Beyond Public Opinion:

A Systematic Analysis of Nuclear Energy Policy in U.S. States

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ABSTRACT

Why do U.S. states vary in their nuclear energy policies, and to what extent does public opinion explain these differences? While conventional nuclear energy scholarship often assumes that public opinion plays a central role in shaping legislative outcomes, political science offers a more contested view in which responsiveness may be mediated by parties, institutions, and interest groups. This thesis provides the first systematic state-level test between public opinion and public policy by constructing an original dataset that combines weighted measures of nuclear energy favorability with over 700 manually coded nuclear-related bills across 25 states over a 12-year period. Using a series of state-year regression models, the analysis examines whether variation in public opinion predicts legislative outcomes. The results show limited evidence of direct responsiveness. Higher public support does not seem to be systematically associated with increases in pro-nuclear legislation. Further descriptive statistics and qualitative analyses underscore the imperative role external factors such as interest groups and partisanship, play in mediating this relationship. These findings suggest that, in the case of nuclear energy, policy outcomes are not primarily driven by public opinion, but rather emerge from a more complex interaction between public sentiment, institutions, and political actors.

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1. INTRODUCTION

Why do some states harness nuclear energy while others do not? Why are nuclear power plants concentrated in certain parts of the United States but absent in others? Depending upon whom is asked, the answers to these questions vary.[1] In a moment when nuclear energy is increasingly discussed as a powerful, clean, and strategically important source of electricity, it is timely and important to understand the factors as to why different U.S. states exhibit such uneven nuclear power development and production. The unevenness of its presence across U.S. states becomes an especially important question.

This thesis constructs an original dataset combining weighted state-level public opinion data with more than 700 manually reviewed nuclear-related bills across 25 states over 12 years. Each bill is classified as pro-nuclear, anti-nuclear, or neutral, and is paired with data on partisan sponsorship and partisan voting behavior. This paper makes three main contributions. First, it provides a systemic investigation of why U.S. states vary in the introduction and passage of nuclear energy legislation, shifting the focus of the literature to state-level policy variation. Second, it constructs two original measures, a state-level measure of nuclear legislative favorability and a corresponding measure of state-level public opinion, allowing for a more precise analysis of how policy and public sentiment interact. The literature identifies public opinion as a key driver of legislative outcomes. Third, by combining this state-level measure of nuclear favorability with public opinion, this paper presents the first state-level empirical test of whether public opinion correlates with favorable or unfavorable nuclear energy legislation. In addition to the quantitative analysis, the thesis includes qualitative case studies to examine how other forces, such as interest group campaigns, utility incentives, and broader political constraints may shape nuclear policy beyond public sentiment alone.

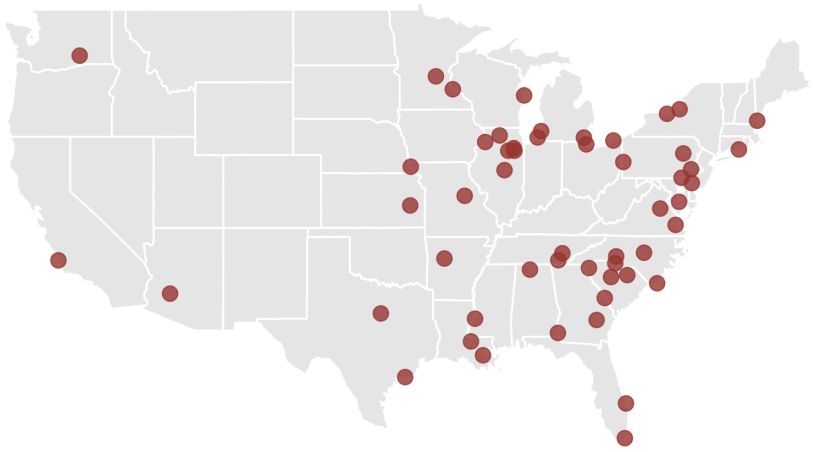
The findings challenge common assumptions that nuclear policy is both strongly driven by public opinion and broadly bipartisan, revealing that partisanship, interest groups, and other structural factors play a significant role in shaping policies. This paper, therefore, argues that the

[1] At the outset of this project, this thesis explored a broader comparative question: Why do some countries have more nuclear energy than others? However, after quickly facing heavy methodological challenges with that inquiry, this paper narrowed its focus to the U.S.

politics of nuclear energy must be understood with a greater cross-disciplinary, theoretical approach and through a more precise political framework. If some states appear more capable than others of expanding or resisting nuclear energy, then the answer may lie in other—often overlooked—forces that affect nuclear energy legislation on a state level.

In the U.S., there are 94 nuclear energy reactors and 54 operating plants producing nuclear power across 28 states (U.S. Energy Information Administration 2024; U.S. Nuclear Regulatory Commission 2025). Nuclear energy generates about 20% of the nation's total electricity (U.S. Department of Energy 2025). With 11 reactors, Illinois has the highest number, followed by Pennsylvania with eight reactors, South Carolina with seven, and both North Carolina and New York with six each (Nuclear Energy Institute 2024). Figure 1 illustrates the haphazard nature of these plant locations.

FIGURE 1. State Nuclear Power Plant Distribution Map



Note: Figure 1 illustrates the geographic distribution of nuclear power plants across U.S. states, highlighting the concentration of facilities in the Midwest, Southeast, and East Coast.

This distribution immediately highlights that most of these plants are located throughout the Midwest, the Southeast, and the Northeast. There are only three plants in the entire other half of the country west of Texas. Other than this apparent and distinctive factor, no other trends are immediately obvious. For example, if this distribution is examined through the states' political identity—possibly attempting to denote this as a partisan issue—the plants seem to span across a

net neutral political divide, especially considering that two dense states, Pennsylvania and Georgia, were both recently flipped as of the 2024 presidential elections (Cable News Network 2024). The geographic nature does not seem to be explained by partisanship. Also, why do some states host multiple plants, while others have none? This seemingly sporadic yet concentrated number of nuclear plants across the U.S., that is nonetheless almost entirely concentrated in the eastern half of the country, begs for an explanation as to what else underlies this obscure plant distribution.

The nuclear energy literature provides several explanations for why some regions or states have more nuclear energy than others. These explanations are often a confusing and tangled hodgepodge of proposed interpretations. Some literature emphasizes states' utility structures, such as whether electricity markets are regulated or deregulated; others point to topographical and infrastructural conditions, or technological comparative advantages, or the timing of new reactor construction starts, or local need for baseload power, or the availability of alternative energy sources.

Yet, one reason is consistent throughout both classic and contemporary nuclear energy literature: the high costs of the industry, particularly the high construction costs. Cantor and Hewlett (1988) and MacKerron (1992), for example, both underscore that one of the gravest challenges facing nuclear energy is the immense cost of plant construction and development. These costs either stimulate or deter capital investors from supporting plant projects. The Alvin W. Vogtle nuclear power plant is often the primary example used to depict how much construction costs determine the viability of nuclear plants (Divan and Sharma 2024). This plant's number one issue has been cost escalations, and many argue that this an example that will undoubtedly arise again, challenging yet another future power plant buildout. Nuclear energy seems to become feasible where the economic and political conditions are most capable of absorbing or reducing costs.

Once the issue is framed this way, a broader logical progression begins to emerge. If high costs are one of the central reasons why nuclear energy power plants vary across states, then: What drives these high costs? Much of the nuclear energy literature points toward legislation and regulation.[2] It is clear that nuclear power is not merely a technology or a market good. It

[2] In this thesis, legislation and regulation are used interchangeably, with the idea that legislation leads to certain types of regulations.

is a politically authorized and legislatively mediated energy source. Its development depends on licensing, siting, safety requirements, financing rules, cost-recovery mechanisms, environmental review, and long-term political legitimacy. In other words, if costs matter for nuclear energy, then legislation matters too. And if state-level legislation matters, then understanding what shapes legislation becomes essential.

Hitherto, much of the nuclear energy literature often implicitly—sometimes explicitly—treats public opinion as a key explanatory variable for nuclear legislation. The logic appears straightforward: the public exhibits what it thinks about nuclear energy, and then politicians respond to those public preferences by shaping legislation and regulations accordingly. The legislative outcomes then affect the costs, feasibility, and political viability of nuclear development. This progression is widely present and seemingly accepted across nuclear and energy scholarship. Public opinion is often treated as an obvious, if not primary, part of the story. Despite the frequency with which this assumption appears in the nuclear energy literature, it remains to be tested directly, and especially at the state level.

This thesis is situated exactly at this intersection. It asks whether state-level public opinion on nuclear energy is indeed associated with state-level nuclear legislative outcomes in the way that the nuclear literature often assumes. More specifically, it examines whether changes in nuclear public opinion favorability is followed by corresponding changes in the composition of pro-nuclear and anti-nuclear legislation resolved across states. Lastly, it analyzes, through descriptive statistics, sponsorship and voting patterns across the nuclear energy bills collected.

This thesis is organized as follows. Section 2 is a brief examination of the background and history of nuclear energy, laying the foundations for what nuclear energy is, why it is important, its historical development, and the major factors that affect the industry (i.e., deregulated utility states or party politics).[3] Section 3 is the literature review and arguments section that discusses both the nuclear energy and political science perspectives, consensus, and contentions regarding the intersection between policy and public opinion. Section 4 outlines the research design and section 5

[3] Nuclear energy is complicated—across its engineering, economic, and social components—and section 2 aims to employ the reader with foundational knowledge that will facilitate a later meaningful grasp of this thesis's contributions.

will then present the empirical results. Section 6 integrates two case studies that help exemplify the results found in the prior section, and section 7 includes the limitations and discussion of the results found and analyzed across the empirical tests and case studies. Section 8 concludes this paper.

2. HISTORICAL AND INSTITUTIONAL BACKGROUND

2.1 Federal Development and Early Expansion of Nuclear Energy

Nuclear energy has been politically constructed since its inception. It has always existed in the context of regulatory approval, public authorization, and long-term capital commitment.[4] From the beginning, it was the U.S. that pioneered the development and advocacy for nuclear energy across the world stage (Miller and Volpe 2023).[5]

In 1946, the U.S. Congress passed the Atomic Energy Act (AEA), which created the Atomic Energy Commission (AEC) and the Joint Committee on Atomic Energy (JCAE; Miller and Volpe 2023). The AEA limited the use of nuclear energy for military purposes while investing millions into civil nuclear plant research and development (R&D; Miller and Volpe 2023; Parenteau 1976).[6] In 1953, President Eisenhower spoke at the U.N General Assembly, giving the famous Atoms for Peace speech in which he outlined the importance of implementing nuclear energy as the main source of both U.S. and global energy production (Miller and Volpe 2023). In this speech, President Eisenhower also called for minimizing nuclear stockpiles and implementing global inspections

[4] Nuclear energy, also known as atomic power, atomic energy, fission energy, nuclear, or nuclear power, is the harnessing of energy that is exerted from splitting atoms' nuclei to heat water and create steam that drives turbines. The fission process—the splitting of an atom's nucleus—occurs when an uranium-235 atom receives extra neutrons that cause it to split, creating a chain reaction with other atoms that are close by (Massachusetts Institute of Technology Nuclear Reactor Laboratory 2025). In 1972, the world's only naturally occurring nuclear reactor was discovered in Oklo, Gabon. This 2-billion-year-old, self-sustaining nuclear fission reactor highlights what many industry professionals admire most about the technology: its magnificence, emulated through its naturally occurring and powerful source of energy (American Nuclear Society 2012). Nuclear power enables secure, base-load energy that trumps and overcomes most meteorological conditions, unlike other renewable energy sources (i.e., wind or solar), while providing clean and low carbon-emitting power.

[5] In 1942, Enrico Fermi was the first individual to successfully bring about a self-sustaining fission reactor, known as Chicago Pile-1 (CP-1), beneath University of Chicago's Stagg Football Field (Parenteau 1976). This discovery, and the later Manhattan Project, eventually culminated in both the development of atomic weapons and the recognition of the abundant influence nuclear energy is capable of providing for civilian life (Temples 1980).

[6] The AEC was designed to centralize control of nuclear technology and manage its development for peaceful purposes, while the JCAE provided congressional oversight over developing this energy source and ensuring it stays within the confines of national security goals (Temples 1980).

of countries' nuclear arsenals (Bowen 2020).[7,8] A later revision to the AEA was made, which in turn created the Atomic Energy Act of 1954, enabling private actors to produce nuclear energy (Parenteau 1976). This marked the beginning of the U.S. commercial nuclear power industry and a period of major public optimism regarding atomic energy (Temples 1980). On Labor Day 1954, the first nuclear energy power plant began construction, the Shippingport Atomic Power Plant, which officially came online about three years later (Nicol 2010). The subsequent years were filled with ebbs and flows of countless political, regulatory, and social transitions that continuously changed how the industry came into being.

2.2 Regulatory Expansion and the Slowdown of Nuclear Growth

In the 1950s and 1960s, the U.S. embarked upon various types of programs that aimed to enhance and expand the commercial nuclear power industry by partnering with different private companies in order to hedge some of the high costs of capital.[9] The 1960s and early 1970s represented the first major wave of nuclear construction in the U.S., with utilities proposing dozens of new plants to meet growing baseload demand (Temples 1980). However this abruptly changed. Quickly into the 1970s, as the energy markets experienced extreme volatility and instability, the government began strict regulatory oversight over utilities (Davis 2012).[10] Before, the utilities could freely spend capital on larger projects, they now had to be extra cautious regarding their spending, specifically on large capitalized expenditures (i.e., nuclear power plants) because these costs would heavily drive price hikes, which consumers would immediately feel and protest (Davis 2012). Although many politicians still felt an urge to silo nuclear's advantages against its disadvantages,

[7] Subramanian (2010) claims that the politics of nuclear energy is centered around nations, largely the West, hoping to use nuclear energy as a vehicle to mitigate and subdue the risk of nuclear weapons.

[8] Bowen (2020) explains how President Eisenhower's Atoms for Peace speech paved the way for the later emergence of the IAEA in 1957 and the NPT in 1968. This eventually led to the 100 reactors built out in the U.S. and exported abroad.

[9] The U.S. government spent approximately $28 billion and then $36 billion on nuclear reactor R&D from 1950 to 1962 and 1963 to 1975, respectively (Miller and Volpe 2023). Around this period, the AEC predicted that about half of the total U.S. energy would eventually be derived from nuclear (Davis 2012). During this period—between the 1950s and 1960s—the everyday consumer was content with their low utility prices, which came about due to lower prices of commodities, low inflation, and economies of scale.

[10] There was a spike in inflation during the 1970s that completely disseminated the previously low nominal prices of electricity, and thus, firms were forced to raise costs in order to cover the inflationary expenses (Joskow 1974). This is one aspect that led to the harsh government oversight.

pushing forward with the nuclear energy agenda, the public opposition was too strong and halted these desires (Miller and Volpe 2023). Nuclear expansion slowed not because physics failed, but because regulatory, political, and public dynamics changed.

Around the same period, rising environmental activism and the first Earth Day in 1970 contributed to growing skepticism of nuclear power in the public sphere. The Nuclear Regulatory Commission's (NRC) increased regulatory requirements reinforced a feedback loop between more regulation and increased levels of fear (Taylor et al. 2012). In 1974, there were 125 new nuclear power plants planned to be built, which drastically dropped to 64 by 1977 and two by 1984 (Miller and Volpe 2023). Project cycles and costs increased with the tighter regulatory and litigatory environments, "which in turn led to the cancellation of many projects." (Divan and Sharma 2024, 38). Nuclear expansion slowed because construction became more politically difficult and thus financially infeasible. Bottom line, this brief historical review showcases the undeniable reality that nuclear energy is greatly affected and actualized by public policies, both on a federal and state level.

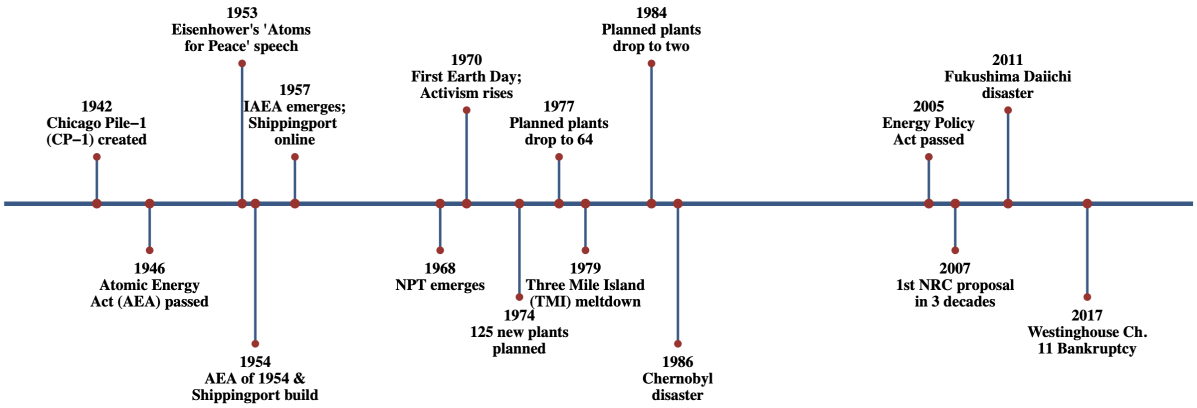
2.3 Nuclear Accidents and Their Political Consequences

Regulatory environments are evermore sensitive and influential on the nuclear energy industry due to its accidents. Accidents increase public fear perceived around nuclear energy (Slovic 1987). The three main global nuclear accidents amplified legislative and regulatory headwinds utilities faced. The first was Three Mile Island (TMI). On March 28, 1979, the TMI Reactor II experienced a partial meltdown that resulted in a minor radioactive spill (U.S. Nuclear Regulatory Commission 2025).[11] TMI is an exemplary case study that highlights how when constituents' concerns increase about this form of energy because of accidents, it leads to even more pushback against utilities investing in nuclear power (Davis 2012). This was, and still is, one of the biggest, most contentious, and groundbreaking nuclear energy-related events in U.S. history (U.S. Nuclear Regulatory Commission 2025). The apex was Chornobyl, which completely halted everything (Davis 2012). The Chornobyl accident led to a reversal of U.S. nuclear power plant expansion,

[11] TMI accident was found to have no effect on any of the plant workers or subsequent first responders (U.S. Nuclear Regulatory Commission 2025).

finding that plants constructed post-1987 were majorly affected by the global bearish outlook on this energy source (Richter and Wurster 2016). President Carter and his administration then implemented restrictions on nuclear exports, which created serious obstacles for the domestic U.S. industry and gave opportunities to competitors to gain power.[12] Finally, the Japanese Fukushima Daiichi nuclear disaster in 2011 had similar impacts, and coupled with lower natural gas prices and persistent cost overruns, the coined "nuclear renaissance" of the early 21st century was sharply ended (Davis 2012; Lloreda 2025).[13] Bottom line, the key here is not engineering details. The key takeaway of this section is that nuclear accidents reshape public opinion, public opinion affects politics, politics affects regulation, and regulation affects costs, which then affects buildout. Please find a visual outline of the events presented above in chronological order in Figure 2.

