THE UNILATERAL PRESIDENCY, FEDERAL BUDGETING, AND THE IMPACT TO ENVIRONMENTAL POLICY: FROM THE CARTER THROUGH THE TRUMP ADMINISTRATIONS (1977-2021)

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ABSTRACT OF THE DISSERTATION

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In the current political environment, there are persistent notions that federal budgets are incapable of shrugging off incremental patterns and political influences to truly support significant organic growth and meet critical needs within specific policy areas. While the traditional federal budgeting process is a collaborative effort between the President and Congress, initial budget allocations are not the final determinant of resource allocation. Few scholars doubt the role and influence of unilateral presidential action on policy. Extensive literature points to the administrative presidency's circumvention of traditional legislative processes and the impact on public policy. However, there are significant research gaps at a comparative level across policy types, particularly within the context of federal budgeting which may allude to the pervasiveness of the administrative presidency in budgeting. A policy area of tremendous concern and consideration for this study is environmental policy and its primary representative federal agency the Environmental Protection Agency (EPA).

The first chapter of this analysis defines the context and importance of the research question “Does the unilateral presidency have an effect on the federal budget resulting in an impact to environmental policy?” The second chapter is a literature review on critical themes within the administrative presidency and budgeting processes and theory. The third chapter discusses the mixed methods approach inclusive of a historical analysis, regression analysis, and case study design. The fourth chapter presents a historical analysis of environmental policy and the deep-rooted nature of unilateral executive action in its growth, progress, and evolution. Chapter five discusses the results of the regression analysis that utilizes certified U.S. budget data provided by the Office of Management and Budget (OMB) covering the span of presidential administrations Carter through Trump (1977-2021) for the EPA, the Department of Agriculture (USDA), the Department of the Interior, and the Department of Energy (DOE). The sixth chapter presents two case studies which identify the most critical implications from both budgeting and regulatory perspectives. The analysis concludes with the identification of critical themes and provides insight for future studies. The findings of this analysis reveal that: (1) unilateral action - by way of executive order - results in direct changes to budget outlays; (2) party affiliation results in a direct change to budget outlays; and (3) because of the regulatory mechanisms that exist between federal agencies with overlapping missions, increases or decreases due to executive orders or party affiliation affecting the EPA, will also be expected to occur for those other agencies, with some exceptions.

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""There is no doubt that it is around the family and the home that all the greatest virtues… are created, strengthened, and maintained."

–Winston Churchill

This work is dedicated to my family. To my grandparents Angelica and Isaias Velazquez, who showed me unconditional love and support, and who I miss dearly. To my parents, who instilled in me the work ethic and confidence necessary to succeed in the most difficult of challenges and who, to this day, continue to push me toward greatness. Everything I am or may become is from their hard work, sacrifice, and dedication. To my brother Jason, the best friend that a person could ever ask for. To my nieces Felicity Rayne and Emma Elsy, that they may know there are truly no limits to what they can accomplish.

The start of my journey in studying Public Administration was not exactly intentional and had it not been for the support and mentorship of Jerome Ziegler, PhD, and Theodore J. Lowi, PhD, who were instrumental to my success in Cornell's MPA program, I would not have made it to this milestone. There is no mystery as to why my interests lie in budgeting, political theory, and the administrative presidency having these two intellectual powerhouses as mentors. While I was accepted to the Rutgers PhD program in 2010, I deferred until 2011 because of my growing career. I had the privilege of keeping in close contact with Ted and met with him a few times a year at Cornell and he always referred to me as his "protegee gone rogue," since I took up my main career in financial services. I remember his excitement when I told him I was starting the program at Rutgers

and he said, “maybe this time you’ll get it right.” Ziegler passed in 2012 and Lowi shortly after in 2017, leaving a gaping hole in my academic support system that can never be filled. They are greatly missed, and I know they would have been proud to witness this milestone.

At Rutgers, I have had the opportunity to meet and work with some of the most incredible public administration scholars in the world. Norma M. Riccucci, PhD was program director when I first started, and she is a truly exemplary role model. Her kind words, support, and advocacy throughout my time here have been critical to my success and I appreciate her for it. I had the pleasure of working with Frank Thompson, PhD, up until his retirement last year. He was my original advisor and helped me develop some of the intellectual history of the administrative presidency used in this dissertation. I thoroughly enjoyed all our discussions on the topic, and I am thankful for his wisdom.

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This accomplishment certainly is not mine alone to claim and it truly takes a village to help achieve such a significant milestone. I am thankful to my closest friends,

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LIST OF ABBREVIATIONS

AAA	Agriculture Adjustment Act
ACA	Affordable Care Act
ADR	Alternative Dispute Resolution
AEA	Atomic Energy Act
AEC	United States Atomic Energy Commission
AMA	American Medical Association
APA	Administrative Procedure Act
BEACH	Beaches Environmental Assessment and Coastal Health
CAA	Clean Air Act
CCC	Civilian Conservation Corps
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CEQ	Council on Environmental Quality
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CMSP	Coastal and Marine Spatial Planning
COP	Committee on Ocean Policy
CPI	Consumer Price Index
CPSC	Consumer Product Safety Commission
CRA	Congressional Review Act
CRPC	Conflict Prevention and Resolution Center

CWA	Clean Water Act
DDT	Dichlorodiphenyltrichloroethane (insecticide)
DERA	Defense Environmental Restoration Account
DOE	Department of Energy
DOJ	Department of Justice
DOL	Department of Labor
DRI	Defense Reform Initiatives
ECOS	Environmental Council of the States
EDB	Ethylene Dibromide
EISA	Energy Independence and Security Act
EMS	Environmental Management Systems
EO	Executive Order
EOP	Executive Office of the President
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
ESEA	Elementary and Secondary Education Act (No Child Left Behind)
FACA	Federal Advisory Committee Act
FDR	Franklin Delano Roosevelt
FED	Federal Reserve Board
FDIC	Federal Deposit Insurance Corporation
FFDCA	Federal Food, Drug and Cosmetic Act
FHA	Federal Housing Administration

FHLBB	Federal Home Loan Banking Board
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FOIA	Freedom of Information Act
FQPA	Food Quality Protection Act
FRC	Federal Radiation Council
FSA	Farm Security Administration
FTC	Federal Trade Commission
G-8	Group of Eight
G-20	Group of Twenty
GATT	General Agreement on Tariffs and Trade
GAO	Government Accountability Office
GHG	Greenhouse gas emissions
GNEP	Global Nuclear Energy Partnerships
GPO	Government Publishing Office
HAACP	Hazard Analysis Critical Control Point
HEW	Department of Health, Education, and Welfare
IPCC	United Nations Intergovernmental Panel on Climate Change
ISO	International Standard
IUCN	International Union for Conservation of Nature and Natural Resources
MPRSA	Marine Protection, Research, and Sanctuaries Act
NAFTA	North American Free Trade Agreement
NASA	National Aeronautics and Space Administration

NEPA	National Environmental Policy Act
NETL	National Energy Technology Laboratories
NIH	National Institute of Health
NIRA	National Industrial Recovery Act
NLRB	National Labor Relations Board
NNSA	National Nuclear Security Administration
NOAA	National Oceanic and Atmospheric Administration
NOC	National Ocean Council
NPR	National Performance Review
NPRM	Notice of Proposed Rulemaking
FR	Federal Register
NRC	Nuclear Research Commission
NRPB	National Resources Planning Board
NSR	New Source Review
NTTAA	National Technology Transfer and Advancement Act
NWPA	Nuclear Waste Policy Act
OIRA	Office of Information and Regulatory Affairs
OMB	Office of Management and Budget
OPA	Oil Pollution Act
OPEC	Organization of Petroleum Exporting Countries
OSHA	Occupational Health and Safety Administration
PART	Program Assessment Rating Tool
PCAM	President’s Committee on Administrative Management

POP	Persistent Organic Pollutants
POSDCORB	Planning, Organizing, Staffing, Directing, Coordinating, Reporting, Budgeting
PPA	Pollution Prevention Act
PPBS	Planning Programming Budgeting System
PRA	Paperwork Reduction Act
PRIA	Pesticide Registration Improvement Act
PUREX	Plutonium Uranium Extraction Facility
PWA	Public Works Administration
RCRA	Resource Conservation and Recovery Act
REA	Rural Electrification Act
RFA	Regulatory Flexibility Act
RFD	Rural Free Delivery
RNG	Reich Nature Protection Law
SARA	Superfund Amendments and Reauthorization Act
SBREFA	Small Business Regulatory Enforcement Fairness Act
SDWA	Safe Drinking Water Act
SEC	Securities Exchange Commission
SNAP	Systems for Nuclear Auxiliary Power
SPA	Shore Protection Act
SPCA	Society for the Prevention of Cruelty to Animals
SRF	State Revolving Funds
SSA	Social Security Administration

STAPPA-ALAPCO	State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution
START	Strategic Arms Reduction Treaty
TRI	Toxic Release Inventory
TSCA	Toxic Substances Control Act
UMRA	Unfunded Mandates Reform Act
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organization
USC	United States Code
USCOP	U.S. Commission of Ocean Policy
USDA	United States Department of Agriculture
WPA	Workers Progress Administration
WRC	Water Resources Council
WWII	World War II
ZBB	Zero-Based Budgeting

1 INTRODUCTION

1.1 Problem Statement & Purpose of the Study

In the current political environment, there are persistent notions that federal budgets are incapable of shrugging off incremental patterns and political influences to truly support significant organic growth and meet critical needs within specific policy areas. While the traditional federal budgeting process is a collaborative effort between the President and Congress, initial budget allocations are not the final determinant of resource allocation. Few scholars doubt the role and influence of unilateral presidential action on policy. The administrative presidency's circumvention of traditional legislative processes and the impact on public policy through various methods such as politicization, budgeting, powers of command, power limitations, and performance considerations are of critically important consideration and discussed in many scholarly works. From a federal budgeting perspective, seminal works outline the expectations and complications of contemporary budgeting theory, processes, and methodologies. However, there remains a significant research gap in administrative presidency literature regarding comparative assessments across policy types and across federal agencies that may impacted by the same policy type. A recent exception to this comparative level analysis is Thompson, Wong, & Rabe's recent work which compares three policy areas within the context of the Trump administrative presidency.[1] Few studies are dedicated to understanding or classifying the impacts and effects of an administrative presidency across policy lines, various presidencies, political party affiliation, and presidential agenda as they impact the direction and influence of an

[1] Thompson, F., Wong, K., & Rabe, B. (2020). *Trump, the Administrative Presidency, and Federalism*. (Washington, DC: Brookings Institution Press).

administrative presidencies. Environmental policy is a policy area in which there is little research explaining the impact of unilateral action on federal budget allocations, though as previously discussed, there are studies that discuss the impact of unilateral action on policy directly. This analysis utilizes a mixed methods approach to understand the variables that have a significant effect on federal budget outlays for the Environmental Protection Agency as compared to a subset of peer agencies. Qualitative data is collected and presented in a historical analysis tracing the role an impact of the unilateral action on environmental policy. The findings from these analyses are integrated to identify emergent themes that are compiled into two case studies detailing critical budgetary and regulatory implications of this phenomenon for consideration in future studies.

1.2 The President, Federal Budgeting, and the Determination of Policy Focus

The organizational realities of constitutional governance yield few questions about how executive agencies are expected to be run. By virtue of process, the President nominates a Secretary who is approved or rejected with the direct advice and consent of the U.S. Senate. The Secretary in turn works to advance the President's agenda for that agency by gaining legislative support for various policy initiatives. However, the modern political realities of running government raise numerous questions regarding the efficacy of public agencies and the significant impacts of the unilateral presidency on agency funding, performance, and efficacy of managerial and operational processes. In public administration, there are open questions regarding how our government, and the implementing federal agencies are held accountable, how decisions are made, how resources are allocated, and whether special interests, self-interests, politicization, or

executive influence, are impacting agencies to where they can no longer be held accountable to their respective performance. The concept of resource allocation and availability is one that permeates throughout public administration and is a point of contention in every discussion regarding organization efficiency, effectiveness, and economy.

Theodore J. Lowi coins the term interest group liberalism as an explanation for the increase in client-based politics, or exchange of goods and services for political support, which resulted from the broad public programs expansion in the U.S. While peers like Robert Dahl support pluralism and argue interest groups as a competitive means to creating a democratic link between the government and its people, Lowi sharply critiques interest group liberalism as a "vulgarized version of the pluralist model" where their role in the U.S. government creates and encourages a model of engagement based on the political resources at a groups disposal rather than by the merits, morality, or rationality of the interest.[2] Invoking President Truman's conclusion, the pluralistic political system can self-correct this issue as membership of interest groups begins to overlap and confrontation among groups increases. Lowi recognizes the conditions for self-correction to be suppressed as the government tends to minimize confrontation (as discussed later with Alternative Dispute Resolutions) and interest groups set the "rules-of-the-game" to keep members confined to specific values.[3] This adds an additional layer to the conversation about the government and public interest.

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[2] Lowi, Theodore J. (1967). "The Public Philosophy: Interest-Group Liberalism." *American Political Science Review,* volume 61, no.1 (March 1967), pp.5-24.
[3] Lowi (1967), p.22.

Prior to engaging in any discussion about government performance and efficacy, it is critical to understand what guides, influences, and controls major budgeting and policy decisions at the federal level. The literature review will focus primarily on federal budgeting processes and the potential impacts to policy focus as driven by the President and Congress, with special consideration for any presidential actions that are symptomatic of a unilateral or administrative presidency. The evidence from existing research that will follow, presents literature on the administrative presidency as a phenomenon and investigates whether those actions have any disparate impact or overt influence within the current federal budgeting process. This is followed by a view of budgeting theory to understand the core tenets for resource allocation beyond presidential influence. While various policy types are relevant to this discussion, environmental policy is the area of focus due to it permeation through multiple agencies and the impact it has on daily life of all citizens.

1.3 What is a Unilateral or Administrative Presidency?

The intellectual history discussion begins with President Franklin D. Roosevelt's Administration, representing the high noon of public administrative orthodoxy and 1937 as the precise year when the modern administrative state begins. FDR was responsible for ushering in a series of public work projects, reforms, and regulations known as The New Deal, a progressive reform comprised of executive orders and laws passed by Congress to provide unemployment and poverty relief, economic recovery support, and financial system reform in response to the Great Depression. The First New Deal (1933-1934) focused on fiscal policy, banking reform, monetary reform, repeal of prohibition, relief for

public works and rural programs, housing recovery, reform regarding trade liberalization, and land reform in Puerto Rico resulting in the enactment of the Securities Act of 1933, the Agricultural Adjustment Act (AAA), the establishment of the Securities and Exchange Commission (SEC), the creation of the Public Works Administration (PWA), and the creation of the Federal Housing Administration (FHA). The Second New Deal (1935-1936) saw the enactment of the Social Security Act of 1935, the National Labor Relations Act of 1935, the Revenue Act of 1935, the Housing Act of 1937, and the creation of the Works Progress Administration (WPA). During the period of New Deal Reform from 1933 through 1936, FDR signed 1,701 executive orders. Throughout the course of his entire presidency the total count of executive orders was 3,721.[4]

Further setting the trend for the modern administrative state and executive reform was the creation of the President's Committee on Administrative Management (also known as the Brownlow Committee/Commission or PCAM) including Louis Brownlow, Charles Merriam, and Luther Gulick. In their study "Administrative Management in the Government of the Unites States" or the Brownlow Report, committee recommended sweeping changes to the executive branch and formed the basis for the Reorganization Act of 1939 that created the Executive Office of the President with the intent to move the Civil Service Administration, the Bureau of the Budget, and the National Resources Board under the direct control of the executive.[5] FDR, with the same committee members and Joseph P. Harris as the director of research, commissioned five additional reports focusing on

[4] Gerhard Peters and John T. Woolley, "Executive Orders." The American Presidency Project. Ed. John T. Woolley and Gerhard Peters. Santa Barbara, CA. 1999-2022. https://www.presidency.ucsb.edu/node/323876

[5] Karl, Barry D. (1963). *Executive Reorganization and Reform in the New Deal*. (Cambridge: Harvard University Press).

personnel management, fiscal management (including financial control and accountability and the General Accounting Office), independent regulatory commissions, administration management, and administrative department rule making and legislative measures.[6] The Government Publishing Office (GPO) published three versions of PCAMs recommendations: the report submitted to Congress "Administrative Management in the Government of the Unites States", the Report of the Committee with Studies of Administrative Management in the Federal Government, and the five accompanying studies.[7] Newbold and Terry's analysis of the five addiitonal concluded with an understanding that the Brownlow Committee studies, using Federalist 27 and Federalist 70 as a foundation for confidence and unity, intended to go beyond improving public management and sought to improve "democracy within the American constitutional republic."[8]

The New Deal reforms resulted in further considerations for a long-term relief strategy. In 1939, the National Resources Planning Board (NRPB) determined that the relief problems the New Deal intended to resolve were a chronic condition requiring "long-range policies and action programs for the full use of resources."[9] The NRPB's Committee on Long-Range Work and Relief Policies was committed to prioritizing national relief and raise the standard of living for all American people. The NRPB board, however, became more Keynesian in thought speaking on possibility of full employment and raising the

[6] Newbold, Stephanie P. and Larry D. Teddy (2006). "The President's Committee on Administrative Management: The Untold Story and the Federalist Connection." *Administration & Society, vol.38, no.5. November 2006. pp*.522-555. pp.524-525.
[7] Newbold & Terry (2006). p.524.
[8] Newbold & Terry (2006). pp.552
[9] Jeffries, John W. (1990). "The 'New' New Deal: FDR and American Liberalism, 1937-1945." *Political Science Quarterly, vol.105, No.3 (Autumn, 1990).* pp.397-418. p.406

minimum standard of living post-war, a derivation from its own relief committee that was following a more sensible approach to addressing post-war goals. Eventually, shifts in public sentiment and the need for the presidential administration to draw greater public support for the war, drew focus away from this expansion of New Deal relief. In addition, these efforts were downplayed in the subsequent presidential election to avoid conflict with a Republican and anti-New Deal Democrat dominated Congress.[10] Facing political pressure from administration liberals, FDR submitted the more than 600-page Security, Work, and Relief Policies and Post-War Plan and Program to Congress without any advance notice to any of the stakeholders. While these plans were mixed in acceptance and implementation, they illustrated that policy innovation and presidential support did not result in quick enactment of New Deal policies.

Born out of this politically contentious period were the Administrative Procedure Act (APA) of 1946 and the Legislative Reorganization Act of 1946, Congress' institutional reaction to the New Deal Era. The premise of these acts is to provide constitutional safeguards to ensure that regulatory authority did not go unchecked or violate the separation of powers. The APA outlines the framework for regulating agencies and publishing rules in the Federal Register (FR). Moreover, these acts reasserted Congress's constitutional relationship to federal administration and attempted to shift the narrative of achieving efficiency, economy, and effectiveness through a separation of politics from administration.[11] This resulted in the more modern element of incumbency as members of Congress would seek reelection establishing career service within both houses. Key to the

[10] Jeffries (1990). p.412

[11] Rosenbloom, David H. (2000). *Building a Legislative-Centered Public Administration*. (Tuscaloosa, AL: University of Alabama Press).

spirit of the APA and the supporting acts of 1946 is the notion that agencies are extensions of the legislature, a result of New Deal Era reforms, with the further assumption that Congress "should specify their procedures to promote its views of how legislation by other means – that is administration – should work."[12] This enforces the dynamic that presidential power stipulates general orders, agencies provide the detailed regulations and standards, and Congress provides the continued oversight of those agencies from the administrative perspective, redefining a system of balance despite the persistent administrative state.

The use of the term "administrative state" was common throughout the 1940's but gained prevalence in Dwight Waldo's 1948 work of the same name to describe how executive branch administrative agencies exercised power in the creation and enforcement of their own rules.[13] The use of the term as Morstein Marx explained, refers to "a state in which administrative organization and operations are particularly prominent." As Roberts described, the administrative state during this time was in a state of analysis where views were not necessarily unfavorable and many observed this phenomenon as an instrument of progress, or intelligent government action.[14] There was also significant apprehension about the pervasiveness of control throughout the bureaucracy.

The term "Administrative Presidency" soon followed in the seminal piece by Richard Nathan which illustrated the vast reach of presidential power across the entire structure and further alluded to the abilities a President can exercise without direct changes

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[12] Rosenbloom (2000). p.23.
[13] Waldo, Dwight (1948). *The Administrative State: A Study of the Political Theory of American Public Administration*. (New York, NY: The Ronald Press Company).
[14] Roberts, A. (2020). "Should we defend the administrative state?" *Public Administration Review, 80(3),* 393.

in law or other forms of congressional approval.[15] The powers of the presidential office are extensive and according to Meier (2000) include "organizational powers (politicization), budgetary powers, powers of command (direct intervention through executive orders), and leadership."[16] The president can also wield executive power through the use of waivers and other administrative tools. At times, this exercise of power may be overlooked or ignored due to understanding that a president has time and term limitations which ensure an upcoming regime change can undo unfavorable actions or even reverse potential negative effects. Looking historically across landmark executive decisions shows that there may be lasting impacts regardless of the next political regime.

The concept of the administrative state has drifted throughout the years and for scholars is used "as a synonym for the state, as a synonym for the administrative system of a state, and as a reference to a specific type of state that emerged at a certain moment in history.[17] This also begs an answer to the question as to whether an administrative presidency can truly exist in a separation of power system of government considering that this model should operate in a way that minimizes or avoids a president with the authority to make unilateral decisions. Rohr (1986) rested on the assumption "that we live in an administrative state and will continue to do so for the foreseeable future" and attempted to legitimate it in terms of constitutional principle in the hopes to "enable it to perform more effectively."[18] While predecessors like Raughenbush (1939), viewed the transition of the administrative state coming at the expense of democracy, Rohr shifted the lens to ground

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[15] Nathan, R.P. (1986). *The Administrative Presidency*. (New York, NY: Macmillan Publishing).
[16] Meier, K.J. (2000). *Politics and the Bureaucracy: Policymaking in the Fourth Branch of Government.* (New York, NY: Harcourt). p.144.
[17] Roberts (2020), p.397.
[18] Rohr, John A. (1986). *To Run a Constitution: The Legitimacy of the Administrative State*. (Kansas: University Press of Kansas). pp x-xii.

Public Administration in the Constitution rather than create a dichotomy between politics and administration. The Public Administration would have its constitutional master in the form of the President, the House, and Senate, and would be a balancing wheel inclusive of bureaucratic actors that function as administrative statesmen regardless of the extremity of their leanings.[19] The differentiation between lobbyists and administrators is critical at this point since administrators are still bound to their constitutional oaths. While competition will arise, bureaucratic resistance may increase, and partisanship may take seeming precedence, harmonious relationships will still exist in some policy areas as the "gentleman's agreements" and informal arrangements are an important part of maintaining a constitutional balance of powers.

1.4 The Importance of Public Budgeting

In a world of haves and have-nots, the disparities of normal life are becoming more evident. In a world of inequality and inequity, the limitations, barriers, and glass ceilings are evident as well. Historically, the U.S. government has tied itself to both the social and economic outcomes of our society. Owning that responsibility is a considerable undertaking for our government not just from a policy outcome perspective but also from the view of resource allocation. The citizen's contributions to our government and society through taxes, ensure that the government can provide for the greater good such as social welfare, infrastructure, environment, and defense. These contributions, however, demand some form of accountability and an understanding of the relative success and accomplishments of any specific endeavor. In regard to the performance of the

[19] Rohr, J.A. (1986), p.183.

constitutional system in these endeavors, Robert Dahl suggests that constitutional arrangements should "(1) maintain the democratic system; (2) protect fundamental rights; (3) ensure democratic fairness among citizens; (4) encourage the formation of a democratic consensus; and (5) provide a democratic government that is effective in solving problems."[20] Among the most visible proof of government intent and action is in the form of public budgeting.

According to the official U.S. government website USA.gov[21], the current federal budgeting cycle is an annual process in which the president and congress align on spending proposals for the coming fiscal year which runs from October 1st to September 30th of the following year. Typically, departments and agencies begin their planning more than a year before a budget goes into effect and submit their proposals to the White House for consideration in the president's budget request. The president, in turn drafts a budget proposal and submits the plan to congress by the first Monday in February. The House of Representatives and Senate review the president's proposal and each draft a budget resolution to set spending limits. A conference committee comprised of House and Senate members, resolves any differences between the resolutions and creates a definitive version of the plan for vote within each chamber. From there, an appropriations committee for each chamber divides the funding between twelve subcommittees, each charged with funding vital functions of government. The subcommittees conduct agency hearings for budget requests and draft appropriations bills. The House and Senate vote on the bills, merge both versions, and then vote on the final bill. If Congress passes the bill, it will go the president

[20] Dahl, Robert A. (2003). *How Democratic is the American Constitution?, 2nd Edition.* (New Haven, CT: Yale University Press). pp.92-93.
[21] "Budget of the U.S. Government." www.usa.gov/budget

for official signature. If Congress cannot agree, an Omnibus bill may be passed in the interim, but a continuing resolution must be passed if the budget is not completed by the new fiscal year otherwise the result is a government shutdown.

Critical to the creation of more open, efficient budgetary practices and policies were the Progressive administration of Presidents William H. Taft, Franklin D. Roosevelt, and Harry S. Truman who all sought to eliminate public sector corruption that had originally emerged in the Jacksonian period (1824-1840), that touted the belief that people are sovereign with absolute wills and should be ruled by the majority, and carried through the Gilded Age (1870-1900), a time period of industrialization and big business resulting in wealth and labor disparities. The executive budget movement arose during the Taft presidency's landmark development of the Commission on Economy and Efficiency in the early 1900s. Three groups championed this budgeting movement including social reformers seeking to promote better planning, public administrators seeking improved management, and cross-sector leaders interested in executive control of public expenditures.[22] This led to the passing of the Budget and Accounting Act of 1921 which created the Bureau of the Budget. This positioned the president to be the administrative head of government, and financially the "chief executive officer" though the General Accounting Office was also concurrently created to aid Congress in the oversight of federal funds, essentially ensuring Congress did not lose grounding in the face of a growing executive power (which would only continue to grow due to the Great Depression and World War II). In 1945, the House and Senate created a Joint Committee on the Organization of Congress resulting in the Legislative Reorganization Act of 1946 which

[22] Lynn, L.E. (1996). *Public Management as Art, Science, and Profession.* Chatham, NJ: Chatham House. pp.15-16.

allowed for the resourcing for continuous oversight of executive agencies and programs. These budgetary power struggles between Congress and the President would continue though the approval of the Budget Reform and Impoundment Control Act of 1974. Since then, various commissions and reforms have sought to determine the efficiency, effectiveness, and economy of our government.

Simplified, public budgeting is about resource allocation for organizational objectives. But that is anything but simple. Willoughby discusses the macro and micro implications of budgeting where macro decisions are based on holistic policy decisions and micro decisions are the less visible trade-off decisions needed to carry out policies at the macro decision level.[23] While budgeting and planned objectives have seemingly gone hand-in-hand, planning is not the only function that must be addressed by the budgeting process. Robert Anthony identified these functions as strategic planning, management control, and operational control where strategic planning is the process of identifying organizational objectives based on resources and policies, management control is the process used by managers to obtain and effectively use resources to accomplish the objectives, and operational control is the effective and efficient execution of necessary tasks.[24]

The process of public budgeting forecasting at times, seems obscure and more like an arbitrary annual exercise. Coupled with inaccuracies in projections and random error, uncertainty in public budgeting performance is even more commonplace. The budget uncertainties add to the increasing complexity of public budgeting. This uncertainty

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[23] Willoughby, K.G. (2014). *Public Budgeting in Context: Structure, Law, Reform, and Results.* San Francisco, CA: Jossey-Bass. p.7.

[24] Anthony, R.N. (1965). *Planning and Control Systems: A Framework for Analysis* (Boston, MA), pp.16-18

according to Brogan, is what "ensures a strong connection between economics and politics when setting and implementing government's priorities.[25] More so, because of this connection, errors in forecasting revenues and expenditures create substantial difficulty in allocating resources, particularly in the long-term resulting in political influence and intervention and additional stress at state and local levels.

Given the complexity of a national budgeting process and in the administration of a budgeting system, Willoughby views this as a function of the executive where the president prepares and proposes the budget based on a unified and integrated administrative focus and the legislature exercises no power in the proposal process and limited determination of appropriations.[26] He also viewed the budget as an instrument of democracy, where the process would be conducted "in conformity with the popular will" and also act as an instrument for correcting legislative and executive action.[27]

1.5 Federalism and Public Sector Budgeting

Federalism is a political system combing a centralized government with regional or state governments, with a delegation or division of powers and responsibilities. While this analysis focuses on the federal budgeting process, there are implicit assumptions as to how this affects state and local level budgets and there are certain nuances within the same that are important to note especially regarding resource allocation, political influence, and scope of consideration. At the state or local level, forecasting is expected to be more

[25] Brogan, M.J. (2014). *Modern Budget Forecasting in the American States: Precision, Uncertainty, and Politics*. UK: Lexington Books. p.9.
[26] Willoughby, William F. (1918). *The Problem of a National Budget.* (New York, NY: D. Appleton & Co.). pp.30-33.
[27] Willoughby, William F. (1918). *The Movement for Budgetary Reform in the States*. (New York, NY: D. Appleton & Co.). pp.1-5.

accurate especially in the short term where there is less political bias. Any political risk would increase over longer-term forecasts due to political uncertainty. Revenue and expenditures are shaped and constrained by the state political institutions and their ability to manage impacts (deficits or surpluses) will be based on the way they balance their budget. State or local level services relying on federal funding may also have special considerations if federal policies, waivers, or grants change resource allocations. While the literature review alludes to emergent themes and best practices that can be applied to state and local budgeting, the primary focus is on the nuances of federal budgeting with some consideration for the discretionary nature of allocations at state and local levels. It is also important to note that the U.S. Federal Budget captures the composition of state and local government grant outlays by function and by agency that provides deeper insight into how the federal government can use these grants to influence state and local budgeting.

1.6 Private vs. Public Budgeting

When considering organizational theory and the nuances of private and public management, it is often useful to look back at the work of Luther Gulick who established the well-known POSDCORB. This concept is referenced extensively in both business and public administration literature.[28] These elements of chief executive management focus on planning, organizing, staffing, directing, coordinating, reporting, and budgeting. While budgeting is a primary focus of these elements, the focus on planning and tying these elements together is the basis for budgeting theories and performance-based methodologies that are referenced within this study. This element commonality of management and

[28] Gulick, L., & Urwick, L. (1937). *Papers on the Science of Administration*. (New York, NY: Institute of Public Administration). pp.3-13.

administration across private and public lines opens the door for consideration of practices that can be leveraged to promote economy, efficiency, and effectiveness in the public sector across various policy genres. The private, corporate, or scientific views of management are an important foundation to understanding the push for centralized power in the executive as means of empowering the "Chief Executive Order" to have control from initiation to implementation, and execution to outcome. As discussed earlier, the Brownlow Commission sought to apply Gulick's executive theory and created an orthodox administrative doctrine that was a combination of civil service reform, Progressivism, and Scientific Management that relied heavily on overhead systems of management.[29] When applied to public management during the FDR Administration, this orthodoxy was met with considerable criticism and questions such as Appleby (1945) - an agency's ability to create and govern their own legislative rule, Herring (1936) and Simon (1946) - administrators determining public interest, Long (1949) – advocating unity of command, and Waldo (1948) – which political values should be incorporated in public administration theory.[30] The resulting Congressional response to this failed administration tactic, helped to set the stage for legitimacy of the federal administration by forcing agency adherence to legislative values by opening regulatory processes to public view and commentary.

An underlying theme evident in policy reform through executive involvement is performance measurement and process management, and various questions come to mind in terms of leveraging performance standards from the private sector. In comparing the private sector holistically to the government, Appleby (1973) outlines the essential character of government. The three differentiating characteristics of government from any

[29] Rosenbloom (2000). p.144.
[30] Rosenbloom (2000). p.144.

other institution are scope, impact, and consideration; public accountability; and political character.[31] Beryl Radin's study on federal management reform discusses the differences between public and private management and identifies the attributes that have surfaced throughout the intellectual history of the topic (*see Table 1-1*). This discussion lends to the notion of appropriateness of application to the public sector given the differing structure, values, attributes, and defining the public interest.[32] Yet while the complexity and scope of public management differentiates it from the private sector, there may be synergies or best practices that can be applied from the budgeting perspective.

Item	Public	Private
Time perspective	Short term	Long term
Budget process	Complex, multiple players	Hierarchical
Duration	Political short term, career long term	As required
Measurement of performance	Multiple goals	Profit
Authority over work	Shared authority	Control over work
Control over structure	Legislative involvement	Internal control over structure
Personnel constraints	Civil service systems	Internal control
Equity and efficiency	Need for trade-offs	Efficiency major
Processes	Open	Closed
Role of press and media	Open access	Closed access
Persuasion and direction	Multiple authorities	Straight-line authority
Coerciveness	Mandatory, formal	Informal
Implementation	Complex by design	Move to simplify
Complexity of objectives	Multiple and overlapping	Move to simplify
Bottom line	Not clear	Profit

Table 1-1: Differences Between Public and Private Management[33]

While there is an expectation of drastic differences in budgeting between the public and private sectors, the reality may seem quite different especially since forecasting in both sectors occurs through similar methods such as the use of national and regional economic

[31] Appleby, P. (1973). "Government is Different." *Big Democracy*. New York, NY: Knopf.
[32] Radin, Beryl A. (2012). *Federal Management Reform in a World of Contradictions*. (Washington, DC: Georgetown University Press). pp.47-48.
[33] Radin (2012), p.40.

data. This is further convoluted, knowing that private corporations have adopted Corporate Performance Management standards that are based on the planning methodologies of public performance- based budgeting models. However, the "public" nature of public budgeting produces notable considerations versus the private sector regardless of shared methodologies. Brogan effectively states that the major differences between public and private budgeting are that public budgets are open to public debate and scrutiny, are influenced by special interest groups and politicians, are eventually enacted into law, are bound by specific rules (balanced budget, rainy day provisions, expenditure ceilings), and are subject to competing forecasts from other branches of government.[34] These considerations will overshadow public methodologies indefinitely and also show an additional layer of complexity in situations of unilateral executive action and the effects of citizen and special interest response.

1.7 The Growth and Power of the Executive in Budgeting and Implementing Policies

This leads further into the topic of power exercised through our elected officials, primarily the United States presidency. As earlier prefaced, the growth of the administrative presidency and the extension of executive powers throughout multiple areas of government is a significant concern to every policy genre especially for considerations of budget allocation, performance efficiency, measurement, and management. In observing power influence, it is fair to say that there is a continued focus on the abuse of those powers. Finer (1941) states that the abuse of power shows in three separate ways: nonfeasance,

[34] Brogan (2014), p.11.

malfeasance, or over feasance.[35] While the indicators of power abuse are evident in countless examples, the nature of where power is allocated and where the influences come from are of greater concern. The concept of an administrative presidency as stated by Thompson (2012) is the presidential ability to shape allocations to federal programs through executive action rather than the traditional legislative process.[36]

The nature of power in public organizations and budgeting is complicated given the structural influences of our government as there are three distinct disciplines for management: the managerial, political, and legislative approaches.[37] The managerial approach relies on an ideal structure that relies on hierarchical power and effective coordination with properly assigned functions, a merit-based system, and formal operating procedures. This view also follows a more impersonal view of individuals coming into direct conflict with social approaches to organizational theory. The political approach relies heavily on representativeness, responsiveness, and accountability from the lens of social influence. This approach views the individual as part of the aggregate group and relies heavily on the representative interests and collectivization. The legal approach relies on procedural due process, individual rights, and equity, concepts which have variable interpretations based on situation. This approach views the individual as a unique person with a unique set of circumstances introducing new criteria for decision-making.[38] And what makes public administrators different from their private sector counterparts is that

[35] Finer, H.J. (1941). "Administrative Responsibility in Democratic Government." *Public Administration Review, 1(4),* pp.335–350.
[36] Thompson, F.J. (2012). "The Rise of Executive Federalism: Implications for the Picket Fence and IGM." *The American Review of Public Administration,* 43(3).
[37] Rosenbloom, David H. (1983). "Public Administration Theory and the Separation of Power." Public Administration Review, 43(3), (May-June 1983). pp.219-217.
[38] Rosenbloom (1983), pp.219–227.

they must be well-versed in each of these approaches. They must understand that each complements a specific separation of powers function and guides decision-making accordingly.

Woodrow Wilson presented the idea of an overhead democracy in which bureaucrats are subordinate to public officials twenty-five years before he was president.[39] In this structure politicians, elected and selected by the people, set goals and agendas while administrators focus on implementation and delivery through their respective federal agencies. This is an idea that still garners significant support though there are differences in where the political powers may lie, with the president or though Congressional oversight of critical functions. While the American Framers established Congress to represent the people, in either course, there is uncertainty as to how much control or influence the people truly have over elected officials to balance the bureaucracy for the greater good. The legislature still exerts controls on bureaucratic power by passing laws on activities, limiting actions, affecting design (setting procedures, delimiting tasks, and responsibilities), denying resource allocations through budgeting, and using a consultative process (functioning similar to the veto[40]) to influence administrative action.[41] As previously discussed, the APA and supporting acts of 1946 helped Congress to reframe the narrative of administration with agencies being legislatively-centered and creating a publicly open format for commentary and debate on proposed regulations, reducing the influence of

[39] Meier, K.J. (2000). *Politics and the Bureaucracy: Policymaking in the Fourth Branch of Government.* (New York, NY: Harcourt). p.123.
[40] Note: The Supreme Court declared some forms of legislative veto were declared unconstitutional at the federal level
[41] Meier (2000), p.125.

agencies in self-governance, and rebalancing the power structure of the remaining branches of government.[42]

From the judicial standpoint, courts can employ mechanisms to limit bureaucratic power through the interpretation of laws deeming executive, legislative, and bureaucratic actions void if they undermine the rule of law. In addition, while courts have been helpful in policy-making decisions they have come under scrutiny for the harsh intervention at state and local levels and for complicating the administrative process. Lowi (1969)[43] argues that courts are ineffective in controlling administrative action and have aided the legislative branch in leveraging power against bureaucratic institutions. This coupled with the excessive costs of litigation make it evident that these controls are inefficient. Rosenbloom (2015) presents the view of courts as "essential to subordinating administrative action to the rule of law" though the scope and scale of those actions are convoluted, and complex given existing legal doctrines that have been created over time to define those parameters.[44] The process of judicial review occurs within the court system at federal and state levels with a division of labor among trial, appellate, and specialized courts. District courts can rule on legality of administrative actions, can remand cases for clarification, issue temporary restraining orders on an activity until final decision, or dismiss a suit for lacking a legitimate federal legal question.[45] Appeals, organized by circuits, serve as a check for district courts and a deciding factor in the affirmation of a decision or remanding it back to the district court for further clarification. The Supreme Court hears cases from the lower

[42] Rosenbloom (2000). p.144.
[43] Lowi, Theodore J. (1969). *The End of Liberalism.* (New York, NY: Norton).
[44] Rosenbloom, David H. (2015). *Administrative Law for Public Managers, 2nd Edition.* (Boulder, CO: Westview Press). p.153.
[45] Rosenbloom (2015), p.155.

courts, mainly from appeals, and possesses "original jurisdiction" for trials.[46] The Supreme Court justices are appointed by the president with confirmation of the Senate with constitutional power derived from Article III. The opinions of the court set precedents for subsequent cases making this a critical consideration in high profile action in the courts, tough they are not self-enforcing rules.[47] Overall, the judicial review process is enabled when a resolution of legality is required, and all administrative remedies are exhausted by interested parties. The scope and depth of those reviews is a point of debate due to the variability and episodic nature of these cases. Legislative review is a more continuous process occurring when the legislature is in session to discuss a large scope of administrative concerns. The Legislative Reorganization Act of 1946 empowers Congress to a standard of "continuous watchfulness" resulting in constant audit of agency functions. The Regulatory Enforcement Fairness Act of 1996 (or Congressional Review Act) establishes major or ordinary reviews based on economic impact.[48]

As for presidential control of the bureaucracy, Article II, Section 1 of the United States Constitution details the executive power of the president. Yet other provisions intend to either minimize or share this power with Congress, resulting in congressional control of certain appointment functions. This is also evident in Congress' ability to override resource appropriations and vetoes and the Senate's role in confirming presidential appointees. Of consideration in the matter of appointments and authority, is the role and powers of the Senate. Rohr (1986) discusses the executive establishment with a clear understanding of the role of the Senate as being part of the legislative branch, "the checking branch" of the

[46] Rosenbloom (2015), p.157.
[47] Rosenbloom (2015), p.158.
[48] Rosenbloom (2015), pp.182-184.

House with special consideration for the executive, "an integral part of the constitutional plan."[49] While the House is deemed as the legislative authority and the President as the executive, some Anti-Federalists during the framing of the constitution feared the Senate's power would overwhelm the president or act as a poor substitute for a true executive council to the President with additional concerns about term duration, being a continuing body, and the nomination and appointment process.[50] According to evidence provided by Rohr, it is clear that the current Senate does not resemble the institution that was envisioned by Federalists or Anti-Federalists in the 1787 debates supporting the argument that "there are aspects of the administrative state that roughly fulfill the vision of the framers – today's Administrative State is fair game for criticism, but not on the grounds of constitutional legitimacy."[51]

While there are inconsistencies that are prevalent in society that make this type of relationship more complicated, many believe that executive management is the most effective and efficient means for driving performance across the bureaucracy. Whereas historically, many viewed the president and bureaucracy as being a singular entity, the massive scope and size of bureaucratic organizations has created a new environmental culture. One in which the president is "more of an outsider than a fellow bureaucrat"[52] regardless of his hierarchical rank. Even still, the president's visibility above Congress allows for additional powers through popular control that enable influence over public organizations and affect how they deliver to the greater good.

[49] Rohr, J.A. (1986), p.30.
[50] Rohr, J.A. (1986), pp.33-37.
[51] Rohr, J.A. (1986), p.39.
[52] Meier (2000), p.143.

How is the extent of presidential power measured beyond that of normal organizational actors? A method encouraged by Gamson (1968)[53] is based on measuring the determinants of power a specific actor may possess.[54] This process is skewed by the knowledge or competence an actor may possess and whether they recognize they have influence over a specific determinant or not. There are certain functions within an organization where the subject of power has importance. The focus shifts to the importance of resource allocation and scarcity in justifying and legitimating power of social actors. In discussing resource allocation, it would be remiss to not address the politics of budgeting within an organization. According to Cyert and March (1963)[55], the budget is the outcome of the collective bargaining process for setting priorities within an organization. Wildavsky (1968)[56] believes that budgets are inherent attempts to allocate resources through political processes. The budget is a vital component of organizational activity planning but more so is critical for determining the merit-based reward system of organizational careers.

Traditionally, the legitimacy of an organization has been based on the belief that career progression is merit-based and non-political. This notion has been continuously challenged at various points in history looking at presidential administrations such as Jackson, Reagan, and Trump and enables a slightly different view of the effect of executive decisioning and influence on organizational management. Nonetheless, the manner of succession of actors within executive roles is also of critical concern, as they bear symbolic importance resulting in significant consequences for organization structure and decision-

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[53] Gamson, W.A. (1964). "Experimental Studies of Coalition Formation." In *Advances in Experimental Social Psychology, Vol. 1,* ed. Leonard Berkowitz, pp.81-110. New York: Academic Press.
[54] Pfeffer, J. (1981). *Power in Organizations*. (Boston, MA: Pitman Publishing). p.48.
[55] Cyert, R.M., & March, J.G. (1963). *A Behavioral Theory of the Firm.* (Englewood Cliffs, NJ: Prentice-Hall).
[56] Wildavsky, A. (1968). "Budgeting as a Political Process." *The International Encyclopedia of the Social Sciences, 2ed.* (New York: Crowell, Collier and Macmillan). pp.192-199.

making. Power can be attributed to the current organizational structure. In a large organization with numerous subunits or departments, differentiation provides visibility and recognition for a horizontal unit within an organization. In all organizations, the level of centralized governance, or concentration of authority and decision-making, is a critical variable as well. As power is often predicated on access to information, the ability to access information systems with detailed data for analysis, is an important variable though it is important to note that power is about the control of this information leading to a host of issues with the use of these systems. The power of organizational actors is largely shaped by their ability to alter or control perceptions through their communication network. Freeman (1979) refers to an actor's location in the communication structure as betweenness, connectedness, and closeness.[57] It is arguable that the President has an enhanced ability (beyond individual agency actors) to alter, control, and frame perceptions thereby having a direct effect on not only actual, but perceived performance. The ensuing literature review intends to show that this occurs through contemporary federal budgeting practices.

Regardless of views on unilateral action or federal budgeting standards, the underlying critical concern remains as to what the implications of these actions are for policy creation, implementation, and effectiveness. The positioning of political actors and special interest groups throughout the end-to-end process of policymaking is equally important to the unilateral executive action coming from the president. The ceremonial nature of centralizing power within the executive does not guarantee policy success nor does it guarantee higher prioritization. Special consideration should be given, not only to

[57] Freeman, L.C. (1979). "Centrality in Social Networks: Conceptual Clarifications." *Social Networks, 1:* pp.215-239.

the unilateral efforts to push agendas for growth or deprecation of specific policy genres, but also the processes by which actions may affect subsequent and persistent outcomes.

1.8 Research Questions

The primary inquiry of this study asks the question "does the unilateral presidency have an effect on the federal budgeting process that results in an impact to environmental policy?" The following sub-questions will also be of consideration:

1) Are there significant punctuations in the historical Federal budget outlays for the EPA?
2) Are the punctuations in EPA appropriations comparably more significant than those for similar agencies (the Department of Agriculture, the Department of the Interior, and the Department of Energy)?
3) Is there a relationship between agency outlays and the issuance of specific executive orders?
4) Is there a relationship between agency outlays and presidential party affiliation?
5) Is there an emerging best practice understanding of this phenomenon that can be applied to other policy types?
6) What are the implications of a unilateral president in a separation of powers system of government?

1.9 Target Audience & Significance of Study

This study will be of interest to both researchers and practitioners of public administration and will advance knowledge of the effects of the administrative presidency

on federal budgeting and resulting implications for environmental policy. This study will identify trends and behaviors that may be applicable across various policy types and begin a deeper discussion about current government administrative tools, the necessity and relevance of legislative processes, and the impact of unilateral actions on policy efficacy.

While many scholars debate that changes in the budget are overwhelmingly incremental, there is an overwhelming gap in analyzing the depth of those changes and their significance within specific policy types and in relation to other policy types in the total federal budget. The message in budget allocations also gets misconstrued when focus goes entirely into the implementing agency. While the Environmental Protection Agency (EPA) is itemized in the budget, the EPA is not the sole owner or sole implementing agency for the entire Natural Resources and Environment function spend that is allotted within the federal budget. By understanding the changes at both dimensions, researchers and practitioners can study the significance of changes both quantitatively and qualitatively despite the incremental presentation of budget values. This analysis focuses on a holistic comparison of actual budget allocations by agency and explains preliminary trends and observations from a qualitative perspective that can help to understand the underlying phenomena associated with budgeting changes in environmental policy. This analysis will surface evidence to support the notion that unilateral actions of an administrative presidency and party affiliation all have direct impacts resulting in outlays punctuation within the federal budget.

Though the role of the administrative presidency within the policy environment is evident, there is a necessity to understand how influence is exercised on the budgeting process at time of proposal and by way of budget amendments or unilateral budget shifts

after the proposed budgets are approved by Congress. Proposed allocations are incredibly important as they allow implementing agencies to plan more effectively for the ensuing year. While changes in the proposed allocations are noted during planning cycles with holistic allocation reasoning explained within the budget documents, the actuals are the final indicator for all actions and behaviors that occurred during the fiscal year.

It is expected, data will show the impact that unilateral actions may have on budget outlays, and further examining the basis for statistically significant punctuations in budget data will warrant a more direct answer to the question of whether these changes are more significant for the EPA versus other and agencies. This study will focus on identifying which variables impacting outlays are statistically significant and identify if changes are significant in relation to agencies that share in environmental responsibilities. The scope of this analysis is to view holistic changes across annual fiscal year budgets and determine if unilateral actions of an administrative presidency were the primary cause of those punctuated differences and if so, to understand the nature of why those actions were utilized.

This study will add to the literature of the administrative presidency by: (1) determining if political party affiliation has a relationship to changes in budget outlays, (2) determining if unilateral action (by executive order) has a relationship to changes in budget outlays, (3) providing an understanding of the motivations and prominence of unilateral actions within environmental policy, (4) identifying the shared history between federal agencies and understanding how shares mechanisms still exist in regulation, and (5) outlining transferrable themes and best practices that enables a deeper examination of this phenomenon across other policy types.

2 LITERATURE REVIEW

2.1 The Powers of the President and the Unilateral Presidency

The body of work referenced in this literature review for the unilateral presidency is best understood by first recognizing the existing powers of the U.S. presidency. The first important consideration is that the administrative presidency and the strategy of leveraging unilateral actions are not inherently illegal or unconstitutional. At times, these actions are perceived to push the boundaries of what the executive office is empowered to conduct legally, by virtue of the constitution or other regulatory conventions or precedents. Theoretically, the major point of a separation of powers government is to avoid a concentration of power within any specific branch of government, thus avoiding a president who uses his executive authority to make unilateral action. Practically, the government has been in a perpetual administrative state marked by increased partisan conflict and administrative scrutiny.

While many may challenge certain executive actions as an overextension of the powers afforded to the office, there are others who subscribe to the unitary executive theory that "posits that the president has sole responsibility for the control and maintenance of the executive branch."[58] This conservative theory would see the president as the chief executive officer responsible for all undertakings of the executive branch and therefore be empowered with the ultimate discretion to hire, fire, and reorganize at will. The theory extends to budgeting as well since the president is constitutionally empowered to approve spending limits and follow a deferral and recession process to affect spending across the

[58] Waterman, R.W. (2009). "The Administrative Presidency, Unilateral Power, and the Unitary Executive Theory." *Presidential Studies Quarterly 39, no. 1,* p.6.

bureaucracy. While this and other theories subscribe to the notion of broad-stroke, centralized executive action, they neglect the constitutional powers allocated to Congress and courts within the executive branch and attempt to delegitimize the legislative oversight and compliance with congressional requests. Theories as such may seem a bit extremist given that earlier views of the administrative presidency strategy aligned with the need for better responsiveness to critical bureaucratic issues, not absolute control, and dominance.

Moreover, there is significant criticism in public administration literature of unitary executive authority. More recent criticisms center around President George W. Bush's Administration and the War on Terror, as many argue this period marked the last true bipartisanship this nation has seen. The administration was characterized by broad stroke executive orders, unilateral actions, and political influence by the administration due in part to reactionary actions post-September 11th, but resulting in greater government control under the veil of national security and an attempt to bolster strength in a new vision for the Republican party through a series of executive influences and grassroots efforts.[59] Reform plans from the Bush Administration sought to collect more power in the executive branch through formal legal changes and overextension of politicization powers.[60] Rife with failures of political appointees in major events such as Hurricane Katrina and the occupation of Iraq, the Bush Administration was seen as less effective versus career bureaucrats. Conflict resulting from this overbearing executive management were not limited solely to partisan conflicts in Congress or federal agencies, but also at the state

[59] Milkis, Sidney M. and Jesse H. Rhodes (2007). "George W. Bush, the Republican Party, and the 'New' American Party System." *American Political Science Association, vol.5, No.3 (September 2007). pp.461-488.*

[60] Moynihan, Donald P. and Alasdair S. Roberts (2010). "The Triumph of Loyalty Over Competence: The Bush Administration and the Exhaustion of the Politicized Presidency." *Public Administration Review, vol.70, no.4 (July/August 2010). pp.572-581.*

level as unmet promises of cooperative federalism resulted in pushback from states seeking support for climate and environmental policy as are addressed in greater detail later.[61]

Within the following seminal public administration and unilateral presidency works, presidential powers are explained through a series of emergent categories that not only reflect the historical insights but more importantly the processes and means by which a president can exercise their power. These categories are organizational powers and politicization, powers of command and leadership, limitations of presidential power, performance measurement, and budgeting. All these categories can help create a lens to analyze the impact of a presidency across policy genres and can also be used as a baseline for better comprehending the phenomenon of the unilateral presidency.

Organizational Powers and Politicization

The organizational powers of the presidency refer to politicization through appointments and staff control as well as reorganizations and are two distinct tools of the administrative presidency. Seyb (1994) discusses the strengths of using both personnel and procedural changes along with comprehensive reorganization to achieve administrative reform. He also alludes to reorganizations as being a symbolic exercise to reinforce social values more so than a means to secure a political agenda.[62] The basic tenet for wielding power through this function is to appoint line officials and staff that can influence behavior and drive decisioning toward the president's political philosophy or agenda. In his work,

[61] Rabe, B. (2007). "Environmental Policy and the Bush Era: The Collision between the Administrative Presidency and State Experimentation." *Publius, 37(3),* pp.413-431.
[62] Seyb, R. (1994). "The Death and Rebirth of Reorganization Planning: Symbolic Action, Divided Government, and Orthodox Administrative Theory's Enduring Appeal." *Presidential Studies Quarterly, 24(4),* pp.725-744.

