational Development Council (1963)
Florida Keys Aqueduct Commission (1953)
Suwannee River Development Authority
State Board of Conservation (1963)
Board of Drainage Commissioners (1905)
Canal Authority (1933)
Commission on Marine Sciences & Technology
Department of Natural Resources (1969)
Department of Environmental Protection (1993)

Georgia

Department of Natural Resources

Mission Statement

To sustain, enhance, protect, and conserve Georgia's natural, historic, and cultural resources for present and future generations, while recognizing the importance of promoting the development of commerce and industry that utilize sound environmental practices

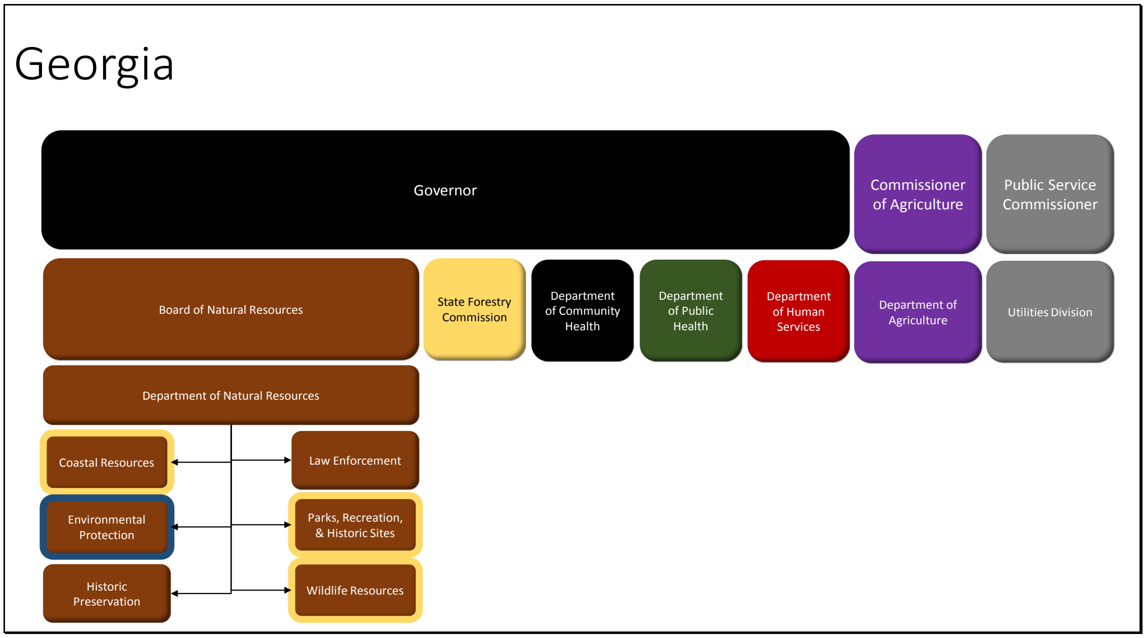
History and Budgetary Information

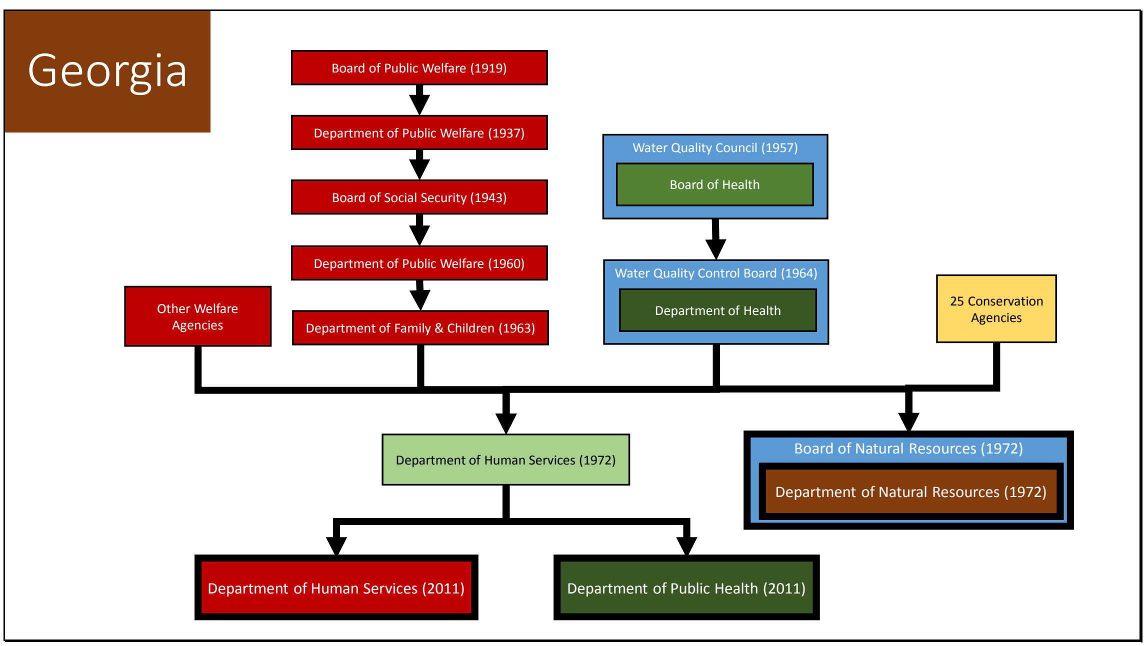
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	Y (air)	Y (water)	N	1972	*N/A*	750

Operating Budget 2015/16	Federal Funding	Federal Share
$250,049,298	$46,510,538	18.6%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	Y	Y	Y	Y	N	N


Georgia
Governor
Commissioner of Agriculture
Public Service Commissioner
Board of Natural Resources
State Forestry Commission
Department of Community Health
Department of Public Health
Department of Human Services
Department of Agriculture
Utilities Division
Department of Natural Resources
Coastal Resources
Law Enforcement
Environmental Protection
Parks, Recreation, & Historic Sites
Historic Preservation
Wildlife Resources


Georgia
Board of Public Welfare (1919)
Department of Public Welfare (1937)
Board of Social Security (1943)
Department of Public Welfare (1960)
Department of Family & Children (1963)
Other Welfare Agencies
Water Quality Council (1957)
Board of Health
Water Quality Control Board (1964)
Department of Health
25 Conservation Agencies
Department of Human Services (1972)
Board of Natural Resources (1972)
Department of Natural Resources (1972)
Department of Human Services (2011)
Department of Public Health (2011)

Hawaii

Department of Health

Mission Statement

The mission of the Department of Health is to protect and improve the health and environment for all people in Hawaii.

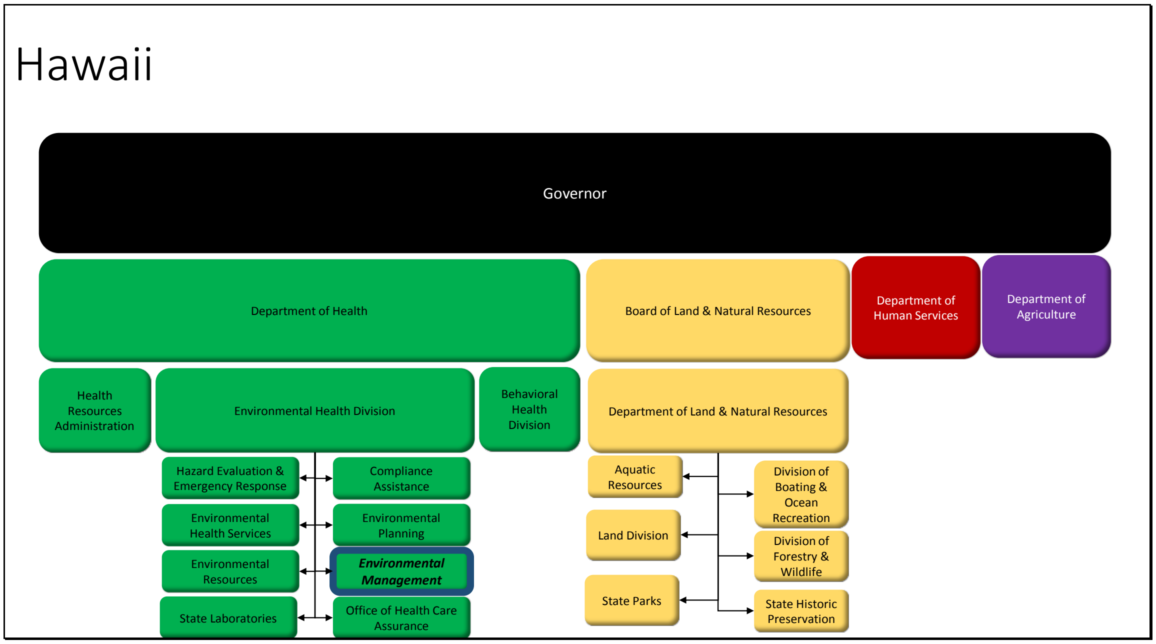
History and Budgetary Information

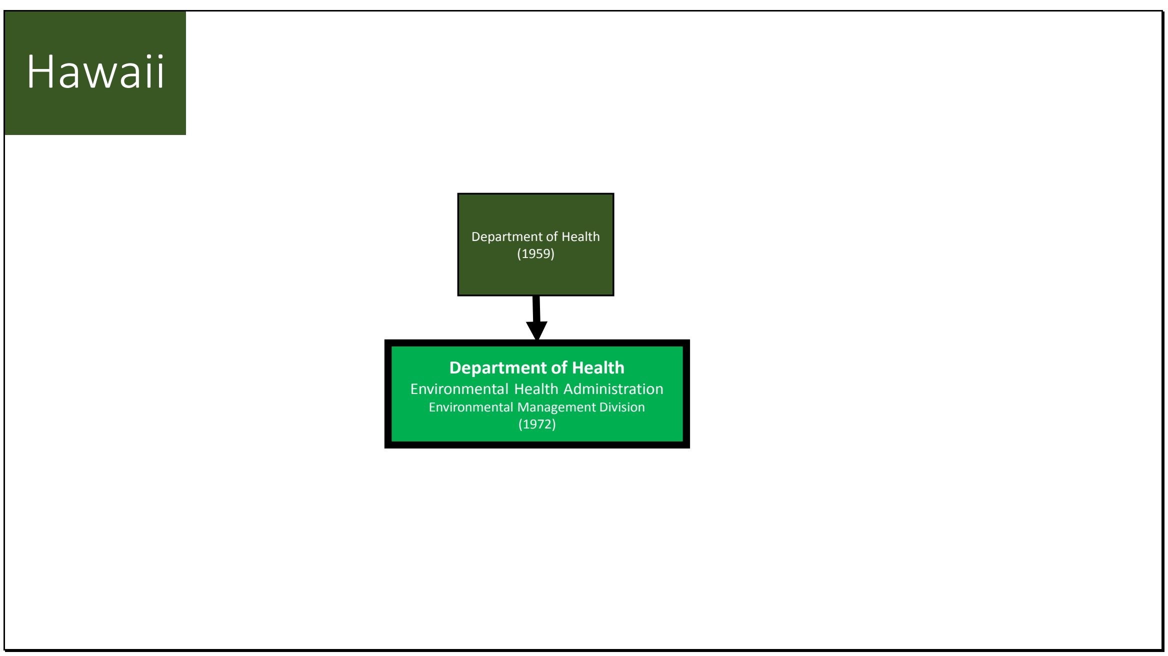
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Health	Y	N	N	N/A	N/A	2596

Operating Budget 2015/16	Federal Funding	Federal Share
$929,841,910	$87,164,911	9.4%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
	Y	Y	Y	Y	Y	Y	Y	N	N


Hawaii
Governor
Department of Health
Board of Land & Natural Resources
Department of Human Services
Department of Agriculture
Health Resources Administration
Environmental Health Division
Behavioral Health Division
Department of Land & Natural Resources
Hazard Evaluation & Emergency Response
Compliance Assistance
Environmental Health Services
Environmental Planning
Environmental Resources
Environmental Management
State Laboratories
Office of Health Care Assurance
Aquatic Resources
Division of Boating & Ocean Recreation
Land Division
Division of Forestry & Wildlife
State Parks
State Historic Preservation


Hawaii
Department of Health (1959)
Department of Health
Environmental Health Administration
Environmental Management Division
(1972)

Idaho

Department of Environmental Quality

Mission Statement

To protect human health and preserve the quality of Idaho's air, land, and water for use and enjoyment today and in the future.

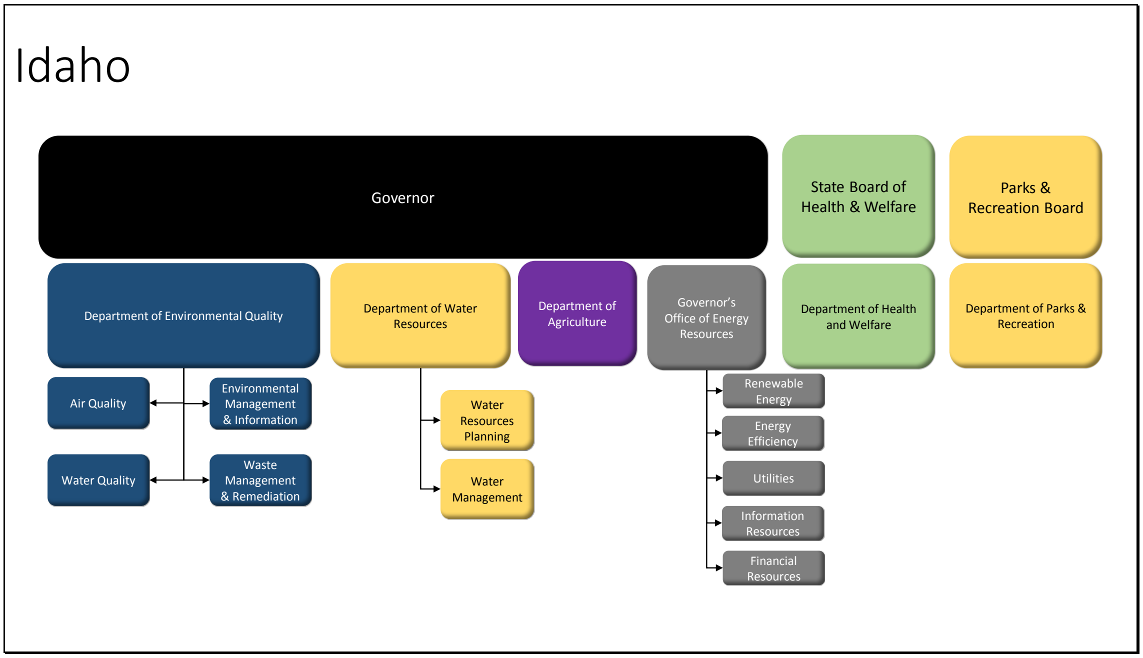
History and Budgetary Information

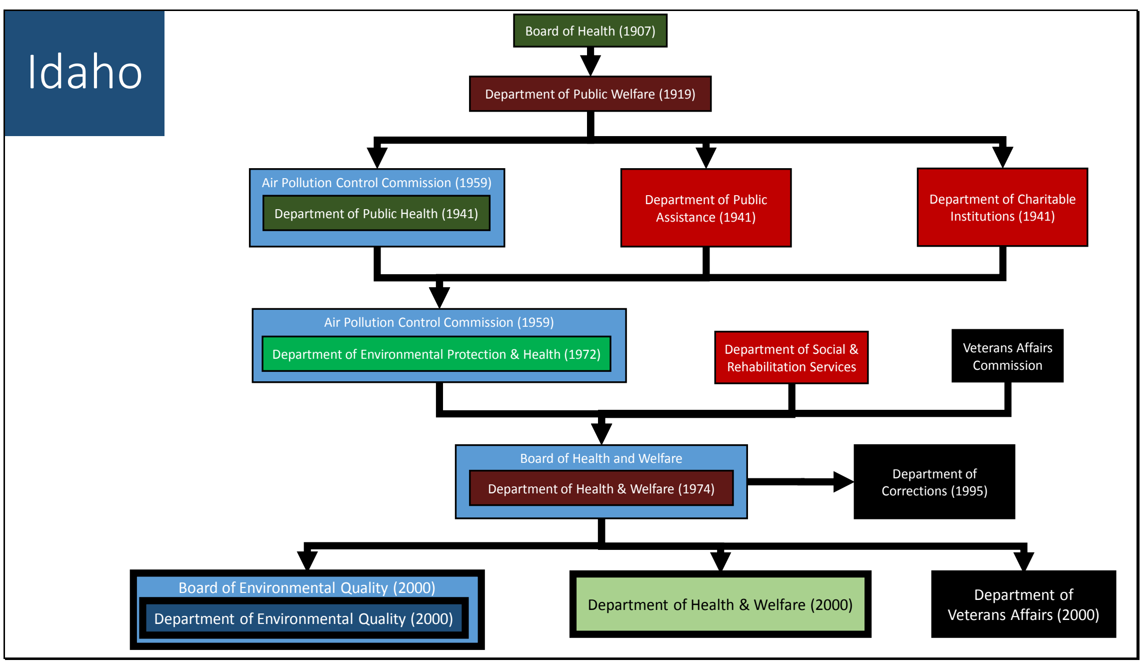
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	N	N	2000	N/A	358

Operating Budget 2015/16	Federal Funding	Federal Share
$54,856,400	$31,637,700	57.7%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	N	N	N


Idaho
Governor
State Board of Health & Welfare
Parks & Recreation Board
Department of Environmental Quality
Department of Water Resources
Department of Agriculture
Governor's Office of Energy Resources
Department of Health and Welfare
Department of Parks & Recreation
Air Quality
Environmental Management & Information
Water Quality
Waste Management & Remediation
Water Resources Planning
Water Management
Renewable Energy
Energy Efficiency
Utilities
Information Resources
Financial Resources


Idaho
Board of Health (1907)
Department of Public Welfare (1919)
Air Pollution Control Commission (1959)
Department of Public Health (1941)
Department of Public Assistance (1941)
Department of Charitable Institutions (1941)
Air Pollution Control Commission (1959)
Department of Environmental Protection & Health (1972)
Department of Social & Rehabilitation Services
Veterans Affairs Commission
Board of Health and Welfare
Department of Health & Welfare (1974)
Department of Corrections (1995)
Board of Environmental Quality (2000)
Department of Environmental Quality (2000)
Department of Health & Welfare (2000)
Department of Veterans Affairs (2000)

Illinois

Environmental Protection Agency

Mission Statement

To safeguard environmental quality, consistent with the social and economic needs of the State so as to protect health, welfare, property, and the quality of life.

History and Budgetary Information

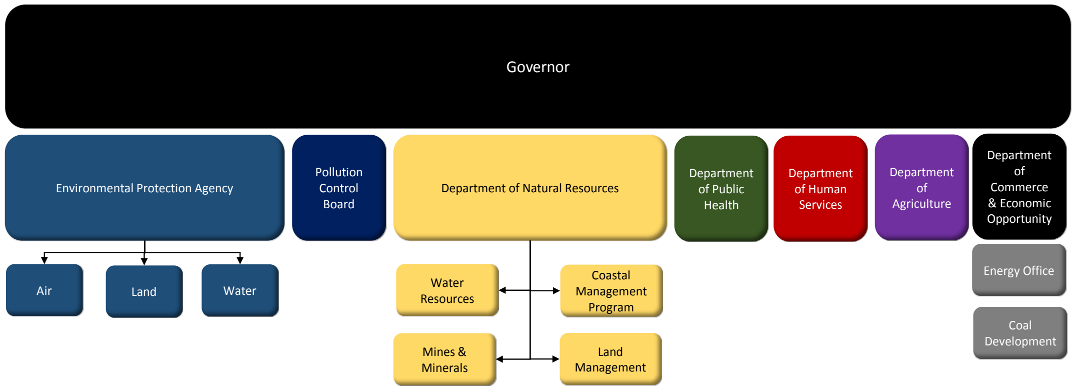
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	Y (sanitation board)	N	1970	**N/A**	726

Operating Budget 2015/16	Federal Funding	Federal Share
$297,178,700	$63,640,300	21.4%

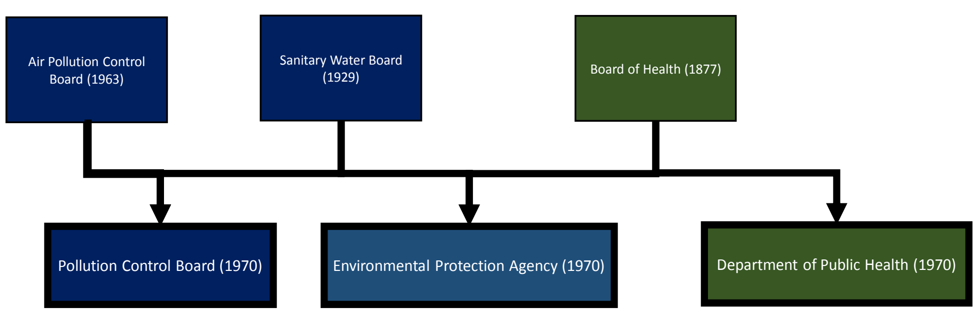
Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	N	N	N

Illinois



Illinois



Indiana

Department of Environmental Management

Mission Statement

To implement federal and state regulations to protect human health and the environment while allowing the environmentally sound operations of industrial, agricultural, commercial and government activities vital to a prosperous economy.

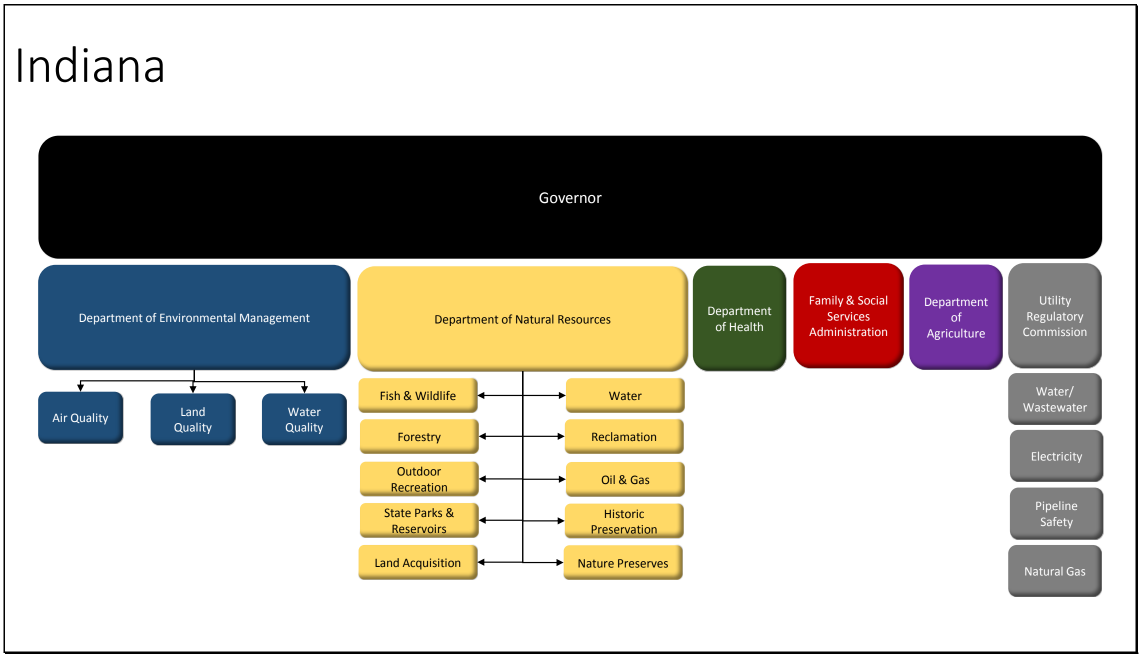
History and Budgetary Information

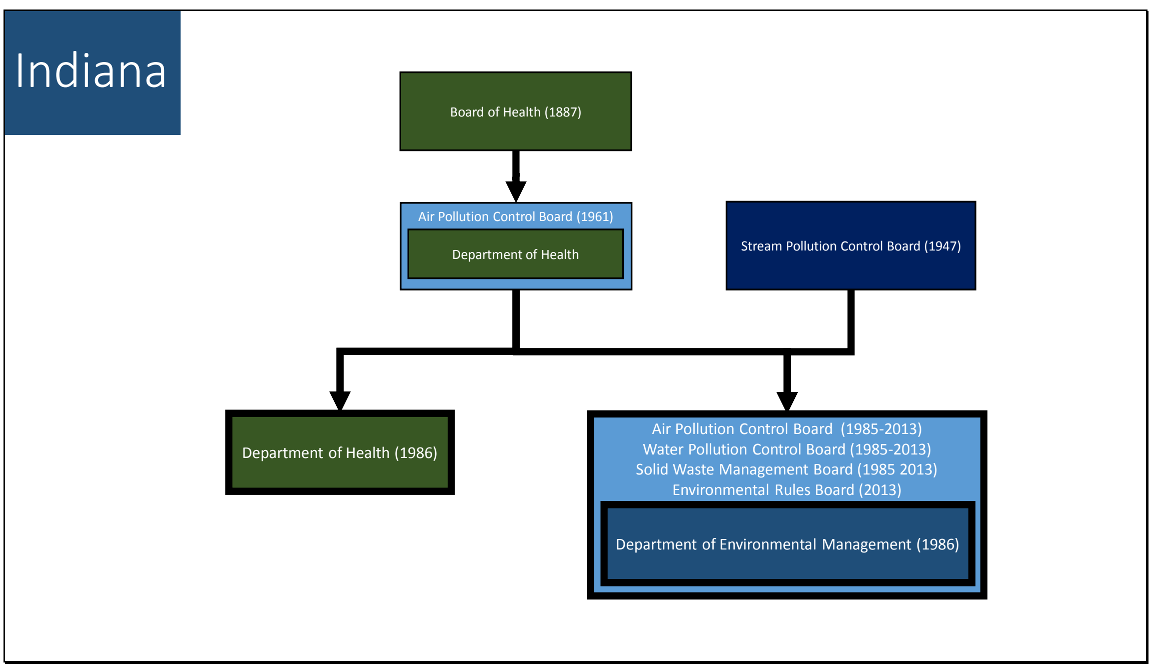
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	N	N	1986	N/A	N/A

Operating Budget 2015/16	Federal Funding	Federal Share
$121,760,282	$19,025,168	15.6%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	N	Y	Y	N	N	N


Indiana
Governor
Department of Environmental Management
Air Quality
Land Quality
Water Quality
Department of Natural Resources
Fish & Wildlife
Water
Forestry
Reclamation
Outdoor Recreation
Oil & Gas
State Parks & Reservoirs
Historic Preservation
Land Acquisition
Nature Preserves
Department of Health
Family & Social Services Administration
Department of Agriculture
Utility Regulatory Commission
Water/ Wastewater
Electricity
Pipeline Safety
Natural Gas


Indiana
Board of Health (1887)
Air Pollution Control Board (1961)
Department of Health
Stream Pollution Control Board (1947)
Department of Health (1986)
Air Pollution Control Board (1985-2013)
Water Pollution Control Board (1985-2013)
Solid Waste Management Board (1985 2013)
Environmental Rules Board (2013)
Department of Environmental Management (1986)

Iowa

Department of Natural Resources

Mission Statement

To conserve and enhance our natural resources in cooperation with individuals and organizations to improve the quality of life for Iowans and ensure a legacy for future generations.

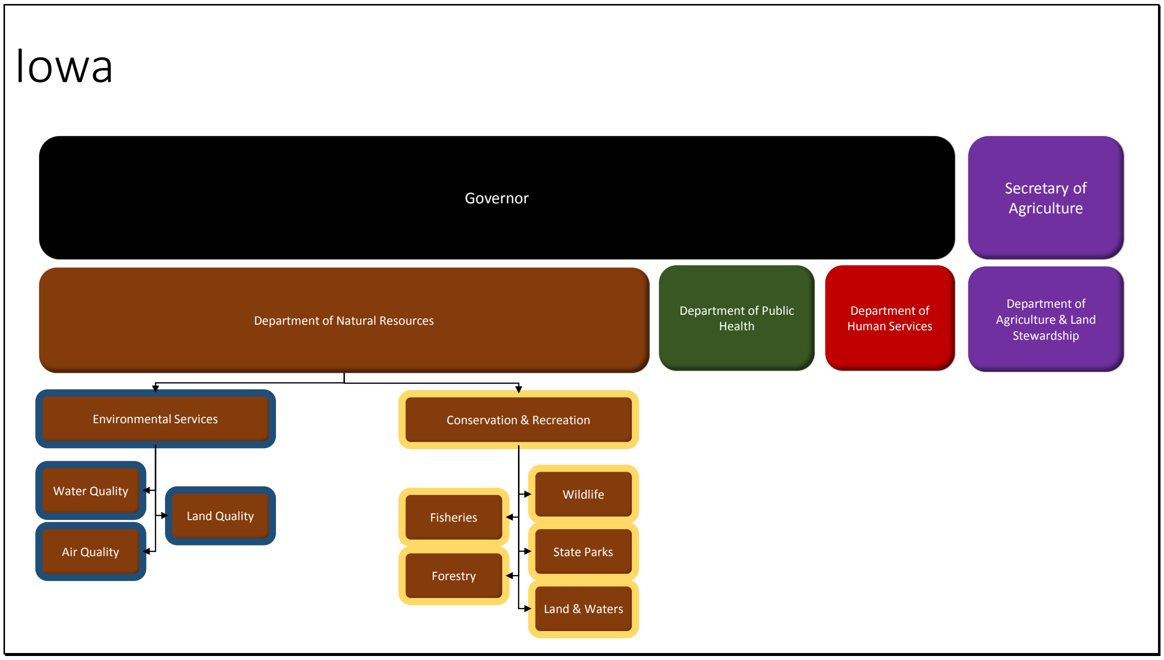
History and Budgetary Information

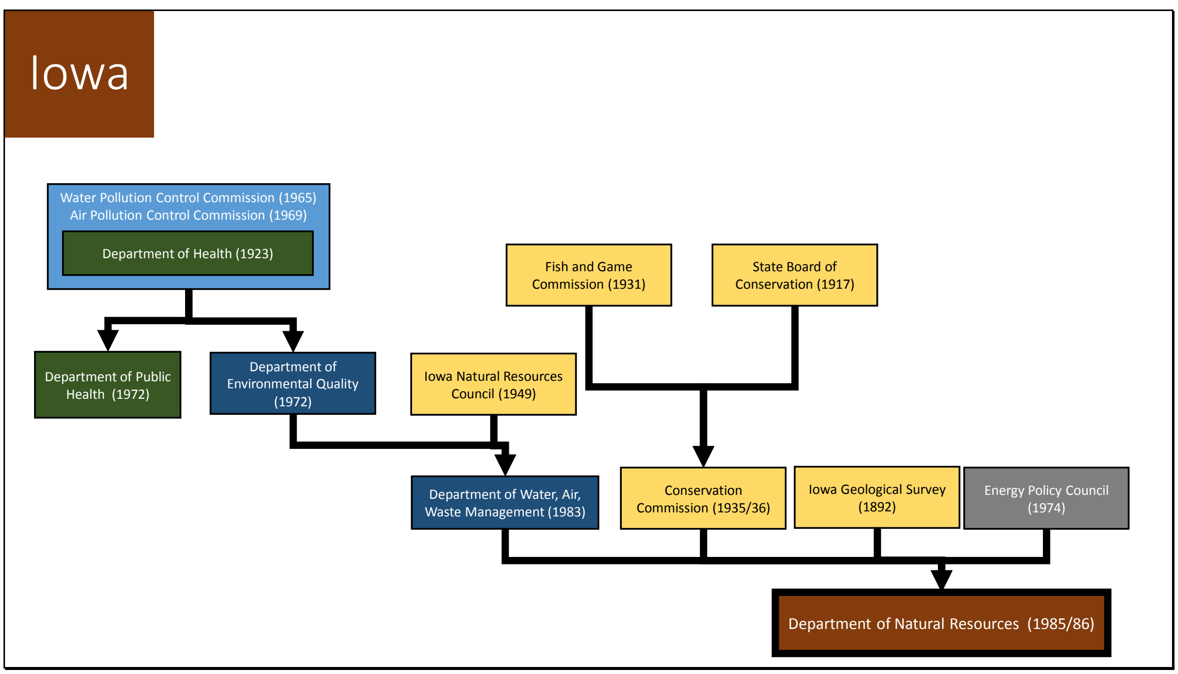
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	Y	N	N	1972	1986	1007

Operating Budget 2015/16	Federal Funding	Federal Share
$396,347,481	$25,696,891	6.5%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	Y	N	N


Iowa
Governor
Secretary of Agriculture
Department of Natural Resources
Department of Public Health
Department of Human Services
Department of Agriculture & Land Stewardship
Environmental Services
Conservation & Recreation
Water Quality
Land Quality
Air Quality
Fisheries
Wildlife
State Parks
Forestry
Land & Waters


Iowa
Water Pollution Control Commission (1965)
Air Pollution Control Commission (1969)
Department of Health (1923)
Fish and Game Commission (1931)
State Board of Conservation (1917)
Department of Public Health (1972)
Department of Environmental Quality (1972)
Iowa Natural Resources Council (1949)
Department of Water, Air, Waste Management (1983)
Conservation Commission (1935/36)
Iowa Geological Survey (1892)
Energy Policy Council (1974)
Department of Natural Resources (1985/86)

Kansas

Department of Health and Environment

Mission Statement

To protect and improve the health and environment of all Kansans.