FIGURE 2. Timeline of Major Nuclear Energy Events & Milestones



Note: Figure 2 illustrates the timeline of major nuclear energy events and milestones, tracing key developments in policy, technological expansion, and major accidents over time.

[12] Overall, between 1970 and 1973, the U.S. total share of global reactor exports was 86%, which declined to 39% between 1978 and 1980. By the 1990s up until 2020, America only exported six nuclear power reactors, compared to Russia's 16 (Miller and Volpe 2023).

[13] Many coin the period of time between the early 2000s and 2011 as a "nuclear renaissance" (Lloreda 2025). Rising fossil-fuel costs, climate concerns, new legislation from the 2005 Energy Policy Act that allowed loan guarantees and tax subsidies for plants, and new reactors, sparked hopes that nuclear power could make a comeback (Davis 2012; Lloreda 2025). In addition, President Obama authorized federally guaranteed loans to encourage power plant builds (Taylor et al. 2012). In 2007, the NRC received its first proposal for a new reactor license in almost three decades, and quickly received an additional 24 new proposals (Davis 2012).

2.4 Why Nuclear Power Is Expensive

Nuclear power is defined by high upfront capital costs and long construction timelines. The majority of outstanding literature explains that the key and most important data point for understanding whether to pursue a nuclear plant project is the costs of the system itself, mainly the construction costs which are most notably measured by the Overnight Construction Cost (OCC; Davis 2012; Lovering et al. 2016).[14] OCC is an important metric because it excludes financing costs, also known as Interest During Construction (IDC), examining what the costs of a plant would be if it were all built in one night, which would exclude any expenses that accrue over time.

The different drivers that the nuclear energy industry offers for rising costs are longer lead times, design complexity, uncertainty of meltdowns, financing risk, and, in some settings, competition from cheaper alternatives like natural gas. However, the overarching issue that consistently comes up within the literature to explain the high costs is legislation and the changes in regulatory environments. For example, Lovering et al. (2016) explain that many aspects contribute to increases in OCC; however, an essential reason is the regulatory and safety landscapes prior and post nuclear accidents. Reactors under construction during TMI experienced major cost escalation by orders of magnitude, depending on the period of time their construction began and how much of the nuclear accidents' secondary effects they experienced.

To reiterate what was established in the introduction, this paper is grounded in the widely

[14] Lovering et al. (2016) explain that they mainly focus on OCC for two main reasons: (1) It is the dominant component of lifetime expenses for nuclear power, and (2) it is the cost that varies the most over time and between regions. OCC includes the expenses correlated with engineering, procurement, and construction (EPC), as well as the plant owner's costs, such as the land, preparation of the property, project oversight, employee training, contingency allocations, and commissioning expenses (Lovering et al. 2016). OCC is about 55% of total costs for nuclear power generation, compared to IDC's 15%, 15% for operations and maintenance, and 15% for the handling of used fuel. However, it is still important to remember that as construction periods increase, the IDC will play a more major role in increasing the overall expenses of construction (Davis 2012). Lovering et al. (2016) found the following cost breakdowns in OCC. Between the years 1954 and 1968, there were 18 plants started and completed at an initial price of $6,800/kWh to $1,300/kWh, which is a 14% annualized decrease in costs, while reactor sizes increased from 60 MW to 620MW. Between 1964 and 1967, there were 14 reactors completed with their OCC decreasing by an annualized rate of 13% to a range of $1,000/kWh to $1,500/kWh, with an increase in reactor size from 800 MW to 1,000MW. Then, between 1967 and 1972, there were 48 completed reactors with their OCC increasing from a low of $600/kWh to $900/kWh to a range of $1,800/kWh to $2,500/kWh, which is an annualized increase of 23%. The last set of completed reactors was separated into a fourth group, which lasted from 1968 until 1978, and included reactors that were under construction during TMI. Their OCC rose from $1,800/kWh to $11,000/kWh.

accepted notion that high costs are a leading factor—if not the leading issue—that determines where and to what degree nuclear energy is able to exist and expand in different areas. When costs are too high in specific states and or regions, nuclear energy buildout is simply not feasible or attainable. Thus, costs are often defined by the nuclear energy scholarly works as the main explanatory variable for the number of nuclear power plants across U.S. states.

2.5 The Role of Legislation in Driving Nuclear Costs

Nuclear energy academics and professionals, as mentioned above, mainly center the high-costs headwinds on over-regulation. The extensive nuclear energy literature often expresses how nuclear development is legislatively mediated through regulations that increase costs. Unlike many sectors, nuclear energy requires political authorization at nearly every stage of its lifecycle, making it uniquely sensitive to regulations. When there is abundant anti-nuclear energy legislation, which leads to harsh subsequent regulatory structures, the industry faces a reality that is defined by an inability to pursue such projects, disincentivizing investors' capital allocation. Hughes and Lipscy (2013) explain how legislation is often imperative in either achieving or challenging certain energy-related outcomes.[15] In the case of this thesis, the "energy-related outcomes" are the high costs associated with the sector. Therefore, it would be difficult to solve the issue of these extreme expenses without looking at the impact of legislation.

2.6 State-Level Institutions and Energy Policy Variation

In the 21st century, the inaction of the federal government to appropriately and diligently respond to climate change has resulted in state legislatures becoming empowered to actively apply policy measures that aim to frantically decrease their own carbon footprint, increase renewable energy sources, and increase total energy generation within their state (Carley 2011). Heffron (2012) explicitly writes how the state is positioned as a significant player for the nuclear energy industry,

[15] Hughes and Lipscy (2013) claim that one of the key areas of future energy research should encompass what public opinions and interest group preferences will be for different renewable energy production.

especially in incentivizing new builds.[16] This emphasis highlights states and their legislatures' role in energy production and transitions. For example, Texas's state policy implementation of the Renewable Portfolio Standard (RPS) that mandated 5,880/MWh of energy be renewable by 2015 is an example of the imperative role legislation can and does play in energy. The state experienced an increase of 2,292/MWh by 2009.

Energy outcomes seem to only work if they are structured to match that state's subjective legislative components (Carley 2011). Essentially, energy transitions and innovations are decentralized in the U.S., and it is up to state legislators to determine the feasibility and implementation of certain projects. The main thing to take away here—in the context of this thesis—is that state legislators, and the regulations they implement, play a crucial role in determining how efficiently energy projects, including nuclear, will come to fruition. Berthélemy and Escobar Rangel (2015) find that longer lead times for nuclear reactor construction are caused by stricter safety regulations that directly increase costs. Their takeaway is that the regulations are the bottleneck issue that can affect the overall costs of buildouts and, therefore, the incentives to pursue such projects. They synthesize the idea that nuclear energy cost escalations are not purely a technological issue, but instead are a function of regulatory environments.

Meckling et al. (2022) similarly underscore the crucial nature of legislation for energy transitions through an international analysis. One qualitative example they include of the government's role in energy transitions is France and its state-owned electricity (SOE) utility Électricité de France (EDF). EDF enacted a bold energy transition into nuclear energy through regulatory efficiency and thus cost reductions. The country increased its total output, as a share of total energy generation, of nuclear energy from 8% to 70% in less than twenty years. Furthermore, in response to the recent Russian invasion of Ukraine, President Macron immediately announced 14 new-generation reactor projects, all continuously highlighting the central token that the government and legislators are a key component in the implementation of energy (Meckling et al. 2022).

[16] The New England Committee on Atomic Energy created a report which signaled to the federal government about the states' yearning to be involved in the decisions surrounding local nuclear power plants. The Atomic Energy Act was then amended in 1959 to add the provision, "Cooperation with States", which officially enabled the path for states to begin influencing their domestic nuclear energy industries (Parenteau 1976).

Similarly, in certain nations like Russia and China, their nuclear energy industry are also SOEs, which enable more effective and rapid reactor buildout (Hibbs 2017). These countries are able to expand their domestic and foreign nuclear energy projects in full force, while the U.S. and other Western countries' domestic regulatory bottlenecking has inevitably led to the entire industry coming to a critically dangerous deterioration point. Shleifer (1998) explains how SOEs, in most cases, actually lead to inefficiencies and cost redundancies. He explains that the private sector is often better at innovation. Nevertheless, he also explains how, in some cases, government controlled SOEs make the most sense. The times he outlines where government ownership might be superior to the private sector are when cost reductions hurt the products, innovation is not necessary, and competition is weak. As outlined above, the nuclear energy industry actually benefits from commercialized, turnkey solutions that are tailored to a specific regulatory environment. Thus, when applying Shleifer's (1998) presented comparative advantages of SOEs, the nuclear energy industry would fall in line with these claims, supporting Hibbs's (2017) findings that governmental structures that enable SOE plant ownership benefits buildout. These papers highlight how nuclear energy plant build-outs are not market-driven; rather, they are state-supported through public policy.[17]

Even in contemporary papers, this sentiment of double-clicking on legislative outcomes to better understand higher nuclear costs is widely employed. Bowen (2020) explains the benefits of the US increasing its engagement in nuclear power and emphasizes how policy decisions shape global and domestic nuclear deployment. Lloreda (2025) further explains how the "nuclear renaissance" and its narratives depend on regulatory reform and policies, and that the industry has to address these two issues in order to manage the headwinds.

The takeaway is the evident and unavoidable place legislation has within nuclear energy,

[17] Yet, some still argue that there are different reasons for nuclear's high costs other than just legislation. One example Davis (2012) gives is an increase in the supply of natural gas, which would lower the overall costs for utilities of power generation. He notes that, "the chairman of one of the largest U.S. nuclear companies recently said that his company could not break ground on a new nuclear power plant until the price of natural gas was more than double today's level and carbon emissions cost $25 per ton." (Davis 2012, 50). When future nuclear costs are difficult to predict with confidence, investors become even more sensitive to prevailing commodity prices and competing energy alternatives (Neij 2008). All in all, this example of commodity prices driving nuclear energy's high costs aims to exemplify how different mechanisms are also presented in affecting nuclear energy's high capital costs, aside from public policy. Nevertheless, as seen above, there is an overwhelming industry consensus that centralizes the explanation for why nuclear power faces dangerously high costs around the influence of regulations.

specifically in driving high costs for buildouts and thus making projects impossible to pursue. To reiterate, the research question presented in the introduction asks: Why do different states have different amounts of nuclear power plants? What explains this variation? The progressing logic that therefore seems to appear to answer this question evolves as follows: (1) one of the most prominent issues facing the nuclear energy industry is high costs, and (2) harsh or overbearing regulations seems to be one of the most essential reasons for these costs.

Nuclear power requires licensing, siting, financing, and political legitimacy, and thus, state governments and state-level institutions become an impregnable part of the industry. Power plants all exist in the context of states, and many legislative barriers operate at the state level. Therefore, nuclear energy is not just a technical or national policy issue; it is a state political issue. If costs matter, then states and legislation matter; therefore, understanding what shapes state legislation becomes essential. Overall, nuclear energy is a legislatively mediated, politically authorized, and publicly contested energy source, making it an ideal domain to test theories of democratic responsiveness at the state-year level.

3. LITERATURE REVIEW AND ARGUMENTS

3.1 Public Opinion in the Nuclear Energy Literature

Sections 2.5 and 2.6 reviewed the broadly accepted notion, across both nuclear power and energy literature, that the high costs of nuclear energy seem to increase in certain areas over time due to restrictive legislations. Heavier and overbearing regulations lead to more expensive projects for developers because of additional safety, licensing, and approval hurdles that increase overall lead times and thus expenses spent. Now that the relationship between the industry's high costs and legislation has been laid out, the question then becomes: What influences legislation?

Nuclear energy literature largely seems to treat public opinion as a central factor shaping policy outcomes. There is seemingly a conventional wisdom that public opinion is the key explanatory variable for nuclear energy legislation, being that legislators respond to public sentiment, linking regulations to opinions and, ultimately, to costs (Berthélemy and Escobar Rangel 2015).

Especially within democracies, the lionshare of nuclear energy literature argues that public opposition stands as a strong determinant in legislative outcomes (Miller and Volpe 2023). Taylor et al. (2012) highlight examples that encompass the imperative role public opinion has played on policy outcomes which enabled buildouts to increase and prosper. High favorable public opinion led to the Price-Anderson Act of 1957, which decreased the risk utility companies were potentially exposed to if there were to be a plant meltdown or accident.[18] Then, the increase of distress towards nuclear as an energy source in the early 1970s, was followed by certain federal legislations that made the regulatory process more difficult, which harshly halted buildouts.[19] Even if new technologies are introduced that increase the safety of nuclear power plants and make them more efficient, public opinion about nuclear energy maintains its heavy influence on legislation and resulting financial pressures (Taylor et al. 2012).

Furthermore, through more extensive and international research regarding different countries and their buildout costs, other than just the U.S. and France, nuclear energy costs do not inherently increase over time, but rather seem to stabilize (Lovering et al. 2016).[20] These findings reinforce the link between costs, policy, and public sentiment by showing that cost escalation is not inherent, but varies with regulatory environments shaped by public attitudes. In particular, heightened anti-nuclear sentiment following major accidents led to stricter regulations, increasing OCC (Lovering et al. 2016). Additional work similarly emphasizes how policymakers must remain sensitive to public mistrust of nuclear energy, which would eventually shape legislative behavior through electoral incentives (MacKerron 1992).

[18] In 1957, the JCAE urged congress to pass the Price-Anderson Act, which protected utilities from up to $560 million in losses in the case of a plant meltdown and or accident. Subsequently, orders for reactor buildout increased, and came into operation near the Shippingport reactor in that same very year. The JCAE is known to be one of the most successful and impactful joint committees in the history of Congress (Temples 1980).

[19] The separation of the Atomic Energy Commission (AEC) into the Nuclear Regulatory Commission (NRC) and the Energy Research and Development Administration (ERDA) was one such example.

[20] Lovering et al.'s (2016) comprehensive analysis spanning from the 1960s until the 2010s increases the data and literature to include 58% of all reactors built globally during that same period of time previously examined in the three seminal papers: Hultman and Koomey (2007), Grubler (2010), and Escobar-Rangel and Lévêque (2015). By expanding the analysis of more power plants in different regions, they were able to find different results than prior literature did. Through the examination of seven additional countries, Lovering et al. (2016) found that construction costs, in some areas, actually stabilized over a period of time, with some cases, like South Korea, experiencing a cost decrease in OCC during reactor developments from 1984 until 2008. They showcase how most of these papers are based on power plants constructed in the 1970s and 1980s in the U.S., which most likely suffered from first-mover cost disadvantages.

The Shoreham Nuclear Power reactor, managed by the Long Island Lighting company, is a perfect example where a nuclear plant was 100% completed and connected to the grid; however, because of tensions and issues arising from local communities, the plant consequently faced regulatory gridlock and thereafter incurred too much financial distress, leading to its cancellation (Davis 2012). Not a single watt was ever generated. This case illustrates how local opposition can translate into regulatory gridlock and project failure. Bordoff et al. (2025) also strongly tie the success and expansion of the nuclear energy industry to public opinion and the regulations policymakers enact. They describe the necessity of the public increasing support for nuclear energy expansion. Divan and Sharma (2024) claim that because of community pushback which increased regulations, the costs of nuclear energy increased; however, do not include any quantitative analysis to prove this relationship. It is clear that the nuclear literature urges not to discount public opinion's presence and impact in shaping legislation (Meckling et al. 2022).

Across these studies, public opinion is consistently treated as a key factor in explaining legislative outcomes. Whether through electoral incentives, cost visibility, salience, or political signaling, nuclear energy scholars frequently return to public sentiment as an important driver of policy; however often, they do not substantiate these claims with quantitative analysis.