Arnold (1981) speaks of executive reorganization as having two primary goals: to economize by changing or eliminating organizations, and to provide expanded tools to control agencies.[63] Politicization is one of those expanded tools that enables presidents to wield, what at times seems to be, absolute power and discretion across various agencies. Aberbach and Rockman (2009) outline the known and unknowns of the political appointment process drawing attention to the idea that a president has more opportunities to appoint than they have people to fill the roles. Various appointments do not require Senate confirmation however higher-level appointments within controversial agencies, coupled with an increasing legal and ethical environment, has led to growing political polarization.[64]

Of critical consideration in the discussion for organizational management is Luther Gulick's Span of Control theory that argues organizational relationships between leaders and subordinates are structured by the span of control.[65] Within organizations, hierarchical design determines the number of levels and thr transaction costs associated with accomplishment of priorities. More complex organizations with convoluted leadership and accountability lines, have difficulty in finding support, consensus, and collaboration to meet greater organizational priorities and missions. A wide or narrow span of control is determined by whether a manager oversees many or fewer subordinates. Gulick prescribes that the focus in span of control should be on[66]:

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[63] Arnold, P. (1981). "Executive Reorganization & the Origins of the Managerial Presidency." *Polity, 13*(4), 568-599. doi:10.2307/3234641

[64] Aberbach, J., & Rockman, B. (2009). "The Appointments Process and the Administrative Presidency." *Presidential Studies Quarterly, 39*(1), pp.38-59. Retrieved March 28, 2020, from www.jstor.org/stable/23044874

[65] Gulick, Luther (1937). "Notes on the Theory of Organization." In *Papers on the Science of Administration*, edited by Luther Gulick and Lydal Urwick. (New York: Institute of Public Administration, Columbia University).

[66] Gulick (1937), p.7

- (1) diversification of function – combining diverse functions increases span of control because a manager would need to interact with different type of workers, larger span of control occurs when subordinates are performing the same tasks on a routinized basis
- (2) time and stability – managers do not have to train or oversee workers in a mature organization as routinization and stabilization occurs over time enabling larger span of control
- (3) size and space – space and distance increase transaction costs within large organizations and might result in more supervision.

As influential to organizational management as POSDCORB, the span of control establishes a framework for understand the nature of control within management hierarchy and provides observations on management regardless of whether the organization follows an executive top-down approach or a bottom-up approach. In Meier and Bohte's defense of Gulick's Span of Control, they discuss the practical application of the theory including fewer administrators are needed in larger spans of control, spans of control affect manager styles and relations, and spans of control within organizations are not uniform and change at certain points.[67]

President Reagan used this strategy successfully to deregulate major organizations such as OSHA, the EPA, the FTC, and the CPSC which had gained considerable regulatory strength during President Jimmy Carter's administration. His success was not only attributed to his appointments but also to the discipline of prioritization which included personnel recruitment, cabinet secretaries given less discretion, and lastly key strategic

[67] Meier, Kenneth J. and John Bohte (2003). "Span of Control and Public Organizations: Implementing Luther Gulick's Research Design." *Public Administration Review, 63(1): 61-70.*

subcabinet and bureau chief positions were left vacant. Given the harshness of Reagan's budget cuts evident during his administration, the strategy of leaving these critical positions vacant was critical in assuring that political opposition in the face of the budget cuts would be minimized as there was no one in the post to organize opposition.[68] It is important to note that Reagan's administration was also seen as an attack toward civil servants, and Congress pushed back and delayed many of his appointments. Some of Reagan's appointees such as his surgeon general Charles E. Koop even changed their views and yielded to the influence of their respective bureaucracies. Long (1949) discusses this nuanced behavior in speaking about the political expendability of subordinates and the fact that "loyalties to programs or to groups and personal pride and interest frequently conflict with whole-souled devotion to the presidency."[69]

Also, within the scope of these powers is the use of reorganization to adjust bureaucratic power. An example of this was President Richard Nixon granting the National Cancer Institute independence and privileges that other bureaus within the National Institutes of Health (NIH) were not permitted. There are other examples in which reorganization is used to handicap a program as evidenced in Reagan's administration with moving pesticide regulation back to the Department of Agriculture (USDA) rather than the EPA, limiting the EPAs ability to regulate its actions.[70] Regardless of the seemingly extreme actions of the Reagan administration, it is an excellent illustration of an administrative presidency in the use of strategy and comprehensiveness. As Durant (1987) posited in his work, "A more fruitful approach to executive leadership would effectively

[68] Meier (2000), p.145.
[69] Long, N.E. (1949). "Power and Administration." *Public Administration Review*. *Autumn*. p.263.
[70] Meier (2000), p.148.

link the administrative presidency with a 'backward mapping' implementation strategy" alluding to the strategic choices made by Reagan's appointees that were not linked well to the President's policy agenda.[71]

In further allusion to political responsiveness in an administrative presidency, Aberback & Rockman (2000) state that a goal of the administrative presidency is to limit civil servant access to key decisionmakers if there was fear of civil servants "acting in their own interests or in the defense of the interests of their programs" with supporting evidence that the Regan Administration was very successful in influencing contact levels compared to earlier years.[72] The strategy for control in an administrative presidency is to micromanage through specific details in policy implementation. In parallel to this behavior is the perceptions of being the "other" within the political appointee and civil servant relationship. While an administrative presidency may attempt to drive unilateral action through all avenues, bureaucratic resistance is a common occurrence which could result in the success or failure of a particular initiative. Political appointees are charged with pursuing and implementing these executive mandates in what often can be a hostile environment. The hostile atmosphere of the Reagan administration, even saw political appointees, originally charged to confront the bureaucracy, end up venerate and extoll the bureaucracy and the career servants for their hard work, subject matter expertise, and in carrying out the administration initiatives and policies.[73]

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[71] Durant, R. (1987). "Toward Assessing the Administrative Presidency: Public Lands, the BLM, and the Reagan Administration." *Public Administration Review, 47*(2), pp.180-189.
[72] Aberbach, Joel D. and Bert A. Rockman (2000*). In the Web of Politics: Three Decades of the U.S. Federal Executive*. (Washington, DC. Brookings Institution Press). pp.114-116.
[73] Aberbach, J.D. and Bert A. Rockman (2000*),* pp.119-123.

In discussing the administrative presidency, Derthick (1990) views budgeting and appointments as being the primary tools for the assertion of presidential power resulting in two consistent themes where the president's control of the budgetary process conflicts with a policymaking presidency's need to innovate and use of appointments destabilizes agency leadership.[74] In their study of seven different agencies, Wood and Waterman (1991) found that powers of political appointment were extremely important in the dynamic of institutional control and were represented by immediate shifts in agency outputs.[75] It was also evident through this study that executive control is greater in agencies that have greater centralization. Kogan (2017) draws attention to the impact centralization has on agency responsiveness and suggests that administrative centralization is only a partial mechanism for limiting political discretion.[76]

Referring back to Kaufman (1969), it is important to note that conversely, decentralization also has its inherent risks as it results in disparities in practice, will conflict with organizational goals, and will result in competition and conflict among subunits for resources and decision-making authority.[77] Lowande (2019) illustrates this further in the results of his study that indicate bureaucratic responsiveness changes in the face of increased politicization.[78] This results in less responsiveness to Congress and increases in responsiveness to the president. Interestingly, Palus and Yackee (2016) note in their study

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[74] Derthick, M. (1990). *Agency Under Stress: The Social Security Administration in Government*. (Washington, DC: The Brookings Institution). p.118.
[75] Wood, B.D., & Waterman, R.W. (1991). "The Dynamic of Political Control of the Bureaucracy." *The American Political Science Review, 85(3),* p.822.
[76] Kogan, V. (2017). "Administrative Centralization and Bureaucratic Responsiveness: Evidence from the Food Stamp Program." *Journal of Public Administration Research and Theory, 22.* pp.629-646.
[77] Kaufman, H. (1969). "Administrative Decentralization and Political Power." *Public Administration Review, 29(1),* pp.3–15.
[78] Lowande, K. (2019). "Politicization and Responsiveness in Executive Agencies," *Journal of Politics 81(1),* pp.36-37.

that agency heads felt more constrained when their partisanship matched that of the president or their political principals resulting in an "anti-ally principle" at work within organizations.[79] This ultimately works to constrain administrators from creating policy as they conform to roles of partisanship and give up their autonomy to align with political principals.

In terms of agency management and the impact of politicization, Lewis's work suggests the measure of politicization operates on four primary assumptions: (1) presidents care about politics, (2) presidents prefer competent agencies, (3) agency views can be altered by presidential appointees, and (4) agencies with a higher percentage of appointees have less competence than those with less.[80] Politicization can be used as a strategy or as a response and is characteristic of many behaviors. Presidents are more likely to politicize an agency that has differing policy views which will enable influence to sway the agenda. Overall, an agencies competence is extremely sensitive to politicization unless the appointee is a subject matter expert. In instances where there are divergent views between the president and Congress, there is less of a desire to politicize by Congress. Moreover, patronage appointees are likely to increase in agencies that have similar views to the president. Though the powers of politicization are limited by number and can also be limited by Congress based on expenses, appointees can have varying impacts based on their influence and competence. Miller and Whitford (2016) also bring to light the idea that certain agencies maintain their policy persistence despite political influence as in the case of financial organizations like the Fed, NLRB, the SEC, FHLBB, and the FDIC that pushed

[79] Palus, C., & Yackee, S. (2016). "Clerks or Kings? Partisan Alignment and Delegation to the US Bureaucracy." *Journal of Public Administration Research & Theory, 26(4).* p.701.
[80] Lewis, D.E. (2008). *The Politics of Presidential Appointments: Political Control and Bureaucratic Performance.* Princeton, NJ: Princeton University Press.

back on political influence and politicization post-Great Depression resulting in fewer constraints to the benefit of the finance industry.[81] This shows the variable effects of internal bureaucratic power structures against politicization.

Moreover, Newland (1987) compares the presidency to that of imperial or sacerdotal qualities, mainly the preoccupation with image at the cost of civic purpose, and as the presidency continues to build power in this environment of high-cost politics, it becomes the "mechanisms of political exchange through which special interests operate with little regard for the general good."[82] Conversely, Lewis (2008) contends that scholars should revisit the broad based assumption that the administrative presidency is solely about enhancing political control and instead recognize that it can be driven by patronage concerns.[83] Durant (1990) offers a contingency approach to bridge the gap between political appointees and agency careerists by focusing on the normative values of the public service model. This model can still be applied to modern politics and places further emphasis on celebrating heterogeneity, recognizing which roles can tackle each problem, and taking dynamic approaches to managing the agency.[84]

From a theoretical perspective, Bertelli and Feldmann (2006), to follow the line toward an institutional theory of the presidency, developed an institutional spatial theory of presidential appointment. They find overall that a president is better served in leveraging appointments that offset the influence of organized interests.[85] Lewis (2009) further

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[81] Miller, G.J., & Whitford, A.B. (2016). *Above Politics: Bureaucratic Discretion and Credible Commitment*. (New York, NY: Cambridge University Press).
[82] Newland, C. (1987). "Public Executives: Imperium, Sacerdotium, Collegium? Bicentennial Leadership Challenges." *Public Administration Review, 47*(1), pp.45-56.
[83] Lewis (2008).
[84] Durant, R. (1990). "Beyond Fear or Favor: Appointee-Careerist Relations in the Post-Reagan Era." *Public Administration Review, 50*(3), pp.319-331.
[85] Bertelli, A., & Feldmann, S. (2007). "Strategic Appointments." *Journal of Public Administration Research and Theory: J-PART, 17*(1), pp.19-38.

illustrates the nature of politicization and differing management processes required for making appointments based on patronage, or placing people, versus policy, or filling positions.[86] This reveals various implications for unilaterally influenced policy outcomes, based on recruitment of appointees, administrative authority, personnel resourcing, representativeness, and performance incentives.

Powers of Command and Leadership

The powers of command are critical to understand especially considering the current political climate. The use of executive orders and proclamations influence the force of law and in many instances a president can attempt to reverse administrative decisions. Examples of the use of these powers are evident in every presidential administration. Nathan (1986) expounds upon executive management and provides excellent examples of administrative impact.[87] FDR appointed a Committee on Administrative Management in 1936 headed by Louis Brownlow which emphasized the need for a stronger executive presence within the democracy. This resulted in the creation of the Executive Office of the President, an action which has provided management tools that are still relevant in the modern presidency. President Herbert Hoover's Commission on the Organization of the Executive Branch of Government echoed similar sentiments to the Brownlow Report. In 1947, President Harry S. Truman convened the commission which issues a report in 1949 stressing accountability in the context of the classical management approach encouraged in the Final Report of the President's Committee on Administrative Management (1937).

[86] Lewis, D. (2009). "Revisiting the Administrative Presidency: Policy, Patronage, and Agency Competence." *Presidential Studies Quarterly, 39(1)*, p.65.
[87] Nathan (1986).

The push for a "clear line of command from top to bottom" became the focus of administrative actions as the presidency sought to align executive power across the government. Most presidents have appointed a similar committee including President Lyndon B. Johnson which operated this committee in secret.

The Nixon Administration was known for making sound decisions that were consistent with acceptable administrative practices including the formation of regional councils, delegation of federal powers, use of unconditional grants, broader categories for functional grants, strengthen of budgeting agencies, consolidation of activities, restructuring postal activities, and formation of the Federal Executive Service. The administration was also known for questionable, if not abusive, practices in the face of the Watergate scandal including usurpation of policy and operational powers by the White House, enormous staff growth with tight hierarchy, by-passing of departments and agencies (specifically for international and defense matters), lack of transparency in White House activities, extensive use of veto power and impoundments, and use of unconfirmed intermediaries and aids to facilitate communication between the president and agency heads.[88]

The unfortunate impact of the Watergate scandal resulted in relatively weak executive control for President Gerald R. Ford who had to contend with a strong public distrust of the presidential office and President Jimmy Carter who was elected due to his management expertise but failed to deliver effectively as president. Even still, Carter created the Civil Service Reform Act of 1978 that strengthened politicization at the top

[88] Mosher, F.C., United States., & National Academy of Public Administration. (1974). *Watergate: Implications for Responsible Government: a special report at the request of the Senate Select Committee on Presidential Campaign Activities.* (New York: Basic Books.)

layer of the career service and granted to ability to move, remove, or appoint these professionals at liberty. This was aggressively leveraged by the Reagan administration.[89] The executive strength of the Reagan Administration has been previously discussed and his apparent success with deregulation can be attributed to his use of Executive Order 12291 which required a cost-benefit analysis for all major regulations conducted by the Office of Management and Budget (OMB), that consequently went on to change any regulation that was contrary to the president's agenda. For better or worse, this administration characterized a stronger push for centralization around the executive powers of the president. In many ways, the Reagan administration set a precedence for new extremes of tighter control of the federal bureaucracy that would be seen in George W. Bush's administration, which many view as an exhaustion of the politicized presidency which challenges the existence of objective standards for appointments and saw gross extensions of influence over such things as scientific knowledge produced by agencies.[90]

While it may go without stating, the impact of presidential command and administrative tools, may deeply affect some policy arenas more than others. Mashaw (2007) draws attention as far back as the Jeffersonian Republican era in which even contemporary issues of administrative law were still in focus such as policy implementation, presidential versus congressional powers, judicial review, etc.[91] The administrative presidency is often viewed as a vehicle for adopting new interpretations of existing statutes and policies to further policy agendas without following the standard

[89] Nathan (1986), p.6.
[90] Moynihan & Roberts (2010), p.577.
[91] Mashaw, J. (2007). "Reluctant Nationalists: Federal Administration and Administrative Law in the Republican Era, 1801-1829." *The Yale Law Journal, 116*(8), pp.1636-1740.

legislative process.[92] Durant (2009) refers to the advancement of presidential policy agendas through the administrative powers of appointees and the various lessons they should recognize.[93] As a representative example, health care reform for many years has been a topic of increased debate. Thompson (2013) discusses the "deep-seated partisan polarization" that creates significant challenges for implementing health care reform.[94] He contends that the Affordable Care Act, is representative of the continued rise of executive branch discretion and indicated the nature of discretion that is pushed into the hands of the Presidency. What makes this scenario interesting is that the broadness of rule interpretation permits a host of interest groups and stakeholders to reshape rules. Thompson expected that likely the largest use of executive discretion would be to grant states waivers from the provisions of the ACA, an action observed during the Trump administration. The use of executive power to drive policy change is not always detrimental as Rudalevige (2009) discusses, future research should consider the various conditions under which administrative power can effectively do so.[95]

Where some administrations are more aggressive in exercising executive power, recent trends indicate that the average annual number of executive orders is consistent and signaling projected growth particularly within the Trump Administration (117 executive orders between 2017 and July 2019). While the Reagan presidency issued 381 executive orders, the Clinton administration is a close second at 364, with other administrations

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[92] Luton, L. (2009). "Administrative "Interpretation" as Policymaking: An Abuse of Discretion by Presidential Administrations." *Administrative Theory & Praxis, 31*(4), pp.556-576.
[93] Durant, R. (2009). "Getting Dirty-Minded: Implementing Presidential Policy Agendas Administratively." *Public Administration Review, 69*(4), pp.569-585.
[94] Thompson, F. (2013). "Introduction: Health Reform, Polarization, and Public Administration." *Public Administration Review, 73*, pp.S3-S12.
[95] Rudalevige, A. (2009). "The Administrative Presidency and Bureaucratic Control: Implementing a Research Agenda." *Presidential Studies Quarterly, 39*(1), pp.10-24.

showing less assertion of executive power through executive order (George H.W. Bush – 166, George W. Bush – 291, Barack Obama – 276).[96] While this use of presidential power may seem haphazard and concerning, Neustadt (1960), while arguing that a president is weak due to the inability to accomplish goals on his own due to the scope of work, provides a framework of conditions for the obedience of an issued presidential order. This includes unambiguous presidential involvement, clear orders and expectations, widespread publicity to negate disobedience, sufficient resources to conduct orders, and actors must not doubt presidential authority in the matter.[97] This refers to a recurring theme on power and the personal characteristics of the political actor. In this case the president must be persuasive and convincing to avoid resistance and conflict also making it necessary to control the communications network and the framing of the issued order in a way that appeals to the emotion of the actors that are expected to implement it. This is where executive leadership skills become an important consideration in the effect power has on the bureaucracy. The president's ability to motivate policy makers, to gain support and advocacy from agencies and the public, and to effectively bargain for control are all critical in the relative success of the presidential mandate. An area for future research consideration is to differentiate between coordinated executive action versus unilateral presidential action regarding presidential-bureaucratic relations to better understand the true impact of presidential control over administration.[98] While the necessity of persuasion is an important skill in the powers of presidential command, Howell (2005) argues to the contrary of his

[96] Table 6-1: Source https://www.presidency.ucsb.edu/statistics/data/executive-orders
[97] Neustadt, R. (1960). *Presidential Power.* (New York, NY: Wiley).
[98] Krause, G. (2009). "Organizational Complexity and Coordination Dilemmas in U.S. Executive Politics." *Presidential Studies Quarterly, 39*(1), pp.74-88. Retrieved March 28, 2020, from www.jstor.org/stable/23044876.

peers that "the ability to move first and act alone, then, distinguishes unilateral actions from other sources of influence...for unilateral action is the virtual antithesis of persuasion."[99] He further contents that the president can set policy through executive order and "dare others to counter" thereby taking an educated chance on whether Congress will gain the two-thirds majority to overturn the action.

As inferred within these examples, the extent of executive discretion permeates beyond the federal level and has significant implications for state and local government especially though the unilateral action of waivers, congressionally approved tools used to enable states federal and regulatory flexibility in the face of implementation challenges. Gaining prevalence in the Reagan administration, waivers have been used not only for easing complications in implementations ("small waivers") but also for negotiation and alignment with new executive policy agendas ("big waivers").[100] Waiver usage for public welfare concerns was established by Public Law 103-432 in 1994 and saw a rise in their usage for education and health care. Popular examples include the reactivation of the Elementary and Secondary Education Act (ESEA) or No Child Left Behind Act, Medicaid waivers, and the Affordable Care Act. The varying specificity of waivers can create significant variation among states in terms of implementation success and accountability.

The use and success of waivers as a strategy, is also incredibly nuanced in times of partisan conflict. Thompson (2012) contends that the proliferation of waivers is an indication of Congress' concession of authority to the executive branch, thereby allowing significant variability at the agency level and at times drastic program transformations at

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[99] Howell, W. (2005). "Unilateral Powers: A Brief Overview," *Presidential Studies Quarterly 35, no.3*, p421.
[100] Saultz, A., McEachin, A., & Fusarelli, L. (2016). "Waivering as Governance: Federalism During the Obama Administration." *Educational Researcher, 45(6),* p.358.

the state level.[101] Thompson & Gusmano (2014) use the Affordable Care Act as an example for statewide cooperation in the implementation of the Act within an environment of "fractious federalism."[102] Their study showed that half of the states along with Washington, DC were moving forward with adoption of the Medicaid expansion while 23 states did not participate indicating that states primarily managed by Republicans were unwilling to participate. While state participation was meant to be voluntary to allow the Act to be passed, this illustrated the nature of state engagement and incentivization within a partisan atmosphere. Another example of state-level policy consideration stems from Rabe (2007) which discusses the Bush Administration that pledged to support environmental policy but tabled efforts in exchange to develop a more centralized oversight consistent with an administrative presidency. As a result of this shift, states took it upon themselves to pursue opportunities and challenge the federal government.[103]

To tie this back in to the administrative presidency, in a politically fractious environment, the tone of the presidency is a critical consideration as it can set the stage for bi-partisan collaboration and accomplishment. As referenced earlier, it can be argued that bipartisan collaboration at a larger scale has not been evident since before the events 11 September 2001. This further alludes to the notion that an administrative presidency focused on bridging the gap across the aisles may be more effective and may avoid the challenges of fractious federalism. In Doris Kearns Goodwin survey of leadership of Abraham Lincoln, Theodore Roosevelt, FDR, and Lyndon b. Johnson, she classifies each president according to their greatest leadership strengths being transformational leadership,

[101] Thompson (2012).
[102] Thompson, F., & Gusmano, M. (2014). "The Administrative Presidency and Fractious Federalism: The Case of Obamacare." *Publius, 44*(3), pp.426-450.
[103] Rabe (2007), p.423.

crisis management, turnaround leadership, and visionary leadership, respectively. She delves deeper into the qualities and actions that made them great leaders including:[104]

- acknowledgement of failures and demanding change in direction
- gather firsthand information
- anticipate challenges and criticism
- exhaust all compromise possibilities before using unilateral executive action
- assume full responsibility, shield colleagues, and share credit for wins
- transcend personal vendettas and do not hold grudges
- ambition for collective interest above self-interest
- calculating risks of action and involvement
- use history as a perspective
- be available, approachable, and visible - control anger and resentment
- assemble a crisis management team
- document plans for all actions considered and taken
- control the narrative across all mediums
- personal and professional balance to ease stress
- have alternative choices for every strategy
- restore confidence of the people
- create a shared purpose and direction and deliver in a simple message
- lead by example
- create lasting reforms that address systemic problems
- adapt to change and have flexibility in strategy for addressing new problems

[104] Kearns Goodwin, Doris (2018). *Leadership in Turbulent Times*. (New York, NY: Simon & Schuster). pp.211-343.

- encourage competition and debate to spark innovation and creativity
- honor commitments
- set a strong roadmap for success, set a compelling vision for the future, and drive to completion
- include stakeholders in shaping the vision form the beginning

This comparison illustrates the complicated dilemmas faced by each president, especially given their ambitions, and though there is no common pattern for leadership in turbulent times, there are best practices that can be considered to bring about a successful resolution.

Limitations on Presidential Power

The modern presidency has been an area of concern for scholars since the New Deal as it marks a "decline of political parties and fostering the expansion of the administrative state, portended an era of chronically low public engagement and voter turnout and an increasingly fractious and impotent national politics."[105] At the most basic level, a president's influence is limited by the time he must devote to the bureaucracy. With the increasing responsibilities of the office, the criticality of an item will determine the president's attention and focus. For those presidents that have a specific intent to influence a bureaucracy through politicization to meet partisan objectives, they will face significant challenges based on the size, scope, reputation, and visibility of the agency. By virtue of the size, scope, and missions of these large federal agencies, political influence can be constrained as these agencies are not only an extension of the president's executive

[105] Milkis, Sidney M. and Jesse H. Rhodes (2007). "George W. Bush, the Republican Party, and the 'New' American Party System." American Political Science Association, vol.5, No.3 (September 2007). pp.461-488.

authority but are also an extension of Congress. These agencies also shield themselves from political pressures by maintaining contingency plans to meet agency missions regardless of pressures from the elected branches of government. Large bureaucracies can shake off the political control and, in various instances, they can wait out a president since the longest term is eight years. Conversely, as described in later examples, a president can use tactics to leave key appointment roles unfilled as evident in the Trump Administration.

Bureaucracies, like the president, can also control and limit the quantity and quality of information enabling public input on agency performance. In the face of resource reduction, agencies may appeal to Congress. Since Congress can function as a buffer for presidential power, a strong relationship between Congress and the bureaucracy can provide shelter from the onslaught as Congress can provide resources critical to the bureaucracy's function and override presidential decisioning.

There are instances, however, where the balance of power shifted as was evident during the Reagan Administration when his party controlled the Senate and limited agency appeals to Congress. As noted by Kagan (2001), where presidents historically avoided any direct intervention in rulemaking, Reagan "self-consciously and openly adopted strategies to exert his influence."[106] Using his powers of politicization, paired with control of the Senate, empowered the president to align a centralized mechanism for agency rulemaking through the issuance of executive orders. These shifts, of course, are a double-hinged door. For the examples of executive action that may be perceived as an abuse, there are countless examples of forward-thinking civil progression. An example of this was Theodore Roosevelt who is said to have set the a tone for a modern administrative presidency due to

[106] Kagan, E. (2001). "Presidential Administration." *Harvard Law Review 114.*

his tenure as Commissioner for the Civil Service Commission which provided him with the experience and political maturity necessary to implement lasting reform in civil service.[107] His presidency was marked as a departure from legislative gains to that of administrative gains focusing on making decisions quickly by centralizing authority and responsibility. To absolutely limit the power of the president is to miss out on the dynamic shifts of consciousness that occur in politics and society, however, check and balances should be enforced to avoid detrimental executive action and societal digression.

While many of the previous sources state otherwise, some scholars contend that Congress functions as a symbolic figurehead in a government structure dominated by unilateral executive action. Howell and Pevehouse (2005) contend that while their studies did not see heavy influence from Congress in relation to major "uses-of-force," they identify instances in which Congress has significantly interfered with presidential plans to expand military campaigns such as refusing funds, forming opposition, and moving public opinion. This marks an important derivation in the realms of executive action as the President exhibits extraordinary strength in foreign policy, yet the administrative presidency typically focuses on domestic programs. This further establishes Congress' position as a key component in the dynamic between partisanship and interbranch relations that drives and affects executive decision-making.[108] Congress and the courts play the most pivotal roles in balancing the actions of the presidency and barring actions that surface without statutory or constitutional authority, though they are met with varied success. Howell (2005) discusses Congress' failure to enact laws that overturn or amend

[107] White, R. (2000). "Theodore Roosevelt as Civil Service Commissioner: Linking the Influence and Development of a Modern Administrative President." *Administrative Theory & Praxis, 22*(4), pp.696-713.
[108] Howell, W., & Pevehouse, J. (2005). "Presidents, Congress, and the Use of Force." *International Organization, 59(1),* p.213.

presidential executive orders but sees success in its ability to legally codify or fund executive orders. Congress can affect funding and budgeting through agenda-setting as well. Courts on the other hand are empowered to strike down executive orders, and the Supreme Court of the United States has a history of striking down executive orders that the majority of justices argue have gone beyond the rule of law and the constitution. However, there is evidence of concern regarding institutional constraints on presidential power across three critical subjects: (1) information asymmetries particularly in foreign policy and national defense can derail monitoring of White House activities by legislators and courts and also result in ineffective responses; (2) Congressional agenda setting and prioritization of policy topics enables inaction as a preferred response resulting in an increased prevalence of unilateral directives; and (3) the funding of unilaterally created agencies and programs is an area where Congress would have considerable control however a President's directives can circumvent this by not requiring additional appropriations, utilizing the more streamlined appropriations process which is more navigable than the legislative process, and can secure funding for agencies and programs even opposed by Congress through discretionary funds, reprogramming funds, transferring funds (with Congress' consent), and drawing from contingency accounts (i.e.: disaster relief).[109]

The importance of actions by governors, legislators, state attorney-generals, and other state policymakers should not be diminished or removed from consideration. Thompson, Wong, and Rabe contend that state policy makers have the power to impede unilateral executive action. In the case of the Trump administration seeking to reverse Obama administration policies, the administration practiced "opportunistic federalism"

[109] Howell (2005), pp.423.

that empowered or constrained states based on what best served policy goals.[110] The state and local response to Trumps policy attacks took shape in the form of coalitions of state attorneys general engaging courts to act against presidential mandates and key policymakers using their influence and discretion as implementing agents.[111]

The Bottom Line on Performance

While organizational performance seems an afterthought to understanding the effects budgeting has on policy agenda focus at the federal, it is important to distinguish how it is possible to measure the performance and efficacy of actions coming from our political actors. Cohen, Vaugh, and Villalobos (2012) conducted a study to apply empirical public management theory directly to the White House administration to explain managerial performance. This study relied on original survey data and relied on quantitative analyses to determine a range of factors that contribute to the perceptions of performance. It found that perceptions of effectiveness are attributed to experience and working relationship with the president.[112] While this is deeply insightful for perceptions of leadership success, future research will need to expand these studies to define key metrics for truly measuring impact and success. They should also consider the incredible partisan atmosphere that exists in modern politics and how these perceptions may be changing.

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[110] Thompson, F., Wong, K., & Rabe, B. (2020). *Trump, the Administrative Presidency, and Federalism.* (Washington, DC: Brookings Institution Press). pp.157-159.
[111] Thompson, F., Wong, K., & Rabe, B. (2020). p.189.
[112] Cohen, D., Vaughn, J., & Villalobos, J. (2012). "Manager-in-Chief: Applying Public Management Theory to Examine White House Chief of Staff Performance." *Political Research Quarterly, 65*(4), pp.841-854.

An interesting notion within public management is the perception of the public of agency or government success. Absent a strictly defined criteria or performance metrics, at times, agencies are perceived by the public to be successful in their endeavors based on how the president or other esteemed political actors frame it. These public perceptions can also be skewed negatively as controversial agencies are attacked on partisan stances. If the government were to respond directly to the public as their primary stakeholders, this may impact the creation of new agencies as well as how they are managed. Canes-Wrone (2009) distinguishes between substantive and symbolic responsiveness to public opinion and reveals that administrative politics cannot be understood without dimension of public relations.[113]

While little doubt exists, that presidential political powers influence organizational decision-making, it is still inconclusive to believe that unilateral action is solely detrimental to performance. Durant (2009) suggests that past assessments of administrative presidency efficacy are premature and lacking "the realities of the American political system."[114] In understanding the nature of performance in public organizations, it is necessary to diagnose the primary problem with performance which is the lack of a standardized set of success criteria for the decisions that are made within an organization. As Waldo (2001)[115] contends, the traditional economic methodologies for performance measurement are inadequate within this space because they are "simplistic and unfair." He states that administrative technology has been based on these antiquated economic models and does

[113] Canes-Wrone, B. (2009). "Administrative Politics and the Public Presidency." *Presidential Studies Quarterly, 39*(1), pp.25-37.
[114] Durant, R. (2009). "Back to the Future? Toward Revitalizing the Study of the Administrative Presidency." *Presidential Studies Quarterly, 39*(1), pp.89-110.
[115] Waldo, D. (2001). *The Enterprise of Public Administration*. (Novato, CA: Chandler & Sharp).

not consider the impact of social characteristics which define the public space. The battle between "hard" (efficiency, economy, effectiveness) and "soft" (people, family, community, emotion) values is what makes performance measurement so difficult. Lynn (1996) suggests that the conflicting goals of actors within an organization also make performance validation inherently difficult and the only way to mitigate these issues is through the adoption of formal structures and practices that can conform to societal expectations.[116] Hill and Lynn (2004) discuss variables to performance that include structural factors (policy design, hierarchies, procedures), public management influencing subordinate levels of administration, and governance (program design, worker activity, beliefs and values, processes).[117]

Green, Keller, and Wamsley (1993) speak to the nature of professionalism in the field of public administration addressing perspectives that reflect growth in professional aspirations and those that see professionalism as a threat to democratic governance.[118] The question of professionalism arises when public servants, trained in specific subject matter expertise, enter public service to a host of challenges regarding conflict resolution, decision-making, legislative oversight, labor relations, and bureaucratic politics to which they are ill prepared to address. The authors contend that political character is the differentiating characteristic of public administration and requires not only the emphasis on management, science, and technology (or economy, efficiency, and effectiveness) but also political judgment and rhetorical skills embracing public life (or

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[116] Lynn (1996).

[117] Hill, C.J., & Lynn, Jr., L.E. (2004). "Governance and Public Management, An Introduction." *Journal of Policy Analysis and Management, 23(1). pp.516-524. p.516.*

[118] Green, Richar T., Keller, Lawrence F., and Gary L. Wamsley (1993). "Reconstituting a Profession for American Public Administration." *Public Administration Review, 53(6), (November/December 1993). pp.516-524. p.516.*

representativeness).[119] From the normative perspective, public administration seeks to attain the common good based on values, rules, laws, negotiations, and the effects on society. From the constitutive dimension, public administration is a constitutional agency that creates political lifestyles unique to society. This "partial agency" approach, where public administration shares some of the powers of all branches but halts the usurpation of any one branch over the others, was originally proposed in the Federalist Papers to protect our independence and act representatively. The approach to solving for the issue of professionalism lies in proper training and education in institutional leadership with a focus toward sustaining public dialogue among citizens, elected officials, and administrators.[120]

According to Rosenbloom (1983), the rise of the contemporary administrative state brings a more intense focus to the theoretical core of public administration based on the separation of powers for the executive (managerial approach), the legislative (political approach), and the judicial (legal).[121] He contends that at the center of public administration theory is the practical application of all three approaches and build a distinct theoretical core based on (1) utility and validity of each of these approaches as they each emphasize a different aspect of administration, (2) recognizing the proper approach to use for each situation, (3) using political theory, and (4) relying on expertise of public administration practitioners.[122]

Regardless of external political influence, organizational structure and decision-making are driven by the norms established within a given organization. As Barnard

[119] Green, Keller, and Wamsley (1993), p.517.
[120] Green, Keller, and Wamsley (1993), p.523.
[121] Rosenbloom (1983), p.220.
[122] Rosenbloom (1983), p.225.

(1968)[123] stated, employees to certain extent agree to accept inducements in exchange for their autonomy and this in turn dictates their behavior and the use of the standard decision-making criteria within the organization. Simon and March (1958)[124] referred to these collections of rules that guide decision-making as "performance programs" that enable structured decision-making at lower levels of the organization and set distinguishable success criteria to measure success for a decision. This may indicate a step in the proper direction. The National Performance Review (1993)[125] released a report during the Clinton administration which attempted to diagnose the issues within government agency management and push for efficiency and cost effectiveness. They diagnosed the primary problem as a change in environment which left these large, centralized bureaucracies in a space where they could not evolve or change due to rigid standard operating procedures and outdated methodology. The solution was reminiscent of traditional scientific management focusing on the entrepreneurial aspects of organizational management. The push was to change to results driven accountability, putting the public customer first, decentralizing authority and empowering employees, and embracing advanced technology to avoid duplication of efforts and enhance processes leading to cost savings.

In the discussion about navigating the difficulties of performance measurement, there has been debate as to whether decentralization, direct community management, or private management would make performance evaluation more effective. Rivlin (1971) states that regardless of how the public service is managed, there is a need for performance

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[123] Barnard, C.I. (1968). *The Functions of the Executive: 30th Anniversary Edition.* (Cambridge, MA: Harvard University Press).
[124] March, J.G., & Simon, H.A. (1958). *Organizations.* (New York, NY: John Wiley).
[125] National Performance Review (1993). *From Red Tape to Results: Creating a Government that Works Better and Costs Less.* (Washington, D.C.: U.S. Government Printing Office, September), pp.1-9.

measures to form the basis for reward of effective management.[126] While these measures will vary by public service, she hazards against using single measures of social service performance and encourages metrics that reflect the difficulty of the problem, essentially aligning activities with the objectives and measuring the relative success or failure. These performance issues allude to the greater challenge facing public administration. As stated by Moe (1990), organizational management and the institutional presidency are no longer operating in parallel resulting in the abandonment of traditional principles by administrators and leaders as well as a movement toward personal and politicized agendas.[127]

The tides of reform are also a critical consideration for performance. As Light (2006) presents in his study, the creation of new government structures at various points between 1945 and 2002, signaled renewed vigor for process reform within the government. He argues that part of the acceleration and variation of reform is due in part to "the lack of hard evidence of what actually works in improving government performance."[128] This requires an enhanced focus and dedication from political actors to define their goals, success criteria, and performance metrics while also sticking to the reforms and building trust within their organizations as the perception of organizational performance is just as important as the output of the organization itself. While the considerations in this section are aligned more toward internal agency management, these are incredibly principal factors in understanding the influence the President may have over an agency. This influence can

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[126] Rivlin, A.M. (1971). *Systematic Thinking for Social Action.* (Washington, D.C.: The Brookings Institution, 1971).

[127] Moe, R. (1990). "Traditional Organizational Principles and the Managerial Presidency: From Phoenix to Ashes." *Public Administration Review, 50*(2), pp.129-140.

[128] Light, P. (2006). "The Tides of Reform Revisited: Patterns in Making Government Work, 1945-2002." *Public Administration Review, 66*(1), pp.6-19.

be deeply affected by the strength of special interest groups, the prominence of public feedback or pushback that may be received on a specific policy type, and other pressures that may come internally from the agency accepting managers that are political appointees.

Budgeting Powers

The most important consideration of this review is the perceived power the president has on resource allocation through federal budgeting. Of the studies included in this analysis, the majority referred directly to budgeting and the budgeting process, yet another potential example of the growth of political influence of the administrative presidency. While legislative budgeting was the standard for our government for 150 years, Congress provided the authorization for the president to prepare the budget for presentation in 1921. This act enabled the president to withhold resources from agencies on the opposite end. The scope of presidential power in this instance all allows for the president to impound funds subject to legislative veto, to defer expenditures, and veto appropriations. While agencies may make additional legislative requests, these decisions must be approved by the Office of Management and Budget and deemed consistent with the president's program.

As further discussed by Meier[129], these executive powers are wielded by presidents in numerous ways such as the widespread use of waivers, impoundments, funding restrictions, and emergency reallocations. President Johnson would restrict domestic programs for Vietnam war funding and President Reagan restricted social programs to support military expenditures and used budget cuts to reduce enforcement of the Clean Air Act and support to federal low-income housing assistance programs. President Reagan

[129] Meier (2000), pp.149-150.

used impoundments to affect allocations though agencies were able to directly appeal, many times successfully, to Congress as in the case of the Small Business Administration. Reagan's executive actions were affected by his strategy to aggressively reorganize departments, drastically cut budgets, enable personnel cuts, and reallocate spending. Durant, Kleusner, & Legge (1991) focus primarily on four critical areas of budget outlays in the Reagan Administration which include transportation, health, community and regional development, and education and ultimately find that in budgetary terms, domestic policy was less impactful and the president failed to have power asymmetry over Congress when measured over the long term.[130] Shull and Garland (1995)[131] and Meier (1994)[132] effectively demonstrated the effectiveness of presidential budget powers in personnel intensive agencies such as civil rights and drug abuse agencies respectively. Studies by Durant (1993)[133] and Newcomer (1998)[134] also show how budgeting can obstruct the president from achieving specific policy objectives.

Though there is a broad range of influence possible through the executive, there are limitations to the presidential budget powers. Entitlements like Social Security, Medicare, Medicaid, education, and other social welfare programs commit significant portions of the budget and require legislative intervention to change. Also, uncontrolled expenditure estimates greatly affect the president's ability to seek substantial budget change. It seems

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[130] Durant, R., Kluesner, T., & Legge, J. (1992). "Domestic Programs, Budget Outlays, and the Reagan Revolution: A Test of Competing Theories in Four Policy Arenas." *Journal of Public Administration Research and Theory: J-PART, 2*(4), pp.369-386.

[131] Shull, S.A., & Garland, D. (1995). "Presidential Influence versus Agency Characteristics in Explaining Policy Implementation." *Policy Studies Review* 14(1 & 2): pp.49-70.

[132] Meier, K.J. (1994). *The Politics of Sin: Drugs, Alcohol and Public Policy*. (Armonk, NY: M.E. Sharpe).

[133] Durant, R.F. (1993). *The Administrative Presidency Revised*. (Albany, NY: State University of New York Press.

[134] Newcomer, K.E. (1998). "The Changing Nature of Accountability: The Role of the Inspector General in Federal Agencies." *Public Administration Review* 58 (March-April): pp.129-136.

that many underestimate the long-term policy effects when budgets are adjusted to address certain entitlements. As in the case of Medicaid during the 1970s and 1980s, state expenditures were affected by the Reagan presidency, local administration, and incrementalism.[135] This resulted in states being empowered by the president to make their own decisions regarding program changes, breaking from incremental approaches focused on previous budget, to allocate toward other policy initiatives. What was observed for many states is that power was delegated to the local level resulting in even larger disparities of treatment toward the Medicaid program.

An important item to note is that though this discussion refers to the president's use of executive powers to alter decisioning, similarities are also seen at the state and local level, with some governors having stronger discretionary powers than the president as evidenced particularly in budgeting where some can use line-item vetoing without rejecting the entire bill.[136] This illustrates that growth in executive power on federal, state, and local levels is prevalent. Budgeting thereby becomes part of the balancing act between the president and policy outcomes. Long (1949) diagnosed that the inescapable problem of achieving stability was due to the "increasingly critical importance of the federal budget for the national economy and the inevitable impact of world power status" a sincere consideration for today's political environment.[137]

In the case of budgeting, Congress has an enhanced ability to pushback on unilateral action especially regarding the funding of unilaterally established agencies, assuming that there is a requirement for additional appropriations. Even still, the president can seek

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[135] Schneider, S. (1988). "Intergovernmental Influences on Medicaid Program Expenditures." *Public Administration Review, 48*(4), pp.756-763.
[136] Meier (2000), p.151.
[137] Long (1949), p.264.

funding from independent coalitions, request funds from other initiatives, and realign funds in various accounts.[138] This adds a strategic dynamic to unilateral action in which the administration finds the means to circumvent congressional appropriations. Perhaps an even more pervasive theme to note about budgeting and resource allocation is that the resources "are responsive to incentives and limitations…A president's power, though substantive and unique, is attenuated and affected by a constrained political context and the nature of his limited resources."[139] What these examples begin to illustrate is that the actions of a unilateral presidency are much less impressive within the budgeting space. With a politically balanced Congress and presidency, the bureaucracy can level out influences in the budget more adequately. Where some influence may seem to be more apparent is with same party presidencies and Congress, a concept that will be covered in the next section about budgeting processes.

2.2 Budgeting Theory and Processes

While the administrative presidency may seem less impactful to federal budgeting than anticipated, there are many nuances in federal budgeting that allude to the incredibly complicated nature of setting budgets, allocating appropriate resources, and measuring efficacy and growth, that can result in impacts across policy genres. This portion of the analysis will endeavor to dive deeper into existing budgeting literature with particular focus on budgeting theory, processes, and impact to policy genres using environmental policy as an example. This portion of the review is an examination of some foundational

[138] Howell (2005), p.428.
[139] Rottinghaus, B., & Waggoner, P. (2018). "The Cost of Doing Business: Congressional Requests, Cost, and Allocation of Presidential Resources." *Political Research Quarterly, 71(4),* p.822.

considerations from the body of existing research on budgeting and performance theories. Arguably, the most prominent and significant challenge in public budgeting is understanding the decision criteria for allocating spending among the different purposes that will achieve the greatest return. Adding to the difficulty of this challenge is the proliferation of budgetary, economic, and social theories that attempt to define resource allocation within the constraints of, and despite, the many variables that affect these allocations. This theoretical portion is supplemented by some critical considerations from various specialized studies, which attempt to prove and expand on theoretical trends in budget performance including incrementalism, punctuated equilibrium, rational choice, and principal-agent theories.

Due to the increasing complexity of resource allocation and weighting, various management approaches are leveraged within public management to provide a more analytical basis for operational decision making. The second section will identify the strengths, limitations, and implications of the performance-based budgeting methodologies within public budgeting, including the Planning Programming Budgeting System (PPBS) and Zero-Based Budgeting (ZBB). These two methods illustrate the variation among approaches ranging from allocation based on program structure, goals, and strategy to that of "zero base" decision where each function is evaluated on its need and merit on an annual basis without consideration for the previous budget.

In this analysis, it would be remiss to not address the increasing external influences which may affect agency efficiency and effectiveness particularly within budgeting. Influence comes in many forms including, but not limited to, special interest groups, political appointments, and Presidential mandates and executive orders. With the continued

rise of the administrative presidency resulting in the extensive use of executive orders to drive policy and agency direction, it is imperative to consider the potential effects that power politics may play on budgeting resource allocation and overall performance.

Theories of Public Budgeting

When considering the progress of budgeting theory, it is best to start chronologically with V.O. Key's cornerstone 1940s work "The Lack of Budgetary Theory" that identified the most significant question in budgeting: how are resources allocated? In his piece, Key alludes to the lack of economic focus within budgeting and the importance of economic theory in budgeting behavior and public expenditure. Considering the scarcity of resources, the final budget determines the allocation intended to bring about the "maximum return in social utility."[140] Within these estimate reviews, Key maintains that authorities focus more on the efficiency in which functions are executed and primarily act based on their own judgment, thereby sacrificing true standards for evaluation.

An agency utilizing its resources for maximum efficiency is of greatest importance in this discussion though there is still an open question as to what criteria allows for reduction or expansion of certain functions and the transfer of economic resources between activities based on utility. The differentiation in thought around expenditure, productive and unproductive, introduces an interesting concept. He refers to English economist Arthur Cecil Pigou's statement on maintaining balance of expenditures, not necessarily in monetary amount, but rather, "that the marginal return of satisfaction is the same for all" thereby alluding the concept of "real return" or equity versus equality. While literature has

[140] Key, V.O. (1940). "The lack of a budgetary theory." *The American Political Science Review, 34,* pp.1137-1144. (Reprinted in Public Budgeting and Finance, Summer, 1981.) p.1138.

only skimmed the issues of this discussion, Key does draw a comparison to the emerging socialist critiques to show the difficulty in solving even pure economic problems, in this example the worthwhileness of different production lines versus alternatives to produce the same item.

In moving forward, Key identifies the work of Gayer and Clark[141] as suggesting a framework for identifying relevant factors in determining the amount of the capital budget, though it fails at considering alternative projects. Russel V. Black's study,[142] framed more from the experience of a planner, intended to address this shortfall, and establish a set of criteria for selecting the expenditure objects. This is where agencies can have a more active role in determining the relative public utility weighting to a specific object. Key maintains that while agencies have not succeeded in crafting principles capable of balancing between present and future interests, in some cases, they have "created governmental machinery facilitating the consideration of related alternative expenditures" such as the Water Resource Committee. Key invokes the pressure theory that suggests a bureaucratic agency with a personal stake in the overall social welfare, as he asserts that frictions or obstructions in the public economy will delay resource allocation adjustments based on the changing utility, more so than in the private economy. The pressure from special interest groups makes it difficult to precisely ascribe a relative value to public services and there are concessions between contending groups that affect the final decisions.

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[141] Clark, J.M. (1935). *Economics of Planning Public Works* (Washington, Government Printing Office).; A.D. Gayer (1935), *Public Works in Prosperity and Depression* (New York, NY: National Bureau of Economic Research).

[142] Black, R.V. (1934). *Criteria and Planning for Public Works* (Washington, National Resources Board, mimeographed).

Overall, while Key aids in drawing recognition to the issue that there is no real theory governing public budgeting and supports this with evidence from existing literature, his piece is solely an exposé of what is missing from budget theory and does not attempt to deeply solution the issue. While Key does not provide concrete answers on how to mitigate the problem, he admits the extraneous difficulty in answering the question and identifies many obstacles that scholars and practitioners should be wary of in solving the issue.

In Waldo's discussion on the administrative state, he views that a government is effective when it is truly democratic because it is responsive to the will of the nation and its people, further qualified as sharing in the nation's gains, greater security, steady employment, better working and living conditions.[143] A.R Hatton is quoted as saying about the budget "it may be made on to the most potent instruments of democracy…the budget provides a means through which citizens may assure themselves that their effort which has been devoted to common ends is not used for private gain, is not misused or frittered away."[144] Within this context, Waldo discusses "two patent bases of decision" that budgeting requires for consideration including principles of public administration and functionalism, where decisions are based on and made by subject matter experts of the respective field.[145]

Wildavsky presents budgeting as a translation of financial resources into human purposes where currencies are affected by human limitations, but human desires continue to grow, and the budget is a record of past negotiations and bargains and a vision for the

[143] Waldo (1948), p.74.
[144] Upson, L.D. (1924). "Half-Time Budget Methods." *113 Annals* (May, 1924), pp.69-74.
[145] Waldo (1948), p.88.

future.[146] Budgets serve diverse purposes and decisions should be based on calculations of which alternatives to consider, with an established and accepted base for consistency and proper budgetary actors. Those actors with their own interests, seek to reestablish new bases and break incremental patterns to cause punctuations, also resulting in a less predictable environment for effective budgeting.[147] Further developing a comparative theory of budgeting, he further outlines five budgetary processes that occur based on a model of wealth and predictability: incremental budgeting (rich and certain), revenue budgeting (poor and certain), repetitive budgeting (poor and uncertain), supplemental budgeting (rich and uncertain with administrative incapacity), and combination of incremental and repetitive (rich and uncertain with political instability).[148] In navigating the difficult political environment of wealth nations like the U.S., he discusses that reform is "likely to be a question of power" and about who is particularly responsive to which interest, requiring more congressional control through revitalization of highly specialized committees focused on simplified representation.[149] Moreover, he suggests actions to be avoided including permitting the president to make cuts from congressionally established ceilings, multi-year projections of governmental expenditures for programs, and joint committee to advise on the budget.[150] He suggests the coordination of an annual expenditure increment with current economic conditions, coordinated by Congress,

[146] Wildavsky, Aaron (1975). *Budgeting: A Comparative Theory of Budgetary Processes*. (Boston, MA: Little, Brown and Company). p.3.
[147] Wildavsky (1975), pps.6-7.
[148] Wildavsky (1975), p.12.
[149] Wildavsky (1975), p.396.
[150] Wildavsky (1975), pp.397-398.

enabling a transparent view of important choices and priorities while creating stability for agencies and exiting programs.[151]

Marching Toward a Public Budgeting Theory

Appropriately, Jeffrey D. Straussman (1985), attempts to examine the progress that has been made since Key's initial assertion on public budgeting and claims that economic theory is not sustainable and that perhaps a proper allocation formula for determining budgetary resources is an illusion.[152] In addressing economic influence and value in budgetary analysis, Straussman explains that cost-benefit analysis is useful when there is a limitation in the "choice set" or rather a more singular purpose, whereas in instances where a social policy has multiple objectives or the choice set includes non-commensurate programs, the measures of performance are more difficult to discern and cost-benefit analysis is not an adequate method for proper decision making. In budgetary decisioning, output measures drive efforts and function as indicators for what was purchased given a specific allocation, though significant gaps exist between these outputs and agency performance.

He also refers to reforms that were introduced to accommodate the need to assist decision makers with the analytics and information necessary to make an appropriate allocation decision, though evidence suggests that the rational justifications used for budget decisioning were made on grounds other than public sector performance alluding to Key's points on influence and special interests. However, in terms of microeconomic impact,

[151] Wildavsky (1975), p.402.
[152] Straussman, J. (1985). "*V.O. Key's* "The lack of a budgetary theory": Where are we now?" *International Journal of Public Administration*, 7(4), pp.345-374. p.345.

Straussman contends that the assumptions present in the theory of "non-market failure" are useful in predicting the behavior of managers in public budgeting and suppose that "the rational bureaucrat will attempt to maximize the budget"[153] or better said they will continue to act in a self-interested manner regardless of being part of the overall bureaucracy. Taking this one step further to congressional decisions, if a member is seeking reelection, they would support the taxpayer programs to gain strength in a reelection bid, therefore creating a host of "disjointed incremental" decisions. In Straussman' s examples from the legislative perspective, the definition for efficiency or success shifts to that of "distributive tendency" in which programs that could provide benefits to multiple congressional districts would be deemed the most successful.

In referring to contrarian views on this legislative subject, he states that Key would not be satisfied with this approach. The strength of Straussman's work lies in the explanation of various perspectives on the subject, though it falls short of being definitive and does not adequately answer the overarching research question. He states the idea that "principles of allocation cannot be divorced from value judgments"[154] born out of the political process, thereby voiding Key's main question as being incapable of defining criteria that could withstand political attack.

In his 1966 piece, Otto A. Davis provides an analytical summary of the federal budgetary process; proposes "alternative specifications" for the decision equations; presents empirical results; and addresses deviant cases, predictions, and options for future work.[155] He begins the analysis by discussing the complexity of calculations that are

[153] Straussman (1985), p.352.
[154] Straussman (1985), p.372.
[155] Davis, O.A., Dempster, M.A.H., & Wildavsky, A. (1966). "A theory of the budgetary process." *The American Political Science Review*, 60(3), pp.529-547. p.529.

invoked in the process and mentioning incrementalism's role in aiding these calculations using an existing baseline. The agency model is discussed, and the reader is provided insight into the strategic planning that results in the setting of specific budgetary goals, strategies that are based less on efficiency and more on the cultivation of a public audience and gaining the confidence of appropriation subcommittees.

As success metrics are often measured in terms of percentages, Davis states that this is evidence of a linear model, and that the stability provided by the agency's base links this to time series data. In these models, decision making elements are aggregated at the agency level to limit the invocation of numerous rules for addition stakeholders and due to unavailability of data. To account for different strategies among agencies, alternative equations are used: as a function of the previous year's appropriation, a function of the previous year's appropriation and difference between agency request, and function of previous year's request. Though these are not the only equations that can effectively represent budgeting behavior, Davis contends that these equations represent the Budget Bureau behavior in the best manner.