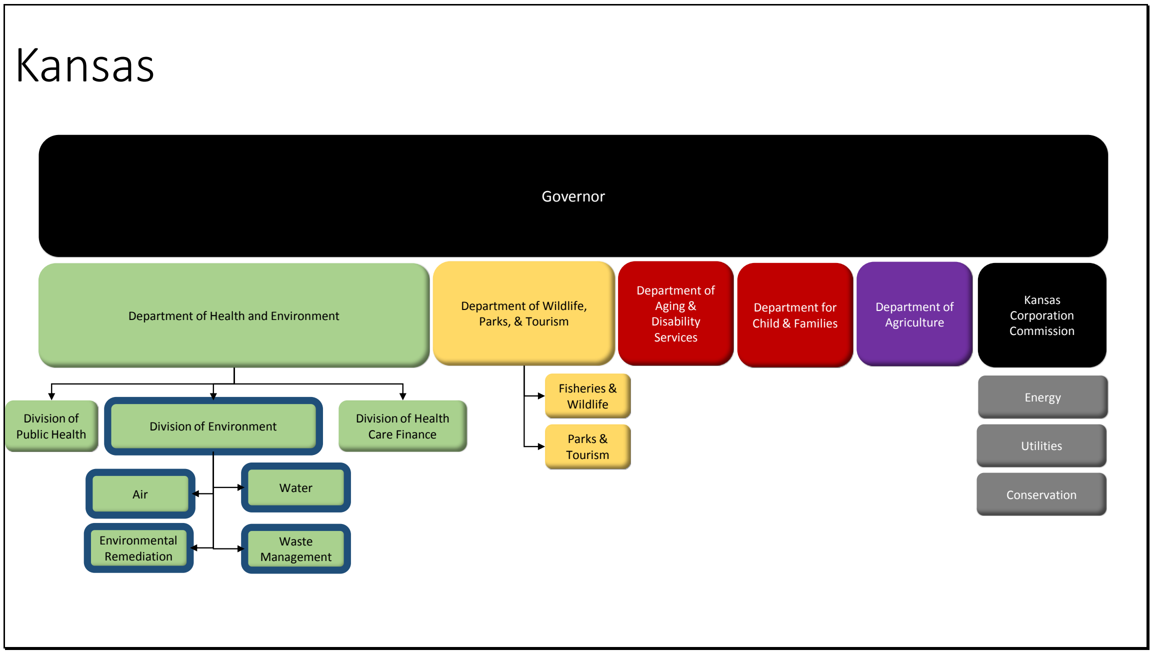
History and Budgetary Information

Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Health	Y	N	N	N/A	N/A	1057

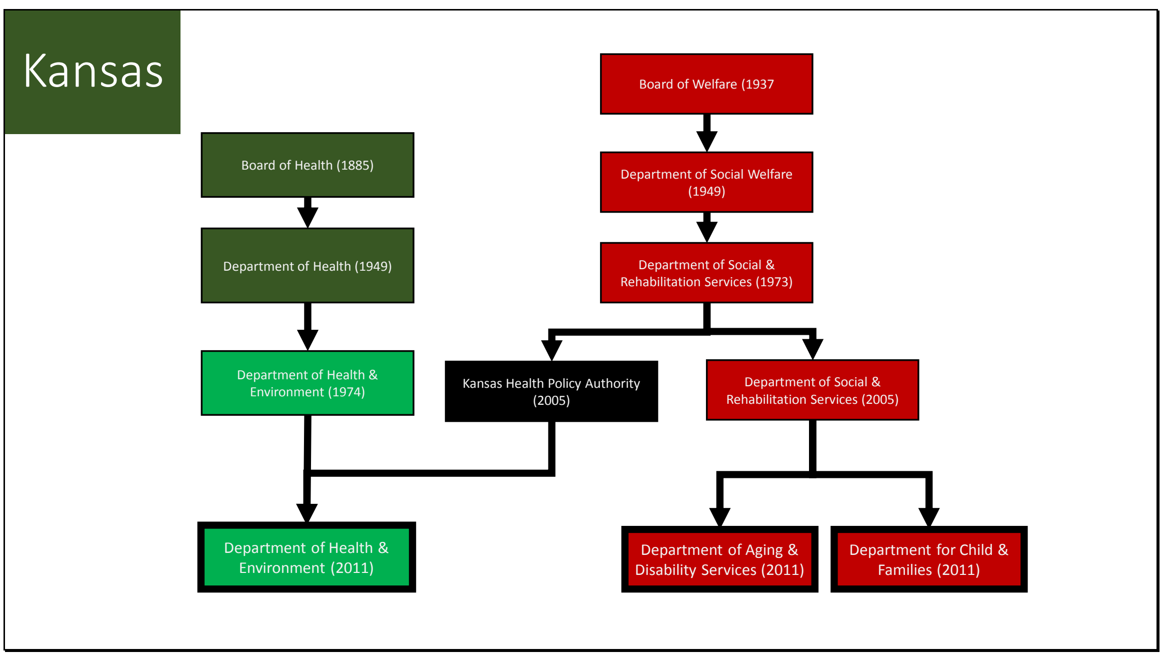
Operating Budget 2015/16	Federal Funding	Federal Share
$2,453,854,065	N/A	N/A

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	Y	Y	Y	N	N	N



Kansas
Governor
Department of Health and Environment
Department of Wildlife, Parks, & Tourism
Department of Aging & Disability Services
Department for Child & Families
Department of Agriculture
Kansas Corporation Commission
Division of Public Health
Division of Environment
Division of Health Care Finance
Fisheries & Wildlife
Parks & Tourism
Energy
Utilities
Conservation
Air
Water
Environmental Remediation
Waste Management



Kansas
Board of Welfare (1937
Board of Health (1885)
Department of Social Welfare (1949)
Department of Health (1949)
Department of Social & Rehabilitation Services (1973)
Department of Health & Environment (1974)
Kansas Health Policy Authority (2005)
Department of Social & Rehabilitation Services (2005)
Department of Health & Environment (2011)
Department of Aging & Disability Services (2011)
Department for Child & Families (2011)

Kentucky

Energy and Environment Cabinet

Mission Statement

To Protect and Enhance Kentucky's Environment

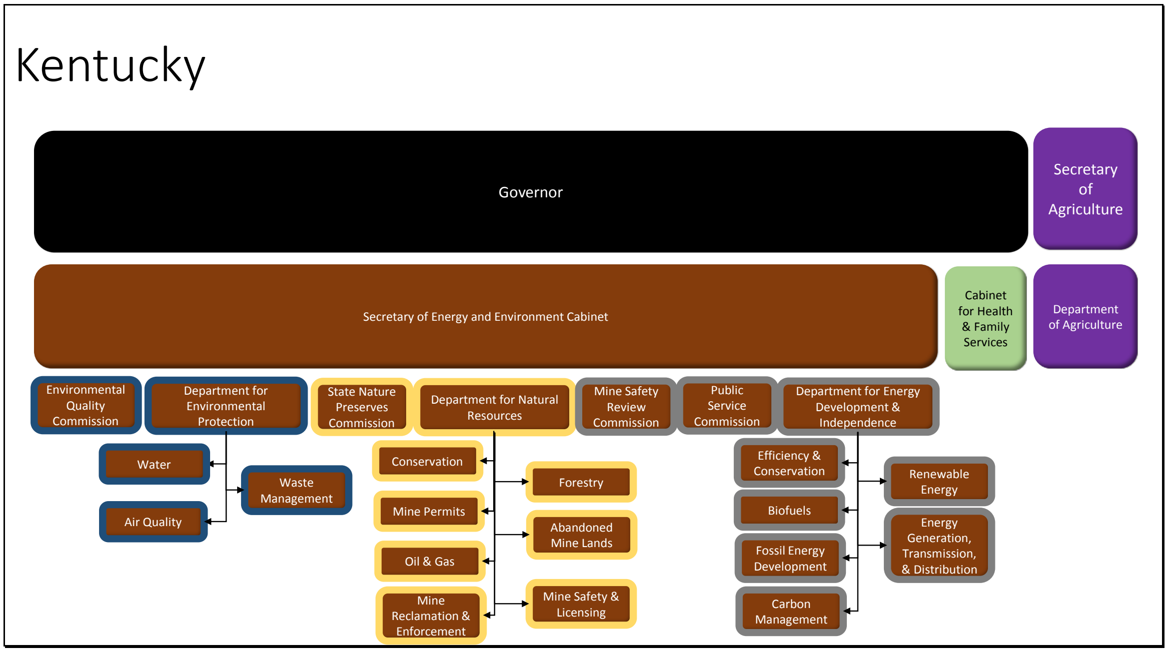
History and Budgetary Information

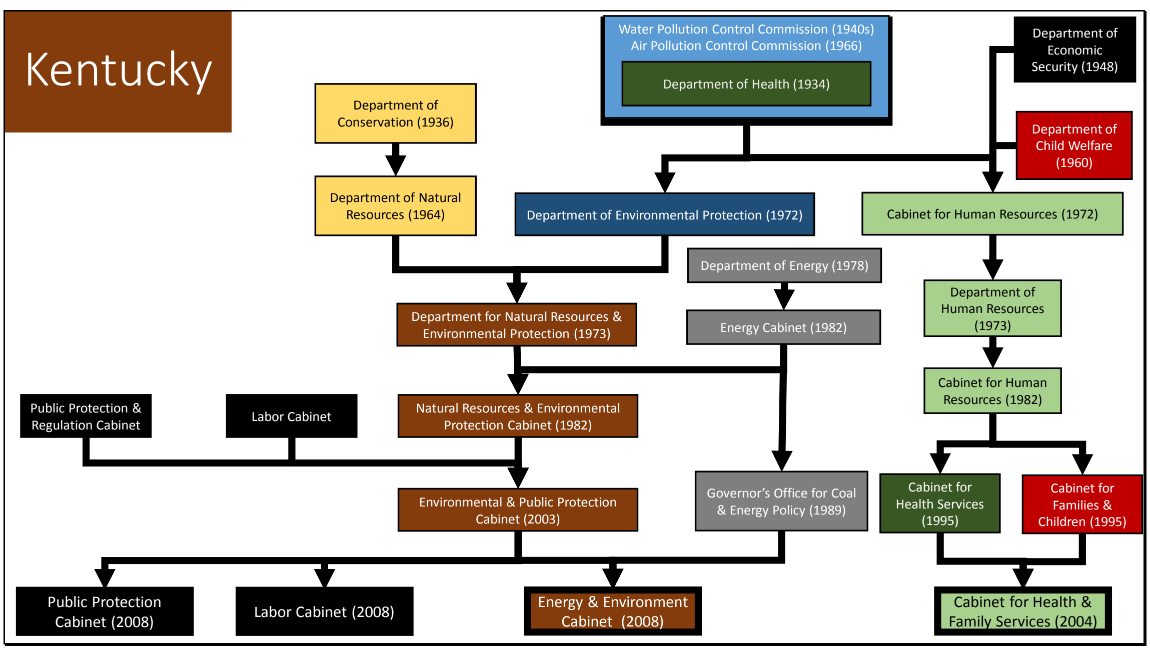
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	Y	N	N	1973	N/A	765

Operating Budget 2015/16	Federal Funding	Federal Share
$262,150,123	$69,030,513	26.3%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	N	N	N


Kentucky
Governor
Secretary of Agriculture
Secretary of Energy and Environment Cabinet
Cabinet for Health & Family Services
Department of Agriculture
Environmental Quality Commission
Department for Environmental Protection
State Nature Preserves Commission
Department for Natural Resources
Mine Safety Review Commission
Public Service Commission
Department for Energy Development & Independence
Water
Waste Management
Air Quality
Conservation
Forestry
Mine Permits
Abandoned Mine Lands
Oil & Gas
Mine Reclamation & Enforcement
Mine Safety & Licensing
Efficiency & Conservation
Renewable Energy
Biofuels
Fossil Energy Development
Energy Generation, Transmission, & Distribution
Carbon Management


Kentucky
Water Pollution Control Commission (1940s)
Air Pollution Control Commission (1966)
Department of Health (1934)
Department of Economic Security (1948)
Department of Conservation (1936)
Department of Child Welfare (1960)
Department of Natural Resources (1964)
Department of Environmental Protection (1972)
Cabinet for Human Resources (1972)
Department of Energy (1978)
Department of Human Resources (1973)
Department for Natural Resources & Environmental Protection (1973)
Energy Cabinet (1982)
Cabinet for Human Resources (1982)
Public Protection & Regulation Cabinet
Labor Cabinet
Natural Resources & Environmental Protection Cabinet (1982)
Governor's Office for Coal & Energy Policy (1989)
Cabinet for Health Services (1995)
Cabinet for Families & Children (1995)
Environmental & Public Protection Cabinet (2003)
Public Protection Cabinet (2008)
Labor Cabinet (2008)
Energy & Environment Cabinet (2008)
Cabinet for Health & Family Services (2004)

Louisiana

Department of Environmental Quality

Mission Statement

To provide service to the people of Louisiana through comprehensive environmental protection in order to promote and protect health, safety and welfare while considering sound policies regarding employment and economic development

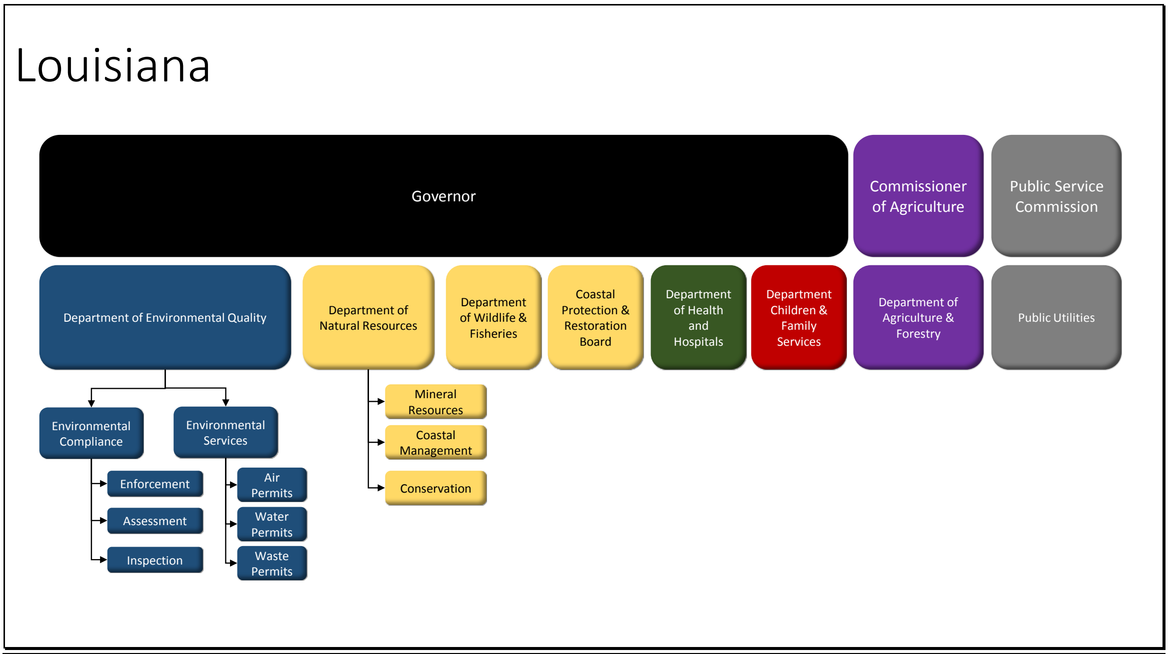
History and Budgetary Information

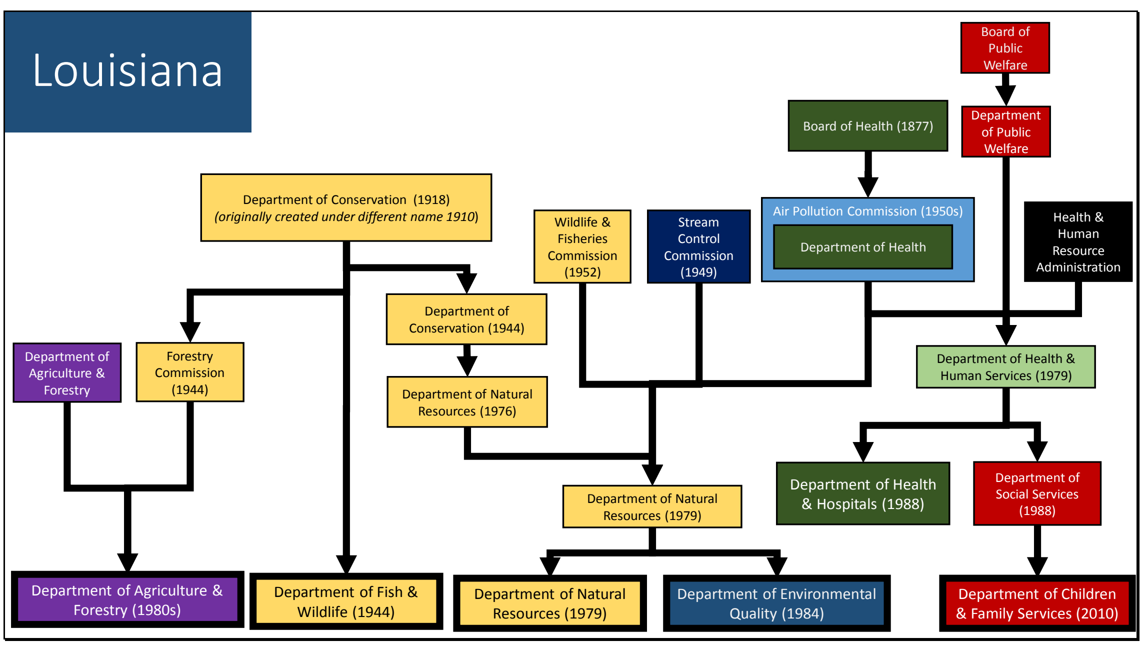
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	N	N	1979	1984	677

Operating Budget 2015/16	Federal Funding	Federal Share
$114,721,953	$19,930,946	17.4%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	N	N	Y	Y	N	N	N


Louisiana
Governor
Commissioner of Agriculture
Public Service Commission
Department of Environmental Quality
Department of Natural Resources
Department of Wildlife & Fisheries
Coastal Protection & Restoration Board
Department of Health and Hospitals
Department Children & Family Services
Department of Agriculture & Forestry
Public Utilities
Mineral Resources
Coastal Management
Conservation
Environmental Compliance
Environmental Services
Enforcement
Assessment
Inspection
Air Permits
Water Permits
Waste Permits


Louisiana
Board of Public Welfare
Board of Health (1877)
Department of Public Welfare
Department of Conservation (1918)
(originally created under different name 1910)
Wildlife & Fisheries Commission (1952)
Stream Control Commission (1949)
Air Pollution Commission (1950s)
Department of Health
Health & Human Resource Administration
Department of Conservation (1944)
Department of Agriculture & Forestry
Forestry Commission (1944)
Department of Health & Human Services (1979)
Department of Natural Resources (1976)
Department of Natural Resources (1979)
Department of Health & Hospitals (1988)
Department of Social Services (1988)
Department of Agriculture & Forestry (1980s)
Department of Fish & Wildlife (1944)
Department of Natural Resources (1979)
Department of Environmental Quality (1984)
Department of Children & Family Services (2010)

Maine

Department of Environmental Protection

Mission Statement

To prevent, abate, and control the pollution of the air, water, and land. To preserve, improve, and prevent diminution of the natural environment of the state. To protect and enhance the public's right to use and enjoy the State's natural resources.

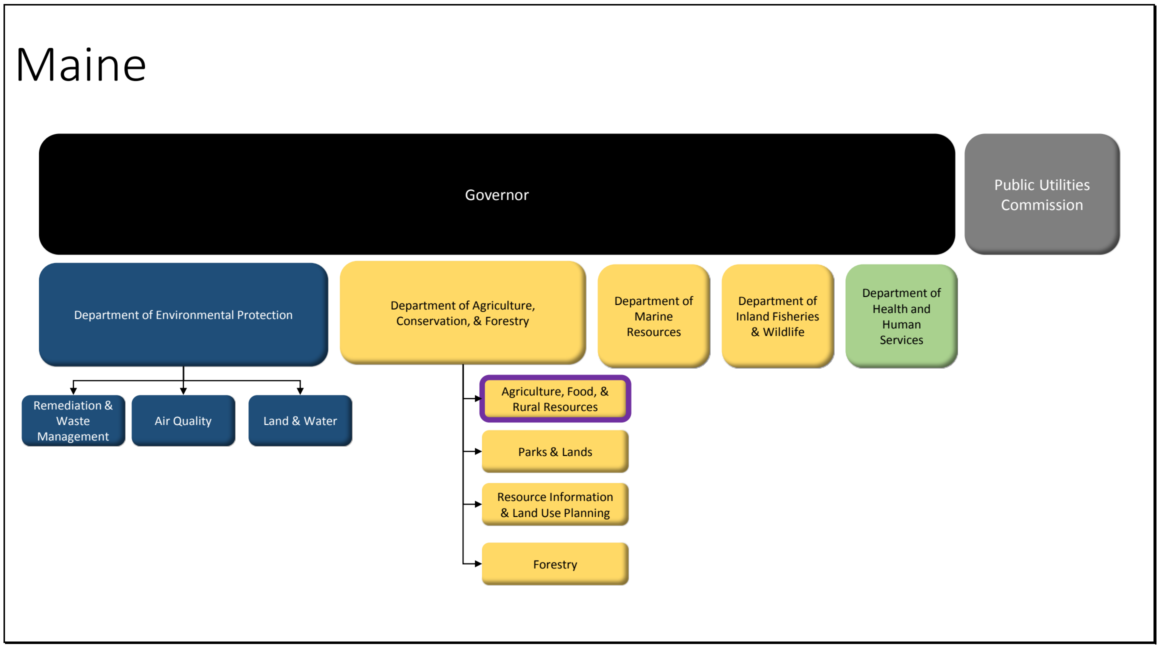
History and Budgetary Information

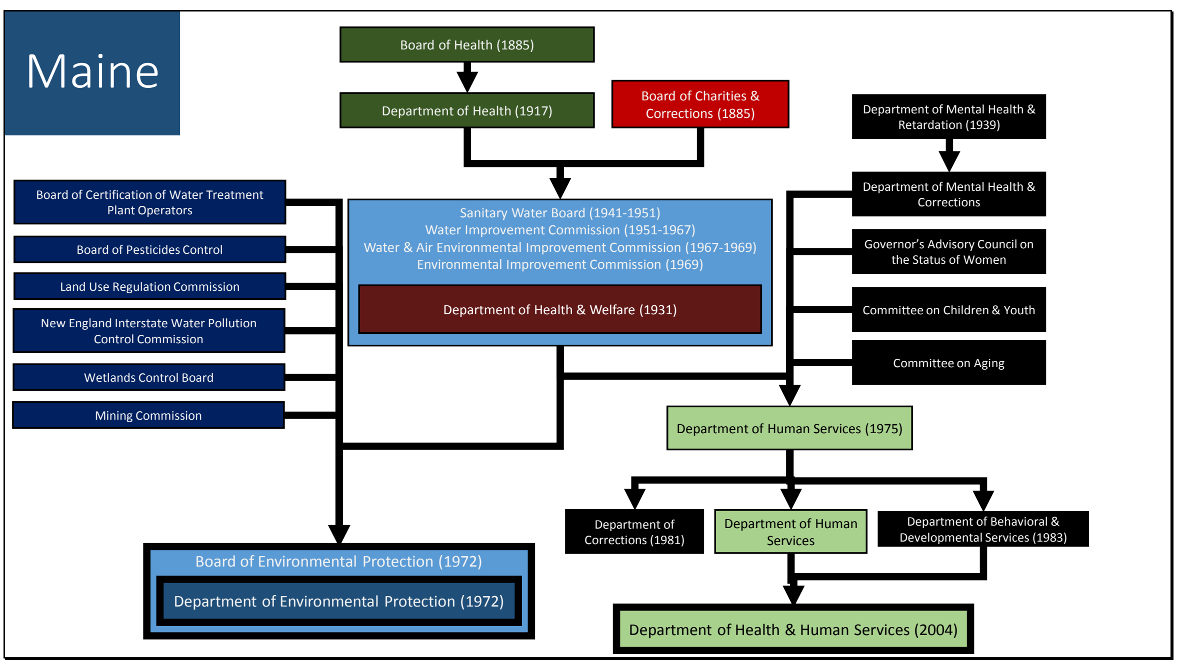
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	N	Y	N	1972	N/A	N/A

Operating Budget 2015/16	Federal Funding	Federal Share
$74,970,812	N/A	N/A

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	N	Y	Y	Y	Y	N	N


Maine
Governor
Public Utilities Commission
Department of Environmental Protection
Department of Agriculture, Conservation, & Forestry
Department of Marine Resources
Department of Inland Fisheries & Wildlife
Department of Health and Human Services
Remediation & Waste Management
Air Quality
Land & Water
Agriculture, Food, & Rural Resources
Parks & Lands
Resource Information & Land Use Planning
Forestry


Maine
Board of Health (1885)
Department of Health (1917)
Board of Charities & Corrections (1885)
Department of Mental Health & Retardation (1939)
Department of Mental Health & Corrections
Governor's Advisory Council on the Status of Women
Committee on Children & Youth
Committee on Aging
Board of Certification of Water Treatment Plant Operators
Board of Pesticides Control
Land Use Regulation Commission
New England Interstate Water Pollution Control Commission
Wetlands Control Board
Mining Commission
Sanitary Water Board (1941-1951)
Water Improvement Commission (1951-1967)
Water & Air Environmental Improvement Commission (1967-1969)
Environmental Improvement Commission (1969)
Department of Health & Welfare (1931)
Department of Human Services (1975)
Department of Corrections (1981)
Department of Human Services
Department of Behavioral & Developmental Services (1983)
Board of Environmental Protection (1972)
Department of Environmental Protection (1972)
Department of Health & Human Services (2004)

Maryland

Department of the Environment

Mission Statement

To protect and restore the quality of Maryland's air, water, and land resources, while fostering smart growth, a thriving and sustainable economy and healthy communities

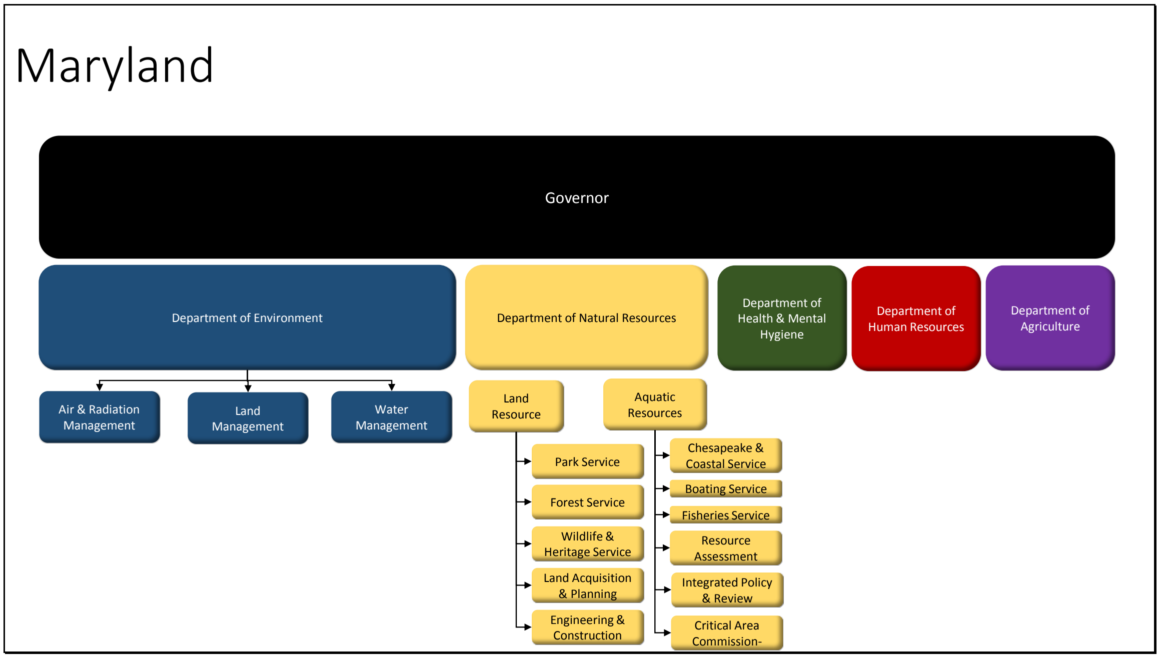
History and Budgetary Information

Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	Y(WATER)	N	1987	N/A	1008

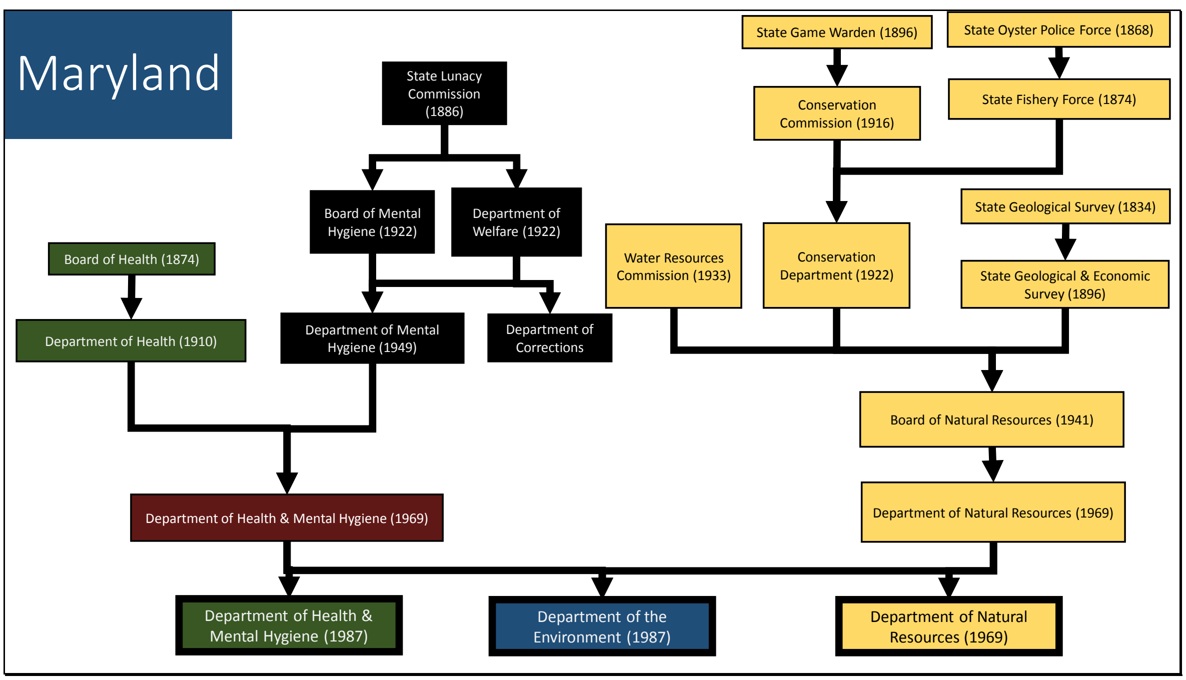
Operating Budget 2015/16	Federal Funding	Federal Share
$393,005,002	$76,526,503	19.5%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	Y	Y	Y	Y	N	N



Maryland
Governor
Department of Environment
Department of Natural Resources
Department of Health & Mental Hygiene
Department of Human Resources
Department of Agriculture
Air & Radiation Management
Land Management
Water Management
Land Resource
Aquatic Resources
Park Service
Forest Service
Wildlife & Heritage Service
Land Acquisition & Planning
Engineering & Construction
Chesapeake & Coastal Service
Boating Service
Fisheries Service
Resource Assessment
Integrated Policy & Review
Critical Area Commission-



Maryland
State Lunacy Commission (1886)
Board of Mental Hygiene (1922)
Department of Welfare (1922)
Board of Health (1874)
Department of Health (1910)
Department of Mental Hygiene (1949)
Department of Corrections
State Game Warden (1896)
State Oyster Police Force (1868)
Conservation Commission (1916)
State Fishery Force (1874)
State Geological Survey (1834)
Water Resources Commission (1933)
Conservation Department (1922)
State Geological & Economic Survey (1896)
Board of Natural Resources (1941)
Department of Health & Mental Hygiene (1969)
Department of Natural Resources (1969)
Department of Health & Mental Hygiene (1987)
Department of the Environment (1987)
Department of Natural Resources (1969)

Massachusetts

Executive Office of Energy and Environmental Affairs

Mission Statement

Responsible for ensuring clean air and water, the safe management of toxics and hazards, the recycling of solid and hazardous wastes, the timely cleanup of hazardous waste sites and spills, and the preservation of wetlands and coastal resources.

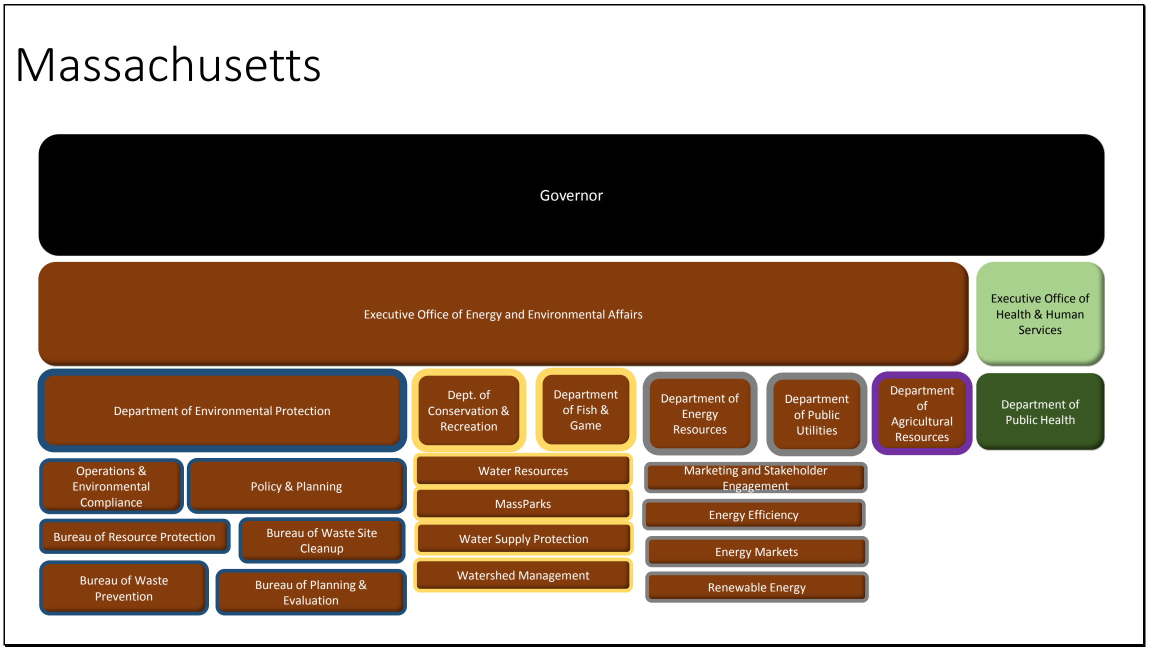
History and Budgetary Information

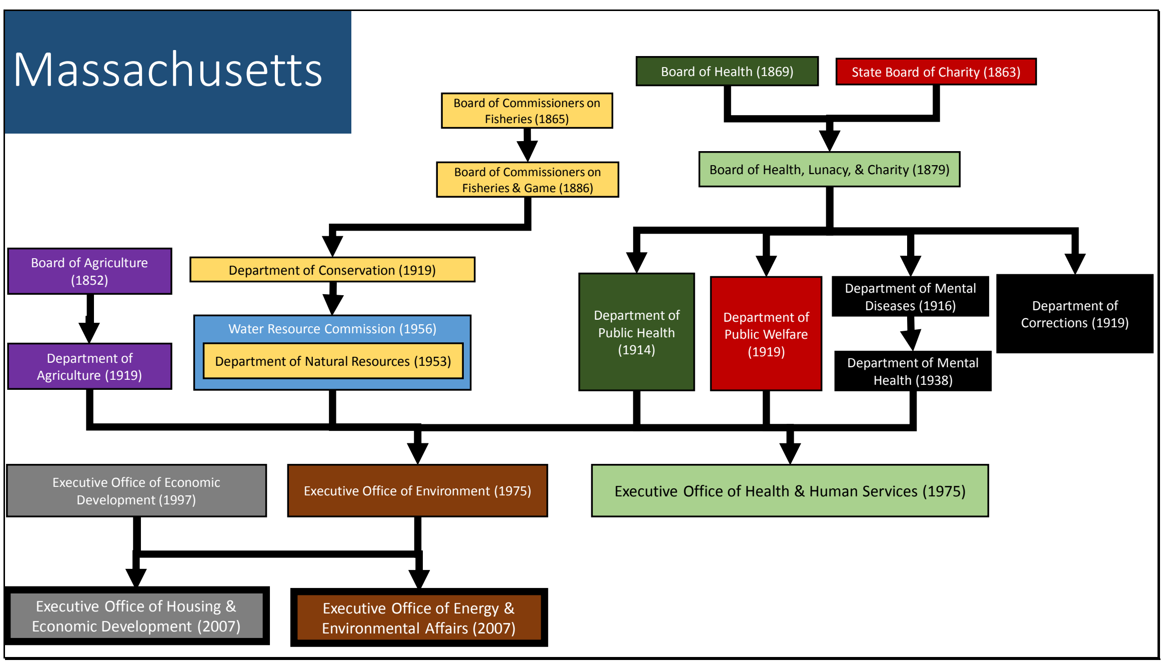
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	Y	N	N	1969	1975, 2007	N/A

Operating Budget 2015/16	Federal Funding	Federal Share
$247,227,000	$73,311,377	29.7%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	Y	Y	Y	N	Y	Y


Massachusetts
Governor
Executive Office of Energy and Environmental Affairs
Executive Office of Health & Human Services
Department of Environmental Protection
Dept. of Conservation & Recreation
Department of Fish & Game
Department of Energy Resources
Department of Public Utilities
Department of Agricultural Resources
Department of Public Health
Operations & Environmental Compliance
Policy & Planning
Bureau of Resource Protection
Bureau of Waste Site Cleanup
Bureau of Waste Prevention
Bureau of Planning & Evaluation
Water Resources
MassParks
Water Supply Protection
Watershed Management
Marketing and Stakeholder Engagement
Energy Efficiency
Energy Markets
Renewable Energy


Massachusetts
Board of Health (1869)
State Board of Charity (1863)
Board of Commissioners on Fisheries (1865)
Board of Commissioners on Fisheries & Game (1886)
Board of Health, Lunacy, & Charity (1879)
Board of Agriculture (1852)
Department of Conservation (1919)
Department of Public Health (1914)
Department of Public Welfare (1919)
Department of Mental Diseases (1916)
Department of Corrections (1919)
Water Resource Commission (1956)
Department of Natural Resources (1953)
Department of Agriculture (1919)
Department of Mental Health (1938)
Executive Office of Economic Development (1997)
Executive Office of Environment (1975)
Executive Office of Health & Human Services (1975)
Executive Office of Housing & Economic Development (2007)
Executive Office of Energy & Environmental Affairs (2007)

Michigan

Department of Environmental Quality

Mission Statement

The Michigan Department of Environmental Quality promotes wise management of Michigan's air, land, and water resources to support a sustainable environment, healthy communities, and vibrant economy.