3.2 Bringing Political Science into the Analysis of Nuclear Policy

While nuclear energy scholarship often assumes public opinion shapes policy, political science offers a more contested view. There is a large set of political science work done on public opinion and state policy, and an existing nuanced debate, which are both often not highlighted across the nuclear energy literature. On one hand, work on democratic responsiveness suggests policy follows public preferences, but other research emphasizes the role of parties, institutions, and interest groups as mediating factors. Thus, a relationship that is often treated as self-evident in the nuclear energy literature is, in fact, theoretically questioned in political science. The issue is not simply whether public opinion matters, but how much, under what conditions, and relative to what other forces.

Hughes and Lipscy (2013) outline how energy cannot and should not be understood in the absence of political science. They argue that energy is not only an economic commodity; it is a complex issue grounded in political science. They urge researchers to always include energy in the international political economy and political science academia as a continuous part of the ongoing conversation, not just when it is convenient or relevant.[21]

This thesis applies a political science tension and debate to the assumption found in nuclear energy literature, bridging a disconnect between two scholarly conversations. On one hand, as seen above, the nuclear energy scholarship often treats public opinion as an explanatory variable for legislation and regulations that ultimately drive higher costs. On the other hand, within political science scholarship, it is not clear whether public opinion is the only explanatory variable for legislative outcomes; it is an argued discussion that contains varying schools of thought. This thesis, thus, highlights the assumptions often described in nuclear energy literature, and empirically tests them to maybe find an unexpected reality between public opinion and legislative outcomes.

Political science theories can largely be segregated into two main strands that attempt to explain legislative outcomes. The first strand is compiled of a collection of classical political science papers underscoring the direct importance of public opinion on legislative outcomes. The second strand examines whether there are possibly other factors that have a place in this equation. This second camp often analyses whether other components might also contribute to the so-called "positive relationship" between public opinion and policy. This second group's intention is not to debunk the importance of public opinion, but rather to highlight a wide-ranging set of varying other factors that often either completely or somewhat shadow public opinion's effect on policy.

This literature review proceeds in four parts. First, it presents the political science strand that emphasizes the generally strong responsiveness of policy to public opinion. Second, it outlines the core argument this thesis tests: public opinion shapes nuclear energy legislation. Third, it examines a

[21] Throughout the peaks of the 1970s oil crisis and energy demand increase, the share of energy literature among the top political science academic journals increased from 1% to 4%, while in times of weakened demand, lower prices, and thus lower relevance, energy was researched less. Unlike these findings, this thesis aims to highlight the relevant intersection of political science and nuclear energy, regardless of the fluctuations in supply and demand (Hughes and Lipscy 2013).

contrasting strand of political science literature that highlights how this relationship is often mediated by factors such as interest groups, partisanship, and economic elites. Finally, it introduces a second argument, asking whether additional factors systematically intervene between public opinion and legislative outcomes. These arguments are less so complete theories, and more so anchors of inquiry. This thesis is unaware and unattached to either one of these possible explanations for legislative outcomes, and thus is theoretically grounded in testing both of them to better understand which one seems to hold more truth and applicability.

3.3 The Classical Responsiveness Tradition

This section is an integrated analysis of a myriad of research that home in on the following critical point: public opinion has a positive effect on policy outcomes. This first strand begins with the fundamentals of democratic theory. Gilens and Page (2014) describe Majoritarian Democracy as a function of the average citizen's will, and their direct influence on policy through the mechanisms of democracy (e.g., elections). Theories of Majoritarian Democracy go as far back as Tocqueville's (2000: 1835–1840) reflections on American society—both praising and criticizing the way democracies empower citizens—to Abraham Lincoln's address saying, "of the people, for the people, by the people", to Robert Dahl's groundbreaking work on "populistic democracy" (Lincoln 1863; Dahl 1956).

Stemming from Monroe's (1979) groundbreaking quantitative examination of these questions, most subsequent papers closely scaffolded upon his research with increasingly sophisticated empirical tools. Monroe (1979) set the conversation with a preliminary assessment of the relationship between public opinion and public policy. Before his work, there was a lack of literature that examined responsiveness. It is one of, if not the first, empirical tests of public opinion's relationship on public policy.[22] His dataset spanned from 1960 until 1974, and found that there was an overall 64% consistency level between public opinion and policy changes. Yet, he found variations in the consistency levels across different domains of policy. For example, he found that when it came

[22] Monroe (1979) prefaced that his work is challenged with many limitations, one of which is that, up until the late 1980s, there was a lack of longitudinal survey public opinion data, which limited his work to a certain extent.

to foreign policy, there was a 92% consistency level, while energy and environment had 79% consistency, and defense fell below a 50% level of consistency.[23] Monroe (1979) posits that about two-thirds of the time, there seems to be consistency between public opinion and public policies, and therefore concludes that alignment between public sentiment and public opinion is very relevant, and that most likely cases that skew away from these findings are due to issues that arise from legislative gridlock or policy decisions being delayed and or forgotten. He reframes democratic responsiveness as a probabilistic, institutional process constrained by structural friction, while having an undeniable positive relationship between public opinion and policy.

Studies continued to evolve—post Monroe (1979)—diving deeper into a directional change analysis between these two factors instead of the prior static examination of the consistency. Page and Shapiro (1983) are seminal scholars that elevated these academic advancements.[24] They found that 66% of the time, congruence between public opinion and policy was present. This was similar to Monroe's (1979) 64% findings that aligned with majoritarian congruence. In addition, they also find that there was no evidence for pure elite dominance and or for pure interest group override. Page and Shapiro (1983) conclude that democratic responsiveness is present in American politics, ending with the message that public opinion has an undeniable effect—as a vehicle of change—on legislation. Yet, they also warn to not draw overarching conclusions about the concrete impact it has across all cases. Their work seems to strengthen the majoritarian tradition introduced by Monroe (1979).

It was further found that responsiveness is not episodic (Stimson et al. 1995). Stimson et al. (1995) introduce dynamic responsiveness and how government policy shifts with the macro public mood.[25] They argue that politicians are not dumb or naive, but rather, they: (1) are rational actors

[23] The issue of defense had a 43% level of consistency (Monroe 1979).

[24] Page and Shapiro (1983) also describe the side of literature that argues for policy shaping public sentiment, whereas politicians, either through the mechanics of coercion or education, affect constituents' beliefs. However, they clarify that these possibilities are not mutually exclusive and can often be more prevalent across different policy issues that are either more or less salient or largely temporal factors.

[25] Stimson et al. (1995) define dynamic representation as follows: when public opinion changes, policy makers sense that shift and respond to it with subsequently altered legislation. They claim there are two main ways that public opinion transforms into policy: elections and politicians' rational conception of public sentiment. Responsiveness means that politicians' sensitivity to public opinion is inherently linked to temporal factors; time is a pivotal factor in responsiveness. Dynamic derives from the public shifting their beliefs across the same or different issues.

that aim to achieve maximum utility in the present by forecasting the future, (2) are sensitive to what their constituents yearn for, and (3) largely converse and agree with one another regarding where the direction of the public opinion current is flowing towards. They write, "the main story is that large-scale shifts in public opinion yield corresponding large-scale shifts in government action." (Stimson et al. 1995, 559). They found no evidence for hesitation in responsiveness. Monroe (1979) helps us better grasp the cross-sectionality of congruence, followed by Page and Shapiro (1983), who further highlight the directionality of consistency, and Stimson et al. (1995) provide case studies of systemic macro-responsiveness that is based on structural, temporal, and embedded political adaptive factors.

Furthermore, Smith (1999), for example, explains that he did not find statistical significance for either the structural or privileged position of business on policy. He explains how, when politicians are faced with the dilemma of either heeding the public or favoring business professionals, the former can usually be found more significant than the latter. He explains that due to the nature of how politicians often disagree on which policies bring forth the best solutions for specific issues—even if business actors suggest certain approaches to better the economy—they often might not apply those said suggestions simply because of disagreement with their potential outcomes. As Smith (1999) postulates, even when many claim that the private sector will occasionally leverage its power and resources to influence policy, it is common that either politicians squarely prefer to side with public sentiment or simply disagree with the approaches the private sector suggests.

Within political science, over the span of these various theoretical publications, the debate no longer was about whether "public opinion matters to policy", but rather "how much", "under what conditions", and "relative to what factors" (Burstein 2003). Reviewing a large sum of studies—spanning across 20+ years—it was found that public opinion's effect on policy is substantial and that external factors such as interest groups do not overshadow the impact of public sentiment on legislation, and that responsiveness does not seem to change over time. Burstein (2003) very neatly explains that, "No one believes that public opinion always determines public policy; few believe it never does." (29). He illustrates that consistency seems to be well over 50% amongst

the majority of cases presented in the different papers, and that there is insufficient evidence to claim that responsiveness has declined over time. He concludes, that (1) public opinion seems to have a substantial relationship and effect on policy, (2) as issues increase in salience so does responsiveness, (3) there was not a substantial change of public opinion's impact on policy due to interest group intervention, (4) responsiveness also does not seem to decrease over time, and (5) that there is an urgent need for more data to continue to compare responsiveness across various geographical regions and issue types.

Across all of these theorists, the degree in which an issue was salient was often paid close attention to. Some scholars found that salient issues tend to have higher levels of congruence (Burstein 2003; Monroe 1979; Page and Shapiro 1983).[26] For example, social versus economic issues ranked higher on salience and thus on congruence as well (i.e., 78% and 66%, respectively; Page and Shapiro 1983). It seems that public opinion does have a significant effect on legislative outcomes, especially when the issues themselves are salient. However, while salience affects the strength of this relationship, these studies do not treat it as undermining responsiveness; rather, they consistently retain public opinion as the meaningful influence on policy outcomes.

What is important to remember regarding this political science strand of theory is that there has consistently been found an effect of public opinion on policy for more than 50% of the time. These findings seem to be crystallized and congruent even as quantitative measures have evolved which have yielded progressively more conservative, valid, and reliable results. Collectively, these papers overwhelmingly found that the classical majoritarian responsiveness between public opinion and public policy is significant and present.

3.4 Argument 1: Nuclear Legislation as Responsive to Public Opinion

The first argument of this paper will attempt to understand whether this relationship, explained in section 3.3 is true. The assumption that public opinion is the primary driver of legislative

[26] Monroe (1979) examined the saliences of each of the issues the questions he included accounted for. To determine the questions' salience level, he cross-referenced each issue with a different corresponding public opinion question. For example, he used Gallup's survey question which asked, "What do you consider the most important problem facing the nation today?" (Monroe 1979, 7).

outcomes is not uniformly accepted within the political science literature, despite its prominence in nuclear energy scholarship. This thesis therefore tests this central question: To what extent does public opinion shape nuclear energy legislation? This paper's review was not able to locate any such systematic evaluations in the context of nuclear energy previously done.

Politics matter for nuclear energy, but possibly not in the ways that the nuclear energy industry might expect. The latter assumes that public opinion is not static, shifting over time and across states, and that legislators, particularly in a state-level system, adjust legislative behavior in response to public sentiment shifts. The first argument tested in this thesis is that public opinion influences legislative outcomes at the state-year level. This relationship can be summarized as follows:

1. Higher public favorability $\rightarrow$ more pro-nuclear legislative activity

2. Lower public favorability $\rightarrow$ more anti-nuclear legislative activity

This framework assumes that public opinion is not static, but varies across states and over time, and that legislators respond to these shifts with a temporal lag.

3.5 Looking Past Responsiveness

The following section will now move onto the second strand that outlines the political science discourse regarding public opinion and public policy. It will mainly focus on how other factors, like interest groups, partisanship, and economic elites play a role in the relationship between public opinion and policy. The initial political science strand argued for the simple, direct impact of public opinion on legislation; however, in this subsequent section, the literature argues that this "simplistic" relationship is actually more complicated, and can often be distorted due to various other reasons.[27] In addition, through an overarching review of many nuclear energy papers, it is clear that

[27] Additional political science literature further highlights how institutional and structural factors shape the extent to which public opinion translates into policy. Wlezien and Soroka (2016) explain how different governmental structures, such as electoral and parliamentary systems, can play an influential role in determining how, and to what extent, public opinion is reflected in policy and policy shifts. Clulow and Reiner (2022) similarly argue that democratic institutions act as the bridge between public opinion and legislators, playing a central role in determining energy outcomes within a given region. Factors such as reelection incentives and the framing of issues to the public are often shaped by institutional design, and can weigh heavily on legislative outcomes. Examining transitions toward clean energy between

there is relatively little systematic work examining the influence of external factors like interest groups or partisanship on nuclear policies. Thus, this review of the political science literature about external mediating factors felt even more necessary in light of this apparent lack of research across nuclear scholarship.

3.5.1 Interest Groups

The factor that has repeatedly been mentioned to affect the impact of public opinion on policy outcomes is interest groups. Many claim that interest groups' effects sometimes overrule the influence of the average voter's public opinion. Actors like the "Sierra Club, Friends of the Earth, the Natural Resources Defense Council, the Scientists' Institute for Public Information, and the Committee for Nuclear Responsibility, along with such prominent individuals as consumer advocate Ralph Nader and scientists Barry Commoner, John Gofman, Arthur Tamplin, Harold Urey, George Wald, Linus Pauling, and George Kistiakowsky" have all played significant roles in influencing buildouts at various moments in history (Temples 1980, 247).

Gilens and Page (2014) examine two theories of interest group influence on policy. They define the two camps as follows: Majoritarian Pluralism, where interest groups that represent the public or the largest groups hold power, versus Biased Pluralism, which is the system that generally tends to favor business professionals and corporations. They found that Majoritarian

1980 and 2020, Clulow and Reiner (2022) found that in advanced economies, stronger democratic processes often enhance the use of nuclear energy relative to developing nations, due in part to differences in renewable energy capacity. At the same time, other work suggests that these same institutional features can amplify negative public sentiment. Richter and Wurster (2016) find that governmental structures affect both the number of nuclear power plants and the diffusion of anti-nuclear sentiment across countries. Among democracies, policy diffusion following nuclear accidents can reduce acceptance of nuclear energy, in part, due to the freer flow of media compared to autocracies. Subramanian (2010) further notes that nuclear energy politics are often intertwined with broader geopolitical concerns, particularly efforts by Western nations to mitigate nuclear weapons risk. Kwon et al. (2024) similarly show that negative public sentiment toward nuclear energy is largely driven by the conflation of nuclear power with nuclear weapons, war, and conflict, reinforcing the role of institutional environments that enable information diffusion in shaping public opinion and its policy effects. Beyond domestic institutions, regional and international political economy dynamics also shape the relationship between public opinion and policy. Mildenberger and Stokes (2019) explain how energy policymaking in North America is embedded within fragmented regional systems, where cross-border trade in fossil fuels plays a defining role. As energy systems transition away from fossil fuels, these entrenched relationships are likely to influence the feasibility of alternative energy expansion, including nuclear. Relatedly, Richter and Wurster (2016) show that democracies, being more integrated into global trade and economic networks, are more exposed to international pressures. During periods of negative sentiment, democratic systems tend to reduce nuclear expansion more than autocracies. In this sense, public opinion within a single state may be constrained by cross-border dependencies and global economic conditions, linking domestic policy outcomes to broader structural forces.

Pluralism—which would align more with the Majoritarian Democracy perspective found in the prior political science strand—exhibited less significant impact on policy compared to the biased interest groups that center their preferences around private business objectives. Hughes and Lipscy (2013) further claim that the politics of energy are really pronged on two tiers: individual people and interest groups. They explicitly say that in Germany, although the decision to abandon nuclear energy post Fuckashima in 1986 might have been influenced by public opinion, it was mainly a factor of interest group influence.

Lax and Phillips (2012) provide one of the most comprehensive empirical tests of policy responsiveness at the state level, using multilevel regression and poststratification (MRP) to estimate public opinion across 39 policies. They ask this essential question: How responsive is policy to public opinion? They not only look at whether public opinion sentiment matches policy shifts, but also examine whether those policies are, in effect, actually congruent with what the public wants to happen. Representation largely means that policy matches public opinion, but congruence asks whether the policy achieves, or works towards, what the public seeks to materialize. They found that policy matches public opinion $\sim$50% of the time, meaning that there is something else that is affecting policy the other half of the time. They tokenize this phenomenon as a democratic deficit, indicating that other factors mediate the relationship between opinion and policy.

To explain the "democratic deficit", Lax and Phillips (2012) examine the role of institutions, salience, partisanship, and interest groups. Their findings suggest that while interest groups do not systematically determine whether policy matches public opinion, they play a more targeted role in shaping how policy deviates when it does. In other words, when policy outcomes do not reflect what the majority wants, interest groups influence in which direction that divergence takes, either pushing the policies closer or further away from the majority opinion based on their own incentives. This implies that incongruence is not random, but structured, with interest groups helping to channel policy outcomes in ways that reflect asymmetric pressure, resource imbalances, and strategic advocacy. Taken together, their results suggest that public opinion alone is insufficient to explain legislative outcomes, and that external political forces—like organized interest groups—mediate

how responsiveness is expressed in practice, particularly in cases where policy does not align with majority preferences.

Many scholars claim that interest groups enhance policy's responsiveness to public opinions by providing necessary resources to politicians (Burstein 2003). Hall and Deardorff (2006) provide an alternative explanation to the existing literature regarding lobbying. They posit that lobbying is best understood not as a quid pro quo mechanism but as a "legislative subsidy," where lobbyists provide information, expertise, and labor to lawmakers who already support their cause. Lobbying is explained here as a reinforcer with the necessary resources and financial support that legislators otherwise would not have received. If applying Hall and Deardorff's (2006) theory on lobbying, interest groups' effects and influence are even more accentuated. Interest groups' large acumen of resources, motivation, and human capital often enables them to truly influence politicians, regardless of what their constituents might want. This brief review evinces that existing literature clearly outlines the substantial place interest groups have within policy influence, often reshaping or conditioning how public opinion is translated into policy.