The empirical evidence provided by Davis shows the U.S. Government's budgetary process to be "a set of temporally stable liner decision rules"[156] though with certain deficiencies including exclusion of some agencies, small sample size, and justification of selection criteria. Stochastic disturbances in the model are caused by significant policy changes, increased congressional supervision, introduction of new legislative programs, agency reorganization, and in some cases unidentifiable variables. This limits the efficacy of the models to an explanatory role rather than a predictive one, as stability is a short-

[156] Davis, Dempster, & Wildavsky (1966), p.537.

term, time boxed assumption. Davis provides a very technical assessment on budgetary theory but fails to translate it to actionable methods or to make a clear point of the significance of the assessment. Though he evidenced his theory that the federal budgetary decision-making process can be represented by simple equations or rules, the overall message is heavily complicated by the technical jargon attributed to model creation. The meaning or impact of these technical items to the holistic discussion seems inconsequential and does not necessarily allude to future progress in the space outside of mitigating edge case scenarios and potential problems.

Irene S. Rubin discusses budgeting theory from the normative and descriptive angles specifically regarding reform. Descriptive theory is based on "close observation or participation in public sector activities" whereas normative is based on a "narrower range of observations…and its proposed solutions may be based on values rather than observations."[157] From the normative perspective, at the federal level, while reformers had a had in 1921 in designing the executive budgeting process and also in 1974 for the redesign of congressional budgeting, reform played a smaller role in the 1985 Gramm-Rudman-Hollings deficit reduction which had massive mandatory cuts causing many to question the normative theory.[158] Rubin suggests improvements to normative theory and practice including (1) realistic budget reform based on understanding of what is permitted in the budget process, (2) determining how to achieve accountability, (3) create a system of indicators for measuring and monitoring progress, and (4) balance between pre-controls and post-controls in budget implementation.[159] The dominance of incrementalism theory,

[157] Rubin, Irene S. (1990). "Budget Theory and Budget Practice: How Good the Fit?" *Public Administration Review, 50(2), (March-April 1990). pp.179-189.*
[158] Rubin (1990), p.183.
[159] Rubin (1990), p.185.

being both normative and descriptive, pushes the notion that policy choices of significance are less likely due to lack of major budget changes year over year, further detracting from any behavior that strays from the theory or possibly adds a new dimension to understanding budgeting. Incrementalism places high value on a decentralized, legislatively centered budget process, ignoring the centralized executive and legislative review of budget proposals.[160] Overall, Rubin concludes that while normative theory is met with more success due to its attractiveness, growth in descriptive theory and research can make significant improvements within the budget process.[161]

In making a case for renewed reform, Rubin (2007) discusses the unravelling of the budget process due to budgeting issues in 1998 resulting in a failure to properly fund Medicare and Social Security and significant "threats to constitutional and democratic governance."[162] The takeaways from this study are that democracy is vulnerable to public demand, executive power exertion leading to extreme budgets create a constitutional crisis, reformers need to monitor the equilibrium, and the budget process should be opened periodically to be potentially redesigned to fit the current environment.[163] In review of the classic budget literature, Rubin (2014) suggests that the classics are outdated given the extent of changes, complexities, and varieties of programs that exist in current budgeting practices in addition to the evolving relationship between federal, state, and local levels of government.[164] She proposes using a comparative case study methodology to reexamine

[160] Rubin (1990), p.187.
[161] Rubin (1990), p.187.
[162] Rubin, Irene S. (2007). "The Great Unraveling: Federal Budgeting, 1998-2006." *Public Administration Review*. (July-August 2007). pp.608-617. p.608
[163] Rubin (2007), pp.615-616.
[164] Rubin, Irene S. (2014). "Past and Future Budget Classics: A Research Agenda." *Public Administration Review, 75(1). (January-February 2015). pp.25-35. p.33.*

various assumptions in budgeting including: (1) contracting to save money, (2) state responsibility for local finances shields local governments from stress, (3) the role of informal processes in budgeting, and (4) conflict in budgeting.[165]

Incrementalism & Punctuated Equilibrium

In his 1994 article, Joseph White presents the concept that when it comes to budgeting, symptoms are confused with problems and the centrist view of budgeting demands a standard of rationality that in many instances may be unachievable.[166] While the notion of our nation's leaders collaborating in ranking our priorities to eliminate deficits and allocate budgets is an attractive concept, the unrelenting truth is that the role of politics, rather "people pursuing their interests in a democratic forum" is not mutually exclusive and cannot be ignored. He invokes Aaron Wildavsky' s view on incrementalism in budgeting in that it is a representation of people's behaviors and how they govern together and its usefulness as a theory is in relation to the situation and is more about mitigating error than seeking perfection. In discussing the applicability of incrementalism, he refers to the idea of building from the "base" or the previous year, as this is expected to have the same political effect as the previous year. Changes to the base or overall budget come via "shift points" which are changes in policymaking and/or budgeting processes and can be influences without change in officeholders through public pressure.[167]

The greatest strength of incrementalism from his view is that it places no value judgments on the results which is different from the methods currently leveraged in budget

[165] Rubin (2014), pp.31-32.
[166][166] White, Joseph. (1994). "(Almost) nothing new under the sun: Why the work of budgeting remains incremental." *Public Budgeting & Finance, 14(1),* pp.113-134. p.114.
[167] White (1994), p.118.

reforms like Planning Programming Budgeting (PPB) and Zero-Based Budgeting (ZBB) that are burdened with calculations, arbitrarily compare values and outputs, or ignore the previously established base. The conditions for incrementalism include diffusion of power, availability of resources, shorter budget cycles, singular source of funds (as opposed to dedicated funding), and entitlements. An important observation from the research data shows that the Federal government may not be proven more incremental in nature than the state or municipal levels of government, and though increment ranges may vary due to inflation, economic conditions, or reactions to deficits, federal appropriations in the 1980s were incremental. While incrementalism "does the least violence to administration," it surely is not the most impactful for momentous changes, nor should large shifts occur frequently according to White.[168] In addition, federal budgeting is not likely going to be the proper vehicle for change.

Of the theoretical examples in this review, White is thorough in focusing and answering his research question (in a more digestible manner) and provides a strong, in-depth analysis on incrementalism from various perspectives. The true strength of his approach is that he does not try to turn the theory into a silver bullet but outlines the conditions necessary for incrementalism to be a viable option. Where he does fall short however, is in defining next steps or identifying a potential path for the use of incrementalism outside of understanding his point that, as before, incrementalism continues to exist as a viable and necessary theory.

Janet Kelly's 2005 article examines the underlying notion, that history has provided an answer to V.O. Key's theory, mainly that the theory is based on political cycles or value

[168] White (1994), p.131.

changes, and that practices are based on two features: incrementalism as a reflection of public preference and traditional format budgeting which reflects financial accountability. Kelly explains the historical backdrop of this discussion and refers to Schlesinger who discusses the inevitable change of people's interests between public and private and back again. These shifts in attitude certainly impact budgeting theory due to it being an open system and reforms, overall, have proven to be successful in meeting political accountability based upon public preference.

She begins tracing the historical path from the 1800's laissez-fair economically driven, simple budgeting, government public investing economy which set the tone for the people attributing public expenditure to the government entity. The late 1800's to early 1900's reveals a call for restrictions of the corporate empire and providing the public with certain protections. This also led to the emergence of "scientific management" focused on efficiency.[169] The booming wartime economy of the roaring twenties assisted in driving public perceptions back to trusting private industry only to reverse during the Great Depression. With the advent of FDR's New Deal program, budgeting would go from being a method of cost control to that of management for the public good. Gulick and Urwick[170] in defining the functions of management in their POSDCORB framework (planning, organizing, staffing, directing, coordinating, reporting, and budgeting, would push for specific budgeting activities which are still relevant today (fiscal planning, execution, research, accounting, and auditing).[171]

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[169] Kelly, J.M. (2005). "A century of public budgeting reform the "Key" question." *Administration and Society,* 37(1), pp.89-109. p.93.
[170] Gulick & Urwick (1937), pp.3-13.
[171] Kelly (2005), p.96.

Interestingly, she noted that the post-WWII era did not advance administration theory but attempted to create controls in budgeting. Realism in the 50s and 60s yielded arguments that bargaining, and negotiation were the true drivers of public policy rather than practical application of scientific methods. Nixon would go on to restructure the Office of Management and Budget (OMB) to address what was perceived to be management problems. The 1980s to early 2000s would focus more on the reduction the size and scope of government and reveal the pitfalls of performance budgeting. Kelly's approach relies on the historical lens to provide strong examples for how public preferences impacted policy development and government action. This allows the researcher to get a sense of the climate during the times of her predecessors discussed in this piece. While Kelly's piece directly acts as a response to Key, it does not answer to what end the question is truly answered and, in some ways, acts as an enabler for allowing the system to continue incrementally while administering shock through implementation of new reforms. This concept allows for an excellent transition to punctuated equilibrium theory and its impact on budgets and public management.

In the realm of public management, Punctuated Equilibrium Theory is an often-cited decision-making theory for policy change in American politics. Originally proposed by Jones and Baumgartner in "Agendas and Instability in American Politics" (1993, 2009), the principal claim that this theory upholds is that "the course of public policy in the United States is not gradual and incremental, but rather disjointed and episodic."[172] The model they created intends to take into account the long periods of stability, where there is a perceived dominance of privileged groups, as well as the periods of "rapid change in

[172] Jones, B.D., & Baumgartner, F.R. (1993, 2009). *Agendas and Instability in American Politics, 2nd Edition.* (Chicago, IL: University of Chicago Press). p.17.

political outcomes" where the mass public may find themselves in a more disadvantaged position. By leveraging an agenda-setting model, many policy consequences become evident. In politics, there is no single equilibrium and due to the continual development of innovative ideas, policy monopolies do not have long term stability. The increased knowledge and subject matter expertise of disadvantaged groups means they can convince others successfully to achieve rapid change in public policy.

In their research, Jones and Baumgartner studied numerous public policies over extended intervals to determine the primary qualitative and quantitative forces that result in incrementalism versus rapid change. Invoking President Truman's take on countermobilization, they make it clear that many major political decisions resulting in long term consequences were realized during times where there was a lack of countermobilization and instead sweeping policy decisions resulting in new institutions dedicated to pursuing the specific policy.[173] With numerous policy subsystems in existence it is easy to see the case for incremental processes but it is important to note, that at creation or destruction points, changes can be rapid, dramatic, and reinforcing for establishing a new equilibrium. Jones and Baumgartner view incrementalism as occurring from countermobilization or intentionally by decision makers to maintain a status quo based on their inability to predict the true impact to their performance. The ability for a system to self-correct is what leads to a dynamic equilibrium. The political system moves from one equilibrium to the next as new institutions are established to alter existing, or further support favorable policy.

[173] Jones & Baumgartner (1993, 2009), p.33.

Meagan Jordan's influential piece in punctuated equilibrium, examines the influence and effects of grants and mandates at federal and state level on local government expenditures. The study primarily focuses on the prevalence of leptokurtotic distributions within local government expenditures from large U.S. cities over a 27-year period. Findings suggest that some budget types and policy types are more prone to punctuation resulting in less stable agendas.[174] At the federal level, policy punctuations resulted in punctuated budgets, a behavior moving contrary to incrementalism and vividly illustrating the impact of disruptions and the respective tradeoffs. Aside from political mandates and disruptions, socioeconomic variables such as age, race, ethnicity, and location all contributed to agenda shifts that could result in punctuations. Local developmental functions depending on state or federal funds are also more likely to see punctuations, especially in non-allocational functions. Because of the many influences to punctuated behaviors, it is critical to consider these behaviors in planning and forecasting in addition to traditional forecasting.

In considering the long-term consequences and implications of incrementalism and punctuated equilibrium, Breunig and Koski's study examined American state budgets between 1984 and 2009 to determine if punctuated states have greater levels of variation in spending than their incremental counterparts. Like Jordan, they found that allocational spending in areas like education, public health, and welfare produced more incremental changes within a state budget whereas non-allocational categories were more likely to display punctuations. They also found that over longer periods, punctuated budgets are

[174] Jordan, M.M. (2003). "Punctuations and Agendas: A New Look at Local Government Budget Expenditures." *Journal of Policy Analysis and Management, 22(3)*, pp.345-360.

smaller than incremental due to the frequency of punctuated decreases.[175] To tie this back to budget theory, Breunig and Koski suggest that the responsiveness of budgets as well as "attention" as a concept, require further theorization and consideration specifically in formulating measurements of attention and the effect on model selection.

What does this mean for contemporary public budgeting?

There are items left unexplained from this body of research that introduce skepticism to the methods that are currently used to ascribe value in public service - likely an intended consequence. These gaps also complicate the practical applicability of these theories to real-life scenarios, essentially the inability or difficulty for a public administration practitioner to put these ideas into immediate practice. Though these articles give insight into theoretical models at an aggregated level, it is critically necessary to understand how agencies and governmental organizations truly measure their success, efficiency, and impact. The variation between municipal, state, and federal levels is discussed in various works, but lacks the in-depth analysis to seek synergistic practices at all levels. There is also a tone in these articles that inherently suggests or directly alludes to accepting the current system as is and when necessary, introducing change inducing behaviors. This invokes similar sentiments to the efficient market hypothesis within financial markets. Given the need for understanding and controlling for public sentiment and satisfaction, this concept for researchers falls short of a sustainable solution to the overall issue.

[175] Breunig, C. & Koski, C. (2012). "The Tortoise or the Hare? Incrementalism, Punctuations, and their Consequences." *Policy Studies Journal, 40(1),* pp.62-63.

Each of these articles does provide a researcher with insight into areas of future focus and, at the very least, allude to productive research questions. Key suggests that the path forward for the future requires the following: study in economic theory and political philosophy; a deeper analysis of the budgetary process including its influences and decision factors, how budget officials are governed, the differences between state and federal, the congressional appropriating processes, the role of the legislature, the overall point of view regarding estimates for alternatives, and the training of personnel beyond the fiscal components of budgeting, to capture true public interest. Davis suggests that similar studies could be conducted on state and local levels as well as between public and private institutions, to make process comparisons in a variety of systems and to identify similar behaviors.

On the role of incrementalism, Straussman contends that it is a theory of decision-making rather than a prescriptive budgeting theory in that it is not useful for predicting optimal budgets but can be utilized as a tool for identifying patterns within procedures. Growth by incrementalism lacks sustainability due to the impacts of fiscal scarcity making it an invalid approach for the future. He turns back to political philosophy and the idea of determining policy goals, setting proper expectations for the role of government, and anticipate shifts in government budgets which would seem to be a critical area of research focus especially now in the current state of interorganizational and political complexity. These future considerations may be in line with White's thoughts on incrementalism as he was clear that it would not move the needle for significant changes in budgeting. Though White does not propose future considerations he does allude to methods that could make budgeting less incremental, primarily: elimination of dedicated funding, strengthening

general funds, raising money via taxes, concentrating power in the executive and legislature, and bring in new leaders with different opinions.[176] Next steps for research would include delving further into data from agencies that have taken these steps to see the range of growth and impact versus similar agencies and peers in both private and public sectors.

Relying on a historical framework, Kelly mentions that changes to the current methods of budgeting and how the political system manages this process, should not occur, which is a highly contentious point. Given the circumstances, she does suggest a slightly different path forward from her predecessors in that she sees future change in the development and implementation of reforms. While the process inefficiencies and improvement areas for budgeting and our political system should not be ignored, the idea of delving further into agencies and their role in our political structure is a plausible research question and is closely aligned with White's reference to "shift points" in the budgeting process. It is plausible to create efficiencies in process even around changing public sentiment and agency advocacy. Shift points, impact points, and rapid change all invoke notions contained within punctuated equilibrium.

In their 2004 study, Jones and Baumgartner reiterate punctuated equilibrium as an alternative to incrementalism but also identify its limitations in serving as a complete model for understanding policy choice. Through their research they identified a testable hypothesis for the interactions of rational decision makers and the institutions where they make their choices, invoking bounded rationality as a means for understanding the attention-driven choices that people make. Disproportionality within policy is produced in

[176] White (1994), p.131.

most instances but can be magnified when institutional friction is present resulting in various decision, transaction, information, and cognitive costs. This added complexity results in a model where regardless of input flow, the output flow will be more stable and more punctuated based on ignoring or reacting strongly to signals, respectively.[177] This nuanced behavior has resulted in a general punctuation hypothesis that as decision-making costs increase, the more leptokurtic output distributions will seem. Ultimately, the more robust model in this study manages to combine both incrementalism and punctuated equilibrium and reveals that the U.S. federal budget reflects the adverse behavior of decision-makers to react proportionately to changes in their environment.

The conversation on punctuated equilibrium as a measure for stability and change in public policy is further expounded by True, Jones, and Baumgartner (2006) as they emphasize the elements of issue definition and agenda setting in policy processes. They contend that the interaction of multilevel political institutions and behavioral decision-making create punctuated equilibria which accounts for both marginal and large-scale policy changes.[178] They also describe exogenous change as predictable in different models of policy process and establish a precedent for budget punctuations. As incremental models of stability are based on fair share assumptions, it is predicted that budget processes are incredibly responsive to economic and societal needs, but only after an impactful build up. However, the generalization of the theory has made it difficult to accurately predict policy at the individual level except for post-mortem analyses after point of impact that can show the relative success or failure of a policy. The timing and outcomes of punctuation being

[177] Jones, B.D., & Baumgartner, F.R. (2004). "A Model of Choice for Public Policy." *Journal of Public Administration Research and Theory*, 15 (3), pp.325-351.
[178] True, J.L., Jones, B.D., & Baumgartner, F.R. (2006). "Punctuated-Equilibrium Theory Explaining Stability and Change in Public Policymaking." (To appear in) *Theories of the Policy Process*, 2nd Edition.

highly unpredictable has made this even more complex. Despite the limitations, the predictive nature of the theory does continue to hold up for systems-level stability.

The scholarly examples in this body of research have effectively established the key tenets that comprise the existing foundation of budgetary theory and, while they have not provided a singular means for best addressing the budget allocation question, they have aided in identifying the many challenges that researchers should consider and have opened the field of play for budgetary agents to consider numerous forms of measurement for future allocations. This analysis of research has allowed us to ascertain many concurrent themes and implications regarding budget theory including the following: (1) the implications of economic and political theory are numerous; (2) self-interest on the part of bureaucrats is expected but not completely controlled for; (3) incrementalism as a measure of growth is theoretical in nature and it is unlikely to aid in predictably understanding large scale changes or transformations; (4) the prevalence and impacts of punctuations are difficult to predict though they should be considered in conjunction with incrementalism to provide a complete view of behavior and action; (5) scarcity of resources and agency prioritization are viewed as the primary vectors for issues in budgeting; (6) temporal linear stochastic models can be an appropriate measurement of behavior, controlling for some exceptions and adverse scenarios; (7) historical analysis can provide insight into the range of response to public sentiment and some factors that influenced shifts; (8) principal-agent theory is important for understanding the qualitative nature of motivations and influence within budget management; (9) a multidisciplinary approach is necessary for measuring relative success within public budgeting though it may be constrained to backward-looking

methods; and (10) the notion of "what is the greater good" is a moving target as public interests, expectations, and demands are always changing.

Performance-based Budgeting

A critical process within public management is that of performance budgeting. This practice involves developing budgets primarily based on program funding resources and the expected results of the overall program or its respective initiatives. The purpose of this process is to enable and empower program administrators to make more efficient and economical decisions in their budgeting. Performance budgeting focuses on three primary elements: final outcomes/results, strategy, and activity/outputs.[179] As Segal and Summer identify in this framework, it is imperative to create a connection between the rationale for activities and end results.

There are various methodologies that fall within Performance-based budgeting. One common methodology, Planning Programming Budgeting System (PPBS), is an analytical methodology that enables decision-making within budgetary processes. As an integration of various techniques for planning and budgeting, PPBS focuses on the primary elements for success - program structure; program strategy; decision-making process, rules, and timetables; process for measuring effectiveness; and an information system that supplies detailed financial data. Zero-Based Budgeting (ZBB) is another method that encourages the justification of expenses for each new period starting every budgetary function at a "zero base" where its needs and costs are considered regardless of the previous period allocation. This method allows for top-down strategic influence by typing budgetary

[179] Segal, G., & Summers, A. (2002). "Improving Performance and Accountability in Government." *Reason Public Policy Institute, Policy Study No.292, March 2002,* p.4.

functions directly to goals and measured outcomes. This breaks from other more incremental models by avoiding holistic increases or decreases based solely on the previous period budget. This approach also favors the more traditional budgetary areas such as revenues to justify allocations across functional areas. While methodologies may vary, performance-based budgeting begins with the organization establishing goals and objectives, next establishing metrics, and methods for measurement, and lastly developing reporting functions.[180]

Early on, PPBS was perceived as the first budget system which accommodated various budgeting functions while embracing both historic and forward-looking disciplines in budgeting. Schick outlined the stages of budget reform that lead to PPBS prevalence which started with the period between 1920 and 1935 when there was great focus on expenditure control. This was followed by the New Deal where there was more focus on the management orientation ultimately resulting in the third stage where formal links between planning and budgeting paved the way for PPBS.[181] He further contends that specific factors led to the evolution from a management to a planning orientation including economic analysis, development of new technologies, and the gradual integration of planning and budgeting. Overall, the conclusion on PPBS is that budgeting would shift from a process of justification to one of analysis with decisions influenced directly by the objectives of the organization.

As with any methodology, PPBS has its limitations and strong criticisms. In its early implementation, Wildavsky criticized PPBS particularly within the scope of policy analysis on the basis that holistically many know what program budgeting should be, but

[180] Young, R.D. (2003). "Performance-Based Budget Systems." *Public Policy & Practice, January,* p.12.
[181] Schick, A. (1966). "The Road to PPB: The Stages of Budget Reform." *Public Administration Review*.

operationally it cannot not be defined and therefore results in a need for better policies to adopt the methodology, for which there is no existing formula.[182] In other words, conversations about costs and effectiveness are important however, the methodology itself cannot adequately dictate better policy. This is due in part to what he views as various limitations imposed by adopting a program structure to fit an appropriate budget, an inability to make decisions on large scale national programs, an inherent weakness in making trade-offs among closely related policy areas, and a discredit to policy analysis due to "mindless quantification for its own sake."[183]

In Waldo's work, he speaks extensively of interpreting economy, effectiveness, and efficiency within public administration given the government's complex historical involvement with the economy especially after the Great Depression of the 1930's where the government became inherently responsible for driving economic activity and growth amid social equity. These developments would lead to the concept of government budgeting and program budgeting. Waldo suggests that PPBS fell short of its expectations "to pull things together and make rational decisions."[184] He attributed this to the change in focus to productivity and concern for evaluation, or measuring effectiveness, issues that still exist today. Though this review will not attempt to solve for this concern, Waldo is clear that considerations must include both hard values (economy, efficiency, effectiveness) and soft values (family, community, social) to accurately gauge success. He also focuses on the importance of authority knowledge in weighing allocation

[182] Wildavsky, A. (1969). "Rescuing Policy Analysis from PPBS." *Public Administration Review.*
[183] Wildavsky (1969).
[184] Waldo (2001), p.175.

considerations either independently or on a comparative basis (only if the authority is responsible for all areas being compared to justify the comparison).

Poister, Aristigueta, and Hall stated that the performance-based budgeting process is really about the application of performance information to the budget process (also referred to as performance-informed budgeting) and because of limitations, must be considered alongside any other available information in the decision-making process.[185] The holistic benefits of a performance-informed budget are numerous according to Kelly and Rivenbank (2003), Mercer (2003), and Young (2003) and include the following: alignment of service priorities with spending, adding information dimensions to budget discussions, aligning employees and manager with goal achievement, creating a diagnostic tool for resources and performance, budget justification, providing comparative costs, public accountability, improving program design, aligning spending with goals, and comparing cost-effectiveness among programs. Despite the benefits, this is still a supplementary approach requiring a full grasp of all information and variables.

This backdrop of literature illustrates the importance of performance budgeting and is an important arena where there is recent evidence of executive influence by way of reform. The budgeting space is certainly not without reform attempts as seen in examples of Clinton's National Performance Review and George W. Bush's administration's Program Assessment Rating Tool (PART), means for rationalizing budget reforms across administration. In the case of PART, according to Dull (2006), it was doomed to fail and instead the focus should be on institutional theories based on realistic models.[186] While

[185] Poister, T.H., Aristigueta, M.P., & Hall, J.L. (2015). *Managing and Measuring Performance in Public and Nonprofit Organizations: An Integrated Approach, 2nd Edition*. San Francisco, CA: Jossey-Bass. pp.232-235.
[186] Dull, M. (2006). "Why PART? The Institutional Politics of Presidential Budget Reform." *Journal of Public Administration Research and Theory: J-PART, 16*(2), pp.187-215.

these reforms have met with mixed success, they are important catalysts for the change seen across policy genres.

The previously discussed bodies of literature pertaining to the powers of the presidency, the characteristics and actions of a unilateral presidency, and budgeting theory and processes, provide a backdrop to understanding the complicated nature of policy focus, preferment, advancement, deprecation, and reform. While focus of the literature review has primarily been on the nature of administrative and legislative actions that guide the decision-making process with allusion within the topic of politicization, there is an implied nature to this topic wherein agencies function as the arms of implementation within policy genres based on those decisions. Re-invoking Durant (2009), he prescribes ten research-based best practices considerations for politically appointed administrators to make progress on their unilateral presidential mandates and effectively implement federal policies further alluding to the implementation portion critically necessary for analyzing the implications of unilateral actions in federal budgeting within the context of the outcome. The historical analysis will delve deeper into pertinent examples of environmental policy reform through federal budgeting allocation and unilateral executive action.

3 RESEARCH DESIGN & METHODS

3.1 Conceptual Framework – Epistemology & Worldview

Before delving into the theoretical or philosophical worldviews that provide a way of looking at the world, this process begins with identifying the epistemology, which seeks to provide a philosophical grounding that creates legitimacy.[187] While many epistemologies exist, there are three primary classifications for consideration of this study, objectivism, constructionism, and subjectivism. The epistemology of this study is reflective of constructionism which is the ability to simultaneously incorporate the interpretation of the world while constructing meanings of it within specific contexts. It is deeply rooted in the idea that there is no objective truth and meaning is constructed. This position allows for a better approach to making claims constructed in a view that resonates with how actors and practitioners currently engage. While the quantitative analysis can pinpoint statistically significant punctuations, the qualitative analysis will look to not only determine if unilateral actions were responsible for these punctuations but also will attempt to understand why those actions occurred. For a topic like the administrative presidency, the way people view, and construct meaning is important for understanding the true and lasting impacts of this type of action across policy types and society.

Linking the research study to the philosophical worldview assumptions is important for determining the most appropriate research design and methods. According to Creswell, worldviews, also called paradigms, ontologies, or research methodologies, are "a general

[187] Crotty, M. (1998). *The Foundations of Social Research: Meaning and Perspective in the Research Process*. (Thousand Oaks, CA: Sage Publishing). p.8

philosophical orientation about the world and the nature of research that a researcher brings to the study."[188] Among the most common worldviews are:

- post-positivism – a deterministic philosophy focusing on reduction and empirical observation for the testing and validating of a theory (quantitative approach)
- constructivism – is based on the philosophy that meanings directed toward objects or things are subjective and understanding the participant's point of view is critical for constructing meaning and generating theory (qualitative approach),
- transformative – prescribes that research agendas are change or action oriented and are inherently political while becoming the voice of the participants (qualitative approach), and
- pragmatism – focuses on practical application and understanding the problems and consequences of actions and behaviors (mixed methods approach).[189]

The nature of the topic of the administrative presidency is one that overlaps all four worldviews of post-positivism, constructivism, transformative, and pragmatism. Because the scope of presidential power can reach over the entire expanse of government, policy, and public management, there is a reductionist aspect to narrowing down the field of play and a consideration for application, generation, and validation of theories that fit both post-positivism and constructivism views. The study also touches strongly on constructivism with the intent to properly theorize within the topic of the administrative presidency. Crotty (1998) marks the difference between constructivism as a worldview and constructionism as an epistemology as the former is not concerned on the context and individual differences

[188] Creswell, John W. & J. David Creswell (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 5th Edition*. (Los Angeles, CA: SAGE Publications). p.54.
[189] Creswell, J.W. & J. D. Creswell (2018), p.55-59, 66-67.

whereas the former is.[190]The topic is inherently political, power and justice oriented, relies on a deliberate understanding of collaboration, and is change-oriented, qualities associated with the transformative world view. While elements of this work will touch all worldviews, the pragmatic approach is more appropriate given the expected result and intent of this study which seeks to qualify a specific problem, understand the consequences of actions and behaviors, and create a lens for real world practical application. Moreover, pragmatism is not rooted in any singular system of philosophy or reality and does not view the world as an absolute unity. It employs a freedom of choice standard for methods, techniques, and procedures that draws liberally from quantitative and qualitative assumptions and is deeply concerned with seeking the truth – the best understanding of the research problem.

3.2 Research Approach – Mixed Methods

The field of Public Administration encourages the use of quantitative methods and research to objectively evaluate and prove theories by analyzing the relationships among variables to arrive at empirically driven positions. Research on the topic of federal budgeting is inherently quantitative whereas the reasoning behind unilateral executive action is inherently qualitative, requiring an understanding of the environmental, social, and political influences that drive policy focus and relevance in society. This research analysis leverages a mixed methods approach by utilizing existing budget data to identify statistically significant patterns of change that, when combined with additional qualitative research, further determines the factors that influence change.

[190] Crotty, M. (1998), p.10.

The mixed methods approach involves collection of both open-ended and closed-ended data, or qualitative and quantitative data, respectively. Having existed as a methodology since the late 1950s, mixed methods research came into its own field in the 1980s and has become critical in understanding phenomena across diverse fields, and in the case of public administration, is a methodology that supports the integration of conclusive quantitative results with the qualitative justification and understanding for application to the practice of government management.[191] Undergoing several periods of growth, development, and evolution, mixed methods research has become a popular choice across a diverse array of areas such as social and health sciences, federal funding initiatives, and research across various industries. The distinct designs of a mixed methods approach include a combination of philosophical assumptions with theoretical frameworks relying on the integration of quantitative and qualitative data to uncover additional insights and findings that would not have been discovered using only one of those methods.[192] Creswell focuses on three of the primary designs for mixed methods approaches including explanatory sequential mixed methods, exploratory sequential mixed methods, and convergent mixed methods.[193]

The reasons for selecting this methodology are based on the comparison and explanation of differing perspectives from quantitative and qualitative sources and development of comparative cases. The greater strength of selecting this methodology speaks to the procedural level where it enables a complete understanding of the problems and questions of this study. While the quantitative analysis uncovers points of statistical

[191] Creswell, J.W. & J. D. Creswell (2018), p.62.
[192] Creswell, J.W. & J. D. Creswell (2018), p.52.
[193] Creswell, J.W. & J. D. Creswell (2018), p.63.

significance for consideration, the qualitative analysis allows for the integration of differing perspectives and for a deeper dive into the complexities of the processes that affect budgeting and policy implementation. The documentation of these cases provides a platform for understanding similar actions or phenomena across other policy types. While the strengths of mixed methods design are evident, there are certainly challenges and complexities to the design that must be considered such as: extensive data collection, time-intensive analyses of both quantitative and qualitative data, researcher familiarity with both forms of research, and clear model visualization of the flow of research activity design.[194] Validity of method design is a critically important consideration and is based on the validity of the construct of the quantitative regression technique as well and the validity of the qualitative triangulation technique provided through the historical analysis.

3.3 Research Design & Methods

Using the mixed method approach, this research project relies on a modified convergent design method to provide the most comprehensive analysis of the stated research problem by collecting and integrating both quantitative and qualitative data. This method leverages a combination of designs including a Two-Phase Sequential Design, a Historical Analysis Design, and a Case Study Design. Beginning with a Two-Phased Sequential Design, quantitative data is collected and analyzed to determine variables of significance relating to the federal budget using regression techniques. The results provide indicators of relevant items that are examined further and integrated with qualitative data to provide a comprehensive analysis of the findings from the quantitative analysis (*Figure 1-1*).[195] As

[194] Creswell, J.W. & J. D. Creswell (2018), p.341.
[195] Creswell, J.W. & J. D. Creswell (2018), p.343.

part of the initial two-phase sequential design, qualitative data collection and analysis will focus on understanding the reasoning behind the quantitative observations.

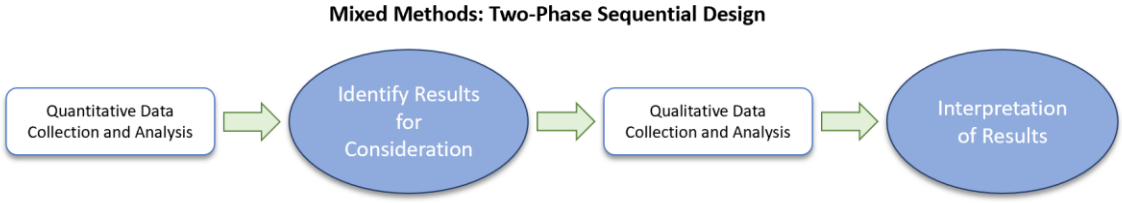

Figure 3-1: Mixed Methods: Two Phase Sequential Design

In parallel to this sequential design for understanding the quantitative analysis, additional qualitative data is collected to create a robust historical analysis that illustrates the complex history of unilateral actions evident within environmental policy (*Figure 1-2).*

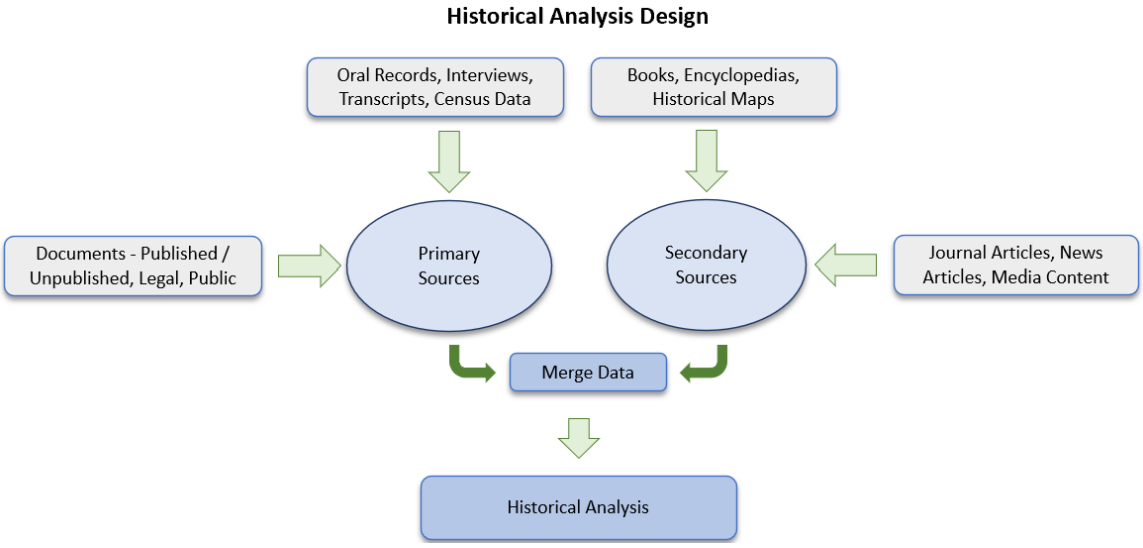

Figure 3-2: Historical Analysis Design

With both quantitative and qualitative data included in this analysis, the side-by-side comparison enables a deeper comprehension of findings which helps prove or disprove

the statistical results. The quantitative and qualitative data are integrated to identify the most critical themes for consideration for a more detailed case study analysis of the phenomenon (*Figure 1-3*).[196] The case study design follows an inductive approach where data is collected from both quantitative and qualitative sources, analyzed, and compared to generate cases based on the evidence or themes identified.

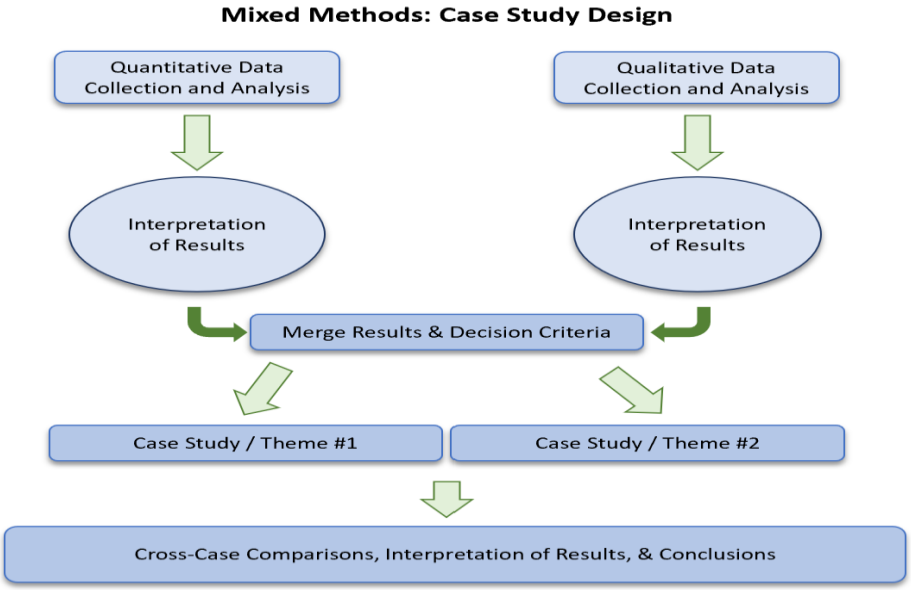

Figure 3-3: Mixed Methods: Case Study Design

3.4 Qualitative Methods - Historical Analysis

The historical analysis method is based upon the examination and understanding of past events, behaviors, and circumstances collected from various documents or artifacts. This process is about enabling the researcher to establish a foundation of certainty within the phenomenon of consideration. Where other methods may rely on understanding the effects of independent variables, the historical analysis focuses on the interdependence of

[196] Creswell, J.W. & J. D. Creswell (2018), p.354.

variables[197] and, within the context of this study, enables an understanding of the many factors that may contribute to the behavior of unilateral executive action. In creating the proper narrative for the historical analysis, considerable focus is placed on primary data sources including eyewitness accounts, oral or written testimony, public records, legal documents, and any other sources within archives, collections, journals, or media. This historical analysis is a time-series approach that leverages publicly available data sources, transcripts, testimonies, research studies, articles, and media content to identify the rich history and pervasiveness of the administrative presidency within environmental policy starting with the events leading to the creation of the EPA through the most the unilateral actions of the most recent presential administrations.

3.5 Quantitative Methods – Regression Analysis

Linear regression models are a commonly used technique in statistical analysis due to their simplicity in interpretation and estimation. The primary goal of regression analysis is to "examine the association between one or more independent variables, usually denoted as X's, and a single dependent variable, denoted as Y."[198] The linear regression also presumes that the dependent variable is continuous and seeks to explain or predict differences in the dependent variable that occur due to the influence of the independent variable. The linear regression equation is written as $Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \ldots \beta_kX_k + \varepsilon$ where α is the intercept or constant, β represents the regression or slope coefficients, ε represents error, and *k* represents the independent variables. Multiplying the independent

[197] Buckley, Peter J. (2016). "Historical Research Approaches to the Analysis of Internationalization." *Management International Review, 56,* pp.879-900.
[198] Hoffman, John P. (2004). *Generalized Linear Models: An Applied Approach*. (Boston, MA: Pearson). p.1.

variables by their coefficients results in the expected value of the dependent variable. If assumptions believe the relationship of variables to be non-linear, the equation can be modified as $Y = \alpha + \beta_1 X_1 + \beta_2 X_1^2 + \beta_3 X_2 + \varepsilon$ to represent that Y and X_1 have a non-linear relationship.[199] The coefficient of the independent variable if the bottom-line result of the regression revealing its quantitative influence and is interpreted as "the change in the dependent variable associated with a one-unit increase in the independent variable."[200] To further evaluate the importance and significance of independent variables within a regression model, the p-value must be examined. For this analysis levels of significance are considered at $*p < 0.10$, $**p < 0.05$, and $***p < 0.01$ levels.

The regression data for this analysis utilizes the U.S. Federal Budget data between the Carter and Trump presidential administrations covering the span of 1977-2021. The Office of Management and Budget (OMB) of the United States Government issues the budget and the Government Publishing Office (GPO) signs and certifies them for their content accuracy. Data for this analysis is collected from the fiscal year budgets ranging from 1977-2021 leveraging annual U.S. Budget Outlays by Agency.

The primary dependent variable for this analysis is U.S. Budget Outlays by Agency – Environmental Protection Agency (EPA). For a comparative basis, due to similarities in agency missions, the following U.S. Budget Outlays by Agency are selected for the Department of Agriculture (USDA), the Department of the Interior, and the Department of Energy (DOE).

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[199] Hoffman, J.P. (2004), p.2-3

[200] Remler, D.K. and Gregg G. Van Ryzin (2011). *Research Methods in Practice: Strategies for Description and Causation*. (Thousand Oaks, CA: Sage Publications). pp.73-75.

In addition to plotting these values to visualize points of significant punctuation in the year over year budget outlays, this analysis hypothesizes that there are various independent variables which have an impact on the budget outlays of the selected agencies. The independent variables and their coding for consideration in this analysis are: Political Party Affiliation (0 = Democrat, 1 = Republican), Executive Orders (0 = each year before E.O., 1 = each year after), and Presidential Administration (0 = each year not in office, 1 = each year in office). Specific executive orders are selected for this analysis across the time range of consideration, with each directed toward a selected agency *(see Table 3-1)*.

SUMMARY OF EXECUTIVE ORDERS

E.O. #	*TITLE*	*Primary Agency*	*Year*
#12898	Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations	EPA	1994
#13211	Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use	ENERGY	2001
#13299	Establishment of Interagency Group on Insular Areas	INTERIOR	2003
#13423	Strengthening Federal Environmental, Energy, and Transportation Management	EPA / ENERGY	2007
#13790	Promoting Agriculture and Rural Prosperity in America	AGRICULTURE	2017

Table 3-1: Summary of Executive Orders

With primary data utilized from the U.S. Federal Budget, a control is necessary for broader macroeconomic trends, primarily inflation, and is represented by the control variable Consumer Price Index Average Annual Inflation Constant (CPI-U).

3.6 Case Study Design & Methodology

The analysis utilizes a case study methodology, historically defined in many ways. Bromley (1990) presented this method as a systematic investigation of an event or set of

events to understand a phenomenon. Bogden and Biklen (2003) define it as a detailed examination of one specific subject, document, setting, or event. Berg (2004, 2007) originally defined it "as a method involving systematically gathering enough information about a particular person, social setting, event, or group to permit the researcher to effectively understand how the subject operated or functions."[201] In recent editions, Lune & Berg posit that while case studies can be used for exploratory purposes of a single event or phenomenon, "the methodological approach is geared toward discovering or at least suggesting some generalizable theoretical concept."[202]

Case studies as a qualitative research method, are designed to understand specific examples within people, groups, or organizations through several approaches including:

(1) paradigmatic case selection – prototypical case allowing for best generalizability
(2) extreme case selection – focusing on a specific event or occurrence often attributed to a best or worst-case scenario, and
(3) critical case selection – identifying cases that are similar and important to other cases.[203]

In addition to these approaches, there are three case study designs for consideration:

(1) exploratory – where field work and data collection occur before the research question is defined,
(2) explanatory – attempts to create a causal explanation by discovering and analyzing the factors and conditions to aid in theory development, theory testing, and theory expansion, and

[201] Lune, H. and Bruce L. Berg (2018). *Qualitative Research Methods for the Social Sciences, 9th Edition*. (London, UK: Person Publishing). p.170.
[202] Lune, H. and B.L. Berg (2018), pp.170-171.
[203] Remler, D.K. and Gregg G. Van Ryzin (2011), pp.73-75.

(3) descriptive – leads with a theory that establishes the framework for the investigation and requires a unit of analysis for the study.[204]

The case study methodology assists in establishing the credibility and scientific value of the research. While objectivity comes into question for many qualitative inquiry strategies, the case method provides a sterile environment for the "creation of analytic strategies" with a high level of reproducibility and "intersubjective reliability."[205] The generalizability and comparability of the case are of critical importance for the proper assertion of the trends, characteristics, or assumptions of the study to the phenomenon in question,

The case study methodology illustrates the instances in which unilateral action affects environmental policy particularly through the federal budgeting process. The case studies of this analysis present the critical and paradigmatic examples of unilateral action on environmental policy including:

- budgetary implications - action(s) perceived to have a direct impact to the federal budget, and
- regulatory implications - critical action(s) that may not result in a direct impact to the federal budget and alluding to the shared regulatory mechanisms of the EPA with other agencies sharing similar missions.

The first case study leverages the results of the quantitative analysis to investigate those periods or variables resulting in significant budget punctuations and identifies the motivating factors that contributed to those budgetary shifts for the EPA. The purpose of this portion of the analysis is to determine the cause(s) for those punctuated changes. For those examples where it is determined that unilateral action is the primary cause of

[204] Lune, H. and B.L. Berg (2018), p.176.
[205] Lune, H. and B.L. Berg (2018), p.177.

punctuation, supporting evidence from literature and news articles will construct the case study narrative for understanding how unilateral actions influence federal budgeting and what the implications are at a policy level.

The second case study focuses on the regulatory implications of the observed behavior especially in relation to other executive agencies including the USDA, the Interior Department, and the DOE. The purpose of this case study is to outline the current regulatory process, and present examples of the deep, interconnected mechanisms that exist between executive agencies to understand the full range of the overall impacts of unilateral action especially from the regulatory perspective. The case studies provide a framework for practical application to further examine and understand similar trends across other policy types.

3.7 Hypotheses

Null Hypotheses

SUMMARY OF NULL HYPOTHESES	
$H_{\#}$	*Description*
H_0	**Null Hypotheses**
H_0a	Unilateral actions (Executive Orders) do not result in changes to U.S. Federal Budget Outlays by Agency
H_0b	Party affiliation does not result in changes to U.S. Federal Budget Outlays by Agency

Table 3-2: Summary of Null Hypotheses

As the quantitative methods and regression analysis rely on dependent and independent variables, the inferred are numerous assumptions or predictions for understanding the relationship between variables. The null hypotheses for this analysis suppose that there is no relationship between the dependent variables, U.S. Federal Budget

Outlays by Agency, and the independent variables, party affiliation and executive orders (*see Table 3-2*). If there is evidence from the analysis that suggests a relationship truly does exist between the variables, then these null hypotheses are rejected in favor of the alternative hypotheses.

Alternate Hypotheses – Unilateral Action (Executive Orders)

The first set of alternative hypotheses predict a relationship between issued executive orders and U.S. Federal Budget Outlays by Agency (*see Table 3-3*). Each sub-hypothesis further predicts that U.S. Federal Budget Outlays would have a resulting increase due to the issuance of the executive orders in addition to seeing increases for the primary agency for which the executive order was directed for administration. The hypotheses also predict that increases would be evident for agencies with similar missions and shared regulatory mechanisms (i.e.: the USDA, the Interior Department, and the DOE).

The second set of alternative hypotheses predict a relationship between presidential party affiliation and U.S. Federal Budget Outlays by Agency (*see Table 3-4*). Each sub-hypothesis further predicts that U.S. Federal Budget Outlays for the EPA would have a resulting decrease during Republican presidential administrations and increases for Democrat administrations. The hypotheses also predict that those changes in outlays would also be evident for the agencies with similar missions and shared regulatory mechanisms. Dummy Variables are created for each presidential administration covering the time span of this analysis (*See Table 3-5*).

SUMMARY OF ALTERNATE HYPOTHESES - UNILATERAL ACTION	
H#	*Description*
H1	**Unilateral actions (Executive Orders) relation to U.S. Federal Budget Outlays by Agency**
H1a	Executive Orders affecting environmental policy result in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency
H1b	Executive Orders affecting environmental policy result in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency
H2	**Executive Order #12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 1994) relation to U.S. Federal Budget Outlays by Agency**
H2a	Executive Order #12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 1994) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency
H2b	Executive Order #12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 1994) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency
H3	**Executive Order #13211 - Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use (May 2001) relation to U.S. Federal Budget Outlays by Agency**
H3a	Executive Order #13211 - Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use (May 2001) results in increases to U.S. Federal Budget Outlays by Agency for the Department of Energy
H3b	Executive Order #13211 - Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use (May 2001) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency
H3c	Executive Order #13211 - Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use (May 2001) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency
H4	**Executive Order #13299 - Establishment of Interagency Group on Insular Areas (May 2003) relation to U.S. Federal Budget Outlays by Agency**
H4a	Executive Order #13299 - Establishment of Interagency Group on Insular Areas (May 2003) results in increases to U.S. Federal Budget Outlays by Agency for the Department of the Interior
H4b	Executive Order #13299 - Establishment of Interagency Group on Insular Areas (May 2003) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency
H4c	Executive Order #13299 - Establishment of Interagency Group on Insular Areas (May 2003) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency
H5	**Executive Order #13423, Strengthening Federal Environmental, Energy, and Transportation Management (Jan 2007) relation to U.S. Federal Budget Outlays by Agency**
H5a	Executive Order #13423, Strengthening Federal Environmental, Energy, and Transportation Management (Jan 2007) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency
H5b	Executive Order #13423, Strengthening Federal Environmental, Energy, and Transportation Management (Jan 2007) results in increases to U.S. Federal Budget Outlays by Agency for the Department of Energy
H5c	Executive Order #13423, Strengthening Federal Environmental, Energy, and Transportation Management (Jan 2007) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency
H6	**Executive Order #13790—Promoting Agriculture and Rural Prosperity in America (April 2017) relation to U.S. Federal Budget Outlays by Agency**
H6a	Executive Order #13790—Promoting Agriculture and Rural Prosperity in America (April 2017) results in increases to U.S. Federal Budget Outlays by Agency for the Department of Agriculture
H6b	Executive Order #13790—Promoting Agriculture and Rural Prosperity in America (April 2017) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency
H6c	Executive Order #13790—Promoting Agriculture and Rural Prosperity in America (April 2017) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency

Table 3-3: Summary of Alternate Hypotheses – Unilateral Action

Alternate Hypotheses – Party Affiliation

SUMMARY OF ALTERNATE HYPOTHESES - PARTY AFFILIATION	
H#	*Description*
H7	**Party affiliation relation to U.S. Federal Budget Outlays by Agency**
H7a	Republican presidential administrations result in a decline to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency
H7b	Republican administrations result in a decline to U.S. Federal Budget Outlays by Agency for other agencies with similar missions and shared mechanisms with the EPA
H8	**Carter Administration relation to U.S. Budget Outlays by Agency**
H8a	Carter Administration results in increases to U.S. Budget Outlays by Agency for the Environmental Protection Agency
H8b	Carter Administration results in changes to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency
H9	**Reagan Administration relation to U.S. Budget Outlays by Agency**
H9a	Reagan Administration results in decreases to U.S. Budget Outlays by Agency for the Environmental Protection Agency
H9b	Reagan Administration results in decreases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency
H10	**G.H.W. Bush Administration relation to U.S. Budget Outlays by Agency**
H10a	G.H.W. Bush Administration results in decreases to U.S. Budget Outlays by Agency for the Environmental Protection Agency
H10b	G.H.W. Bush Administration results in decreases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency
H11	**Clinton Administration relation to U.S. Budget Outlays by Agency**
H11a	Clinton Administration results in increases to U.S. Budget Outlays by Agency for the Environmental Protection Agency
H11b	Clinton Administration results in increases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency
H12	**G.W. Bush Administration relation to U.S. Budget Outlays by Agency**
H12a	G.W. Bush Administration results in decreases to U.S. Budget Outlays by Agency for the Environmental Protection Agency
H12b	G.W. Bush Administration results in decreases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency
H13	**Obama Administration relation to U.S. Budget Outlays by Agency**
H13a	Obama Administration results in increases to U.S. Budget Outlays by Agency for the Environmental Protection Agency
H13b	Obama Administration results in increases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency
H14	**Trump Administration relation to U.S. Budget Outlays by Agency**
H14a	Trump Administration results in decreases to U.S. Budget Outlays by Agency for the Environmental Protection Agency
H14b	Trump Administration results in decreases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency

Table 3-4: Summary of Alternate Hypotheses – Party Affiliation

SUMMARY OF DUMMY VARIABLES		
Presidential Administration	*Years*	*Party Affiliation*
Carter	1977-1981	Democrat = 0
Reagan	1981-1989	Republican = 1
G.H.W. Bush	1989-1993	Republican = 1
Clinton	1993-2001	Democrat = 0
G.W. Bush	2001-2009	Republican = 1
Obama	2009-2017	Democrat = 0
Trump	2017-2021	Republican = 1

Table 3-5: Summary of Alternate Hypotheses – Party Affiliation

3.8 Limitations

The scope of this analysis is limited to a subset of budget data covering the administrations from President Carter through President Trump to surface observations of phenomenon or trends that can be later applied comparatively across additional presidencies. It is important to note that the data begins with 1977 data which is more complete for environmental spend and EPA considering the agency's founding in 1970 during the Nixon administration. Starting with 1977 also avoids the 1976 transition quarter which ran from July 1st until September 30th before the start of the 1977 fiscal year, marking the change to the new fiscal year format.

This analysis relies on federal budget actuals as projected budget data is a bit nuanced. Projections for any given future year will vary with each fiscal year budget, resulting in a moving target for comparison of forecasted numbers against actuals. Each fiscal year budget contains projections for the previous year, the current year, and the four years following. This means the final budget of each presidential term will forecast the

federal budget through the next presidential term. The first two fiscal year budgets of each presidential term are influenced and affected by the previous presidential term. Given this dynamic, considerable changes are expected in projected budget data between the final fiscal year budget of each presidential term and the first fiscal year budget of the next presidential term especially in the case of differing political parties or differing ideology.