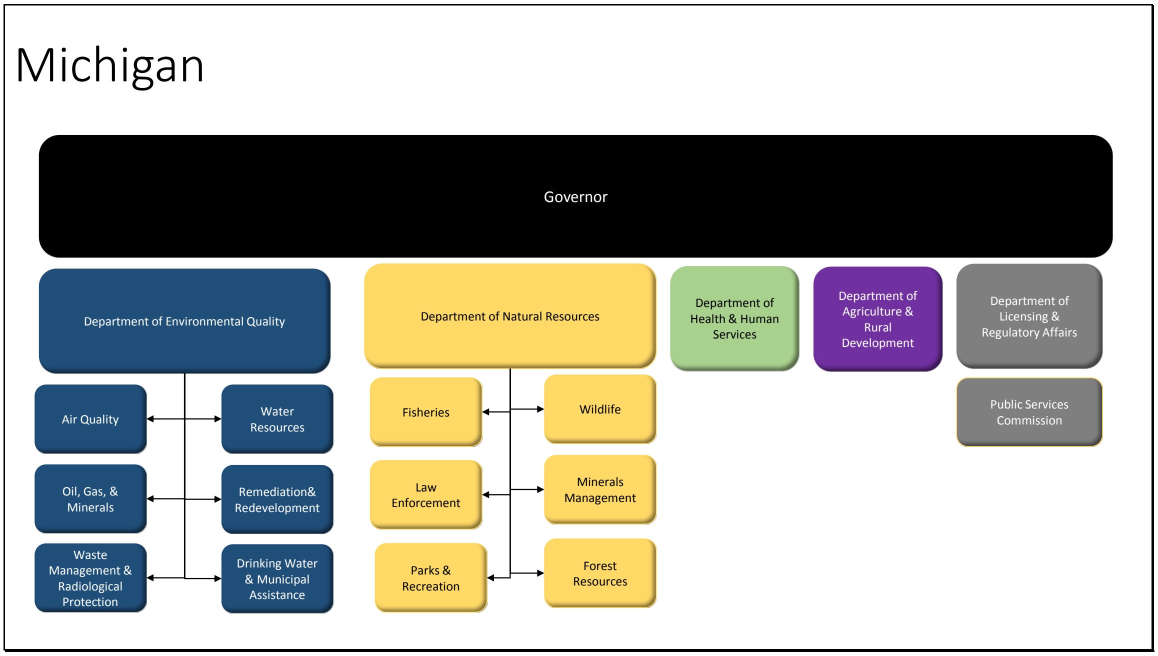
History and Budgetary Information

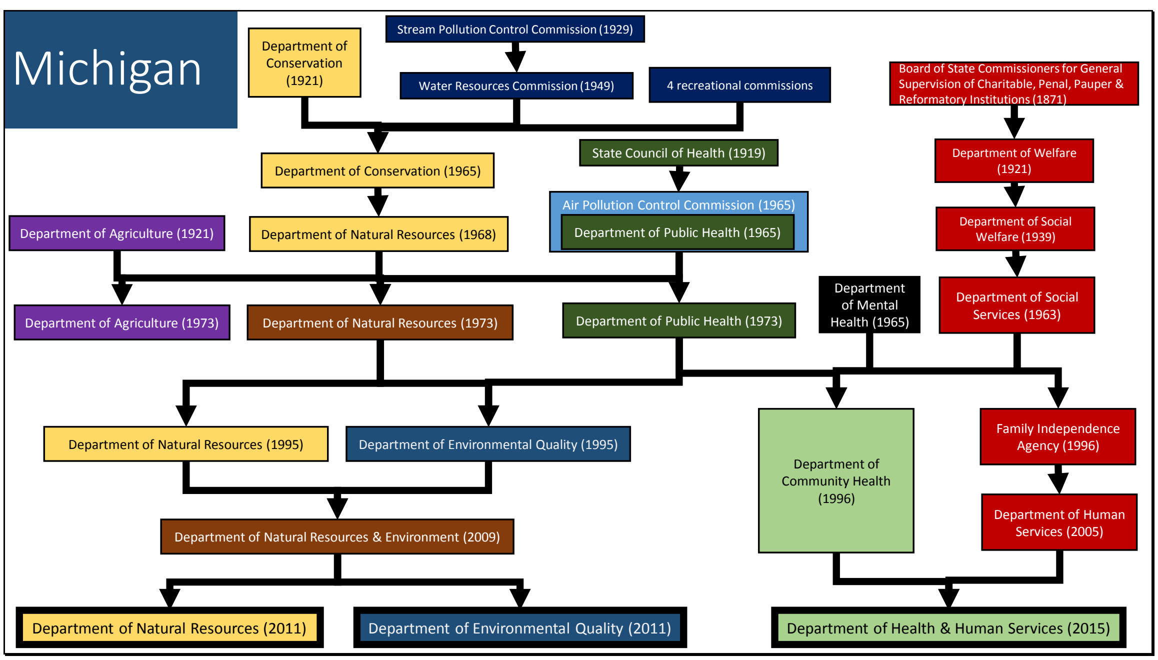
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	Y	Y	N	1995	1995, 2009,2011	N/A

Operating Budget 2015/16	Federal Funding	Federal Share
$504,091,800	N/A	N/A

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	Y	Y	Y	Y	N	N


Michigan
Governor
Department of Environmental Quality
Air Quality
Water Resources
Oil, Gas, & Minerals
Remediation& Redevelopment
Waste Management & Radiological Protection
Drinking Water & Municipal Assistance
Department of Natural Resources
Fisheries
Wildlife
Law Enforcement
Minerals Management
Parks & Recreation
Forest Resources
Department of Health & Human Services
Department of Agriculture & Rural Development
Department of Licensing & Regulatory Affairs
Public Services Commission


Michigan
Department of Conservation (1921)
Stream Pollution Control Commission (1929)
Water Resources Commission (1949)
4 recreational commissions
Board of State Commissioners for General Supervision of Charitable, Penal, Pauper & Reformatory Institutions (1871)
Department of Conservation (1965)
State Council of Health (1919)
Department of Welfare (1921)
Air Pollution Control Commission (1965)
Department of Public Health (1965)
Department of Social Welfare (1939)
Department of Agriculture (1921)
Department of Natural Resources (1968)
Department of Mental Health (1965)
Department of Social Services (1963)
Department of Agriculture (1973)
Department of Natural Resources (1973)
Department of Public Health (1973)
Department of Natural Resources (1995)
Department of Environmental Quality (1995)
Department of Community Health (1996)
Family Independence Agency (1996)
Department of Human Services (2005)
Department of Natural Resources & Environment (2009)
Department of Natural Resources (2011)
Department of Environmental Quality (2011)
Department of Health & Human Services (2015)

Minnesota

Department of Pollution Control

Mission Statement

To protect and improve the environment and enhance human health.

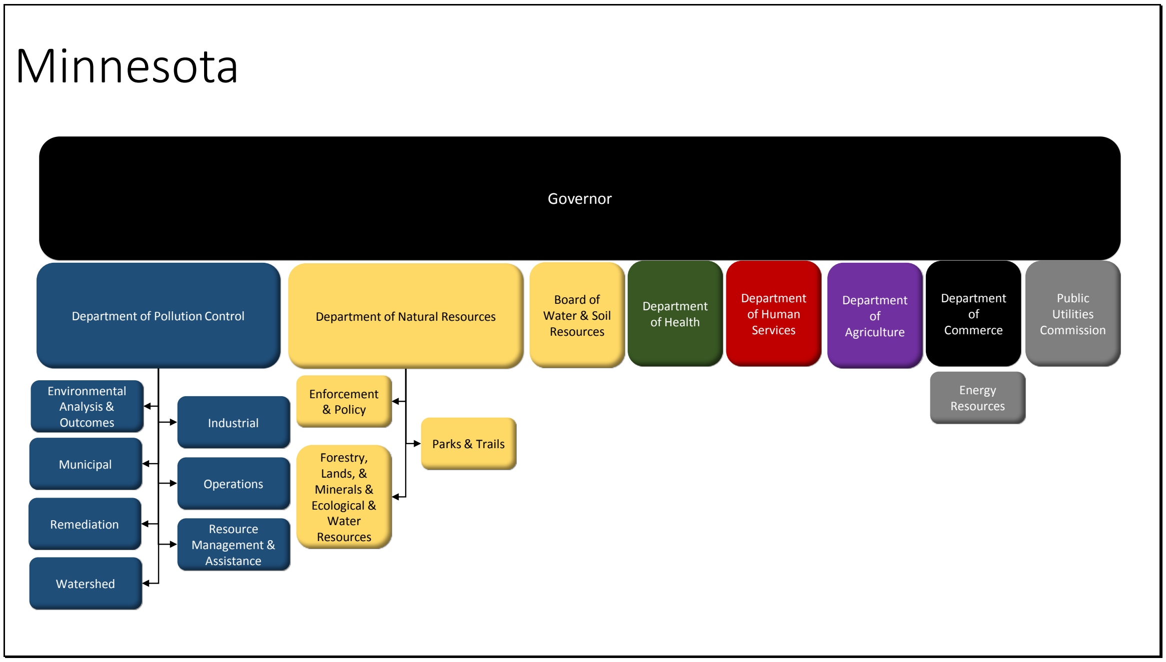
History and Budgetary Information

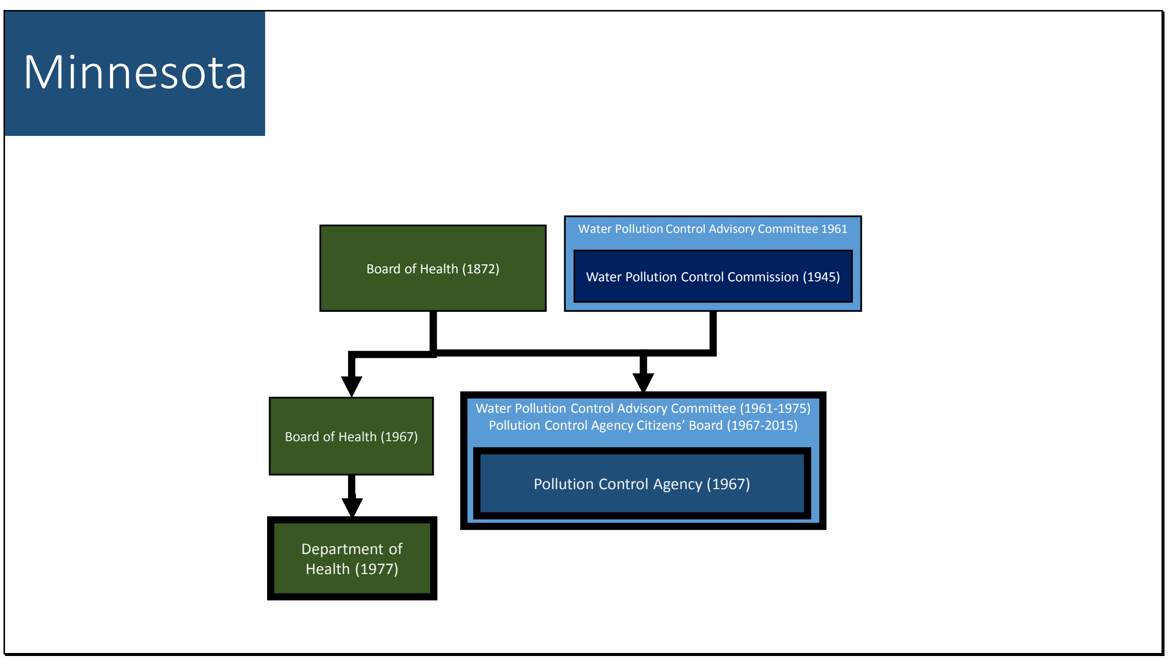
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	Y	N	1967	N/A	941

Operating Budget 2015/16	Federal Funding	Federal Share
$216,977,000	$28,108,000	13%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	N	N	Y	Y	N	N	N


Minnesota
Governor
Department of Pollution Control
Department of Natural Resources
Board of Water & Soil Resources
Department of Health
Department of Human Services
Department of Agriculture
Department of Commerce
Public Utilities Commission
Energy Resources
Environmental Analysis & Outcomes
Municipal
Remediation
Watershed
Industrial
Operations
Resource Management & Assistance
Enforcement & Policy
Forestry, Lands, & Minerals & Ecological & Water Resources
Parks & Trails


Minnesota
Board of Health (1872)
Water Pollution Control Advisory Committee 1961
Water Pollution Control Commission (1945)
Board of Health (1967)
Water Pollution Control Advisory Committee (1961-1975)
Pollution Control Agency Citizens' Board (1967-2015)
Pollution Control Agency (1967)
Department of Health (1977)

Mississippi

Department of Environmental Quality

Mission Statement

To safeguard the health, safety, and welfare of present and future generations of Mississisppians by conserving and improving our environment and fostering wise economic growth through focused research and responsible regulation.

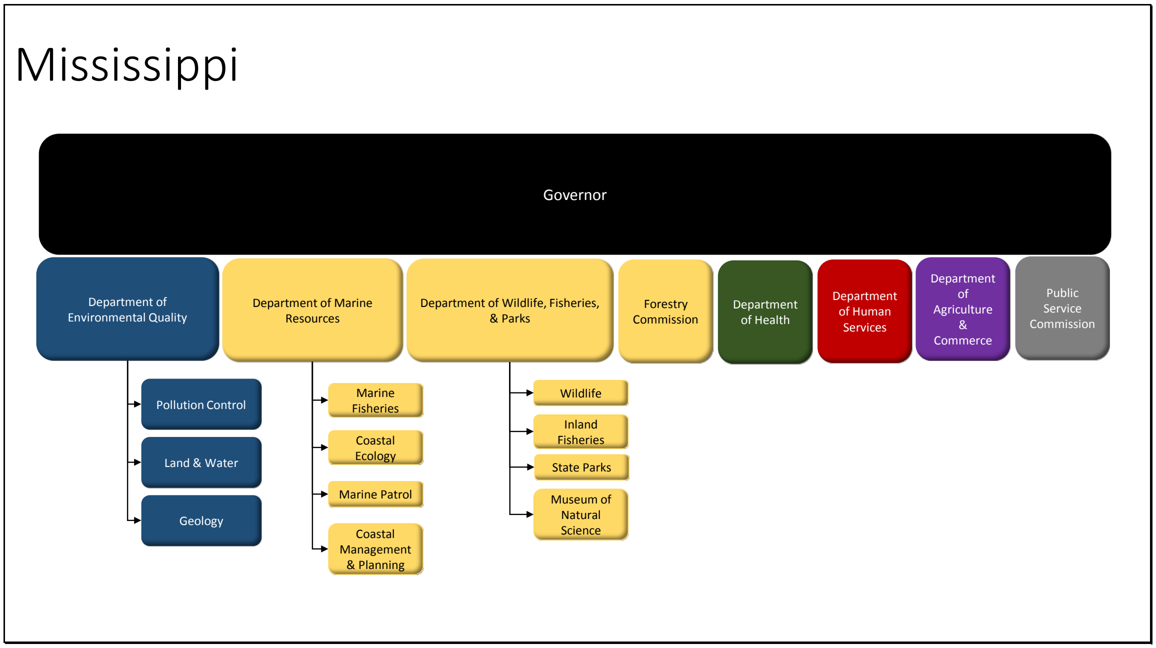
History and Budgetary Information

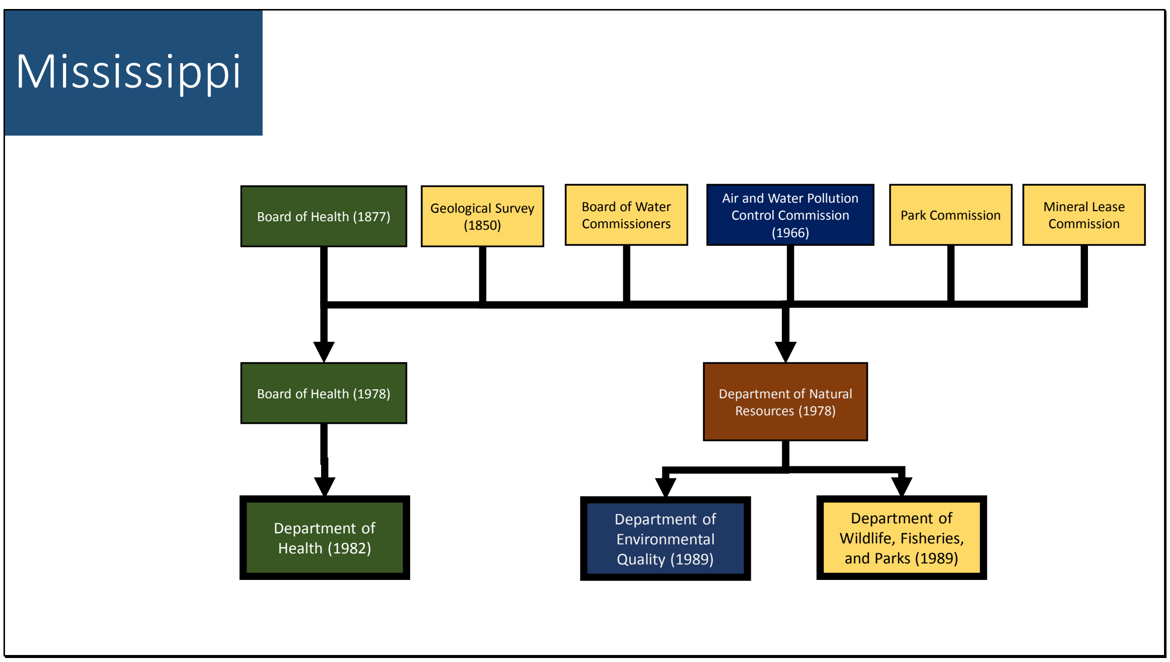
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	N	Y	N	1978	1989	491

Operating Budget 2015/16	Federal Funding	Federal Share
$139,147,504	$34,131,941	24.5%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	N	Y	Y	Y	Y	N	N


Mississippi
Governor
Department of Environmental Quality
Department of Marine Resources
Department of Wildlife, Fisheries, & Parks
Forestry Commission
Department of Health
Department of Human Services
Department of Agriculture & Commerce
Public Service Commission
Pollution Control
Land & Water
Geology
Marine Fisheries
Coastal Ecology
Marine Patrol
Coastal Management & Planning
Wildlife
Inland Fisheries
State Parks
Museum of Natural Science


Mississippi
Board of Health (1877)
Geological Survey (1850)
Board of Water Commissioners
Air and Water Pollution Control Commission (1966)
Park Commission
Mineral Lease Commission
Board of Health (1978)
Department of Natural Resources (1978)
Department of Health (1982)
Department of Environmental Quality (1989)
Department of Wildlife, Fisheries, and Parks (1989)

Missouri

Department of Natural Resources

Mission Statement

To protect, preserve, and enhance Missouri's natural, cultural and energy resources

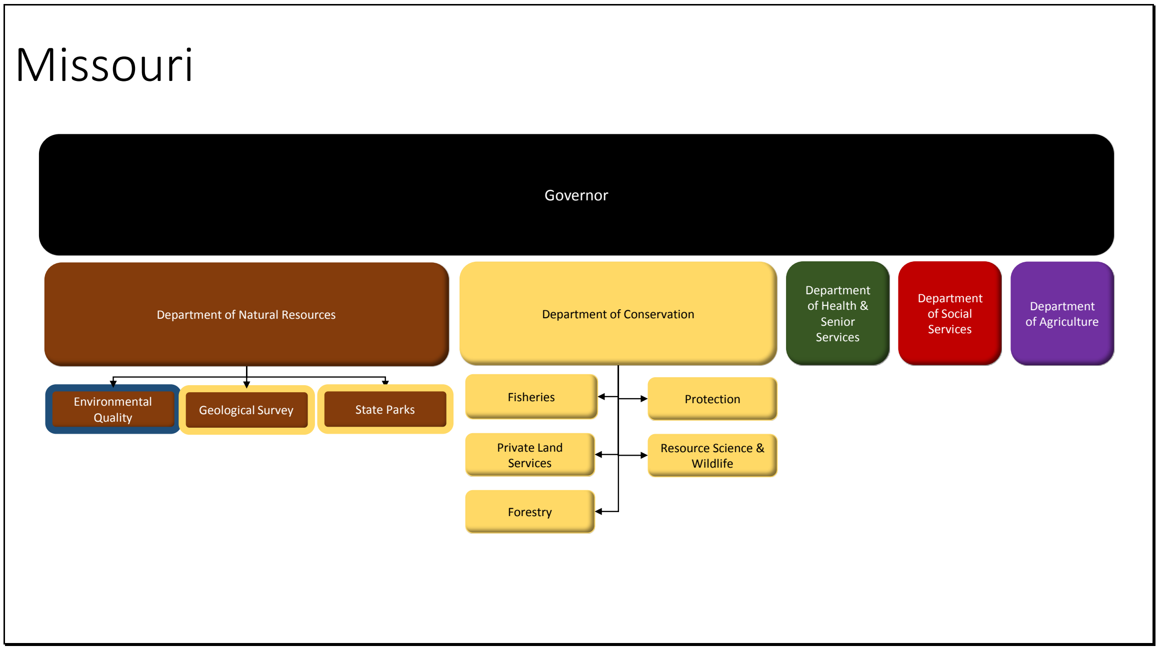
History and Budgetary Information

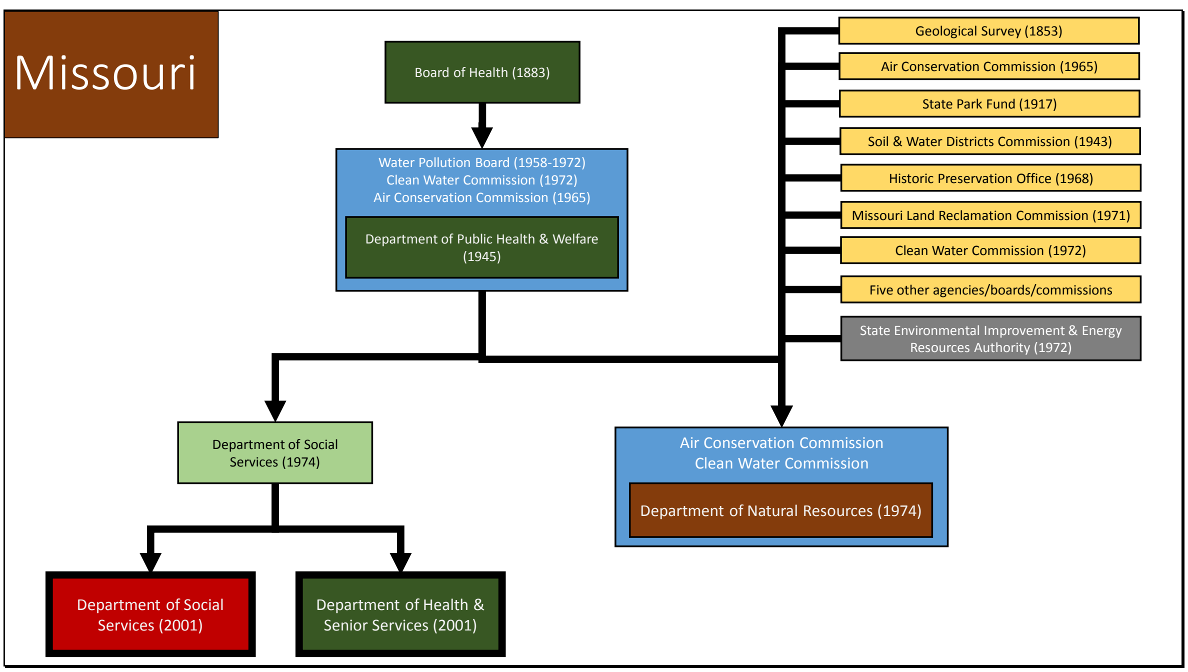
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	Y	N	N	1974	N/A	1694

Operating Budget 2015/16	Federal Funding	Federal Share
$558,319,893	N/A	N/A

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	Y	Y	Y	Y	N	N


Missouri
Governor
Department of Natural Resources
Department of Conservation
Department of Health & Senior Services
Department of Social Services
Department of Agriculture
Environmental Quality
Geological Survey
State Parks
Fisheries
Protection
Private Land Services
Resource Science & Wildlife
Forestry


Missouri
Board of Health (1883)
Water Pollution Board (1958-1972)
Clean Water Commission (1972)
Air Conservation Commission (1965)
Department of Public Health & Welfare (1945)
Geological Survey (1853)
Air Conservation Commission (1965)
State Park Fund (1917)
Soil & Water Districts Commission (1943)
Historic Preservation Office (1968)
Missouri Land Reclamation Commission (1971)
Clean Water Commission (1972)
Five other agencies/boards/commissions
State Environmental Improvement & Energy Resources Authority (1972)
Department of Social Services (1974)
Air Conservation Commission
Clean Water Commission
Department of Natural Resources (1974)
Department of Social Services (2001)
Department of Health & Senior Services (2001)

Montana

Department of Natural Resources and Conservation

Mission Statement

To protect, sustain, and improve a clean and healthful environment to benefit present and future generations

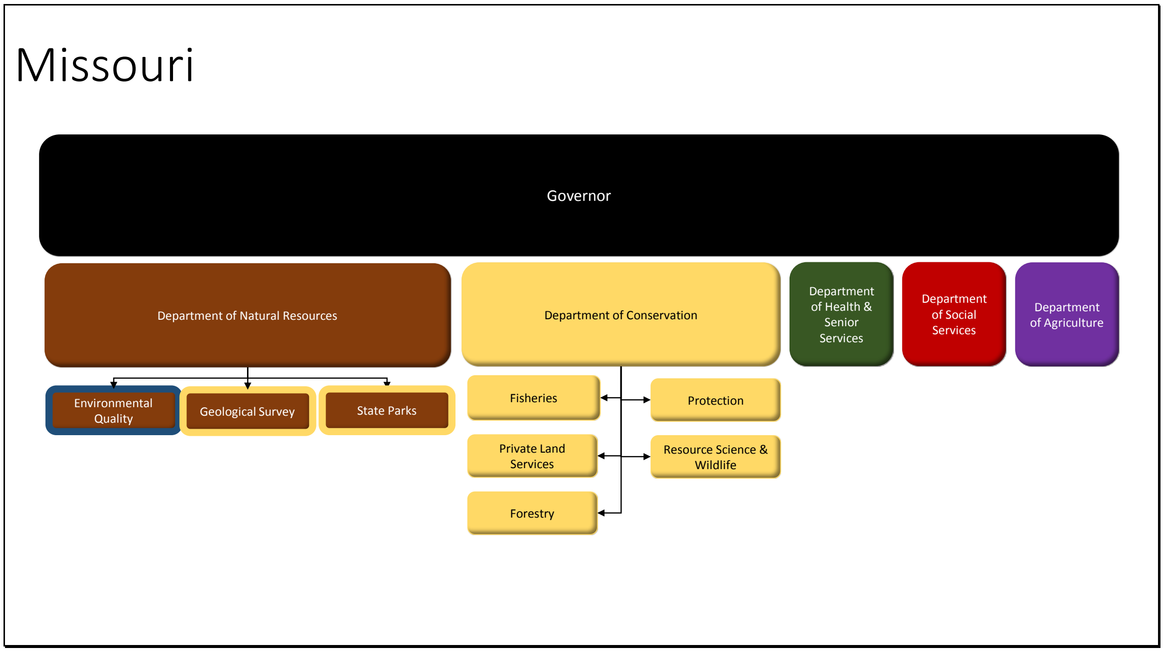
History and Budgetary Information

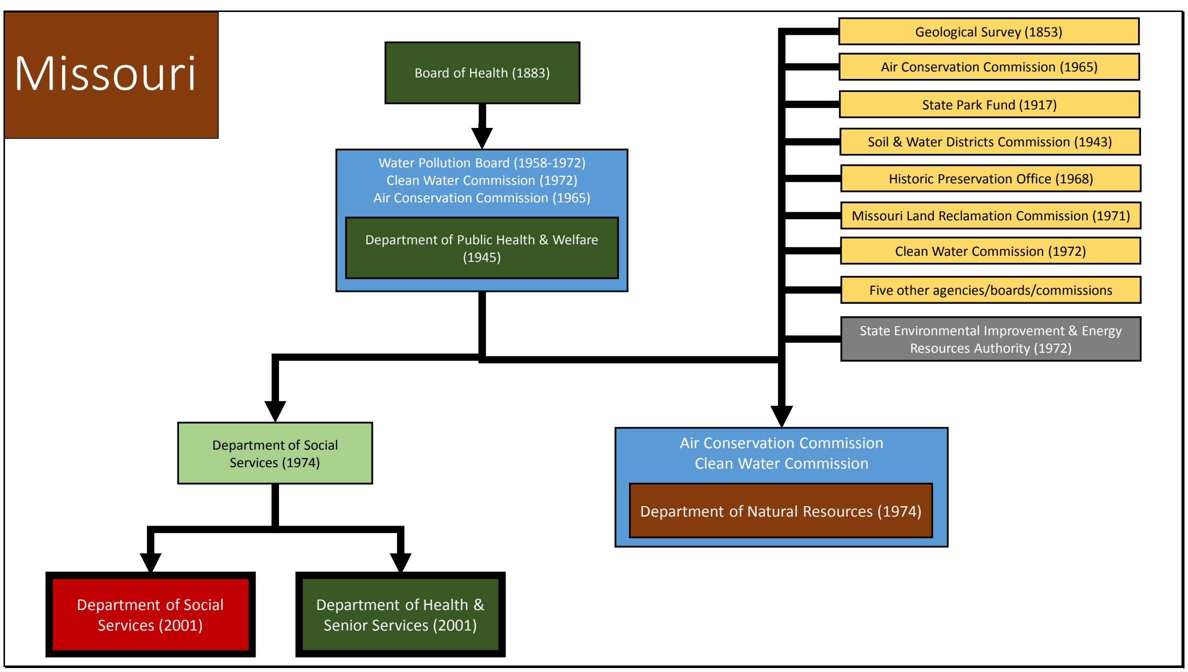
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	Y	N	N	1995	N/A	366

Operating Budget 2015/16	Federal Funding	Federal Share
$62,308,434	$24,281,714	39.0%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	Y	Y	Y	N	N	N


Missouri
Governor
Department of Natural Resources
Department of Conservation
Department of Health & Senior Services
Department of Social Services
Department of Agriculture
Environmental Quality
Geological Survey
State Parks
Fisheries
Protection
Private Land Services
Resource Science & Wildlife
Forestry


Missouri
Board of Health (1883)
Water Pollution Board (1958-1972)
Clean Water Commission (1972)
Air Conservation Commission (1965)
Department of Public Health & Welfare (1945)
Geological Survey (1853)
Air Conservation Commission (1965)
State Park Fund (1917)
Soil & Water Districts Commission (1943)
Historic Preservation Office (1968)
Missouri Land Reclamation Commission (1971)
Clean Water Commission (1972)
Five other agencies/boards/commissions
State Environmental Improvement & Energy Resources Authority (1972)
Department of Social Services (1974)
Air Conservation Commission
Clean Water Commission
Department of Natural Resources (1974)
Department of Social Services (2001)
Department of Health & Senior Services (2001)