3.5.2 Partisanship and Party Politics

Different literary works, some of which have already been discussed, found that partisanship and party politics also disrupt the classical positive-responsive relationship between public sentiment and policy. Lax and Phillips (2012) explicitly tested whether party politics, alongside salience, ideology, and institutions, mediates the relationship between public opinion and policy, as mentioned above. They found that even when public opinion is held constant, party control and electoral competition shape whether policy reflects what voters want. Monroe (1998) re-examined his initial groundbreaking paper and found that policy still aligned with public opinions; however, only for 55% of the time between 1980 and 1993, which is a decrease from his original conclusion of 64% consistency between 1960 and 1974. One reason he posits for this decrease is because of the challenges of implementing change. From 1981 to 1992, there was a divided party control, and from 1960 to 1979, the democratic party held majority control of the government, both houses of Congress,

and the executive branch, for 12 out of the 20 years. In addition, during the examined period, Reagan was president, which defined a new, visible era of conservatism. Consistency seems to be more apparent in partisan-controlled political epochs. Thus, public opinion's influence on policy weakens under different party configurations of government. Nevertheless, Monroe (1998) does not reject the responsiveness he found in his earlier paper; however, he does argue that responsiveness is contingent on the partisanship of the political structure. He adds a layer of sophistication that responsiveness is conditional, not necessarily abundantly automatic.

Partisan differences can deepen after major nuclear events (Yeo et al. 2013). Yeo et al.'s (2013) core finding is that ideological groups responded differently after Fukushima. They uncovered that risk perceptions among liberals and conservatives moved in different ways after the disaster, and they frame this as evidence that partisan or ideological groups do not process nuclear events the same way. Perceptions of nuclear risk are thus not processed uniformly across the public, but rather are filtered through ideological identity, with media attention often exacerbating these divisions.

Lastly, another interesting paper discussed the mystery of why strong public concern about climate change has not translated into a bipartisan governing coalition (Bergquist et al. 2020). Bergquist et al. (2020) show how, again, not every issue is translated from public opinion into successful legislation. One of their clearest findings is that partisan sponsorship matters. This emphasizes how the partisan label attached to a policy can shape support and bill passage independently of the policy content itself, all because of the association it has with a certain party. They also repeatedly show that Democrats and Republicans react differently to the same policy bundle. This highlights how policy outcomes depend not only on what the public prefers in the abstract, but on how party actors assemble coalitions and frame bills. Bergquist et al. (2020) conclude that public opinion does not mechanically become policy support because partisan sponsorship itself often can shape whether an energy policy becomes politically viable.

3.5.3 Economic Elites

Returning to the seminal work done by Gilens and Page (2014), they largely focused on: Who holds the most power over policy? They define the possible answers into four existing theories of American political science, with each one presenting one perspective on who holds the most influence over policy: "'the average citizen' or 'median voter', economic elites, mass-based interest groups, or business-oriented interest groups" (Gilens and Page 2014, 564). They compiled 1,779 cases of policies and tested the various theories against each other. They found that the Majoritarian Democratic impact was insignificant, implying that the average citizen's influence is trivial, specifically when tested against economic elites; thus, challenging classical majoritarian democratic theories. Economic elites were found to have a statistically significant effect on policy. When pitted against economic elites, the average citizen will not win. This concept of American democratic representation is possibly much weaker, even non-resistant, than what is often commonly accepted as truth in the nuclear energy industry, and argued in section 3.3. Gilens and Page (2014) findings still paint a very interesting picture that showcase how wealthy elites have more power over legislative outcomes than the median voter.[28]

Smith (1999) strengthens these findings. He outlines how there is an abundant world of literature, often categorized as the structuralist theory of the democratic market economy, that presents the concept of the privileged position of business, where policy is affected and representative of the private sector more than of the public, especially during times of economic distress. During bearish economic periods, politicians' goals frequently are fixed on policies that would increase capital investment and avoid capital flight, especially within the districts they represent; thus, their preferences and behaviors will most likely align with business professionals rather than the general public. This underscores the unavoidable fact that private businesses have an influence and place in the relationship between politicians and public opinion.

[28] Gilens and Page (2014) remind the readers that policy creation is not a zero-sum game, and when one group of actors has influence, that does not necessarily negate other groups' effects on those same policies as well; a group of actors "winning" in influence can be simultaneous to another group winning.

3.6 Argument 2: Nuclear Legislation as Politically Mediated

While the nuclear energy literature largely assumes a direct relationship between public opinion and legislative outcomes—as well as one side of the political science literature—other political scientists argue that this relationship is not so cookie-cutter, as seen presented in section 3.5. They suggest a more complex reality. Rather than policy simply following public sentiment, legislative outcomes are shaped through a mediated process in which interest groups, economic elites, and or partisan actors might filter, amplify, and redirect public preferences. This thesis's second argument therefore tests whether variation in legislative outcomes is better explained not only by public opinion, but by the presence and influence of these external forces. To further explore these mechanisms, qualitative case studies will be used to illustrate how these actors operate in practice, particularly in the context of various nuclear energy power plant case studies.

4. RESEARCH DESIGN

4.1 Conceptual Framework

Rather than approaching the analysis with a predetermined expectation about which mechanism dominates, this study is structured to comparatively evaluate multiple plausible explanations for what explains legislative outcomes. As highlighted in the political science literature, the relationship between public opinion and policy is not unidirectional or universally consistent; some strands emphasize strong responsiveness, while others demonstrate that this relationship is often mediated or even disrupted by additional forces. Both perspectives are, therefore, treated as empirically open questions, allowing the data to indicate whether policy is more directly responsive to public opinion or shaped through intervening political dynamics. This approach does not assume that one framework necessarily displaces the other.

To operationalize this, the empirical strategy follows a longitudinal framework similar to prior work examining the relationship between public opinion and policy (Monroe 1979; Page and Shapiro 1983; Stimson et al. 1995). The core idea underlying this approach is that changes in public opinion may precede and potentially influence subsequent legislative outcomes. Accordingly, policy

outcomes are measured at time t, while public opinion is measured at time $(t-1)$, allowing for a temporal framework that avoids simultaneity and better reflects the sequence in which opinion may shape, or fail to shape, policy.

Within this framework, the first argument is tested quantitatively by examining whether variation in state-level public opinion is correlated with legislative outcomes. This provides a direct test of the classical responsiveness hypothesis emphasized in political science. However, consistent with the competing strand of that literature, the analysis does not stop at identifying whether additional relationships exist. The second argument is therefore also examining the extent to which this relationship is mediated by external political forces such as interest groups and partisan dynamics. This lagged specification does not fully capture the complexity of the relationship between public opinion and legislation, particularly given the possibility of delayed responses, feedback effects, or intervening political dynamics. However, it provides a theoretically grounded starting point for assessing whether prior public sentiment is associated with subsequent legislative activity, while leaving open the possibility that any observed alignment—or lack thereof—reflects a more mediated process. While these measures are imperfect, the goal is to offer an initial empirical foundation for a relationship that has been widely assumed, but rarely tested, within the nuclear energy literature.

4.2 Overall Data Structure and Unit of Analysis

The unit of analysis will be state-year. The public opinion data that this thesis collected from Gallup research included the following years: 2001, 2004–2007, 2009–2013, 2015, 2016, 2019, 2022, and 2023. However, due to the fact that eventually these years would have to be matched with legislation in the following year, the research was limited to the temporal options of LegiScan. LegiScan made legislation available for all states between the years of 2007–2025; yet, very sparsely for the years before 2010. Considering the $(t-1)$ approach was applied, the effective overlap resulted in the following: public opinion years considering ($t-1$; 2006, 2007, 2009–2013, 2015, 2016, 2019, 2022, and 2023) and legislation (2007, 2008, 2010–2014, 2016, 2017, 2020, 2023, and 2024). The panel structure consisted of 25 states; there were some missing state-year legislations

due to the fact that not every state, in a specific year, had legislation that matched the criteria that this paper employed. Overall, the outcome variable is legislation and the explanatory variable is the level of public opinion favorability towards nuclear energy, both tested through novel measures of data aggregation.

4.3 Data Collection Part I: Legislative Data

4.3.1 Initial Manual Attempts and Later API-Based Data Extraction

Utilizing LegiScan API, this paper used R code to extract all bills containing nuclear-related keywords in either titles or descriptions, for all 25 states, for the 12 years of data examined (LegiScan 2024).[29] The bills included were those only introduced and resolved (passed/failed) within the same calendar year. A one-year lag structure was applied to better capture the theoretical relationship between public opinion and subsequent legislative behavior. Specifically, public opinion favorability in year $(t-1)$ was matched to legislative activity in year t. For example, Georgia's 2023 public opinion favorability score about nuclear energy was assigned to all nuclear-related bills observed in Georgia in 2024. This lagged design reflects the theoretical argument this paper is advancing, that legislators respond to prior public sentiment—rather than contemporaneous opinion—and supports a cleaner test of the relationship between public opinion and pro/anti-nuclear legislative outcomes. Cross-year bills were avoided to hedge any potential confounders and prevent carry-over contamination. As well as, it more neatly aligns with the $(t-1)$ approach. Thus, the final product using the API-Based LegiScan method was an aggregated Excel file with 740 legislative bills that were introduced and resolved in the same year for all available state-years.

4.3.2 Bill Classification Protocol

The first step of the classification process was building a criterion for whether a bill was pro, anti, or neutral towards nuclear energy. This criterion was based on literature, industry standards, and policy substance. Please find the criteria constructed in Appendix A. Then, the Excel file,

[29] Initially, the thesis began by trying to extract every single appropriate and relevant legislation for all 25 state-years manually from Legiscan and recording each one in an Excel sheet. However, this quickly proved to be nearly impossible given the time constraints of the research; thus, an alternative method was applied (i.e., LegiScan API data scraping).

with the aggregated legislation, was uploaded to two types of LLMs (ChatGPT 5.2 and Gemini 3 Pro). These LLMs were provided with the classification rubric and instructions on how to automate the classification process. Each LLM was directed to proceed with extreme caution and conservatism.[30] The LLMs' outputs were then cross-referenced with each other to validate that they both derived the same classifications. Then, these final LLM classifications were compared to classifications found on interest group forums and nuclear policy tracking documents to ensure that the classification of bills the LLMs did categorize was accurate.[31] This step further ensured alignment with industry classification standards. Then, a full manual review of the 740 bills, their information, and classification in terms of accuracy with LegiScan was conducted. In addition, the number of Democratic or Republican sponsors for each bill, and each party's vote counts, for every enacted bill, in the final House/Senate votes, were recorded.[32]

4.3.3 Construction of Legislative Outcome Variables

Following the classification and manual verification process, the legislative data were aggregated to the state-year level to construct the dependent variables used in the empirical analysis. For each state and year, three primary legislative measures were constructed:

1. The total number of pro-nuclear bills introduced and resolved within that year.
2. The total number of anti-nuclear bills introduced and resolved within that year.
3. The total number of neutral-nuclear bills introduced and resolved within that year.

These counts reflect bills that were both introduced and resolved within the same calendar year, consistent with the temporal filtering rule described above. For each legislation, a binary indicator was recorded for whether the bill ultimately passed or failed. This allowed for the construction of both introduction-level outcomes (legislative activity) and passage-level outcomes (legislative success). This multi-measure approach permitted the analysis to distinguish between legislative agenda-

[30] The LLMs being directed to proceed with causation means that if they were not sure whether a bill appropriately fell into either of the buckets of pro, anti, or neutral, then they should flag that bill.
[31] Main resource used was Nuclear Energy Institute's "Status Report: State Legislation and Regulations Supporting Nuclear Energy (January 2025)."
[32] Only the final sessions of the state house or senate chambers were recorded to avoid double-counting the same state assemblymembers and or senators' votes multiple times.

setting (introduction) and legislative approval (passage), providing a more nuanced understanding of responsiveness.

4.4 Data Collection Part II: Public Opinion

4.4.1 Identifying a State-Level Opinion Source

Moving on to the explanatory variable, the research began with a broad initial search for state-specific nuclear energy surveys, which quickly uncovered that most surveys are either regional or national, and inconsistent over time. Gallup Social Series: Environment survey deemed to be the most successful and substantive in terms of state-year data (Gallup 2024). The specific question used was, "Overall, do you strongly favor, somewhat favor, somewhat oppose, or strongly oppose the use of nuclear energy as one of the ways to provide electricity for the U.S.?"

4.4.2 State Sampling Strategy

The final sample size only consisted of 25 states.[33] A stratified regional sampling of states was employed, by first dividing them into five regions, and then randomly selecting five states from each region.[34] This approach hoped to increase the validity of the research by having greater geographic diversity, preventing regional energy clusters from dominating the sample, and improving representativeness.

4.4.3 Data Extraction and Cleaning

The next steps were to extract and organize the raw data from Gallup using R into excel. First, the raw data was exported into an Excel and separated across sheets per state. The following inputs were recorded in different columns: raw counts (Strongly Favor, Somewhat Favor, Somewhat Oppose, Strongly Oppose, and Don't Know), total N, raw percentages, and weighted percentages. Lax and Phillips (2009) found that MRP is superior to disaggregation methods for public opinion

[33] The legislative coding required intensive manual verification; therefore, this thesis made the decision of the tradeoff between scope and classification precision. Instead of using all 50 states and sacrificing potential validity of the nuclear energy legislation classifications and data inputs used, 25 random states were selected which increased the ability to verify the nuances of each bill in the reasonable timeframe of this project.

[34] The five regions were: Northeast, Southeast, Midwest, South Central, and West.

estimations. Gallup already provided post-stratification weights, therefore, it was decided to not construct an additional-independent MRP model.

4.4.4 Construction of the Favorability Index

To the extent of research capacity and grasp of the literature out there, this thesis did not find an academic paper that had made the distinction between *Strongly Favor*, *Somewhat Favor*, *Somewhat Oppose*, and *Strongly Oppose* for public opinion about nuclear energy. The majority of these papers use Gallup or Pew surveys about nuclear energy; however, often just sum up the support and opposition findings instead of applying a weighted average. Reporting a percentage of either *Favor* or *Oppose*, as a single output, ignores the intensity differences. For example, various studies note and employ different figures that supposedly reflect the favorability of the U.S. in that moment in time such as, how the U.S. support declined anywhere from 47%–36% following the Fukushima disaster, or how after TMI, support dropped from 63% to 57% (Greenberg 2009; Yeo et al. 2013; Temples 1980). Thus, these figures are typically constructed by aggregating survey responses into a binary "*Support* vs. *Oppose*" measure, without accounting for intensity differences between the *Strongly* and *Somewhat* responses, on both a national and more specifically, state level. As a result, these widely cited percentages obscure meaningful variation in public sentiment and rely on an implicit assumption that all supportive responses carry equal weight.

Instead, this thesis challenges this approach by constructing a weighted favorability score (0–100%), which reveals systematically lower levels of support when intensity is incorporated. This approach is built like a Likert Intensity measure (-2 to $+2$), excluding *Don't Know* from the denominator. This overall weighted score accurately measures the favorability of that state rather than a simplistic addition of the two *Strongly* and *Somewhat Favor* or *Oppose* responses.

$$\textit{Favorability Score} = \frac{[2(\%\,\textit{StronglyFavor}) + 1(\%\,\textit{SomewhatFavor}) - 1(\%\,\textit{SomewhatOppose}) - 2(\%\,\textit{StronglyOppose})]}{4}$$

4.4.5 Public Opinion Measurement Context (Literature Integration)

Gupta et al. (2019) explain how public opinion data for nuclear energy is scarce; thus,

this creates a difficulty in identifying patterns and analysis.[35] However, with this being said, there do exist a few seminal papers, on public opinion regarding nuclear energy, that are relevant to discuss here. While all highlighting that there is an issue of the quality, quantity, and alignment of public opinion data regarding nuclear energy, they still find meaningful analytics about what public perception surrounding nuclear power. Greenberg (2009) accentuates that due to the lack of consistent surveys—with the same question being asked over a period of time—there is a serious problem of external validity when it comes to public opinion data about energy in general, let alone nuclear energy. He included questions and data inputs of the counties the respondents were from, mostly to try to examine the effect of living near power plants. There were a total of 2701 interviews completed between June and August 2008. He used random digit dialing (RDD) to aggregate the data. He found that those who were in support of increasing reliability on nuclear energy as an energy source, compared to other sources, were hesitant about the harms that come with energy derived from coal, and these were found to be largely white, educated males who had more knowledge about nuclear as a fuel source. Respondents who lived closer to the plants in proximity frequently also showed higher levels of support for increased energy production through nuclear energy, as they were often also found to have more knowledge about the energy source. Older respondents were also found to be more favorable towards nuclear power. Overall, Greenberg (2009) claimed that public opinion about nuclear energy was evenly distributed across a spectrum, both with more pronounced levels of support and opposition compared to other sources of energy.