As these projected values can reflect considerable variation over the 4-5 years from the first projection in a fiscal year budget, the projected budget data is excluded from this analysis. Historically, the second fiscal year budget of each new presidential term, is the first budgeting cycle in which the current President has independence, discretion, and autonomy from their predecessor to forecast and amend the projections from the first fiscal year of their term and to budget the remaining years of their term more accurately.

On a qualitative comparative basis, the appropriate dollar value change which marks significance at the policy and agency levels can be debated. As budget allocations for environmental policy spend across genre and agency number in the billions, on a percentage basis, changes may not seem significant given the size of the federal budget making an easy argument for changes to be perceived as mostly incremental. Agency stakeholders, policy analysts, and special interest groups can easily argue the significance of any allocation changes regardless of size based on the needs of their agency and its stakeholders. From a qualitative perspective, this analysis identifies points of change and investigates the qualitative reasoning behind those changes as attributed to the administrative presidency, budgeting process, or social intervention leveraging mixed methods approach to determine the significance of changes in the budget.

While references are made in certain instances to understand scope or magnitude in relation to the overall U.S. federal budget, comparisons to other policy areas or peer agencies particularly within the dataset is limited to the Environmental Protection Agency, the USDA, the Interior Department, and the DOE as representative samples of agencies for comparison. This analysis will only focus on agency level budget data as available superfunction level data cannot be correlated or linked directly to every representative agency considered in this analysis.

4 HISTORICAL ANALYSIS OF EXECUTIVE ACTIONS ON ENVIRONMENTAL POLICY IN THE U.S.

4.1 The Paradox of Unilateral Action in Environmental Policy

The critical focus of this analysis has been within the scope of recent history, the years 1977 through 2021. However, to best understand the nature of unilateral action within environmental policy, it is necessary to understand the entire range of historical precedent that has culminated into our modern conceptualization of these behaviors within the scope of budgeting and policy. To properly discuss the EPA and environmental policy, it is necessary to look back to the early origins of environmental policy and to understand its evolution from reactive public safety measures to that of proactive conservation, preservation, and social justice.

A critical factor to note in the ensuing timelines is that the evolution of environmental policy in the U.S. does not occur in a silo, but rather is driven and affected by global affairs and politics. Moreover, this historical snapshot provides concrete evidence that the scope of inclusion within environmental policy goes beyond just that of preservation of landmarks, conversation of wildlife, and mitigation of pollution risks and speaks to being part of a greater mechanism that affects every day life including public health and safety, food and drugs, social justice and equality, and energy. While the narrative behind environmental policy varies greatly by stakeholder group, it is evident that this policy type has global impacts requiring sophisticated solutions from not only bipartisan cooperation, but also agreements and partnership with the nations of the world.

Concern around the environment has been prevalent since the beginning of the time of man. From our Paleotechnic through our Preindustrial history, the environment has

played a critical war in domestication and overall expansion of empires. The has always been concern about availability of resources and during times of innovation, environmental factors have always come into play. As man started to colonize and create bustling towns, air pollution become more common and water pollution became a critical threat to the viability of these cities. Massive trails of deforestation would take shape across the world as civilizations advanced and as man learned to bend the elements to his will, the health risks started to become more prevalent as in the use of lead and other toxic substances.

The Enlightenment period started to set the tone of change and new thought led to large movements, culminating not just in the founding of a new nation, but also in terms of acknowledging humanity's impact on the environment and the world around them (*see Table 4-1*). The late 1600's through the early 1800's signals a time of analysis and understanding of how to manage pollution by air and water, and to minimize the threats of disease. In parallel, the first efforts in lighting and finding viable sources of energy is steadily underway. Given the U.S. relationship with England and the European nations, historical evidence shows environmental movements not only running in parallel, but in partnership as the global community seems to learn quickly from the mistakes of others. This time frame would see the start of agricultural societies and the health inspections for wellbeing across all lifestyle segments.

The Industrial period continued to expand the foundation for environmental policy as executive orders helped to set up major agencies in the U.S. including the Interior Department, the USDA, the Bureau of Labor (later the DOL), the U.S. Weather Bureau, the Bureau of Commercial Fisheries, and the U.S. Geological Survey. At the state level, Boards of Health were erected, and grassroots associations were rising to address critical

issues. Across the world there was also a surge of associations founded for the purposes of addressing societal issues in addition to numerous laws targeted at controlling pollutions, use of certain metals and chemicals, mining, and animal cruelty (*see Table 4-2*).

The late 1800s to the early 1900's mark the Progressive period of history focused on conservation and protection efforts with the creation of the National Park Service (*see Table 4-3*). New forms of energy are considered through the Bureau of Reclamation which was created through the Reclamation Act of 1902. Labor laws and regulations started to take shape as concern of workers exposure in harsh conditions took full view. International waterways, rivers, and harbors are an area of focus as well.

The 20th century saw an intense focus on all things environment with numerous regulations directed toward mitigating pollution, restoring wildlife, public health, mining, energy, and land preservation (*see Table 4-4*). The Great Depression occurring on the precipice of World War II (WWII) set the tone for radical change, growth, and innovation across the world. Coming out of WWII, nuclear energy became a serious consideration though accidents left society unsettled about the future and brought environmental concerns to the forefront. In the U.S. civil unrest shook the nation throughout the 1960's as efforts shifted to addressing racial inequalities and the environmental factors that resulted.

The 1970's were the culmination the "Green Era" marking the establishment of the Environmental Protection Agency (EPA) and the enactment of landmark legislation including the Clean Air Act of 1970 and the Clean Water Act of 1972. President Carter would expand on this environmental agenda by adding amendments to many laws and also formed the U.S. Department of Energy (DOE) for greater focus on energy-related

programs. The 20th century ends with significant concerns around overpopulation, deforestation, declining wildlife, and climate change.

The 2000's in the U.S. are met with a war on terrorism (9/11), environmental and natural disasters (tsunamis; Hurricanes Katrina, Irene, and Maria; hydroelectric plant explosions), social injustice and societal unrest, failed political promises, and in the later half, withdrawal from global accords paired with massive environmental deregulation (*see Table 4-5*). Most troubling in this time is the staunch opposition to environmental efforts, the invalidation of science, and political gaslighting techniques aimed at pushing partisan agendas at the expense of public and environmental safety. The causes and impact of these events will be discussed in detail shortly. Regardless of political tensions, it is evident that environmental concerns reverberate across the world and the impacts are deep and penetrating to our daily living. This historical analysis and timeline also show the deep interconnected relationships between government agencies and the shared accountability, processes, and mechanisms that exists between them.

Taking into consideration this summary of the evolution of environmental policy across the world, there is a critical theme present regarding the role and importance of unilateral executive action. The paradox that this historical analysis alludes to is the fact that environmental policy in its current state, as well as the agencies that were created to drive policy implementation and to manage standards and regulations, were mostly created through unilateral executive action. The ensuing content will delve deeper into the 20th and 21st century political environment to understand some of the most critical and defining events within environmental policy, and to shed light on the unilateral executive actions that contributed to these historic moments.

MILESTONES IN ENVIRONMENTAL HISTORY - ENLIGHTENMENT PERIOD				
Period	*Segment*	*Year*	*Location*	*Description*
Enlightenment	Early Enlightenment	1661	London, England	Air pollution problems, John Evelyn writes "Fumifugium, or the Inconvenience of the Aer and Smoake of London Dissipated" to propose remedies like public parks and plants
Enlightenment	Early Enlightenment	1662	London, England	Book on mortality statistics published by John Graunt
Enlightenment	Early Enlightenment	1666	Japan	Erosion and flooding from deforestation - warnings given by Japanese Shogun, led to woodland management
Enlightenment	Early Enlightenment	1690	PA	Governor William Penn requires preservation of one acre of trees for every five cleared in Pennsylvania
Enlightenment	Early Enlightenment	1706	PA	Benjamin Franklin raises concerns on pure drinking water and sanitation
Enlightenment	Early Enlightenment	1739	Philadelphia, PA	Dock Creek Environmental Controversy
Enlightenment	Late Enlightenment	1750	London, UK	Typhus Epidemic
Enlightenment	Late Enlightenment	1760	Newcastle, England	1st experiment in coal-gas for lighting
Enlightenment	Late Enlightenment	1775	England	Scientist Percival Pott finds link between cancer and coal among chimney sweeps
Enlightenment	Late Enlightenment	1779	Germany	Johann Peter Frank writes "A Complete System of Medical Policy" for government responsibility for clean water, disposal, food inspection, etc.
Enlightenment	Late Enlightenment	1783	Newfoundland	Fishing rights prioritized by U.S. diplomats
Enlightenment	Late Enlightenment	1785	Philadelphia, PA	Formation of the Philadelphia Society for the Promotion of Agriculture and other agricultural groups
Enlightenment	Late Enlightenment	1790	USA	First U.S. Census - 4 million people, all but 10% farmers
Enlightenment	Late Enlightenment	1792	Redruth, Cornwall	William Murdock uses coal gas to light a small room
Enlightenment	Late Enlightenment	1793	USA	Eli Whitney develops the cotton gin
Enlightenment	Late Enlightenment	1799	Paris, France	Philippe Lebon illuminates public building with gas
Enlightenment	Late Enlightenment	1799	Manhattan, NY	Aaron Burr and investors launch the Manhattan Company, a bank and water utility company used to bring water to Manhattan
Enlightenment	Late Enlightenment	1800	London, England	1st modern municipal sewers
Enlightenment	Late Enlightenment	1804	Manhattan, NY	1st U.S. Health Inspector John Pintard appointed due to Yellow Fever epidemic; health inspectors are a branch of the police department

Table 4-1: Milestones in Environmental History – Enlightenment Period[206]

[206] Sources:
Department of Energy. "DOE History Timeline." https://www.energy.gov/lm/doe-history/doe-history-timeline/timeline-events-2009;
"Environmental History." https://environmentalhistory.org/;
Environmental Protection Agency. "Milestones in EPA and Environmental History." https://www.epa.gov/history/milestones-epa-and-environmental-history
Unites States Department of Agriculture. "A Condensed History of American Agriculture 1776-1999 Timeline." https://www.usda.gov/sites/default/files/documents/history-american-agriculture.pdf;
United States Department of the Interior. "History of the Department of the Interior." https://www.doi.gov/whoweare/history

MILESTONES IN ENVIRONMENTAL HISTORY - INDUSTRIAL PERIOD

Period	*Segment*	*Year*	*Location*	*Description*
Industrial	Early Industrial	1812	London, England	1st gas lights introduced, would be used in every major U.S. and European city
Industrial	Early Industrial	1815	England	The Corn Laws passed
Industrial	Early Industrial	1817	USA	U.S. Secretary of Navy authorizes the protection of timber lands
Industrial	Early Industrial	1820	USA	The Agriculture Committee, U.S. House of Representatives is established
Industrial	Early Industrial	1824	London, England	Formation of the London SPCA
Industrial	Early Industrial	1828	USA	NY passes 1st U.S. state anti-cruelty law
Industrial	Early Industrial	1830	USA	The Indian Removal Act signed into law followed by the "trail of tears"
Industrial	Early Industrial	1832	Manhattan, NY	Public health reform interest rises as Cholera epidemic kills 3,000
Industrial	Early Industrial	1838	London, England	Octavia Hill, the first woman environmentalist, founded the National Trust to explore the link between social reform and environmental protection
Industrial	Early Industrial	1839	Scotland	Formation of the Scottish SPCA
Industrial	Early Industrial	1842	England / Germany	House by house sewer lined are adopted throughout Europe as English engineers bring sewer system to Hamburg, Germany
Industrial	Early Industrial	1842	Manhattan, NY	Old Croton Reservoir used to establish a city-wide water system
Industrial	Early Industrial	1842	Manhattan, NY	Dr. John H. Griscom, inspector for the Board of Health, writes 'The Sanitary Condition of the Laboring Population of New York City" outlining the connection between poverty and disease
Industrial	Early Industrial	1843	Scotland	Formation of the Scottish Rights of Way Society to protect walking areas
Industrial	Early Industrial	1844	Manhattan, NY	Formation of the New York State Association for the Preservation of Fish & Game, a distant ancestor of the National Wildlife Federation
Industrial	Early Industrial	1845	Ireland	Irish Potato Famine begins killing over 1.5 million
Industrial	Early Industrial	1846	England	The Corn Laws repealed
Industrial	Early Industrial	1847	England	Towns Improvement Clauses Act issued to address drainage, cleaning, lighting, and paving as well as appointment of full-time medical officers
Industrial	Early Industrial	1847	England	The Gas-works Clauses Act is passed
Industrial	Early Industrial	1848	USA	Formation of the American Medical Association (AMA)
Industrial	Early Industrial	1848	England	1st major Public Health Act is passed by Parliament
Industrial	**Early Industrial**	**1849**	**USA**	**The U.S. Department of the Interior is established**
Industrial	Late Industrial	1850	USA	U.S. Steamboat Inspection Service is established
Industrial	Late Industrial	1851	Paris, France	1st formal international health conference
Industrial	Late Industrial	1853	London, England	Smoke Nuisance and Abatement Bill is passed
Industrial	Late Industrial	1854	Manhattan, NY	NY Common Council rules homes must be connected to sewer lines
Industrial	Late Industrial	1855	Chicago, IL	1st comprehensive city sewer plan in U.S. is established
Industrial	Late Industrial	1859	London, England	London Metropolitan Drinking Fountain Association opens first public water fountains
Industrial	Late Industrial	1859	South Africa	Cape Colony enacts Forest and Herbage Protection Act
Industrial	Late Industrial	1861	USA	Civil War creates enormous environmental problems
Industrial	Late Industrial	1861	USA	Formation of the U.S. Sanitary Commission
Industrial	**Late Industrial**	**1862**	**USA**	**The U.S. Department of Agriculture (USDA) is established**
Industrial	Late Industrial	1862	USA	The Morrill Land Grant College Act is passed
Industrial	Late Industrial	1862	USA	The Homestead Act is passed
Industrial	Late Industrial	1862	Sri Lanka	Formation of the Animals Non-Violence Society
Industrial	Late Industrial	1863	England	The Alkali Act is passed

Industrial	Late Industrial	1863	USA	Formation of the National Academy of Sciences after Abraham Lincoln approves the Congressional charter
Industrial	Late Industrial	1863	Manhattan, NY	Formation of the Association for the Improvement of the Condition of the Poor
Industrial	Late Industrial	1863	London, England	The "Greenhouse Effect" is first explained by John Tyndall to the British Royal Society
Industrial	Late Industrial	1864	India	Formation of the Indian Forest Department by the British colonial government
Industrial	Late Industrial	1865	England	Formation of the Commons Preservation Society
Industrial	Late Industrial	1866	Manhattan, NY	Formation of the Metropolitan Board of Health in response to the New York Sanitary Survey of 1865
Industrial	Late Industrial	1866	USA	Formation of the American Society for the Prevention of Cruelty to Animals
Industrial	Late Industrial	1866	Germany	Ernst Heinrich Phillip August Haeckel coins the term Ecology
Industrial	Late Industrial	1867	Pennsylvania	PA legislature rejects bull to regulate water pollution
Industrial	Late Industrial	1869	USA	Transcontinental railroad creates link to US east and west coasts
Industrial	Late Industrial	1870	USA	John D. Rockefeller incorporates the Standard Oil Company leading to federal anti-trust laws against monopolies
Industrial	Late Industrial	1870	USA	Formation of the U.S. Weather Bureau
Industrial	Late Industrial	1871	USA	Formation of the U.S. Bureau of Commercial Fisheries
Industrial	Late Industrial	1871	USA	Worst recorded forest fire in North American history rages through northeastern Wisconsin and Upper Michigan, the "great Chicago fire" started the same night
Industrial	Late Industrial	1872	Philadelphia, PA	Formation of the Women's Humane Society of Philadelphia
Industrial	Late Industrial	1872	USA	Formation of the American Public Health Association
Industrial	Late Industrial	1872	USA	The Yellowstone National Park Act is issued by President Ulysses Grant
Industrial	Late Industrial	1872	USA	The General Mining Act is passed by Congress
Industrial	Late Industrial	1873	USA	Congress transfers territorial oversight from the Secretary of the State to the Secretary of the Interior
Industrial	Late Industrial	1874	Nebraska	Formation of the Arbor Day Foundation initially proposed as a day by J. Sterling Morton in 1872
Industrial	Late Industrial	1874	Germany	Othmar Zeider discovers the chemical formular for insecticide (DDT)
Industrial	Late Industrial	1874	India	Formation of the Bombay SPCA
Industrial	Late Industrial	1875	USA	President Ulysses S. Grant vetoes bill protecting buffalo and other wildlife
Industrial	Late Industrial	1875	England	The Health Act is issued to consolidate authority for housing, water pollution, etc.
Industrial	Late Industrial	1875	USA	American Forests is founded and is the oldest running U.S. conservation group
Industrial	Late Industrial	1876	England	The British River Pollution Control Act is issued
Industrial	Late Industrial	1877	USA	Formation of the American Humane Association
Industrial	Late Industrial	1878	USA	The National Quarantine Act is issued
Industrial	Late Industrial	1878	England	The Factories and Workshops Act is issued
Industrial	Late Industrial	1879	USA	U.S. Geological Survey is formed
Industrial	Late Industrial	1879	USA	Formation of the Division of Forestry, later becomes the U.S. Forest Service
Industrial	Late Industrial	1879	USA	Formation of the National Board of Health, later dissolved in 1883
Industrial	Late Industrial	1880	London, England	"Killer Fog" leads to 700 deaths
Industrial	Late Industrial	1881	Manhattan, NY	Formation of the Department of Street Cleaning in NY
Industrial	Late Industrial	1882	Massachusetts	First pure food laws
Industrial	Late Industrial	1882	USA	Formation of the American Anti-Vivisection Society
Industrial	Late Industrial	1882	Appleton, Wisconsin	1st hydroelectric power plant is operational
Industrial	Late Industrial	1883	Indonesia	Krakatoa volcano erupts killing over 36,000
Industrial	Late Industrial	1883	USA	Prevention of Lead Poisoning Act is issued

Industrial	Late Industrial	1884	USA	Interior's Bureau of Labor is established, later becomes the Department of Labor (DOL)
Industrial	Late Industrial	1885	USA	The U.S. Biological Survey is created
Industrial	Late Industrial	1885	USA	Formation of the Bureau of Labor Statistics within the Department of Labor
Industrial	Late Industrial	1889	USA	American Humane Education Society is incorporated as a subsidiary to the Massachusetts SPCA

Table 4-2: Milestones in Environmental History – Industrial Period[207]

MILESTONES IN ENVIRONMENTAL HISTORY - PROGRESSIVE PERIOD				
Period	*Segment*	*Year*	*Location*	*Description*
Progressive	Early Progressive	1890	USA	End of the American Frontier
Progressive	Early Progressive	1890	USA	Yosemite and General Grant National Parks and Sequoia National Park established
Progressive	Early Progressive	1890	USA	Second Morrill Act is issued
Progressive	Early Progressive	1890	USA	1st Federal Mean Inspection Act is issued
Progressive	Early Progressive	1891	USA	The Forest Reserve Act is issued
Progressive	Early Progressive	1891	England	The Factory Act Amendments Special Rules added for medical examination of workers
Progressive	Early Progressive	1893	Illinois	1st state law limiting workday for women to 8 hours
Progressive	Early Progressive	1895	USA	Formation of the American SPCA and the San Francisco SPCA
Progressive	Early Progressive	1895	USA	Formation of the Trustees of Scenic and Historic Places and Objects (later the American Scenic and Historic Preservation Society)
Progressive	Early Progressive	1896	USA	Rural Free Delivery (RFD) started
Progressive	Early Progressive	1899	England	Formation of the Coal Smoke Abatement Society
Progressive	Early Progressive	1899	USA	The Rivers and Harbors Act (Refuse Act) passed by Congress
Progressive	New Century	1900	Paris, France	The Paris Universal Exposition begins
Progressive	New Century	1900	Missouri	Supreme Court water pollution lawsuit against Chicago, IL for polluting the Mississippi
Progressive	New Century	1901	USA	The Smithsonian Annual Report is released offering wind, tidal, and solar as alternatives for coal
Progressive	New Century	1902	USA	The Reclamation Act is issued
Progressive	New Century	1902	USA	The Biologics Control Act is issued
Progressive	New Century	1902	USA	Formation of the Bureau of Reclamation
Progressive	New Century	1903	China	Formation of the Hong Kong SPCA

[207] Sources:
Department of Energy. "DOE History Timeline." https://www.energy.gov/lm/doe-history/doe-history-timeline/timeline-events-2009;
"Environmental History." https://environmentalhistory.org/;
Environmental Protection Agency. "Milestones in EPA and Environmental History." https://www.epa.gov/history/milestones-epa-and-environmental-history
Unites States Department of Agriculture. "A Condensed History of American Agriculture 1776-1999 Timeline." https://www.usda.gov/sites/default/files/documents/history-american-agriculture.pdf;
United States Department of the Interior. "History of the Department of the Interior." https://www.doi.gov/whoweare/history

Progressive	New Century	1903	USA	1st National Wildlife Refuge is established by President Theodore Roosevelt
Progressive	New Century	1905	USA	Formation of the National Audubon Society
Progressive	New Century	1906	USA	The Food and Drug Act is issued by President Theodore Roosevelt
Progressive	New Century	1906	USA	The Antiquities Act is issued
Progressive	New Century	1906	USA	The Burton Act is passed by Congress
Progressive	New Century	1907	USA	Formation of the USDA Animal Health and Plant Health Inspection Service
Progressive	New Century	1907	Chicago, IL	Formation of the Smoke Prevention Association of America
Progressive	New Century	1907	Pittsburgh, PA	The Pittsburgh Survey is published with details about housing, environment, public health, and industrial concerns
Progressive	New Century	1908	USA	President Roosevelt's Country Life Commission was established
Progressive	Later Progressive	1910	Chicago, IL	1st National Conference on Industrial Diseases is held
Progressive	Later Progressive	1910	USA	The Insecticide Act is administered by the USDA (becomes FIFRA in 1947 and given to EPA oversight in 1972)
Progressive	Later Progressive	1910	USA	Formation of the Bureau of Mines
Progressive	Later Progressive	1911	USA	The Weeks Act is issued
Progressive	Later Progressive	1912	Egypt	Sun Power Co. builds a massive solar irrigation pump for the British government
Progressive	Later Progressive	1912	Cincinnati, OH	Formation of the Federal Water and Sanitation Investigation Station
Progressive	Later Progressive	1912	USA	U.S. Department of Labor established
Progressive	Later Progressive	1914	USA	Ludlow Massacre
Progressive	Later Progressive	1914	USA	The Smith-Lever Extension Act is passed
Progressive	Later Progressive	1915	Utah	Dinosaur National Monument is established
Progressive	Later Progressive	1916	USA	National Park Service is established by President Woodrow Wilson
Progressive	Later Progressive	1916	USA	1st legal birth control clinic is opened by Margaret Sanger

Table 4-3: Milestones in Environmental History – Progressive Period[208]

[208] Sources:
Department of Energy. "DOE History Timeline." https://www.energy.gov/lm/doe-history/doe-history-timeline/timeline-events-2009;
"Environmental History." https://environmentalhistory.org/;
Environmental Protection Agency. "Milestones in EPA and Environmental History." https://www.epa.gov/history/milestones-epa-and-environmental-history
Unites States Department of Agriculture. "A Condensed History of American Agriculture 1776-1999 Timeline." https://www.usda.gov/sites/default/files/documents/history-american-agriculture.pdf;
United States Department of the Interior. "History of the Department of the Interior." https://www.doi.gov/whoweare/history

4.2 The Green Era and the Creation of the EPA

The historical summary preceding this section, illustrates the foundation on which the EPA is built. On 9th July 1970, the EPA was proposed by President Richard Nixon as an autonomous, independent executive agency of the federal government responsible for all matters concerning environmental protection. The proposal came during a time of increased public concern around air quality deterioration, increased pollution, and water contamination from toxic substances. President Nixon delivered a 37-point message to address these concerns and set a path for a more proactive method of addressing environmental concerns including a request for four billion dollars toward water treatment, heightened air quality standards with guidelines for lowering emissions, launching campaigns for federally-funded research, facility cleanups, Great Lakes dumping elimination, taxation on lead additives in gasoline, considerations for ocean oil transportation, and a National Contingency Plan for addressing future oil spills.[209] In parallel, the president created a the President's Advisory Council on Executive Organization ("Ash Council) to organize federal government programs to support pollution reduction and further support the overall strategy. Based on the recommendations of the president's council to consolidate environmental responsibilities under a singular agency, the plan was sent to Congress for approval.

According to the EPA, the original scope of the proposed organization was to conduct independent research on the impact of pollutants on the overall environment, in partnership with other agencies the EPA would monitor environmental conditions, establish environmental baselines based on research, work directly with states to establish

[209] Environmental Protection Agency. "The Origins of the EPA." http://www.epa.gov

and enforce standards for air and water quality as well as pollutants, create standards with the industry to address waste disposal issues, and to provide financial and technical support to states developing and expanding their environmental control programs.[210]

After the summer hearings, the House and Senate approved the proposal and on 2 December 1970 when President Nixon signed EPA Order 1110.2 the EPA was formally established. On 4 December 1970, William D. Ruckelshaus was appointed as the first Administrator of the EPA. In a press release two weeks later, Ruckelshaus made it clear that the EPA was to be an independent agency with "no obligational to promote agriculture or commerce; only the critical obligation to protect and enhance the environment.[211]" From inception, the EPA was intended to set the standards and provide the regulatory framework that all other agencies were required to follow in pursuit of environmental awareness, though the integration of these functions was not carefully crafted. In establishing its executive and regulatory presence, oversight of laws and functions from other agencies were consolidated into the EPA from the Interior Department the USDA, the Department of Health Education and Welfare (HEW), the Atomic Energy Commission (AEC), the Federal Radiation Council (FRC), and the Council on Environmental Quality (QEC), and the Executive Office of the President[212].

In the early years of its existence, the EPA was responsible for issuing over 1500 rulemaking notices in the Federal Register each year in support of the many critical environmental laws including:

- The Environmental Quality Improvement Act of 1970

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[210] Environmental Protection Agency. "The Origins of the EPA." http://www.epa.gov
[211] Ruckelshaus, W.D. (1970). "EPA's First Administrator on the Establishment of EPA." EPA Press Release, December 16, 1970.
[212] Williams, Dennis C. (1993) "The Guardian: EPA's Formative Years, 1970-1973." (Washington, DC: EPA)

- the Clean Air Act of 1970
- the Resource Recovery Act of 1970
- the Federal Environmental Pesticides Control Act of 1972
- the Coastal Zone Management Act of 1972
- the Marine Protection Research and Sanctuaries Act of 1972
- the Marine Mammal Protection Act of 1972
- the Endangered Species Act of 1973
- the Deepwater Ports and Waterways Safety Act of 1974
- the Fish and Wildlife Coordination Act of 1974
- the Safe Drinking Water Act of 1974
- the Wild and Scenic Rivers Act of 1976
- the Resource Conservation and Recover Act of 1976 (RCRA)
- the Toxic Substances Control Act of 1976 (TSCA)
- the Water Resources Planning Act of 1977
- the Water Resources Research Act of 1977.

Included within these early efforts are:

- regulation of land use in 1972
- safety standards for farmworkers in 1974
- renewed enforcement of the Rivers and Harbors Act of 1899
- amendments to the Food, Drugs, and Cosmetics Act of 1938.

Even with these landmark acts being created, the EPA and Congress worked to modify interpretations and ease restrictions through amendments as in the case of the Clean Air Act Amendments of 1974 that eased auto emissions standards. During this time, the EPA's

Office of Research and Development was also under considerable scrutiny by the National Academy of Sciences, the General Accounting office, the Senate Subcommittee on Environmental Pollution, the Water Pollution Control Federation, and in-house EPA Committees for having to many management hierarchies casing it to fail in meeting long-term goals.[213] By the late 1970s, it was clear that the RCRA, Clean Air, and Clean Water Acts were not capable of addressing the problems they were intended to and required amendments ultimately leading to the enactment of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) of 1980.

4.3 Reagan Era Reform of Green Era Policies

Reagan's presidency is often analyzed for its varied outcomes in the use of sweeping unilateral action across policy genres through the federal budgeting process. Reagan attempted to centralize the budgeting process within the Office of Management and Budget (OMB) to cut domestic spending and directly influence priorities. His supply-side management approach would leverage strategic deficits to make sweeping personnel reductions an align government programs based on bureaucratic, legislative, or special interest demand. Despite the opinions of proponents and opposition, the Reagan Presidency was a "strong, purposive, and premiere force in the political system"[214] though the long-term prominence and persistence is contended. Durant, Kluesner, and Legge (1991)[215] conducted a validity test using an uninterrupted time series model to look at domestic

[213] Wisman, Phil (1985). "EPA History 1970-1985)." (Washington, DC: EPA).
[214] Durant, R., Kluesner, T., & Legge, J. (1992). "Domestic Programs, Budget Outlays, and the Reagan Revolution: A Test of Competing Theories in Four Policy Arenas." *Journal of Public Administration Research and Theory: J-PART, 2(4),* pp.369-386.
[215] Durant, R., Kluesner, T., & Legge, J. (1992), p.371.

spending across health, community development, regional development, and education. The analysis revealed long-term implications for Reagan's unilateral actions, mainly that his supply-side management approach to domestic policy was "less potent" and that it failed to create the anticipated asymmetrical power structure of placing the president at an advantage over congress for federal budgeting. A major takeaway from this study is that Reagan's punctuated changes in budget across those four policy arenas, when compared to Carter, did not mark statistically significant differences even in transportation, the only policy area to have a negative growth rate. These analyses allude to the deeper dynamics of the federal budgeting process and the true influence a unilateral presidency has on driving specific outcomes. Economic, social, cultural, and political conditions start to become very deterministic in the ultimate outcomes of unilateral actions affecting budgeting.

While the previous example highlights broader unilateral action across various policy arenas, the trends continue to be evident within environmental policy. Shanley (1983) describes environmental policy as being driven primarily through bipartisan cooperation in Congress especially for pollution and the creation of the National Environmental Policy Act (NEPA). Nixon would take to using executive orders as a means for sweeping change, establishing the EPA and the National Oceanic and Atmospheric Administration (NOAA). Among his stronger executive actions were placing the Refuse Act program under NEPA and strengthening the Council of Environmental Quality in implementing NEPA, the latter of which criticized for not having regulatory power to influence lasting change.[216] Carter's Executive Order 11911 would strengthen the CEQ by

[216] Shanley, R. (1983). "Presidential Executive Orders and Environmental Policy." *Presidential Studies Quarterly, 13(3),* p.407.

granting the ability to impose requirements on agencies and to issue regulations. Carter would issue additional executive orders that received criticism from special interest groups and the public for the excessive use of exemptions, the overextension of executive power, requirement limitations for Environmental impact statements, and the omission of judicial review.[217]

According to Kraft and Vig (1984), in the case of Environmental Policy, the Reagan administration was touted for its ability to not only reduce budget allocations in this category but also to boldly attempt to reverse previous policies established during the environmental decade (1970s), systematically and in a non-incremental manner.[218] This era initiated under Nixon, saw bipartisan cooperation to enabling implementing agencies the discretion to address critical environmental issues. However, statutes permitted citizen lawsuits as a means of enabling judicial review which put continued pressure on agencies to document administrative processes. Nixon, Ford, and Carter struggled to adopt proper mechanisms to review agency policy. The Sierra Club[219] convention during the Carter presidency would grant the president the ability to directly intervene in agency policymaking, a position which Reagan used to his advantage. When Reagan took office, he revoked Carter's Executive Oder 12113 which required technical reviews to be submitted to the Water Resources Council (WRC) with special considerations. Reagan issued Executive Order 12322 in its place to require all federal agencies to submit water

[217] Shanley (1983). p.409.
[218] Kraft, M., & Vig, N. (1984). "Environmental Policy in the Reagan Presidency." *Political Science Quarterly, 99(3), p*416. doi:10.2307/2149941
[219] The Sierra Club sued the president over concerns that influence and collusion between the White House, EPS, and industry regulators was unconstitutional and a denial of due process. The courts rules that the authority of the president to control and supervise policymaking is derived directly from the Constitution.

and land resource plans to the OMB, continuing the course for large scale centralizing under the OMB and the executive office.

In Nathan's *The Administrative Presidency*, he calls this action a necessity as political penetration of operations is a requirement to enabling efficiency within the government.[220] This dynamic causes concern for whether a true balance in government is possible with unrestrained unilateral action affecting regulatory processes. Kraft and Vig argue that it is not about the ability to intervene but the purpose and method, or legitimacy and technical rationality, for that intervention that is critical.[221] Leveraging the supply-side management and cost-benefit analysis approaches to directly change environmental policy fell in line with what was being done in other domestic policy arenas. Rather than taking time to follow a traditional consensus-based approach to change these existing bipartisan environmental policies, Reagan was determined to use executive action where legislative means fell short. Both Carter and Reagan used cost-benefit analysis and whereas Carter's order placed the burden of proof on the White House to challenge cost effectiveness, Reagan's order mandated the analysis for "major" regulations giving discretion to the OMB to waive the Regulatory Impact Analysis and Review and keeping agencies on high alert due to the uncertainty in what was deemed "major."[222] According to Shanley, the majority of presidential executive orders had little "substantive impacts" except for Reagan's Executive Order 12291 which established the Cabinet-level regulatory appeals group to successfully pull regulatory activities directly under the purview of executive agencies.

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[220] Nathan (1986), p.13.
[221] Kraft & Vig (1984), p.422.
[222] Shanley (1983), p.412.

This is a crucial point as Reagan attempted to achieve his vision by: focusing on personnel policies for traction via politicization, using reorganization to weaken institutional power and centralize planning, budgetary cuts, and regulatory centralization through new offices limiting public intervention. While the president used his unilateral discretion to influence, Congress did successfully block any administrative efforts to change critical environmental policy and launched investigations into the EPA which pushed out leadership, though numerous agency changes were already conducted. While the president and Congress are often considered in this power dynamic, the role of the courts is also an important consideration for establishing balance, though litigation does more to delay administrative actions than to prevent it.[223]

The military would use NPR as a means of decentralization by devolving the separate funding accounts under the Defense Environmental Restoration Account (DERA), under the Office of the Secretary of Defense, to increase their control over the usages of those funds. The general compromise was that they would move forward with environmental restoration as far as it was not "at the expense of mission requirements."[224] During this time there was public and administrative focus on the military-run contaminated sites, energy conservations, demilitarization of chemical weapons, and proper disposal of ozone-depleting chemicals. Clinton's NPR intended to inspire the creation of environmental management systems (EMS) to standardize processes and gauge performance. While the military claimed scarcity as a reason for not dedicating resources to collection of information, the EMS became more attractive to the military with the

[223] Kraft & Vig (1984), p.435.
[224] Defense Environment Alert (DEA). *1996d. Excerpts: DOD Report to Congress on DERA Devolvement.* 4(8): pp.26-29.

addition of International Standard 14001 (ISO 14001) that allowed them to provide their own self-assessments, self-policing, and self-certification.

Another Reagan era example includes Executive Order 12630 "Governmental Action and Interference with Constitutionally Protected Property Rights," a highly contended "top-down" directive that invoked the 5th Amendment Takings Clause to mandate agency proof that just compensation rewards are made for taken property. As Kennedy (2018) states in his analysis, proof of agency compliance was minimal and signaled a "willful avoidance of following."[225] The lack of compliance is attributed to failure in bargaining between political actors, inability to secure satisfactory enforcement, possible symbolic intent with issuance of the order, and the gaps between responsiveness and compliance.

These examples continue to illustrate that while policy reform can be conceived or pushed unilaterally by the president, there are additional layers to the implementation and ultimate results of those reforms based on the president's intent, accountability processes, and the political actors within an implementing agency or program. This creates an incredible dynamic to the view of unilateral presidential actions in the face of policy reform and alludes to a larger gap for researchers and reformers to adequately address.

MILESTONES IN ENVIRONMENTAL HISTORY - 20TH CENTURY PERIOD

Period	*Segment*	*Year*	*Location*	*Description*
20th Century	Roaring 20's	1920	USA	The U.S. Federal Power Act is issued
20th Century	Roaring 20's	1920	USA	The U.S Mineral Leasing Act is issued
20th Century	Roaring 20's	1922	USA	1st Harbor Pollution Survey is conducted
20th Century	Roaring 20's	1922	USA	National Coast Anti-Pollution League is formed
20th Century	Roaring 20's	1922	USA	The Capper-Volstead Act is issued
20th Century	Roaring 20's	1924	USA	The Oil Pollution Act is issued

[225] Kennedy, J. "The Limits of Presidential Influence: Two Environmental Directives and What they mean for Executive Power." *Journal of Policy History 20, no 1 (2018),* p.11.

20th Century	Roaring 20's	1925	USA	The Patent Office is transferred to the Department of Commerce
20th Century	Roaring 20's	1926	England	The Public Health Act (UK) is issued
20th Century	Roaring 20's	1927	New Jersey	The Radium Girls of NJ file lawsuits for dangerous working conditions
20th Century	Roaring 20's	1928	USA	Public Health Service begins checking air pollution in eastern US
20th Century	Roaring 20's	1929	USA	The Norbeck-Anderson Act is issued with consolidation of over 100 wildlife sanctuaries under federal protection
20th Century	Great Depression	1930	USA	National Institute of Health (NIH) is established
20th Century	Great Depression	1930	USA	The Bureau of Pensions is transferred to the Veterans Administration
20th Century	Great Depression	1932	West Virginia	Hawks Nest Disaster
20th Century	Great Depression	1933	USA	Formation of the Civilian Conservation Corps
20th Century	Great Depression	1933	USA	American Chamber of Horrors is created by the FDA to argue products on the market that they lacked authority to remove
20th Century	Great Depression	1933	USA	1st Dust Bowl storms begin
20th Century	Great Depression	1933	USA	The Agricultural Adjustment Act (AAA) is issued
20th Century	Great Depression	1934	USA	The Taylor Grazing Act and Indian Reorganization Act are passed
20th Century	Great Depression	1935	USA	The Social Security Act and National Labor Relations Act are issued
20th Century	Great Depression	1935	Germany	Reich Nature Protection Law (Reichsnaturschutzgesetz or RNG) is enacted by Nazi government
20th Century	Great Depression	1935	USA	The Bureau of Reclamation completed construction of the Hoover Dam
20th Century	Great Depression	1936	USA	Formation of the National Wildlife Federation
20th Century	Great Depression	1936	USA	The Soil Conservation and Domestic Allotment Act is issued
20th Century	Great Depression	1936	USA	The Rural Electrification Act (REA) is issued
20th Century	Great Depression	1936	USA	The Public Contracts Act is passed by U.S. Congress
20th Century	Great Depression	1937	USA	Hindenburg Disaster
20th Century	Great Depression	1937	Manhattan, NY	Public Health Service survey of air pollution shows worsening conditions
20th Century	Great Depression	1937	USA	Federal Aid in Wildlife Restoration Act (also called the Pittman-Robertson Act) is passed by Congress
20th Century	Great Depression	1938	USA	Federal Stream Pollution Bill received final congressional approval
20th Century	Great Depression	1938	USA	The Federal Food, Drug, and Cosmetic Act is issued
20th Century	Great Depression	1938	Germany	Radiochemists Otto Hahn and Fritz Strassman discover the process of fission in uranium
20th Century	Great Depression	1939	Poland	Germany invades Poland
20th Century	Great Depression	1940	USA	The U.S. Fish and Wildlife Service is founded
20th Century	WWII & Post-War	1941	St. Louis, MI	St. Louis adopts first strict smoke control ordinance
20th Century	WWII & Post-War	1941	Berkeley, California	University of California research group under Glenn T. Seaborg discovers plutonium
20th Century	WWII & Post-War	1941	USA	The Office of Petroleum Coordinator for National Defense is established by President Theodore Roosevelt (later renamed to the Petroleum Administration for War)
20th Century	WWII & Post-War	1941	USA	The Japanese attack Pearl Harbor - the U.S. enters World War II
20th Century	WWII & Post-War	1942	USA / Germany	President Harry S. Truman launches war investigating committee that exposes treasonous relationship between American companies and German chemical companies
20th Century	WWII & Post-War	1942	USA	President Roosevelt approves production of the atomic bomb and charges the Army to construct the atomic weapon complex
20th Century	WWII & Post-War	1942	USA	The Army Corps of Engineers establishes the Manhattan Engineer District

20th Century	WWII & Post-War	1943	USA	The Big Inch crude-oil pipeline is completed from Texas to Pennsylvania
20th Century	WWII & Post-War	1944	USA	The Little Inch crude-oil pipeline is completed from Texas to New Jersey
20th Century	WWII & Post-War	1944	Cleveland, OH	Natural gas explosion
20th Century	WWII & Post-War	1944	USA	The Synthetic Liquid Fuels Act is passed by Congress
20th Century	WWII & Post-War	1944	USA	Flood Control Act of 1944 is passed by Congress
20th Century	WWII & Post-War	1945	USA	President Roosevelt dies. Harry S. Truman becomes President
20th Century	WWII & Post-War	1945	San Francisco, CA	Formation of the United Nations (UN)
20th Century	WWII & Post-War	1945	Alamogordo, NM	Trinity Test of world's first atomic weapon
20th Century	WWII & Post-War	1945	Japan	U.S. drops atomic bombs on Hiroshima and Nagasaki
20th Century	WWII & Post-War	1946	USA	President Truman signs the Atomic Energy Act of 1946 transferring Manhattan Project assets and responsibilities to the civilian Atomic Energy Commission
20th Century	WWII & Post-War	1946	USA	U.S. Bureau of Land Management is established when Interior's General Land Office and Grazing Service are merged
20th Century	WWII & Post-War	1947	Los Angeles, CA	Formation of the Los Angeles Air Pollution Control District
20th Century	WWII & Post-War	1947	Texas	Texas City disaster
20th Century	WWII & Post-War	1948	Geneva, Switzerland	World Medical Association issues a modern re-statement of the Hippocratic Oath
20th Century	WWII & Post-War	1948	USA	The Federal Water Pollution Control Act is issued
20th Century	WWII & Post-War	1948	Denver, CO	Inter-American Conference on Conservation of Renewable Natural Resources is held
20th Century	WWII & Post-War	1948	Fontainebleau, France	International Union for the Conservation of Nature is established
20th Century	WWII & Post-War	1948	Donora, PA	Air pollution disaster
20th Century	WWII & Post-War	1948	Russia	Soviet Union begins blockade of West Berlin
20th Century	WWII & Post-War	1949	USA	First U.S. conference on air pollution sponsored by the Public Health Service
20th Century	WWII & Post-War	1949	UN	United Nations Scientific Conference on Conservation and the Utilization of Natural Resources is held
20th Century	Cold War	1950	Washington, DC	United States Technical Conference on Air Pollution is held
20th Century	Cold War	1950	USA	Interior assumes jurisdiction over Guam, American Samoa, and the Trust Territory of the Pacific Islands
20th Century	Cold War	1950	Korea	North Korea invades South Korea - The Korean War begins
20th Century	Cold War	1951	USA	Formation of The Nature Conservancy
20th Century	Cold War	1952	USA	The Dingell-Johnson Act is passed by Congress
20th Century	Cold War	1952	Ontario, Canada	Chalk River nuclear test reactor explodes
20th Century	Cold War	1952	USA	U.S. Atomic Energy Commission (AEC) detonates the first thermonuclear device
20th Century	Cold War	1953	USA	Dwight D. Eisenhower is inaugurated President
20th Century	Cold War	1953	Australia	British nuclear weapon testing at Maralinga
20th Century	Cold War	1954	USA	The Agricultural Trade Development and Assistance Act is issued
20th Century	Cold War	1954	USA	Launch of the USS Nautilus, the world's first nuclear powered submarine
20th Century	Cold War	1954	USA	Formation of the Humane Society of the U.S.
20th Century	Cold War	1954	USA	The Atomic Energy Act is signed by President Dwight D. Eisenhower
20th Century	Cold War	1955	Japan	Formation of the Japan Council Against Atomic and Hydrogen Bombs
20th Century	Cold War	1955	USA	The Air Pollution Control Act is passed by Congress (forerunner to the Clean Air Act of 1963)

20th Century	Cold War	1955	Arco, Idaho	EBR-I reactor melts down during a coolant flow test
20th Century	Cold War	1955	Manhattan, NY	International Air Pollution Congress is held
20th Century	Cold War	1956	USA	The Water Pollution Control Act is passed by Congress
20th Century	Cold War	1956	Sellafield, UK	1st commercial nuclear electric power plant is opened
20th Century	Cold War	1956	England	The Clean Air Act is passed by British Parliament
20th Century	Cold War	1957	Russia	Soviet Union launches Sputnik I, the first artificial satellite
20th Century	Cold War	1957	Manhattan, NY	Water fluoridation controversy
20th Century	Cold War	1957	USA	1st underground nuclear test
20th Century	Cold War	1957	Kyshtym, Russia	Chelyabinsk 40 nuclear waste explosion
20th Century	Cold War	1957	USA	The Price-Anderson Act is issued
20th Century	Cold War	1957	Shippingport, PA	1st full-scale US nuclear power plant goes into service
20th Century	Cold War	1958	UN	UN Conference on the Law of the Sea is held
20th Century	Cold War	1958	USA / UK	Formation of the Campaign for Nuclear Disarmament
20th Century	Cold War	1959	California	1st state to impose automotive emissions standards
20th Century	Cold War	1959	USA	The Humane Slaughter Act is passed by Congress (85 years after Switzerland)
20th Century	Cold War	1959	France	Malpasset Dam collapse
20th Century	The Sixties	1960	USA	President Dwight D. Eisenhower signs bill starting a two-year Air Pollution Study on cars
20th Century	The Sixties	1960	USA	Formation of the Alaskan Conservation Society
20th Century	The Sixties	1960	World	The Organization of Petroleum Exporting Countries (OPEC) is created by Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela
20th Century	The Sixties	1961	USA	John F. Kennedy is inaugurated President
20th Century	The Sixties	1961	North Carolina	Nuclear bomb nearly detonates
20th Century	The Sixties	1961	Europe	Formation of the World Wildlife Fund
20th Century	The Sixties	1961	Russia	East Germany begins construction of the Berlin Wall
20th Century	The Sixties	1962	USA	White House Conservation Conference is held
20th Century	The Sixties	1962	USA	Reconnaissance reveals Soviet missiles in Cuba
20th Century	The Sixties	1963	USA	Formation of the Senate Subcommittee on Air and Water Pollution
20th Century	The Sixties	1963	USA / Russia / UK	The Nuclear Test Ban Treaty is signed
20th Century	The Sixties	1963	USA	Lyndon B. Johnson becomes President
20th Century	The Sixties	1963	New Jersey	The Jersey Central Power and Light Company announces the purchase of a 515-megawatt plant from General Electric to be built at Oyster Creek, New Jersey
20th Century	The Sixties	1963	Italy	Vajont reservoir disaster
20th Century	The Sixties	1964	USA	Formation of the National Wilderness Preservation System by Congress
20th Century	The Sixties	1964	USA	The Food Stamp Act is issued and begins War on Poverty
20th Century	The Sixties	1965	USA	The Water Quality Act, the Noise Control Act, and the Solid Waste Disposal Act are all passed by Congress
20th Century	The Sixties	1965	USA	The U.S. launches the first nuclear reactor in space (SNAP-10A). SNAP stands for Systems for Nuclear Auxiliary Power
20th Century	The Sixties	1966	USA	Public hearings on leaded gasoline
20th Century	The Sixties	1966	Detroit, MI	Fermi No. 1 fast metal breeder nuclear reactor partially melts down
20th Century	The Sixties	1967	Middle East	The Six Day War in the Middle East closes the Suez Canal

20th Century	The Sixties	1967	USA	The Outer Space Treaty is signed to prohibit placement of nuclear weapons around Earth's orbit
20th Century	The Sixties	1967	Mexico City, MX	The Treaty of Tlatelolco is signed prohibiting nuclear weapons in Latin America and the Caribbean
20th Century	The Sixties	1967	USA	Formation of the Environmental Defense Fund
20th Century	The Sixties	1967	USA	The Air Quality Act / Clean Air Act is passed by Congress
20th Century	The Sixties	1968	California	Redwood National Park is established
20th Century	The Sixties	1968	Memphis, TN	Martin Luther King assassinated supporting sanitation workers strike for environmental and economic justice
20th Century	The Sixties	1968	Farmington, WV	Farmington Mine disaster
20th Century	The Sixties	1968	World	The Nuclear Non-Proliferation Treaty is opened for signature
20th Century	The Sixties	1969	USA	Richard M. Nixon is inaugurated President
20th Century	The Sixties	1969	UK / France	Concorde first fight
20th Century	The Sixties	1969	San Francisco, CA	UNESCO conference “Man and his Environment: A View Towards Survival” is held
20th Century	The Sixties	1969	USA	The Federal Coal Mine Health and Safety Act is passed by Congress
20th Century	The Sixties	1969	USA	The National Environmental Policy Act is passed by Congress
20th Century	The Sixties	1969	USA	Formation of the Friends of the Earth
20th Century	The Sixties	1969	Massachusetts	The New Alchemy Institute is founded
20th Century	The Sixties	1969	Cuyahoga, OH	Cuyahoga River fire
20th Century	The Seventies	1970	USA	The National Environmental Policy Act is signed creating the Council on Environmental Quality (CEQ) to give the President advice on environmental issues and review Environmental Impact Statements
20th Century	The Seventies	1970	San Francisco, CA	1st grassroots Earth Day celebration
20th Century	The Seventies	1970	USA	The Mine Safety and Health Act is issued
20th Century	The Seventies	1970	USA	The United States, Great Britain, the Soviet Union, and forty-five other nations sign the Treaty for the Nonproliferation of Nuclear Weapons
20th Century	The Seventies	1970	USA	The Environmental Quality Improvement Act is issued
20th Century	**The Seventies**	**1970**	**USA**	**The Environmental Protection Agency (EPA) is proposed and established by President Richard Nixon**
20th Century	The Seventies	1970	USA	Formation of the National Oceanic and Atmospheric Administration (NOAA)
20th Century	The Seventies	1970	USA	The Occupational Health and Safety Administration (OSHA) bill is passed by Congress
20th Century	The Seventies	1970	USA	Formation of the Natural Resources Defense Council
20th Century	The Seventies	1970	USA	The Clean Air Act is signed into law
20th Century	The Seventies	1970	Victoria, Canada	Greenpeace is founded
20th Century	The Seventies	1971	USA	Lead-based paint restrictions issued by Congress
20th Century	The Seventies	1971	USA	EPA Administrator Ruckelshaus announces national standards on six common pollutants: sulfur oxides, particulate matter, carbon monoxide, photochemical oxidants, nitrogen oxides and hydrocarbons
20th Century	The Seventies	1971	USA	EPA Defines Air Pollution Danger Levels
20th Century	The Seventies	1971	USA	EPA begins Vehicle Fuel Economy Testing
20th Century	The Seventies	1972	USA	EPA starts Documerica project
20th Century	The Seventies	1972	USA	Tuskegee syphilis experiments
20th Century	The Seventies	1972	USA	The Federal Water Pollution Control Act is passed by Congress
20th Century	The Seventies	1972	USA / Canada	Great Lakes Water Quality Agreement is signed

20th Century	The Seventies	1972	USA / Russia	EPA and the U.S.S.R. sign an agreement establishing the Joint Committee on Cooperation in the Field of Environmental Protection
20th Century	The Seventies	1972	USA	The Coastal Zone Management Act is passed by Congress
20th Century	The Seventies	1972	USA	The Marine Mammal Protection Act is passed by Congress
20th Century	The Seventies	1972	USA	The Marine Protection, Research and Sanctuaries Act or Ocean Dumping Act is passed by Congress
20th Century	The Seventies	1972	USA	The Federal Insecticide, Fungicide, Rodenticide Act (FIFRA) is passed by Congress
20th Century	The Seventies	1972	Tennessee	The U.S. Atomic Energy Commission (AEC) announces a cooperative agreement with industry to build a Liquid Metal Fast Breeder Reactor on the Clinch River
20th Century	The Seventies	1972	USA	Nationwide ban on DDT pesticide
20th Century	The Seventies	1973	USA	Eighty nations sign the Convention on International Trade in Endangered Species (CITES)
20th Century	The Seventies	1973	USA	1st Wastewater Permits Issued
20th Century	The Seventies	1973	USA	Alaska Oil pipeline is approved by Congress
20th Century	The Seventies	1973	USA	The Endangered Species Act is passed by Congress
20th Century	The Seventies	1973	USA	EPA sets regulations on car manufacturing and testing for compliance with Clean Air Act emissions standards
20th Century	The Seventies	1973	USA	President Nixon establishes the Energy Policy Office
20th Century	The Seventies	1973	Middle East	The Yom Kippur War breaks out in the Middle East
20th Century	The Seventies	1973	USA	OPEC oil embargo
20th Century	The Seventies	1973	USA	Russell Errol Train becomes the second EPA Administrator, serving under President Richard Nixon and President Gerald Ford
20th Century	The Seventies	1973	USA	EPA creates new transportation controls in some of the nation's largest cities
20th Century	The Seventies	1973	USA	President Nixon launches Project Independence
20th Century	The Seventies	1973	USA	The Federal Energy Office replaces the Energy Policy Office
20th Century	The Seventies	1974	USA	The Safe Drinking Water Act is passed by Congress and administered by the EPA
20th Century	The Seventies	1974	USA	Federal Administration Act is signed by President Nixon replacing the Federal Energy Office
20th Century	The Seventies	1974	USA	Gerald R. Ford becomes President
20th Century	The Seventies	1974	USA	Energy Reorganization Act is signed by President Ford abolishing AEC and establishing the Energy Research and Development Administration and the U.S. Nuclear Regulatory Commission
20th Century	The Seventies	1975	USA	The Energy Research and Development Administration is activated
20th Century	The Seventies	1975	USA	EPA announces its proposal to the Federal Aviation Administration to quiet jet planes as EPA had jurisdiction over federal noise regulation under the 1972 Noise Control Act
20th Century	The Seventies	1975	USA	The Hazardous Waste Transportation Act is passed by Congress
20th Century	The Seventies	1975	China	Collapse of 62 hydro dams
20th Century	The Seventies	1975	USA	Alaska Pipeline begins
20th Century	The Seventies	1975	USA	President Ford signs the Energy Policy and Conservation Act, extending oil price controls into 1979
20th Century	The Seventies	1976	Idaho	Catastrophic failure of Grand Teton Dam
20th Century	The Seventies	1976	Milan, Italy	Chemical explosion
20th Century	The Seventies	1976	USA	The National Academy of Science report on CFCs (chlorofluorocarbon) gasses warns of damage to ozone layer
20th Century	The Seventies	1976	USA	The Resource Conservation and Recovery Act (RCRA) is passed by Congress