Nebraska

Department of Environmental Quality

Mission Statement

To protect Nebraska's air, land, and water resources

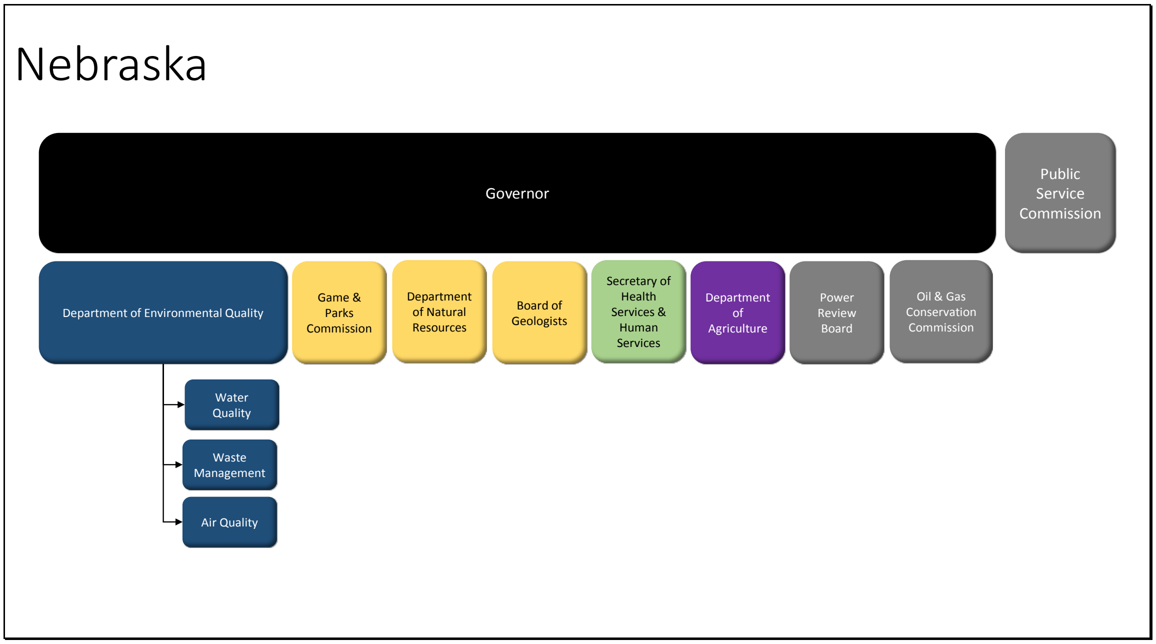
History and Budgetary Information

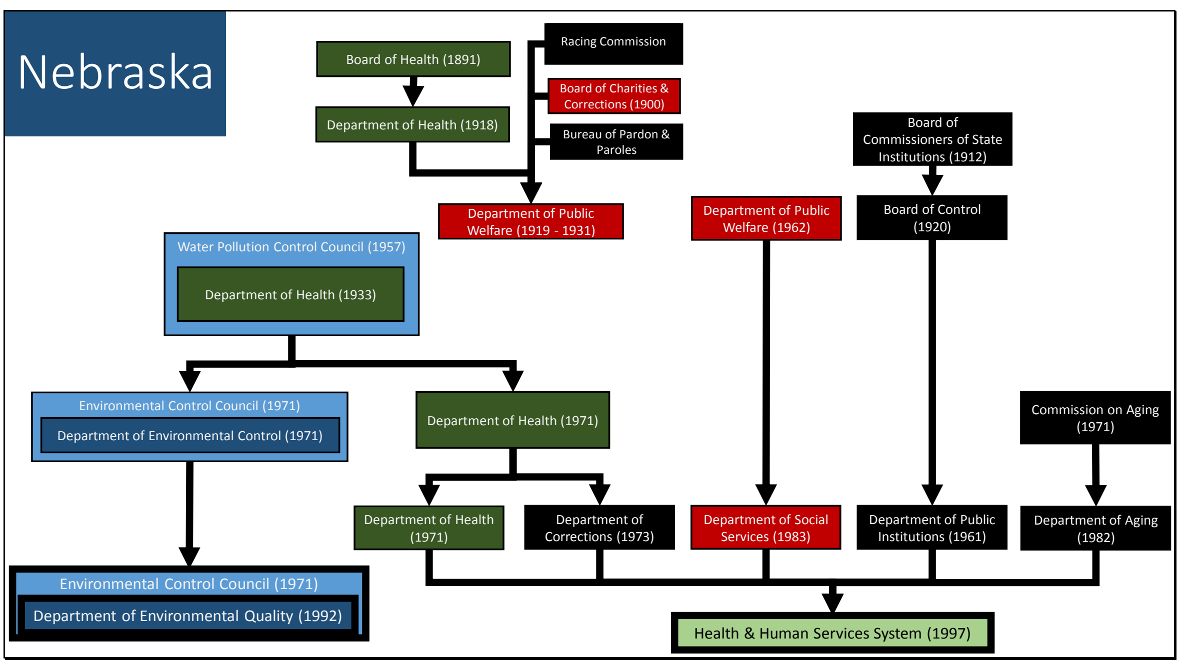
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	N	N	1971	N/A	N/A

Operating Budget 2015/16	Federal Funding	Federal Share
$74,612,962	$18,205,000	24.4%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	N	N	N


Nebraska
Governor
Public Service Commission
Department of Environmental Quality
Game & Parks Commission
Department of Natural Resources
Board of Geologists
Secretary of Health Services & Human Services
Department of Agriculture
Power Review Board
Oil & Gas Conservation Commission
Water Quality
Waste Management
Air Quality


Nebraska
Board of Health (1891)
Department of Health (1918)
Racing Commission
Board of Charities & Corrections (1900)
Bureau of Pardon & Paroles
Department of Public Welfare (1919 - 1931)
Board of Commissioners of State Institutions (1912)
Board of Control (1920)
Department of Public Welfare (1962)
Water Pollution Control Council (1957)
Department of Health (1933)
Environmental Control Council (1971)
Department of Environmental Control (1971)
Department of Health (1971)
Commission on Aging (1971)
Department of Health (1971)
Department of Corrections (1973)
Department of Social Services (1983)
Department of Public Institutions (1961)
Department of Aging (1982)
Environmental Control Council (1971)
Department of Environmental Quality (1992)
Health & Human Services System (1997)

Nevada

Department of Conservation and Natural Resources

Mission Statement

To preserve and enhance the environment of the state to protect public health, sustain healthy ecosystems and contribute to a vibrant economy

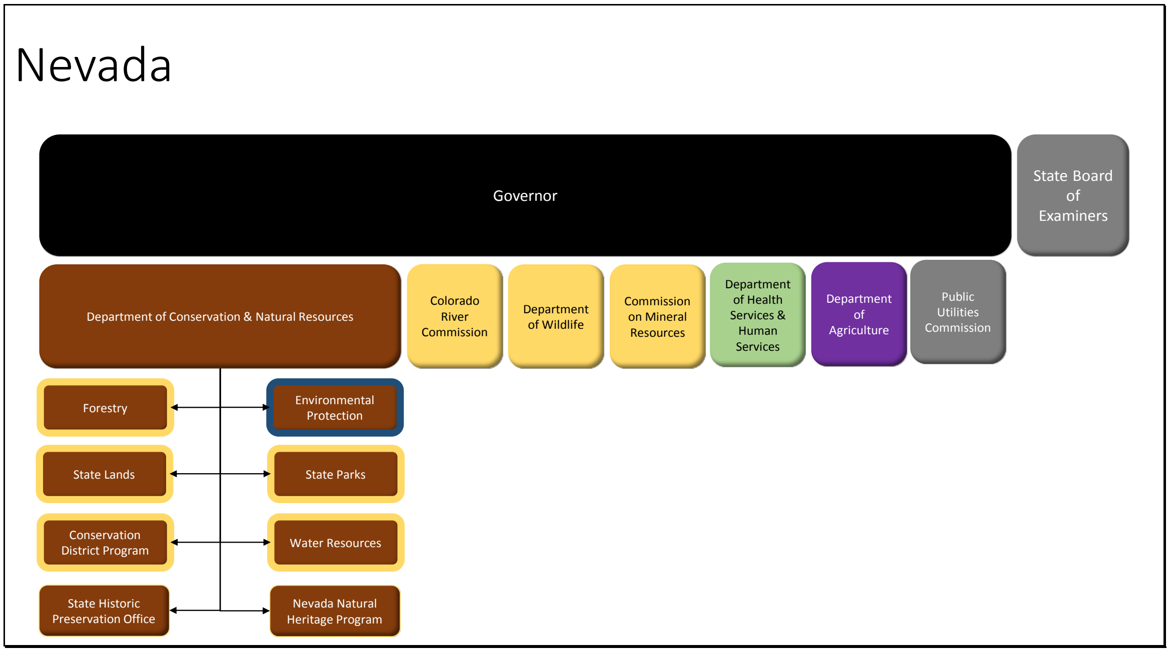
History and Budgetary Information

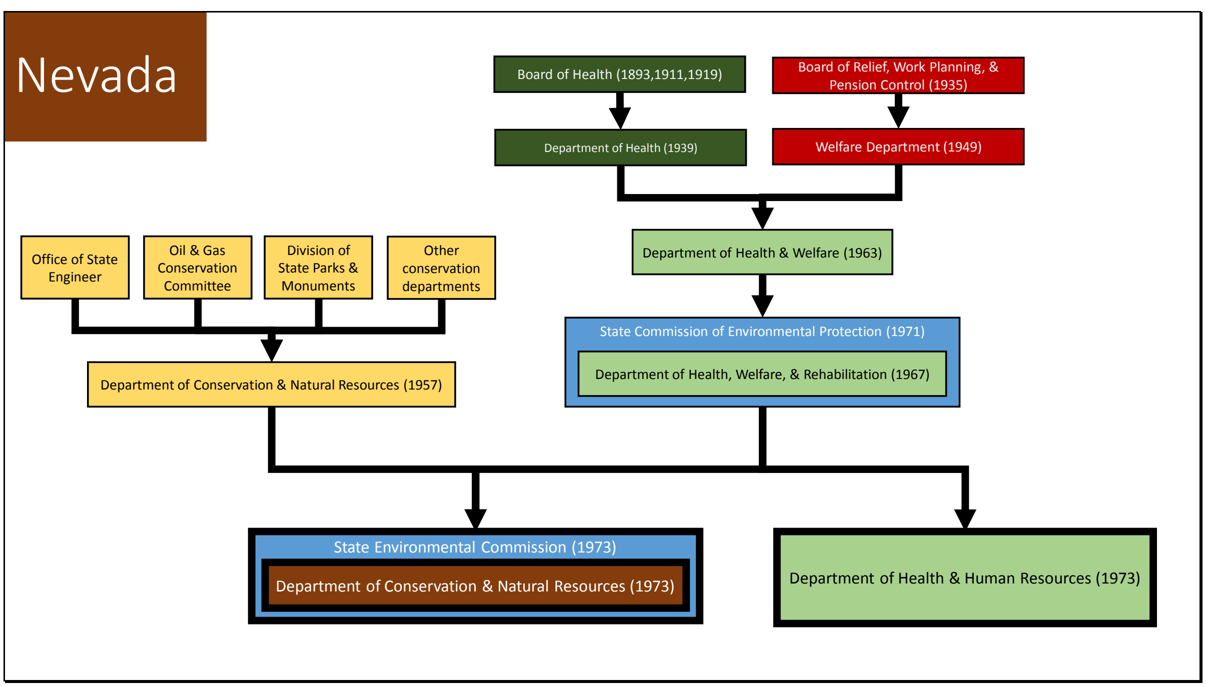
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	Y	N	N	1977	N/A	643

Operating Budget 2015/16	Federal Funding	Federal Share
$110,206,047	$19,837,088	18.0%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	Y	N	N


Nevada
Governor
State Board of Examiners
Department of Conservation & Natural Resources
Colorado River Commission
Department of Wildlife
Commission on Mineral Resources
Department of Health Services & Human Services
Department of Agriculture
Public Utilities Commission
Forestry
Environmental Protection
State Lands
State Parks
Conservation District Program
Water Resources
State Historic Preservation Office
Nevada Natural Heritage Program


Nevada
Board of Health (1893,1911,1919)
Board of Relief, Work Planning, & Pension Control (1935)
Department of Health (1939)
Welfare Department (1949)
Department of Health & Welfare (1963)
Office of State Engineer
Oil & Gas Conservation Committee
Division of State Parks & Monuments
Other conservation departments
State Commission of Environmental Protection (1971)
Department of Health, Welfare, & Rehabilitation (1967)
Department of Conservation & Natural Resources (1957)
State Environmental Commission (1973)
Department of Conservation & Natural Resources (1973)
Department of Health & Human Resources (1973)

New Hampshire

Department of Environmental Services

Mission Statement

To help sustain a high quality of life for all citizens by protecting and restoring the environment and public health in New Hampshire

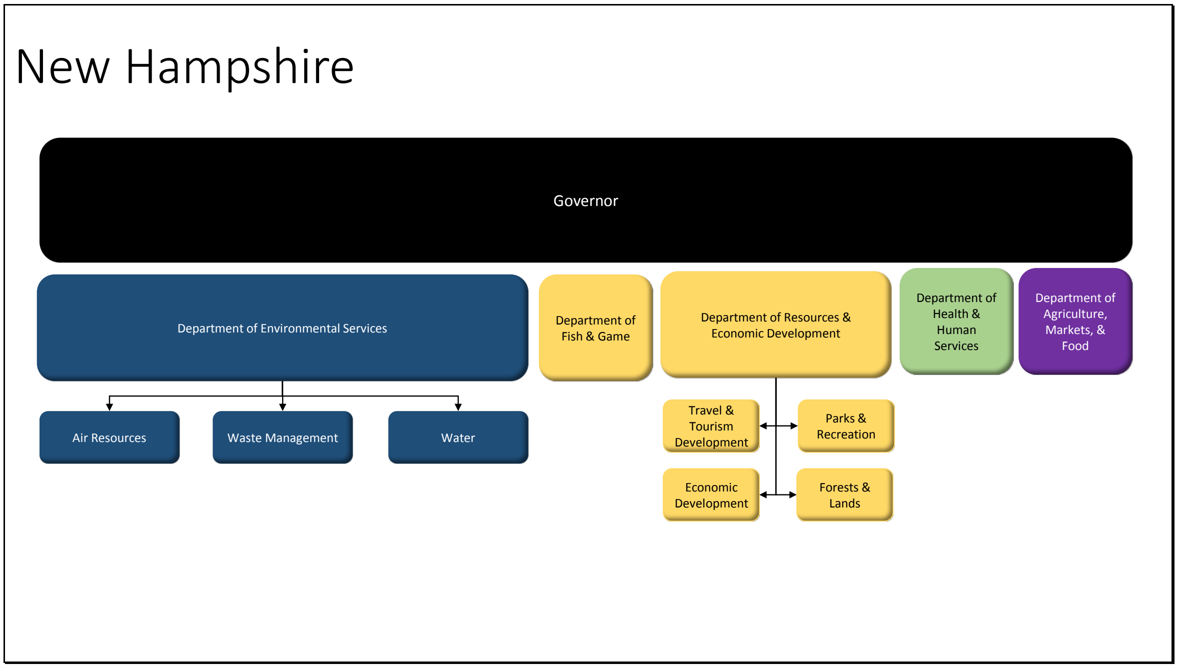
History and Budgetary Information

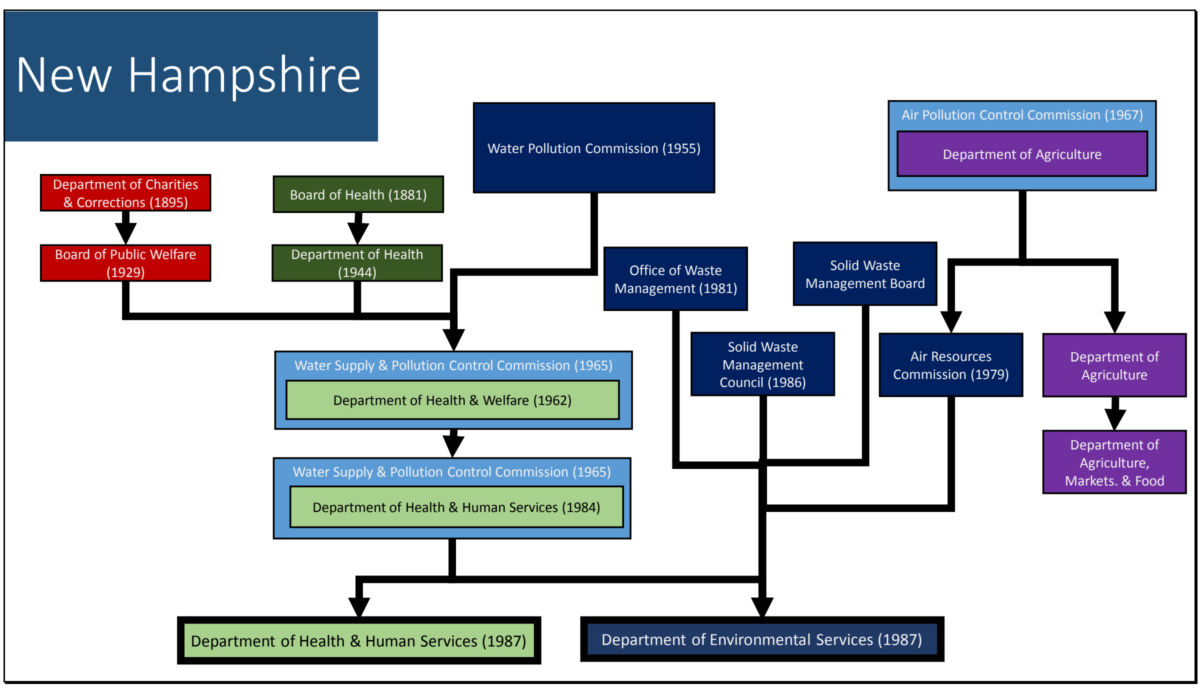
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	N	Y	N	1986	N/A	881

Operating Budget 2015/16	Federal Funding	Federal Share
$284,051,893	$79,224,612	27.9%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	Y	Y	Y	Y	N	N


New Hampshire
Governor
Department of Environmental Services
Department of Fish & Game
Department of Resources & Economic Development
Department of Health & Human Services
Department of Agriculture, Markets, & Food
Air Resources
Waste Management
Water
Travel & Tourism Development
Parks & Recreation
Economic Development
Forests & Lands


New Hampshire
Water Pollution Commission (1955)
Air Pollution Control Commission (1967)
Department of Agriculture
Department of Charities & Corrections (1895)
Board of Health (1881)
Board of Public Welfare (1929)
Department of Health (1944)
Office of Waste Management (1981)
Solid Waste Management Board
Water Supply & Pollution Control Commission (1965)
Department of Health & Welfare (1962)
Solid Waste Management Council (1986)
Air Resources Commission (1979)
Department of Agriculture
Department of Agriculture, Markets. & Food
Water Supply & Pollution Control Commission (1965)
Department of Health & Human Services (1984)
Department of Health & Human Services (1987)
Department of Environmental Services (1987)

New Jersey

Department of Environmental Protection

Mission Statement

Protection of the air, waters, land, and natural and historic resources of the State to ensure continued public benefit

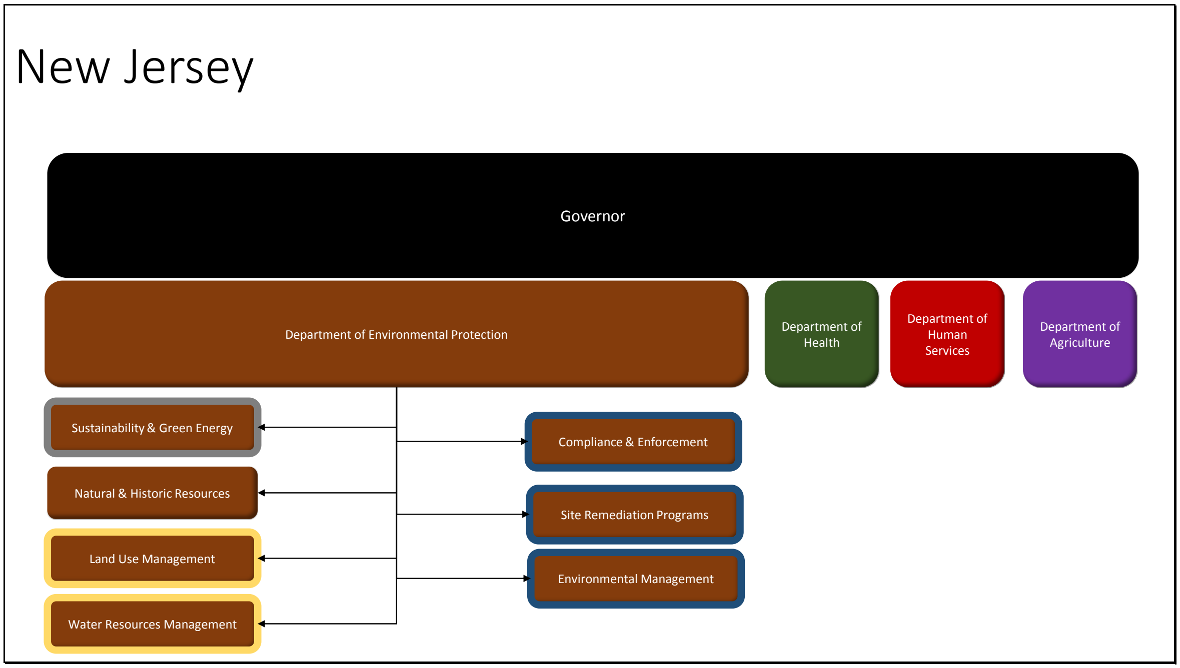
History and Budgetary Information

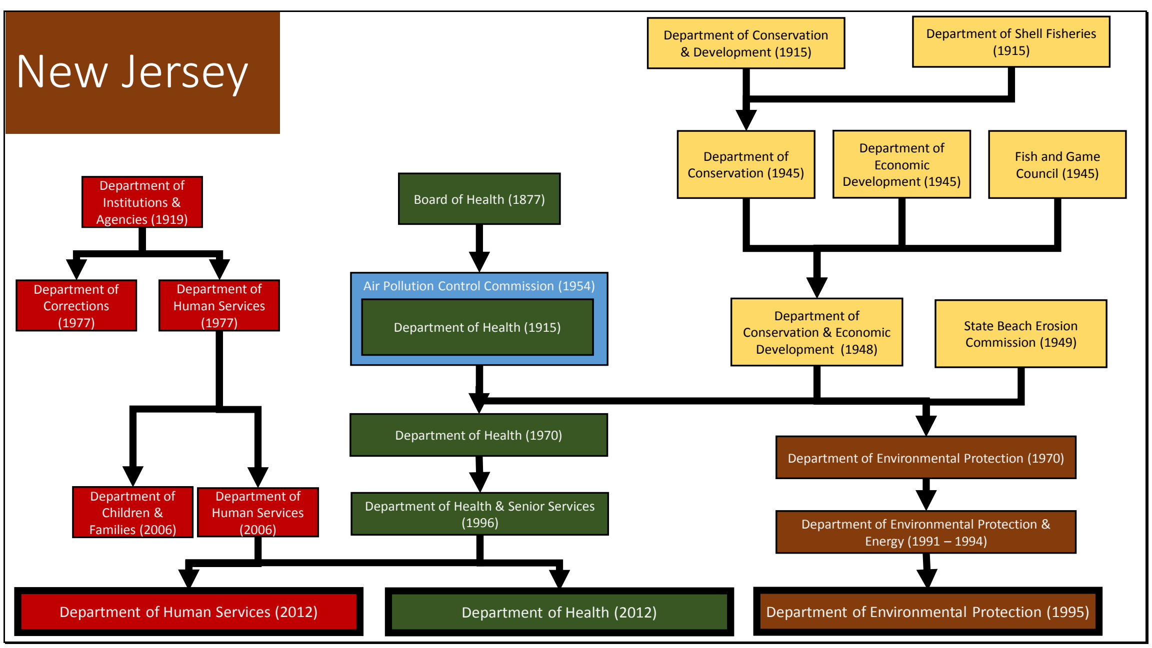
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	Y	N	N	1970	N/A	827

Operating Budget 2015/16	Federal Funding	Federal Share
$34,622,000	$8,150,000	23.5%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	Y	Y	Y	Y	N	N


New Jersey
Governor
Department of Environmental Protection
Department of Health
Department of Human Services
Department of Agriculture
Sustainability & Green Energy
Natural & Historic Resources
Land Use Management
Water Resources Management
Compliance & Enforcement
Site Remediation Programs
Environmental Management


New Jersey
Department of Conservation & Development (1915)
Department of Shell Fisheries (1915)
Department of Conservation (1945)
Department of Economic Development (1945)
Fish and Game Council (1945)
Department of Institutions & Agencies (1919)
Board of Health (1877)
Department of Corrections (1977)
Department of Human Services (1977)
Air Pollution Control Commission (1954)
Department of Health (1915)
Department of Conservation & Economic Development (1948)
State Beach Erosion Commission (1949)
Department of Health (1970)
Department of Environmental Protection (1970)
Department of Children & Families (2006)
Department of Human Services (2006)
Department of Health & Senior Services (1996)
Department of Environmental Protection & Energy (1991 – 1994)
Department of Human Services (2012)
Department of Health (2012)
Department of Environmental Protection (1995)

New Mexico

Department of Environment

Mission Statement

To protect and restore the environment and to foster a healthy and prosperous New Mexico for present and future generations.

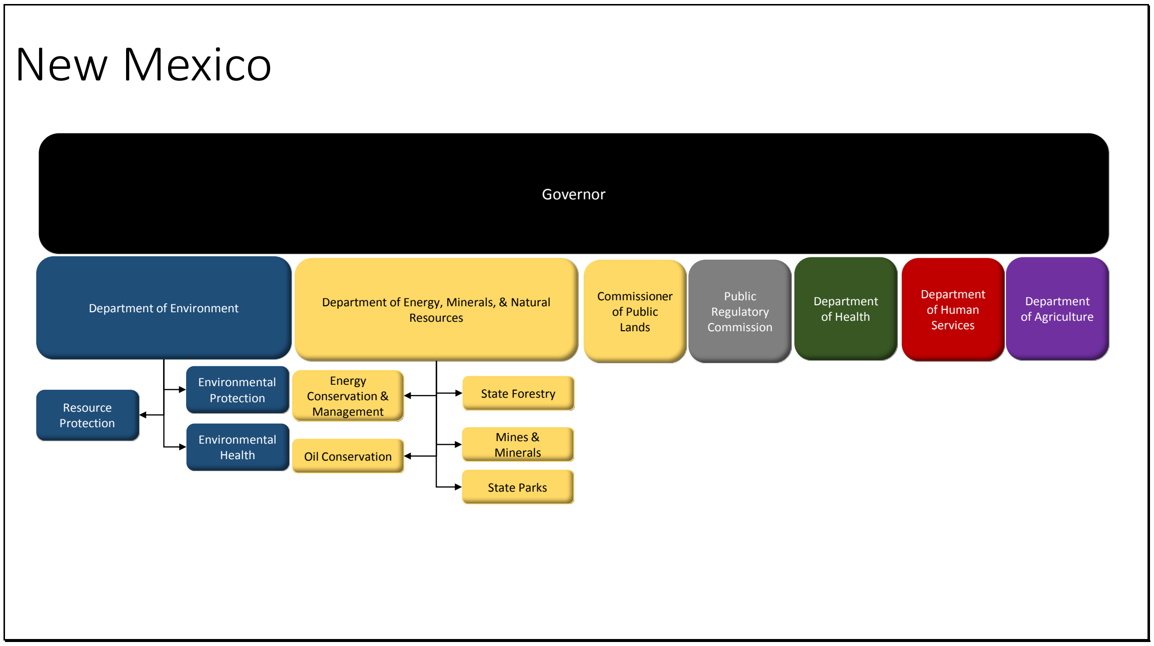
History and Budgetary Information

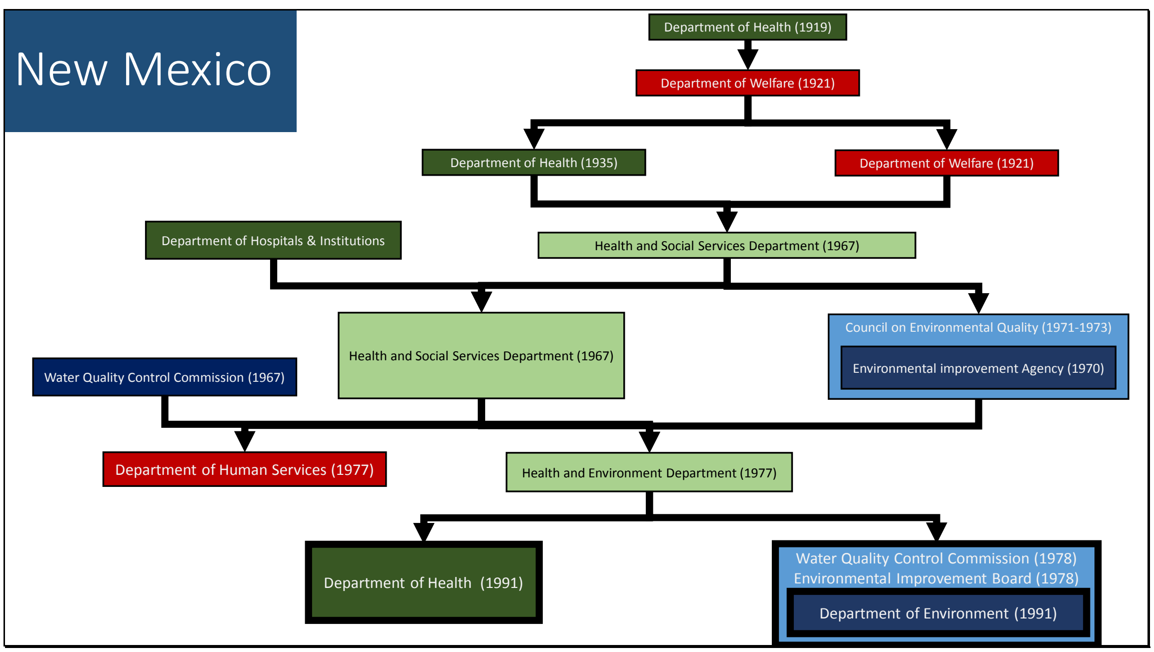
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	N	N	1991	N/A	N/A

Operating Budget 2015/16	Federal Funding	Federal Share
$127,578,000	N/A	N/A

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	N	N	N


New Mexico
Governor
Department of Environment
Department of Energy, Minerals, & Natural Resources
Commissioner of Public Lands
Public Regulatory Commission
Department of Health
Department of Human Services
Department of Agriculture
Environmental Protection
Environmental Health
Resource Protection
Energy Conservation & Management
Oil Conservation
State Forestry
Mines & Minerals
State Parks


New Mexico
Department of Health (1919)
Department of Welfare (1921)
Department of Health (1935)
Department of Welfare (1921)
Department of Hospitals & Institutions
Health and Social Services Department (1967)
Health and Social Services Department (1967)
Council on Environmental Quality (1971-1973)
Environmental improvement Agency (1970)
Water Quality Control Commission (1967)
Department of Human Services (1977)
Health and Environment Department (1977)
Department of Health (1991)
Water Quality Control Commission (1978)
Environmental Improvement Board (1978)
Department of Environment (1991)

New York

Department of Environmental Conservation

Mission Statement

To conserve, improve, and protect New York's natural resources and environment and to prevent, abate, and control water, land, and air pollution, in order to enhance the health, safety, and welfare of the people of the state and their overall economic and social well-being.

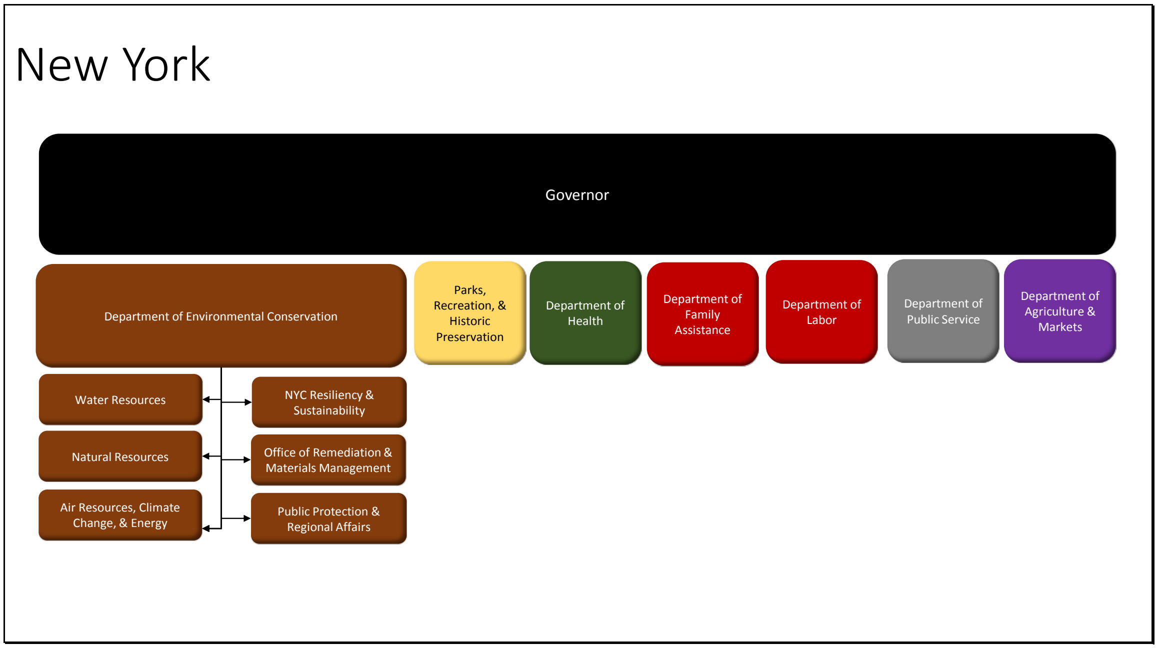
History and Budgetary Information

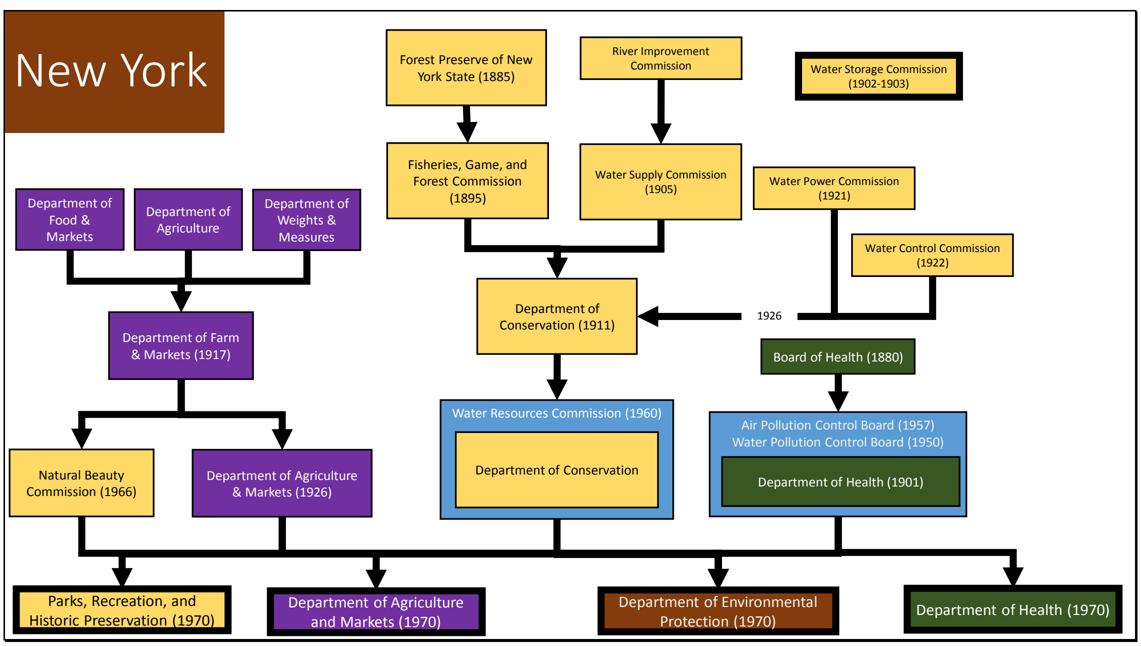
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	Y	N	N	1970	N/A	2946

Operating Budget 2015/16	Federal Funding	Federal Share
$922,000,000	$81,198,000	9%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	N	Y	Y	Y	Y	N	N


New York
Governor
Department of Environmental Conservation
Parks, Recreation, & Historic Preservation
Department of Health
Department of Family Assistance
Department of Labor
Department of Public Service
Department of Agriculture & Markets
Water Resources
NYC Resiliency & Sustainability
Natural Resources
Office of Remediation & Materials Management
Air Resources, Climate Change, & Energy
Public Protection & Regional Affairs


New York
Forest Preserve of New York State (1885)
River Improvement Commission
Water Storage Commission (1902-1903)
Fisheries, Game, and Forest Commission (1895)
Water Supply Commission (1905)
Water Power Commission (1921)
Department of Food & Markets
Department of Agriculture
Department of Weights & Measures
Water Control Commission (1922)
Department of Conservation (1911)
1926
Department of Farm & Markets (1917)
Board of Health (1880)
Water Resources Commission (1960)
Department of Conservation
Air Pollution Control Board (1957)
Water Pollution Control Board (1950)
Department of Health (1901)
Natural Beauty Commission (1966)
Department of Agriculture & Markets (1926)
Parks, Recreation, and Historic Preservation (1970)
Department of Agriculture and Markets (1970)
Department of Environmental Protection (1970)
Department of Health (1970)

North Carolina

Department of Environmental and Natural Resources

<u>Mission Statement</u>

To protect North Carolina's environment and natural resources.