Taylor et al. (2012) found that the public usually views nuclear risks at a heightened level compared to engineers or scientists. Kwon et al. (2024) used 1.26 million different tweets, rather than traditional survey data collection, to better understand public opinion sentiment and then used open-source LLMs to help with sentiment classifications. Kwon et al. (2024) found that policy-related tweets about nuclear energy were overwhelmingly negative. Yeo et al. (2013) argued that conservatives were more likely to be pro-nuclear than liberals, while Bordoff et al. (2025) underscore how bipartisan support for nuclear energy is present and experienced throughout the 21st

[35] Gupta et al. (2019) expand previous literature by aggregating public opinion data from 1973 until 2016, homing in on seminal years for the nuclear energy industry (e.g., periods following nuclear accidents).

century. Overall, these papers reinforce nuclear energy opinion volatility and unreliability, and how a state-level temporal analysis is necessary to define a clearer picture of what the average person feels towards nuclear energy.

4.5 Dataset Merging and Lag Structure

After constructing the state-year legislative and public opinion datasets, the two were merged in R. The merge was performed using state and year as the joint identifiers. Observations were included only where both public opinion and legislative data were available under the defined temporal structure. To test whether public opinion predicts subsequent legislative behavior, the aforementioned one-year lag structure was applied. By structuring the data in this manner, the design reduces the risk of simultaneity bias and helps prevent reverse causation, in which legislative action influences contemporaneous opinion rather than the reverse. This structure establishes temporal precedence but does not eliminate all omitted variable bias.

4.6 Empirical Strategy

To evaluate whether public opinion predicts nuclear legislative outcomes, this thesis estimates a series of two-way fixed effects regression models. These models include both state fixed effects and year fixed effects. State fixed effects control for time-invariant characteristics of individual states, such as institutional structure, historical energy profiles, or long-standing political culture. Year fixed effects account for nationwide shocks common to all states in a given year, including macroeconomic conditions, federal energy policy shifts, or major nuclear-related events. Standard errors are clustered at the state level to account for serial correlation within states over time. To distinguish between direct responsiveness to public opinion and the role of partisan mediation in shaping legislative outcomes, this thesis estimates sets of regression models corresponding to Table 1, and Tests (1)–(6), and descriptive statistics found in section 5.4.

Tests (1)–(6) extend the broader empirical strategy by asking: (1) whether public opinion affects legislative outcomes at the state-year level. By combining responsiveness models with partisan statistics, the empirical design distinguishes between direct responsiveness and possible

influences of party politik.

4.6.1 Public Opinion and Bills Introduced (Models 1–3)

The first three regression models examine whether public opinion predicts the composition of nuclear-related bills introduced within a given state-year. The empirical specification is:

$$Y_{st} = \beta_0 + \beta_1 \, Opinion_{s,t-1} + \gamma_s + \delta_t + \epsilon_{st}$$

The dependent variables in these models are defined as:

1. Model (1): Percentage of total nuclear-related bills introduced that are classified as pro-nuclear.
2. Model (2): Percentage of total nuclear-related bills introduced that are classified as anti-nuclear.
3. Model (3): Percentage of total nuclear-related bills introduced that are classified as neutral.

The key independent variable is lagged public opinion favorability, measured at $(t-1)$. Each model tests whether higher public support for nuclear energy corresponds to changes in the share of pro-, anti-, or neutral bills introduced in the subsequent year. These specifications allow the analysis to capture agenda-setting responsiveness, whether public sentiment influences what types of bills legislators choose to bring forward.

4.6.2 Public Opinion and Bills Passed (Models 4–6)

The next three models examine whether public opinion predicts the composition of nuclear-related bills that ultimately pass. The empirical specification remains:

$$Y_{st} = \beta_0 + \beta_1 \, Opinion_{s,t-1} + \gamma_s + \delta_t + \epsilon_{st}$$

The dependent variables are:

1. Model (4): Percentage of total nuclear-related bills passed that are pro-nuclear.

2. Model (5): Percentage of total nuclear-related bills passed that are anti-nuclear.
3. Model (6): Percentage of total nuclear-related bills passed that are neutral.

Again, the primary independent variable is lagged public opinion favorability. Whereas Models (1)–(3) capture agenda-setting behavior, Models (4)–(6) capture policy outcomes. This distinction is important; legislators may introduce bills symbolically, but passage reflects institutional support and coalition formation. Together, the six models provide a structured test of dynamic representation at two stages of the legislative process: introduction and passage.

5. EMPIRICAL RESULTS

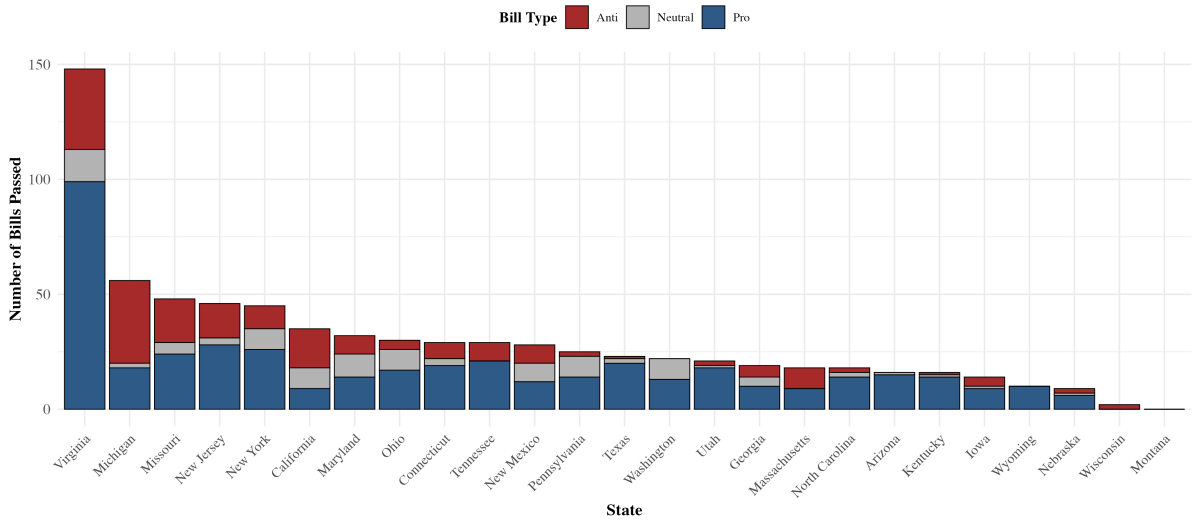
5.1 Descriptive Legislative and Partisan Patterns

This thesis first examines patterns in states' legislative behavior and partisan alignment. This analysis begins by describing the distribution of the primary outcome variable, the number of nuclear-related bills passed at the state level. Across the 740 bills in the dataset, there is substantial variation in legislative activity, with some states passing a large number of bills while others pass very few or none. This variation reflects meaningful differences in legislative engagement with nuclear energy policy across states.

Given the lack of large-scale descriptive statistics on state-level nuclear energy legislation, this step provides important context for the empirical analysis. Figure 3 illustrates the total number of nuclear-related bills passed by state, showing a highly uneven distribution across the sample. Some states account for a disproportionate share of legislative activity, while others exhibit minimal engagement. This dispersion indicates that legislative outcomes are not uniform across states, supporting the use of cross-state empirical analysis to examine the factors driving these differences.[36]

[36] Montana did not have any legislation that fit into this thesis's legislative criteria. The minimal amount of existing nuclear energy bills did not fall within the examined years, and or, were not introduced, then resolved, in the same calender year.

FIGURE 3. Total Nuclear Legislation Passed By State



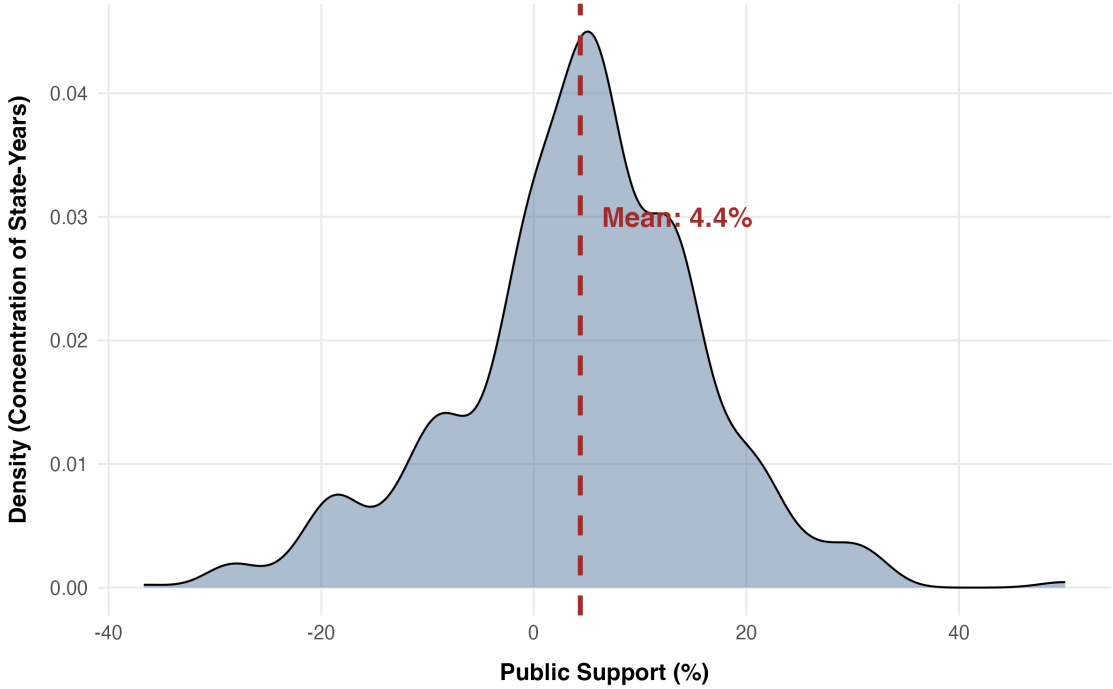
Note: Figure 3 illustrates the total number of nuclear-related bills passed by state, disaggregated by pro-, anti-, and neutral classifications.

5.2 Descriptive Evidence: Variation in Public Opinion

Now moving to the variation found across public opinion regarding nuclear energy. Before testing whether public opinion predicts legislative outcomes, it is necessary to demonstrate the meaningful variation that exists across states and over time, similar to the variation examined across states' nuclear legislations above. Without sufficient dispersion in the independent variable, responsiveness cannot be empirically identified. Figure 4 presents the overall distribution of the state-year favorability index. Public support for nuclear energy is widely dispersed rather than clustered around neutrality. The mean favorability score across all state-years is approximately 4.4%. The distribution spans roughly from -35% to $+50\%$, indicating that some states exhibit strongly negative attitudes while others demonstrate substantial positive support.[37] The density curve shows a relatively smooth distribution centered slightly above zero, with a meaningful spread on both tails. This dispersion confirms that legislators across states operate in meaningfully different opinion environments, making it possible to test whether those differences translate into legislative behavior.

[37] The favorability score that was calculated above could go below 0% due to the weighted factoring incorporated.

FIGURE 4. Overall Distribution Histogram with Mean

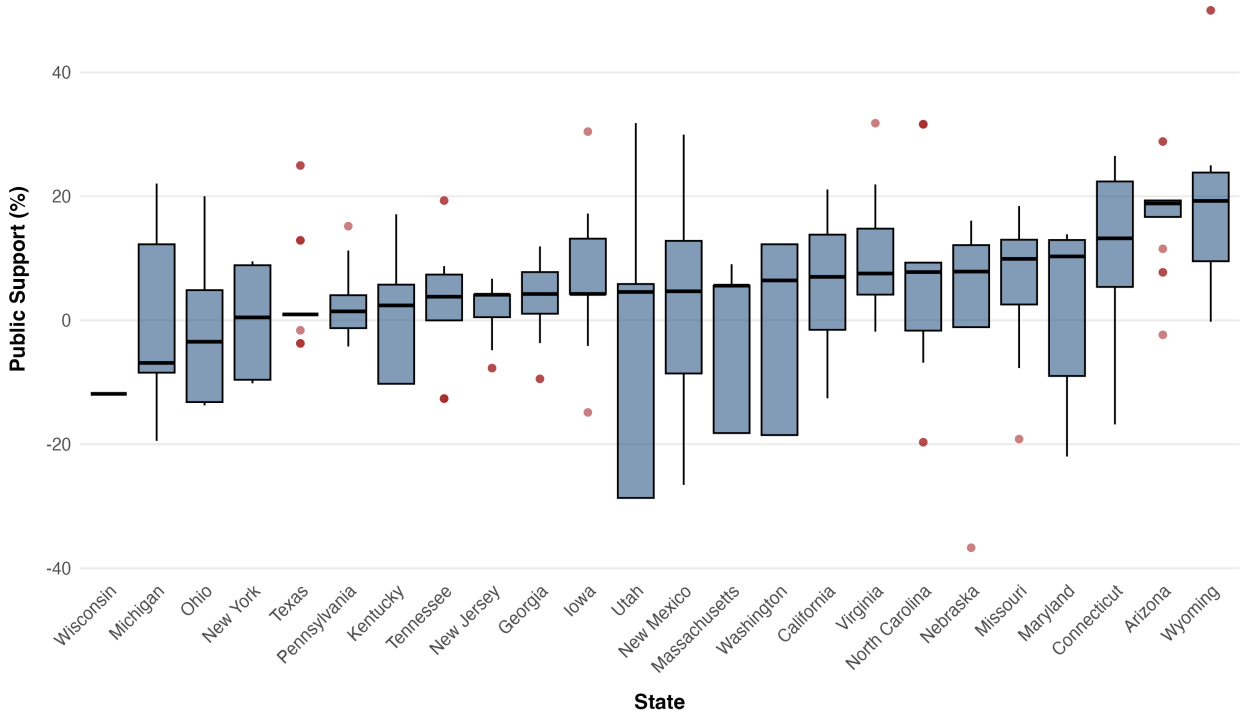


Note: Figure 4 illustrates the distribution of public support for nuclear energy across state-year observations, with the mean level of support indicated.

Figure 5 presents boxplots of public favorability by state.[38] The boxplots reveal significant differences in baseline support levels across states. Some states consistently exhibit median favorability above zero, while others are centered at or below neutrality. Importantly, the interquartile ranges differ across states, suggesting that some states experience more volatility in opinion than others. Outliers are present in both positive and negative directions, reinforcing that the variation is not driven by a small number of extreme observations. These cross-state differences justify the inclusion of state fixed effects in the regression models, as states appear to differ structurally in their baseline levels of nuclear support.

[38] Montana is excluded from the cross-state variation analysis because the dataset is restricted to state-years where both public opinion data and specific legislative records are present. While Montana has available public opinion data, it recorded no qualifying legislation during the study period, resulting in its omission from this visualized sample.

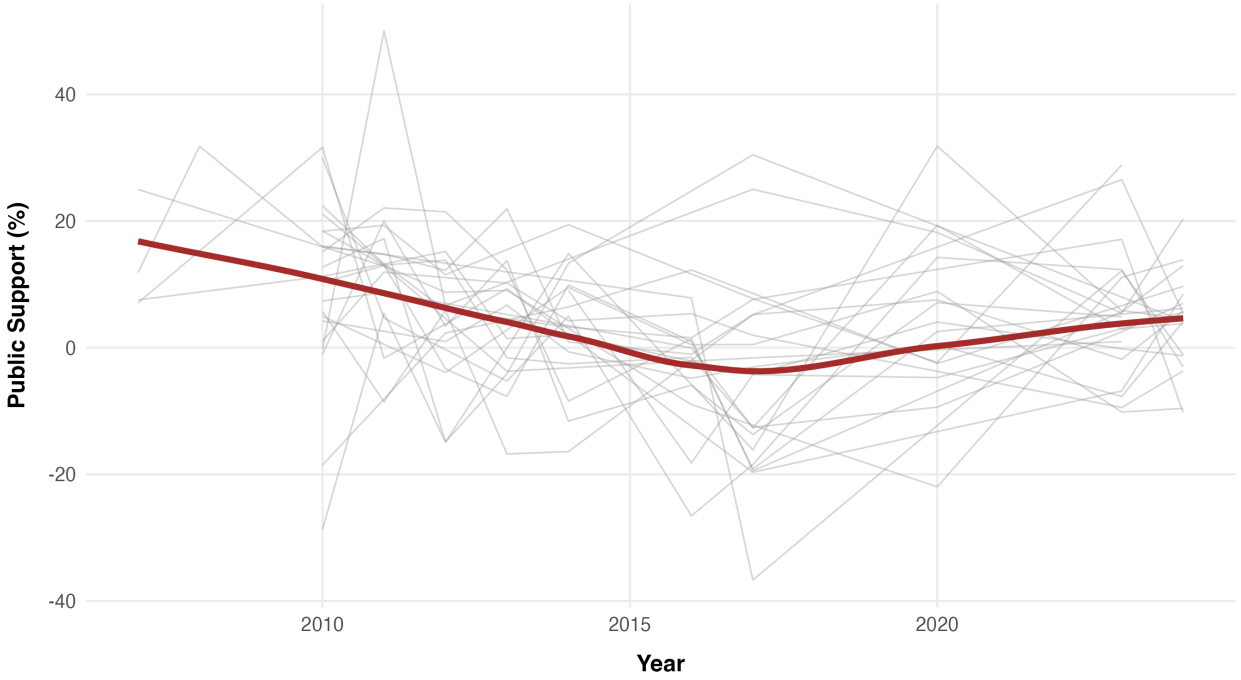
FIGURE 5. Cross-State Variation Boxplot



Note: Figure 5 illustrates the variation in public support for nuclear energy across states, showing differences in central tendency and dispersion.