20th Century	The Seventies	1976	USA	The Federal Land Policy Management Act is passed by Congress
20th Century	The Seventies	1976	USA	The Whale Conservation and Protective Study Act is passed by Congress
20th Century	The Seventies	1976	USA	The Toxic Substances Control Act (TSCA) is passed by Congress
20th Century	The Seventies	1977	USA	Jimmy Carter is inaugurated President
20th Century	The Seventies	1977	USA	Douglas M. Costle becomes the third EPA Administrator, serving under President Jimmy Carter
20th Century	**The Seventies**	**1977**	**USA**	**The U.S. Department of Energy (DOE) is formed by President Jimmy Carter**
20th Century	The Seventies	1977	USA	The Soil and Water Conservation Act is passed by Congress
20th Century	The Seventies	1977	USA	The Surface Mining Control and Reclamation Act is passed by Congress
20th Century	The Seventies	1977	USA	The U.S. Supreme Court upholds the 1973 Endangered Species Act
20th Century	The Seventies	1977	USA	National drinking water standards went into effect for the first time
20th Century	The Seventies	1977	USA	President Jimmy Carter signs the Clean Air Act Amendments to further strengthen air quality standards and protect human health
20th Century	The Seventies	1977	USA	President Jimmy Carter signs the Clean Water Act, amending the 1972 version
20th Century	The Seventies	1977	USA	Emergency Natural Gas Act is signed by President Carter
20th Century	The Seventies	1977	Denver, CO	DOE establishes Western Area Power Administration
20th Century	The Seventies	1978	Tarragona, Spain	Propylene gas explosion
20th Century	The Seventies	1978	USA	The Energy Tax Act is issued
20th Century	The Seventies	1978	USA	The National Energy Act is passed by Congress
20th Century	The Seventies	1978	USA	The Endangered American Wilderness Act is passed by Congress
20th Century	The Seventies	1978	USA	The Antarctic Conversation Act is passed by Congress
20th Century	The Seventies	1978	USA	EPA phaseout of Chlorofluorocarbon (CFC) gases
20th Century	The Seventies	1979	Pennsylvania	Three Mile Island nuclear power plant loses coolant and partially melts down
20th Century	The Seventies	1979	Campeche, MX	IXTOC I oil well blowout
20th Century	The Seventies	1979	USA	EPA gives industry managers flexibility to clean up air pollution their own ways
20th Century	The Eighties	1980	USA	The National Security Act of 1980 is issued
20th Century	The Eighties	1980	USA	The Alaskan National Interest Lands Conservation Act is passed by Congress
20th Century	The Eighties	1980	USA	Formation of the Citizens Clearinghouse for Hazardous Waste — now named the Center for Health, Environment and Justice
20th Century	The Eighties	1980	USA	The Energy Security Act is signed by President Carter and consists consisting of six major acts: U.S. Synthetic Fuels Corporation Act, Biomass Energy and Alcohol Fuels Act, Renewable Energy Resources Act, Solar Energy and Energy Conservation Act and Solar Energy and Energy Conservation Bank Act, Geothermal Energy Act, and Ocean Thermal Energy Conversion Act
20th Century	The Eighties	1980	USA	Congress creates the Superfund Program
20th Century	The Eighties	1981	USA	Ronald Reagan is inaugurated President
20th Century	The Eighties	1981	USA	Executive Order #12287 "Decontrol of crude oil and refined petroleum products" is issued
20th Century	The Eighties	1981	USA	Secretary Edwards announces a major reorganization of U.S. Department of Energy (DOE) to improve management and increase emphasis on research, development, and production
20th Century	The Eighties	1981	USA	Anne Gorsuch becomes the first female EPA Administrator, serving under President Ronald Reagan

20th Century	The Eighties	1982	USA	The Nuclear Waste Policy Act is signed by President Ronald Reagan allowing for the safe storage and disposal of radioactive waste
20th Century	The Eighties	1982	Guatemala	Rio Negro Massacres
20th Century	The Eighties	1982	UN	The UN World Charter for Nature passes by a vote of 111 in favor to 1 against (United States)
20th Century	The Eighties	1982	USA	Formation of the World Resources Institute
20th Century	The Eighties	1982	USA	Formation of the Earth Island Institute
20th Century	The Eighties	1982	New Delhi, India	Formation of The Research Foundation for Science, Technology and Ecology
20th Century	The Eighties	1982	USA	EPA announces a rule requiring all elementary and secondary U.S. schools to test for asbestos in their buildings
20th Century	The Eighties	1982	Korea	The Korea Animal Protection Society founded by Sunnan Kum
20th Century	The Eighties	1982	Philippines	The Philippine Animal Welfare Society founded by Nina Hontiveros-Lichauco
20th Century	The Eighties	1982	USA	The Minerals Management Service is established (later becomes the Bureau of Ocean Energy Management, Regulation, and Enforcement)
20th Century	The Eighties	1983	USA	Anne Gorsuch Burford resigns as head of the US EPA after trying to excuse oil refiners from the phase-down of lead in gasoline, and also after withholding records from Congress about the toxic waste Superfund
20th Century	The Eighties	1983	USA	President Reagan addresses the nation on national security and announces the Strategic Defense Initiative (SDI)
20th Century	The Eighties	1983	UN	The International Environmental Protection Act is passed by Congress
20th Century	The Eighties	1983	UN	New UN Convention on the Law of the Sea is signed by 117 States
20th Century	The Eighties	1983	USA	Administrator Ruckelshaus returns as EPA Administrator under President Ronald Reagan - the only administrator to serve twice
20th Century	The Eighties	1983	USA	DOE establishes the Civilian Radioactive Waste Management Office
20th Century	The Eighties	1983	Tennessee	Senate refuses to continue funding the Clinch River Breeder Reactor
20th Century	The Eighties	1984	USA	Hazardous and Solid Waste Amendments of 1984 is passed
20th Century	The Eighties	1984	Bhopal, India	Bhopal disaster
20th Century	The Eighties	1985	USA	Administrator Lee M. Thomas serves as EPA Administrator, serving under President Ronald Reagan
20th Century	The Eighties	1985	USA	The Food Security Act is issued along with the Conservation Reserve Program
20th Century	The Eighties	1985	USA	Formation of the International Rivers Network
20th Century	The Eighties	1985	World	Hole in the Ozone Layer Discovered
20th Century	The Eighties	1985	USA	EPA gives Advanced Genetic Sciences a permit to conduct small-scale tests of two genetically altered bacteria strains
20th Century	The Eighties	1986	USA	The Emergency Planning and Community Right to Know Act is passed by Congress
20th Century	The Eighties	1986	Ukraine	Chernobyl nuclear reactor disaster
20th Century	The Eighties	1986	Basel, Switzerland	Chemical spill
20th Century	The Eighties	1986	USA	Safe Drinking Water Act amended to set standards for 83 contaminants and ban use of lead pipes and solder in new drinking water systems
20th Century	The Eighties	1986	USA	Administrator Thomas names endangered wetlands as a top EPA priority and announces the new Office of Wetlands Protection.
20th Century	The Eighties	1987	USA	DOE Secretary Herrington announces President Reagan's approval of construction of the Superconducting Super

				Collider (SSC), the world's largest and most advanced particle accelerator
20th Century	The Eighties	1987	USA	Congress Establishes the National Estuaries Program
20th Century	The Eighties	1987	USA	Medical Waste Tracking Act is issued and passed by Congress in 1988
20th Century	The Eighties	1987	USA	The Plastic Pollution Research and Control Act is passed by Congress
20th Century	The Eighties	1987	UN	World Commission on Environment and Development (The Brundtland Commission) reports on critical environmental and development problems around the world and formulate realistic proposals to address them
20th Century	The Eighties	1987	UN	Montreal Protocol Signed by U.S.
20th Century	The Eighties	1987	USA	Congress approves amendment designating Yucca Mountain, Nevada, as the only site to be considered for the high-level nuclear waste repository
20th Century	The Eighties	1988	Scotland	Piper Alpha oil Platform explosion
20th Century	The Eighties	1988	UN	Over 100 nations sign Basel convention, a treaty on international toxic waste shipments
20th Century	The Eighties	1988	USA	Launch of EPA Radon Program
20th Century	The Eighties	1988	USA	Sewage Ocean-Dumping Ban
20th Century	The Eighties	1988	UN	International treaty bans all ocean dumping of wastes
20th Century	The Eighties	1988	USA	Plastic Pollution Control Act is issued
20th Century	The Eighties	1989	USA	George Bush is inaugurated President
20th Century	The Eighties	1989	USA	William K. Reilly becomes EPA Administrator under President George H.W. Bush
20th Century	The Eighties	1989	UN	The Basel Convention is ratified
20th Century	The Eighties	1989	Alaska	Exxon Valdez oil tanker disaster
20th Century	The Eighties	1989	South America	Amazon Declaration signed by Brazil, Bolivia Columbia, Ecuador, Surinam, Peru, Guyana and Venezuela
20th Century	The Eighties	1989	USA	DOE establishes the Office of Environmental Restoration and Waste Management within DOE
20th Century	The Nineties	1990	USA	EPA administrator William Reilly establishes Environmental Equity Work Group
20th Century	The Nineties	1990	UN	London Protocols on ozone agreed to by 93 countries
20th Century	The Nineties	1990	USA	The Food, Agriculture, Conservation, and Trade Act as well as the Omnibus Budget Reconciliation Act are issued
20th Century	The Nineties	1990	USA	Toxic Release Inventory (TRI) launched by EPA
20th Century	The Nineties	1990	USA	Pollution Prevention Act is signed by President George Bush
20th Century	The Nineties	1990	USA	Clean Air Act amendments strengthen rules on SOx and NOx emissions from electric power plants helping reduce acid rain
20th Century	The Nineties	1990	USA	National Environmental Education Act is passed by Congress
20th Century	The Nineties	1990	Kuwait	War in Kuwait and Iraq creates environmental disaster with massive oil spills and depleted uranium bullets
20th Century	The Nineties	1991	UN	The UN Antarctica treaty is issued
20th Century	The Nineties	1991	Sweden	1st nation to impose a carbon tax to curb CO2 emissions
20th Century	The Nineties	1991	USA	Strategic Arms Reduction Treaty (START) is signed by President Bush
20th Century	The Nineties	1992	Rio de Janeiro, Brazil	Earth Summit is held
20th Century	The Nineties	1992	USA	EPA joins hands with the U.S. Department of Energy to start the Energy Star program
20th Century	The Nineties	1992	USA	Environmental Justice Act of 1992 is introduced
20th Century	The Nineties	1992	USA	EPA issues final rules about farmworker exposure to pesticides. under FIFRA

20th Century	The Nineties	1992	USA	Recession, issue fatigue led to layoffs at major environmental groups – National Wildlife Foundation, NRDC, Greenpeace and the Sierra Club
20th Century	The Nineties	1992	USA	The Energy Policy Act is signed by President Bush which assists with the implementation of the National Energy Strategy
20th Century	The Nineties	1992	USA	William Clinton is elected president
20th Century	The Nineties	1993	USA	Carol M. Browner begins the longest term of any EPA Administrator, eight years, under President William Clinton
20th Century	The Nineties	1993	USA	The National Biological Survey (now Service) established in Department of Interior
				The Revised General Agreement on Tariffs and Trade (GATT) and the New North American Free Trade Agreement (NAFTA) are issued
20th Century	The Nineties	1993	Korea	Formation of the Korean Foundation for Environmental Movement
20th Century	The Nineties	1993	USA	Moratorium of toxic waste incineration
20th Century	The Nineties	1993	USA	National Environmental Trust (originally environmental information center)
20th Century	The Nineties	1993	USA	The Northwest Forest Plan Summit is convened by the President
20th Century	The Nineties	1993	USA	Congress votes to terminate the Superconducting Super Collider
20th Century	**The Nineties**	**1994**	**USA**	**Executive Order #12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations is issued (directed to the EPA)**
20th Century	The Nineties	1994	USA	Brownfields Program is launched by the EPA
20th Century	The Nineties	1994	USA	EPA goes online posting first pages to the world wide web
20th Century	The Nineties	1994	UN	Basel Convention approved by most industrial nations
20th Century	The Nineties	1994	UN	Climate Change Warning: United Nations Intergovernmental Panel on Climate Change (IPCC) report released
20th Century	The Nineties	1995	USA	Republicans control US Congress for the first time in decades; attack on environmentalism is a first priority
20th Century	The Nineties	1995	USA	EPA signs an agreement to monitor the Environment with the help of space satellites
20th Century	The Nineties	1995	USA	1st Refinery Regulation is announced by EPA
20th Century	The Nineties	1995	UN	The World Bank and international conservation groups (such as the IUCN) announce a plan to establish 155 marine protection areas around the world
20th Century	The Nineties	1996	USA	Leaded gasoline phase out is completed
20th Century	The Nineties	1996	USA	The Safe Drinking Water Act (SDWA) Amendments signed by President William Clinton
20th Century	The Nineties	1996	USA	The Federal Agriculture Improvement Act is issued
20th Century	The Nineties	1996	USA	Interior science and technology functions are consolidated in the U.S. Geological Survey
20th Century	The Nineties	1997	USA	The Food Quality Protection Act (FQPA) is signed into law by President William Clinton
20th Century	The Nineties	1997	USA	Building Public Trust: Actions to Respond to the Report of the Advisory Committee on Human Radiation Experiments
20th Century	The Nineties	1997	USA	Kyoto Protocol adopted by US and 121 other nations, but not ratified by U.S. Congress
20th Century	The Nineties	1997	USA	Executive Order #13045 "Protection for Children Against Environmental Risks" is issued
20th Century	The Nineties	1997	USA	New Air Quality Standards issued by the EPA
20th Century	The Nineties	1997	USA	The Plutonium Uranium Extraction Facility (PUREX), the largest of the Nation's Cold War plutonium processing plants, is deactivated a year ahead of schedule
20th Century	The Nineties	1997	USA	USDA issues Civil Rights Action Team report

20th Century	The Nineties	1997	USA	EPA launches website with Data by ZIP Code on air and water toxicity
20th Century	The Nineties	1998	Aarhus, Denmark	Aarhus Convention adopted – The United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters
20th Century	The Nineties	1998	USA	HAACP is implemented
20th Century	The Nineties	1998	USA	DOE announces the Workforce for the 21st Century Initiative (Workforce 21)
20th Century	The Nineties	1999	USA	New Emissions Standards for Cars are announced
20th Century	The Nineties	1999	USA	DOE and the U.S. Department of Interior launch the Green Energy Parks Program
20th Century	The Nineties	1999	USA	Executive Order #13123 setting new goals for federal energy management, with DOE's Federal Energy Management Program designated as the federal government's program coordinator
20th Century	The Nineties	1999	USA	The Department designates the Federal Energy Technology Center as DOE's newest national laboratory, to be known as the National Energy Technology Laboratory (NETL)
20th Century	The Nineties	1999	World	Earth's population exceeds six billion

Table 4-4: Milestones in Environmental History – 20th Century Period[226]

4.4 Post-Reagan Era Environmental Policy Progress

While the 1970s were heralded as an important period for the rise of environmental policy with the 1980s bringing forth deregulation and policy rollbacks, environmental policy would continue to be an area of focus, and contention, for presidencies to come. According to Durant (2008)[227], the organizational actors within an agency or program are an important consideration for the 'weaponizing' of administrative reforms in the context of organizational change and what he calls the policy paradox – one in which is clearly

[226] Sources:
Department of Energy. "DOE History Timeline." https://www.energy.gov/lm/doe-history/doe-history-timeline/timeline-events-2009;
"Environmental History." https://environmentalhistory.org/;
Environmental Protection Agency. "Milestones in EPA and Environmental History." https://www.epa.gov/history/milestones-epa-and-environmental-history
Unites States Department of Agriculture. "A Condensed History of American Agriculture 1776-1999 Timeline." https://www.usda.gov/sites/default/files/documents/history-american-agriculture.pdf;
United States Department of the Interior. "History of the Department of the Interior." https://www.doi.gov/whoweare/history

[227] Durant, R. (2008). "Sharpening a Knife Cleverly: Organizational Change, Policy Paradox, and the "Weaponizing" of Administrative Reforms." *Public Administration Review, 68(2),* p.283.

visible throughout the history of environmental policy as an example. Using the Clinton administration as an example, the National Performance Review (NPR) and Defense Reform Initiatives (DRI) attempted to push "green" reform through the military causing a clash of values between defense and environmental policy. Relying on the unilateral action of issuing executive orders, Clinton created a new position, the undersecretary of defense for environmental security, to hold all military operations accountable for reform. This challenged the military bureaucracy, not necessarily because the services were opposed to environmental reform, but because political actors wanted to do so on their terms and at their own pace. While the administrative push was to encourage immediate, timely, and cost-effective reform, agency actors determined the relative acceptance of reform and, according to Durant, evaluated the impacts on policy goals, tried to manipulate reforms to advance their goals, and ultimately caused unanticipated and unwelcomed policy complications for proponents of these policy efforts.

George W. Bush pledged to support states in their efforts toward environmental protection in a model of "cooperative federalism," but would ultimately follow his predecessors by attempting to centralize oversight and management, breaking suit from the collaborative efforts of Clinton and Bush in previous terms.[228] It is not a surprise that the Bush administration would exhibit the characteristic of executive federalism, since the 9/11 terrorist attacks certainly were a catalyst for the concentration of federal authority within the executive branch. In moving to this style of management, the dynamic of intergovernmental negotiations with states would be challenged. Federal funding cuts in areas such as hazardous waste and forestry, signaled a reversal of Clinton-era policy and

[228] Rabe, B. (2007). "Environmental Policy and the Bush Era: The Collision between the Administrative Presidency and State Experimentation." *Publius, 37(3)*, p.415.

ultimately resulted in political opposition and withdrawal of funding commitments from states. What the administration could not accomplish legislatively, was achieved through unilateral executive action as seen in the proposal of the 2001 Clear Skies legislation intended to significantly reduce emissions. The proposed legislation would also reform "new source review" protocols established in the Clinton era and give industrial facilities the discretion to expand facilities without the introduction of pollution control equipment. Congress backed by state and federal agencies refused to negotiate terms on this legislation and the Bush administration would repeal NSR.

After the 2004 election, Clear Skies would return for consideration. The major difference to note is that by this point, the administration had already used its discretion to place key political actors in strong positions to actively push this legislation. According to Rabe, the executive orders and regulatory reinterpretations that followed, would leave "statutes intact but being implemented in new ways."[229] This would shift collaborative efforts with states to that of regulatory mandates, reducing flexibility, autonomy, and performance as states were typically the implementing arm of federal considerations for environmental policy. While concerns loomed over a race to the bottom path for states in this scenario, a wide range of states did experience policy innovation and continued to have an aggressive response despite the Bush Administration, shifting the view to the importance of long-term state goals. This would lead to individual states forming collaborative partnerships with other countries, ironically through unilateral state action, as evidenced with Arnold Schwarzenegger and Tony Blair with global climate change. The growing state response is a result of the growing concerns about whether the federal

[229] Rabe (2007), p.420.

government can address critical issues and has resulted in interstate collaboration to achieve progress across various areas of environmental policy. Advocacy organizations such as the Environmental Council of the States (ECOS) and the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials (STAPPA-ALAPCO) have assisted in promoting the collaborative view from states and pushing back on federal proposals. Coupled with state litigation, a systematic response against the Bush administration was created.

While the previous examples have showed the implications of unilateral executive action based on a president's drive to make change, for better or worse, there is another side to the coin in which either the lack of administrative responsiveness or the true limitations of those unilateral powers leads to significant impact as in the case of ocean and coastal zone management. In policy genres and sub-categories, the executive presence provides a collaborative mechanism wherein policy focus and progress can be supported through unilateral action. For ocean and coastal management, progress was relatively stagnant through both Bush and Obama presidencies.

Part of the waning progress seen in these arenas is due to mismatched expectations for a top-down approach to management within this policy space; complicated, inconsistent, and often contradictory federal regulations; and increased opposition from interest groups and decentralized authorities. West (2015) discusses the types of coordination that result from this reactive oversight, screening or seeking consistency with existing administrative priorities, and vetting that involves negotiation and an aversion to conflicting or duplicative actions.[230] Conversely, proactive coordination emphasizes

[230] West, W.F. (2015). "The Administrative Presidency as Reactive Oversight: Implications for Positive and Normative Theory." *Public Administration Review, 75(4),* p.523-533.

supervised collaboration which signifies there is a specific purpose or goal to be met with the use of executive authority and additional resources.[231] While neither of these coordination types guarantees success in the realms of policy, they are important considerations for how unilateral action can be implicit and explicit and have varying outcomes even within sub areas of the same policy genre. Executive Order 13352 "Facilitation of Cooperative Conservation" proved a moderately successful, agency accepted "bottom-up" directive during the Bush presidency as it enabled cooperative efforts between federal, state, local, tribal, non-profit, private, and nongovernmental entities.[232] The success of this order was mainly due to agency acceptance with goals of the order that permitted stronger bargaining among parties and minimized opposition. Establishing a process for rewards and recognition as well as specific measures in performance evaluations, culminated in an annual conference that highlighted initiative successes. The voluntary nature and solution flexibility created a forum for participation and a higher level of compliance with the unilateral executive order.

Coordinated efforts have long existed in government and at the start of the Bush's second term there were a dozen interagency organizations devoted to promoting coordinated efforts in various areas of ocean management. The U.S. Commission of Ocean Policy (USCOP) would recommend a centralized governing structure within the Executive Office of the President (EOP) which led to Bush issuing Executive Order 13366 to establish the Committee on Ocean Policy (COP) within the EOP consisting of a National Ocean Council (NOC). While signaling increased federal coordination and interagency

[231] West, W.F (2017). "The Administrative Presidency as Supervised Collaboration: The Case of Ocean and Coastal Zone Management," *Congress & the Presidency 44, no. 1*, p.5.
[232] Kennedy, J. (2018). "The Limits of Presidential Influence: Two Environmental Directives and What they mean for Executive Power." *Journal of Policy History 20, no 1 (2018),* p.16.

cooperation, the response proved to be ineffective due to proliferation of goals, competing objectives, unclear and open-ended execution, and lack of dedicated resources. The lack of administrative attention and seeming low priority view despite the creation of this centralized body prove the difficulty of relying on executive response to drive progress.

To understand the Obama years, it is important to note that like his predecessors, he followed a similar approach of executive federalism regarding agencies and policy matters. The major contention state and local government had with the Bush administration was that there was a resistance to their ideas and innovations. Obama attempted to promote a "progressive federalism" that enabled states to innovate in their own ways given that they met or exceeded federal standards of performance.[233] Obama made appointments covering the span of every domestic and international policy arena. These policy czars, a move started back in Nixon's presidency, were highly criticized due to the uncertainty of their powers and the bypassing of the confirmation process.

The Obama administration failed three attempts in congress to approve a broad oceanic policy reform and in a 2009 memorandum, President Obama would create the Interagency Ocean Policy Task Force headed by the Council on Environmental Quality (CEQ), following suit with the Bush administration in avoiding organizational management by a dedicated assistant to the president. The reports of the task force suggested a Coastal and Marine Spatial Planning (CMSP) technique to taking a more comprehensive approach to policy. Executive Order 13547 provided the mandates for the CMSP and a process for escalation from the NOC chairs to the EOP and finally, the president. The draft implementation plan was significantly delayed due to prioritization of

[233] Shafie, D.M. (2020). *The Administrative Presidency and the Environment*. (New York, NY: Routledge). p.38.

healthcare and partisan political backlash in various policy arenas and was not issued until April 2013. In addressing the concerns of pervasive executive presence, the final plan marked a shift from ecological language to one of economic development and pushed from centralized national outcomes to a voluntary regional partnership effort among entities, and state and local authorities.[234] While significantly diluted of the original unilateral action considerations, this still became ammunition for partisan attacks on the purpose and role of the reform. While reports touted considerable progress in plan milestones, it was evident that the plan consisted of an inventory of current in-flight activities rather than new proposals under the NOC. This also indicates that any perceived progress was not coming directly from policy or executive action further signaling the limitations of unilateral action.

4.5 Massive Unilateral Deregulation in the Trump Era

Under Trump, Chief Strategist Steve Bannon spoke of the dedication of the administration to push toward the "deconstruction of the administrative state." The administration reframed deregulation, framework changes, and deals as the means to stop threats against our national sovereignty. The Trump administration immediately placed the National Environmental Policy Act (NEPA) and the CEQ under review to revoke published guidance requiring agencies to include greenhouse gases and climate consideration within their reviews.[235] In an effort to advance progress in the use of fossil fuel, the administration believed revocation of guidance standards would permit progress in this endeavor as fossil

[234] West (2017), p.15.
[235] Reeves, D. (2017). "Trump Faces Murky Process to Revoke NEPA Climate Guide, Source Says." Inside *EPA's Clean Air Report, 28(6*), pp.39-40.

fuels fall under the purview of emissions regulations under the Act. Trump attempted to affect these means by using the powers of politicization. His controversial selection of Scott Pruitt as EPA administrator and their subsequent mission to reverse the EPA's climate change mission, led to Pruitt's quick resignation in the face of criticism and scandal for excessive spending and as Rosner describes a relatively blatant disregard for science-based policy.[236]

Trump's second EPA administrator, Andrew Wheeler was known for fighting against air pollution standards and denying climate change. For the CEQ, Trump appointed Kathleen Hartnett White who considered renewable energy "unreliable and parasitic" and climate regulation to be a communist conspiracy. With such polarizing actors politically placed in senior leadership roles, the outcome is not entirely unimaginable. Evoking images of Reagan era deregulation, the Trump administration would set a new standard for the use of broad stroke unilateral executive action to rollback his predecessor's actions in the name of rapid, pronounced, and punctuated deregulation. While clearly influenced and motivated by co-partisan actors, industry, and special interests, overt changes were seemingly made in the glory of seeking national energy independence by harnessing our full capabilities in fossil fuels. Regardless of reason, it is evident that Trump intended to "eviscerate every major step on climate change policy his immediate predecessor, Barack Obama, had taken during his two terms."[237] Avoiding all legislative and administrative channels, and refusing to formally confront the endangerment challenge upon which all Obama policies were soundly based upon, Trump utilized his unilateral tools to appoint loyalists to high-level

[236] Rosner, D. (2017). "Health, Climate Change, and the Descent of Science-Based Policy." *The Milbank Quarterly, 95(1),* p.36.
[237] Thompson, F., Wong, K., & Rabe, B. (2020), p.82.

positions and leveraged regulatory reversals in what Thompson, Wong, and Rabe coin as a "search and destroy" strategy to either completely eviscerate existing policy or create regulatory freezes that would impede further progress.[238]

By the end of the Trump presidency, there would be a rollback of ninety-eight environmental regulations, with more still in progress today. While the true impacts and final outcomes of Trump's unilateral executive actions are still relatively unmeasured, many actions in the environmental policy arena have proven to be incredibly detrimental including: a revision of the EPA's pollution policies to better benefit the chemical industry, repeal of the Clean Water Rule, repeal of efficient lighting regulations, pronounced EPA budget cuts, rollback of Clean Air Act standards, the rollback of the National Environmental Policy Act through an executive order that evoked federal law declaring economic emergency as a means to permit actions significantly impacting the environment without observing the regulatory requirements, and more than 100 regulations affecting water, air, and land which could take the Biden administration an entire term to reconcile.

MILESTONES IN ENVIRONMENTAL HISTORY - 21ST CENTURY PERIOD

Period	*Segment*	*Year*	*Location*	*Description*
21st Century	2000-2009	2000	Kentucky	Massey Energy Co. dam collapses - one of the most serious U.S. environmental disasters
21st Century	2000-2009	2000	USA	DOE activates the National Nuclear Security Administration (NNSA)
21st Century	2000-2009	2000	Europe	European Union bans leaded gasoline as a public health hazard
21st Century	2000-2009	2000	New Zealand	Rain forest logging banned in New Zealand following a 30-year campaign by environmental groups
21st Century	2000-2009	2000	USA / England	President Clinton and British Prime Minister Tony Blair announce that the International Human Genome Project and Celera Genomics Corporation have completed a working draft of 95% of the human genetic structure
21st Century	2000-2009	2001	USA	George W. Bush becomes the 43rd president of the United States
21st Century	2000-2009	2001	USA	The George W. Bush energy plan emphasizes oil exploration and new construction of coal and nuclear power plants
21st Century	2000-2009	2001	USA	Christine Todd Whitman becomes EPA Administrator under President George W. Bush
21st Century	2000-2009	2001	UN	Millennium Ecosystem Assessment is started by the UN

[238] Thompson, F., Wong, K., & Rabe, B. (2020), p.83.

21st Century	2000-2009	2001	USA	Science magazine publishes NASA satellite survey of over 2,000 glaciers showing that most of are shrinking
21st Century	2000-2009	2001	Genoa, Italy	G8 Summit sees massive protests over the lack of environmental and labor standards in the push for international free trade
21st Century	2000-2009	2001	China	Three Gorges Dam protests
21st Century	**2000-2009**	**2001**	**USA**	**Executive Order #13211 "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" is issued (directed to the DOE)**
21st Century	2000-2009	2001	USA	EPA signs global treaty on Persistent Organic Pollutants (POPs)
21st Century	2000-2009	2001	USA	September 11 World Trade Center, Pentagon and Flight 93
21st Century	2000-2009	2001	USA	UNESCO World Heritage Committee inscribed six new natural sites on the prestigious World Heritage List
21st Century	2000-2009	2001	World	World Meteorological Organization projects year to be the second warmest on record
21st Century	2000-2009	2002	Johannesburg, South Africa	World Summit on Sustainable Development is held
21st Century	2000-2009	2002	Detroit, MI	The Group of Eight (G-8) energy ministers meet
21st Century	2000-2009	2003	USA	Bush administration proposes “Clear Skies” legislation to Congress amending the Clean Air Act
21st Century	2000-2009	2003	USA	Invasion of Iraq by US and British forces leads to widespread oilfield burning and other war-related environmental problems
21st Century	2000-2009	2003	USA / Canada	Electric power failure affects 50 million people from New York to Ontario
21st Century	2000-2009	2003	USA	Largest Clean Air Act Settlement with utility
21st Century	2000-2009	2003	USA	Michael O. Leavitt becomes EPA Administrator under President George W. Bush
21st Century	**2000-2009**	**2003**	**USA**	**Executive Order #13299 "Establishment of Interagency Group on Insular Areas" is issued (directed to the Interior Department)**
21st Century	2000-2009	2003	USA	EPA rejects petition from environmental groups to regulate greenhouse gas emissions from vehicles, saying it did not have the authority under the Clean Air Act — an assertion that contradicted the agency’s position under the Clinton administration
21st Century	2000-2009	2003	La Paz, Bolivia	"Black October" Massacre
21st Century	2000-2009	2003	USA	Twelve Eastern states win federal court injunction preventing Bush Administration from weaking clean air laws
21st Century	2000-2009	2004	UN	Russia ratifies Kyoto treating, putting it into effect worldwide even without US approval
21st Century	2000-2009	2004	World	An 8.9 magnitude quake deep under the Indian Ocean triggers massive tsunamis that kill over 230,000 people in 14 nations
21st Century	2000-2009	2005	USA	Stephen L. Johnson becomes EPA Administrator under President George W. Bush
21st Century	2000-2009	2005	World	Kyoto Protocol officially goes into force without the U.S.
21st Century	2000-2009	2005	USA	US Congress votes to open the Alaska National Wildlife Refuge to oil drilling
21st Century	2000-2009	2005	San Francisco, CA	World environment day is held for first time in 30 years
21st Century	2000-2009	2005	New Orleans, Louisiana	Hurricane Katrina disaster
21st Century	2000-2009	2005	UN	United Nations Universal Declaration on Bioethics and Human Rights is adopted
21st Century	2000-2009	2005	China	Jilin Petrochemical Co. refinery explosion
21st Century	2000-2009	2005	UN	UN Millennium Ecosystem Assessment
21st Century	2000-2009	2006	World	Earth’s overall temperature has reached its highest level in 12,000 years according to research by James Hansen of the U.S.’s National Aeronautics and Space Administration (NASA) and others
21st Century	2000-2009	2006	USA	EPA and industry partners join to create the WaterSense Program
21st Century	2000-2009	2006	USA	EPA Strengthens National Air Quality Standards

21st Century	2000-2009	2006	USA	EPA Issues Ground Water Rule
21st Century	2000-2009	2006	California	1st state to impose a cap on greenhouse gas emissions
21st Century	2000-2009	2006	USA	The Stern Review report on climate change is published
21st Century	2000-2009	2006	USA	US elections put Democrats in control of both houses of Congress in an historic turnover
21st Century	2000-2009	2007	USA	The Department releases the Global Nuclear Energy Partnership (GNEP) Strategic Plan
21st Century	**2000-2009**	**2007**	**USA**	**Executive Order #13423 "Strengthening Federal Environmental, Energy, and Transportation Management" is issued (directed to EPA and DOW)**
21st Century	2000-2009	2007	Europe	European Union agrees to cut C02 emissions by 20% by 2020, compared to 1990 levels
21st Century	2000-2009	2007	USA	EPA cuts level of carcinogenic benzene allowed in gasoline
21st Century	2000-2009	2007	USA	U.S. Supreme Court rules that states may regulate “greenhouse” gasses in Massachusetts v. EPA
21st Century	2000-2009	2007	USA	US Interior Department’s Office of Surface Mining Reclamation and Enforcement proposes easing environmental requirements for mountaintop removal mining
21st Century	2000-2009	2007	Bali, Indonesia	International conference on climate change begins as part of an ongoing United Nations effort to develop a successor plan to the 1996 Kyoto Protocol
21st Century	2000-2009	2007	Vatican, Italy	Pope Benedict XVI appeals for peace and environmental protection in his annual Christmas message
21st Century	2000-2009	2007	USA	U.S. Climate Data Center and others say 2007 was the warmest year on record
21st Century	2000-2009	2007	USA	EPA Launches GoGreen! Newsletter and starts social media presence with blog
21st Century	2000-2009	2008	USA	Democrat Barak Obama wins a landslide victory and promises to reform environmental law enforcement
21st Century	2000-2009	2008	USA	US National Research Council reports that rising sea levels threatens key infrastructure in the U.S.
21st Century	2000-2009	2008	Zurich, Switzerland	The World Glacier Monitoring Service, based at the University of Zurich, Switzerland, reports that melting of 30 glaciers from nine mountain regions has accelerated
21st Century	2000-2009	2008	USA	The Lacey Act, first passed in 1900, is amended in US to curtail illegal logging
21st Century	2000-2009	2008	UN	Group of Eight (G-8) industrialized nations will cut greenhouse gas emissions in half by 2050
21st Century	2000-2009	2008	USA	U.S. National Aeronautics and Space Administration (NASA) and the National Snow and Ice Data Center (NSIDC) report arctic ice shrinking
21st Century	2000-2009	2008	Tennessee	Coal Ash disaster
21st Century	2000-2009	2009	USA	Lisa P. Jackson is sworn in as EPA Administrator under President Barack Obama. She is the agency's first African American Administrator.
21st Century	2000-2009	2009	USA	Reinvestment and Recovery Act is signed by President Barack Obama, which provides $7 billion for EPA projects and programs
21st Century	2000-2009	2009	USA	Chesapeake Bay Executive Order is signed by President Barack Obama
21st Century	2000-2009	2009	USA	U.S. Climate Action Partnership presents plan to reduce U.S. greenhouse emissions
21st Century	2000-2009	2009	USA	US climate monitoring satellite launch fails and the Orbiting Carbon Observatory crashes into the Indian Ocean
21st Century	2000-2009	2009	USA	President Obama signs the largest wilderness protection bill in 15 years, protecting two million acres in nine states
21st Century	2000-2009	2009	World	Summit of the Americas brings together elected leaders from 34 countries to discuss sustainable energy, protecting the environment and human prosperity
21st Century	2000-2009	2009	Ontario, Canada	The Green Energy Act is passed
21st Century	2000-2009	2009	Siberia, Russia	The Sayano-Shushenskaya hydroelectric plant, the sixth largest in the world, explodes
21st Century	2000-2009	2009	USA	EPA announces new Clean Air Act regulations to reduce greenhouse gas emissions from electric power plants

21st Century	2010-2012	2010	World	The previous decade 2000 – 2009 was the warmest on record, according to the World Meteorological Organization
21st Century	2010-2012	2010	Louisiana	Deepwater Horizon disaster
21st Century	2010-2012	2010	USA	EPA issues rules on automotive fuel efficiency and, for the first time, regulates greenhouse gas emissions
21st Century	2010-2012	2010	USA	US Secretary of Interior Ken Salizar announces approval of controversial Cape Wind offshore wind electric project
21st Century	2010-2012	2010	Cancun, MX	United Nations climate change talks
21st Century	2010-2012	2010	USA	US federal court rejects challenges to EPA greenhouse gas regulations
21st Century	2010-2012	2010	UN	United Nations biodiversity efforts focused through new Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
21st Century	2010-2012	2010	USA	National Lead-Safe Renovation Program to protect children and pregnant women
21st Century	2010-2012	2010	USA	EPA finalized a rule on the greenhouse gas (GHG) reporting requirements
21st Century	2010-2012	2010	USA	EPA establishes landmark Chesapeake Bay 'Pollution Diet'
21st Century	2010-2012	2011	USA	The Bureau of Ocean Energy Management, Regulation, and Enforcement is replaced by the new Bureau of Ocean Energy Management, Bureau of Safety and Environmental Enforcement and Office of Natural Resources Revenue
21st Century	2010-2012	2011	USA	EPA vetoes water permit for massive Spruce No. 1 mountaintop removal site in West Virginia
21st Century	2010-2012	2011	Japan	Fukushima power complex nuclear reactor meltdown due to earthquake
21st Century	2010-2012	2011	Germany / Switzerland	Germany decides to phase out nuclear power, while Switzerland said it would build no new nuclear reactors
21st Century	2010-2012	2011	Panama	Panama begins filling the Chan-75 dam displacing indigenous Ngobe people
21st Century	2010-2012	2011	USA	US Supreme Court declines to review General Electric v EPA, a challenge to the CERCLA (Superfund) law regarding responsibility for cleanup of toxic wastes. The decision leaves enforcement power with EPA
21st Century	2010-2012	2011	USA	US Supreme Court rejects a nuisance suit and rules that EPA has the authority to regulate greenhouse gas emissions
21st Century	2010-2012	2011	USA	Hurricane Irene hits US east coast, causing massive damage
21st Century	2010-2012	2011	World	Arctic sea ice reaches an historic low
21st Century	2010-2012	2011	USA	Berkeley earth project re-confirms climate warming
21st Century	2010-2012	2011	Durban, South Africa	17th Annual Climate Conference is held
21st Century	2010-2012	2012	China	Cadmium spill in Longjiang River
21st Century	2010-2012	2012	UN	United Nations renewable energy agency kicks off “sustainable energy for all” program
21st Century	2010-2012	2012	USA	EPA issues the first limits on greenhouse gas emissions from newly built power plants
21st Century	2010-2012	2012	Peru	Riots over Xstrata and Minas Conga projects
21st Century	2010-2012	2012	USA	US Geological Survey notes that sea level rise on the US east coast is accelerating
21st Century	2010-2012	2012	Greenland	U.S. National Aeronautics and Space Administration (NASA) reports that the surface of Greenland’s ice sheet has been going through the most extensive and rapid melt since satellite observations began 30 years ago
21st Century	2010-2012	2012	USA	U.S. air pollution rule blocked
21st Century	2010-2012	2012	USA / Caribbean	Hurricane Sandy hits Caribbean and the U.S.
21st Century	2010-2012	2012	Philippines	Typhoon Bopha hits
21st Century	2010-2012	2013	USA	Gina McCarthy is sworn in as EPA Administrator under President Barack Obama after serving for four years as the Assistant Administrator for Air and Radiation
21st Century	2013-2016	2013	Crystal River, FL	Crystal River nuclear power plant declared inoperable by Duke Energy, Co.
21st Century	2013-2016	2013	Beijing, China	Beijing toxic smog

21st Century	2013-2016	2013	USA	U.S. Electric utilities running on coal begin bankruptcy
21st Century	2013-2016	2013	Quebec, Canada	Oil train explosion
21st Century	2013-2016	2013	USA	Google hosts fundraiser for leading climate denier and ultra-right wing U.S. Sen. James Inhof
21st Century	2013-2016	2013	Chile	Mining operations expansion controversy
21st Century	2013-2016	2013	World	The IPCC, fifth assessment, says climate scientists are 95 percent certain that “human influence has been the dominant cause” of global warming
21st Century	2013-2016	2013	World	The Minamata Convention on mercury poisoning signed by delegates from 140 nations — but not the U.S.
21st Century	2013-2016	2014	Charleston, WV	Catastrophic spill of methyl cyclohexane shuts down water supplies
21st Century	2013-2016	2014	USA	The Navajo uranium cleanup - US Dept. of Justice announces largest environmental fine in US history against Andarko Petroleum — $5.15 billion — for damages suffered by Navajo tribes in the Southeastern US during uranium mining
21st Century	2013-2016	2014	USA	President Barack Obama proposes new carbon emissions rules for power plants in order to slow the rate of CO2 accumulation in the atmosphere and fight climate change
21st Century	2013-2016	2014	San Onofre, CA	1st major nuclear decommissioning projects in the U.S.
21st Century	2013-2016	2014	USA	New "Tier 3" standards for cleaner fuel and cars
21st Century	2013-2016	2014	Manhattan, NY	People's Climate March
21st Century	2013-2016	2014	USA	Republicans win majority in US Senate and retain their majority in House, following 2014 mid-term elections with the lowest voter turnout since World War II
21st Century	2013-2016	2014	Maine	Cod fishing shut down
21st Century	2013-2016	2014	Lima, Peru	International climate talks (COP 20) end on a disappointing note
21st Century	2013-2016	2015	Alaska	Alaska Wilderness designation proposal
21st Century	2013-2016	2015	USA	Keystone XL Pipeline from Canada to U.S. refineries is vetoed by President Barack Obama
21st Century	2013-2016	2015	Canada /Russia	Deforestation is exceeding that of tropical rain forests
21st Century	2013-2016	2015	USA	EPA charges with routine lying about pesticide safety
21st Century	2013-2016	2015	USA	EPA announces new rules limiting water pollution
21st Century	2013-2016	2015	Vatican, Italy	Pope Francis issues “Laudito Si” environmental encyclical
21st Century	2013-2016	2015	India	India government announces air pollution killed over 35,000 people over 9-year period
21st Century	2013-2016	2015	Germany	New record set for percentage of electricity generated from wind and solar (78%)
21st Century	2013-2016	2015	USA	EPA issues notice of violation to Volkswagen for rigging engines to foil emissions testing
21st Century	2013-2016	2015	China / USA	Chinese premier Xi Jenping and President Barack Obama announce new initiatives on containing greenhouse gasses
21st Century	2013-2016	2015	UN	United Nations Climate Change conference (COP 21) is held, and all 195 UN member states agree on an “ambitious and balanced” plan to control climate change
21st Century	2013-2016	2015	USA	Congress renews solar and wind energy tax credits for five years
21st Century	2013-2016	2015	USA	EPA revises Agricultural Worker Protection Standards
21st Century	2013-2016	2016	USA	Barrier islands on the US coast will be unlivable in 50 years
21st Century	2013-2016	2016	World	Warmest on record according to NASA and NOAA
21st Century	2013-2016	2016	World	Global assessment shows bees and other pollinators are at risk from pesticides
21st Century	2013-2016	2016	Louisiana	Native American tribe is relocated from Louisiana due to rising water levels
21st Century	2013-2016	2016	Flint, MI	Flint Water Contamination scandal
21st Century	2013-2016	2016	Paris, France	Paris Climate Pact signed by 175 countries
21st Century	2013-2016	2016	USA	Lautenberg Chemical Safety for the 21st Century Act is signed by President Barack Obama

21st Century	2013-2016	2016	North Dakota	Dakota Access Pipeline protests begin
21st Century	2013-2016	2016	USA	New national monuments erected in Maine and Hawaii by President Barack Obama
21st Century	2013-2016	2016	World	Creation of 40 new Marine Sanctuaries in world oceans
21st Century	2013-2016	2016	World	World Wildlife Foundation reports Wildlife populations are down by 60 percent since 1970
21st Century	2013-2016	2016	USA	Donald Trump wins U.S. presidential election
21st Century	2017-2019	2017	China	Chinese government issues national "red alert" due to heavy smog
21st Century	2017-2019	2017	World	Two independent studies show that sea surface temperatures continued to increase in the 21st century
21st Century	2017-2019	2017	USA	President Donald Trump signs legislation allowing secret payments by energy companies to foreign governments
21st Century	2017-2019	2017	USA	President Trump signs legislation taking away the stream protection rule, which prevented mining companies dumping their waste into streams
21st Century	2017-2019	2017	USA	President Donald Trump instructs the EPA to rewrite an act that protected public water supplies, the 'waters of the United States' rule
21st Century	2017-2019	2017	USA	Scott Pruitt is sworn in as EPA Administrator under President Trump
21st Century	2017-2019	2017	USA	EPA Announces Superfund Task Force
21st Century	**2017-2019**	**2017**	**USA**	**Executive Order #13790 "Promoting Agriculture and Rural Prosperity in America" is issued (directed to the USDA)**
21st Century	2017-2019	2017	USA	Hurricane Maria makes landfall
21st Century	2017-2019	2017	USA	President Trump Executive Order begins end to EPA clean power plan
21st Century	2017-2019	2017	El Salvador	Rejects all metals mining
21st Century	2017-2019	2018	USA	President Trump's EPA wins court battle to overturn Obama rule to lower emissions from power stations
21st Century	2017-2019	2018	USA	U.S. withdraws from Paris Climate agreement
21st Century	2017-2019	2018	Hamburg, Germany	G20 Summit is held, U.S. is isolated
21st Century	2017-2019	2018	Texas	Hurricane Harvey makes landfall
21st Century	2017-2019	2018	California	Wildfires at the height of season result in most expensive and destructive on record
21st Century	2017-2019	2018	Utah	President Trump announces plan to pull 2 million acres from Utah national monuments for exploratory mining
21st Century	2017-2019	2018	UN	Syria formally joins the UN climate pact, making U.S. the only country opposed to global action to mitigate climate change
21st Century	2017-2019	2018	Kenya, Africa	Last male white rhino dies, two females remain leaving the species functionally extinct
21st Century	2017-2019	2018	USA	Fourteen states sue the EPA over delays in methane emissions regulations
21st Century	2017-2019	2018	Australia	Australia announces plan to curb agricultural emissions and ease deterioration of the Great Barrier Reef
21st Century	2017-2019	2018	Africa	Ethiopia and Egypt negotiate the Gran Renaissance hydro dam
21st Century	2017-2019	2018	USA	EPA issues its first loan under the 2014 Water Infrastructure Finance and Innovation Act
21st Century	2017-2019	2018	USA	EPA administrator Scott Pruitt resigns following disclosure of ethics violations, Andrew Wheeler is appointed in his place
21st Century	2017-2019	2018	USA	Trump administration eases Obama-era standards on the disposal of toxic coal ash for coal fired power plants
21st Century	2017-2019	2018	Laos	Xepian-Xe Nam Noy hydroelectric dam fails
21st Century	2017-2019	2018	USA	Trump administration proposes weakening oil and gas methane regulations
21st Century	2017-2019	2018	USA	Climate Lawsuit is allowed to process following Supreme Court decision
21st Century	2017-2019	2018	USA	Trump administration proposes revising standards for coal power plant efficiency to revive coal industry
21st Century	2017-2019	2018	USA	IPCC Climate Change Reports is rejected by U.S., Saudi Arabia, Kuwait, and Russia

21st Century	2017-2019	2018	USA	Trump administration tries to roll back clean water protection
21st Century	2017-2019	2019	Honduras	Banks withdraw financing from Agua Zarca dam due to activist murder controversy
21st Century	2017-2019	2019	USA	Green New Deal resolution is introduced in Congress and voted down 57-43, beginning a conversation on long-term energy and environmental policy changes
21st Century	2017-2019	2019	Spain	Socialist Workers Party wins general elections with an emphasis on its green new deal
21st Century	2017-2019	2019	USA	Congress finally agrees on relief for Puerto Rico post-Hurricane Maria
21st Century	2017-2019	2019	USA	Trump administration attacks climate science with creation of "climate review panel"
21st Century	2017-2019	2019	USA	1st time renewable energy surpasses coal in U.S.
21st Century	2017-2019	2019	USA	Trump administration begins the process of eliminating or rolling back 83 previous environmental rules
21st Century	2017-2019	2019	USA	New Trump rule, US agencies no longer have to consider long-term climate impacts when assessing how a project will affect the environment, reversing a major Obama administration policy
21st Century	2017-2019	2019	Guatemala	Nickel mining is brough to a halt
21st Century	2017-2019	2019	Brazil	Amazon deforestation is accelerating
21st Century	2017-2019	2019	Sarov, Russia	Nuclear -powered rocket explodes
21st Century	2017-2019	2019	UN	2019 UN Climate Action Summit is held
21st Century	2017-2019	2019	Australia	Worst bushfire season on record
21st Century	2017-2019	2020	World	COVID-19 Response
21st Century	2020-2022	2020	USA	Trump administration proposes radical alteration of National Environmental Policy Act
21st Century	2020-2022	2020	USA	Trump administration attacks National Parks
21st Century	2020-2022	2020	USA	Amazon founder Jeff Bezos commits 10 billion to protect the environment and fight climate change
21st Century	2020-2022	2020	World	Air pollution declines worldwide due to quarantining during COVID
21st Century	2020-2022	2020	USA	Trump administration eases environmental regulations due to impacts of coronavirus
21st Century	2020-2022	2020	Europe	European Union leaders agree to include climate change measures in coronavirus economic recovery plans
21st Century	2020-2022	2020	USA	50th Anniversary of Earth Day
21st Century	2020-2022	2020	USA	Movement for racial justice accelerates with murders of Ahmaud Arbury, George Floyd and Breonna Taylor,
21st Century	2020-2022	2020	Venezuela	Massive oil spill is first notice off of the Caribbean coast
21st Century	2020-2022	2020	USA	The Case for Climate Action report is presented by Democrats
21st Century	2020-2022	2020	California	Continuing California Wildfires have burned more acreage than any other year before
21st Century	2020-2022	2020	USA	Joe Biden wins U.S. presidential election
21st Century	2020-2022	2020	World	New record for greenhouse gas emissions
21st Century	2020-2022	2021	USA	U.S. formally rejoins the Paris Climate Accords
21st Century	2020-2022	2021	USA	John Kerry appointed as special envoy for climate diplomacy
21st Century	2020-2022	2021	USA	Earth Day climate summit planned with world leaders
21st Century	2020-2022	2021	USA	Environmental Justice officer re-established in the Department of Justice (DOJ)
21st Century	2020-2022	2021	USA	Trump administration bird policy is blocked
21st Century	2020-2022	2021	USA	Protections reinstated for Alaska's Tongass Forest
21st Century	2020-2022	2021	USA	Re-instatement of energy efficiency standards
21st Century	2020-2022	2021	USA	Michael Regan is sworn in as EPA Administrator under President Biden
21st Century	2020-2022	2021	USA	Costs of 22 climate disasters costs the U.S. over $95 billion, global losses over $210 billion according to Bloomberg

21st Century	2020-2022	2021	USA	Court voids Trump air pollution regulations
21st Century	2020-2022	2021	World	Scripps Oceanographic Institution reports shark populations have dropped 71% since 1970
21st Century	2020-2022	2021	UN	UN University Study shows the world's aging dams pose a threat
21st Century	2020-2022	2021	Korea	South Kora plans for world's largest offshore wind farm
21st Century	2020-2022	2021	Detroit, MI	Waste to energy incinerator is decommissioned
21st Century	2020-2022	2021	India	Himalayan glacier bursts sweep away hydroelectric dam complexes
21st Century	2020-2022	2021	USA	EPA reports Trump administration interfered with toxic chemical assessment
21st Century	2020-2022	2021	Texas	Texas winter storm power crisis
21st Century	2020-2022	2021	Africa	Plague of locusts is one of the worst in over a decade
21st Century	2020-2022	2021	China	Begins phasing down of coal
21st Century	2020-2022	2021	USA	EPA reports climate change affects everyone
21st Century	2020-2022	2021	World	Extreme heat wave breaks all-time weather records around the world
21st Century	2020-2022	2021	Europe	Floods devastate Europe
21st Century	2020-2022	2021	World	IPCC climate report projects catastrophe if we continue on our current course
21st Century	2020-2022	2021	Louisiana	Hurricane Ida makes landfall
21st Century	2020-2022	2021	USA	President Joe Biden announces plan to reduce U.S. greenhouse gasses by 50% within ten years
21st Century	2020-2022	2021	Glasgow, Scotland	2021 United Nations Climate Change Conference is held
21st Century	2020-2022	2022	USA	Securities Exchange Commission (SEC) finds Facebook misled investors about its efforts to combat climate change
21st Century	2020-2022	2022	Russia / Ukraine	Russian invasion of Ukraine

Table 4-5: Milestones in Environmental History – 21st Century Period[239]

[239] Sources:
Department of Energy. "DOE History Timeline." https://www.energy.gov/lm/doe-history/doe-history-timeline/timeline-events-2009;
"Environmental History." https://environmentalhistory.org/;
Environmental Protection Agency. "Milestones in EPA and Environmental History." https://www.epa.gov/history/milestones-epa-and-environmental-history
Unites States Department of Agriculture. "A Condensed History of American Agriculture 1776-1999 Timeline." https://www.usda.gov/sites/default/files/documents/history-american-agriculture.pdf;
United States Department of the Interior. "History of the Department of the Interior." https://www.doi.gov/whoweare/history

5 DATA ANALYSIS AND FINDINGS

5.1 Line Graphs

Plotting the year-over-year U.S. Federal Budget Outlays for the EPA, the USDA, the Department of the Interior, and the DOE provides a view of the overall trends between 1977-2021 while also indicating the scope of outlays for each agency. By examining the figures, the significant points of punctuation are more clearly visible across all agencies (*see Figure 5-1*). While any punctuation can be deemed significant by qualitative standards and examples, this analysis focused primarily on punctuations above the $1 billion mark for the EPA, the Department of the Interior, and the DOE. For the USDA, punctuations above 10 billion are considered significant due to the scale and magnitude of budget outlays. These figures and year-over-year change comparison tables are examined in detail for each of the agencies.