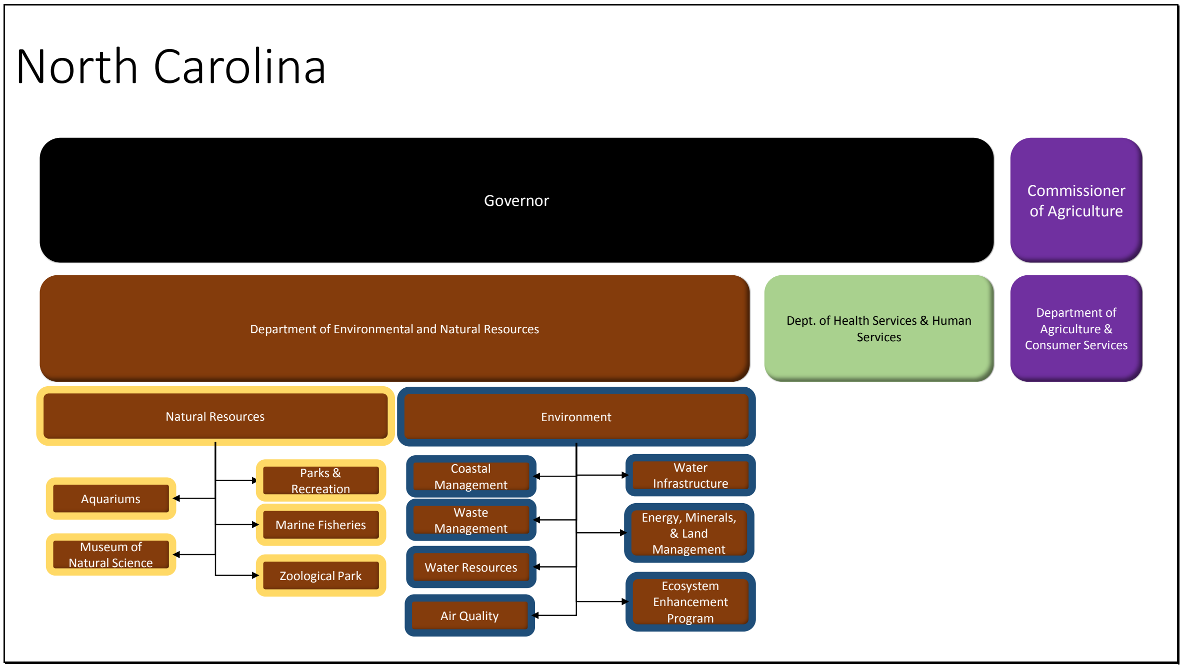
<u>History and Budgetary Information</u>

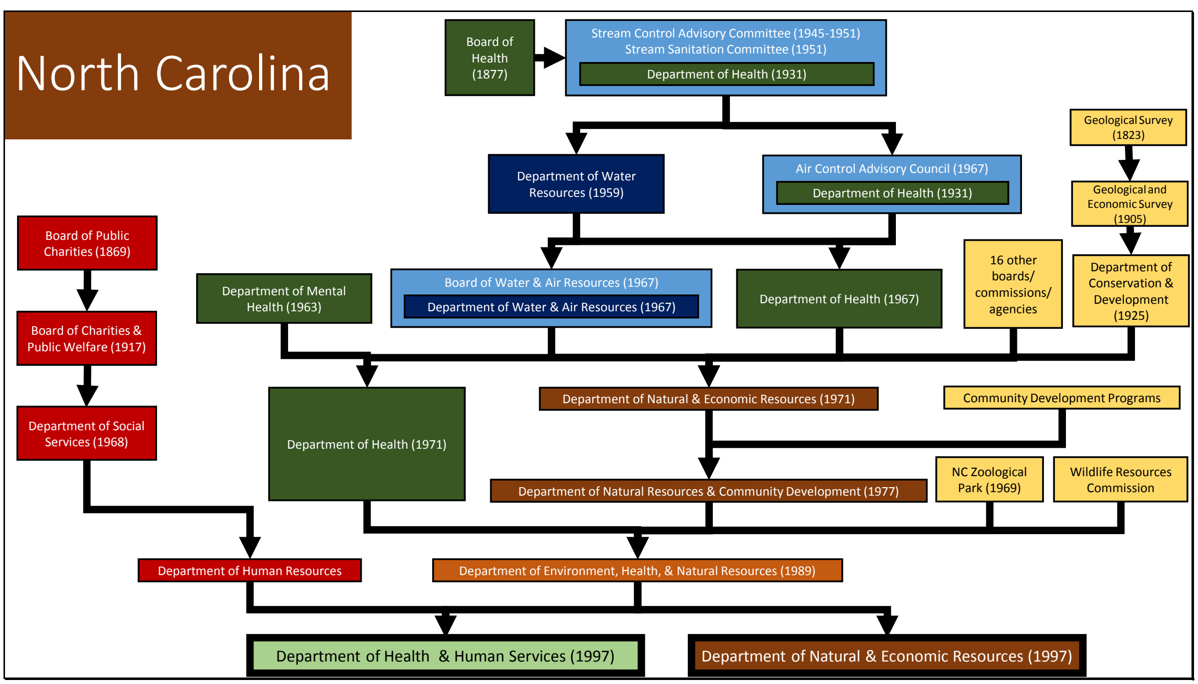
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	N	Y	N	1967	1971	1226

Operating Budget 2015/16	Federal Funding	Federal Share
$102,196,685	N/A	N/A

<u>Agency Responsibilities</u>

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	Y	Y	N


North Carolina
Governor
Commissioner of Agriculture
Department of Environmental and Natural Resources
Dept. of Health Services & Human Services
Department of Agriculture & Consumer Services
Natural Resources
Environment
Aquariums
Parks & Recreation
Marine Fisheries
Museum of Natural Science
Zoological Park
Coastal Management
Waste Management
Water Resources
Air Quality
Water Infrastructure
Energy, Minerals, & Land Management
Ecosystem Enhancement Program


North Carolina
Board of Health (1877)
Stream Control Advisory Committee (1945-1951)
Stream Sanitation Committee (1951)
Department of Health (1931)
Department of Water Resources (1959)
Air Control Advisory Council (1967)
Department of Health (1931)
Geological Survey (1823)
Geological and Economic Survey (1905)
Department of Conservation & Development (1925)
16 other boards/ commissions/ agencies
Board of Public Charities (1869)
Board of Charities & Public Welfare (1917)
Department of Social Services (1968)
Department of Mental Health (1963)
Board of Water & Air Resources (1967)
Department of Water & Air Resources (1967)
Department of Health (1967)
Department of Health (1971)
Department of Natural & Economic Resources (1971)
Community Development Programs
Department of Natural Resources & Community Development (1977)
NC Zoological Park (1969)
Wildlife Resources Commission
Department of Human Resources
Department of Environment, Health, & Natural Resources (1989)
Department of Health & Human Services (1997)
Department of Natural & Economic Resources (1997)

North Dakota

Department of Health

Mission Statement

To protect and enhance the health and safety of all North Dakotans and the environment in which we live.

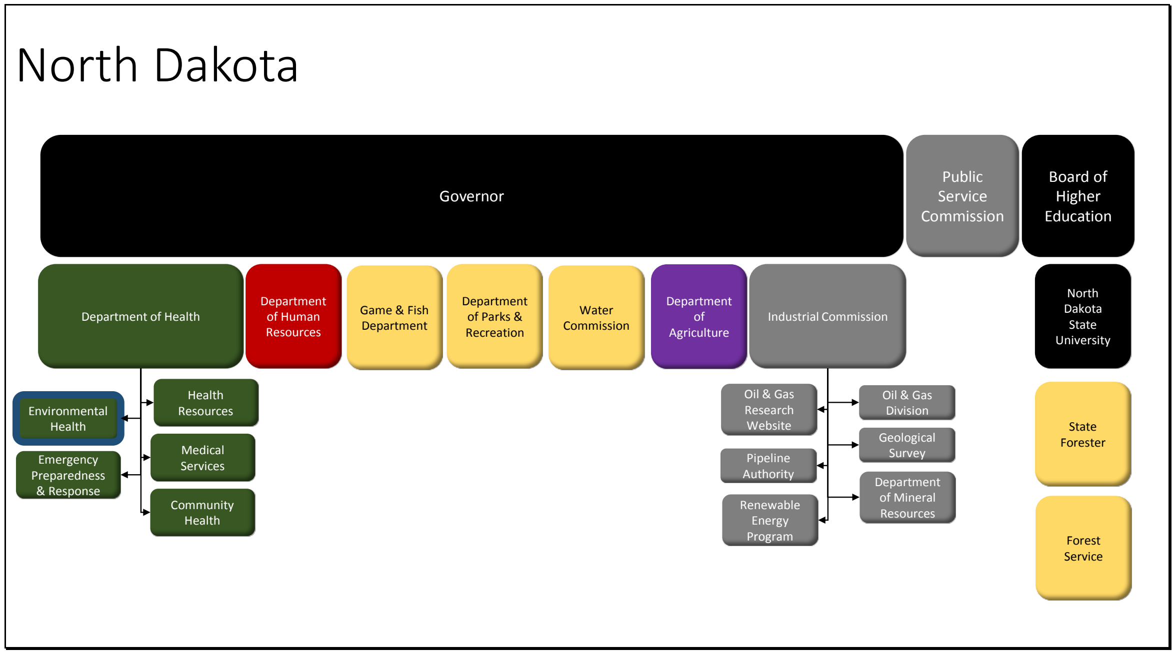
History and Budgetary Information

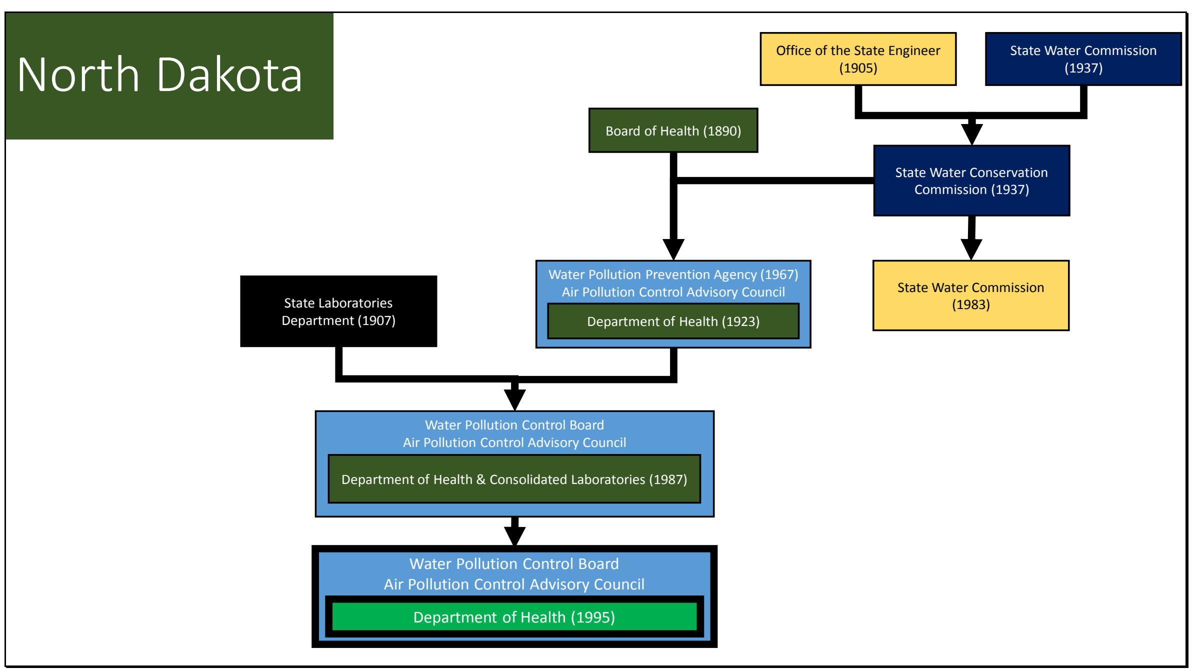
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Health	N/A	N/A	N	N/A	N/A	354

Operating Budget 2015/16	Federal Funding	Federal Share
$180,827,743	$116,763,623	64.6%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	N	Y	Y	Y	N	N	N


North Dakota
Governor
Public Service Commission
Board of Higher Education
Department of Health
Department of Human Resources
Game & Fish Department
Department of Parks & Recreation
Water Commission
Department of Agriculture
Industrial Commission
North Dakota State University
Environmental Health
Health Resources
Emergency Preparedness & Response
Medical Services
Community Health
Oil & Gas Research Website
Oil & Gas Division
Geological Survey
Pipeline Authority
Department of Mineral Resources
Renewable Energy Program
State Forester
Forest Service


North Dakota
Office of the State Engineer (1905)
State Water Commission (1937)
Board of Health (1890)
State Water Conservation Commission (1937)
Water Pollution Prevention Agency (1967)
Air Pollution Control Advisory Council
Department of Health (1923)
State Laboratories Department (1907)
State Water Commission (1983)
Water Pollution Control Board
Air Pollution Control Advisory Council
Department of Health & Consolidated Laboratories (1987)
Water Pollution Control Board
Air Pollution Control Advisory Council
Department of Health (1995)

Ohio

Environmental Protection Agency

Mission Statement

To protect the environment and public health by ensuring compliance with environmental laws and demonstrating leadership in environmental stewardship.

History and Budgetary Information

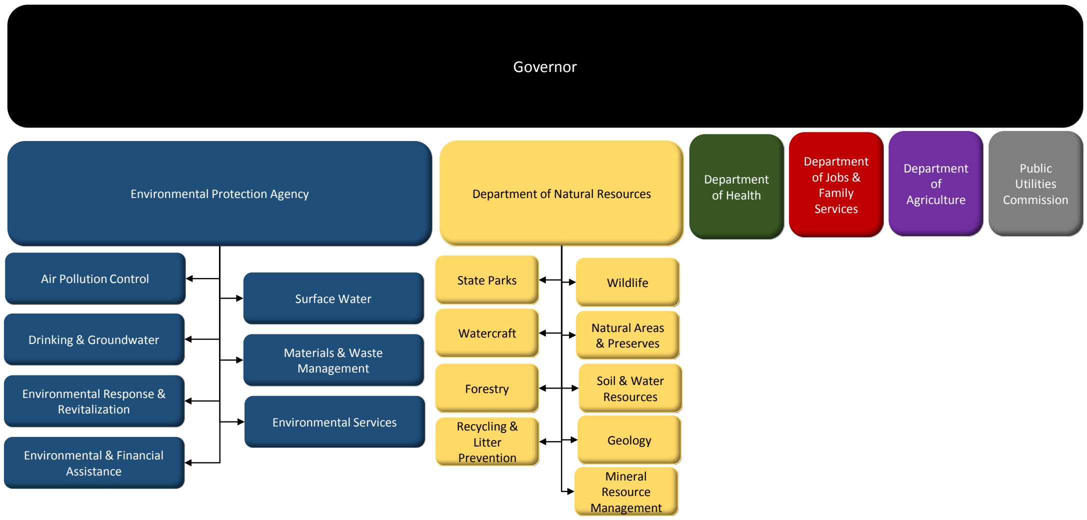
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	Y	N	1972	N/A	N/A

Operating Budget 2015/16	Federal Funding	Federal Share
$199,606,723	$35,310,223	17.7%

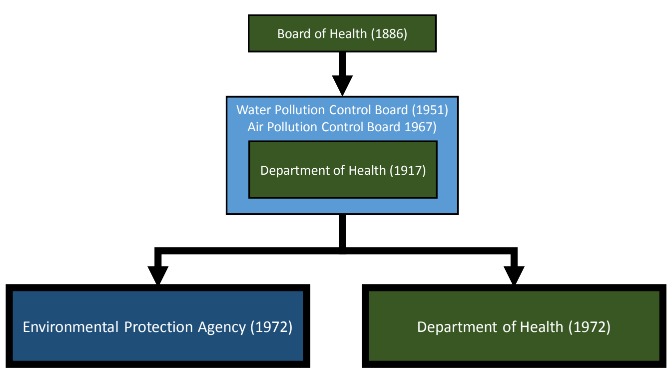
Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	N	N	N

Ohio


Governor
Environmental Protection Agency
Department of Natural Resources
Department of Health
Department of Jobs & Family Services
Department of Agriculture
Public Utilities Commission
Air Pollution Control
Surface Water
Drinking & Groundwater
Materials & Waste Management
Environmental Response & Revitalization
Environmental Services
Environmental & Financial Assistance
State Parks
Wildlife
Watercraft
Natural Areas & Preserves
Forestry
Soil & Water Resources
Recycling & Litter Prevention
Geology
Mineral Resource Management

Ohio


Board of Health (1886)
Water Pollution Control Board (1951)
Air Pollution Control Board 1967)
Department of Health (1917)
Environmental Protection Agency (1972)
Department of Health (1972)

Oklahoma

Secretary of Energy and Environment

Mission Statement

To enhance the quality of life in Oklahoma and protect the health of its citizens by protecting, preserving, and restoring the water, land, and air of the state, thus fostering a clean, attractive, healthy, prosperous and sustainable environment.

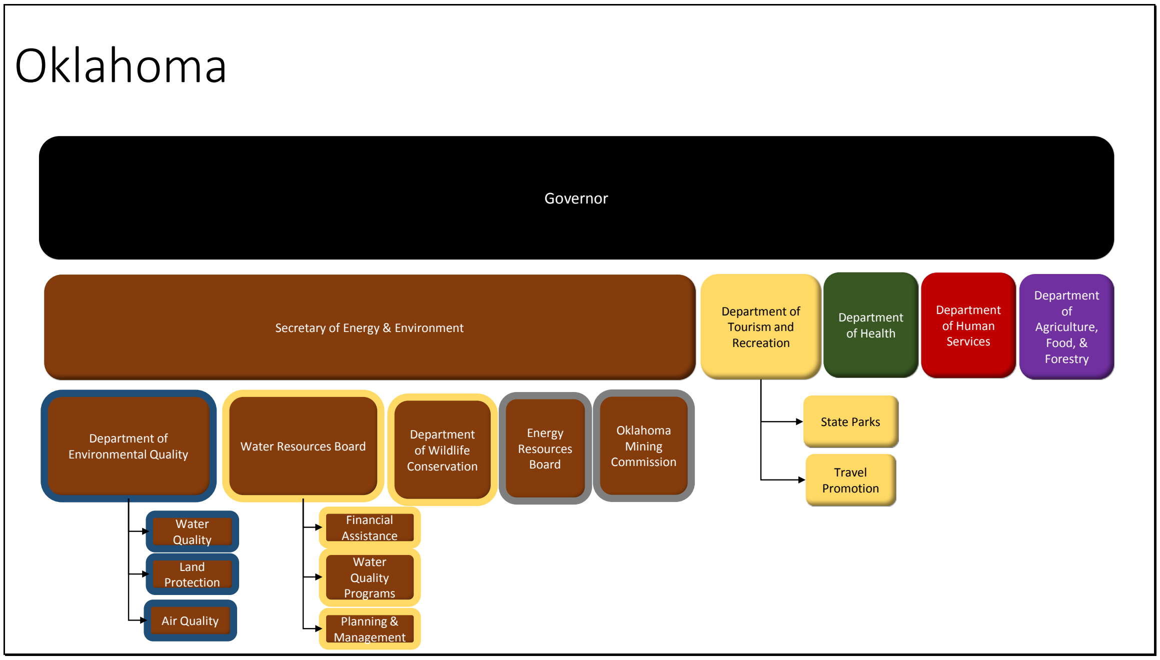
History and Budgetary Information

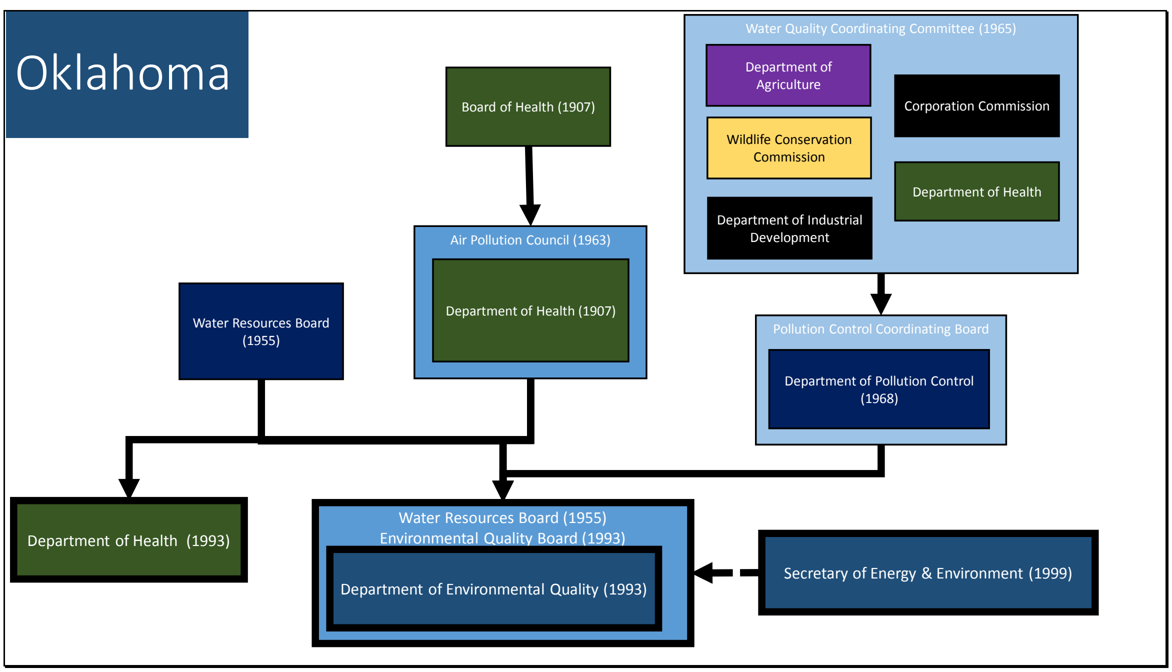
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	Y	N	1993	N/A	N/A

Operating Budget 2015/16	Federal Funding	Federal Share
$81,624,000	$28,579,000	35.1%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	N	N	N


Oklahoma
Governor
Secretary of Energy & Environment
Department of Tourism and Recreation
Department of Health
Department of Human Services
Department of Agriculture, Food, & Forestry
Department of Environmental Quality
Water Resources Board
Department of Wildlife Conservation
Energy Resources Board
Oklahoma Mining Commission
State Parks
Travel Promotion
Water Quality
Land Protection
Air Quality
Financial Assistance
Water Quality Programs
Planning & Management


Oklahoma
Board of Health (1907)
Water Quality Coordinating Committee (1965)
Department of Agriculture
Corporation Commission
Wildlife Conservation Commission
Department of Health
Department of Industrial Development
Air Pollution Council (1963)
Department of Health (1907)
Water Resources Board (1955)
Pollution Control Coordinating Board
Department of Pollution Control (1968)
Department of Health (1993)
Water Resources Board (1955)
Environmental Quality Board (1993)
Department of Environmental Quality (1993)
Secretary of Energy & Environment (1999)

Oregon

Department of Environmental Protection

Mission Statement

To be a leader in restoring, maintaining, and enhancing the quality of Oregon's air, land, and water.

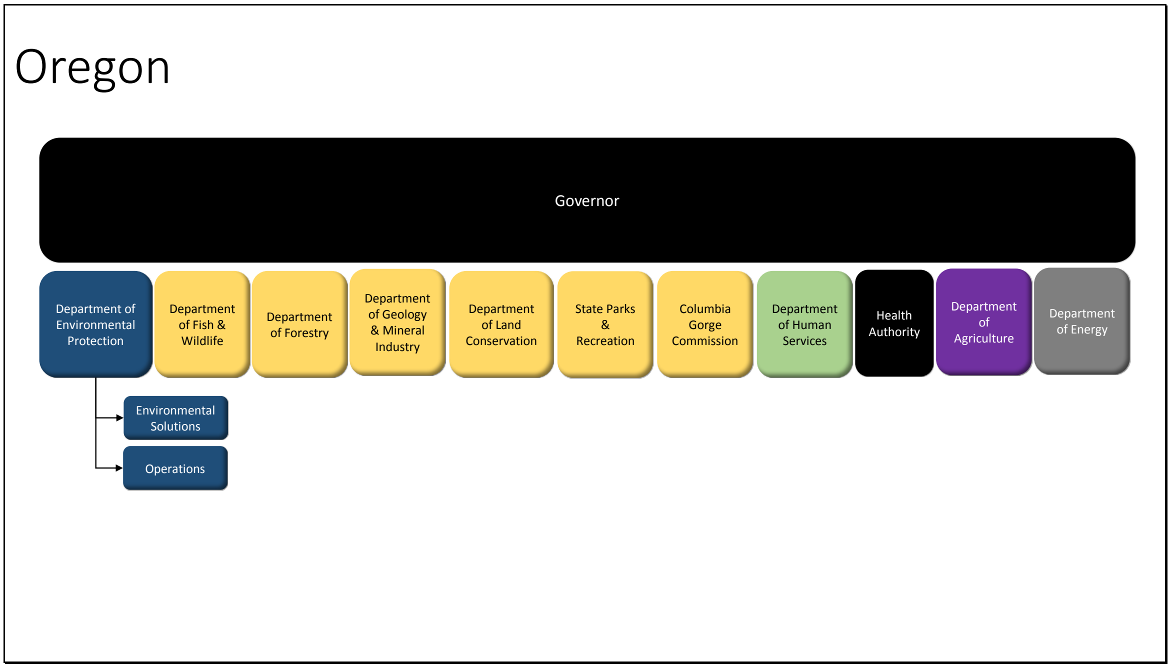
History and Budgetary Information

Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	N	N	1969	N/A	723

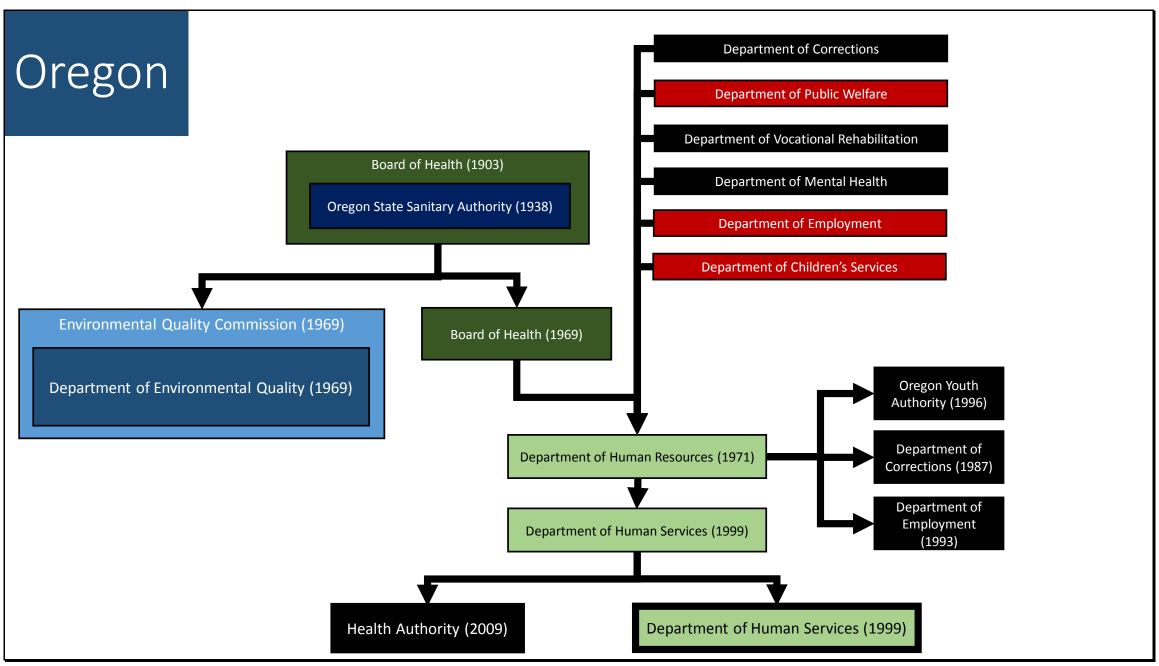
Operating Budget 2015/16	Federal Funding	Federal Share
$344,128,505	$28,600,660	8.3%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	N	Y	Y	Y	N	N	N



Oregon
Governor
Department of Environmental Protection
Department of Fish & Wildlife
Department of Forestry
Department of Geology & Mineral Industry
Department of Land Conservation
State Parks & Recreation
Columbia Gorge Commission
Department of Human Services
Health Authority
Department of Agriculture
Department of Energy
Environmental Solutions
Operations



Oregon
Department of Corrections
Department of Public Welfare
Department of Vocational Rehabilitation
Department of Mental Health
Department of Employment
Department of Children's Services
Board of Health (1903)
Oregon State Sanitary Authority (1938)
Environmental Quality Commission (1969)
Department of Environmental Quality (1969)
Board of Health (1969)
Oregon Youth Authority (1996)
Department of Corrections (1987)
Department of Employment (1993)
Department of Human Resources (1971)
Department of Human Services (1999)
Health Authority (2009)
Department of Human Services (1999)

Pennsylvania

Department of Environmental Protection

Mission Statement

To protect Pennsylvania's air, land and water from pollution and to provide for the health and safety of its citizens through a cleaner environment. We will work as partners with individuals, organizations, governments and businesses to prevent pollution and restore our natural resources.