Figure 6 plots the temporal variation in public support from 2007 through 2024. Grey lines represent individual states, while the red line captures the national trend. The national trend declines from the late 2000s into the mid-2010s, reaching a trough around 2016–2017, before showing a moderate recovery in later years. There are high declines within the range of 2011–2013, likely reflecting the velocity of negative public opinion post-Fukushima. Individual states largely move in the same general direction, though with varying magnitudes. This co-movement suggests the presence of nationwide shocks influencing opinion, which supports the inclusion of year fixed effects in the regression models.

FIGURE 6. Temporal Variation Line Graph



Note: Figure 6 illustrates the evolution of public support for nuclear energy over time across states, with an overall trend line summarizing aggregate movement.

5.3 Public Opinion and Legislative Outcomes (Table 1)

To test whether public opinion predicts legislative outcomes, this thesis estimates two-way fixed effects models including state and year fixed effects. The independent variable is lagged public opinion favorability ($t - 1$). The dependent variables vary across models.

TABLE 1. Effect of Public Opinion

Panel A: Bills Introduced (% of Total)	**(1)**	**(2)**	**(3)**
	Pro-Nuclear	**Anti-Nuclear**	**Neutral-Nuclear**
Public Opinion	0.132	−0.299	0.164
	(0.252)	(0.217)	(0.191)
Observations	183	183	183
$\mathbf{R}^2$	0.324	0.337	0.266
Panel B: Bills Passed (% of Total)	**(4)**	**(5)**	**(6)**
	Pro-Nuclear	**Anti-Nuclear**	**Neutral-Nuclear**
Public Opinion	−0.045	−0.230**	0.056
	(0.213)	(0.089)	(0.101)
Observations	183	183	183
$\mathbf{R}^2$	0.327	0.365	0.177

Standard errors in parentheses. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Note: Each observation represents a state-year. The dependent variables are the percentage of bills introduced or passed in each category (pro-, anti-, or neutral nuclear) relative to total bills in that state-year. Public opinion is measured as net nuclear favorability. All models are estimated using OLS. Standard errors are reported in parentheses.

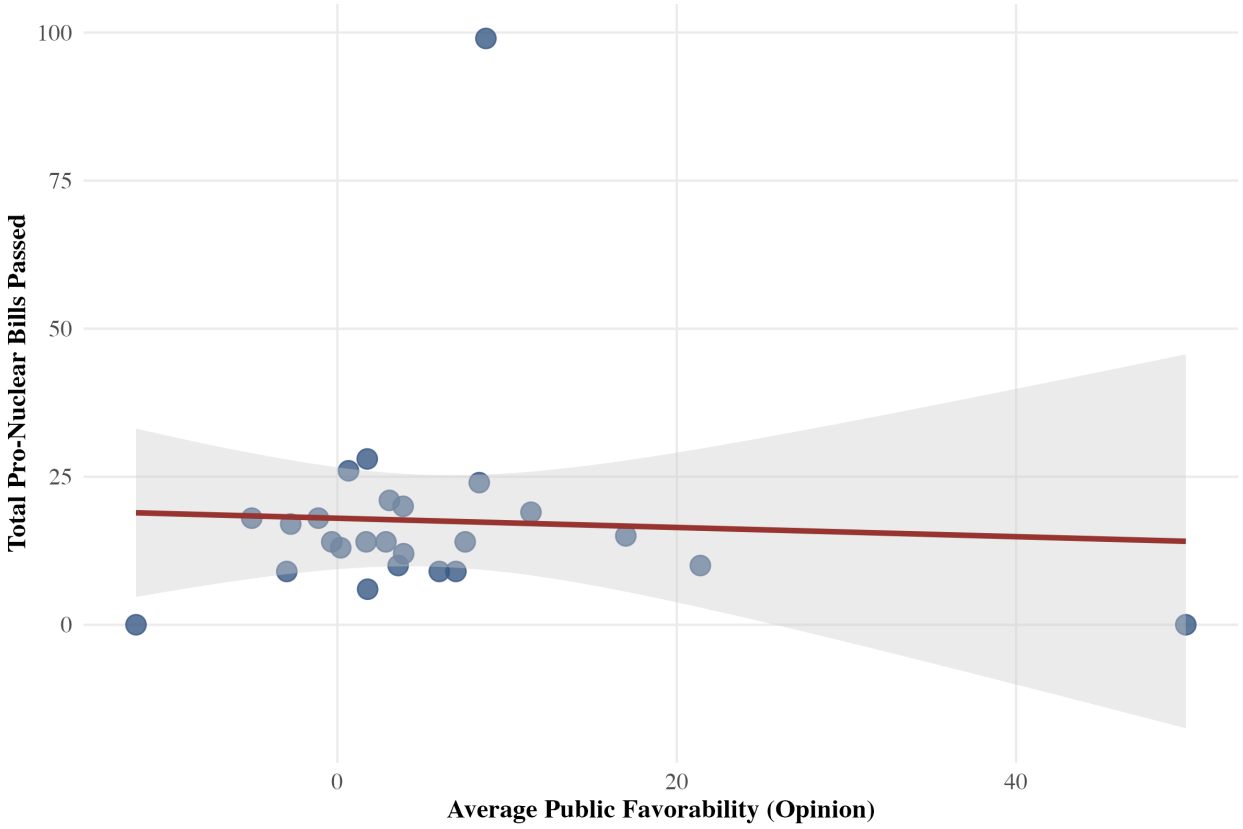
Models (1)–(3) examine whether public opinion predicts the share of bills introduced in each category. For pro-nuclear bills introduced, the coefficient on public opinion is 0.132 (SE = 0.252, p = 0.601). For anti-nuclear bills introduced, the coefficient is −0.299 (SE = 0.217, p = 0.171). For neutral bills introduced, the coefficient is 0.164 (SE = 0.191, p = 0.392). None of these coefficients reaches conventional levels of statistical significance.

In panel B, models (4)–(6) examine whether public opinion predicts the share of bills passed. For pro-nuclear bills passed, the coefficient is −0.045 (SE = 0.213, p = 0.834), indicating no significant relationship. For anti-nuclear bills passed, the coefficient is −0.230 (SE = 0.089, p = 0.011), statistically significant at the 5% level. For neutral bills passed, the coefficient is 0.056 (SE

= 0.101, p = 0.578), meaning it is not significant. The statistically significant negative coefficient in model (5) indicates that as public support for nuclear energy increases, the share of anti-nuclear bills passed decreases. Substantively, this suggests that higher favorability toward nuclear energy constrains the legislative success of anti-nuclear policy proposals. Notably, no comparable positive effect is observed for pro-nuclear bills.

Public opinion does not significantly affect the passage rate of pro-nuclear or neutral bills. However, public opinion has a statistically significant negative effect on the passage of anti-nuclear bills ($p < 0.05$). This might indicate that as public support for nuclear energy increases, the proportion of anti-nuclear bills that pass decreases. In other words, legislators may introduce anti-nuclear legislation, but it becomes less likely to succeed in states where support for nuclear energy is stronger. Nevertheless, overall, public opinion does not seem to have a statistically significant effect on bill introduction across any of the three categories. Figure 7 highlights how a clear positive relationship between public opinion and pro-nuclear legislation was not found. Taken together, these tests and statistics suggest that external factors must have a role in influencing legislators to introduce bills, aside from solely public opinion.

FIGURE 7. Public Opinion vs. Pro-Nuclear Legislation



Note: Figure 7 illustrates the relationship between public support for nuclear energy and the number of pro-nuclear bills passed, including a fitted regression line.

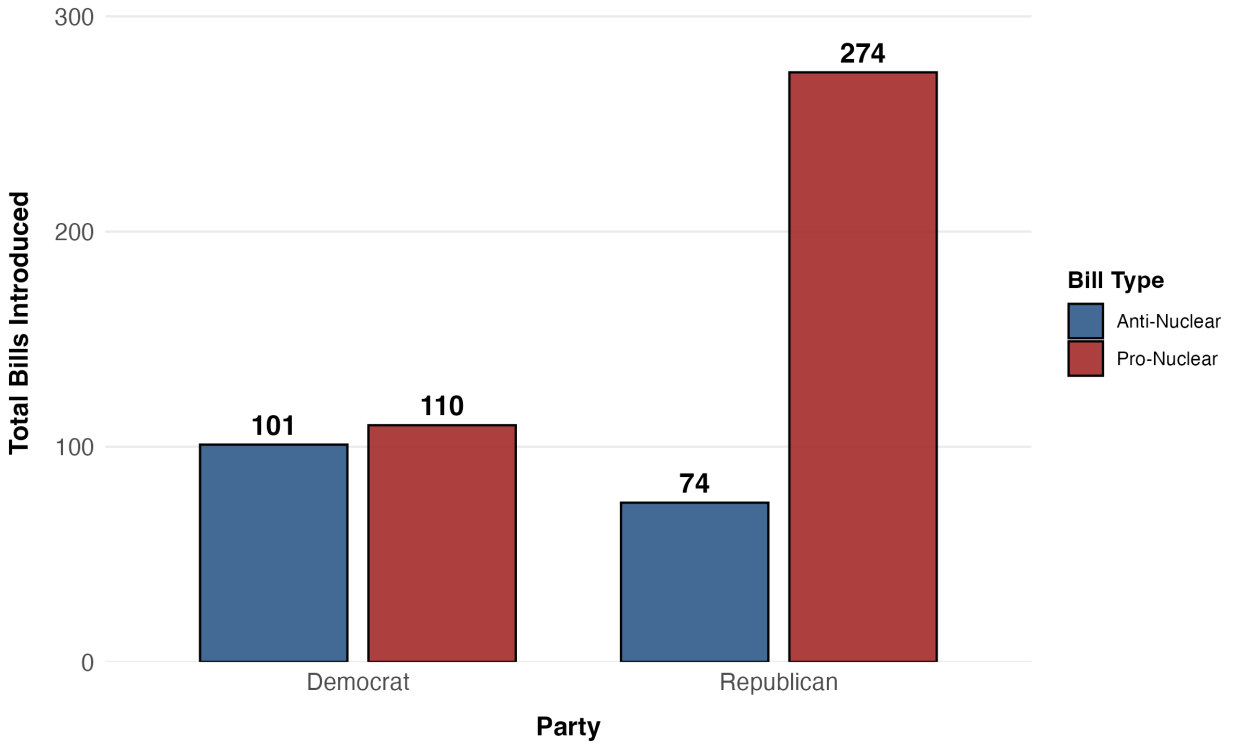
5.4 Descriptive Partisan Patterns

Table 1 evaluates the relationship between public opinion and legislative outcomes, depicting limited evidence of consistent responsiveness across categories. In particular, these findings motivate a shift toward examining additional institutional and political mechanisms that may mediate the relationship between public opinion and legislative outcomes. One plausible mechanism, emphasized in section 3.5.2, is partisanship and party politics. If legislators filter public opinion through party-based incentives, then legislative outcomes may reflect partisan competition rather than direct responsiveness to voters. The following section therefore examines descriptive evidence on partisan patterns in nuclear energy legislation.

As highlighted in the literature, some papers and surveys have found conservative individuals to often exhibit higher levels of acceptance towards nuclear energy, while liberals are more concerned

with either prioritizing other forms of renewable energy sources or opposing nuclear due to the potential dangers (Greenberg 2009; Yeo et al. 2013). At the same time, much of the current "nuclear renaissance" conversation highlights how, in the past century, nuclear energy seems to be a bipartisan issue (Bordoff et al. 2025). Figure 8 displays the total number of bills introduced between 2007–2024 by party and bill classification. Republican sponsors introduced substantially more pro-nuclear bills than Democrats. Democrats introduced slightly more anti-nuclear bills than Republicans, though the asymmetry is smaller than on the pro-nuclear side. This pattern clearly suggests that nuclear expansion functions largely as a Republican-owned issue, while opposition legislation shows a more mixed but slightly Democratic-leaning pattern. Based on this thesis's research, this seems to be a novel data set that highlights this clear partisan legislator divide within the context of the 21st century, across U.S. States.

FIGURE 8. Nuclear Issue Ownership by Party (Bills Introduced)

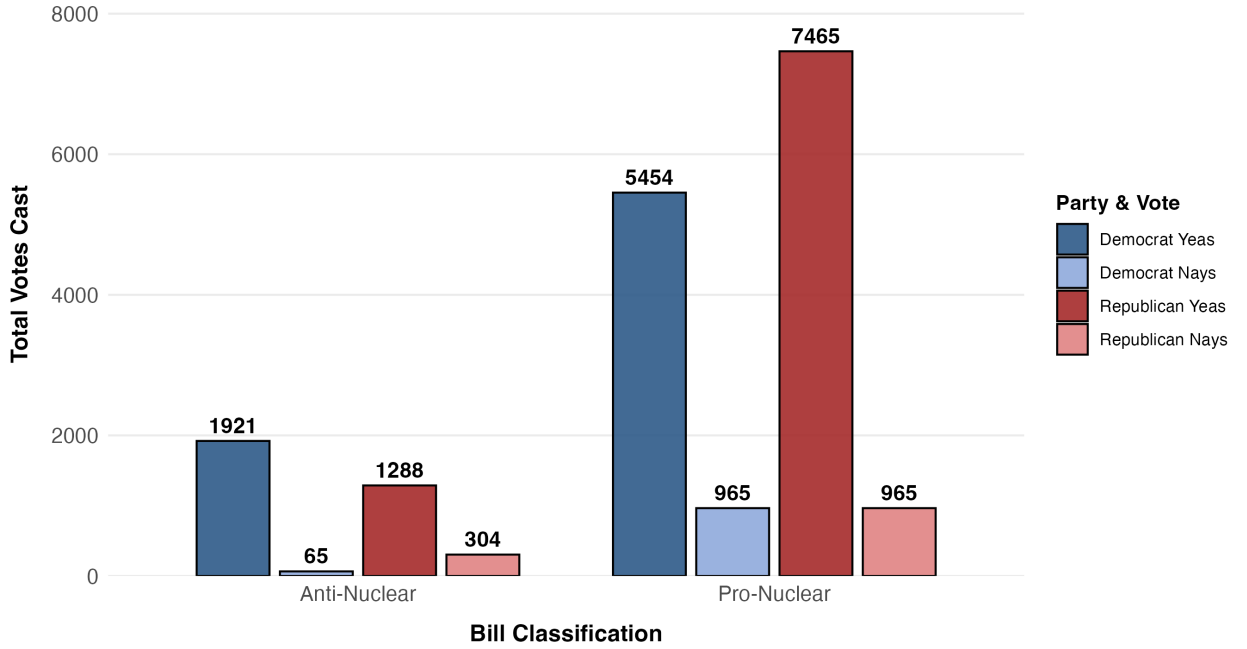


Note: Figure 8 illustrates the distribution of nuclear-related bills introduced by party, comparing Democratic and Republican sponsorship across pro- and anti-nuclear legislation.

Figure 9 presents total yea and nay votes by party for pro- and anti-nuclear bills (excluding

neutral bills). This figure separates affirmative and opposing votes, allowing for a clearer interpretation of partisan alignment. For anti-nuclear bills, Democrats cast 1,921 yea votes and only 65 nay votes. Republicans cast 1,288 yea votes and 304 nay votes. This indicates that while both parties supported anti-nuclear bills at meaningful levels, Democratic legislators were substantially more unified in supporting them, casting far fewer opposing votes relative to affirmative ones. For pro-nuclear bills, Republicans cast 7,465 yea votes and 965 nay votes. Democrats cast 5,454 yea votes and 965 nay votes. Here, Republicans not only cast more total votes on pro-nuclear legislation but also cast significantly more affirmative votes than Democrats. Both parties recorded identical numbers of nay votes (965), but Republican yea votes substantially exceeded Democratic yea votes. Taken together, these voting patterns reinforce the literature's arguments of partisanship influencing legislative outcomes. Anti-nuclear legislation receives stronger and more unified Democratic support, while pro-nuclear legislation receives stronger Republican backing. However, the presence of cross-party yea votes in both categories suggests that nuclear policy is not purely polarized, but rather asymmetrically aligned along partisan lines.