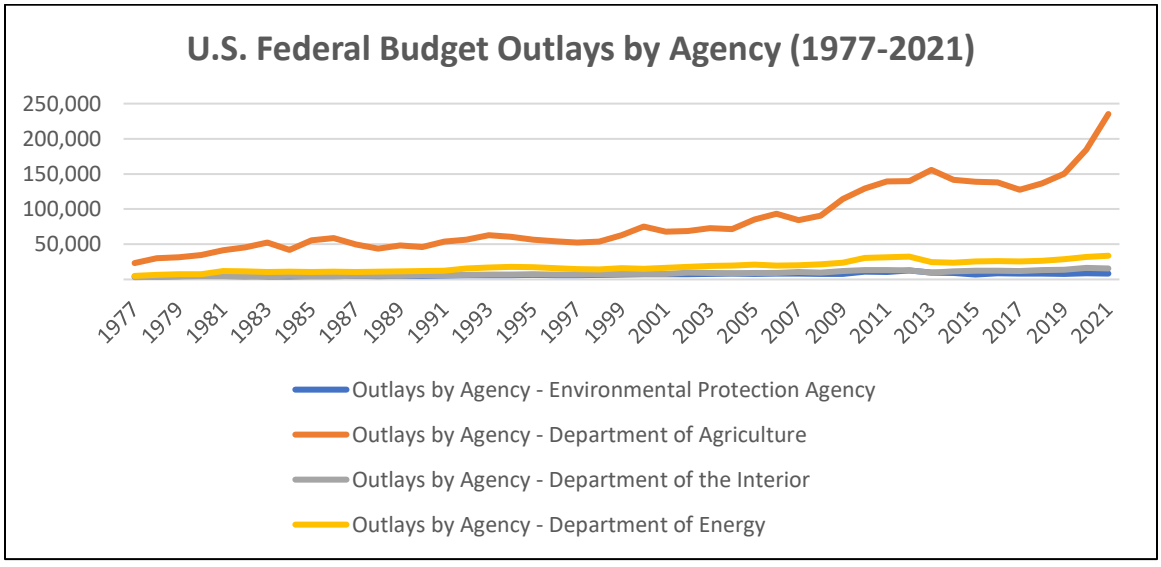

Figure 5-1: U.S. Federal Budget Outlays by Agency (1977-2021)

An important consideration for this analysis is controlling for macroeconomic conditions. The Consumer Price Index Annual Average Inflation Constant is utilized in this analysis for this purpose. To ensure that observed trends are consistent with macroeconomic trends, CPI is plotted to observe whether a similar rising linear trend exists and to note specific points of punctuation which may also affect observations within budget outlays data (*see Figure 5-2*). Looking closer at the year-over-year values, the largest points of punctuation for CPI are the years 1979-1981, 1990, 2005-2006, and 2021 (*see Table 5-1*). The largest punctuation of these is 2021 with a 12.2 constant.

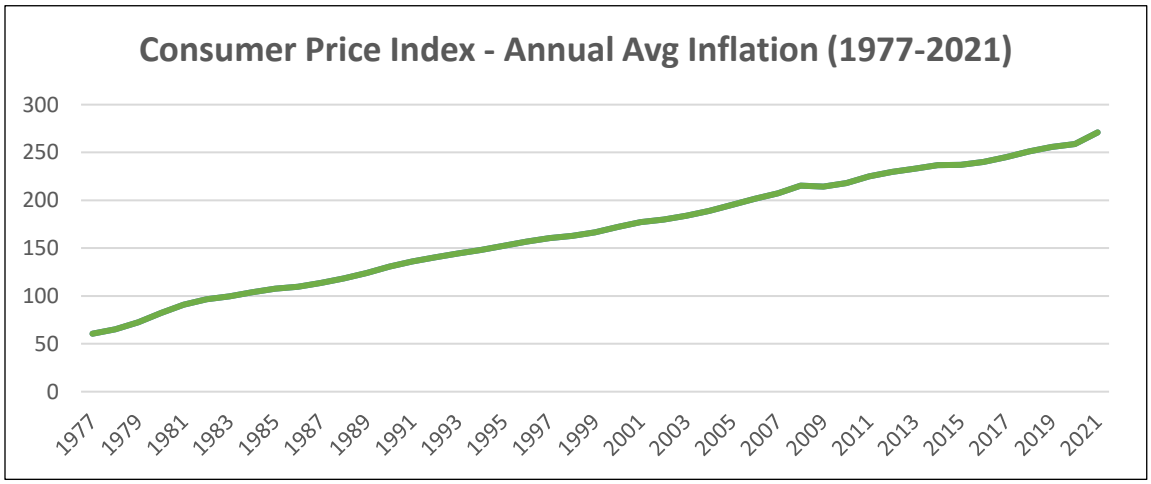

Figure 5-2: Consumer Price Index – Annual Average Inflation Constant (1977-2021)

Examining outlays for the EPA shows a similar linear trend, though there are many points of punctuation to consider (*see Figure 5-3*). The years 1979 and 1980 show increases in outlays followed by an almost equally precipitous drop in 1983. Through the rest of the 1980's and 1990's, outlays can be deemed as being more incremental with some less significant. The years with the largest punctuations are: 2010 ($2,937,000,000), 2012 ($2,392,000,000), 2013 (-$3,312,000,000), 2015 (-$2,392,000,000), and 2016 (1,718,000,000) (*see Table 5-2*).

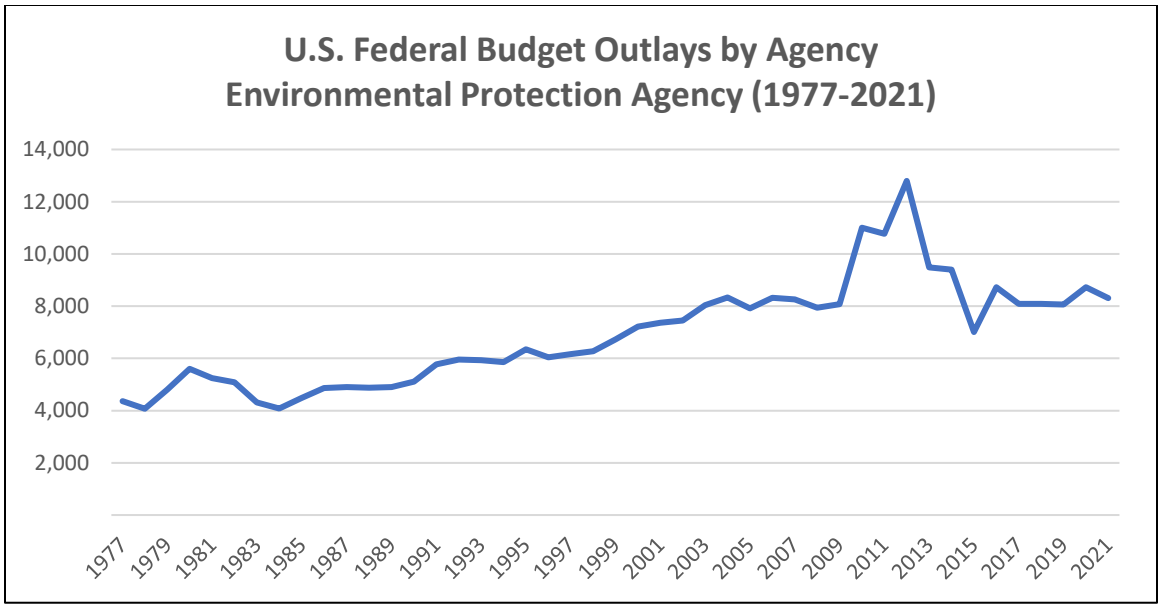

Figure 5-3: U.S. Federal Budget Outlays by Agency – EPA (1977-2021)

YEAR-OVER-YEAR CHANGE - CPI

Year	Consumer Price Index - Annual Average Constant (CPI-U)	Year-Over-Year Δ
1977	60.6	N/A
1978	65.2	4.6
1979	72.6	7.4
1980	82.4	9.8
1981	90.9	8.5
1982	96.5	5.6
1983	99.6	3.1
1984	103.9	4.3
1985	107.6	3.7
1986	109.6	2
1987	113.6	4
1988	118.3	4.7
1989	124	5.7
1990	130.7	6.7
1991	136.2	5.5
1992	140.3	4.1
1993	144.5	4.2
1994	148.2	3.7
1995	152.4	4.2
1996	156.9	4.5
1997	160.5	3.6
1998	163	2.5
1999	166.6	3.6
2000	172.2	5.6
2001	177.1	4.9
2002	179.9	2.8
2003	184	4.1
2004	188.9	4.9
2005	195.3	6.4
2006	201.6	6.3
2007	207.3	5.7
2008	215.3	8
2009	214.5	-0.8
2010	218.1	3.6
2011	224.9	6.8
2012	229.6	4.7
2013	233	3.4
2014	236.7	3.7
2015	237	0.3
2016	240	3
2017	245.1	5.1
2018	251.1	6
2019	255.7	4.6
2020	258.8	3.1
2021	271	12.2

YEAR-OVER-YEAR CHANGE - EPA

Year	Outlays by Agency - Environmental Protection Agency	Year-Over-Year Δ
1977	4,365	N/A
1978	4,072	-293
1979	4,800	728
1980	5,603	803
1981	5,242	-361
1982	5,081	-161
1983	4,312	-769
1984	4,076	-236
1985	4,490	414
1986	4,867	377
1987	4,904	37
1988	4,871	-33
1989	4,906	35
1990	5,108	202
1991	5,769	661
1992	5,950	181
1993	5,930	-20
1994	5,855	-75
1995	6,351	496
1996	6,046	-305
1997	6,164	118
1998	6,269	105
1999	6,733	464
2000	7,223	490
2001	7,367	144
2002	7,451	84
2003	8,041	590
2004	8,328	287
2005	7,913	-415
2006	8,321	408
2007	8,259	-62
2008	7,939	-320
2009	8,070	131
2010	11,007	2,937
2011	10,772	-235
2012	12,796	2,024
2013	9,484	-3,312
2014	9,399	-85
2015	7,007	-2,392
2016	8,725	1,718
2017	8,090	-635
2018	8,082	-8
2019	8,062	-20
2020	8,725	663
2021	8,309	-416

Table 5-1: Year-Over-Year Change – CPI Annual Average Inflation Constant
Table 5-2: Year-Over-Year Change – Environmental Protection Agency Outlays

In this analysis, the USDA is the agency with the largest magnitude of budget outlays and as indicated in the plotted data, also shows a similar linear growth trend to the EPA and consistent with inflation (*see Figure 5-4*). Examining the data closely reveals shifts in outlays consistent with the scale of budget for the agency with punctuations in 1984 (-$10,389,000,000), 1985 ($13,507,000,000), 2000 ($12,381,000,000), and 2005 ($13,748,000,000). There are more erratic and significant punctuations evident within recent years including 2009 ($23,645,000,000), 2010 ($15,019,000,000), 2013 ($16,178,000,000), 2014 (-14,087,000,000), 2017 (-$10,603,000,000), 2019 ($13,409,000,000), 2020 ($34,096,000,000), and 2021 ($50,971,000,000) (*see Table 5-3*).

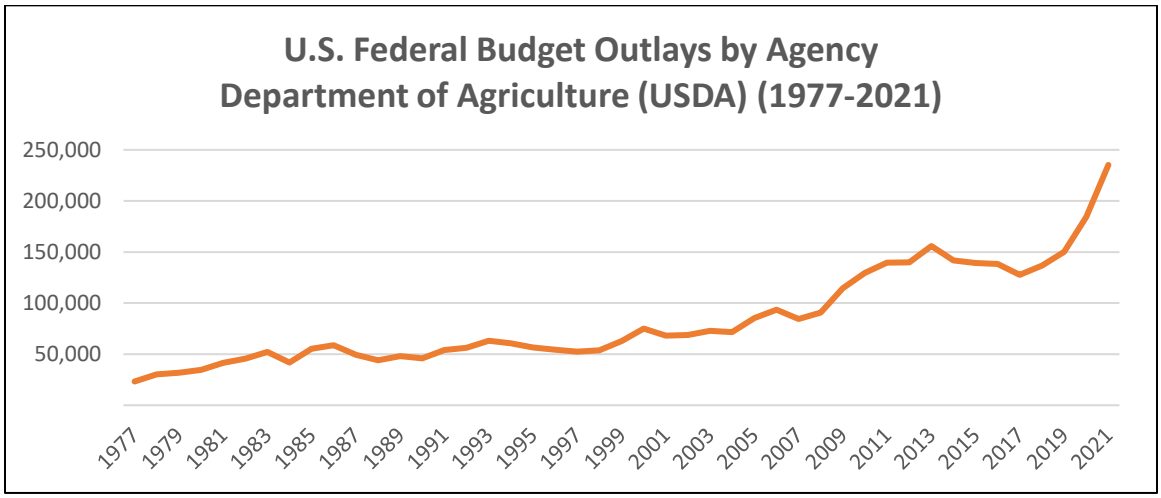

Figure 5-4: U.S. Federal Budget Outlays by Agency – USDA (1977-2021)

The Department of the Interior follows a similar linear growth trend to the EPA and shares some of the same points of punctuation albeit reaching higher budget outlays over time (*see Figure 5-4*). The data indicates the 1980's is a period with various shifts resulting in a more incremental pace through the 1990's. The 2000's ushered in an era of larger punctuations for the department in the years 2002 ($1,996,000,000), 2007

($1,432,000,000), 2009 ($1,958,000,000), 2010 ($1,389,000,000), 2013 (-$3,284,000,000), 2014 ($1,672,000,000), 2015 ($1,061,000,000), 2018 ($1,059,000,000), and 2020 ($2,515,000,000) (*see Table 5-4).*

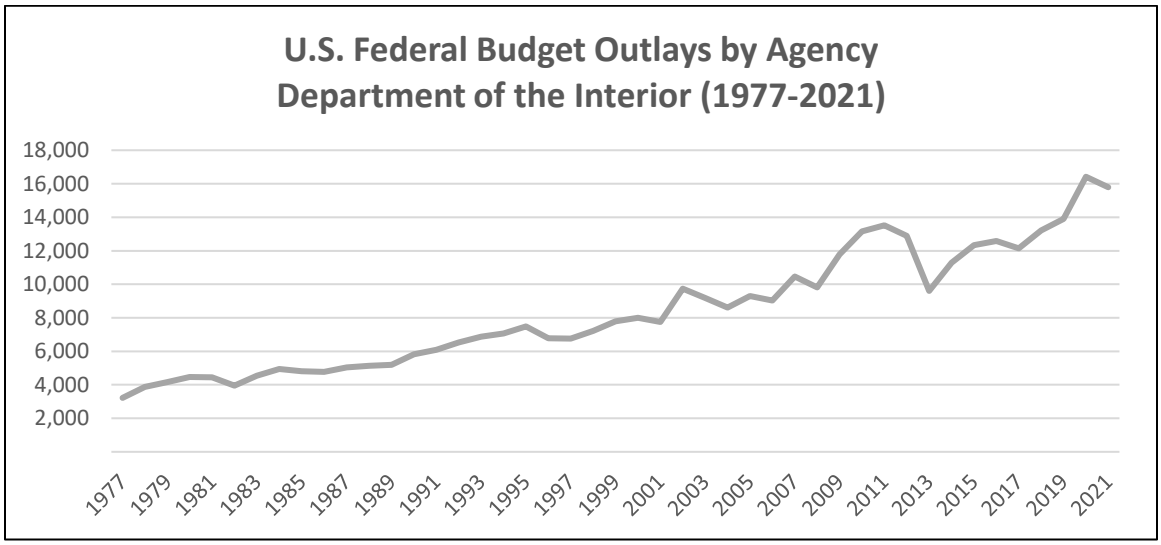

Figure 5-5: U.S. Federal Budget Outlays by Agency – Dept of the Interior (1977-2021)

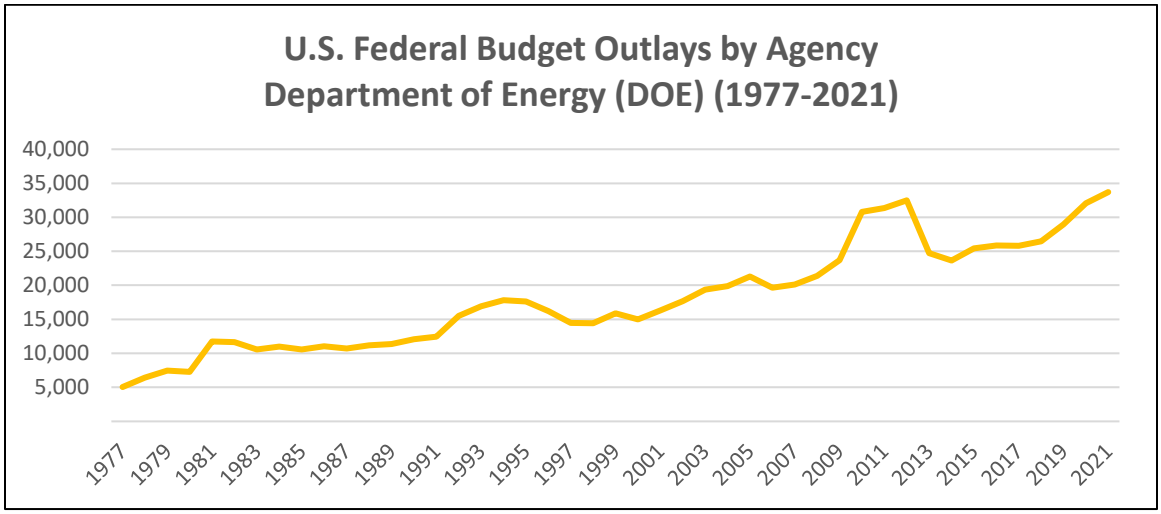

Figure 5-6: U.S. Federal Budget Outlays by Agency – Dept of Energy (1977-2021)

Having a larger magnitude of outlays than the EPA and the Department of the Interior, the DOE follows a similar linear growth trend with some significant variance throughout (*see Figure 5-6*). There are significant punctuations across each presidential administration except for President Reagan's second term and the first half of President G.H.W. Bush's term. The largest of these punctuations are 1981 ($4,496,000,000), 1992 ($3,043,000,000), 2009 ($2,283,000,000), 2010 ($7,095,000,000), 2013 (-$7,753,000,000), 2019 ($2,459,000,000), and 2020 ($3,106,000,000) (*see Table 5-5*).

YEAR-OVER-YEAR CHANGE - AGRICULTURE

Year	Outlays by Agency - Department of Agriculture	Year-Over-Year Δ
1977	23,287	N/A
1978	30,179	6,892
1979	31,698	1,519
1980	34,721	3,023
1981	41,541	6,820
1982	45,623	4,082
1983	52,317	6,694
1984	41,928	-10,389
1985	55,435	13,507
1986	58,599	3,164
1987	49,507	-9,092
1988	43,930	-5,577
1989	48,256	4,326
1990	45,858	-2,398
1991	53,990	8,132
1992	56,320	2,330
1993	63,019	6,699
1994	60,615	-2,404
1995	56,550	-4,065
1996	54,218	-2,332
1997	52,393	-1,825
1998	53,800	1,407
1999	62,690	8,890
2000	75,071	12,381
2001	68,071	-7,000
2002	68,622	551
2003	72,737	4,115
2004	71,560	-1,177
2005	85,308	13,748
2006	93,533	8,225
2007	84,427	-9,106
2008	90,795	6,368
2009	114,440	23,645
2010	129,459	15,019
2011	139,397	9,938
2012	139,717	320
2013	155,895	16,178
2014	141,808	-14,087
2015	139,115	-2,693
2016	138,163	-952
2017	127,560	-10,603
2018	136,716	9,156
2019	150,125	13,409
2020	184,221	34,096
2021	235,192	50,971

YEAR-OVER-YEAR CHANGE - INTERIOR

Year	Outlays by Agency - Department of the Interior	Year-Over-Year Δ
1977	3,220	N/A
1978	3,874	654
1979	4,168	294
1980	4,472	304
1981	4,456	-16
1982	3,944	-512
1983	4,552	608
1984	4,936	384
1985	4,804	-132
1986	4,774	-30
1987	5,037	263
1988	5,138	101
1989	5,194	56
1990	5,814	620
1991	6,082	268
1992	6,531	449
1993	6,879	348
1994	7,064	185
1995	7,479	415
1996	6,776	-703
1997	6,763	-13
1998	7,222	459
1999	7,783	561
2000	7,998	215
2001	7,743	-255
2002	9,739	1,996
2003	9,193	-546
2004	8,606	-587
2005	9,292	686
2006	9,037	-255
2007	10,469	1,432
2008	9,817	-652
2009	11,775	1,958
2010	13,164	1,389
2011	13,519	355
2012	12,891	-628
2013	9,607	-3,284
2014	11,279	1,672
2015	12,340	1,061
2016	12,583	243
2017	12,154	-429
2018	13,213	1,059
2019	13,903	690
2020	16,418	2,515
2021	15,799	-619

YEAR-OVER-YEAR CHANGE - ENERGY

Year	Outlays by Agency - Department of Energy	Year-Over-Year Δ
1977	5,049	N/A
1978	6,412	1,363
1979	7,441	1,029
1980	7,260	-181
1981	11,756	4,496
1982	11,656	-100
1983	10,590	-1,066
1984	10,990	400
1985	10,586	-404
1986	11,025	439
1987	10,692	-333
1988	11,165	473
1989	11,386	221
1990	12,083	697
1991	12,472	389
1992	15,515	3,043
1993	16,933	1,418
1994	17,830	897
1995	17,608	-222
1996	16,195	-1,413
1997	14,458	-1,737
1998	14,414	-44
1999	15,879	1,465
2000	14,971	-908
2001	16,319	1,348
2002	17,669	1,350
2003	19,379	1,710
2004	19,892	513
2005	21,271	1,379
2006	19,649	-1,622
2007	20,116	467
2008	21,400	1,284
2009	23,683	2,283
2010	30,778	7,095
2011	31,371	593
2012	32,484	1,113
2013	24,731	-7,753
2014	23,638	-1,093
2015	25,427	1,789
2016	25,862	435
2017	25,800	-62
2018	26,482	682
2019	28,941	2,459
2020	32,047	3,106
2021	33,702	1,655

Table 5-3: Year-Over-Year Change – Department of Agriculture (USDA) Outlays
Table 5-4: Year-Over-Year Change – Department of the Interior Outlays
Table 5-5: Year-Over-Year Change – Department of Energy (DOE) Outlays

5.2 Descriptive Statistics

Descriptive Statistics

The descriptive statistics for all variables in this analysis are summarized below (*see Table 5-6*). The results demonstrate the significant variation between variables. Of importance from these statistics are the mean/standard deviation for each of the dependent variables: EPA ($6,914,000,000 / 2,002,000,000), Agriculture ($83,520,000,000 / $47,200,000,000), Interior ($8,388,000,000 / $7,743,000,000), and Energy ($18,111,000,000 / $16,933,000,000). These statistics emphasize the scale of outlays for each agency in consideration.

DESCRIPTIVE STATISTICS

Variable Name	Mean	Standard Error	Median	Mode	Standard Deviation	Sample Variance	Kurtosis	Skewness	Range	Minimum	Maximum	Sum	Count	Confidence Level (95.0%)
Outlays EPA	6914.089	298.442	6733.000	8725.000	2002.010	4008042.628	0.363	0.689	8724.000	4072.000	12796.000	311134.000	45.000	601.470
Outlays Agriculture	83520.133	7036.170	63019.000	#N/A	47200.062	2227845848.209	0.997	1.166	211905.000	23287.000	235192.000	3758406.000	45.000	14180.468
Outlays Interior	8388.911	526.619	7743.000	#N/A	3532.670	12479760.083	-0.757	0.511	13198.000	3220.000	16418.000	377501.000	45.000	1061.332
Outlays Energy	18111.267	1143.030	16933.000	#N/A	7667.681	58793338.655	-0.739	0.405	28653.000	5049.000	33702.000	815007.000	45.000	2303.627
Party Affiliation	0.533	0.075	1.000	1.000	0.505	0.255	-2.075	-0.138	1.000	0.000	1.000	24.000	45.000	0.152
EO#12898 (1994)	0.622	0.073	1.000	1.000	0.490	0.240	-1.810	-0.522	1.000	0.000	1.000	28.000	45.000	0.147
EO#13211 (2001)	0.467	0.075	0.000	0.000	0.505	0.255	-2.075	0.138	1.000	0.000	1.000	21.000	45.000	0.152
EO#13299 (2003)	0.422	0.074	0.000	0.000	0.499	0.249	-1.984	0.326	1.000	0.000	1.000	19.000	45.000	0.150
EO#13423 (2007)	0.333	0.071	0.000	0.000	0.477	0.227	-1.535	0.732	1.000	0.000	1.000	15.000	45.000	0.143
EO#13790 (2017)	0.111	0.047	0.000	0.000	0.318	0.101	4.769	2.561	1.000	0.000	1.000	5.000	45.000	0.095
Carter Admin	0.089	0.043	0.000	0.000	0.288	0.083	7.260	2.990	1.000	0.000	1.000	4.000	45.000	0.086
Reagan Admin	0.178	0.058	0.000	0.000	0.387	0.149	1.089	1.744	1.000	0.000	1.000	8.000	45.000	0.116
G.H.W. Bush Admin	0.089	0.043	0.000	0.000	0.288	0.083	7.260	2.990	1.000	0.000	1.000	4.000	45.000	0.086
Clinton Admin	0.178	0.058	0.000	0.000	0.387	0.149	1.089	1.744	1.000	0.000	1.000	8.000	45.000	0.116
G.W.Bush Admin	0.178	0.058	0.000	0.000	0.387	0.149	1.089	1.744	1.000	0.000	1.000	8.000	45.000	0.116
Obama Admin	0.178	0.058	0.000	0.000	0.387	0.149	1.089	1.744	1.000	0.000	1.000	8.000	45.000	0.116
Trump Admin	0.089	0.043	0.000	0.000	0.288	0.083	7.260	2.990	1.000	0.000	1.000	4.000	45.000	0.086
CPI-U	168.471	8.817	166.600	#N/A	59.148	3498.482	-1.113	-0.073	210.400	60.600	271.000	7581.200	45.000	17.770

Table 5-6: Descriptive Statistics

5.3 Regression Analysis

The summary outputs of the regression analyses show the statistical relationships between the dependent variables and the independent variables. All regression models are adjusted for CPI Average Annual Inflation. The outputs indicate the behavior of variables

against each dependent variable and there are relationships of significance that have been marked at the $p<0.10$, $p<0.05$, and $p<0.01$ levels with $p<0.01$ being the most significant.

The regression summary output of the U.S. Budget Outlays for the Environmental Protection Agency shows one relationships of significance at the $p<0.10$ level, three relationships of significance at the $p<0.05$ level, and two relationships of significance at the $p<0.01$ level (*see Table 5-7*). The relationship with Party Affiliation is significant at the $p<0.10$ level and has a coefficient of -591.12 with a standard error of 313.51 indicating that a Republican presidency would result in a decline in EPA outlays by a magnitude of $591,120,000 in each year of a Republican presidency.

The relationships with E.O. #13211, E.O. #13299, and the Trump Administration are all significant at the $p<0.05$ level. E.O. #13211 has a coefficient of 1571.64 with a standard error of 585.80 indicating an increase of $1,571,640,000 to EPA Outlays since this executive order was issued in 2001. E.O. #13299 has a coefficient of 1398.35 with a standard error of 588.42 indicating an increase of $1,398,350,000 since the executive order was issued in 2003. The Trump administration has a coefficient of -1498.04 with a standard error of 595.18 indicating a decrease of $1,498,040,000 to EPA outlays during each year of the presidency.

The variables with significance at the $p<0.01$ level are E.O. #13790 and the Obama Administration. E.O. #13790 has a coefficient of -1849.43 with a standard error of 538.58 indicating a decrease in EPA outlays by $1,849,430,000 for each year following the issuance of this executive order in 2017. The Obama Administration has a coefficient of 1599.36 with a standard error of 418.28 indicating an increase in outlays by $1,599,360,000 for the EPA during each year of the presidency.

REGRESSION SUMMARY OUTPUT: U.S. BUDGET OUTLAYS BY AGENCY - EPA (in millions*)								
Independent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Party Affiliation	-591.12	313.51	-1.89	0.066 *	-1223.80	41.56	0.740	45
EO#12898 (1994)	813.55	597.99	1.36	0.181	-393.24	2020.35	0.730	45
EO#13211 (2001)	1571.64	585.80	2.68	0.010 **	389.45	2753.82	0.759	45
EO#13299 (2003)	1398.35	588.42	2.38	0.022 **	210.88	2585.83	0.751	45
EO#13423 (2007)	602.28	586.67	1.03	0.310	-581.66	1786.23	0.725	45
EO#13790 (2017)	-1849.43	538.58	-3.43	0.001 ***	-2936.33	-762.53	0.780	45
Carter Admin	929.80	654.43	1.42	0.163	-390.89	2250.50	0.731	45
Reagan Admin	-593.43	483.09	-1.23	0.226	-1568.34	381.48	0.728	45
G.H.W.Bush Admin	-521.58	575.33	-0.91	0.370	-1682.64	639.48	0.723	45
Clinton Admin	-359.47	422.34	-0.85	0.400	-1211.78	492.84	0.722	45
G.W.Bush Admin	399.85	428.87	0.93	0.356	-465.64	1265.34	0.723	45
Obama Admin	1588.36	418.28	3.80	0.000 ***	744.24	2432.49	0.790	45
Trump Admin	-1498.04	595.18	-2.52	0.016 **	-2699.16	-296.92	0.755	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-7: Regression Summary Output - U.S. Budget Outlays by Agency, Environmental Protection Agency (in millions)

REGRESSION SUMMARY OUTPUT: U.S. BUDGET OUTLAYS BY AGENCY - DEPT OF AGRICULTURE (in millions*)								
Independent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Party Affiliation	-8713.44	6108.33	-1.43	0.161	-21040.55	3613.66	0.822	45
EO#12898 (1994)	-39301.57	10011.35	-3.93	0.000 ***	-59505.28	-19097.85	0.864	45
EO#13211 (2001)	578.20	12144.78	0.05	0.962	-23930.97	25087.36	0.814	45
EO#13299 (2003)	15406.31	11768.01	1.31	0.198	-8342.50	39155.12	0.821	45
EO#13423 (2007)	37646.25	9783.83	3.85	0.000 ***	17901.68	57390.81	0.862	45
EO#13790 (2017)	31332.95	10627.85	2.95	0.005 ***	9885.09	52780.81	0.846	45
Carter Admin	26035.69	12189.04	2.14	0.039 **	1437.23	50634.16	0.832	45
Reagan Admin	17585.18	9019.48	1.95	0.058 *	-616.86	35787.21	0.829	45
G.H.W.Bush Admin	-7673.43	11065.17	-0.69	0.492	-30003.85	14656.99	0.816	45
Clinton Admin	-19858.06	7562.61	-2.63	0.012 **	-35120.02	-4596.10	0.840	45
G.W.Bush Admin	-28231.54	7064.94	-4.00	0.000 ***	-42489.17	-13973.92	0.865	45
Obama Admin	15859.41	8958.60	1.77	0.084	-2219.77	33938.59	0.827	45
Trump Admin	7600.25	12174.63	0.62	0.536	-16969.16	32169.65	0.815	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-8: Regression Summary Output - U.S. Budget Outlays by Agency, Department of Agriculture (USDA) (in millions)

The regression summary output of the U.S. Budget Outlays for the USDA shows one relationship of significance at the $p<0.10$ level, two relationships of significance at the $p<0.05$ level, and four relationships of significance at the $p<0.01$ level (*see Table 5-8*). The variable with significance at the $p<0.10$ level is the Reagan Administration and has a coefficient of 17585.18 with a standard error of 9019.48 indicating an increase in outlays for the USDA of $17,585,180,000 for each year of the presidency. The relationships with the Carter Administration and the Clinton Administration are significant at the $p<0.05$ level. The Carter Administration has a coefficient of 26035.69 with a standard error of 12189.04 indicating an increase in outlays of $26,035,690,000 for each year of the

presidency. The Clinton Administration has a coefficient of -19858.06 with a standard error of 7562.61 indicating a decrease of $19,858,060,000 for USDA outlays during each year of the presidency.

The variables with significance at the p<0.01 level are E.O. #12898, E.O. #13423, E.O. #13790, and the G.W. Bush Administration. E.O. #12898 has a coefficient of -39301.57 with a standard error of 10011.35 indicating a decrease in department outlays of $39,301,570,000 for each year following the issuance of the executive order in 1994. E.O. #13423 has a coefficient of 37646.25 with a standard error of 9783.83 indicating an increase of $37,646,250,000 for each year following the executive order issuance in 2007. E.O. #13790 has a coefficient of 31332.95 with a standard error of 10627.85 indicating an increase of $31,332,950,000 each year after the executive order was issues in 2017. The G.W. Bush Administration has a coefficient of -28231.54 with a standard error of 7064.94 indicating a decrease in department outlays of $28,231,540,000 for each year of the presidency.

The regression summary output of the U.S. Budget Outlays for the Department of the Interior shows that there are two relationships of significance at the p<0.10 level, one relationship at the p<0.05 level, and two relationships of significance at the p<0.01 level (*see Table 5-9*). The variables with significance at the p<0.10 level are the Clinton Administration and the G.W. Bush Administration. The Clinton Administration has a coefficient of -668.59 with a standard error of 388.60 indicating a decrease of $668,590,000 to department outlays for each year of the presidency. The G.W. Bush Administration has a coefficient of -754.13 with a standard error of 392.07 also indicating a decrease to department outlays of $754,130,000 for each year of the presidency. The relationships

with E.O. #13790 is significant at the p<0.05 level and has a coefficient of 1374.15 with a standard error of 534.82 indicating an increase of $1,374,150,000 to department outlays for each year following executive order issuance in 2017. The variables with significance at the p<0.01 level are E.O. #13423 and the Carter Administration. E.O. #13423 has a coefficient of 1548.56 with a standard error of 507.19 indicating an increase in department outlays of $1,548,560,000 for each year following issuance in 2007. The Carter Administration has a coefficient of 1775.16 with a standard error of 569.98 indicating an increase to department outlays of $1,775,160,000 for each year of the presidency.

REGRESSION SUMMARY OUTPUT: U.S. BUDGET OUTLAYS BY AGENCY - DEPT OF THE INTERIOR (in millions*)

Independent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Party Affiliation	-366.42	302.96	-1.21	0.233	-977.81	244.97	0.922	45
EO#12898 (1994)	-753.57	564.90	-1.33	0.189	-1893.59	386.44	0.923	45
EO#13211 (2001)	623.31	590.66	1.06	0.297	-568.69	1815.30	0.921	45
EO#13299 (2003)	756.35	579.94	1.30	0.199	-414.02	1926.72	0.922	45
EO#13423 (2007)	1548.56	507.19	3.05	0.004 ***	525.01	2572.10	0.934	45
EO#13790 (2017)	1374.15	534.82	2.57	0.014 **	294.84	2453.45	0.930	45
Carter Admin	1775.16	569.98	3.11	0.003 ***	624.89	2925.43	0.934	45
Reagan Admin	-80.33	463.94	-0.17	0.863	-1016.59	855.92	0.919	45
G.H.W.Bush Admin	-502.28	542.83	-0.93	0.360	-1597.76	593.20	0.921	45
Clinton Admin	-668.59	388.60	-1.72	0.093 *	-1452.83	115.64	0.925	45
G.W.Bush Admin	-754.13	392.07	-1.92	0.061 *	-1545.36	37.10	0.926	45
Obama Admin	439.22	452.55	0.97	0.337	-474.07	1352.51	0.921	45
Trump Admin	978.60	583.44	1.68	0.101	-198.84	2156.04	0.924	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-9: Regression Summary Output - U.S. Budget Outlays by Agency, Department of Interior (in millions)

REGRESSION SUMMARY OUTPUT: U.S. BUDGET OUTLAYS BY AGENCY - DEPT OF ENERGY (in millions*)

Independent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Party Affiliation	-1083.53	741.41	-1.46	0.151	-2579.75	412.69	0.901	45
EO#12898 (1994)	-1919.23	1391.15	-1.38	0.175	-4726.68	888.23	0.900	45
EO#13211 (2001)	688.77	1471.99	0.47	0.642	-2281.82	3659.37	0.896	45
EO#13299 (2003)	2229.07	1417.76	1.57	0.123	-632.08	5090.23	0.902	45
EO#13423 (2007)	3199.40	1291.51	2.48	0.017 **	593.02	5805.77	0.909	45
EO#13790 (2017)	787.38	1413.59	0.56	0.580	-2065.36	3640.12	0.896	45
Carter Admin	736.48	1555.39	0.47	0.638	-2402.42	3875.38	0.896	45
Reagan Admin	1196.95	1129.53	1.06	0.295	-1082.53	3476.44	0.898	45
G.H.W.Bush Admin	-991.69	1343.58	-0.74	0.465	-3703.15	1719.77	0.897	45
Clinton Admin	-973.78	980.09	-0.99	0.326	-2951.69	1004.12	0.898	45
G.W.Bush Admin	-2206.87	949.36	-2.32	0.025 **	-4122.74	-290.99	0.908	45
Obama Admin	2667.43	1050.76	2.54	0.015 **	546.91	4787.94	0.910	45
Trump Admin	-171.71	1486.02	-0.12	0.909	-3170.62	2827.20	0.896	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-10: Regression Summary Output - U.S. Budget Outlays by Agency, Department of Energy (in millions)

The regression summary output of the U.S. Budget Outlays for the DOE shows that there are no variables with significance at the $p<0.10$ or $p<0.01$ levels, however there are three variables significant at the $p<0.05$ level (*see Table 5-10*). E.O. #13423 has a coefficient of 3199.40 with a standard error of 1291.51 indicating an increase in department outlays of $3,199,400,000 in each year following executive order issuance in 2007. The G.W. Bush Administration has a coefficient of -2206.87 with a standard error of 1417.76 indicating a decline of $2,206,870,000 to department outlays for each year of the presidency. The Obama Administration has a coefficient of 2667.43 with a standard error of 1050.76 indicating an increase in department outlays of $2,667,430,000 for each year of the presidency.

5.4 Correlation Matrix

Correlation analysis is a bivariate measure used to understand the degree to which a linear relationship may exist between multiple variables. This analysis can also indicate the relationship of independent variables if included within the same regression model. The correlation matrix below (*see Table 5-11*), identifies that there is strong positive correlation (values > 0.5) between the independent variables (all executive orders, Obama Administration, the control variable (CPI), and the dependent variables (EPA, Agriculture, Interior, and Energy). There are strong positive correlations evident between the following independent variables:

- E.O. #12898 with E.O. #13211, E.O. #13299, E.O. #13423, and CPI
- E.O. #13211 with CPI
- E.O. #13299 with E.O. #13423, Obama Administration, and CPI
- E.O. #13423 with E.O. #13790, Obama Administration, and CPI
- E.O. #13423 with CPI
- Obama Administration with E.O. #13299 and E.O. #13423

CORRELATION MATRIX																			
	Outlays EPA	Outlays Agriculture	Outlays Interior	Outlays Energy	Party Affiliation	EO#12898 (1994)	EO#13211 (2001)	EO#13299 (2003)	EO#13423 (2007)	EO#13790 (2017)	Carter Admin	Reagan Admin	G.H.W. Bush Admin	Clinton Admin	G.W.Bush Admin	Obama Admin	Trump Admin	CPI-U	CPI-U
Outlays EPA	1.000																		
Outlays Agriculture	0.766	1.000																	
Outlays Interior	0.846	0.933	1.000																
Outlays Energy	0.889	0.930	0.971	1.000															
Party Affiliation	-0.220	-0.169	-0.134	-0.152	1.000														
EO#12898 (1994)	0.769	0.632	0.771	0.755	-0.269	1.000													
EO#13211 (2001)	0.831	0.776	0.846	0.824	0.071	0.729	1.000												
EO#13299 (2003)	0.817	0.813	0.846	0.846	-0.012	0.666	0.914	1.000											
EO#13423 (2007)	0.739	0.863	0.851	0.838	-0.189	0.551	0.756	0.827	1.000										
EO#13790 (2017)	0.239	0.631	0.598	0.526	0.189	0.275	0.378	0.414	0.500	1.000									
Carter Admin	-0.348	-0.358	-0.398	-0.477	-0.334	-0.401	-0.292	-0.267	-0.221	-0.110	1.000								
Reagan Admin	-0.513	-0.348	-0.490	-0.433	0.435	-0.597	-0.435	-0.397	-0.329	-0.164	-0.145	1.000							
G.H.W. Bush Admin	-0.234	-0.217	-0.222	-0.216	0.292	-0.401	-0.292	-0.267	-0.221	-0.110	-0.098	-0.145	1.000						
Clinton Admin	-0.139	-0.236	-0.152	-0.127	-0.497	0.242	-0.435	-0.397	-0.329	-0.164	-0.145	-0.216	-0.145	1.000					
G.W.Bush Admin	0.244	-0.041	0.113	0.083	0.435	0.362	0.497	0.309	-0.082	-0.164	-0.145	-0.216	-0.145	-0.216	1.000				
Obama Admin	0.644	0.535	0.500	0.560	-0.497	0.362	0.497	0.544	0.658	-0.164	-0.145	-0.216	-0.145	-0.216	-0.216	1.000			
Trump Admin	0.209	0.443	0.495	0.420	0.292	0.243	0.334	0.365	0.442	0.883	-0.098	-0.145	-0.098	-0.145	-0.145	-0.145	1.000		
CPI-U	0.847	0.902	0.959	0.946	-0.085	0.837	0.858	0.852	0.815	0.531	-0.525	-0.505	-0.190	-0.083	0.200	0.483	0.450	1.000	1.000

Table 5-11: Correlation Matrix

There are strong positive correlations between the control variable with all Executive Orders, Carter Administration, and Reagan Administration. The correlation matrix also indicates strong negative correlations (values <-0.5) between the Reagan Administration, E.O. #12898, and CPI. To better navigate the potential effects of the multicollinearity of these variables, regressions of dependent variables are run against each independent variable separately. The control variable CPI is included in every regression to control for macroeconomic conditions.

5.5 Significant Findings

Hypothesis Testing Results Summary & Regression Interpretations

Considering the preliminary regression outputs by agency previously discussed, indicates that unilateral action by way of executive order and party affiliation both have a relationship with the U.S. Federal Budget Outlays by Agency thereby enabling the rejection of both null hypotheses (*see Table 5-12*).

SUMMARY OF NULL HYPOTHESIS TESTING RESULTS		
$H_{\#}$	*Description*	*Results*
H_0	**Null Hypotheses**	
H_0a	Unilateral actions (Executive Orders) do not result in changes to U.S. Federal Budget Outlays by Agency	Rejected
H_0b	Party affiliation does not result in changes to U.S. Federal Budget Outlays by Agency	Rejected

Table 5-12: Summary of Null Hypothesis Testing Results

By rejecting the null hypotheses, this analysis can consider the alternative hypotheses in support for relationships between the variables. For executive orders, there are six groupings of hypotheses which support a relationship between variables at varying levels of significance. The regression data provides evidence that the increases and decreases in outlays to the EPA and agencies with similar mission, are related to executive orders thereby supporting H1a and H1b. Regression data also shows that the EPA experiences increases to outlays in each year following the issuance of these executive orders in all instances except for E.O. #13790 (*see Table 5-13*). This allows for support of H2a, H3b, H4b, and H5a. H6b is not supported, as evidence shows a coefficient of 1849.43 and a standard error of 538.58 indicating a decrease in EPA outlays of $1,849,430,000 each year following the issuance of the executive order in 2017 (*see Table 5-18*). While the hypothesis is not supported, this is a significant relationship for this executive order with the EPA.

Taking this further to the other agencies in this analysis, the regression data shows an increase to outlays in each year following the issuance of these executive orders in all instances except for E.O. #12898 (*see Table 5-13*). This allows for support of H3a, H3c, H4a, H4c, H5b, H5c, H6a, and H6c. H2b is not supported, as evidence shows that for the USDA, Department of the Interior, and the DOE there is decrease in outlays following the

issuance of this executive order in 1994. The relationship between E.O. #12898 and the USDA is significant at the $p<0.01$ level (*see Table 5-14*).

These results support that because the EPA, USDA, Interior Department, and the DOE have similar missions and share functions, most executive orders directed to either of these agencies will likely result in an increase in outlays to the others.

SUMMARY OF ALTERNATE HYPOTHESIS TESTING RESULTS - UNILATERAL ACTION (EXECUTIVE ORDERS)			
H#	*Description*	*Results*	
H1	**Unilateral actions (Executive Orders) relation to U.S. Federal Budget Outlays by Agency**		
H1a	Executive Orders affecting environmental policy result in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency	Supported	
H1b	Executive Orders affecting environmental policy result in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Supported	
H2	**Executive Order #12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 1994) relation to U.S. Federal Budget Outlays by Agency**		
H2a	Executive Order #12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 1994) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency	Supported	
H2b	Executive Order #12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 1994) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Not Supported	**
H3	**Executive Order #13211 - Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use (May 2001) relation to U.S. Federal Budget Outlays by Agency**		
H3a	Executive Order #13211 - Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use (May 2001) results in increases to U.S. Federal Budget Outlays by Agency for the Department of Energy	Supported	
H3b	Executive Order #13211 - Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use (May 2001) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency	Supported	*
H3c	Executive Order #13211 - Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use (May 2001) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Supported	
H4	**Executive Order #13299 - Establishment of Interagency Group on Insular Areas (May 2003) relation to U.S. Federal Budget Outlays by Agency**		
H4a	Executive Order #13299 - Establishment of Interagency Group on Insular Areas (May 2003) results in increases to U.S. Federal Budget Outlays by Agency for the Department of the Interior	Supported	
H4b	Executive Order #13299 - Establishment of Interagency Group on Insular Areas (May 2003) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency	Supported	*
H4c	Executive Order #13299 - Establishment of Interagency Group on Insular Areas (May 2003) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Supported	
H5	**Executive Order #13423, Strengthening Federal Environmental, Energy, and Transportation Management (Jan 2007) relation to U.S. Federal Budget Outlays by Agency**		
H5a	Executive Order #13423, Strengthening Federal Environmental, Energy, and Transportation Management (Jan 2007) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency	Supported	
H5b	Executive Order #13423, Strengthening Federal Environmental, Energy, and Transportation Management (Jan 2007) results in increases to U.S. Federal Budget Outlays by Agency for the Department of Energy	Supported	*
H5c	Executive Order #13423, Strengthening Federal Environmental, Energy, and Transportation Management (Jan 2007) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Supported	*
H6	**Executive Order #13790—Promoting Agriculture and Rural Prosperity in America (April 2017) relation to U.S. Federal Budget Outlays by Agency**		
H6a	Executive Order #13790—Promoting Agriculture and Rural Prosperity in America (April 2017) results in increases to U.S. Federal Budget Outlays by Agency for the Department of Agriculture	Supported	*
H6b	Executive Order #13790—Promoting Agriculture and Rural Prosperity in America (April 2017) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency	Not Supported	**
H6c	Executive Order #13790—Promoting Agriculture and Rural Prosperity in America (April 2017) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Supported	*

* Indicates that the finding is significant ** Indicates that the finding is significant but not consistent with the hypothesis

Table 5-13: Summary of Alternate Hypothesis Testing Results -Unilateral Action (Executive Orders)

Regarding E.O. #12898 and its relationship with the dependent variables, it is expected and supported that an increase in EPA outlays would occur especially since this order was directed to the EPA. It is expected that the magnitude of the increase would be greater for the EPA because of this. However, it is the only executive order that results in a decrease to all other executive agencies where the increase is evident for the EPA (*see Table 5-14*). The magnitude of decreases for both the USDA and the DOE are noted as $39,301,570,000 and $1,919,230,000 respectively, indicating a greater trend beyond the data especially with significance at the $p<0.01$ level for Agriculture.

REGRESSION SUMMARY OUTPUT: EXECUTIVE ORDER #12898 (1994) (in millions*)

Dependent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Outlays - EPA	813.55	597.99	1.36	0.181	-393.24	2020.35	0.730	45
Outlays - AG	-39301.57	10011.35	-3.93	0.000 ***	-59505.28	-19097.85	0.864	45
Outlays - INTERIOR	-753.57	564.90	-1.33	0.189	-1893.59	386.44	0.923	45
Outlays - ENERGY	-1919.23	1391.15	-1.38	0.175	-4726.68	888.23	0.900	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-14: Regression Summary Output - Executive Order #12989 (1994) (in millions)

The regression output for E.O. #13211 supports the hypotheses where resulting increases across all agencies are observed. This also illustrates the overlapping nature of executive orders targeted for the DOE that have a direct effect on the EPA and other related agencies. Differing from the previous order, the magnitude of the increase in outlays for the EPA at $1,571,640,000 is much greater than the other agencies including the DOE, at $688,000,000 being the agency of direct focus (*see Table 5-15*). The relationship of this variable with the EPA being of significance at the $p<0.05$ level is important to note.

REGRESSION SUMMARY OUTPUT: EXECUTIVE ORDER #13211 (2001) (in millions*)

Dependent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Outlays - EPA	1571.64	585.80	2.68	0.010 **	389.45	2753.82	0.759	45
Outlays - AG	578.20	12144.78	0.05	0.962	-23930.97	25087.36	0.814	45
Outlays - INTERIOR	623.31	590.66	1.06	0.297	-568.69	1815.30	0.921	45
Outlays - ENERGY	688.77	1471.99	0.47	0.642	-2281.82	3659.37	0.896	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-15: Regression Summary Output - Executive Order #13211 (2001) (in millions)

The results of the regression for E.O. #13299 also support the outlays increases across all agencies, though the magnitude of the changes across agencies is the least for the Department of the Interior at $756,350,000 being the agency of direct focus (*see Table 5-16*). The relationship of this variable with the EPA being of significance at the p<0.05 level is important to note.

REGRESSION SUMMARY OUTPUT: EXECUTIVE ORDER #13299 (2003) (in millions*)

Dependent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Outlays - EPA	1398.35	588.42	2.38	0.022 **	210.88	2585.83	0.751	45
Outlays - AG	15406.31	11768.01	1.31	0.198	-8342.50	39155.12	0.821	45
Outlays - INTERIOR	756.35	579.94	1.30	0.199	-414.02	1926.72	0.922	45
Outlays - ENERGY	2229.07	1417.76	1.57	0.123	-632.08	5090.23	0.902	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-16: Regression Summary Output - Executive Order #13299 (2003) (in millions)

The regression output for E.O. #13423 supports the outlays increases across all agencies When issued, the order was directed at both the EPA and the DOE though magnitude of increases vary greatly across all agencies (*see Table 5-17*). The data shows significance at the p<0.05 level for Energy and at the p<0.01 level for Agriculture and Interior.

REGRESSION SUMMARY OUTPUT: EXECUTIVE ORDER #13423 (2007) (in millions*)

Dependent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Outlays - EPA	602.28	586.67	1.03	0.310	-581.66	1786.23	0.725	45
Outlays - AG	37646.25	9783.83	3.85	0.000 ***	17901.68	57390.81	0.862	45
Outlays - INTERIOR	1548.56	507.19	3.05	0.004 ***	525.01	2572.10	0.934	45
Outlays - ENERGY	3199.40	1291.51	2.48	0.017 **	593.02	5805.77	0.909	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-17: Regression Summary Output - Executive Order #13423 (2007) (in millions)

For E.O. #13790, the regression output results did not support the hypothesis and instead show a decrease in EPA outlays and significance at the p<0.01 level (*see Table 5-18*). As this order was directed at the USDA, the data shows a high magnitude increase of

$37,646,250,000 for Agriculture which is also significant at the p<0.01 level. The Department of the Interior also shows an increase of $1,374,150,000 with significance at the p<0.05 level, seemingly consistent with the mission of rural prosperity, an intended target of the executive order.