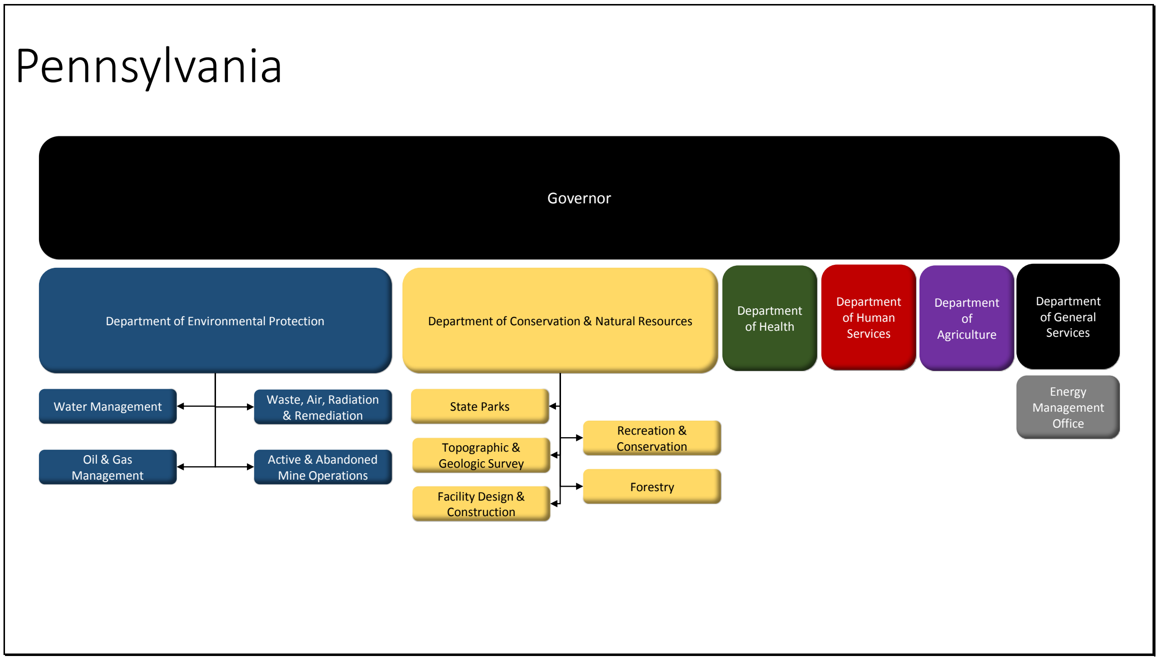
History and Budgetary Information

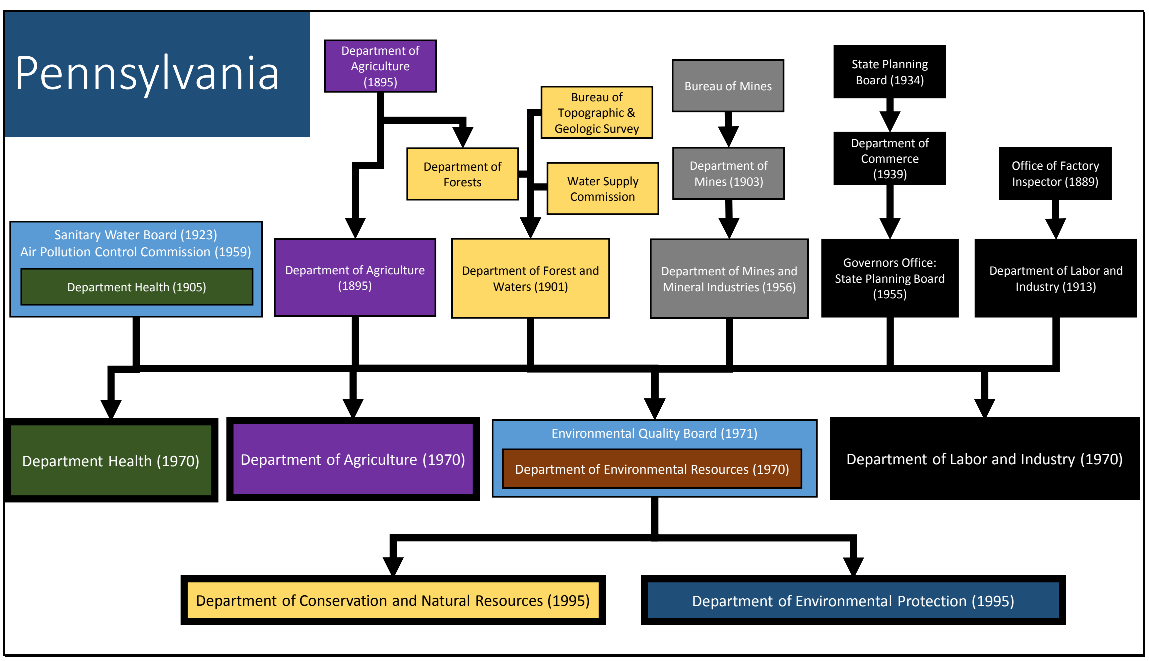
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	N	N	1970	1995	N/A

Operating Budget 2015/16	Federal Funding	Federal Share
$697,142,000	$193,050,000	27.7%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	Y	Y	Y	Y	N	N


Pennsylvania
Governor
Department of Environmental Protection
Department of Conservation & Natural Resources
Department of Health
Department of Human Services
Department of Agriculture
Department of General Services
Energy Management Office
Water Management
Waste, Air, Radiation & Remediation
Oil & Gas Management
Active & Abandoned Mine Operations
State Parks
Recreation & Conservation
Topographic & Geologic Survey
Forestry
Facility Design & Construction


Pennsylvania
Department of Agriculture (1895)
Bureau of Topographic & Geologic Survey
Bureau of Mines
State Planning Board (1934)
Department of Forests
Water Supply Commission
Department of Mines (1903)
Department of Commerce (1939)
Office of Factory Inspector (1889)
Sanitary Water Board (1923)
Air Pollution Control Commission (1959)
Department Health (1905)
Department of Agriculture (1895)
Department of Forest and Waters (1901)
Department of Mines and Mineral Industries (1956)
Governors Office: State Planning Board (1955)
Department of Labor and Industry (1913)
Department Health (1970)
Department of Agriculture (1970)
Environmental Quality Board (1971)
Department of Environmental Resources (1970)
Department of Labor and Industry (1970)
Department of Conservation and Natural Resources (1995)
Department of Environmental Protection (1995)

Rhode Island

Department of Environmental Management

Mission Statement

To preserving the quality of Rhode Island's environment, maintaining the health and safety of its residents, and protecting the natural systems upon which life depends

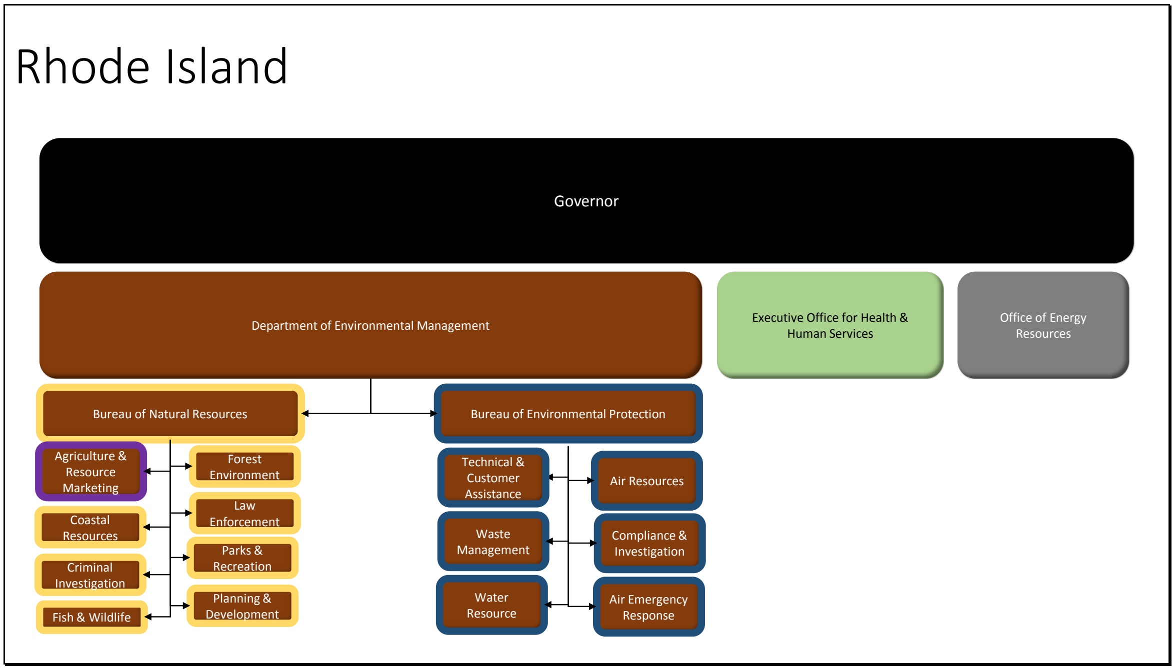
History and Budgetary Information

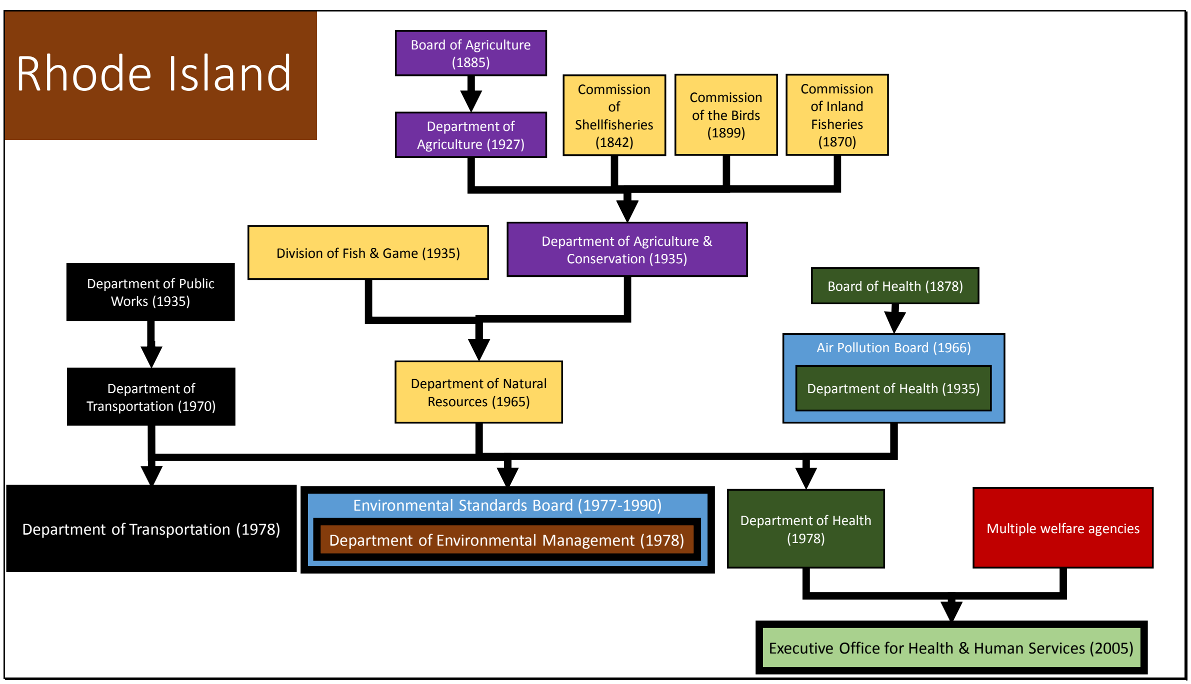
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	Y	N	N	1978	N/A	399

Operating Budget 2015/16	Federal Funding	Federal Share
$103,811,527	$3,185,964	3.0%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	N	Y	Y	Y	N	N	N


Rhode Island
Governor
Department of Environmental Management
Executive Office for Health & Human Services
Office of Energy Resources
Bureau of Natural Resources
Bureau of Environmental Protection
Agriculture & Resource Marketing
Forest Environment
Coastal Resources
Law Enforcement
Parks & Recreation
Criminal Investigation
Planning & Development
Fish & Wildlife
Technical & Customer Assistance
Air Resources
Waste Management
Compliance & Investigation
Water Resource
Air Emergency Response


Rhode Island
Board of Agriculture (1885)
Department of Agriculture (1927)
Commission of Shellfisheries (1842)
Commission of the Birds (1899)
Commission of Inland Fisheries (1870)
Division of Fish & Game (1935)
Department of Agriculture & Conservation (1935)
Department of Public Works (1935)
Board of Health (1878)
Air Pollution Board (1966)
Department of Health (1935)
Department of Transportation (1970)
Department of Natural Resources (1965)
Department of Transportation (1978)
Environmental Standards Board (1977-1990)
Department of Environmental Management (1978)
Department of Health (1978)
Multiple welfare agencies
Executive Office for Health & Human Services (2005)

South Carolina

Department of Health and Environmental Control

Mission Statement

To promote and protect the public and the environment.

History and Budgetary Information

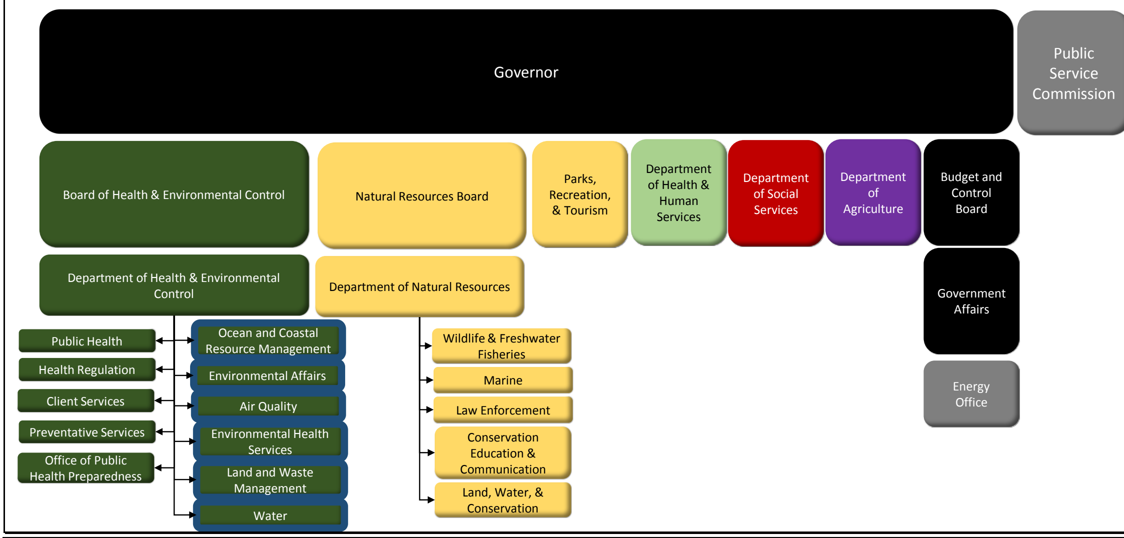
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Health	Y	Y	N	1970	1973	3400

Operating Budget 2015/16	Federal Funding	Federal Share
$593,900,859	N/A	N/A

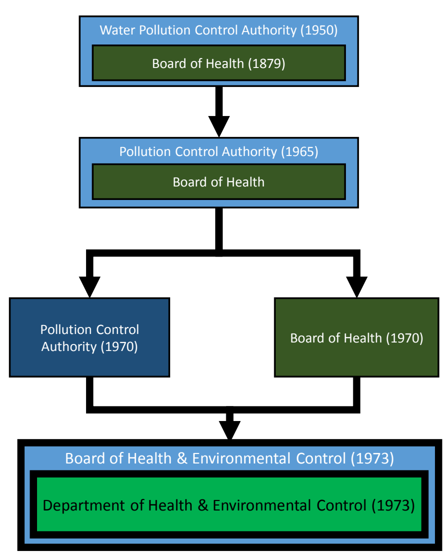
Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	N	Y	Y	N	N	N

South Carolina



South Carolina



South Dakota

Department of Environmental and Natural Resources

Mission Statement

To protect public health and the environment by providing environmental monitoring and natural resource assessment, technical and financial assistance for environmental projects, and environmental regulatory services; all done with reduced red tape, expanded e-government functions, and exceptional customer service to promote a prosperous economy while protecting South Dakota's environment and natural resources for today and tomorrow.

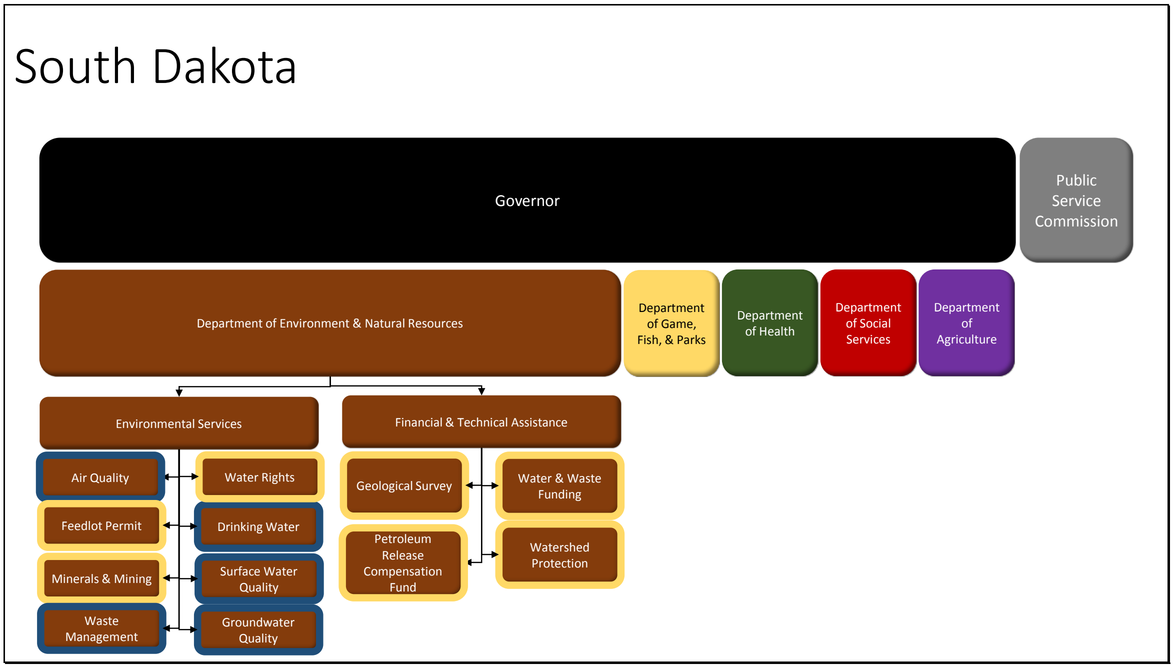
History and Budgetary Information

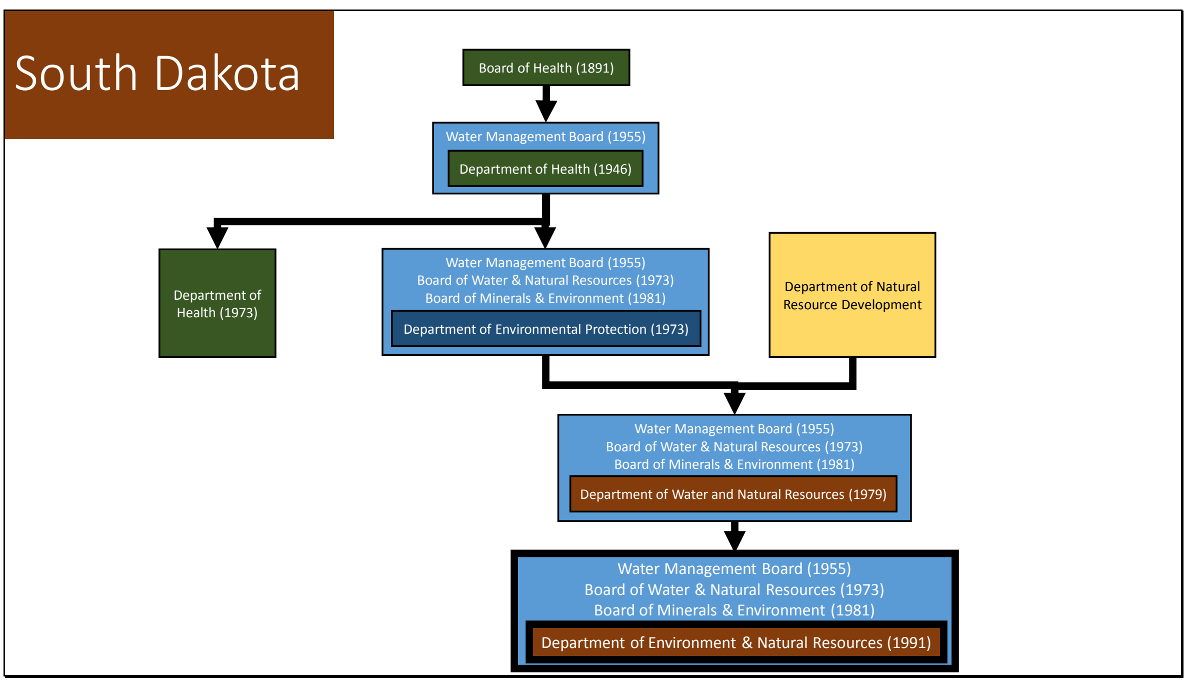
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	N	N	1973	1991	181

Operating Budget 2015/16	Federal Funding	Federal Share
$23,300,008	$7,876,965	33.8%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	Y	N	N


South Dakota
Governor
Public Service Commission
Department of Environment & Natural Resources
Department of Game, Fish, & Parks
Department of Health
Department of Social Services
Department of Agriculture
Environmental Services
Financial & Technical Assistance
Air Quality
Water Rights
Feedlot Permit
Drinking Water
Minerals & Mining
Surface Water Quality
Waste Management
Groundwater Quality
Geological Survey
Water & Waste Funding
Petroleum Release Compensation Fund
Watershed Protection


South Dakota
Board of Health (1891)
Water Management Board (1955)
Department of Health (1946)
Department of Health (1973)
Water Management Board (1955)
Board of Water & Natural Resources (1973)
Board of Minerals & Environment (1981)
Department of Environmental Protection (1973)
Department of Natural Resource Development
Water Management Board (1955)
Board of Water & Natural Resources (1973)
Board of Minerals & Environment (1981)
Department of Water and Natural Resources (1979)
Water Management Board (1955)
Board of Water & Natural Resources (1973)
Board of Minerals & Environment (1981)
Department of Environment & Natural Resources (1991)

Tennessee

Department of Environment and Conservation

Mission Statement

To enhance the quality of life for citizens of Tennessee and to be stewards of our natural environment by: protecting and improving the quality of Tennessee's air, land, and water through a responsible regulatory system; protecting and promoting human health and safety; conserving and promoting natural, cultural, and historic resources; and providing a variety of quality outdoor recreational experiences.

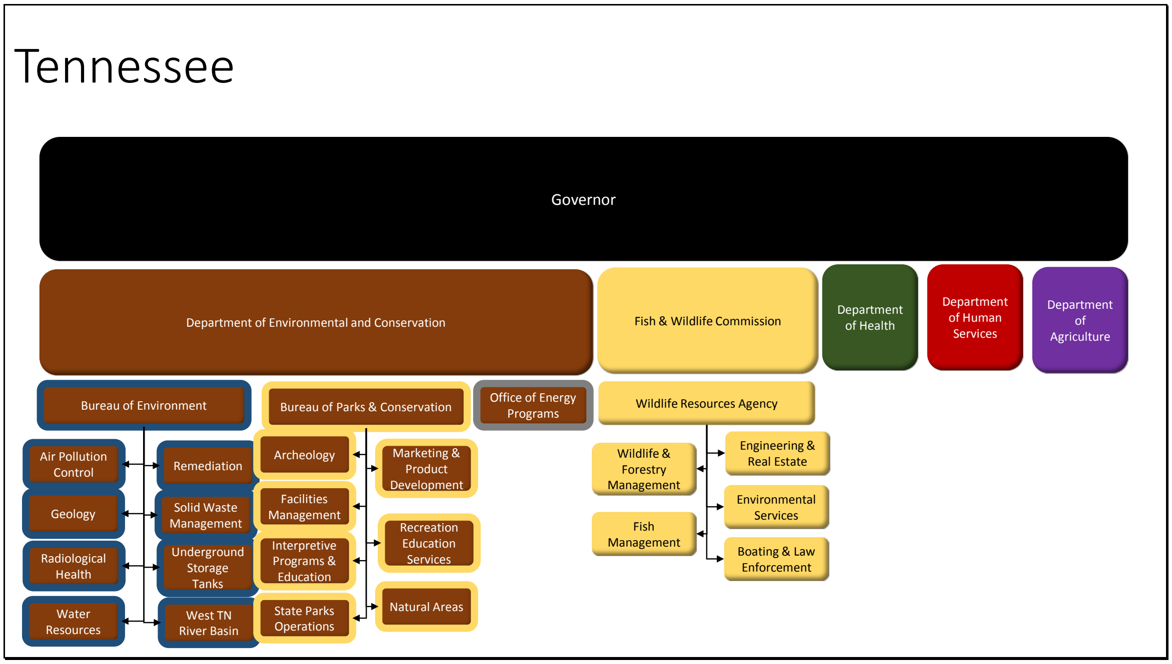
History and Budgetary Information

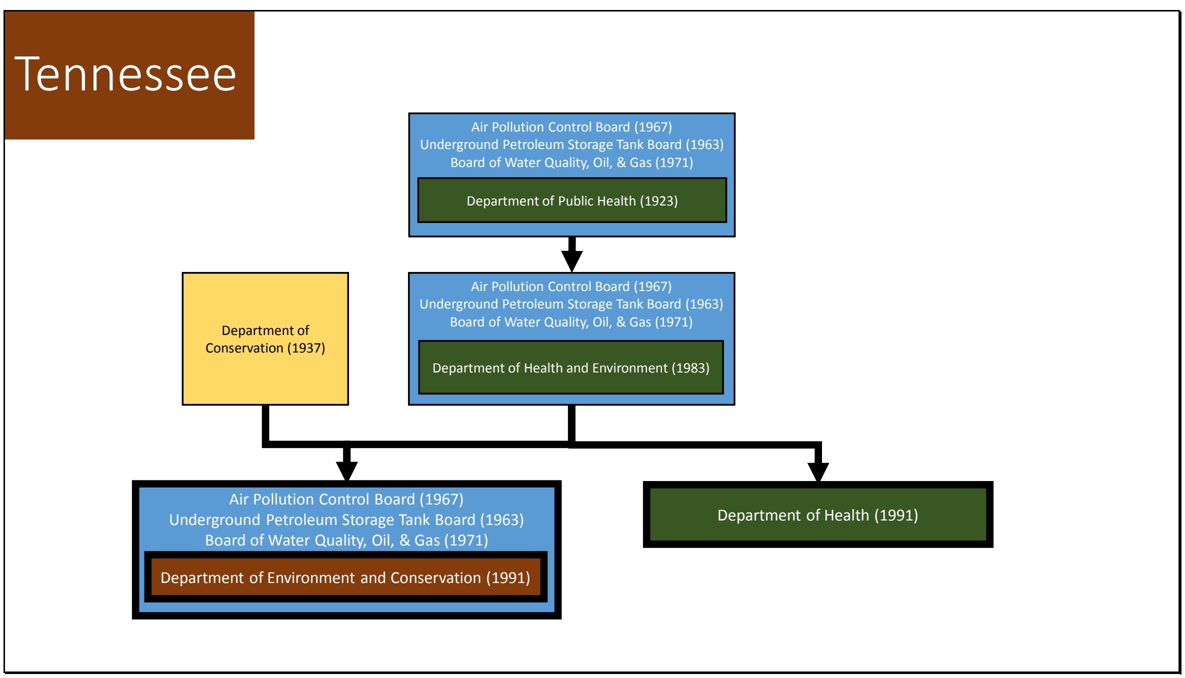
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	Y	Y	N	1991	N/A	2780

Operating Budget 2015/16	Federal Funding	Federal Share
$387,346,200	$87,667,900	22.6%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	N	N	N


Tennessee
Governor
Department of Environmental and Conservation
Fish & Wildlife Commission
Department of Health
Department of Human Services
Department of Agriculture
Bureau of Environment
Bureau of Parks & Conservation
Office of Energy Programs
Wildlife Resources Agency
Air Pollution Control
Geology
Radiological Health
Water Resources
Remediation
Solid Waste Management
Underground Storage Tanks
West TN River Basin
Archeology
Facilities Management
Interpretive Programs & Education
State Parks Operations
Marketing & Product Development
Recreation Education Services
Natural Areas
Wildlife & Forestry Management
Fish Management
Engineering & Real Estate
Environmental Services
Boating & Law Enforcement


Tennessee
Air Pollution Control Board (1967)
Underground Petroleum Storage Tank Board (1963)
Board of Water Quality, Oil, & Gas (1971)
Department of Public Health (1923)
Air Pollution Control Board (1967)
Underground Petroleum Storage Tank Board (1963)
Board of Water Quality, Oil, & Gas (1971)
Department of Health and Environment (1983)
Department of Conservation (1937)
Air Pollution Control Board (1967)
Underground Petroleum Storage Tank Board (1963)
Board of Water Quality, Oil, & Gas (1971)
Department of Environment and Conservation (1991)
Department of Health (1991)

Texas

Commission on Environmental Quality

Mission Statement

To protect our state's public health and natural resources, consistent with sustainable economic development. Our goal is clean air, clean water, and safe management of waste

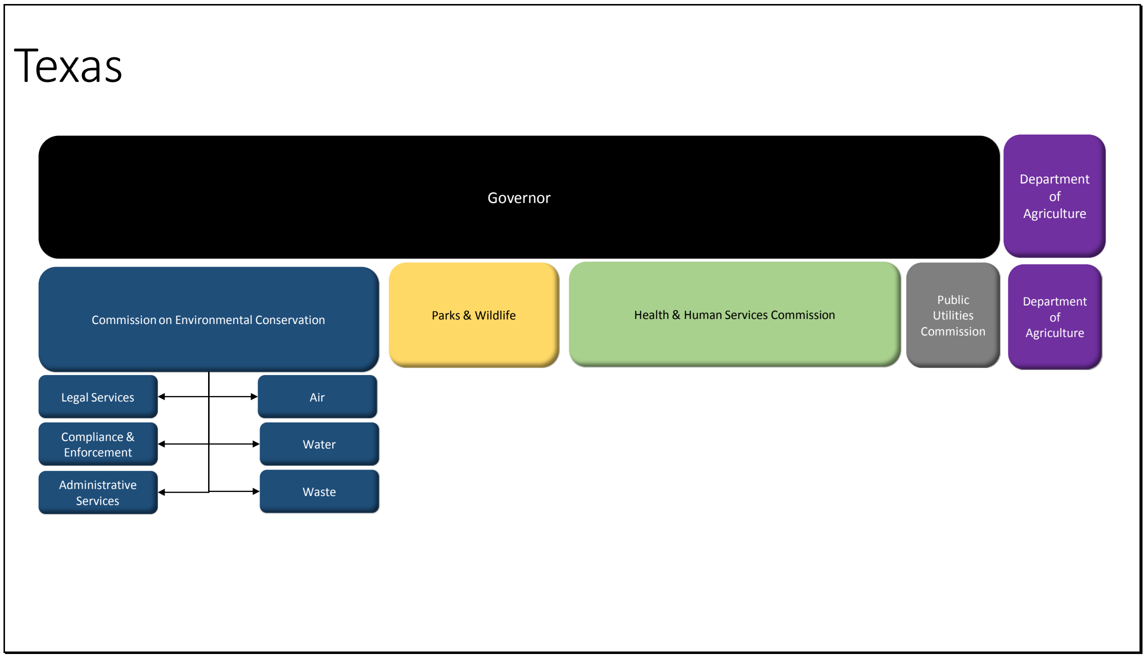
History and Budgetary Information

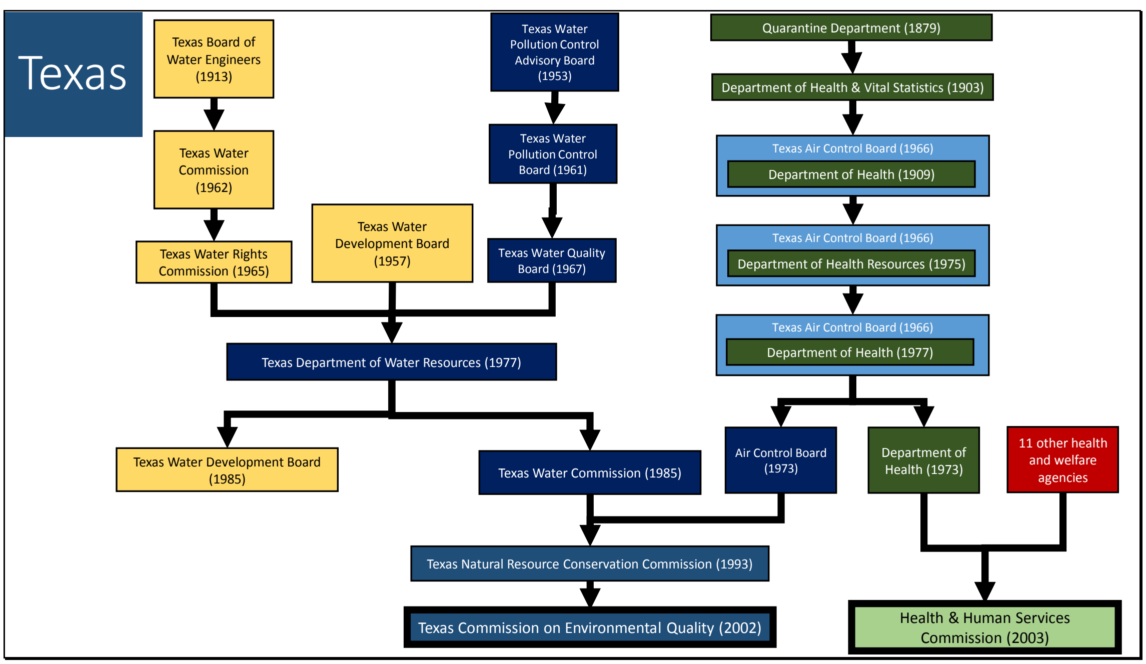
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	N	Y	N	1993	N/A	2780

Operating Budget 2015/16	Federal Funding	Federal Share
$477,748,034	$43,100,000	9.0%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	Y	Y	N


Texas
Governor
Department of Agriculture
Commission on Environmental Conservation
Parks & Wildlife
Health & Human Services Commission
Public Utilities Commission
Department of Agriculture
Legal Services
Air
Compliance & Enforcement
Water
Administrative Services
Waste


Texas
Texas Board of Water Engineers (1913)
Texas Water Commission (1962)
Texas Water Rights Commission (1965)
Texas Water Development Board (1957)
Texas Water Pollution Control Advisory Board (1953)
Texas Water Pollution Control Board (1961)
Texas Water Quality Board (1967)
Texas Department of Water Resources (1977)
Texas Water Development Board (1985)
Texas Water Commission (1985)
Texas Natural Resource Conservation Commission (1993)
Texas Commission on Environmental Quality (2002)
Quarantine Department (1879)
Department of Health & Vital Statistics (1903)
Texas Air Control Board (1966)
Department of Health (1909)
Texas Air Control Board (1966)
Department of Health Resources (1975)
Texas Air Control Board (1966)
Department of Health (1977)
Air Control Board (1973)
Department of Health (1973)
11 other health and welfare agencies
Health & Human Services Commission (2003)

Utah

Department of Environmental Quality

Mission Statement

To safeguard human health and quality of life by protecting and enhancing the environment.

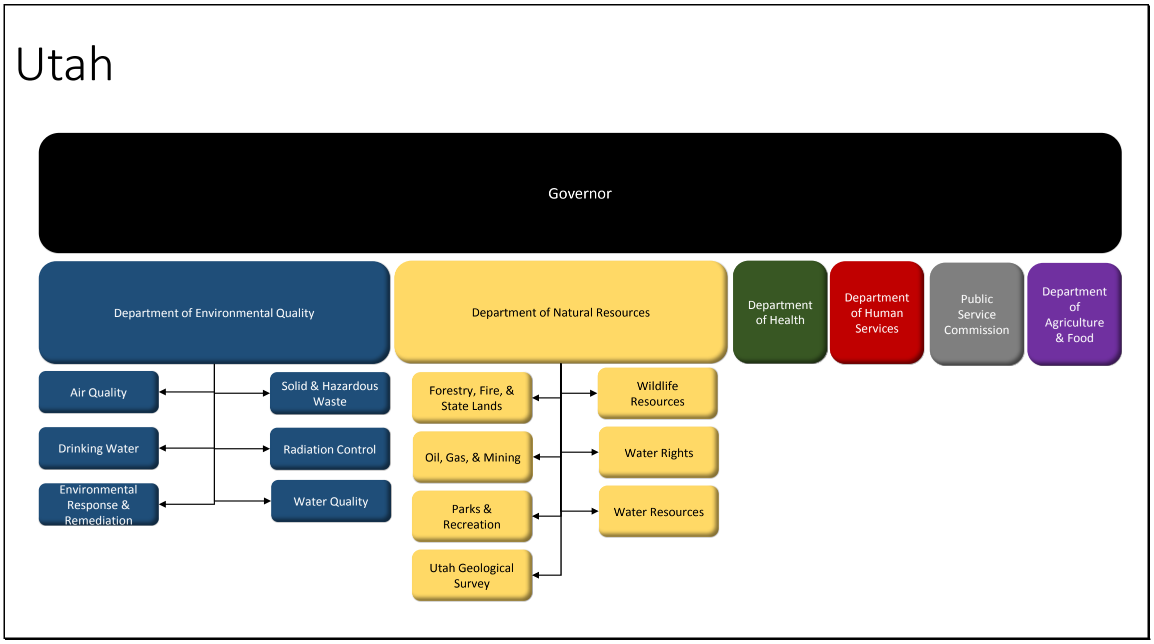
History and Budgetary Information

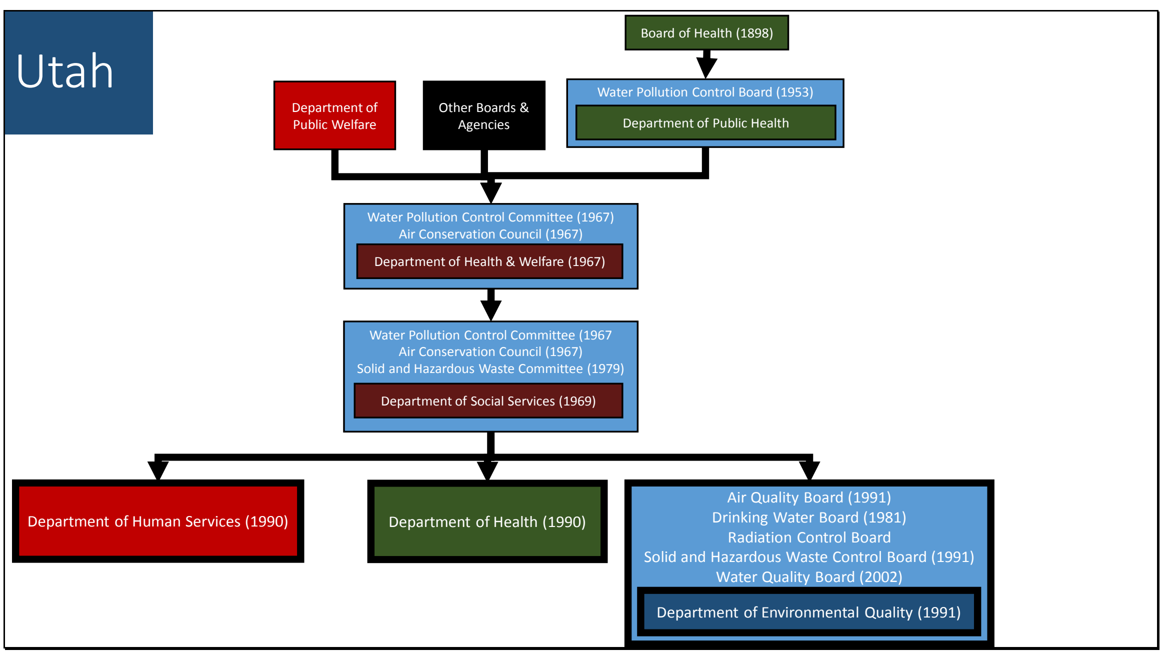
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	N	N	1991	N/A	N/A

Operating Budget 2015/16	Federal Funding	Federal Share
$60,484,000	$17,929,400	29.6%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	N	Y	Y	N	N	N


Utah
Governor
Department of Environmental Quality
Department of Natural Resources
Department of Health
Department of Human Services
Public Service Commission
Department of Agriculture & Food
Air Quality
Solid & Hazardous Waste
Drinking Water
Radiation Control
Environmental Response & Remediation
Water Quality
Forestry, Fire, & State Lands
Wildlife Resources
Oil, Gas, & Mining
Water Rights
Parks & Recreation
Water Resources
Utah Geological Survey


Utah
Board of Health (1898)
Department of Public Welfare
Other Boards & Agencies
Water Pollution Control Board (1953)
Department of Public Health
Water Pollution Control Committee (1967)
Air Conservation Council (1967)
Department of Health & Welfare (1967)
Water Pollution Control Committee (1967
Air Conservation Council (1967)
Solid and Hazardous Waste Committee (1979)
Department of Social Services (1969)
Department of Human Services (1990)
Department of Health (1990)
Air Quality Board (1991)
Drinking Water Board (1981)
Radiation Control Board
Solid and Hazardous Waste Control Board (1991)
Water Quality Board (2002)
Department of Environmental Quality (1991)

Vermont

Agency of Natural Resources

Mission Statement

To draw from and build upon Vermonters' shared ethic of responsibility for our natural environment, an ethic that encompasses a sense of place, community and quality of life, and understanding that we are an integral part of the environment and that we must all be responsible stewards for this and future generations.