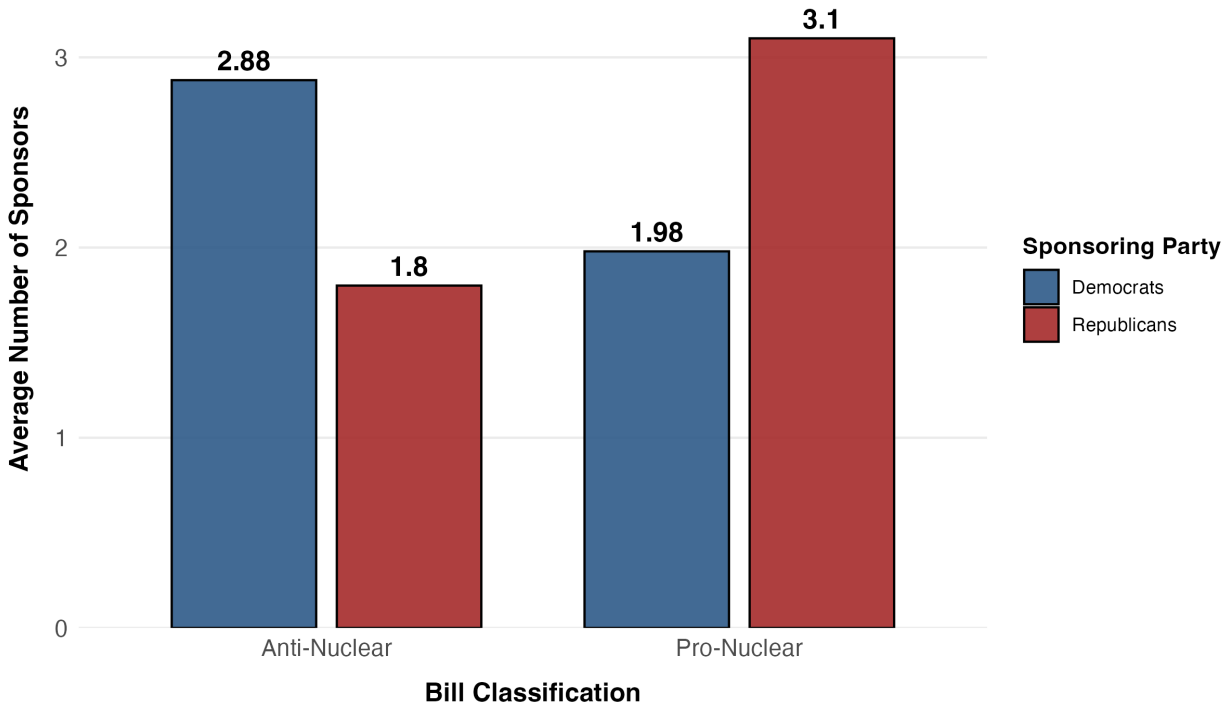
FIGURE 9. Total Legislative Votes by Party (Yea + Nay)



Note: Figure 9 illustrates the total number of legislative votes cast by party and bill type, distinguishing between yea and nay votes for pro- and anti-nuclear legislation.

Furthermore, Figure 10 reports the average number of sponsors by party and bill classification. Pro-nuclear bills have an average of 3.1 Republican sponsors compared to 1.98 Democratic sponsors. Anti-nuclear bills have an average of 2.88 Democratic sponsors compared to 1.8 Republican sponsors. This pattern further confirms the likelihood of partisan alignment in sponsorship behavior. Sponsorship appears strongly structured along party lines, suggesting that coalition strength may be a determinant of bill success.

FIGURE 10. Average Number of Sponsors by Party and Bill Type



Note: Figure 10 illustrates the average number of sponsors per bill by party and bill classification, highlighting differences in coalition size across parties and issue positions.

Taken together, these patterns suggest that legislative outcomes in nuclear energy policy cannot be explained by public opinion alone and instead reflect additional mediating forces. While the descriptive evidence demonstrates a clear role for partisanship in shaping both sponsorship and voting behavior, it does not fully account for how public opinion translates, or fails to translate, into policy outcomes. More broadly, the analysis leaves open the question of which factors mediate the relationship between public sentiment and legislative behavior. Partisanship may be one such

factor, but as seen in section 3.5.1, interest groups may also play a critical role in shaping legislative outcomes. The following portion of the paper, therefore, turns to qualitative case studies to examine how these additional mediating forces interact with public opinion and influence nuclear energy policy at the state level.

6. CASE STUDIES

Before moving into the discussion section, this thesis includes two qualitative case studies that help contextualize both the literature and empirical results presented above. These cases are not meant to serve as causal proof, nor are they intended to represent the entirety of the 740 bills examined in this paper. Rather, they are included to illustrate—in concrete legislative settings—how nuclear energy policy is often shaped by a mix of public opinion, partisanship, interest groups, regulatory structures, and broader institutional pressures. In that sense, these cases help clarify what may lie behind the limited evidence of direct responsiveness found in the statistical analysis above.

6.1 Florida SB1472 (2013)

The first case study examines Florida SB1472 in 2013, a piece of legislation rooted in a controversial regulatory history and shaped by public backlash, organized campaigns, and utility financing structures. The story begins with SB888, enacted on June 19, 2006, which introduced the controversial Nuclear Cost Recovery clause for utilities (Florida Legislature 2006).[39] SB888 was the original bill that set in motion the chain of events that would later culminate in SB1472.

Florida is a vertically integrated utility state.[40] As a result, SB888 allowed utilities to begin

[39] SB888 was originally HB1473 which was filed on March 5th, 2006, in the Florida House, but substituted for SB888 on May 2nd (Florida House 2006).

[40] Deregulation of the electrical power industry began in 1997, following earlier reforms in the "airline, telecommunications, and natural gas" sectors (Raughley 1999). Prior to this shift, utility companies operated as vertically integrated monopolies, generating, transmitting, and distributing electricity while controlling access to the grid and pricing (Raughley 1999). The National Energy Policy Act (EPACT) of 1992 introduced competition by requiring utilities to open their transmission lines to other qualified electricity producers for a fee, preventing discriminatory access and beginning the breakdown of traditional monopoly structures (Raughley 1999). This process was further advanced by Federal Energy Regulatory Commission (FERC) reforms in 1996, which mandated broader transmission access and aimed to expand competitive wholesale markets. These changes led many utilities to restructure, sell generation assets, or withdraw from plant ownership, shifting electricity systems in some states away from vertically integrated models toward competitive market frameworks (Raughley 1999). However, the California energy crisis of 2000–01 exposed vulnerabilities in poorly designed deregulation, prompting some states to slow or reverse these efforts. For

recovering some of their Construction Work in Progress (CWIP) expenses from ratepayers before construction had even begun, whereas in a deregulated state, independent power producers would not have been able to do so in the same way (Florida Legislature 2006; Davis 2012).[41] SB888 was later codified as Florida Statute §366.93 (Fla. Stat. § 366.93 2006). More specifically, the law enabled Florida Power & Light (FPL) and Progress Energy Florida to recover pre-construction nuclear costs through the "capacity cost recovery clause."[42] At this initial stage, however, widespread public backlash had not yet emerged.

That changed once utilities began charging ratepayers and consumers began to feel the financial burden of these cost recovery mechanisms. The large catalyst for eventual public outrage was the Crystal River failure, which, together with the 2011 Fukushima disaster, significantly transformed ratepayers' attitudes toward nuclear energy in Florida.[43] The 2011 Prehearing Statement filed with the Public Service Commission (PSC) explicitly invoked Fukushima in order to oppose the utilities' nuclear plans, arguing that the disaster intensified uncertainty and strengthened public backlash (Southern Alliance for Clean Energy 2014). Fukushima did not create the conflict on its own, but it helped intensify and legitimize opposition that was already building.

At the same time, the repairs to Crystal River caused structural damage and drove costs even higher, increasing the burden on ratepayers (Southern Alliance for Clean Energy 2014). Through §366.93, customers were already paying elevated costs, but as project expenses kept growing, those costs became more visible and politically salient. The Levy County nuclear reactors were originally

nuclear energy, these developments were particularly consequential. Nuclear plants require high upfront capital, long construction timelines, and stable cost-recovery mechanisms, conditions that deregulated markets often undermine. Raughley (1999) notes that deregulation also introduced reliability and coordination concerns, including congestion and uncertainty in transmission incentives, while Heffron (2012) argues that such market structures increase uncertainty and weaken the financial and legal stability necessary for new nuclear investment. Divan and Sharma (2024) also explain how deregulated systems can often threaten energy equity for all peoples and places, as incentives shift towards profit maximizing. Utility structure, therefore, is not merely background context but a central factor shaping the feasibility of nuclear energy development.

[41] As already established, nuclear power plant builds are extremely expensive and often have both cost and time overruns; therefore, for utilities to take on this massive financial risk, they usually like to have some of that risk hedged and diversified; thus, one of those methods is recovering some of the buildout costs before a single kWh of energy is generated and distributed.

[42] Florida Power & Light (FPL) and Progress Energy Florida later merged into Duke Energy Florida.

[43] The Crystal River failure was the structural damage to one of the buildings of the power plant, which was caused by improper, rushed repair work during a 2009 upgrade. The cracks worsened and eventually became uneconomical to repair, thus the power plant had to shut down.

projected to cost $5 billion and begin operations in 2016. Those estimates quickly rose to $17–22 billion, and eventually to $24.7 billion by the time Duke Energy canceled the project (Judy 2013; Schneider and Froggatt 2013). Through a settlement with the state, Duke Energy was able to retain the roughly $1 billion already collected from ratepayers to finance the cancellation of the Levy County project (Judy 2013). In addition, carrying charges for the Crystal River 3 regulatory asset allowed the utilities to keep failed projects on their books even after the underlying project had collapsed (Duke Energy Florida 2014). Cost recovery thus continued despite deep uncertainty over whether the plant would ever be completed. Altogether, rising costs, visible financial burdens, and the fears reignited by Fukushima transformed the politics of the issue.

Public opposition then became more organized. Interest groups began branding SB888 as a "nuclear tax," with Southern Alliance for Clean Energy (SACE) acting as one of the most visible organizers of this growing backlash (Southern Alliance for Clean Energy 2014). SACE launched a campaign to repeal what it called the advanced nuclear recovery fee, and this messaging quickly spread into broader public media discourse (Times Staff Writer 2013). Grassroots activism followed. The Change.org petition "Stop The Duke Energy Rip Off!" called for an end to advance cost recovery and demanded that the PSC return the collected fees to customers (Stop the Duke Energy Rip Off 2013). Constituents flooded the PSC with emails and complaints expressing frustration with the utilities and opposition to rising bills (Florida Public Service Commission 2013a). In response, the PSC issued procedural orders to formally review and mediate settlement agreements, thereby institutionalizing the conflict into a formal regulatory process (Florida Public Service Commission 2013b). Public frustration also extended to the governor's office, where these cost recovery mechanisms were described by constituents as "crazy" (Florida Public Service Commission 2013a).

This outcry, shaped both by individual ratepayers and organized interest groups such as SACE and AARP, ultimately forced legislators to respond. On March 1, 2013, SB1472 was introduced in the Florida Senate (Florida Senate 2013). The bill significantly modified the cost recovery structure first established in 2006. On June 14, 2013, SB1472 was enacted and approved by the gov-

ernor, bringing to a close a seven-year legislative struggle defined by nuclear financing mechanisms, public backlash, and sustained interest group pressure (Florida Senate 2013).

What makes this case especially important for this thesis is that Florida's overall favorability score in 2005 and 2012—the relevant lagged years for SB888 and SB1472—was 19.76% and 21.93%, respectively.[44] These are both relatively favorable scores, and they are also fairly similar to one another. Yet, Florida experienced dramatically different legislative outcomes across these years. This weakens any simple account in which legislative change is explained by public support alone. Instead, the case suggests that other factors, especially organized campaigns by interest groups, cost visibility, regulated utility structures, and accident-driven fears, helped mediate the relationship between public opinion and policy.

This case study therefore provides a practical example of the broader argument of this thesis: nuclear legislation is often not the product of public opinion alone. In Florida, the legislative reversal from SB888 to SB1472 was shaped by a layered combination of interest group campaigns, utility financing mechanisms, nuclear accidents, and rising public frustration over visible costs. The case does not stand in for all nuclear legislation, but it does clearly illustrate the complexity that often lies between public sentiment and legislative outcomes.

6.2 California SB846

California SB846 offers a second case that challenges the assumption of a simple relationship between public opinion and policy responsiveness. Like the Florida case, California illustrates how nuclear legislation is often shaped by multiple, competing forces rather than by public opinion alone.

California's relationship with nuclear energy has long been politically and socially contentious. The anti-nuclear movement in the state is especially deep-rooted. As environmental mobilization intensified in the 1970s, California became one of the central arenas of anti-nuclear activism (Wellock 1998). Massive protests, including thousands of arrests at the Diablo Canyon site, forced the state to alter its energy trajectory. This movement peaked in 1981 with more than 1,900

[44] Scores are found based on this paper's data.

arrests during a ten-day blockade at Diablo Canyon. That level of sustained public opposition helped lay the groundwork for the Warren–Alquist Act and the 1976 state moratoria, which fundamentally constrained California's nuclear future (Minnesota Law Review Editorial Board 1982). Those institutional legacies still shaped the policy environment decades later.

By 2016, it appeared that the anti-nuclear movement had largely succeeded. Pacific Gas and Electric (PG&E) announced a joint proposal with labor unions and environmental organizations, including Friends of the Earth, to phase out Diablo Canyon by 2025 and replace it with renewables and energy efficiency measures (Pacific Gas and Electric Company 2016). At that moment, public opposition and interest group pressure seemed to have carried the day. However, as this thesis has found, energy policy is rarely that straightforward. The politics of energy are also shaped by structural needs, especially the need for reliable electricity. In August 2020, California experienced an extreme heat event that caused major energy capacity shortfalls and rolling outages. A joint root cause analysis by state energy agencies warned of serious grid fragility during climate-driven heat events (California Independent System Operator et al. 2020). Faced with these mounting reliability risks, along with natural gas price volatility, California's political leadership abruptly reconsidered Diablo Canyon's closure. Governor Gavin Newsom and state lawmakers advanced legislation to keep the state's last nuclear plant online in order to prevent future shortages (Lopez 2022).

Federal intervention then altered the economic and political calculus even further. President Joe Biden finalized a $1.1 billion award to PG&E through the Civil Nuclear Credit Program, which made it financially viable to keep Diablo Canyon running while preserving clean energy jobs (U.S. Department of Energy 2024). In parallel, the California legislature introduced SB846, which effectively reversed the prior closure trajectory by authorizing state support and resources to extend Diablo Canyon's operational capacity.

Yet, this reversal did not occur in the absence of organized opposition. Friends of the Earth filed a lawsuit alleging that the Department of Energy had failed to properly assess the environmental risks of extending the plant's life. Eventually, however, in the face of overwhelming combined state and federal support, the group dropped the lawsuit in early 2025, effectively conceding the

fight (Begert 2025). At the same time, pro-nuclear organizations also became more active. The American Nuclear Society engaged in direct lobbying, sending letters to California legislators urging passage of SB846 and explicitly reframing the debate away from local environmental risks and toward statewide grid reliability and climate goals (American Nuclear Society 2022). This clash between environmental opponents and pro-nuclear advocates pushed the state legislature into an active mediating role.

SB846 reflects that tension clearly. Supporters justified the bill on the grounds of urgent electricity reliability and climate needs, while opponents such as the California Environmental Justice Alliance argued that the process was rushed, nontransparent, and dangerous for surrounding communities (California Senate Rules Committee 2022). On September 2, 2022, Governor Newsom signed SB846 into law, formalizing Diablo Canyon's extension and demonstrating that concerns over energy reliability ultimately outweighed many of the opposing pressures at that moment (California Legislature 2022).

Even after the bill's passage, however, the underlying conflict did not disappear. Diablo Canyon's extension continues to generate controversy, with groups such as Mothers for Peace still advocating for closure and challenging the long-term legitimacy of nuclear energy in California's energy stack. Importantly, California's overall favorability score was -9.39% in 2019 and 2.51% in 2022.[45] These relatively weak favorability levels suggest that the legislative shift behind SB846 did not arise from a strong surge in pro-nuclear public opinion. Instead, as in Florida, the legislative outcome appears to have been shaped by a combination of institutional pressures, financial restructuring, federal intervention, and competing campaigns.

6.3 Case Study Takeaways

Taken together, these two cases reinforce the broader interpretation of this thesis's empirical findings. In Florida, the eventual anti-nuclear legislative outcome was shaped by interest group campaigns, fear, high costs, and utility financing mechanisms. In California, the continuation of

[45] There was no favorability data provided by Gallup for 2021. These percentages were again derived from this paper's data.

nuclear power depended on different forces, especially grid reliability concerns and federal subsidies, even while organized opposition remained active.

The bottom line is that neither case reflects a simple or direct pathway from public opinion to policy. Instead, they both illustrate how nuclear energy legislation often emerges from a layered interaction of public sentiment, interest groups, partisanship, utility incentives, fiscal structures, and broader institutional pressures. Public opinion alone does not appear to comprehensively explain nuclear legislative outcomes. If politics matter for nuclear energy, they seem to matter through a more mediated and complex process than much of the nuclear literature has often assumed.

7. LIMITATIONS & DISCUSSION

7.1 Limitations and Future Research

This analysis is subject to several constraints, primarily related to data availability and identification. First, there is limited state-level data that measures public opinion. While the GPSS provides one of the most useful and extensive benchmarks for state-specific favorability polling, it has relatively small sample sizes at the state level. This introduces noise and reduces confidence in how accurately these measures reflect true public sentiment within individual states. Improving the measurement of public opinion would therefore be an important avenue for future research. This could involve collecting more granular, state-level survey data with larger and more representative samples, to generate more precise state estimates. Importantly, applying MRP directly, rather than relying on pre-aggregated measures such as Gallup-based estimates, would allow for greater validity and reliability of the public opinion weighted estimations. A more accurate and methodologically consistent measure of public opinion would strengthen the ability to evaluate its relationship with policy outcomes and reduce concerns that observed relationships are driven by measurement limitations rather than underlying political dynamics.

Second, the legislative dataset—while extensive—is not exhaustive. Expanding the dataset to include a broader set of bills, particularly across earlier time periods or additional states, could improve the robustness of the results and provide a more complete picture of legislative activity.

In addition, including bills that meet the criteria for nuclear-related legislation but which were not resolved within the same year they were introduced could further broaden the scope of nuclear energy legislation. Doing so, however, does introduce complications. Specifically, if legislative outcomes occur in a different year than the introduction, the timing of the dependent variable would no longer align cleanly with public opinion measured in the prior year ($t - 1$). This would require modifying the quantitative framework, either by redefining the timing structure of the independent variable or by shifting the focus from including legislative outcomes to only legislative introductions, or some other alternative.