REGRESSION SUMMARY OUTPUT: EXECUTIVE ORDER #13790 (2017) (in millions*)

Dependent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Outlays - EPA	-1849.43	538.58	-3.43	0.001 ***	-2936.33	-762.53	0.780	45
Outlays - AG	31332.95	10627.85	2.95	0.005 ***	9885.09	52780.81	0.846	45
Outlays - INTERIOR	1374.15	534.82	2.57	0.014 **	294.84	2453.45	0.930	45
Outlays - ENERGY	787.38	1413.59	0.56	0.580	-2065.36	3640.12	0.896	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-18: Regression Summary Output - Executive Order #13790 (2017) (in millions)

For party affiliation, there are eight groupings of hypotheses which support a relationship between variables at varying levels of significance. The regression data provides evidence that decreases in outlays to the EPA and agencies with similar mission, are related to republican party affiliation thereby supporting H7a and H7b. Regression data also shows that the EPA experiences decreases to outlays in each year of a Republican presidency except for the G.W. Bush Administration and experiences increases in each year of a Democrat presidency except for the Clinton Administration (*see Table 5-19*). This allows for support of H8a, H9a, H10a, H13a, and H14a.

H11a is not supported, as evidence shows a coefficient of -359.47 with a standard error of 422.34 indicating a $359,470,000 decrease in EPA outlays for each year of the Clinton presidency (*see Table 5-24*). H12a is not supported, as evidence shows a coefficient of 399.85 and a standard error of 428.87 indicating an increase in EPA outlays of $399,850,000 each year of the G.W. Bush presidency (*see Table 5-25*).

Taking this further to the other agencies in this analysis, the regression data shows similar behaviors where Republican administrations generally result in decreases to outlays and Democrat administrations result in increases except for the Reagan, Clinton, and Trump administrations (*see Table 5-13*). This allows for support of H7b, H8b, H10b, H12b, and H13b. H9b is not supported, as evidence shows that for the USDA and the DOE there is an increase in outlays for each year of the Reagan administration. The relationship between The Reagan Administration and the USDA are significant at the $p<0.10$ level (*see Table 5-22*).

H11b is not supported, as evidence shows a decrease in outlays across all agencies for each year of the Clinton administration with relationships of significance at the $p<0.10$ level for the Department of the Interior and at the $p<0.50$ level for the Department of the Agriculture (*see Table 5-24*). H14b is not supported, as evidence shows an increase in outlays for each year of the Trump administration for the USDA and the Department of the Interior (*see Table 5-27*).

These results support that because the EPA, USDA, Department of the Interior, and the DOE have similar missions and share functions, most Democrat administration will result in an increase in outlays and Republican administrations will result in decreases for these agencies.

SUMMARY OF ALTERNATE HYPOTHESIS TESTING RESULTS - PARTY AFFILIATION

H#	*Description*	*Results*	
H7	**Party affiliation relation to U.S. Federal Budget Outlays by Agency**		
H7a	Republican presidential administrations result in a decline to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency	Supported	*
H7b	Republican administrations result in a decline to U.S. Federal Budget Outlays by Agency for other agencies with similar missions and shared mechanisms with the EPA	Supported	
H8	**Carter Administration relation to U.S. Budget Outlays by Agency**		
H8a	Carter Administration results in increases to U.S. Budget Outlays by Agency for the Environmental Protection Agency	Supported	
H8b	Carter Administration results in changes to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Supported	*
H9	**Reagan Administration relation to U.S. Budget Outlays by Agency**		
H9a	Reagan Administration results in decreases to U.S. Budget Outlays by Agency for the Environmental Protection Agency	Supported	
H9b	Reagan Administration results in decreases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Not Supported	**
H10	**G.H.W. Bush Administration relation to U.S. Budget Outlays by Agency**		
H10a	G.H.W. Bush Administration results in decreases to U.S. Budget Outlays by Agency for the Environmental Protection Agency	Supported	
H10b	G.H.W. Bush Administration results in decreases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Supported	
H11	**Clinton Administration relation to U.S. Budget Outlays by Agency**		
H11a	Clinton Administration results in increases to U.S. Budget Outlays by Agency for the Environmental Protection Agency	Not Supported	
H11b	Clinton Administration results in increases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Not Supported	**
H12	**G.W. Bush Administration relation to U.S. Budget Outlays by Agency**		
H12a	G.W. Bush Administration results in decreases to U.S. Budget Outlays by Agency for the Environmental Protection Agency	Not Supported	
H12b	G.W. Bush Administration results in decreases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Supported	*
H13	**Obama Administration relation to U.S. Budget Outlays by Agency**		
H13a	Obama Administration results in increases to U.S. Budget Outlays by Agency for the Environmental Protection Agency	Supported	*
H13b	Obama Administration results in increases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Supported	*
H14	**Trump Administration relation to U.S. Budget Outlays by Agency**		
H14a	Trump Administration results in decreases to U.S. Budget Outlays by Agency for the Environmental Protection Agency	Supported	*
H14b	Trump Administration results in decreases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Not Supported	

* Indicates that the finding is significant ** Indicates that the finding is significant but not consistent with the hypothesis

Table 5-19: Summary of Alternate Hypothesis Testing Results – Party Affiliation

Across all agency outlays, the regression summary output shows party affiliation results in a decrease in outlays during a Republican administration supporting the intended

hypotheses (*see Table 5-20*). For the EPA, this relationship is significant at the p<0.10 level.

REGRESSION SUMMARY OUTPUT: PARTY AFFILIATION (in millions*)								
Dependent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Outlays - EPA	-591.12	313.51	-1.89	0.066 *	-1223.80	41.56	0.740	45
Outlays - AG	-8713.44	6108.33	-1.43	0.161	-21040.55	3613.66	0.822	45
Outlays - INTERIOR	-366.42	302.96	-1.21	0.233	-977.81	244.97	0.922	45
Outlays - ENERGY	-1083.53	741.41	-1.46	0.151	-2579.75	412.69	0.901	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-20: Regression Summary Output – Party Affiliation (in millions)

While party affiliation as an independent variable gives a holistic view of the relationship between the dependent variables and political party, examining each presidential administration within this data set enables a more detailed view of behaviors and impacts. For the Carter Administration, the regression summary output supports the hypotheses as increases are evident for outlays across all agencies, consistent with the expected results of a Democratic presidency (*see Table 5-21*). The USDA and the Department of the Interior show significance at the p<0.05 and p<0.01 levels respectively.

REGRESSION SUMMARY OUTPUT: CARTER ADMINISTRATION (in millions*)								
Dependent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Outlays - EPA	929.80	654.43	1.42	0.163	-390.89	2250.50	0.731	45
Outlays - AG	26035.69	12189.04	2.14	0.039 **	1437.23	50634.16	0.832	45
Outlays - INTERIOR	1775.16	569.98	3.11	0.003 ***	624.89	2925.43	0.934	45
Outlays - ENERGY	736.48	1555.39	0.47	0.638	-2402.42	3875.38	0.896	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-21: Regression Summary Output – Carter Administration (in millions)

The regression summary output for the Reagan Administration supports the decrease in outlays for the EPA at $593,430,000 and for the Department of the Interior at $80,330,000. However, it does not support the same for the USDA or the DOE that have significant increases, inconsistent with the expected results of a Republican presidency (*see Table 5-22*). The relationship with the USDA is significant at the p<0.10 level.

REGRESSION SUMMARY OUTPUT: REAGAN ADMINISTRATION (in millions*)								
Dependent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Outlays - EPA	-593.43	483.09	-1.23	0.226	-1568.34	381.48	0.728	45
Outlays - AG	17585.18	9019.48	1.95	0.058 *	-616.86	35787.21	0.829	45
Outlays - INTERIOR	-80.33	463.94	-0.17	0.863	-1016.59	855.92	0.919	45
Outlays - ENERGY	1196.95	1129.53	1.06	0.295	-1082.53	3476.44	0.898	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-22: Regression Summary Output – Reagan Administration (in millions)

The G.H.W. Bush Administration supports the hypotheses with outlay decreases across all agencies, consistent with the results of a Republican presidency (*see Table 5-23*). An interesting observation is that this is the only independent variable in this analysis that does not have any relationships of significance to the dependent variables at the $p<0.10$, $p<0.05$, or $p<0.01$ levels.

REGRESSION SUMMARY OUTPUT: G.H.W.BUSH ADMINISTRATION (in millions*)								
Dependent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Outlays - EPA	-521.58	575.33	-0.91	0.370	-1682.64	639.48	0.723	45
Outlays - AG	-7673.43	11065.17	-0.69	0.492	-30003.85	14656.99	0.816	45
Outlays - INTERIOR	-502.28	542.83	-0.93	0.360	-1597.76	593.20	0.921	45
Outlays - ENERGY	-991.69	1343.58	-0.74	0.465	-3703.15	1719.77	0.897	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-23: Regression Summary Output – G.H.W. Bush Administration (in millions)

The regression summary output for the Clinton Administration does not support the hypotheses as there are decreases in outlays across all agencies, an inconsistency with the expected results for a Democrat presidency (*see table 5-24*). The USDA and the Department of the Interior have relationship significance at the $p<0.05$ and $p<0.01$ levels respectively.

REGRESSION SUMMARY OUTPUT: CLINTON ADMINISTRATION (in millions*)								
Dependent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Outlays - EPA	-359.47	422.34	-0.85	0.400	-1211.78	492.84	0.722	45
Outlays - AG	-19858.06	7562.61	-2.63	0.012 **	-35120.02	-4596.10	0.840	45
Outlays - INTERIOR	-668.59	388.60	-1.72	0.093 *	-1452.83	115.64	0.925	45
Outlays - ENERGY	-973.78	980.09	-0.99	0.326	-2951.69	1004.12	0.898	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-24: Regression Summary Output – Clinton Administration (in millions)

The G.W. Bush Administration supports the hypotheses for related agencies as there are outlays declines for all other agencies, however it does not support the hypothesis for the EPA as an increase of $399,850,000 is evident thereby breaking from the expected result of a Republican presidency (*see Table 5-25*). The Department of the Interior, the DOE, and the USDA are each significant at the p<0.10, p<0.05, and p<0.01 levels respectively.

REGRESSION SUMMARY OUTPUT: G.W. BUSH ADMINISTRATION (in millions*)

Dependent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Outlays - EPA	399.85	428.87	0.93	0.356	-465.64	1265.34	0.723	45
Outlays - AG	-28231.54	7064.94	-4.00	0.000 ***	-42489.17	-13973.92	0.865	45
Outlays - INTERIOR	-754.13	392.07	-1.92	0.061 *	-1545.36	37.10	0.926	45
Outlays - ENERGY	-2206.87	949.36	-2.32	0.025 **	-4122.74	-290.99	0.908	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-25: Regression Summary Output – G.W. Bush Administration (in millions)

The regression summary of the Obama Administration supports the hypotheses with outlays increases across all agencies (*see Table 5-26*). The EPA shows highest significance at the p<0.01 level. The USDA and the DOE are each significant at the p<0.10 and p<0.05 levels respectively.

REGRESSION SUMMARY OUTPUT: OBAMA ADMINISTRATION (in millions*)

Dependent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Outlays - EPA	1588.36	418.28	3.80	0.000 ***	744.24	2432.49	0.790	45
Outlays - AG	15859.41	8958.60	1.77	0.084 *	-2219.77	33938.59	0.827	45
Outlays - INTERIOR	439.22	452.55	0.97	0.337	-474.07	1352.51	0.921	45
Outlays - ENERGY	2667.43	1050.76	2.54	0.015 **	546.91	4787.94	0.910	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-26: Regression Summary Output – Obama Administration (in millions)

The Trump Administration regression summary output supports the decline in outlays for the EPA at $1,498,040,000 with significance at the p<0.05 level and for the

DOE (*see Table 5-27*). However, the results do not support the hypotheses for the USDA and the Department of the Interior that show increases in outlays.

REGRESSION SUMMARY OUTPUT: TRUMP ADMINISTRATION (in millions*)

Dependent Variables	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*R squared*	*Observations*
Outlays - EPA	-1498.04	595.18	-2.52	0.016 **	-2699.16	-296.92	0.755	45
Outlays - AG	7600.25	12174.63	0.62	0.536	-16969.16	32169.65	0.815	45
Outlays - INTERIOR	978.60	583.44	1.68	0.101	-198.84	2156.04	0.924	45
Outlays - ENERGY	-171.71	1486.02	-0.12	0.909	-3170.62	2827.20	0.896	45

* All regression models adjusted for CPI Average Annual Inflation (CPI-U)

Table 5-27: Regression Summary Output – Trump Administration (in millions)

Overall, looking closer at the relationships between the independent variables across each of the dependent variables enables a better understanding of behaviors as supported by the hypotheses and indicates where exceptions exist. These exceptions will be examined closely in Case Study #1 to understand the circumstances that cause these derivations where otherwise the data would support a certain behavior.

6 CASE STUDIES

6.1 Case Study #1 – Budgetary Implications

This case study focuses on the budgetary implications of unilateral executive action and relies on the results of the quantitative analysis to guide the narrative in understanding not only the impacts of this behavior on the budget outlays but also the qualitative reasoning for the actions. Examining the noted exceptions and unsupported hypotheses from the regression analysis as well as the visible punctuations in budget outlays, will enable a deeper understanding of the overall phenomenon.

While the regression analysis shows support for the EPA and agencies that share similar missions and functions experiencing increases in U.S. Federal Budget Outlays when executive orders are issued and directed toward either of the agencies, there are some noted exceptions that are important to understand. Following the issuance of E.O. #12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" in 1994, the EPA saw a rise in budget outlays supporting the expected result given that this order was directed toward the agency.

The purpose of this order was to focus deliberate federal attention of the environmental and health effects on low-income and minority populations and to prove environmental protection for all communities. The order directed all federal agencies to (1) identify and address the actions that disproportionately affected minority and low-income communities regarding health and environment, (2) develop an implementation strategy

for environmental justice, and (3) promote non-discrimination[240]. The order also established the Interagency Working Group on environmental justice. Breaking from the expected results were the USDA, Department of the Interior, and the DOE that all resulted in a decrease in outlays with Agriculture being statistically significant (*see Table 5-14*). The magnitude of decreases for both the USDA and the DOE were incredibly large, indicating a greater trend beyond the data.

In 2017 and the years that followed, the EPA saw a marked decrease in outlays following the issuance of EO#13790 "Promoting Agriculture and Rural Prosperity in America" also marking a relationship of statistical significance (*see Table 5-18*). This order established the Interagency Task Force on Agriculture and Rural Prosperity and focused on providing resources and education to rural communities. At this time, Trump proposed significant cuts to the EPA, seeking to shrink spending by 31%, from $8.1 billion to $5.7 billion, and to reduce staff to 15,000. The effect of these cuts beyond budgetary consideration, also impacted critical areas such as decreasing grants for public water systems, cuts in criminal and civil enforcement programs, removal of regional cleanup programs, reduction of superfunds and Brownfields, and reduction of climate change initiatives.[241]

The results of the analysis also indicate a relationship between presidential party affiliation and changes in budget outlays, mainly Republican administrations see decreases in outlays whereas Democrat administrations see increases in budget outlays. The

[240] Environmental Protection Agency. "Summary of Executive Order 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" 59 FR 7629. (February 16, 1994).
[241] Tabuchi, Hiroko (2017). "What's at Stake in Trump's Proposed E.P.A. Cuts." *The New York Times*, April 10, 2017.

circumstances behind the exceptions deserve a greater explanation. During the Reagan Administration, from 1981 through 1989, the USDA and the DOE show an increase in outlays, breaking from the expected result for a Republican presidency. The USDA relationship is statistically significant (*see Table 5-22*). While outlays may show increases for USDA and DOE, these were not increases made at the discretion of the president as Reagan announced significant budget cuts across most federal agencies to decentralize critical functions from the broader government. According to projections during the Regan Administration from the Office of Management and Budget, the total outlays by percentage of Gross National Product were expected to decrease over 3% from 1981 to 1986. While there was a decrease in percentage, it should be noted that the magnitude of the budget was much higher growing from 18% of GDP to 23%, doubling from $330 billion to $660 billion between 1965 and 1981.[242]

President Clinton's administration, ranging from 1993 to 2001, saw many cuts across environmental policy supporting agencies. As evidenced in the data from this analysis, all agencies show a decrease to outlays during this administration, breaking from Democrat administration trends (*see Table 5-24*). The decreases for the Department of the Interior and the USDA are statistically significant. The Clinton years were heralded as an improvement to environmental quality with a dedicated, yet controversial focus to using cost-benefit analysis for assessing environmental regulation. The administration pushed for cost-effectiveness across agencies while proposing some of the largest budget increases at that point in history.[243] While budget proposals may have been loftier than previous years

[242] Danziger, Sheldon, and Robert Haveman (1981). "The Reagan Budget: A Sharp Break with the Past." *Challenge*, 24 (May-June 1981), 5-13 (IRP Reprint 434). p.16.
[243] Cavanagh, Sheila M., Hahn, Robert W. and Robern N. Stavins (2001). "National Environmental Policy During the Clinton Years." *Resources for the Future*, September 2001.

or previous administrations, the enacted budget outlays as seen in this analysis indicate variability which may have occurred in part to more efficient cost-cutting measures or a failure to utilize the entire proposed allotment.

The G.W. Bush Administration, from 2001 until 2009, also breaks from Republican party trends showing an increase in EPA outlays throughout the presidency (*see Table 5-25*). The Bush Administration has historically been scrutinized for its seeming attach on environmental policy due to shifts in EPA ideology to match a more partisan campaign resulting in what were viewed as industry-friendly regulations, a reduction of research and scientific exploration, and a reduction in transparency from companies dealing in toxic substances. The administration took more control over environmental regulations making it harder for the EPA and related agencies to issue rules, regulations, and standards consistent with their overall missions[244]. There is also evidence that budget increases in unanticipated areas like the EPA were due to the environmental concerns of the September 11th tragedy. The EPA played a critical role in response to this event and the activities included:

- monitoring of air, water and dust for environmental hazards
- vacuuming of debris in lower Manhattan
- disposal of hazardous wastes
- setting up wash stations and providing protective equipment
- cleaning and testing of indoor residences
- collecting outdoor monitoring data

[244] Hogue, Cheryl (2008). "Bush's Legacy at EPA." *Chemical & Engineering News*, December 22, 2008.

- demolition and deconstruction activities.[245]

The Trump Administration, from 2017 through 2021, shows decreases in outlays for the EPA and for the DOE but breaks Republican party trends with increases in outlays for the USDA and the Department of the Interior (*see Table 5-27*). As discussed earlier with E.O.#13790, there was a large push to promoting agricultural and rural prosperity offering training, education, and support to rural communities. This coupled with larger investments into exploring natural resources for energy independence may have driven outlays to exceed that of previous administrations.

After examining the year-over-year changes, some of the largest punctuations occur over the last decade 2010 to 2020 indicating the ebb and flow of budgeting between the Obama and Trump Administrations and two differing approaches to managing environmental policy. The EPA experienced the largest punctuations throughout both terms of the Obama Administration, where decreases were partially a result of larger staff cuts within the EPA[246] and increases aligned with administration priorities:

- EPA (*see Table 5-2*)
    - 2010 ($2,937,000,000)
    - 2012 ($2,392,000,000)
    - 2013 (-$3,312,000,000)
    - 2015 (-$2,392,000,000)
    - 2016 (1,718,000,000).

[245] Environmental Protection Agency. "EPA Response to September 11." EPA Region 2, https://archive.epa.gov/wtc/web/html/

[246] Environmental Protection Agency. "EPA's Budget and Spending." https://www.epa.gov/planandbudget/budget

During this same period the USDA, Department of Interior, and DOW all experienced large punctuations where declines were due to discretionary spending budget cuts made by the Obama Administration.[247] Punctuations are visible for the following years:

- USDA (*see Table 5-3*)
    - 2010 ($15,019,000,000)
    - 2013 ($16,178,000,000)
    - 2014 (-14,087,000,000)
    - 2017 (-$10,603,000,000)
- Interior Department (*see Table 5-4*)
    - 2010 ($1,389,000,000)
    - 2013 (-$3,284,000,000)
    - 2014 ($1,672,000,000)
    - 2015 ($1,061,000,000)
- DOE (*see Table 5-5*)
    - 2010 ($7,095,000,000)
    - 2013 (-$7,753,000,000)

The Obama administration outlined a strong green agenda for environmental policy. The year 2010 marked an increase in budget by function and agency across overall outlays and discretionary forecasts. This seemed to match with the EPA's FY2010 goals with Clean and Safe Water ($5 billion) being the largest focus of spending by goal and spending being allocated to four other major areas: Clean Air & Global Climate Change

[247] Cain, Derrick (2014). "Obama budget cuts USDA spending, including crop insurance funds." *Agri-Pulse*, April 15, 2014. https://www.agri-pulse.com/articles/3897-obama-budget-cuts-usda-spending-including-crop-insurance-funds

($1 billion), Land Preservation & Restoration ($1.7 billion), Healthy Communities & Ecosystems ($1.7 billion), and Compliance & Environmental Stewardship ($789 million).[248] Interestingly, this allocation increase specifically in Clean Water and Drinking Water State Revolving Funds (SRFs) was considered a historic increase. Perhaps a prelude to the Flint Water Crisis in 2014, larger allocations to this segment were consistent in the following years.

Of more recent consideration, the behaviors and actions of the Trump administration help to explain the larger changes in budget especially in the second portion of his term where there is a marked increase in EPA outlays for 2020. For the EPA, the scale of punctuations was smaller during the Trump Administration than in previous ones, though the tone of deregulation across the administration resulted in broad strokes to enforce sharp budget cuts and pullbacks to the entire agency. Larger punctuations are visible during this period for the USDA, Interior Department, and the DOE due to administration priorities in support of rural support and education, reevaluation of conservation sites for mineral exploration, and a shift to revive the coal industry. This resulted in punctuations as follows:

- USDA (*see Table 5-3*)
    - 2019 ($13,409,000,000)
    - 2020 ($34,096,000,000)
    - 2021 ($50,971,000,000)
- INTERIOR (*see Table 5-4)*
    - 2018 ($1,059,000,000)

[248] United Stated Environmental Protection Agency. *FY 2010 EPA Budget in Brief.* Washington: Office of the Chief Financial Officer. May 2009. Available from: https://nepis.epa.gov/Accessed June 2021.

  - 2020 ($2,515,000,000)
- ENERGY (*see Table 5-5*)
  - 2019 ($2,459,000,000)
  - 2020 ($3,106,000,000)

Due to Trump's lag in staffing his administration and lack of participation in briefings from federal agencies, Congress stepped in to aid on the initial policy agenda. As the outcome of the 2016 election was a single party majority rule of American government, the focus was to rescind critical Obama-era regulations by invoking the 1996 Congressional Review Act (CRA) which enables Congress to overturn rules by passing a disapproval resolution prior to the rule going into effect without any further debate on the floor. In 2017, Congress took the step of pushing 14 CRA actions. Four of the regulations that were struck down impacted energy and the environment.[249] Though poised to leverage Congress to push a partisan agenda, aside from tax cut legislation, Trump chose to pursue most changes across policy arenas through executive action. While there were threats of pronounced shifts across environmental policy and the EPA, the analysis shows that a significant punctuated decrease occurs in 2017, with smaller decreases in 2018 and 2019. This is followed by a significant punctuated increase in 2020 for the EPA. This may allude to the increased costs associated with some rollbacks and deregulation. This inevitably shows that changes in policy will not always necessitate immediate changes to the budget. This may allude to budgets being more incremental in nature and may further illustrate that agencies still utilize their discretion to spend regardless of policy outcomes.

[249] Shafie (2020), pp.41-42.

6.2 Case Study #2 – Regulatory Implications

The Regulatory Process

This analysis has shown that agencies with similar missions and functions to the EPA, are likely to experience similar changes and behaviors regarding the federal budget especially by variables such as party affiliation and unilateral action. This case study breaks from the budgetary implications of this analysis and focuses primarily on the existing regulatory mechanisms that exist between agencies.

The creation of a law begins with a proposal of a bill, brough to Congress for approval. If both the House of Representatives and Senate approve the bill, the President will either approve or veto the bill. If approved the new law becomes an act or statute and is then codified in the United States Code (USC), available through the GPO, based on subject matter. While laws and executive orders are enacted with a particular purpose, they do not include the details for implementation but rather, authorization is passed to specific executive agencies to create the rules, regulations, and standards required for compliance and enforcement.[250] The EPA as a regulating agency in these instances, will conduct research and draft a Notice of Proposed Rulemaking (NPRM) and list in the Federal Register (FR) for public consideration and feedback. The rules and supporting documentation are also filed in the official EPA docker on https://www.regulations.gov. The EPA will then review comments and feedback to amend the proposed regulation before issuing a final ruling. It is then printed in the FR as a final rule and is codified

[250] Environmental Protection Agency. "Laws & Regulations: The Basics of the Regulatory Process." https://www.epa.gov/laws-regulations/basics-regulatory-process

once it is added to the Code of Federal Regulations (CFR), the federal government's official record of all regulations.[251]

Under the APA of 1946 that established the standards for this process, there is also informal rulemaking under Section 553 known as "notice and comment" rulemaking, which is the most common type used by agencies. The APA authorizes agencies to dispense with notice and comment requirements or waive the 30-day waiting period if they can prove "good cause" that traditional procedures would be "impracticable, unnecessary, or contrary to the public interest."[252] The "good cause" exception allows agencies to issue "interim rules" or "final rules" where the agency issues an interim final rule, invokes good cause, issues a rule, and holds a post-promulgation comment period. The rule can then be amended by the agency if any comments resonate. The "good cause" exception can also be used for "direct final" rulemaking when the agency finds a rule to be routine and noncontroversial yet allows public comment on a rule. The agency will issue a final rule without notice and comment and set a designated time to receive comments. If one adverse comment or more is received, it will withdraw the rule and proceed with formal notice and comment procedures. If no adverse comments are received the rule will become effective.[253]

The CRA of 1996 was enacted to establish the procedures for the congressional review of agency regulations requiring all federal agencies to send final rules to the Government Accountability Office (GAO) and to both houses of Congress before they

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[251] Environmental Protection Agency. "Laws & Regulations: The Basics of the Regulatory Process." https://www.epa.gov/laws-regulations/basics-regulatory-process

[252] Congressional Research Service. "Counting Regulations: An Overview of Rulemaking, Types of Federal Regulations, and Pages in the Federal Register." September 3, 2019. p.2.

[253] Congressional Research Service. "Counting Regulations: An Overview of Rulemaking, Types of Federal Regulations, and Pages in the Federal Register." September 3, 2019. p.16.

rules can take effect.[254] Section 804(2) of the CRA includes a special category that enables the Office of Information and Regulatory Affairs (OIRA) to designate "major" rules for those that: (1) have an effect of $100,000,000 or more on the economy; (2) result in a major increase in costs or prices to consumers, industries, Federal, State, or local government agencies, or geographic regions; and (3) significant effects of an adverse nature on competition, employment, investment, productivity, innovation, or U.S. competition with foreign enterprises.[255] When designated as such, agencies are required to delay the effective for 60 days post submission to Congress or publication in the FR. Then the Comptroller General provides a report on each major rule to present to the congressional committees of jurisdiction within 15 days of the rule submission or publication.[256]

Executive Order #12866 was issued in 1993 by President William Clinton to designate "significant" or "economically significant" regulatory actions during the proposal and final rule stage. The definition of "significant" rules applies to rules that: (1) have an annual effect of $100 million or more OR adversely impact the economy, an economy sector, productivity, employment, competition, the environment, public health and safety, or state, local, or tribal communities; (2) create serious inconsistencies or interferences with actions taken or planned by other agencies; (3) materially alter the budget for entitlements, grants, user fees, loan programs, or right and obligations of recipients, and (4) raise novel legal or policy issues against legal mandates, Presidential

[254] Congressional Research Service. "Counting Regulations: An Overview of Rulemaking, Types of Federal Regulations, and Pages in the Federal Register." September 3, 2019. p.8.
[255] Congressional Research Service. "Counting Regulations: An Overview of Rulemaking, Types of Federal Regulations, and Pages in the Federal Register." September 3, 2019. p.8.
[256] Congressional Research Service. "Counting Regulations: An Overview of Rulemaking, Types of Federal Regulations, and Pages in the Federal Register." September 3, 2019. p.9.

priorities, or the Executive Order itself.[257] The agencies are then required to submit rules potentially deemed "significant" to the OIRA for centralized review including text of the action, detailed descriptions of the need the action meets, the implementation plan for the action, and a detailed assessment of how the regulation aligns with Presidential priorities and avoid undue interference with State, local, and tribal governments.[258] Those rules falling under "economically significant" categories are those rules that fall into the previously discussed category (1) of "significant" rules. In the scenarios where a rule is considered "economically significant," the agency is required to submit a detailed cost-benefit analysis. This is like a "major" rule though the definition of a "major" rule is broader due to the inclusion of other categories.[259]

In further advancement of this process, Executive Order #13563 was issued in 2011 by President Barack Obama to reinforce E.O. #12866 and instruct agencies to conduct retrospective reviews of rules to recommend modification or repeal of "outmoded, ineffective, insufficient, or excessively burdensome."[260] This retrospective look-back feature enables agencies to take a closer look at rules that have inter-agency impacts or require adjustment to satisfy additional inter-agency requirements.

This process is also susceptible to amendments that can aid in deregulation, as in the case of the Trump Administration. President Donald Trump issued Executive Order 13771 and established the "one in, two out" policy. This policy requires that any new

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[257] Congressional Research Service. "Counting Regulations: An Overview of Rulemaking, Types of Federal Regulations, and Pages in the Federal Register." September 3, 2019. p.10.
[258] Congressional Research Service. "Counting Regulations: An Overview of Rulemaking, Types of Federal Regulations, and Pages in the Federal Register." September 3, 2019. p.10.
[259] Congressional Research Service. "Counting Regulations: An Overview of Rulemaking, Types of Federal Regulations, and Pages in the Federal Register." September 3, 2019. p.12.
[260] Congressional Research Service. "Counting Regulations: An Overview of Rulemaking, Types of Federal Regulations, and Pages in the Federal Register." September 3, 2019. p.4.

regulations resulting in new incremental costs, needs to be accompanied by repealing equivalent costs from two existing regulations. It also enables the OMB to establish a "regulatory costs allowance" to place a cap on the incremental costs of regulations within a fiscal year. Being potentially onerous in nature, the OMB specified that the policy would only apply to newly added regulations and would apply to a broader range of agency actions such as guidance documents, recordkeeping, and reporting requirements.[261]

The Shared Mechanisms of Environmental Policy

To understand the interconnected relationship between the EPA and its peer executive agencies, it is necessary to dive a bit deeper into the historical foundations that resulted in the creation of the EPA and those initial formative years that set the path for regulatory control and peer accountability across matters of environmental policy. To understand the complexity of this design, it will be necessary to understand the role, purpose, and scope of each agency included in this analysis as well as the overlapping responsibilities across legislation.

Of the agencies considered in this study, the Interior Department is the oldest having been formed on 3 March 1849 during the industrial revolution. The formation of the Interior was a direct result of the nation's need to have a separate and distinct department to handle domestic matters. In 1789, Congress had created three Executive Department across which they apportioned domestic matters, and these included Foreign

[261] Congressional Research Service. "Counting Regulations: An Overview of Rulemaking, Types of Federal Regulations, and Pages in the Federal Register." September 3, 2019. p.5.

Affairs (later renamed to the Department of State), the Treasury, and War.[262] In its early years, the department focused on items that pertained to the internal development of the nation in addition to the welfare of the people. Those early activities included: construction of the national capital's water system, colonization of freed Haitian slaves, western exploration, management of health and education, management of public parks and public lands, Indian territory regulation, patents, and pensions. Within the scope of work assigned to the Interior, were programs directed toward and affecting environmental policy. The Interior was originally responsible for some the biggest environmental milestones in our history including the administration of the following:

- 1872: Congress established first National Park at Yellowstone
- 1879: Creation of the U.S. Geological Survey
- 1902: Establishment of the Bureau of Reclamation used to construct dams and aqueducts
- 1903: Establishment of the National Wildlife Refuge
- 1910: Creation of the Bureau of Mines to promote mine worker safety and advance mineral technology
- 1916: Creation of The National Park Service
- 1935: The Hoover Dam is completed
- 1940: Creation of the U.S. Fish and Wildlife Service
- 1977: Establishment of the Surface Mining Control and Reclamation Act to oversee repair of environmental damage from strip coal mining

[262] United States Department of the Interior. "The History of the Department of the Interior." https://www.doi.gov/whoweare/history

- 1982: Creation of the Minerals Management Service (now the Bureau of Ocean Energy Management, Regulation, and Enforcement)
- 1993: President convened the Northwest Forest Plan Summit
- 2003: Executive Order #13299 "Establishment of Interagency Group on Insular Areas."

Shortly after the formation of the Interior, came the USDA on 15 May 1862, whose origins in this country began with the formation of the Philadelphia Society for the promotion of Agriculture in 1785. Through the efforts of various societies and agricultural intellectual movements, the Agriculture Committees of the U.S. House of Representatives and of the Senate were established, helping to push for commercialized agriculture throughout the early stages of the industrial revolution. President Abraham Lincoln signed the legislation to create the USDA and called it "The People's Department" due to its intended focus on agriculture, food, natural resources, economic development, science, and research.[263] Topics of agricultural development go hand in hand with the environment and the USDA was responsible for many environmental milestones including administration of the following:

- 1862: The Homestead Act, enacted to provided public land to farmers
- 1890: The second Morrill Act, enacted to set up funding for black land-grant schools
- 1902: The Reclamation Act, enacted to facilitate irrigation
- 1906: The Food and Drug Act

[263] United States Department of Agriculture. "About the U.S. Department of Agriculture." https://www.usda.gov/our-agency/about-usda

- 1908: President Roosevelt founded the Country Life Commission focused on the problems of rural life including health and environmental wellness
- 1936: The Soil Conservation and Domestic Allotment Act, enacted to assist with conservation efforts through farming programs
- 1956: Authorization of the Soil Bank Program
- 1964: Food Stamp Act, enacted as part of the nationwide War on Poverty to ease poverty conditions and push agency accountability for contribution to environmental factors affecting poverty
- 1985: The Food Security Act, enacted and created the Conservation Reserve Program
- 1997: USDA issues the Civil Rights Action Team report offering 92 recommendations for addressing past agricultural and environmental injustices
- 1998: The Hazard Analysis and Critical Control Points (HACCP) approach was developed as a preventative approach to food safety considering biological, chemical, physical, and environmental hazards in processing
- 2017: Executive Order #13790 "Promoting Agriculture and Rural Prosperity in America."

Among its peers in this study, the DOE is the only agency founded after the EPA as it was formed by President Jimmy Carter on 4 August 1977. However, the origins of the DOW begin with the establishment of the Atomic Energy Commission (AEC) in 1946, a post-World War II effort by Congress to drive peacetime nuclear efforts and advancements in atomic science and technology.[264] The AEC, while playing a critical role in the

[264] Niehoff, Richard (1948). "Organization and Administration of the United States Atomic Energy Commission". *Public Administration Review*. 8 (2): pp.91–102.

development of nuclear power and running regulatory programs seeking to ensure public and environmental health and safety, came under fire as environmental consciousness was on the rise during the "Green Years" of the Nixon Administration. The AEC was forced to prepare an Environmental Impact Statement in 1970 for their work in preparation for Project Rio Blanco in Colorado. The AEC was held responsible for the environmental disasters that had occurred and Congress decided to abolish the agency in 1974 through the Energy Reorganization Act. Supporters and critics alike agreed to transfer regulatory functions to the newly established Nuclear Regulatory Commission (NRC) and among other existing agencies, including the EPA. The newly minted DOE would consolidate the Federal Energy Administration, the Energy Research and Development Administration, and the Federal Power Commission along with energy related programs within other agencies with the goal of developing alternative sources of energy and conservation. Three-Mile Island Disaster provided the perfect opportunity for President Carter to intervene with the support of the DOE that pushed for changes within the Nuclear Regulatory Commission. As energy has historically been deeply entwined with environmental issues, the presence of the DOE within environmental policy is of critical importance for this narrative. The DOE currently administers the following legacy environmental facing legislation:

- 1920: The Federal Power Act
- 1939: The Reclamation Project Act
- 1954: The Atomic Energy Act
- 1970: The National Environmental Policy Act, enacted to create the EPA and promote enhancement of the environment

- 1974: The Energy Policy and Conservation Act, enacted which helped form the DOE and decommissioned the AEC

The DOE also is responsible for creating and administering these more recent items:

- 1974: The Federal Nonnuclear Energy Research and Development Act
- 1974: The Energy Supply and Environmental Coordination Act
- 1978: The National Energy Conservation Policy Act
- 1978: The Natural Gar Policy Act
- 1978: The Uranium Mill Tailing Radiation Control Act
- 1990: The Global Change Research Act
- 1992 & 2005: The Energy Policy Act
- 2001: Executive Order #13211 "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use"
- 2007: Executive Order #13423 "Strengthening Federal Environmental, Energy, and Transportation Management."

The founding of the EPA required a transfer of duties and responsibilities from various agencies to consolidate programs and initiatives to centralize environmental policy. Ruckelshaus as the first administrator, pushed the agency at a rapid pace with a workforce of over 5,000 brought in from the Interior, USDA, HEW, CEG, AEC, and FRC as these agencies all had functions that were consolidated into the scope of the EPA.[265] Of the newly transferred duties, from the Interior, the EPA would take on the following:

- Federal Water Quality Administration
- Reorganization Plan #2 of 1966

[265] Williams, Dennis. (1993), p.3.

- The Federal Water Pollution Control Act
- Gulf Breeze Biological Laboratory of the Bureau of Commercial Fisheries
- The Water Pollution Control Advisory Board of the Federal Water Pollution Control Act.

From the USDA the EPA would receive the following:

- The Federal Insecticide, Fungicide, Rodenticide Act (FIFRA)
- Federal Food, Drug, and Cosmetic Act (FFDCA)
- The Environmental Quality Branch of the Plant Protection Division of the Agricultural Research Service.

From HEW, the EPA was transferred the following:

- The National Air Pollution Control Administration
- Bureau of Solid Waste Management
- Bureau of Water Hygiene
- Bureau of Radiological Health
- Federal Food, Drug and Cosmetic Act (FFDCA)
- The Air Quality Advisory Board.

The decommissioning of the AEC resulted in the transfer of the Atomic Energy Act of 1954. Directly assumed from the Executive Order of the President, were all functions of the Federal Radiation Council (FRC) and oversight of the NEPA that resulted in all functions of the CEQ being transferred to the EPA[266].

[266] Environmental Protection Agency. "EPA's Origins: Duties Transferred to EPA from Other Federal Agencies." https://www.epa.gov/archive/epa/aboutepa/epas-origins-duties-transferred-epa-other-federal-agencies.html

While all the transferred functions were related to environmental policy, running the organization to scale proved to be a significant challenge due to the already existing inter-agency mechanisms and the difficulty in driving accountability across critical environmental dimensions such as air, water, and waste. Many recommendations were received including that of Defense Department organization analyst Alain Enthoven, who suggest that the EPA structure around functional objectives (criteria setting, research, development, and enforcement) to achieve the mission with centralized efficiency.[267] This ran in parallel to ideas of an intermedium or medium-specific approach that would break from a siloed implementation approach for critical areas and instead seek to create holistic solutions across the organization. Douglas Costle, who worked on the Ash Council and would later the EPA administrator under President Carter, recognized that the "existing statutes imposed complex restrictions to integration and centralization" and suggested an incremental approach that combined the two recommendations.[268] The medium-specific approach would be used to preserve continuity of the efforts that were moved into the EPA's jurisdiction while the functional approach would be aligned to holistic missions. Over the years, the EPA has continued to fully administer environmental laws and partially administer environmentally impacting laws from other agencies including the following:

- 1946: Atomic Energy Act (AEA)
- 1947: Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
- 1947: Pesticide Registration Improvement Act (PRIA), under FIFRA
- 1956: Clean Air Act (CAA)
- 1970: National Environmental Policy Act (NEPA)

[267] Williams, Dennis. (1993), p.5.
[268] Williams, Dennis. (1993), p.5.

- 1970: Occupational Safety and Health (OSHA)
- 1972: Federal Water Pollution Control Amendments, also Clean Water Act (CWA)
- 1972: Marine Protection, Research, and Sanctuaries Act (MPRSA, also known as the Ocean Dumping Act)
- 1972: Noise Control Act
- 1973: Endangered Species Act (ESA)
- 1974: Safe Drinking Water Act (SDWA)
- 1976: Toxic Substances Control Act (TSCA)
- 1976: Resource Conservation and Recovery Act (RCRA)
- 1980: Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, or Superfund)
- 1982: Nuclear Waste Policy Act (NWPA)
- 1983: Federal Food, Drug, and Cosmetic Act (FFDCA)
- 1986: Emergency Planning and Community Right-to-Know Act (EPCRA)
- 1986: Superfund Amendments and Reauthorization Act (SARA), under CERCA
- 1988: Shore Protection Act (SPA)
- 1990: Oil Pollution Act (OPA)
- 1990: Pollution Prevention Act (PPA)
- 1992: Energy Policy Act
- 1994: Executive Order #12898 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”
- 1995: Food Quality Protection Act (FQPA), also FFDCA and FIFRA
- 1996: National Technology Transfer and Advancement Act (NTTAA)

- 1999: Chemical Safety Information, Site Security and Fuels Regulatory Relief Act
- 2000: Beaches Environmental Assessment and Coastal Health (BEACH) Act
- 2001: Executive Order #13211 “Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use”
- 2007: Energy Independence and Security Act (EISA)
- 2011: Executive Order #13045 - Protection of Children from Environmental Health Risks and Safety Risks.

Also for consideration are the EPA’s influence over laws and orders that influence the regulatory process in protecting human health and the environment including the following:

- 1946: The Administrative Procedure Act (APA)
- 1967: The Freedom of Information Act (FOIA)
- 1972: The Federal Advisory Committee Act (FACA)
- 1974: The Privacy Act
- 1980: The Paperwork Reduction Act (PRA)
- 1980: The Regulatory Flexibility Act (RFA) or The Small Business Regulatory Enforcement Fairness Act (SBREFA)
- 1993: Executive Order #12866 “Regulatory Planning and Review”
- 1993: Executive Order #12866 “Regulatory Planning and Review”
- 1995: The Unfunded Mandates Reform Act (UMRA)
- 1996: The Congressional Review Act (CRA)
- 1999: Executive Order #13132 “Federalism”

- 2000: Executive Order #13175 "Consultation and Coordination with Indian Tribal Governments"
- 2011: Executive Order #13563 "Improving Regulation and Regulatory Review"
- 2019: Executive Order #13859 "Maintaining American Leadership in Artificial Intelligence"

Addressing Challenges of Regulatory Mechanisms

In reviewing the regulatory process that agencies follow for creating and finalizing rules and understanding the implications of act oversight amid agency transfer, it is evident there may be concern of gaps in assessing inter-agency impact and consequences as well as inter-agency conflicts over regulations. As previously stated, the regulatory process in all scenarios provides some format for review and commentary on proposed rules, even when invoking exceptions through the "good cause" policy. Comments, adverse or otherwise, are received from the public, other federal agencies, third parties, States, and interested parties and can have an impact on the final acceptance of the regulation. To take this a step further at the agency level, the EPA, to minimize inter-agency, federal, state, tribal community, or third-party conflict, established the Regulatory Negotiation Project in 1986 and then used the alternative dispute resolutions (ADR) process after the first contract was awarded in 1988, to provide services to broadly manage and prevent conflict. The EPA would then create the Consensus and Dispute Resolution Program in 1990 that paved the way for the establishment of the Conflict Prevention and Resolution Center (CRPC) in 1999.[269] The ADR process helps to

[269] Environmental Protection Agency. "About the CRPC." https://www.epa.gov/adr/about-cprc

facilitate meaningful dialogue and negotiation through mediation with a neutral third party. This is used for internal agency conflicts as well as external conflicts with other agencies, industry, advocacy groups, etc. This mediation helps to minimize time and costs associated with litigation, aids in consensus building, and strives for more collaborative problem solving.

7 IMPLICATIONS AND FUTURE RESEARCH

7.1 Theoretical Contributions & Practical Implications

This study contributes to public administration scholarship, the administrative presidency, federal budgeting, and environmental policy. As a result of this study, there is support for the relationship between political party and changes in budget outlays. These is also support for the relationship between executive orders and changes in budget outlays. This study provides an understanding of the motivations and prominence of unilateral actions within environmental policy and focuses on the regulatory mechanisms that exist between the EPA and agencies with similar missions and shared functions. These results show that the framework of this analysis can be used to understand this phenomenon across other policy types.

The regression results and qualitative analysis of this study reveal several themes of practical importance across budgeting, unilateral action, party affiliation, and regulatory mechanisms that are helpful for scholars and practitioners. From a budgeting perspective, over any given time, budget changes seem incremental by way of percentage, however the magnitude of those changes in dollar values must be considered more closely in terms of the effect on operational processes and relative success of policy implementation within these federal agencies. The magnitude of change for each agency is important as not all agencies have similar allocations, as in the case of the USDA which has a much larger operating budget. Outlays decreases for other agencies, and where there are increases for the EPA, do not necessarily mean the allocation was shifted from one agency to the next.

There are many other agencies not included in this analysis where allocations may have shifted, and changes may also be due to holistic budget cuts or increases.

In the case of unilateral action, executive orders generally result in increased outlays across agencies due to the overlapping missions and regulatory mechanisms for enabling implementation of the order. While there are similarities, the magnitude of change will vary. Executive orders directed toward a particular agency, may have intended and unintended consequences on similarly related agencies.

For presidential party affiliation, this analysis does not find party affiliation to be a critical factor in the use of executive orders, but rather there is strong use of orders on both sides of the aisle. The data does suggest that presidents mostly follow their partisan practices in budgeting and policy priorities with only few exceptions.

Lastly, the regulatory mechanisms that exist between agencies is of critical consideration. Agencies with shared missions and overlapping scope of policy are likely to exhibit similar behaviors in budgeting. The non-budgetary considerations are equally important when it comes to the implementation of policy and where responsibility falls across similar agencies. The increased scope of regulation on the EPA, triggers significant challenges due to the interrelated mechanisms of these agencies.

7.2 Future Research Considerations

Congressional Alignment & Agency Dynamics

The body of research and findings of this analysis have enabled the emergence of critical themes that run in parallel across federal budgeting, policy reform, and the unilateral presidency. While the future of research for theoretical conceptualization is ripe

with opportunity, there is additional opportunity to analyze these actions through the lens of practical application to better navigate the intricate and complicated web of actions that impacts the daily operations of our government. This analysis has surfaced significant evidence to illustrate that the actions of a unilateral presidency are correlated to changes in the federal budget. There may be instances however, where a deeper understanding of the influence and mechanisms of the executive may become more evident especially if Congress aligns to the same political party as the president. This alludes to a deeper question about considering the exertion of influence by a president as a component of a unilateral presidency beyond the tangible actions of issuing waivers, executive orders, or politicization.

Environmental policy has been the subject of significant unilateral action in almost every presidency since the 1970s. Even still, many would consider recent environmental policy growth (in the pre-Trump era) to be incremental at best, but mostly considered to be lagging and unimpactful. In the case of the Trump presidency, massive deregulation and defunding has altered the landscape of unilateral action in environmental policy and a new wave of implications has started to emerge. This recent example is an excellent consideration for a case study analyzing the impact these actions have had on the current Biden administration and the subsequent policy and budget changes that will arise in response. In further consideration of the unilateral presidency, future research should focus further on determining the relative success and failure of unilateral actions and determining a best practices approach to leveraging unilateral actions in a prescribed and meaningful manner.[270] While unilateral actions seem one-sided, the role of Congress and the courts is

[270] Note: Success or failure only refers to implementation and long-term impact, not necessarily whether it was a positive or negatively received action.

critical in this process and studies should endeavor to understand how they can assert authority and keep balance in the face of potentially detrimental unilateral action. The role of the legislature deserves additional scrutiny to better understand the cultural dynamic and mechanism to avoid complacency in the face of unilateral decisions.

The president and Congress are often associated with the decision-making that drives policy change and reform; however, it is the agencies that function as the implementing arm of those decisions. Such decision-making realities illustrate the relevance of this research to the field of public administration. Previous research shows the success and persistence of any unilateral policy mandate is heavily contingent on acceptance and ownership by the agencies affected. Future research should consider analyzing agencies run by political appointees and determining alignment with executive goals and mandates, influence on presidential proposed budgets, and measure overall success relative to agencies being run by non-appointed political actors. Measuring bureaucratic resistance in the face of politicization enables a deeper understanding of the complex dynamics of executive action and the results on policy implementation. An analysis of goal alignment across agencies is also an important concept for understanding the depth of connectedness between implementing agencies and the unilateral executive office. Delving deeper into how presidential political appointees at the agency level can influence Congress deliberations on subsequent annual budgets would be an important analysis for understanding how the influences of a unilateral presidency can affect budgeting process indirectly.

Consideration should also be given to agency processes and impacts at federal, state, and local levels. While studies focus on agency changes and reactions, it will be

important to explore the growth or decline of agencies in relation to the effects of dedicated funding versus general funding and the impacts on those agencies with mid-year funding changes and realignments. In further analysis of the role of political actors within an agency, research should look at the role of overall public opinion (including special interest groups, corporations, non-profits, individual citizens, media, international partners, and competitors) in influencing not only unilateral changes, but also congressional, legislative, or agency reactions.

Data Considerations: Outlays by Superfunction/Function/Subfunction

This analysis focuses primarily on agency level budget outlays from the U.S. Federal Budget. Budget outlays data at the superfunction, function, and subfunction level is presented in the budget and gives insight into the level of spending at various holistic policy levels. This data is excluded from the analysis because linking spending by superfunction to the appropriate agency is difficult due to the overlapping nature of these agencies' missions and functions. A deeper analysis of holistic policy spending at this level would provide insights on allocations to policy types and their relationship to agency allocations. This will also provide a view of how policy programs and initiatives may be run by the primary agency or may be run concurrently through a peer agency.

Data Considerations: Outlays Across All Agencies

To narrow down the scope of this study, only agencies with similar missions and shared function are considered for the analysis. While the data analysis supported the hypothesis considered in this study to give insight into this subset of agencies with ties to

environmental policy and the EPA, there are other agency dynamics and relationships that should be considered in future studies. A deeper analysis across the remaining agencies would help to understand the scale of change within the federal budget and where prioritizations may cause punctuations within the budget. This analysis will also provide deeper insight into the agencies with the largest growth or largest reductions in outlays. Paired with qualitative analysis, it will be possible to identify the unilateral actions that affect agency and policy prioritization.

Data Considerations: Mandatory vs. Discretionary Program Budget Comparison

The U.S. Federal Budget captures data for outlays across mandatory and discretionary programs. Within the scope of "Other mandatory programs", Energy and Agriculture are line items within the budget. Within the outlays for discretionary programs, there are also line items for Energy and Agriculture as well as Natural resources and environment. These categories speak to the superfunction and function level within the budget and are a bit more difficult to delineate according to agency since there is overlap between agencies assigned to similar projects or tasks. Future research would look at the budget shifts between mandatory and discretionary programs and seek to understand the relationship between these shifts and agency outlays. This will also give deeper insight into how unilateral action may affect budget allocations to specific programs.

Data Considerations: Proposed vs. Actuals & Budget Authority

While the scope of this analysis focuses on budget data actuals, there is a necessity to understand how influence is exercised on the budgeting process at time of proposal,

either by way of budget amendments or unilateral budget shifts after the proposed budgets are approved by Congress. Proposed allocations are incredibly important as they allow implementing agencies to plan more effectively for the ensuing year. While changes in the proposed allocations can be noted during planning cycles with holistic allocation reasoning explained within the budget documents, the actuals are the final indicator for all actions and behaviors that occurred during the fiscal year. While this data shows the impact that unilateral actions may have on the budget, it does not warrant a definitive answer to the question of whether these changes are more disparate for environmental policy and the EPA versus other functions and agencies.

Effects of Lobbying & Societal Influences

In his recent book *The Administrative Presidency and the Environment*, Shafie discusses the increased atmosphere for advocacy and lobbying particularly following Reagan's inauguration. Since that point, the ten largest lobbying organizations have met regularly in Washington to coordinate. From 2000-2016, more than $2 billion was invested by corporations for the purpose of lobbying Congress for climate legislation.[271] The use of influence affects legislative votes and can deeply influence public support to influence implementation. Seeking presidential support for a proposal is the goal as the president has autonomy and power to set the agenda, propose legislation, veto the same, and use executive orders and directives as federal mandate. Because of the failure of recent presidents to have success in legislative changes affecting environmental policy, the

[271] Shafie (2020), pp.12-18.

political landscape has changed significantly toward an environment relying on unilateral executive action to enforce more punctuated changes and enable significant growth.

Part of the societal dynamic of politics involves public perception and influence through the media. Analyzing the use of these mediums by a president would introduce an impactful and often overlooked dimension of how unilateral action can be affected, accelerated, or stalled based on these external influences.

7.3 Conclusions

The field of public administration and public affairs should concern itself with this, the administrative presidency, because it is a means to understanding the balance of power within our government and a primary mechanism of decision-making which affects all aspects of government function and policy alignment. For further consideration, unilateral action within the administrative state is a double-edged sword. Considering the historical timeline of environmental policy – there is growth, progress, and mobilization at some of the most critical times in human history. The catalyst and driving force behind many of those actions was due to unilateral executive action by the President. Conversely, in more recent years, some executive actions are deemed less than noble, pushing more toward alignment with partisan beliefs, capitalist self-interests, and ulterior agendas than reconciling with the needs of the people and the environment.

While this analysis supports the notion that an administrative presidency plays a critically important and interconnected role in the focus, design, implementation, and success of a policy, it is not grounded in condemning the behavior or suggesting methods to curtail it beyond the mechanisms that already exist within the functions of Congress. As

discussed earlier in the analysis, in a balance of powers system, unilateral actions are certainly expected if not openly encouraged. They can be a method of direct and exacting decision making that may have the potential to push policy forward to break through political barriers or stagnation that may occur through traditional legislative processes. At times, these actions may cause contention and conflict. They may also result in reversions, retrogressions, or even have adverse consequences. While imperfect, this fits the motif of the term "balance of power" and falls within the boundaries of the Constitution, however loose those interpretations may seem.