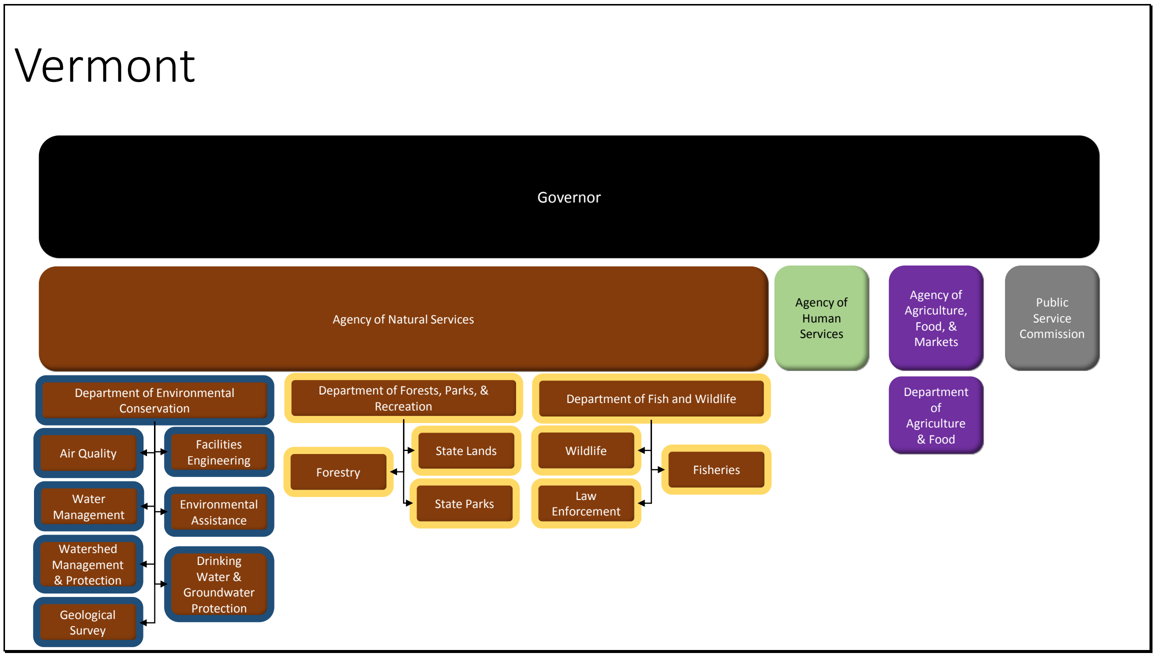
History and Budgetary Information

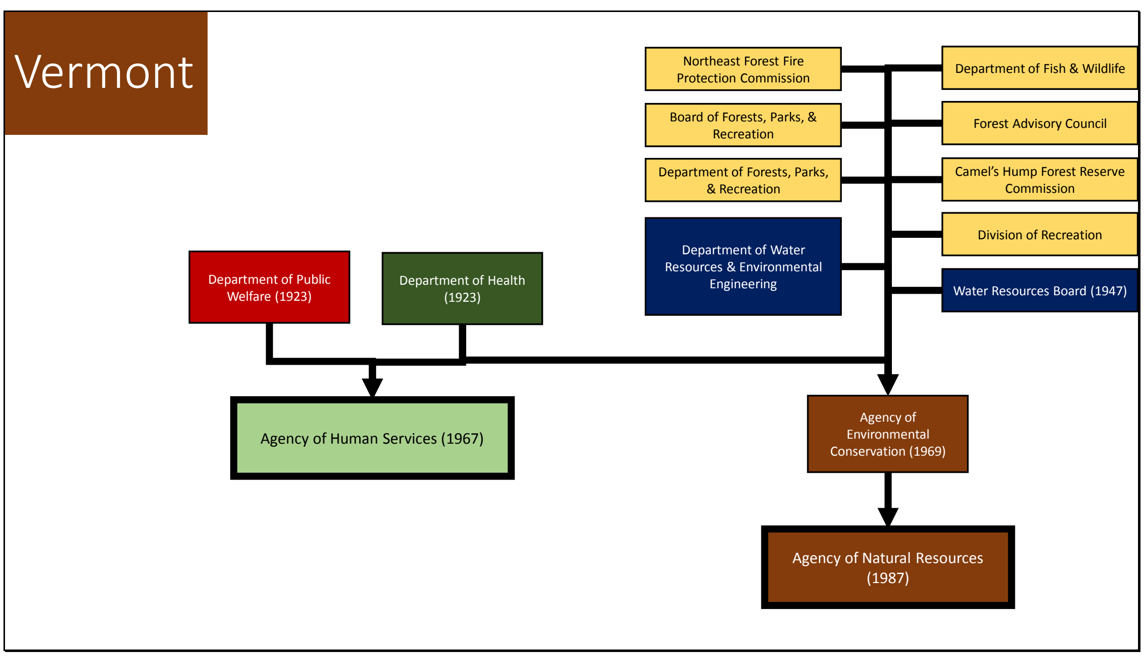
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	Y (air)	N	Y (water)	1969	1988, 2013	291

Operating Budget 2015/16	Federal Funding	Federal Share
$48,978,277	$10,846,407	22.1%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	N	N	N


Vermont
Governor
Agency of Natural Services
Agency of Human Services
Agency of Agriculture, Food, & Markets
Public Service Commission
Department of Environmental Conservation
Department of Forests, Parks, & Recreation
Department of Fish and Wildlife
Department of Agriculture & Food
Air Quality
Facilities Engineering
Water Management
Environmental Assistance
Watershed Management & Protection
Drinking Water & Groundwater Protection
Geological Survey
Forestry
State Lands
State Parks
Wildlife
Law Enforcement
Fisheries


Vermont
Northeast Forest Fire Protection Commission
Board of Forests, Parks, & Recreation
Department of Forests, Parks, & Recreation
Department of Water Resources & Environmental Engineering
Department of Fish & Wildlife
Forest Advisory Council
Camel's Hump Forest Reserve Commission
Division of Recreation
Water Resources Board (1947)
Department of Public Welfare (1923)
Department of Health (1923)
Agency of Human Services (1967)
Agency of Environmental Conservation (1969)
Agency of Natural Resources (1987)

Virginia

Secretary of Natural Resources

Mission Statement

To protect and improve the environment for the well-being of all Virginians.

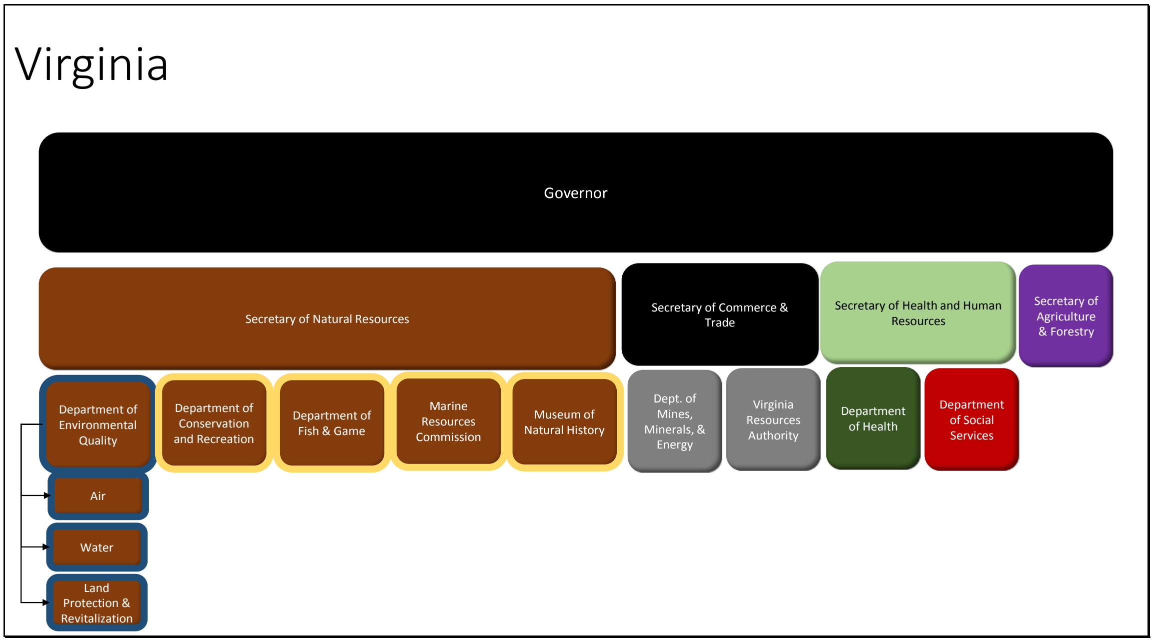
History and Budgetary Information

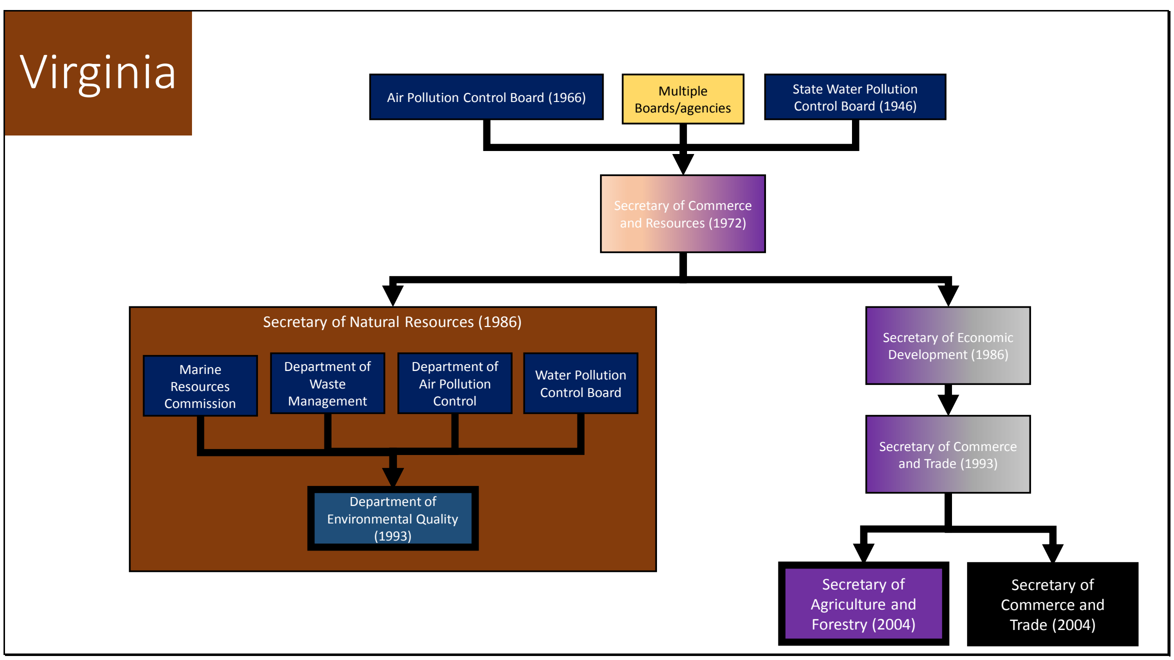
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	N	Y	N	1993	N/A	413

Operating Budget 2015/16	Federal Funding	Federal Share
$68,288,217	N/A	N/A

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	N	Y	Y	N	N	N	N


Virginia
Governor
Secretary of Natural Resources
Secretary of Commerce & Trade
Secretary of Health and Human Resources
Secretary of Agriculture & Forestry
Department of Environmental Quality
Department of Conservation and Recreation
Department of Fish & Game
Marine Resources Commission
Museum of Natural History
Dept. of Mines, Minerals, & Energy
Virginia Resources Authority
Department of Health
Department of Social Services
Air
Water
Land Protection & Revitalization


Virginia
Air Pollution Control Board (1966)
Multiple Boards/agencies
State Water Pollution Control Board (1946)
Secretary of Commerce and Resources (1972)
Secretary of Natural Resources (1986)
Marine Resources Commission
Department of Waste Management
Department of Air Pollution Control
Water Pollution Control Board
Department of Environmental Quality (1993)
Secretary of Economic Development (1986)
Secretary of Commerce and Trade (1993)
Secretary of Agriculture and Forestry (2004)
Secretary of Commerce and Trade (2004)

Washington

Department of Ecology

Mission Statement

To protect, preserve and enhance Washington's environment for current and future generations.

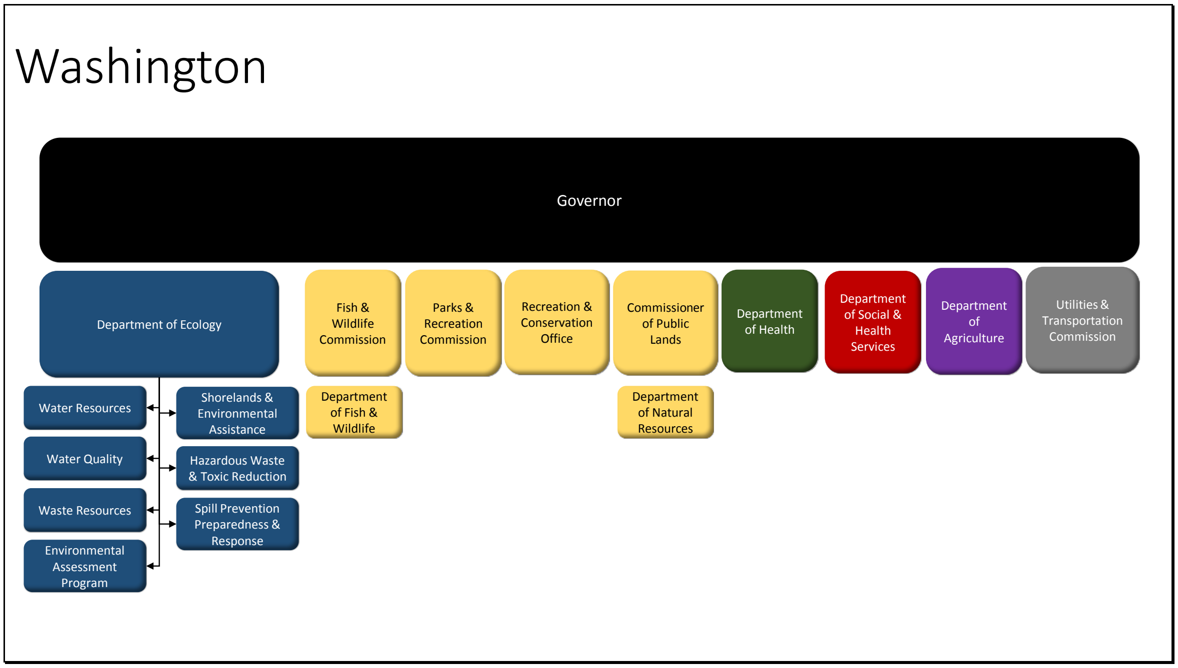
History and Budgetary Information

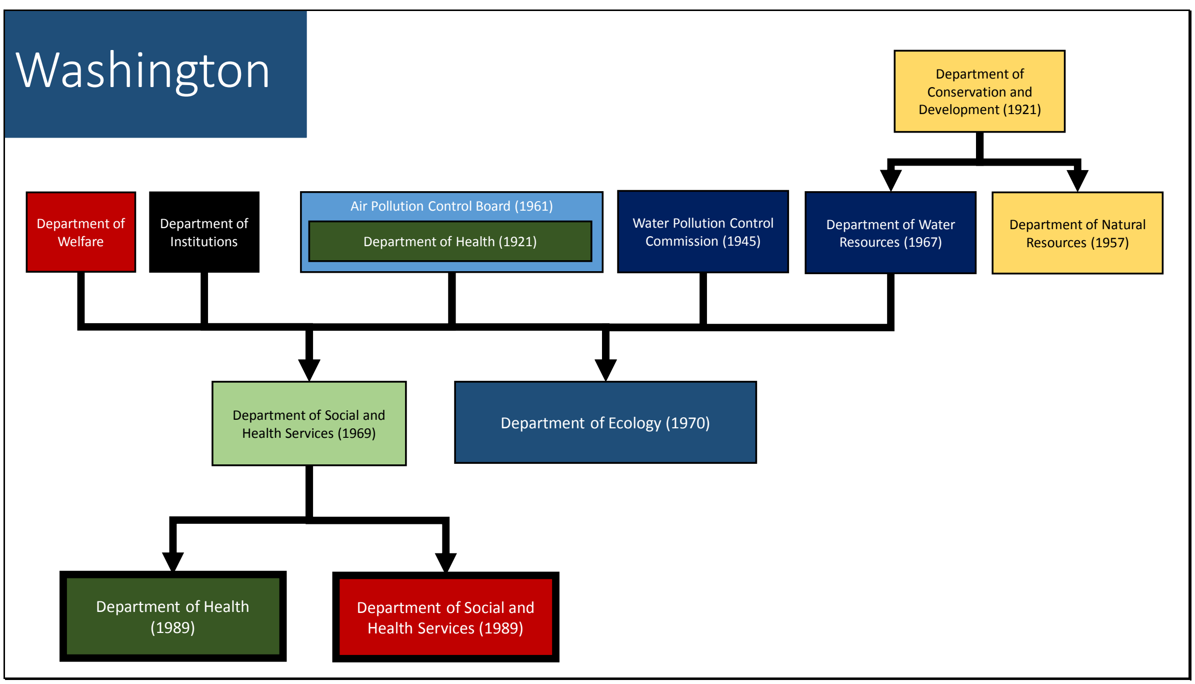
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y (solid waste)	Y (air and water)	N	1970	N/A	1676

Operating Budget 2015/16	Federal Funding	Federal Share
$503,137,000	$104,167,000	20.7%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	N	Y	Y	Y	N	N	N


Washington
Governor
Department of Ecology
Water Resources
Water Quality
Waste Resources
Environmental Assessment Program
Shorelands & Environmental Assistance
Hazardous Waste & Toxic Reduction
Spill Prevention Preparedness & Response
Fish & Wildlife Commission
Department of Fish & Wildlife
Parks & Recreation Commission
Recreation & Conservation Office
Commissioner of Public Lands
Department of Natural Resources
Department of Health
Department of Social & Health Services
Department of Agriculture
Utilities & Transportation Commission


Washington
Department of Conservation and Development (1921)
Department of Welfare
Department of Institutions
Air Pollution Control Board (1961)
Department of Health (1921)
Water Pollution Control Commission (1945)
Department of Water Resources (1967)
Department of Natural Resources (1957)
Department of Social and Health Services (1969)
Department of Ecology (1970)
Department of Health (1989)
Department of Social and Health Services (1989)

West Virginia

Department of Environmental Protection

Mission Statement

To protect the environment while leaving room for a sustainable industry base.

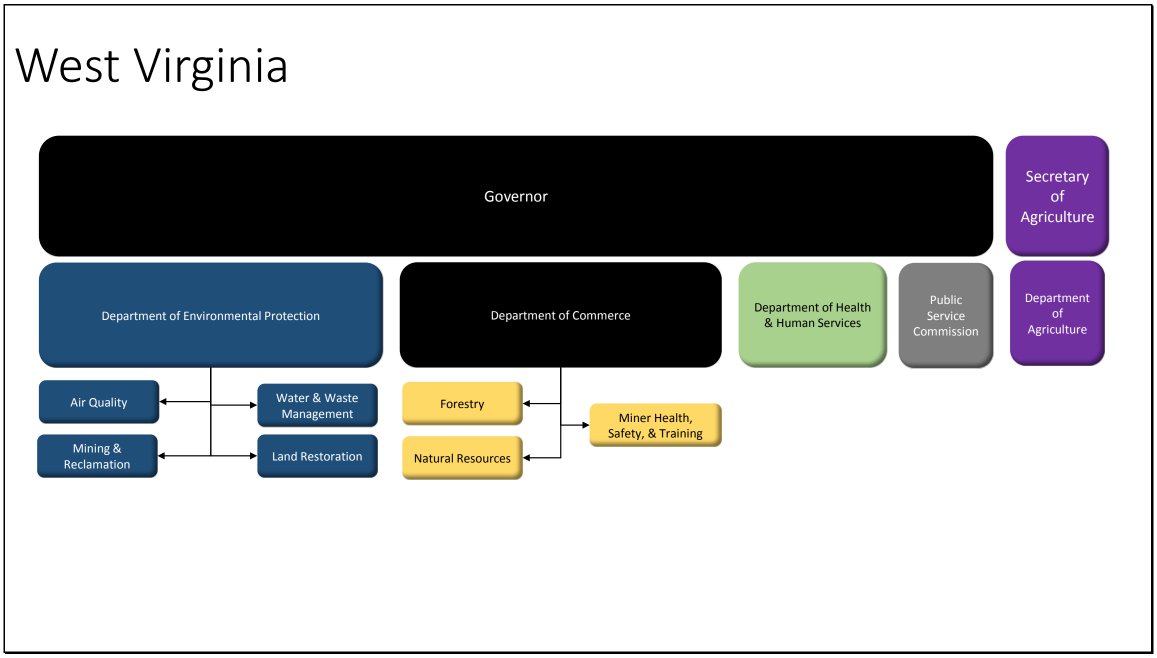
History and Budgetary Information

Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	N	Y	N	1991	2001	927

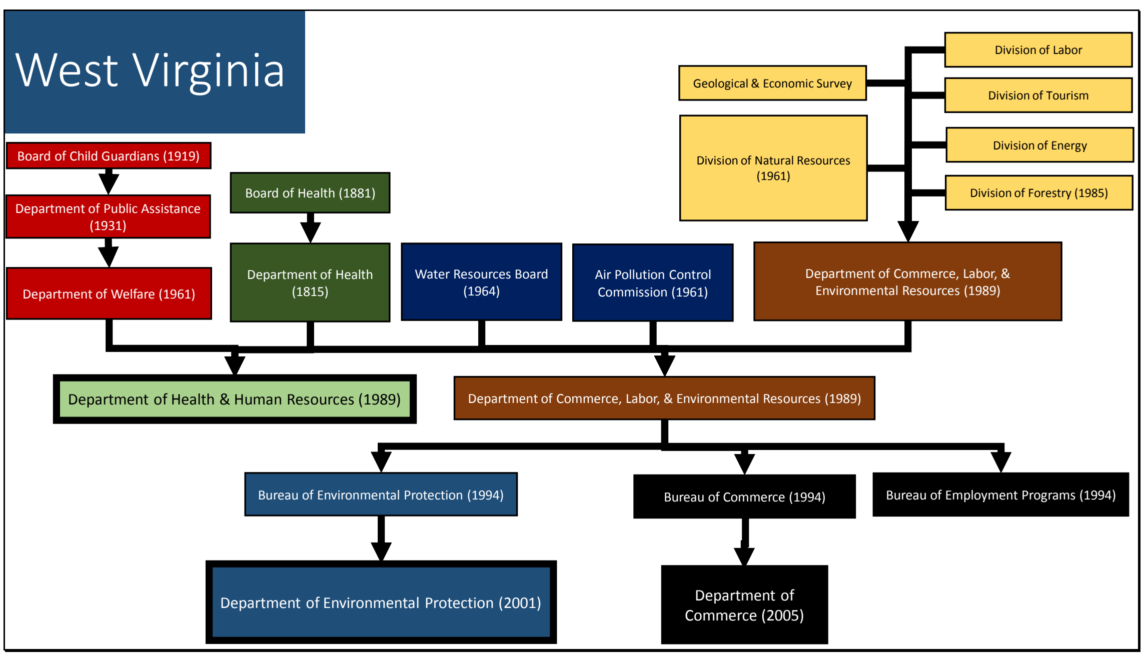
Operating Budget 2015/16	Federal Funding	Federal Share
$496,001,937	$141,360,552	28.5%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	N	Y	Y	Y	Y	N	N



West Virginia
Governor
Secretary of Agriculture
Department of Environmental Protection
Department of Commerce
Department of Health & Human Services
Public Service Commission
Department of Agriculture
Air Quality
Water & Waste Management
Mining & Reclamation
Land Restoration
Forestry
Natural Resources
Miner Health, Safety, & Training



West Virginia
Board of Child Guardians (1919)
Department of Public Assistance (1931)
Department of Welfare (1961)
Board of Health (1881)
Department of Health (1815)
Water Resources Board (1964)
Air Pollution Control Commission (1961)
Geological & Economic Survey
Division of Natural Resources (1961)
Division of Labor
Division of Tourism
Division of Energy
Division of Forestry (1985)
Department of Commerce, Labor, & Environmental Resources (1989)
Department of Health & Human Resources (1989)
Department of Commerce, Labor, & Environmental Resources (1989)
Bureau of Environmental Protection (1994)
Bureau of Commerce (1994)
Bureau of Employment Programs (1994)
Department of Environmental Protection (2001)
Department of Commerce (2005)

Wisconsin

Department of Natural Resources

Mission Statement

To protect and enhance our natural resources: our air, land and water; our wildlife, fish and forests and the ecosystems that sustain all life. To provide a healthy, sustainable environment and a full range of outdoor opportunities. To ensure the right of all people to use and enjoy these resources in their work and leisure. To work with people to understand each other's views and to carry out the public will. And in this partnership consider the future and generations to follow.

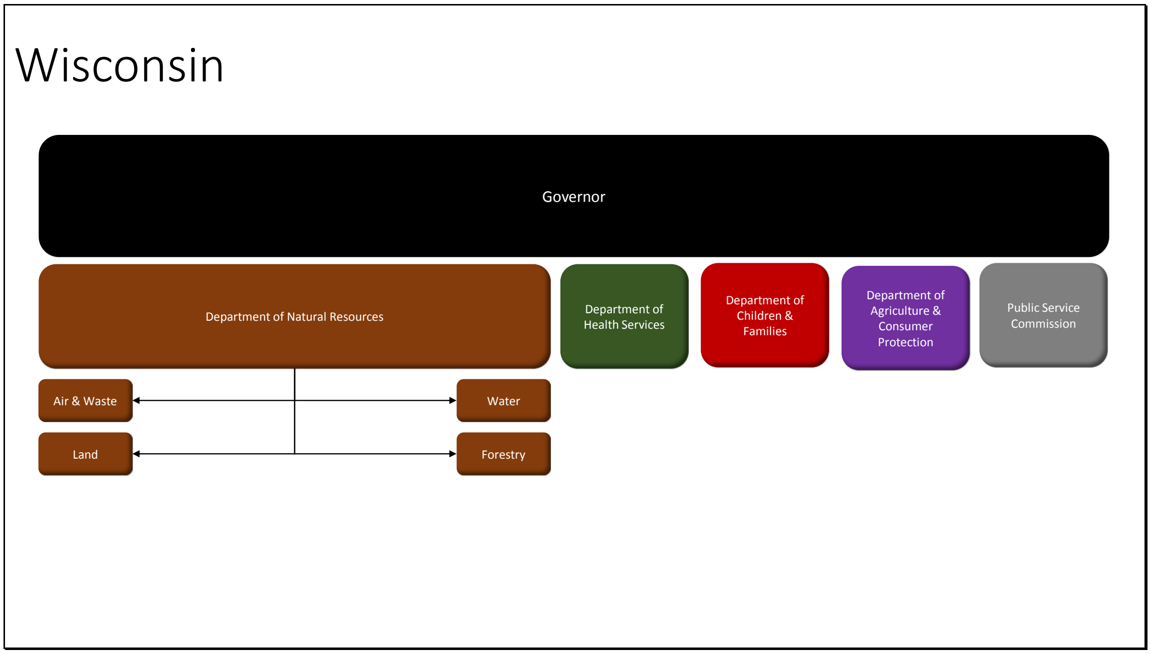
History and Budgetary Information

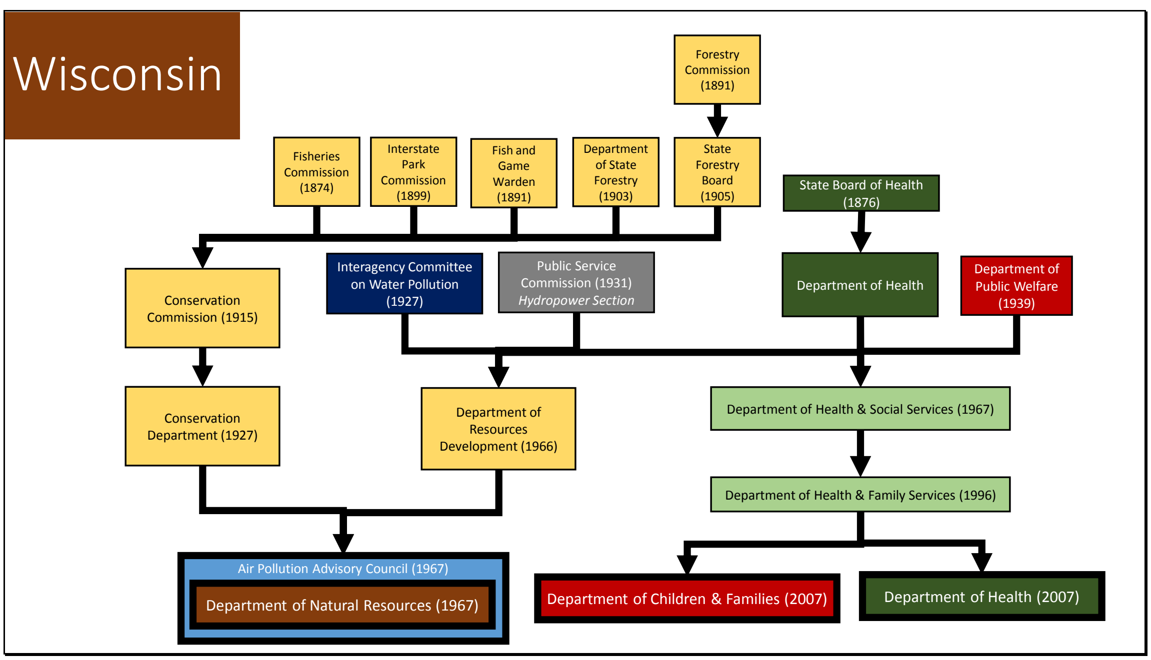
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Super-Agency	Y (WATER)	Y	N	1966	N/A	2642

Operating Budget 2015/16	Federal Funding	Federal Share
$574,854,600	$82,536,100	14.4%

Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
Y	Y	Y	Y	Y	Y	Y	Y	N	N


Wisconsin
Governor
Department of Natural Resources
Department of Health Services
Department of Children & Families
Department of Agriculture & Consumer Protection
Public Service Commission
Air & Waste
Water
Land
Forestry


Wisconsin
Forestry Commission (1891)
Fisheries Commission (1874)
Interstate Park Commission (1899)
Fish and Game Warden (1891)
Department of State Forestry (1903)
State Forestry Board (1905)
State Board of Health (1876)
Conservation Commission (1915)
Interagency Committee on Water Pollution (1927)
Public Service Commission (1931)
Hydropower Section
Department of Health
Department of Public Welfare (1939)
Conservation Department (1927)
Department of Resources Development (1966)
Department of Health & Social Services (1967)
Department of Health & Family Services (1996)
Air Pollution Advisory Council (1967)
Department of Natural Resources (1967)
Department of Children & Families (2007)
Department of Health (2007)

Wyoming

Department of Environmental Quality

Mission Statement

To protect, conserve, and enhance the quality of Wyoming's environment for the benefit of current and future generations.