This study has provided some tools to empower researchers and practitioners to view the phenomenon more deeply. By understanding (1) the relationships between budget outlays and variables such as political party affiliation and executive orders, (2) the historical relationship between agencies, and (3) the shared regulatory mechanisms that still exist between agencies, behaviors and their potential consequences start to become more predictable. This enables agency bureaucrats to proactively plan for increases or reductions in budget based on specific trends. Ultimately, this can help to drive toward agency efficiency and efficacy as they navigate challenges to meet the missions and objectives of their agency with consideration for their effect on peer agencies.

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APPENDICES

A1: Variable Data

	DEPENDENT VARIABLES			
Year	Outlays by Agency - Environmental Protection Agency	Outlays by Agency - Department of Agriculture	Outlays by Agency - Department of the Interior	Outlays by Agency - Department of Energy
1977	4,365	23,287	3,220	5,049
1978	4,072	30,179	3,874	6,412
1979	4,800	31,698	4,168	7,441
1980	5,603	34,721	4,472	7,260
1981	5,242	41,541	4,456	11,756
1982	5,081	45,623	3,944	11,656
1983	4,312	52,317	4,552	10,590
1984	4,076	41,928	4,936	10,990
1985	4,490	55,435	4,804	10,586
1986	4,867	58,599	4,774	11,025
1987	4,904	49,507	5,037	10,692
1988	4,871	43,930	5,138	11,165
1989	4,906	48,256	5,194	11,386
1990	5,108	45,858	5,814	12,083
1991	5,769	53,990	6,082	12,472
1992	5,950	56,320	6,531	15,515
1993	5,930	63,019	6,879	16,933
1994	5,855	60,615	7,064	17,830
1995	6,351	56,550	7,479	17,608
1996	6,046	54,218	6,776	16,195
1997	6,164	52,393	6,763	14,458
1998	6,269	53,800	7,222	14,414
1999	6,733	62,690	7,783	15,879
2000	7,223	75,071	7,998	14,971
2001	7,367	68,071	7,743	16,319
2002	7,451	68,622	9,739	17,669
2003	8,041	72,737	9,193	19,379
2004	8,328	71,560	8,606	19,892
2005	7,913	85,308	9,292	21,271
2006	8,321	93,533	9,037	19,649
2007	8,259	84,427	10,469	20,116
2008	7,939	90,795	9,817	21,400
2009	8,070	114,440	11,775	23,683
2010	11,007	129,459	13,164	30,778
2011	10,772	139,397	13,519	31,371
2012	12,796	139,717	12,891	32,484
2013	9,484	155,895	9,607	24,731
2014	9,399	141,808	11,279	23,638
2015	7,007	139,115	12,340	25,427
2016	8,725	138,163	12,583	25,862
2017	8,090	127,560	12,154	25,800
2018	8,082	136,716	13,213	26,482
2019	8,062	150,125	13,903	28,941
2020	8,725	184,221	16,418	32,047
2021	8,309	235,192	15,799	33,702

Table A1-1: Dependent Variables - U.S. Federal Budget Outlays by Agency

	INDEPENDENT VARIABLES												
Year	Party Affiliation	Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations February 1994	Executive Order 13211 - Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use May 2001	Executive Order 13299 - Establishment of Interagency Group on Insular Areas May 2003	Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management Jan 2007	Executive Order 13790—Promoting Agriculture and Rural Prosperity in America April 2017	Carter Administration	Reagan Administration	G.H.W. Bush Administration	Clinton Administration	G.W. Bush Administration	Obama Administration	Trump Administration
1977	0	0	0	0	0	0	1	0	0	0	0	0	0
1978	0	0	0	0	0	0	1	0	0	0	0	0	0
1979	0	0	0	0	0	0	1	0	0	0	0	0	0
1980	0	0	0	0	0	0	1	0	0	0	0	0	0
1981	1	0	0	0	0	0	0	1	0	0	0	0	0
1982	1	0	0	0	0	0	0	1	0	0	0	0	0
1983	1	0	0	0	0	0	0	1	0	0	0	0	0
1984	1	0	0	0	0	0	0	1	0	0	0	0	0
1985	1	0	0	0	0	0	0	1	0	0	0	0	0
1986	1	0	0	0	0	0	0	1	0	0	0	0	0
1987	1	0	0	0	0	0	0	1	0	0	0	0	0
1988	1	0	0	0	0	0	0	1	0	0	0	0	0
1989	1	0	0	0	0	0	0	0	1	0	0	0	0
1990	1	0	0	0	0	0	0	0	1	0	0	0	0
1991	1	0	0	0	0	0	0	0	1	0	0	0	0
1992	1	0	0	0	0	0	0	0	1	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	1	0	0	0
1994	0	1	0	0	0	0	0	0	0	1	0	0	0
1995	0	1	0	0	0	0	0	0	0	1	0	0	0
1996	0	1	0	0	0	0	0	0	0	1	0	0	0
1997	0	1	0	0	0	0	0	0	0	1	0	0	0
1998	0	1	0	0	0	0	0	0	0	1	0	0	0
1999	0	1	0	0	0	0	0	0	0	1	0	0	0
2000	0	1	0	0	0	0	0	0	0	1	0	0	0
2001	1	1	1	0	0	0	0	0	0	0	1	0	0
2002	1	1	1	0	0	0	0	0	0	0	1	0	0
2003	1	1	1	1	0	0	0	0	0	0	1	0	0
2004	1	1	1	1	0	0	0	0	0	0	1	0	0
2005	1	1	1	1	0	0	0	0	0	0	1	0	0
2006	1	1	1	1	0	0	0	0	0	0	1	0	0
2007	1	1	1	1	1	0	0	0	0	0	1	0	0
2008	1	1	1	1	1	0	0	0	0	0	1	0	0
2009	0	1	1	1	1	0	0	0	0	0	0	1	0
2010	0	1	1	1	1	0	0	0	0	0	0	1	0
2011	0	1	1	1	1	0	0	0	0	0	0	1	0
2012	0	1	1	1	1	0	0	0	0	0	0	1	0
2013	0	1	1	1	1	0	0	0	0	0	0	1	0
2014	0	1	1	1	1	0	0	0	0	0	0	1	0
2015	0	1	1	1	1	0	0	0	0	0	0	1	0
2016	0	1	1	1	1	0	0	0	0	0	0	1	0
2017	1	1	1	1	1	1	0	0	0	0	0	0	1
2018	1	1	1	1	1	1	0	0	0	0	0	0	1
2019	1	1	1	1	1	1	0	0	0	0	0	0	1
2020	1	1	1	1	1	1	0	0	0	0	0	0	1
2021	0	1	1	1	1	1	0	0	0	0	0	0	0

Table A1-2: Independent Variables – Party Affiliation, Executive Orders, & Administrations

	Control Variable
Year	Consumer Price Index - Annual Average Constant (CPI-U)
1977	60.6
1978	65.2
1979	72.6
1980	82.4
1981	90.9
1982	96.5
1983	99.6
1984	103.9
1985	107.6
1986	109.6
1987	113.6
1988	118.3
1989	124
1990	130.7
1991	136.2
1992	140.3
1993	144.5
1994	148.2
1995	152.4
1996	156.9
1997	160.5
1998	163
1999	166.6
2000	172.2
2001	177.1
2002	179.9
2003	184
2004	188.9
2005	195.3
2006	201.6
2007	207.3
2008	215.3
2009	214.5
2010	218.1
2011	224.9
2012	229.6
2013	233
2014	236.7
2015	237
2016	240
2017	245.1
2018	251.1
2019	255.7
2020	258.8
2021	271

Table A1-3: Control Variable – Consumer Price Index Annual Average Inflation (CPI-U)

A2: Complete Summary of Hypothesis Testing Results

COMPLETE SUMMARY OF HYPOTHESIS TESTING RESULTS			
$H_{\#}$	*Description*	*Results*	
H_0	**Null Hypotheses**		
H_0a	Unilateral actions (Executive Orders) do not result in changes to U.S. Federal Budget Outlays by Agency	Rejected	
H_0b	Party affiliation does not result in changes to U.S. Federal Budget Outlays by Agency	Rejected	
H1	**Unilateral actions (Executive Orders) relation to U.S. Federal Budget Outlays by Agency**		
H1a	Executive Orders affecting environmental policy result in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency	Confirmed	
H1b	Executive Orders affecting environmental policy result in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Confirmed	
H2	**Executive Order #12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 1994) relation to U.S. Federal Budget Outlays by Agency**		
H2a	Executive Order #12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 1994) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency	Confirmed	
H2b	Executive Order #12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 1994) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Not Confirmed	**
H3	**Executive Order #13211 - Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use (May 2001) relation to U.S. Federal Budget Outlays by Agency**		
H3a	Executive Order #13211 - Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use (May 2001) results in increases to U.S. Federal Budget Outlays by Agency for the Department of Energy	Confirmed	
H3b	Executive Order #13211 - Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use (May 2001) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency	Confirmed	*
H3c	Executive Order #13211 - Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use (May 2001) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Confirmed	
H4	**Executive Order #13299 - Establishment of Interagency Group on Insular Areas (May 2003) relation to U.S. Federal Budget Outlays by Agency**		
H4a	Executive Order #13299 - Establishment of Interagency Group on Insular Areas (May 2003) results in increases to U.S. Federal Budget Outlays by Agency for the Department of the Interior	Confirmed	
H4b	Executive Order #13299 - Establishment of Interagency Group on Insular Areas (May 2003) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency	Confirmed	*
H4c	Executive Order #13299 - Establishment of Interagency Group on Insular Areas (May 2003) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Confirmed	
H5	**Executive Order #13423, Strengthening Federal Environmental, Energy, and Transportation Management (Jan 2007) relation to U.S. Federal Budget Outlays by Agency**		
H5a	Executive Order #13423, Strengthening Federal Environmental, Energy, and Transportation Management (Jan 2007) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency	Confirmed	
H5b	Executive Order #13423, Strengthening Federal Environmental, Energy, and Transportation Management (Jan 2007) results in increases to U.S. Federal Budget Outlays by Agency for the Department of Energy	Confirmed	*
H5c	Executive Order #13423, Strengthening Federal Environmental, Energy, and Transportation Management (Jan 2007) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Confirmed	*
H6	**Executive Order #13790—Promoting Agriculture and Rural Prosperity in America (April 2017) relation to U.S. Federal Budget Outlays by Agency**		
H6a	Executive Order #13790—Promoting Agriculture and Rural Prosperity in America (April 2017) results in increases to U.S. Federal Budget Outlays by Agency for the Department of Agriculture	Confirmed	*
H6b	Executive Order #13790—Promoting Agriculture and Rural Prosperity in America (April 2017) results in increases to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency	Not Confirmed	**
H6c	Executive Order #13790—Promoting Agriculture and Rural Prosperity in America (April 2017) results in increases to U.S. Federal Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Confirmed	*

* Indicates that the finding is significant

** Indicates that the finding is significant but not consistent with the hypothesis

Table A2-1: Complete Summary of Hypothesis Testing Results

COMPLETE SUMMARY OF HYPOTHESIS TESTING RESULTS (CONT.)

$H_{\#}$	*Description*	*Results*	
H7	**Party affiliation relation to U.S. Federal Budget Outlays by Agency**		
H7a	Republican presidential administrations result in a decline to U.S. Federal Budget Outlays by Agency for the Environmental Protection Agency	Confirmed	*
H7b	Republican administrations result in a decline to U.S. Federal Budget Outlays by Agency for other agencies with similar missions and shared mechanisms with the EPA	Confirmed	
H8	**Carter Administration relation to U.S. Budget Outlays by Agency**		
H8a	Carter Administration results in increases to U.S. Budget Outlays by Agency for the Environmental Protection Agency	Confirmed	
H8b	Carter Administration results in changes to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Confirmed	*
H9	**Reagan Administration relation to U.S. Budget Outlays by Agency**		
H9a	Reagan Administration results in decreases to U.S. Budget Outlays by Agency for the Environmental Protection Agency	Confirmed	
H9b	Reagan Administration results in decreases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Not Confirmed	**
H10	**G.H.W. Bush Administration relation to U.S. Budget Outlays by Agency**		
H10a	G.H.W. Bush Administration results in decreases to U.S. Budget Outlays by Agency for the Environmental Protection Agency	Confirmed	
H10b	G.H.W. Bush Administration results in decreases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Confirmed	
H11	**Clinton Administration relation to U.S. Budget Outlays by Agency**		
H11a	Clinton Administration results in increases to U.S. Budget Outlays by Agency for the Environmental Protection Agency	Not Confirmed	
H11b	Clinton Administration results in increases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Not Confirmed	**
H12	**G.W. Bush Administration relation to U.S. Budget Outlays by Agency**		
H12a	G.W. Bush Administration results in decreases to U.S. Budget Outlays by Agency for the Environmental Protection Agency	Not Confirmed	
H12b	G.W. Bush Administration results in decreases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Confirmed	*
H13	**Obama Administration relation to U.S. Budget Outlays by Agency**		
H13a	Obama Administration results in increases to U.S. Budget Outlays by Agency for the Environmental Protection Agency	Confirmed	*
H13b	Obama Administration results in increases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Confirmed	*
H14	**Trump Administration relation to U.S. Budget Outlays by Agency**		
H14a	Trump Administration results in decreases to U.S. Budget Outlays by Agency for the Environmental Protection Agency	Confirmed	*
H14b	Trump Administration results in decreases to U.S. Budget Outlays by Agency for agencies with similar missions to the Environmental Protection Agency	Not Confirmed	

* Indicates that the finding is significant

** Indicates that the finding is significant but not consistent with the hypothesis

Table A2-2: Complete Summary of Hypothesis Testing Results (Continued)

A3: Regression Summary Outputs

Environmental Protection Agency Regressions

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.860083124
R Square	0.73974298
Adjusted R Square	0.727349788
Standard Error	1045.36772
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	130456541.5	65228270.75	59.68946611	5.28995E-13
Residual	42	45897334.15	1092793.67		
Total	44	176353875.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2470.923166	517.7463821	4.772458585	0.000022	1426.068666	3515.777667
Party Affiliation	-591.1187457	313.5060869	-1.885509629	0.066291	-1223.799643	41.5621521
CPI-U	28.24477753	2.674169003	10.56207648	0.000000	22.848086	33.64146907

Table A3-1: Summary Output – Environmental Protection Agency & Party Affiliation

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.854182725
R Square	0.729628128
Adjusted R Square	0.716753277
Standard Error	1065.488123
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	128672748.2	64336374.08	56.67080151	1.17813E-12
Residual	42	47681127.48	1135264.94		
Total	44	176353875.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2527.482954	584.1201875	4.326991274	0.000091	1348.680692	3706.285217
EO#12898 (1994)	813.5523282	597.9920562	1.360473471	0.180937	-393.2444987	2020.349155
CPI-U	23.03300294	4.957086486	4.646479944	0.000033	13.0291974	33.03680847

Table A3-2: Summary Output – Environmental Protection Agency & EO#12898

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.87121388
R Square	0.759013625
Adjusted R Square	0.747538083
Standard Error	1005.921531
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	133854994.4	66927497.19	66.14185592	1.05158E-13
Residual	42	42498881.27	1011878.126		
Total	44	176353875.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	3288.29418	640.9500441	5.130343948	0.000007	1994.804623	4581.783736
EO#13211 (2001)	1571.637016	585.7960693	2.682908094	0.010394	389.4526868	2753.821345
CPI-U	17.16830905	4.996769619	3.435881651	0.001343	7.08441971	27.25219839

Table A3-3: Summary Output – Environmental Protection Agency & EO#13211

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.866701776
R Square	0.751171969
Adjusted R Square	0.739323015
Standard Error	1022.156773
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	132472088	66236043.98	63.39563619	2.06009E-13
Residual	42	43881787.68	1044804.469		
Total	44	176353875.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	3186.87637	656.9235982	4.851213107	0.000017	1861.150876	4512.601864
EO#13299 (2003)	1398.353388	588.4191509	2.376457982	0.022115	210.8754659	2585.83131
CPI-U	18.61919604	4.969101621	3.746994418	0.000540	8.591142976	28.6472491

Table A3-4: Summary Output – Environmental Protection Agency & EO#13299

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.851248183
R Square	0.724623468
Adjusted R Square	0.7115103
Standard Error	1075.30415
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	127790157	63895078.52	55.25922181	1.73167E-12
Residual	42	48563718.6	1156279.014		
Total	44	176353875.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2548.874637	666.8188125	3.822439603	0.000431	1203.179793	3894.569482
EO#13423 (2007)	602.2840679	586.6673446	1.026619384	0.310476	-581.6585659	1786.226702
CPI-U	24.71909201	4.72852595	5.227652818	0.000005	15.1765403	34.26164371

Table A3-5: Summary Output – Environmental Protection Agency & EO#13423

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.882945588
R Square	0.779592912
Adjusted R Square	0.769097336
Standard Error	962.0123277
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	137484231.5	68742115.73	74.27824262	1.61338E-14
Residual	42	38869644.18	925467.7186		
Total	44	176353875.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	1399.415507	480.4762228	2.912559334	0.005720	429.7752335	2369.055781
EO#13790 (2017)	-1849.427476	538.5812192	-3.433887796	0.001350	-2936.328379	-762.5265717
CPI-U	33.9533899	2.893968555	11.73246677	0.000000	28.11312492	39.79365489

Table A3-6: Summary Output – Environmental Protection Agency & EO#13790

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.854785611
R Square	0.730658441
Adjusted R Square	0.717832652
Standard Error	1063.456044
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	128854447.8	64427223.9	56.96791575	1.08735E-12
Residual	42	47499427.85	1130938.758		
Total	44	176353875.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	1600.538556	590.8143406	2.709038096	0.009724	408.2269459	2792.850167
Carter Admin	929.8043389	654.4298591	1.420785323	0.162761	-390.8885855	2250.497263
CPI-U	31.04924651	3.184290163	9.750759169	0.000000	24.62308879	37.47540422

Table A3-7: Summary Output – Environmental Protection Agency & Carter Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.852938221
R Square	0.727503609
Adjusted R Square	0.714527591
Standard Error	1069.66611
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	128298081	64149040.51	56.06524089	1.3886E-12
Residual	42	48055794.62	1144185.586		
Total	44	176353875.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2518.479983	601.6258932	4.18612299	0.000142	1304.349776	3732.61019
Reagan Admin	-593.4304837	483.0861478	-1.228415442	0.226130	-1568.337799	381.4768322
CPI-U	26.71738572	3.157897613	8.460497773	0.000000	20.34449033	33.09028112

Table A3-8: Summary Output – Environmental Protection Agency & Reagan Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.850371192
R Square	0.723131164
Adjusted R Square	0.709946933
Standard Error	1078.213827
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	127526983.3	63763491.65	54.8481896	1.93979E-12
Residual	42	48826892.35	1162545.056		
Total	44	176353875.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2211.010738	509.9638758	4.335622272	0.000089	1181.861971	3240.159505
G.H.W. Bush Admin	-521.5822321	575.328777	-0.906581164	0.369800	-1682.64271	639.478246
CPI-U	28.19142691	2.799404306	10.07050924	0.000000	22.54200031	33.84085352

Table A3-9: Summary Output – Environmental Protection Agency & G.H.W. Bush Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.84999984
R Square	0.722499727
Adjusted R Square	0.709285429
Standard Error	1079.442632
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	127415627.1	63707813.53	54.67560132	2.03485E-12
Residual	42	48938248.58	1165196.395		
Total	44	176353875.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2179.94188	503.6406672	4.328367468	0.000091	1163.553864	3196.329895
Clinton Admin	-359.470838	422.3371398	-0.851146641	0.399515	-1211.781692	492.8400162
CPI-U	28.47997443	2.760785942	10.31589374	0.000000	22.90848283	34.05146602

Table A3-10: Summary Output – Environmental Protection Agency & Clinton Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.85055108
R Square	0.72343714
Adjusted R Square	0.71026748
Standard Error	1077.617878
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	127580943.4	63790471.7	54.93210452	1.89527E-12
Residual	42	48772932.24	1161260.291		
Total	44	176353875.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2100.349673	490.1629928	4.285002548	0.000104	1111.160706	3089.53864
G.W.Bush Admin	399.8527787	428.8682369	0.932344119	0.356488	-465.6383632	1265.343921
CPI-U	28.15114263	2.80347923	10.04150212	0.000000	22.49349249	33.80879277

Table A3-11: Summary Output – Environmental Protection Agency & G.W. Bush Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.888740859
R Square	0.789860315
Adjusted R Square	0.779853663
Standard Error	939.3380127
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	139294927.8	69647463.88	78.93352752	5.92474E-15
Residual	42	37058947.89	882355.9021		
Total	44	176353875.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2645.725574	451.932626	5.854247783	0.000001	1733.68861	3557.762537
Obama Admin	1588.36398	418.2826592	3.797345993	0.000464	744.235399	2432.492561
CPI-U	23.65976855	2.734282109	8.653009311	0.000000	18.14176385	29.17777325

Table A3-12: Summary Output – Environmental Protection Agency & Obama Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.868741076
R Square	0.754711057
Adjusted R Square	0.743030631
Standard Error	1014.861658
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	133096219.9	66548109.94	64.61331683	1.52489E-13
Residual	42	43257655.77	1029944.185		
Total	44	176353875.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	1664.141188	490.4192898	3.393302878	0.001517	674.4349921	2653.847383
Trump Admin	-1498.039505	595.1811528	-2.516947148	0.015742	-2699.163699	-296.9153105
CPI-U	31.95269939	2.896000945	11.03338707	0.000000	26.10833287	37.7970659

Table A3-13: Summary Output – Environmental Protection Agency & Trump Administration

Department of Agriculture (USDA) Regressions

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.906781651
R Square	0.822252963
Adjusted R Square	0.813788819
Standard Error	20367.86211
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	80601525428	40300762714	97.14542959	1.76137E-16
Residual	42	17423691893	414849807		
Total	44	98025217321			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-32032.13592	10087.72963	-3.17535631	0.002802	-52389.9985	-11674.27334
Party Affiliation	-8713.4435	6108.327842	-1.426485894	0.161120	-21040.54815	3613.661152
CPI-U	713.47211	52.10329769	13.69341561	0.000000	608.3233983	818.6208217

Table A3-14: Summary Output – Department of Agriculture & Party Affiliation

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.929336548
R Square	0.86366642
Adjusted R Square	0.857174345
Standard Error	17837.98034
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	84661088536	42330544268	133.0339514	6.70903E-19
Residual	42	13364128785	318193542.5		
Total	44	98025217321			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-59210.24244	9779.108932	-6.054768676	0.000000	-78945.28325	-39475.20164
EO#12898 (1994)	-39301.56686	10011.34626	-3.92570248	0.000315	-59505.28157	-19097.85214
CPI-U	992.3641088	82.98957948	11.95769535	0.000000	824.884357	1159.843861

Table A3-15: Summary Output – Department of Agriculture & EO#12898

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.90202624
R Square	0.813651337
Adjusted R Square	0.804777591
Standard Error	20854.86594
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	79758349120	39879174560	91.69198097	4.75173E-16
Residual	42	18266868201	434925433.4		
Total	44	98025217321			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-37304.09246	13288.24052	-2.807301117	0.007545	-64120.84752	-10487.3374
EO#13211 (2001)	578.1987859	12144.78279	0.047608821	0.962254	-23930.96515	25087.36272
CPI-U	715.5790622	103.5935283	6.907565307	0.000000	506.5188582	924.6392662

Table A3-16: Summary Output – Department of Agriculture & EO#13211

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.906061793
R Square	0.820947974
Adjusted R Square	0.812421687
Standard Error	20442.49414
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	80473603519	40236801760	96.28434701	2.05383E-16
Residual	42	17551613802	417895566.7		
Total	44	98025217321			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-25587.69977	13138.0598	-1.947601104	0.058168	-52101.37787	925.9783175
EO#13299 (2003)	15406.31009	11768.01383	1.309168251	0.197595	-8342.503304	39155.12349
CPI-U	609.0239801	99.37891471	6.128301782	0.000000	408.4692107	809.5787495

Table A3-17: Summary Output – Department of Agriculture & EO#13299

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.928554308
R Square	0.862213102
Adjusted R Square	0.855651821
Standard Error	17932.80487
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	84518626727	42259313364	131.4092664	8.38236E-19
Residual	42	13506590594	321585490.3		
Total	44	98025217321			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-8639.926039	11120.51102	-0.776936062	0.441551	-31082.02585	13802.17377
EO#13423 (2007)	37646.24789	9783.828152	3.847803467	0.000399	17901.68331	57390.81246
CPI-U	472.5517007	78.85744065	5.992480821	0.000000	313.4109426	631.6924588

Table A3-18: Summary Output – Department of Agriculture & EO#13423

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.919562484
R Square	0.845595162
Adjusted R Square	0.838242551
Standard Error	18983.43125
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	82889649523	41444824761	115.0061011	9.15965E-18
Residual	42	15135567798	360370661.9		
Total	44	98025217321			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-26162.82501	9481.258273	-2.759425411	0.008543	-45296.77885	-7028.871165
EO#13790 (2017)	31332.95007	10627.8467	2.948193641	0.005202	9885.087099	52780.81304
CPI-U	630.3841575	57.10680779	11.03868666	0.000000	515.1379536	745.6303614

Table A3-19: Summary Output – Department of Agriculture & EO#13790

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.912086515
R Square	0.831901812
Adjusted R Square	0.823897136
Standard Error	19807.32275
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	81547355876	40773677938	103.9269859	5.45536E-17
Residual	42	16477861446	392330034.4		
Total	44	98025217321			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-51262.50471	11004.16927	-4.658462028	0.000032	-73469.81737	-29055.19204
Carter Admin	26035.69498	12189.03546	2.135993046	0.038553	1437.225541	50634.16441
CPI-U	786.2971471	59.30876346	13.2576891	0.000000	666.6072168	905.9870775

Table A3-20: Summary Output – Department of Agriculture & Carter Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.910553769
R Square	0.829108167
Adjusted R Square	0.82097046
Standard Error	19971.23472
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	81273508237	40636754119	101.8847489	7.71165E-17
Residual	42	16751709084	398850216.3		
Total	44	98025217321			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-50646.20221	11232.67515	-4.508828177	0.000052	-73314.6584	-27977.74602
Reagan Admin	17585.17545	9019.475107	1.949689449	0.057910	-616.8622315	35787.21313
CPI-U	777.8193025	58.95962665	13.19240549	0.000000	658.8339587	896.8046462

Table A3-21: Summary Output – Department of Agriculture & Reagan Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.903189333
R Square	0.815750971
Adjusted R Square	0.806977208
Standard Error	20737.04479
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	79964166208	39982083104	92.97617729	3.7455E-16
Residual	42	18061051113	430025026.5		
Total	44	98025217321			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-35867.0772	9808.020888	-3.656912808	0.000705	-55660.4647	-16073.68971
G.H.W. Bush Admin	-7673.4294	11065.16938	-0.693476	0.491828	-30003.84526	14656.98646
CPI-U	712.6995979	53.84031538	13.23728498	0.000000	604.0454426	821.3537533

Table A3-22: Summary Output – Department of Agriculture & G.H.W. Bush Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.916471899
R Square	0.839920742
Adjusted R Square	0.832297921
Standard Error	19329.1071
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	82333413309	41166706655	110.1850162	1.9545E-17
Residual	42	15691804012	373614381.2		
Total	44	98025217321			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-32403.04795	9018.473157	-3.592963841	0.000851	-50603.06362	-14203.03229
Clinton Admin	-19858.06151	7562.606449	-2.625822413	0.012009	-35120.01921	-4596.103813
CPI-U	709.0444323	49.43618641	14.34261993	0.000000	609.278169	808.8106955

Table A3-23: Summary Output – Department of Agriculture & Clinton Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.930040988
R Square	0.86497624
Adjusted R Square	0.858546537
Standard Error	17752.08466
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	84789483907	42394741953	134.5281826	5.4779E-19
Residual	42	13235733414	315136509.9		
Total	44	98025217321			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-38958.46247	8074.675748	-4.824771135	0.000019	-55253.81785	-22663.10709
G.W.Bush Admin	-28231.54295	7064.939628	-3.996006256	0.000255	-42489.16834	-13973.91756
CPI-U	756.7916893	46.18297603	16.38681077	0.000000	663.5906704	849.9927082

Table A3-24: Summary Output – Department of Agriculture & G.H.W. Bush Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.909165251
R Square	0.826581454
Adjusted R Square	0.818323428
Standard Error	20118.33484
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	81025826657	40512913329	100.0943148	1.04956E-16
Residual	42	16999390664	404747396.8		
Total	44	98025217321			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-32130.74518	9679.297306	-3.31953283	0.001871	-51664.35797	-12597.13239
Obama Admin	15859.4062	8958.596887	1.770300238	0.083936	-2219.774256	33938.58667
CPI-U	669.737546	58.56167033	11.43644883	0.000000	551.5553106	787.9197814

Table A3-25: Summary Output – Department of Agriculture & Obama Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.902969865
R Square	0.815354578
Adjusted R Square	0.806561939
Standard Error	20759.33963
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	79925309676	39962654838	92.73149543	3.91841E-16
Residual	42	18099907646	430950182		
Total	44	98025217321			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-35621.37607	10031.69301	-3.550883788	0.000962	-55866.15218	-15376.59996
Trump Admin	7600.245473	12174.63247	0.624268987	0.535827	-16969.15755	32169.6485
CPI-U	703.18247	59.23868215	11.87032602	0.000000	583.6339694	822.7309705

Table A3-26: Summary Output – Department of Agriculture & Trump Administration

Department of the Interior Regressions

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.960180333
R Square	0.921946271
Adjusted R Square	0.918229427
Standard Error	1010.186684
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	506249403.9	253124702	248.0454418	5.49879E-24
Residual	42	42860039.7	1020477.136		
Total	44	549109443.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-1017.927108	500.3220308	-2.034543843	0.048242314	-2027.617844	-8.236371645
Party Affiliation	-366.4178939	302.9552837	-1.209478473	0.233243269	-977.8064087	244.970621
CPI-U	56.99648463	2.584171928	22.05599558	1.02265E-24	51.78141455	62.21155472

Table A3-27: Summary Output – Department of the Interior & Party Affiliation

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.960474303
R Square	0.922510886
Adjusted R Square	0.918820929
Standard Error	1006.52637
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	506559439.6	253279719.8	250.0058102	4.72122E-24
Residual	42	42550004.03	1013095.334		
Total	44	549109443.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-1669.796373	551.7962702	-3.026110294	0.004217942	-2783.36633	-556.2264168
EO#12898 (1994)	-753.5707269	564.9005003	-1.333988422	0.189396396	-1893.58609	386.4446367
CPI-U	62.48902775	4.6827723	13.34445148	1.06094E-16	53.03881065	71.93924484

Table A3-28: Summary Output – Department of the Interior & EO#12898

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.959851044
R Square	0.921314026
Adjusted R Square	0.917567075
Standard Error	1014.26975
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	505902232.4	252951116.2	245.8836516	6.51394E-24
Residual	42	43207211.26	1028743.125		
Total	44	549109443.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-780.3282525	646.2693373	-1.207435055	0.234020526	-2084.552577	523.8960721
EO#13211 (2001)	623.3082832	590.6576354	1.055278466	0.297330764	-568.6870834	1815.30365
CPI-U	52.69961186	5.03823819	10.45992862	2.88104E-13	42.53203555	62.86718816

Table A3-29: Summary Output – Department of the Interior & EO#13211

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.960401715
R Square	0.922371455
Adjusted R Square	0.918674858
Standard Error	1007.431519
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	506482876.5	253241438.2	249.5190469	4.90287E-24
Residual	42	42626567.15	1014918.265		
Total	44	549109443.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-661.3023425	647.459916	-1.021379588	0.312922031	-1967.929352	645.3246673
EO#13299 (2003)	756.3504672	579.942348	1.304182165	0.199273829	-414.020574	1926.721508
CPI-U	51.8241105	4.897516434	10.58171243	2.01923E-13	41.9405222	61.70769881

Table A3-30: Summary Output – Department of the Interior & EO#13299

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.966384603
R Square	0.9338992
Adjusted R Square	0.930751543
Standard Error	929.6257996
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	512812870.3	256406435.1	296.6966103	1.67626E-25
Residual	42	36296573.35	864204.1273		
Total	44	549109443.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-60.94583602	576.4805911	-0.105720534	0.916307412	-1224.330769	1102.439097
EO#13423 (2007)	1548.557408	507.1877566	3.053223167	0.003918749	525.0110769	2572.10374
CPI-U	47.09217558	4.087922211	11.51983163	1.39351E-14	38.84241456	55.3419366

Table A3-31: Summary Output – Department of the Interior & EO#13423

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.96446836
R Square	0.930199217
Adjusted R Square	0.92687537
Standard Error	955.2894025
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	510781174.3	255390587.1	279.8562218	5.26098E-25
Residual	42	38328269.39	912577.8426		
Total	44	549109443.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-750.2087416	477.1184637	-1.572374156	0.123367692	-1713.072783	212.6553
EO#13790 (2017)	1374.147497	534.8173992	2.569376947	0.013828831	294.8422889	2453.452704
CPI-U	53.34111432	2.87374435	18.56153778	7.39409E-22	47.54166343	59.14056521

Table A3-32: Summary Output – Department of the Interior & EO#13790

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.966634216
R Square	0.934381707
Adjusted R Square	0.931257026
Standard Error	926.2266559
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	513077819.3	256538909.6	299.032708	1.43722E-25
Residual	42	36031624.36	857895.8181		
Total	44	549109443.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-2179.746692	514.5750911	-4.236012837	0.000121487	-3218.201268	-1141.292115
Carter Admin	1775.156953	569.9816021	3.114410968	0.003315304	624.8875108	2925.426395
CPI-U	61.79615012	2.773386305	22.28184008	6.8897E-25	56.19922997	67.39307028

Table A3-33: Summary Output – Department of the Interior & Carter Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.958793681
R Square	0.919285323
Adjusted R Square	0.915441767
Standard Error	1027.261633
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	504788252.2	252394126.1	239.1757295	1.11174E-23
Residual	42	44321191.45	1055266.463		
Total	44	549109443.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-1199.341716	577.775805	-2.075790828	0.044072636	-2365.340497	-33.34293604
Reagan Admin	-80.33459021	463.9352979	-0.173159039	0.863358252	-1016.593926	855.9247457
CPI-U	56.99810768	3.032709955	18.79444738	4.6272E-22	50.87785121	63.11836415

Table A3-34: Summary Output – Department of the Interior & Reagan Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.959604781
R Square	0.920841335
Adjusted R Square	0.917071875
Standard Error	1017.311706
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	505642673.1	252821336.6	244.2899716	7.38699E-24
Residual	42	43466770.53	1034923.108		
Total	44	549109443.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-1135.184876	481.1589388	-2.359272133	0.023036102	-2106.202927	-164.1668253
G.H.W. Bush Admin	-502.276984	542.8317514	-0.925290355	0.360101136	-1597.755809	593.2018412
CPI-U	56.79752907	2.641281999	21.5037732	2.72554E-24	51.46720619	62.12785194

Table A3-35: Summary Output – Department of the Interior & G.H.W. Bush Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.961532983
R Square	0.924545678
Adjusted R Square	0.920952615
Standard Error	993.2232394
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	507676762.7	253838381.4	257.3140761	2.70002E-24
Residual	42	41432680.94	986492.4033		
Total	44	549109443.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-1078.328799	463.4128766	-2.326928866	0.024864626	-2013.533847	-143.1237523
Clinton Admin	-668.5939048	388.6033865	-1.720504576	0.092701599	-1452.827289	115.6394791
CPI-U	56.90056287	2.540270948	22.39940701	5.61685E-25	51.77408855	62.02703719

Table A3-36: Summary Output – Department of the Interior & Clinton Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.962167718
R Square	0.925766718
Adjusted R Square	0.9222318
Standard Error	985.1540397
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	508347247.4	254173623.7	261.8919778	1.91678E-24
Residual	42	40762196.24	970528.482		
Total	44	549109443.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-1290.616338	448.1050865	-2.880164446	0.006231958	-2194.929014	-386.3036621
G.W.Bush Admin	-754.1275507	392.0696609	-1.923452962	0.061219215	-1545.35616	37.10105828
CPI-U	58.25090429	2.562929722	22.72824877	3.18755E-25	53.07870271	63.42310587

Table A3-37: Summary Output – Department of the Interior & G.W. Bush Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.959687176
R Square	0.920999476
Adjusted R Square	0.917237546
Standard Error	1016.295018
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	505729510	252864755	244.8210223	7.0832E-24
Residual	42	43379933.68	1032855.564		
Total	44	549109443.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-1102.715174	488.958043	-2.255234759	0.02938927	-2089.472454	-115.9578944
Obama Admin	439.2197154	452.5512403	0.970541402	0.337333053	-474.0656624	1352.505093
CPI-U	55.87630258	2.958293232	18.88802028	3.83793E-22	49.90622514	61.84638002

Table A3-38: Summary Output – Department of the Interior & Obama Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.961404385
R Square	0.924298392
Adjusted R Square	0.920693554
Standard Error	994.8494469
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	507540975.9	253770488	256.4049405	2.89206E-24
Residual	42	41568467.72	989725.422		
Total	44	549109443.6			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-984.5169833	480.7486374	-2.047883045	0.046857747	-1954.707012	-14.32695455
Trump Admin	978.6004238	583.4446852	1.677280552	0.100915849	-198.83862	2156.039468
CPI-U	55.12186231	2.838894262	19.41666622	1.35258E-22	49.39274174	60.85098288

Table A3-39: Summary Output – Department of the Interior & Trump Administration

Department of Energy (DOE) Regressions

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.949090676
R Square	0.900773111
Adjusted R Square	0.896048022
Standard Error	2472.182007
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2330216178	1165108089	190.6361836	8.49605E-22
Residual	42	256690722.7	6111683.874		
Total	44	2586906901			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-1847.888868	1224.4144	-1.509202169	0.138734	-4318.857166	623.079429
Party Affiliation	-1083.528175	741.4081114	-1.461446345	0.151335	-2579.750319	412.6939692
CPI-U	121.9024264	6.324121518	19.27578812	0.000000	109.1398325	134.6650204

Table A3-40: Summary Output – Department of Energy & Party Affiliation

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.948813758
R Square	0.900247547
Adjusted R Square	0.89549743
Standard Error	2478.720438
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2328856590	1164428295	189.5211377	9.49282E-22
Residual	42	258050310.3	6144055.008		
Total	44	2586906901			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-3606.695547	1358.880137	-2.654167537	0.011180	-6349.026689	-864.3644053
EO#12898 (1994)	-1919.227818	1391.151247	-1.379596807	0.175012	-4726.684696	888.2290596
CPI-U	136.0004588	11.53202116	11.79328904	0.000000	112.7278979	159.2730197

Table A3-41: Summary Output – Department of Energy & EO#12898

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.946714261
R Square	0.896267892
Adjusted R Square	0.891328268
Standard Error	2527.681535
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2318561595	1159280798	181.4445511	2.15863E-21
Residual	42	268345305.5	6389173.94		
Total	44	2586906901			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-2030.458034	1610.58049	-1.26069951	0.214376	-5280.741051	1219.824983
EO#13211 (2001)	688.7740431	1471.989477	0.467920494	0.642261	-2281.820987	3659.369073
CPI-U	117.6480447	12.5558922	9.369947021	0.000000	92.30922841	142.986861

Table A3-42: Summary Output – Department of Energy & EO#13211

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.949485725
R Square	0.901523142
Adjusted R Square	0.896833768
Standard Error	2462.820983
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2332156439	1166078219	192.248072	7.24466E-22
Residual	42	254750462.3	6065487.197		
Total	44	2586906901			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-799.2531524	1582.815146	-0.504956725	0.616229	-3993.503438	2394.997133
EO#13299 (2003)	2229.073682	1417.758088	1.572252489	0.123396	-632.0779738	5090.225338
CPI-U	106.6613454	11.97273066	8.908689956	0.000000	82.49939673	130.8232941

Table A3-43: Summary Output – Department of Energy & EO#13299

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.953425649
R Square	0.909020468
Adjusted R Square	0.904688109
Standard Error	2367.214456
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2351551321	1175775661	209.8211471	1.37347E-22
Residual	42	235355579.8	5603704.281		
Total	44	2586906901			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-84.86929484	1467.959677	-0.057814459	0.954171	-3047.33186	2877.59327
EO#13423 (2007)	3199.396368	1291.511262	2.477250073	0.017348	593.0211216	5805.771614
CPI-U	101.6771979	10.40955249	9.767681947	0.000000	80.6698705	122.6845253

Table A3-44: Summary Output – Department of Energy & EO#13423

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.94683248
R Square	0.896491746
Adjusted R Square	0.891562781
Standard Error	2524.952699
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2319140683	1159570342	181.8823704	2.06288E-21
Residual	42	267766217.5	6375386.13		
Total	44	2586906901			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-2267.480445	1261.085436	-1.798038722	0.079362	-4812.453888	277.4929985
EO#13790 (2017)	787.3778034	1413.59114	0.557005333	0.580480	-2065.364611	3640.120218
CPI-U	120.4435618	7.595675753	15.85685932	0.000000	105.1148676	135.7722561

Table A3-45: Summary Output – Department of Energy & EO#13790

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.946721078
R Square	0.8962808
Adjusted R Square	0.891341791
Standard Error	2527.524263
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2318594987	1159297494	181.4697456	2.15299E-21
Residual	42	268311913.7	6388378.899		
Total	44	2586906901			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-2940.899125	1404.193044	-2.094369529	0.042300	-5774.675416	-107.1228353
Carter Admin	736.4790029	1555.388543	0.473501625	0.638307	-2402.422156	3875.380162
CPI-U	124.5715117	7.56812723	16.46001817	0.000000	109.2984126	139.8446108

Table A3-46: Summary Output – Department of Energy & Carter Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.947862036
R Square	0.898442439
Adjusted R Square	0.893606365
Standard Error	2501.047186
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2324186946	1162093473	185.7792866	1.38343E-21
Residual	42	262719955.2	6255237.028		
Total	44	2586906901			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-3436.560979	1406.695728	-2.443002356	0.018852	-6275.38789	-597.734068
Reagan Admin	1196.951502	1129.531206	1.059688742	0.295343	-1082.534757	3476.437762
CPI-U	126.6391379	7.383660069	17.15126871	0.000000	111.7383086	141.5399672

Table A3-47: Summary Output – Department of Energy & Reagan Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.947133744
R Square	0.897062329
Adjusted R Square	0.892160535
Standard Error	2517.983749
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2320616730	1160308365	183.0069476	1.8368E-21
Residual	42	266290170.7	6340242.161		
Total	44	2586906901			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-2315.58277	1190.933301	-1.944342952	0.058572	-4718.983475	87.81793447
G.H.W. Bush Admin	-991.6878493	1343.581834	-0.73809263	0.464563	-3703.145765	1719.770067
CPI-U	121.7716161	6.537529361	18.62654978	0.000000	108.5783477	134.9648845

Table A3-48: Summary Output – Department of Energy & G.H.W. Bush Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.947692823
R Square	0.898121688
Adjusted R Square	0.893270339
Standard Error	2504.993629
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2323357191	1161678596	185.1282672	1.47814E-21
Residual	42	263549709.4	6274993.082		
Total	44	2586906901			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-2296.520368	1168.766756	-1.964909043	0.056062	-4655.187173	62.14643712
Clinton Admin	-973.7846955	980.0908483	-0.993565747	0.326124	-2951.688104	1004.118713
CPI-U	122.1628099	6.406779753	19.06773989	0.000000	109.2334049	135.0922149

Table A3-49: Summary Output – Department of Energy & Clinton Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.952687568
R Square	0.907613601
Adjusted R Square	0.903214249
Standard Error	2385.447009
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2347911889	1173955944	206.306187	1.8957E-22
Residual	42	238995012.2	5690357.432		
Total	44	2586906901			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-2653.260481	1085.03939	-2.44531259	0.018746	-4842.95862	-463.5623412
G.W.Bush Admin	-2206.866222	949.3554939	-2.324594145	0.025002	-4122.743174	-290.9892708
CPI-U	125.5815242	6.205865065	20.23594179	0.000000	113.0575815	138.105467

Table A3-50: Summary Output – Department of Energy & G.H.W. Bush Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.953728551
R Square	0.909598149
Adjusted R Square	0.905293299
Standard Error	2359.687087
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2353045729	1176522864	211.2961285	1.2015E-22
Residual	42	233861172.2	5568123.148		
Total	44	2586906901			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-1613.910513	1135.288434	-1.421586325	0.162530	-3905.01533	677.1943037
Obama Admin	2667.427224	1050.75721	2.538576179	0.014925	546.9133237	4787.941124
CPI-U	114.2686587	6.868720416	16.63609112	0.000000	100.4070197	128.1302977

Table A3-51: Summary Output – Department of Energy & Obama Administration

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.946446125
R Square	0.895760267
Adjusted R Square	0.89079647
Standard Error	2533.858742
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2317248415	1158624208	180.458689	2.39166E-21
Residual	42	269658485.3	6420440.127		
Total	44	2586906901			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-2606.629001	1224.455762	-2.128806186	0.039178	-5077.68077	-135.5772314
Trump Admin	-171.7123764	1486.020243	-0.115551842	0.908558	-3170.622638	2827.197885
CPI-U	123.0665534	7.230598627	17.02024407	0.000000	108.4746146	137.6584922

Table A3-52: Summary Output – Department of Energy & Trump Administration

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A tenacious, analytical, problem-solver and goal-oriented team player. An experienced global financial services executive with professional expertise in wealth & asset management and a proven track record in strategic consulting, project management, & large-scale transformation and implementation. Academic experience in the subjects of Business Administration and Public Administration with subject matter knowledge in finance & budgeting, accounting, strategic planning, executive leadership, public management, performance management, and comparative public administration.

EDUCATION

PhD **Rutgers University** | School of Public Affairs & Admin *October 2022*

Dissertation: "The Unilateral Presidency, Federal Budgeting, and the Impact to Environmental Policy: From the Carter through the Trump Administrations"

Committee: Cleopatra Charles, PhD (Chair); Gregg G. Van Ryzin, Ph.D.; Stephanie P. Newbold, PhD; Arthur B. Powell, Jr., PhD

EMBA **Rutgers University** | Rutgers Business School *May 2014*

Major(s): Finance, Accounting

MPA **Cornell University** | Cornell Institute for Public Affairs *May 2006*

Concentration: Human Rights & Social Justice

Thesis Title: ""Depreciation and Rehabilitation: Defining the 'Medical Malpractice Crisis' and Exploring Solutions in the Context of Health Law and Policy"

Thesis Chair: Theodore J. Lowi, PhD

BS **Cornell University** | College of Agriculture and Life Sciences *May 2004*

Major: General Studies

Minor(s): Biology, Latino Studies

ACADEMIC HONORS AND AWARDS

Golden Key International Honor Society | Rutgers Chapter *2022*

Rutgers Pre-Doctoral Leadership Development Academy (PLDA) *2020*

Presidential Management Fellows Semi-Finalist *2014*

NYSSA CFA Investment Research Challenge Participant *2013*

Order of Omega Honor Society | Beta Upsilon Chapter *2006*

TEACHING EXPERIENCE

Kean University | Union, NJ *Aug 2009 to May 2010*

Adjunct Professor | School of Business and Public Administration

- Taught Quantitative Methods in Business Management, an undergraduate course averaging 40 students per semester, covering the following topics: Decision Analysis, Inventory Control Models, Linear Programming Models, Transportation and Assignment Models, Project Management, Markov Analysis
- Developed quizzes, exams, and homework
- Revised the syllabus to meet accreditation standards
- Coordinated grading, labs, and office hours

ENTREPRENEURIAL EXPERIENCE

le maçon éclairé, LLC | Edison, NJ *Mar 2017 to Current*

Owner | Writer | Artist

- le maçon éclairé (French: The Enlightened Mason) is an endeavor to further explore personal interests in philosophy and esotericism by creating a platform for sharing, a forum for discussion, and a medium for understanding
- A blogging and podcast forum for discussion on personal interests, philosophy, and life experience
- An independent publishing medium for pieces across various academic disciplines and topics of special interest

CAREER EXPERIENCE

Capco | New York, NY *Apr 2017 to Current*

Managing Principal (Director)| Wealth & Asset Management Practice

- Leader within the Wealth & Asset Management Practice responsible for domain expansion, client delivery management lead, career coaching/mentorship, account management, and project management
- Proven ability to drive difficult and highly complex projects from strategy through execution; delivery lead on large-scale transformation, digital transformation, target operating model design and execution, and workstation/product design & implementation related projects
- A major contributor to new client relationships and is known for exceptional delivery which has been the means of earning client trust and providing the value proposition for additional opportunities resulting in a proven track record of sales credit and managed revenue based on relationship originations, project extensions, and sourcing additional roles
- Recognized by clients, teammates, and fellow leaders as an enthusiastic team leader with an ability to evaluate, organize, and execute change quickly; recognized as an outstanding Coach through the Coaching Center of Excellence for people focus and support of critical internal diversity initiatives

Ernst & Young | New York, NY *Dec 2013 to Apr 2017*

Management Consultant | Financial Services Office - Wealth & Asset Management Practice

- Partner with retail brokers, private banks, wealth managers, and retirement & trust organizations within the banking, capital markets, asset management, and insurance industries, delivering advisory services across several cross-functional capabilities that span front office, operations, tech, finance, risk, and compliance
- Support client engagement teams, liaise with a variety of clients to deliver professional advisory services, deliver strong sales presentations, and lead business development on global priority accounts
- Implement strategies in various areas of subject matter expertise including strategy, product management & implementation, agile methodology (Scrum), and advisor & client-centric experience (CRM, financial planning, goals-based, advisory accounts, investments & securities, reporting, asset movement)

Merrill Lynch | Paramus, NJ *Jul 2011 to Nov 2013*

Portfolio Advisor | Wealth Management

- Analyzed financial statements and reports to investigate variances, seek alternative business opportunities, and report findings to clients. Also responsible for creating quarterly reporting statements to review actual performance versus market forecasts. Actively implement a strategic marketing plan to source, interview, and gather information from clients to understand their core financial objectives.
- Specialized in forecasting data and using goals-based planning to create risk adjusted investment portfolios to assist clients with wealth management needs, and develop solutions for corporations, small businesses, executives and individuals in financial planning, investments, portfolio management, and tax gain & loss.

J.P. Morgan Chase | Short Hills, NJ *Mar 2010 to Jul 2011*

Vice President - Investments | Wealth Management

- Provided oversight and coaching to 17 Personal Bankers & 7 Branch Managers; liaised with senior leadership to implement and strategically develop successful investment business practices; maintained a successful Profit & Loss for 7 separate NJ bank branches focusing on exposing outside investment opportunities to expand AUM.
- Managed a total of more than $20 million in client assets with a trailing 12-month production of $240k.

Morgan Stanley Smith Barney | Toms River, NJ *Jun 2007 to Mar 2010*

Portfolio Manager | Wealth Management

- Designed structured investment portfolios, prepared detailed financial analyses, recommended and implemented detailed and sophisticated investment strategies, analyzed financial statements & reports which resulted in the acquisition and allocation of over 15 million in client assets with a trailing 12-month production of over $96,000.
- Implemented solutions and facilitated in-depth reviews using goals-based wealth management; promoted and sold financial products to meet given/negotiated sales targets; liaised with center of influence; maintained detailed records to comply with the regulations of FINRA/SEC; produced financial reports.

PROFESSIONAL TRAINING

Human Research Social / Behavioral / Epidemiological Research, CITI Program, 2020

Certified Scum Master, 6sigma, 2017

SAFe Agilist, Scaled Agile, 2017

CRPC Chartered Retirement Planning Specialist, College for Financial Planning, 2012

Life & Health Insurance, NJDOBI, 2007

Series 66: Registered Agent & Investment Advisor, Securities Exchange Commission, 2007

Series 7: General Securities Representative, Securities Exchange Commission, 2007

Licensed Real Estate Specialist, NJ Real Estate Commission, 2006

PROFESSIONAL AFFILIATIONS

Association of Latino Professionals in Finance & Accounting (ALPFA), 2007-Present

PROSPANICA (Formerly National Society of Hispanic MBA), 2007-Present

LEADERSHIP & PHILANTHROPY

Sovereign Military Order of the Temple of Jerusalem (SMOTJ) | Priory of St. George

Member, New Jersey, 2022-Current

Cornell University | Cornell University Council (CUC) Admin Board

Elected Member, Ithaca, NY, 2012-Current

Cornell University | Cornell University Council (CUC)

Director-at-Large, Ithaca, NY, 2019-Current

Cornell University | Cornell Association of Class Officers (CACO) Board

Director-at-Large, Ithaca, NY, 2019-Current

Cornell University | College of Agriculture & Life Sciences Alumni Association (CALSAA) Board

Director-at-Large, Ithaca, NY, 2019-Current

Knights of Columbus | St Francis di Assisi Council #3272

Member, Edison, NJ, 2011-Current

Free & Accepted Masons | Grand Lodge of NJ

Past Master, Metuchen, NJ, 2011-Current

Court Appointed Special Advocates (CASA) of NJ

Chairman | Board of Trustees, Toms River, NJ, 2007-2011

Lambda Upsilon Lambda, Fraternity, Inc. | Alpha Chapter

Lifetime Member | New York, NY, 2001-Current

LANGUAGES

English: Native Language

Spanish: Native Language

COMPUTER SKILLS

Applications: Microsoft Office, Stata Statistical Software, CRM, Adobe Duite

OTHER

Interests/Hobbies: Philanthropic organizations, book collecting, esoteric & occult philosophy, community service, art, photography, boxing/martial arts, outdoor sports, and music.