History and Budgetary Information

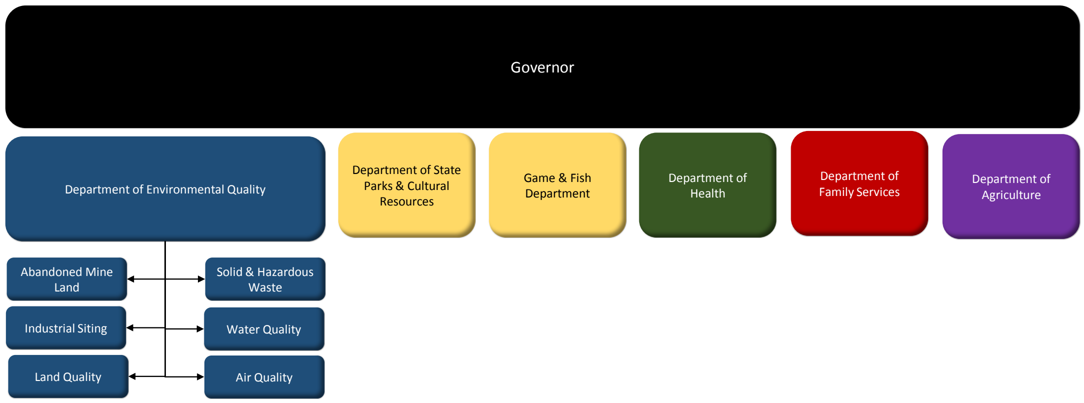
Current Structure	Environmental Programs Started			Founded	Reorganized	Employees
	Health Department	*Independent Board*	*Independent Agency*			
Mini-EPA	Y	*N*	N	1973	N/A	264

Operating Budget 2015/16	Federal Funding	Federal Share
$232,733,815	$151,500,197	65.0%

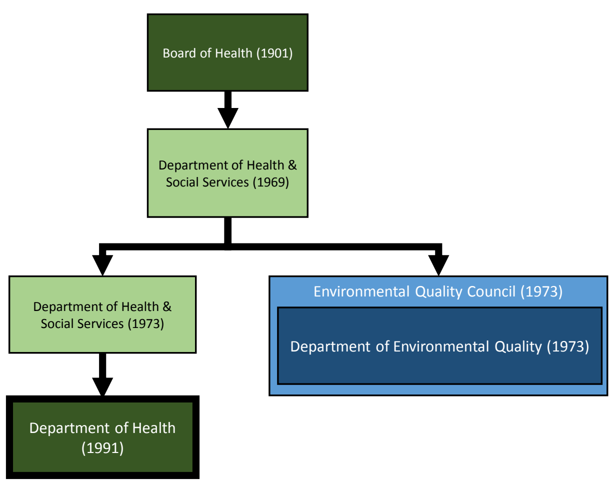
Agency Responsibilities

Commission	Clean Air	Clean Water	Drinking Water	Ground-water	Solid Waste	Hazardous Waste	Mining	Energy	Agriculture
N	Y	Y	Y	Y	Y	Y	N	N	N

Wyoming



Wyoming



APPENDIX B: FEDERAL ENVIRONMENTAL LAWS

Table B-1: Federal Environmental Laws

Statute	Date Enacted	Federal Agency Responsible	Purpose/Goal
National Environmental Policy Act (NEPA)	1969	EPA	• Establishes the national framework for protecting environment. • To assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action that significantly affects the environment.
Occupational Safety and Health Act (OSHA)	1970	Department of Labor	• To ensure worker and workplace safety
Environmental Quality Improvement Act	1970	Council on Environmental Quality	• Provided additional responsibilities for the Council on Environmental Quality
Executive Order 12898 on Environmental Justice	1994	Interagency Working Group (IWG) chaired by EPA Administrator and comprised of heads of multiple agencies	• To focus federal attention on the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities
Water Pollution			
Rivers and Harbors Act	1890	US Army Corps of Engineers (USACE)	• To protect navigation and prohibited discharge into rivers without a permit.
Water Pollution Control Act	1948, amended 1956, 1961	Public Health Service	• Instructed Public Health Service to encourage state governments to develop water pollution control programs through technical assistance and funding • Provided authority for federal government to research water pollution control issue. • Created federal loan program for states to develop wastewater treatment plants (1956 amendments changed this to grants) • Granted Federal Authority to address interstate pollution issues.
Water Quality Act	1965	Public Health Service	• Established ambient water quality standards • Required state governments to establish implementation plans to

Statute	Date Enacted	Federal Agency Responsible	Purpose/Goal
			achieve ambient water quality standards
Clean Water Act (CWA)	1972 (amend 1990)	EPA	• Restore and maintain the chemical, physical, and biological integrity of the nation's waters.
Coastal Zone Management Act (CZMA)	1972 (amend 1975, 1976, 1978)	EPA/NOAA	• To control nonpoint pollution sources that affect coastal water quality.
Marine Protection, Research, and Sanctuaries Act (MPRSA or Ocean Dumping Act)	1972	EPA	• Prohibits the transportation of material from the US for the purpose of ocean dumping • Prohibits the transportation of material from anywhere for the purpose of ocean dumping by US agencies or US flagged vessels • Prohibits dumping of material transported from outside the US into US territorial sea.
Safe Drinking Water Act	1974	EPA	• Protect human health from contaminants in drinking water
Shoreline Protection Act (SPA)	1988	EPA/US Coast Guard	• Prohibits the transportation of municipal or commercial waste within coastal waters by a vessel without a permit and number.
Beaches Environmental Assessment and Coastal Health (BEACH) Act	2000	EPA	• To reduce the risk of disease to users of the Nation's coastal recreation waters. • Authorizes EPA to award grants to states and local governments to support microbiological testing and monitoring of coastal • To support programs to notify the public of potential exposure to disease-causing microorganisms in waters.
Air Pollution			
Air Pollution Control Act	1955, amended 1961,1962	Public Health Service	• Acknowledged the existence of air pollution • Directed Secretary of Health, Education, and Welfare to conduct research and provide technical assistance to state and local government. • Stated clearly that air pollution was responsibility of state and local governments

Statute	Date Enacted	Federal Agency Responsible	Purpose/Goal
Clean Air Act	1963, amended 1965	Public Health Service	• First time term 'clean air' was used in Federal air legislation • Granted money to state and local governments to conduct research and develop local control programs. • Granted Federal authority to address interstate pollution issues.
Air Quality Act Amendment	1967	Public Health Service	• Required the Secretary of Health, Education, and Welfare to divide the country into Air Quality Control Regions. • Established emission standards for stationary source
Clean Air Act (CAA)	1970, amended 1977,1990	EPA	• Regulates stationary and mobile air sources. • Establishes National Ambient Air Quality Standards (NAAQS).
Hazardous Waste			
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)	1947	Department of Agriculture	• Established procedures for registering pesticides and labelling provisions.
Lead-Based Paint Poisoning Prevention Act	1971, amended 1977,1978	HUD	• Provides grants to carry out comprehensive testing programs to detect the presence of and eliminate lead-based paint from surfaces of residential structures accessible to children.
Federal Environmental Pesticide Control Act (FEPCA)	1972, amended 1972, 1975, 1978	EPA	• Regulate sale, distribution, and application of pesticides
Resource Conservation and Recovery Act (RCRA)	1976	EPA	• Source reduction, high-technology treatment, and secure, long-term disposal of hazardous waste.
Toxic Substances Control Act	1976 (amend	EPA	• EPA requires reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics and pesticides.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)	1980	EPA	• Provides a Federal "Superfund" to clean up uncontrolled or abandoned hazardous waste sites as well as accidents, spills, and other

Statute	Date Enacted	Federal Agency Responsible	Purpose/Goal
			emergency releases of pollutants and contaminants into the environment
Residential Lead-Based Paint Hazard Reduction Act	1992	EPA/HUD	• To develop a national strategy to build the infrastructure necessary to eliminate lead-based paint hazards in all housing
Food Quality Protection Act	1996	EPA/USDA	• Amended FIFRA and FFDCA to increase stringency of pesticide regulations
Mercury-Containing and Rechargeable Battery Management Act	1996	EPA	• To phase out the use of mercury in batteries • To provide for the efficient and cost-effective collection, disposal, and/or recycling of materials within these batteries.
Small Business Liability Relief and Brownfields Revitalization Act	2002	EPA	• Provides funding to assess and clean up brownfields
The Frank R. Lautenberg Chemical Safety for the 21st Century Act	2016	EPA	• Amends TSCA to provide a mandatory requirement for EPA to evaluate existing chemicals with clear and enforceable deadlines • Provides new risk-based safety standard • Increases public transparency for chemical information • Creates a consistent source of funding to enforce law
Solid Waste			
Solid Waste Disposal Act	1965	Public Health Service	• Required environmentally sound methods for disposal of household, municipal, commercial, and industrial waste • Provided financial assistance to states to research and develop solid waste management plans
Pollution Prevention Act (PPA)	1990	EPA	• Focused industry, government, and public attention on reducing the amount of pollution through cost-effective changes in production, operation, and raw material use.
Noise			
Noise Control Act	1972 (amend 1978)	EPA	• To promote an environment for all Americans free from noise that jeopardizes their health and welfare
Energy			

Statute	Date Enacted	Federal Agency Responsible	Purpose/Goal
Atomic Energy Act	1947	NRC, DOE, EPA (originally AEC)	• Established the Atomic Energy Commission (AEC) • To promote the "utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the health and safety of the public
Surface Mining Control and Reclamation Act (SMCRA)	1977	OSM	• To regulate surface mining activities and the reclamation of coal-mined lands.
Nuclear Waste Policy Act (NWPA)	1982	DOE/NRC/EPA	• Supports the use of deep geologic repositories for the safe storage and/or disposal of radioactive waste.
Oil Pollution Act (OPA)	1990	EPA	• Streamlined EPA's ability to prevent and respond to catastrophic oil spills
Energy Policy Act	2005	EPA	• Addresses energy production in the US including energy efficiency, renewable energy, oil and gas, coal, etc.
Energy Independence and Security Act (EISA)	2007	EPA	• Addresses energy production in the US including energy efficiency, renewable energy, oil and gas, coal, etc.

APPENDIX C: STATE PRIMACY INFORMATION

State primacy information for programs delegated to states under the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, the State Drinking Water Act, the Toxic Substances Control Act, the Emergency Planning and Community Right to Know Act, the Federal Insecticide, Fungicide, and Rodenticide Act, and the Oil Pollution Control Act. The data in this appendix is from a report produced by the Environmental Council of States (ECOS)

Source of Data: Longsworth, Sarah Grace, Brendan Johns, and Carolyn Hanson) (2016). State Delegation of Environmental Acts. Retrieved from: http://www.ecos.org/documents/state-delegations/.

Key to Abbreviations in Delegation Tables

Codes

I	Interim Status -- state is operating the program pending final EPA authorizations.
IN	In the process of being delegated/authorized or SIP approved.
ND	Not subject to delegation, but states may have approved program.
P	Partial Delegation/Authorization/Approval -- some parts of the programs have been approved but not the entire program.
S	State program -- program operated by the state, for which EPA approval is not applicable.
A	Approved state program or State Implementation Plan -- state's plan for meeting the applicable national standards.
Y	Delegated or Authorized -- the state runs the program under EPA oversight.
N	Not Delegated/Authorized/Approved
N/A	Not Applicable

Qualifications

1	The state has the authority to enforce some or all of these regulations; some approved through the SIP process, while others were delegated.
2	EPA still maintains responsibility for audit resolution.
3	Only the enforcement portion can be delegated.
4	Program close-out.

Clean Air Act (CAA)

The CAA regulates air emissions from stationary and mobile sources. It authorizes EPA to establish National Ambient Air Quality Standards (NAAQS) and delegate the following programs to states.

- NSPS: New Source Performance Standards.
- NESHAPS: National Emission Standards for Hazardous Air Pollutants.
- PSD: Prevention of Significant Deterioration
- Title V: Operating permits
- NSR: New Source Review

Table C-1: Clean Air Act Designations

State	NSPS	NESHAPS	PSD	Title V	NSR
AL	Y1	Y1	A	Y	A
AK	P	P	A	A	A
AZ	P	P	P	Y	Y
AR	Y	Y	SIP	A	SIP
CA	P	P	P	I	SIP
CO	Y	Y	SIP	Y	SIP
CT	Y	Y	SIP	I	SIP
DE	Y	Y	SIP	S	S
DC	Y	P	N	Y	N
FL	Y	Y	Y	A	A
GA	Y	Y	SIP	Y1	SIP
HI	P	P	Y	A	NA
ID	Y	P	SIP	Y	SIP
IL	Y	Y	Y	Y	SIP

State	NSPS	NESHAPS	PSD	Title V	NSR
IN	Y	Y	SIP	Y1	SIP
IA	Y	Y	A	Y	A
KS	Y	Y	A	Y	A
KY	Y	Y	A	Y	A
LA	Y	Y	SIP	Y	SIP
ME	I	I	SIP	I	SIP
MD	Y	Y	SIP	S	SIP
MA	Y	Y	Y	I	SIP
MI	Y	P1	A	A	A
MN	Y	Y	Y	I	SIP
MS	Y	Y	SIP	Y1	NA
MO	Y	Y	SIP	Y	SIP
MT	Y1	Y1	A	I	A
NE	Y	Y	SIP	Y	SIP
NV	P	P	Y	Y	SIP
NH	Y1	Y1	A	A	SIP
NJ	Y	Y	Y	A	A1
NM	Y	Y	SIP	Y	SIP
NY	P	P	Y	I	S
NC	Y	Y	SIP	A	SIP
ND	Y	Y	SIP	I	SIP
OH	Y	Y	Y	Y	SIP
OK	Y	Y	SIP	Y	SIP
OR	P	P	A	Y	A
PA	Y	Y	SIP	SIP	Part 70 Approval
PR	P	P	N	I	NA
RI	P (Title V sources only)	P (Title V sources only)	A	ND	A
SC	Y	Y	SIP	Y1	SIP
SD	Y	Y	Y	Y1	SIP
TN	Y	Y	SIP	Y1	SIP

State	NSPS	NESHAPS	PSD	Title V	NSR
TX	Y	Y	A	Y	A
UT	Y	Y	SIP	Y	SIP
VT	Y	Y	SIP	I	SIP
VA	Y	Y	A	Y	A
WA	P	P	P	A, IN (approved, updates in process)	SIP
WI	Y	Y	A	A	A
WV	Y	Y	SIP	S	S
WY	Y	Y	SIP	Y	SIP

Clean Water Act (CAA)

The CWA aims to restore and maintain the nation's surface waters. It is implemented via various regulatory programs, which delegated states are authorized to enforce.

- NPDES: Nation Pollutant Discharge Elimination System
- Pretreatment
- Sludge Management
- SRF: State Revolving Fund
- Section 404: Wetlands

Table C-2: CWA State Delegations

State	Construction Grants	NPDES	Pretreatment	Sludge Management	SRF	Wetlands
AL	Y2	Y	Y	N	Y	N
AK	Y	Y	Y	N	S	N

State	Construction Grants	NPDES	Pretreatment	Sludge Management	SRF	Wetlands
AZ	Y	Y	Y	Y	(Water Infrastructure Finance Authority)	N
AR	N	Y	Y	N	N	N
CA	S	Y	Y	N	S	N
CO	Y	P	IN	IN	Y	ND
CT	Y	Y	Y	N	Y	N
DE	Y	Y	N	N	S	N
DC	N	N	N	N	N	N
FL	Y	P	Y	N	Y	N
GA	Y	Y	Y	IN	Y	N
HI	S	Y	Y	IN	S	N
ID	Y	N	N	N	S	N
IL	Y	Y	Y	S	S	N
IN	N/A	Y	N	S	S	N
IA	S	Y	Y	N2	Y	N
KS	Y	Y	N	N	Y	N
KY	Y	Y	Y	N	Y	N
LA	Y2	Y	Y	N	S	N
ME	Y	N	N	N	Y	N
MD	NA	Y	Y	N	S	N
MA	Y	N	N	N	Y	N
MI	Y	Y	Y	S (also federally delegated)	S	Y
MN	Y	Y	Y	S	S	N
MS	N9	Y	Y	N	Y	N
MO	Y	Y	Y	N	Y	N
MT	Y2	Y	N	N	Y	ND
NE	Y	Y	Y	N	Y	N
NV	S	Y	N	N	S	N

State	Construction Grants	NPDES	Pretreatment	Sludge Management	SRF	Wetlands
NH	Y2	N	N	N	Y	N
NJ	Y	Y	Y	N	ND	Y
NM	Y2	ND	ND	ND	S	N
NY	Y	Y	N	N	S	N
NC	Y	A	Y	N	Y	N
ND	Y	Y	N	N	Y	ND
OH	Y	Y	Y	N	S	N
OK	Y2	Y	Y	Y	S	N
OR	Y	Y	Y	IN	Y	ND
PA	Y	Y	N	Y	S	N
PR	N	Y	N	N	N	N
RI	Y	Y	Y	N	Y	N
SC	N	Y	Y	N	Y	N
SD	Y	Y	Y	N3	Y	ND
TN	Y	Y	Y	N	Y	N
TX	Y2	Y	Y	Y	S	N
UT	Y2	Y	Y	Y	Y	ND
VT	Y	Y	Y	N	Y	N
VA	Y	Y	Y	S	Y	S
WA	Y	P	Y	Y	S	N
WI	Y	Y	Y	Y	S	N
WV	Y	Y	Y	N	S	N
WY	Y2	Y	N	N	Y	ND

Resource Conservation and Recovery (RCRA)

RCRA aims to assist in the development of management plans and facilities for solid waste, hazardous waste, and underground storage tanks that hold petroleum products or other chemicals. States are delegated to oversee the following programs to ensure maximum protection from hazardous waste disposal and conservation of energy and natural resources.

- Subtitle C: Hazardous Waste
    - *Base program*
    - *Corrective Action*
    - *Mixed Waste*
    - *BIF: Regulation of Burning of Hazardous Wastes in Boilers and Industrial Furnaces*
    - *Toxicity Characteristic: Toxicity Characteristics Revisions*
    - *LDR California Wastes*
    - *LDR 1/3 Wastes*
    - *LDR 2/3 Wastes*
    - *LDR 3/3 Wastes: Land Disposal Restrictions for Third Scheduled Wastes.*
- Subtitle D: Solid Waste
- Subtitle I: Underground Storage Tanks (UST)

Table C-3: RCRA State Delegations

State	C/ Base Program	C/ Corrective Action	C/ Mixed Waste	C/ BIF	C/ Toxicity Characteristic	C/ California LDR	C/ LDR 1/3 Wastes	C/ LDR 2/3 Wastes	C/ LDR 3/3 Wastes	D/ Solid Waste	I/ UST
AL	Y	Y	Y	Y	Y	Y	Y	Y	Y	P	Y
AK	N	N	N	N	N	N	N	N	N	Y	S

State	C/ Base Program	C/ Corrective Action	C/ Mixed Waste	C/ BIF	C/ Toxicity Characteristic	C/ California LDR	C/ LDR 1/3 Wastes	C/ LDR 2/3 Wastes	C/ LDR 3/3 Wastes	D/ Solid Waste	I/ UST
AZ	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
AR	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y
CA	Y	Y	Y	IN	Y	Y	Y	Y	IN	ND	N
CO	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N
CT	Y	N	Y	N	N	Y	Y	Y	N	Y	Y
DE	Y	N	Y	N	Y	Y	Y	N	N	Y	Y
DC	Y	N	N	N	N	N	N	N	N	NA	Y
FL	Y	Y	Y	Y	Y	Y	Y	Y	Y	ND	N
GA	Y	Y	Y	Y	Y	ND	Y	Y	Y	Y	Y
HI	Y	N	N	N	Y	Y	Y	Y	Y	ND	Y
ID	Y	Y	Y	Y	Y	Y	Y	Y	Y	S	Y
IL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
IN	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
IA	N	N	N	N	N	N	N	N	N	Y	Y
KS	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
KY	Y	Y	Y	N	Y	N	N	N	N	ND	Y
LA	Y	Y	Y	Y	Y	Y	I	I	I	Y	Y
ME	Y	Y	Y	N	N	Y	Y	Y	N	N	Y
MD	Y	N	N	N	Y	N	N	N	N	P	Y
MA	Y	N	N	N	N	N	N	N	N	Y	Y
MI	Y	Y	Y	IN	Y	Y	Y	Y	Y	Y	N
MN	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y
MS	Y	N	Y	N	Y	Y	Y	N	Y	ND	Y
MO	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
MT	Y	Y	N	Y	Y	Y	Y	Y	Y	P	Y
NE	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y
NV	Y	Y	Y	Y	Y	Y	Y	Y	Y	ND	S/Y
NH	Y	Y	P	N	Y	N	N	N	N	Y	Y

State	C/ Base Program	C/ Corrective Action	C/ Mixed Waste	C/ BIF	C/ Toxicity Characteristic	C/ California LDR	C/ LDR 1/3 Wastes	C/ LDR 2/3 Wastes	C/ LDR 3/3 Wastes	D/ Solid Waste	I/ UST
NJ	Y1	A	Y1	Y1	Y1	Y1	Y1	Y1	Y1	S	Y
NM	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y
NY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
NC	Y	Y	Y	Y	Y	Y	Y	A	Y	ND	A
ND	Y	Y	Y	N	Y	Y	Y	Y	IN	Y	Y
OH	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
OK	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
OR	Y	Y	Y	Y	Y	Y	Y	Y	Y	S	A
PA	Y	N	N	N	N	Y	N	N	Y	Y	Y
PR	N	N	N	N	N	N	N	N	N	IN	N
RI	Y	N	N	N	N	N	N	N	N	N	Y
SC	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
SD	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
TN	Y	N	Y	Y	Y	Y	Y	N	Y	ND	N
TX	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
UT	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VT	Y	Y	Y	N	Y	N	N	N	N	Y	Y
VA	Y	Y	Y	Y	Y	Y	Y	Y	Y	A	Y
WA	Y	Y	Y	N	Y	Y	Y	Y	Y		
WI	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
WV	Y	N	N	N	N	Y	N	N	N	N	Y
WY	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	IN

Safe Drinking Water Act (SDWA)

SDWA regulates public drinking water supply. Many states are delegated to play an important role in enforcing the following programs which protect drinking water and its sources.

- PWSS: Public Water System Supervision
- Wellhead Protection Program
- Sec. 1422 Underground Injection Control (UIC)
- Sec. 1425 UIC

Table C-4: SDWA State Delegations

State	PWSS	Wellhead Protection	UIC/ 1422	UIC/ 1425
AL	Y	A	Y	Y
AK	Y	ND	N	P
AZ	Y	Y	N	N
AR	Y	ND	Y	Y
CA	Y	ND	N	Y
CO	Y	SIP	N	Y
CT	Y	SIP	Y	Y
DE	Y	Y	Y	Y
DC	N	N	N	N
FL	Y	A	Y	N
GA	Y	SIP	Y	Y
HI	Y	A	N	N
ID	Y	S	Y	N
IL	Y	Y	Y	S3

State	PWSS	Wellhead Protection	UIC/ 1422	UIC/ 1425
IN	Y	Y	N	A3
IA	Y	A	N	N
KS	Y	A	Y	Y
KY	Y	Y	N	N
LA	Y	ND	Y	Y
ME	Y	SIP	Y	Y
MD	Y	Y	Y	Y
MA	Y	SIP	Y	N
MI	Y	Y	N	N
MN	Y	Y	N	NA
MS	Y	SIP	Y	Y
MO	Y	Y	Y	Y
MT	Y	Y	N	Y
NE	Y	Y	Y	Y
NV	Y	ND	Y	Y
NH	Y	A	Y	Y
NJ	Y	A	Y	Y
NM	Y	ND	Y	Y
NY	Y	Y	N	ND
NC	Y	SIP	Y	Y
ND	Y	SIP	Y	Y
OH	Y	Y	Y	Y
OK	Y	ND	Y	Y (but not to DEQ)
OR	Y	A	Y	Y
PA	Y	A or Y (EPA approved PA DEP's Wellhead Protection Program in 1999)	N	N
PR	Y	N	N	ND

State	PWSS	Wellhead Protection	UIC/ 1422	UIC/ 1425
RI	Y	SIP	Y	Y
SC	Y	SIP	Y	Y
SD	Y	SIP	N	Y
TN	Y	SIP	N	N
TX	Y	A	Y	Y
UT	Y	SIP	Y	Y
VT	Y	SIP	Y	Y
VA	Y	Y	N	N
WA	Y	S	Y	Y
WI	Y	A	Y	NA
WV	Y	Y	Y	Y
WY	N	A	Y	Y

Toxic Substances Control Act (TSCA)

TSCA addresses the protection, importation, use, and disposal of many toxic substances. Through delegation, states assist EPA in the oversight of various programs within the act.

- MAP: Model Accreditation Plan
- AHERA Waiver
- Indoor Radon

Table C-5: TSCA State Delegations

State	MAP	AHERA Waiver	Indoor Radon
AL	Y	N	ND
AK	N	N	N
AZ	N	N	N
AR	ND	ND	ND
CA	N	N	ND
CO	Y	Y	ND
CT	Y	Y	Y
DE	ND	ND	ND
DC	ND	ND	ND
FL	P	N	ND
GA	N	N	ND
HI	IN	IN	ND
ID	N	N	N
IL	Y	N	ND
IN	Y	N	ND
IA	N	ND	S
KS	N	ND	S
KY	Y	Y	ND
LA	N	Y	NA
ME	Y	Y	Y
MD	Y	Y	ND
MA	Y	IN	Y
MI	P	N	ND
MN	P	N	ND
MS	Y	N	ND
MO	Y	ND	S
MT	Y	N	ND

State	MAP	AHERA Waiver	Indoor Radon
NE	Y	ND	S
NV	N	N	ND
NH	Y	Y	N
NJ	N/A	N/A	Y
NM	N	N	ND
NY	N	N	N
NC	Y	N	ND
ND	Y	N	ND
OH	S	N	ND
OK	N	N	ND
OR	S	P	N
PA	ND	ND	ND
PR	N	N	N
RI	Y	Y	Y
SC	Y	N	ND
SD	Y	N	ND
TN	N	N	ND
TX	Y	Y	ND
UT	Y	Y	ND
VT	Y	N	Y
VA	ND	ND	ND
WA	S	P	N
WI	Y	N	ND
WV	ND	ND	ND
Y	N	N	ND

Emergency Planning and Community Right to Know (EPCRA)

EPCRA is designed to help communities plan for emergencies involving hazardous substances. Delegated states are authorized to implement the following programs:

- Sec 313: Toxic Chemical Release Form
- Sec 304
- Sec 312

Table C-6: EPCRA State Delegations

State	SEC 313	SEC 304, 312
AL	ND	ND
AK	ND	ND
AZ	N	N
AR	N	ND
CA	ND	ND
CO	ND	ND
CT	ND	ND
DE	ND	ND
DC	ND	ND
FL	ND	ND
GA	ND	ND
HI	ND	ND
ID	ND	ND
IL	S	S
IN	N	S
IA	ND	ND
KS	N	N
KY	ND	ND

State	SEC 313	SEC 304, 312
LA	N	ND
ME	ND	ND
MD	ND	ND
MA	ND	ND
MI	N	N
MN	S	S
MS	ND	ND
MO	ND	ND
MT	ND3	ND
NE	ND	ND
NV	ND	ND
NH	ND3	ND
NJ	S	S
NM	N	ND
NY	N	N
NC	ND	ND
ND	ND	ND
OH	S	S
OK	ND	ND
OR	ND	ND
PA	ND	ND
PR	N	N
RI	ND	ND
SC	ND	ND
SD	ND	ND
TN	ND	ND
TX	ND	ND
UT	ND	ND

State	SEC 313	SEC 304, 312
VT	ND	ND
VA	ND	ND
WA	ND	ND
WI	S	S
WV	ND	ND
WY	ND	ND

Federal Insecticide, Fungicide, and Rodenticide (FIFRA)

FIFRA controls pesticide distribution, sale, and use requiring EPA registering, licensing, and labeling. Through delegation, states can take primacy on some parts of this work.

- Sec 23: State Cooperation, Aid, and Training
- Endangered Species
- Worker Protection
- Groundwater Protection

Table C-7: FIFRA State Delegations

State	Sec 23(a)	Sec 23(b)	End. Species	Worker Protection	Groundwater Protection
AL	Y	Y	Y	Y	Y
AK	Y	Y	N	Y	N
AZ	N	N	Y (Fish and Game)	Y (Industrial Commission)	Y (Department of Agriculture)
AR	I	I	I	I	I
CA	ND	ND	I	SIP	I

State	Sec 23(a)	Sec 23(b)	End. Species	Worker Protection	Groundwater Protection
CO	P8	P8	ND	P8	ND
CT	Y	Y	N	Y	IN
DE	Y	Y	Y	Y	Y
DC	Y	Y	Y	Y	Y
FL	Y	Y	Y	Y	Y
GA	Y	Y	Y	Y	Y
HI	ND	ND	ND	A	I
ID	Y	Y	ND	Y	N
IL	Y	Y	ND	SIP	S
IN	Y	Y	ND	Y	S
IA	Y	Y	Y	Y	I
KS	Y	Y	Y	Y	I
KY	Y	Y	Y	Y	Y
LA	Y	Y	Y	Y	Y
ME	Y	Y	N	Y	Y
MD	Y	Y	Y	Y	Y
MA	Y	Y	N	Y	IN
MI	Y	Y	ND	SIP	S
MN	Y	Y	ND	SIP	S
MS	Y	Y	Y	Y	Y
MO	Y	Y	Y	Y	I
MT	Y	Y	P	Y	Y
NE	Y	Y	Y	Y	Y
NV	ND	ND	I	SIP	I
NH	Y	Y	Y	Y	Y
NJ	Y1	Y1	N/A 4	Y1	Y1
NM	Y	Y	Y	Y	Y
NY	Y	Y	Y	Y	Y

State	Sec 23(a)	Sec 23(b)	End. Species	Worker Protection	Groundwater Protection
NC	Y	Y	Y	Y	Y
ND	Y	Y	ND	Y	ND
OH	Y	Y	ND	SIP	S
OK	Y	Y	Y	Y	Y
OR	Y	Y	Y	P	Y
PA	Y	Y	Y	Y	Y
PR	Y	Y	Y	Y	Y
RI	Y	Y	N	Y	IN
SC	Y	Y	Y	Y	Y
SD	Y	Y	ND	Y	ND
TN	Y	Y	Y	Y	Y
TX	Y	Y	Y	Y	Y
UT	Y	Y	ND	Y	ND
VT	Y	Y	S	Y	Y
VA	Y	Y	Y	Y	Y
WA	Y	Y	ND	Y	N
WI	Y	Y	ND	A	S
WV	Y	Y	Y	Y	Y
WY	S	Y	ND	S	ND

Oil Pollution Act (OPA)

OPA aims to provide standards and resources for the nation to adequately prevent and respond to future spills. The statute focuses on oil spills into navigable waters, and highlights the prevention of spills and liability for spill clean-up and damages to natural resources. States can acquire delegation of this work.

Table C-8: OPA State Delegations

State	OPA		State	OPA
AL	ND		**MO**	ND
AK	ND		**MT**	ND
AZ	N		**NE**	ND
AR	ND		**NV**	ND
CA	ND		**NH**	ND
CO	ND		**NJ**	N/A
CT	ND		**NM**	ND
DE	ND		**NY**	N
DC	ND		**NC**	ND
FL	ND		**ND**	ND
GA	ND		**OH**	ND
HI	ND		**OK**	ND
ID	ND		**OR**	ND
IL	ND		**PA**	ND
IN	ND		**PR**	N
IA	ND		**RI**	ND
KS	ND		**SC**	ND
KY	ND		**SD**	ND
LA	ND		**TN**	ND
ME	ND		**TX**	ND
MD	ND		**UT**	ND
MA	ND		**VT**	ND
MI	ND		**VA**	ND
MN	ND		**WA**	ND/S
MS	ND		**WI**	ND

APPENDIX D: EXECUTIVE BRANCH REORGANIZATIONS

Table D-1: Executive Branch Reorganizations

STATE	TYPE OF STRUCTURE		COMPREHENSIVE REORGANIZATION		GOVERNOR POWER TO REORGANIZE
	before reorg	*after reorg*	*start*	*end*	
States with no major reorganization					
North Dakota	traditional		N/A	N/A	
Texas	traditional		N/A	N/A	
Washington	traditional		N/A	N/A	
Mississippi	cabinet		N/A	N/A	
States that underwent comprehensive reorganization prior to 1967					
Pennsylvania	traditional	traditional	1923	1923	
Ohio	traditional	traditional	1929	1929	
Indiana	traditional	traditional	1933	1933	Yes
Nebraska	traditional	traditional	1935	1935	
Alabama	traditional	traditional	1939	1939	
Rhode Island	cabinet	cabinet	1939	1939	
New Jersey	traditional	cabinet	1947	1947	
Alaska	n/a	cabinet	1958	1958	Yes
Hawaii	n/a	cabinet	1959	1959	
Tennessee	cabinet	cabinet	1959	1959	
New York	cabinet	cabinet	1960	1960	
New Hampshire	traditional	cabinet	1961	1961	
Nevada	cabinet	cabinet	1963	1963	
Minnesota	traditional	cabinet	1969	1969	Yes
Partial Reorganization 1967-2000					
Utah	traditional	traditional	1967	1967	
Oregon	cabinet	traditional	1969	1969	
Vermont	cabinet	cabinet	1969	1971	Yes
Kansas	traditional	traditional	1970	1975	Yes
Arizona	cabinet	traditional	1971	1974	
Comprehensive Reorganization 1967-2000					
Michigan	traditional	traditional	1963	1965	Yes
Wisconsin	traditional	traditional	1967	1967	
Colorado	traditional	traditional	1966	1968	Yes
California	traditional	secretary-coordinator	1967	1968	Yes
Florida	traditional	traditional	1968	1969	

STATE	TYPE OF STRUCTURE		COMPREHENSIVE REORGANIZATION		GOVERNOR POWER TO REORGANIZE
	before reorg	*after reorg*	*start*	*end*	
Illinois	cabinet	traditional	1969	1969	Yes
Massachusetts	traditional	secretary-coordinator	1969	1969	Yes
Delaware	traditional	cabinet	1969	1970	Yes
Montana	traditional	traditional	1970	1971	Yes
Arkansas	cabinet	cabinet	1971	1971	Yes
Maryland	traditional	cabinet	1969	1972	Yes
Georgia	traditional	traditional	1972	1972	Yes
Virginia	traditional	secretary-coordinator	1972	1972	Yes
Maine	cabinet	cabinet	1970	1973	
South Dakota	traditional	cabinet	1972	1973	Yes
Idaho	cabinet	traditional	1972	1974	
Kentucky	traditional	secretary-coordinator	1972	1974	Yes
Missouri	traditional	cabinet	1972	1974	Yes
North Carolina	cabinet	traditional	1970	1975	Yes
Louisiana	cabinet	cabinet/ traditional	1974	1977	Yes
New Mexico	traditional	cabinet	1972	1978	Yes
Connecticut	traditional	traditional	1977	1979	
Iowa	secretary-coordinator	cabinet	1985	1986	
Oklahoma	traditional	cabinet	1986	1987	
Wyoming	cabinet	cabinet	1986	1987	
West Virginia	traditional	secretary-coordinator	1988	1989	
South Carolina	traditional	cabinet/ traditional	1991	1993	

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APPENDIX E: ADDITIONAL TABLES:

Table E-1 Unrotated Matrix Factors

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	4.27909	2.93934	0.3566	0.3566
Factor2	1.33975	0.23507	0.1116	0.4682
Factor3	1.10468	0.23994	0.0921	0.5603
Factor4	0.86474	0.07824	0.0721	0.6324
Factor5	0.78650	0.04210	0.0655	0.6979
Factor6	0.74440	0.06717	0.0620	0.7599
Factor7	0.67722	0.09719	0.0564	0.8164
Factor8	0.58003	0.05346	0.0483	0.8647
Factor9	0.52657	0.12799	0.0439	0.9086
Factor10	0.39858	0.03270	0.0332	0.9418
Factor11	0.36588	0.03332	0.0305	0.9723
Factor12	0.33256	.	0.0277	1.0000

LR test: independent vs. saturated: chi2(66) = 4193.63 Prob>chi2 = 0.0000

Variable	Factor1	Factor2	Factor3	Uniqueness
RPS	0.7612	-0.0473	-0.0802	0.4119
PBF	0.6696	-0.1688	0.1839	0.4894
Vehicle Emissions	0.6375	-0.3483	-0.2079	0.4291
Net Metering	0.6433	-0.0566	0.1226	0.5680
Mercury	0.7061	-0.1597	-0.0116	0.4757
Ecycling	0.6599	-0.1103	-0.3103	0.4561
Public Green Buildings	0.7747	-0.1057	-0.3123	0.2912
Lead	0.4761	0.6935	0.0686	0.2877
UST	0.3879	0.7492	-0.1222	0.2733
Groundwater	0.3612	0.1469	0.5674	0.5260
Radon	0.3498	-0.2211	0.6853	0.3592
EJ Program	0.5169	0.1517	0.0323	0.7088

APPENDIX F: SOURCES USED TO DEVELOP STATE STRUCTURE INFORMATION

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- “State Innovation in Renewable Energy.” Southeast Conference for Public Administration, Wilmington, NC, 2010.
- “Public Participation in Environmental Issues in China.” Southeast Conference for Public Administration, Louisville, KY, 2009
- Low Carbon Solid Waste Panel Discussion, Moderator, WASTECON, Reno, NV, 2007.
- “Waste-to-Energy and Landfill Gas Recovery: Renewable Energy Sources” (with Cliff Koenig, Greg Gesell, Carlo Lebron, and Ed Liebsch), Energy Utility and Environment Conference, Tucson, Arizona, 2008.
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