Third, the inferences gathered from statistical data can be strengthened through empirical tests of partisanship. While these types of tests were conducted, they were not included in the final version of the thesis due to some empirical-measurement issues. However, if future research is conducted, the partisan tests would need to exploit and fix for—as one example—changes in state government control, such as shifts in party majorities, examining whether these transitions lead to systematic legislative changes. These possible tests would allow for a clearer understanding of whether political actors are actively shaping nuclear policy outcomes, or whether observed relationships are driven by underlying state characteristics correlated with partisanship. Lastly, further research could also include targeted tests that incorporate legislators' individual voting behaviors, testing whether from a micro perspective, responsiveness is present.

7.2 Discussion and Contributions

What can this thesis help us understand about nuclear energy in the United States? More specifically, what can it conclude about the relationship between nuclear energy legislation, policy responsiveness to public opinion, and the effects of external mediating factors? This thesis set out to make three main contributions. First, to bring the nuclear energy literature into direct conversation with political science theories of democratic responsiveness, shifting the focus to state-level variation in legislative outcomes. Second, to construct an original state-level measures of nuclear legislative favorability and public opinion, producing new descriptive evidence on public opinion, legislative,

and partisan patterns across U.S. states. Third, to provide the first direct regression-based test of whether state-level public opinion on nuclear energy is associated with legislative outcomes, with an additional qualitative case studies that examines how other forces, including interest groups, utility incentives, and broader political constraints, may shape nuclear policy beyond public sentiment alone. This discussion section returns to those contributions and categorizes the findings into four main takeaways: (1) the lack of public opinion data on nuclear energy, (2) the inaccuracy of nuclear energy favorability scores, (3) legislative behaviors towards nuclear energy aligned with party politics, and (4) the role of public opinion on policy.

7.2.1 Takeaway #1: A Lack of Nuclear Energy Public Opinion Data

This takeaway directly supports the thesis's first contribution by showing that, while the literature treats public opinion as a measurable and observable driver of policy, the actual state-level data required to test this relationship remains limited and underdeveloped. Berry et al. (1998) and Lax and Phillips (2012) warn of the challenges and weaknesses of public opinion surveys across states and years at large, let alone specifically regarding nuclear energy. This thesis's data collection process only reinforced that concern. The bottom line is that not enough polling is done on a state-specific level regarding nuclear energy and about whether individuals are pro-, anti-, or unsure about nuclear power.

National public opinion data is simply anemic and unreliable towards a full accurate, and valid picture of public opinion for individual states. Nuclear power plants exist within the context of states. Therefore, if the goal is to either build more plants, understand different potential public opinion backlash, or pursue any other similar objective, there simply is not enough state-specific data to make extremely definitive choices that affect huge amounts of capital, strategy, and effort. This highlights robust downstream issues, mostly insufficient data for different actors, such as utilities, private nuclear energy businesses, and legislators, regarding what certain constituents think about nuclear energy in a given state-year.

7.2.2 Takeaway #2: Low Levels of Nuclear Energy Support in the U.S. (Weighted)

Takeaway #2 directly reflects this thesis's second contribution, as the construction of a weighted favorability index reveals that commonly cited support percentages, for nuclear energy, are overstated when intensity is ignored. This thesis set out to produce new descriptive evidence on nuclear favorability, and one of the clearest findings is that nuclear energy's overall favorability is much lower, and more methodologically fragile, than it is often presented across the literature and industry commentary. It was found that nuclear energy's overall favorability is extremely low when weighted, with a mean score of approximately 4.4% between a twelve-year span. In addition, favorability scores appear to be relatively stable over time, with only a modest increase in the most recent years, especially around 2017. They also appear to move in ways that are congruent with the timing of nuclear accidents and periods of heightened public sensitivity.

These findings matter because they clarify one of the descriptive questions that this thesis explicitly set out to answer: What does nuclear favorability actually look like on a state level over time when measured with a weighted intensity-based index rather than with simple collapsed favor/oppose percentages? The results highlight issues of acceptance, on a state level, for nuclear energy, complicating the assumed optimism of the 21st century that is often characterized as the second nuclear renaissance.

Aspects of limited educational programming, the absence of a broad and persuasive pro-nuclear public campaign, and the continuing prominence of anti-nuclear narratives seem to have all contributed to these low favorability levels. However, hypothesizing why the U.S. faces such low weighted support is beyond the scope of this paper. Future research should examine whether these favorability scores align with those in the initial years of public opinion formation in the 1950s and 1960s, and how the nuclear industry might need to think more seriously about its long-term legitimacy in the public eye.

7.2.3 Takeaway #3: Partisan Divide on Nuclear Energy

This third takeaway directly builds on this thesis's contribution of constructing a detailed legislative dataset, allowing for a more precise examination of how partisanship—rather than broad bipartisanship—structures nuclear policy outcomes. One of the paper's central descriptive questions posed was whether nuclear energy legislation and sponsorship patterns appear bipartisan or instead structured by party. This paper covered various sources that highlighted nuclear energy as a bipartisan issue; however, this paper's findings accentuate that this does not seem to be the case. Nuclear energy seems to be decisively a partisan issue, at least within the context of state legislatures. Sponsorship and voting support appear strongly structured along party lines, suggesting that coalition strength may be a determinant of bill success. Republicans introduce pro-nuclear bills by orders of magnitude more than Democrats, a 270.27% difference.[46] Republicans also had more average sponsors per pro-bill, 3.1, compared to Democrat's 1.98 average. In voting behavior, Republicans cast far more yea votes on pro-nuclear bills, while Democratic legislators accounted for more yea votes on anti-nuclear energy bills than Republicans.

Nonetheless, it is important to re-emphasize that this thesis is by no means stating causality of any sort, especially from a partisan level. Instead, it is testing prior assumptions that the nuclear energy industry often holds, and finds—based on the descriptive findings—that nuclear policy might not function as a bipartisan issue in the way much contemporary nuclear writing sometimes implies.

7.2.4 Takeaway #4: The Role of Public Opinion

The core contribution of this thesis was to construct an original state-year dataset and provide the first direct regression test of whether state-level public opinion on nuclear energy is associated with state-level nuclear legislative outcomes. Therefore, the fourth takeaway is the one that speaks most directly to this central empirical and methodological contribution. The bottom-line result is that this relationship was not found in the way that both the nuclear energy industry and the first strand of political science theories would have led us to expect.

[46] 274 pro-nuclear bills introduced by Republican sponsors compared to 74 by Democrats.

The results of this research, coupled with the case studies, underline the most important takeaway being that nuclear energy policy responsiveness was not significantly found as a broad factor of public opinion. The results of the initial two-way fixed effects models, examining the relationship between state-year policy responsiveness for most nuclear energy bills either introduced or passed at time t, highlight that there is no consistently significant relationship between the favorability scores and legislative outcomes. There were no significant results other than Model (5), which found that when public opinion was higher, there was a negative coefficient associated with a lower proportion of anti-nuclear bills being passed. This is a meaningful finding, but it is also a narrow one. It does not show that higher public support for nuclear energy generates more pro-nuclear bills introduced or passed. Nor does it show that legislators broadly and directly move with public favorability in the way a straightforward theory of dynamic representation would predict. Instead, this only significant result suggests that stronger support for nuclear power may constrain the legislative success of anti-nuclear bills. That is a much more limited form of responsiveness than what was initially hypothesized.

Nevertheless, these results do not support the claim that public opinion has no effect or influence on policy. Rather, they show that public sentiment does not seem to be the main or only reason for legislative impact in the nuclear energy domain. In that sense, this thesis's empirical contribution is not that it disproves the importance of public opinion entirely, but that it shows how much weaker, narrower, and more conditional that relationship appears to be once it is actually tested at the state-year level for nuclear legislation.

This finding brings the literature contribution full circle. The nuclear energy literature often treats public opinion as an obvious explanatory variable for nuclear policy. However, one strand of political science papers, by contrast, has long warned that this relationship may be more conditional and mediated. Based on these results, it seems that the data supports the second strand of political science scholarship most of all: the existence of other external factors complicates the responsive relationship between legislation and public opinion, especially when it comes to nuclear energy. The case studies help reinforce this conclusion. For example, in Florida, organized public backlash,

cost recovery politics, interest group campaigns, and accident-driven fear all merged. In California, reliability needs, climate considerations, federal funding, and interest group conflict all mattered. In neither case does policy appear as a clean or simple reflection of public sentiment alone.

Factors like interest groups, partisan coalition strength, fiscal and market constraints, utility structure, and energy demand all seem to be relevant indicators of certain types of policy outcomes. The examination of potential regulatory and legislative outcomes in certain U.S. states, therefore, has to merge these multiple factors into any serious predictions, projections, and calculations. The objective of this paper was not to prove which factor matters the most, rather to highlight how public opinion does not act alone in policy influence. The ultimate, broader contribution of the paper is that if politics matter for nuclear energy, they may not matter in the way the nuclear literature often presumes. Public opinion remains relevant, but it does not operate as the singular driving force of nuclear legislative outcomes across the examined states.

7.3 Discussion Final Thoughts

Taken together, these findings refine how nuclear energy policy should be understood at the state level by shifting attention away from the existing, untested assumptions about public support and toward the underlying structure of political and informational constraints. Rather than revealing a clear and direct pathway from public opinion to policy outcomes, the results suggest a more conditional and mediated process. By integrating newly constructed measures with original legislative data, this analysis clarifies both what can and cannot be inferred about the drivers of nuclear policy, emphasizing that commonly cited explanations often rely on incomplete or overstated empirical foundations. In doing so, it situates nuclear energy politics within a broader political framework where public sentiment remains relevant, but neither singular nor sufficient in explaining legislative behavior.

8. CONCLUSION

This paper set out to examine whether state-level nuclear energy policy aligns with public opinion. While public opinion toward nuclear energy does exhibit meaningful variation across states

and over time—and while one model suggests that higher favorability is associated with fewer anti-nuclear bills being passed—the broader pattern of evidence does not support a strong theory of direct public responsiveness. Across most specifications, public opinion does not consistently predict either bill introduction or passage. Instead, the results point toward a more mediated relationship between public opinion and policy outcomes. Descriptive evidence demonstrates clear partisan structuring in nuclear energy state legislation, with Republicans disproportionately sponsoring and supporting pro-nuclear bills and Democrats showing relatively greater alignment with anti-nuclear positions, though not in a fully polarized manner. At the same time, the case studies illustrate that legislative outcomes are shaped by a broader set of forces, including interest group campaigns, regulatory structures, and external shocks such as nuclear accidents or energy supply crises. Taken together, these findings suggest that nuclear policymaking is not simply a direct reflection of public sentiment, but rather the product of multiple interacting political and institutional mechanisms.

As the contemporary debates over energy security, climate change, great power competition, and AI-driven electricity demand intensify, understanding the relationship between public opinion and nuclear policymaking becomes ever more urgent. Much of the existing discourse implicitly assumes that public opinion serves as the primary driver of nuclear outcomes across states. However, this thesis suggests a more complex reality; public opinion matters, but it does not operate in isolation, nor does it consistently translate into direct legislative change.

Although the measures used in this analysis are imperfect, this thesis represents an important first step in re-examining a commonly assumed relationship within the nuclear energy literature. By bringing together quantitative analysis and qualitative evidence, it highlights the need for the nuclear energy industry to move beyond assumed models of simple responsiveness and toward a more nuanced understanding of how policy is actually produced. In doing so, this paper contributes to a broader conversation about the limits of democratic responsiveness in complex, high-stakes policy domains, while also pointing toward the kind of cross-disciplinary insight that is needed for the meaningful Schumpeterian disruption the energy landscape has to embody in the near future. Ultimately, this thesis clarifies how responsiveness operates—or fails to operate—in one of the

most consequential domains of our lifetimes, bringing us one step closer to a more energy-abundant future.

APPENDICES

Appendix A: Nuclear Energy Bill Classification Guide

This guide provides a structured approach to classify legislation into three categories: favorable to nuclear energy, unfavorable to nuclear energy, and neutral or mixed impact.

The criteria below synthesize common positions articulated by pro-nuclear organizations (e.g., NEI, ANS, U.S. DOE), anti-nuclear organizations (e.g., Alliance for Nuclear Responsibility, anti-nuclear coalitions), and standard public policy arguments around nuclear energy. The guide is designed for coding, evaluating, or annotating legislation.

A.1 Favorable to Nuclear Energy

A bill is favorable if it actively advances, protects, or expands the role of nuclear power in the energy system. A bill should be classified as favorable if it contains any of the following provisions:

- **A.** *Expands Financial Access or Incentives*: Appropriates funding for new or existing reactors; extends or creates tax credits, grants, or DOE programs; or guarantees loans to nuclear developers or utilities.
- **B.** *Includes Nuclear in Clean Energy Definitions*: Adds nuclear to renewable, clean, or zero-carbon standards; or ensures access to clean energy subsidies, credits, or mandates.
- **C.** *Streamlines or Modernizes Regulation*: Shortens licensing timelines; reduces administrative barriers without removing safety; or creates pathways for advanced reactor certification.
- **D.** *Sustains and Protects Existing Nuclear Plants*: Prevents premature plant closures or creates incentives to keep current reactors operating.
- **E.** *Supports Workforce and Industry Development*: Funds nuclear engineering programs and STEM pipelines; or provides training or partnerships with universities

and national labs.

- **F.** *Strengthens International Positioning*: Encourages reactor exports; enhances US technological competitiveness globally; or provides tools to counter geopolitical competitors (e.g., Russia, China).

A.2 Unfavorable to Nuclear Energy

A bill is unfavorable if it restricts, limits, or undermines nuclear power now or in the future. A bill should be classified as unfavorable if it includes any of the following:

- **A.** *Explicit Restrictions or Prohibitions*: Enacts a moratorium on new reactor licensing or siting; bans constructing new nuclear capacity; or requires the closure of existing facilities.
- **B.** *Removes Access to Funding or Incentives*: Eliminates nuclear eligibility for statewide energy programs; redirects funding exclusively toward non-nuclear sources; or repeals existing tax or financing support.
- **C.** *Imposes Burdensome Regulatory Requirements*: Creates new compliance obligations targeted specifically at nuclear that materially raise costs or timelines; or enacts safety, waste, or reporting standards in a way that discourages development.
- **D.** *Phase-Out or De-Prioritization Language*: Includes statements indicating the state intends to eliminate nuclear over time; or enacts policies privileging wind/solar mandates while explicitly excluding nuclear.
- **E.** *Discouraging Utility or Private Investment*: Implements siting restrictions that effectively prevent construction, or creates barriers to transmission or grid connection for nuclear facilities.

A.3 Neutral or Mixed Impact Bills

A bill is neutral or mixed when its primary intent does not target nuclear energy, or when its effects are ambiguous. A bill should be classified as neutral/mixed when one or more of the following apply:

- **A.** *The Bill Does Not Materially Affect Nuclear*: General clean energy or infrastructure bills that do not mention nuclear, or incentives that apply to all technologies and do not exclude nuclear.
- **B.** *Technology-Neutral Clean Energy Measures*: Emissions-based or carbon-intensity standards; or market-based programs (e.g., cap-and-trade) with no exclusions.
- **C.** *Safety Oversight or Waste Policy That Is Proportionate*: Updates to maintenance, oversight, or waste planning that do not raise barriers (note: waste research funding may even be slightly favorable).
- **D.** *Mixed Provisions*: Contains both incentives and constraints (e.g., providing funding for Small Modular Reactors [SMRs] while simultaneously imposing tougher siting scrutiny).
- **E.** *Uncertain or Indirect Impacts*: Policies highly dependent on agency implementation, or measures affecting utilities broadly without singling out nuclear energy.

Appendix B: Data and Code Availability

All data and R code used in this study are available upon request. The following supplementary datasets and spreadsheets were compiled for this analysis and are available for replication and review:

1. *State Public Opinion Data and Favorability Score Calculations*: This sheet contains the raw public opinion data and the formulas used to calculate the favorability scores.
2. *Nuclear Energy Legislation Classification*: This sheet includes all classified nuclear energy legislation, along with their respective sponsors and roll-call votes for the state-years collected.

3. *Merged Favorability and Legislation Data*: A bound dataset that links the calculated state favorability scores with the corresponding classified legislation.

REFERENCES

References

American Nuclear Society. 2012. “Oklo’s Natural Fission Reactors.”

American Nuclear Society. 2022. “American Nuclear Society Urges California Lawmakers to Save S.B. 846.” *Nuclear Newswire*, August 29.

Begert, Blanca. 2025. “Environmental Group Drops Lawsuit over Diablo Canyon’s Federal Funding.” *E&E News by POLITICO*, January 16.

Bergquist, Parrish, Matto Mildenberger, and Leah C. Stokes. 2020. “Combining Climate, Economic, and Social Policy Builds Public Support for Climate Action in the US.” *Environmental Research Letters* 15 (5): 054019.

Berry, William D., Evan J. Ringquist, Richard C. Fording, and Russell L. Hanson. 1998. “Measuring Citizen and Government Ideology in the American States, 1960–93.” *American Journal of Political Science* 42 (1): 327–48.

Berthélemy, Michel, and Lina Escobar Rangel. 2015. “Nuclear Reactors’ Construction Costs: The Role of Lead-Time, Standardization and Technological Progress.” *Energy Policy* 82: 118–30.

Bordoff, Jason, Ashley Finan, and Matt Bowen. 2025. “The United States Needs a Nuclear Operation Warp Speed.” *Foreign Policy*, June 9.

Bowen, Matt. 2020. *Why the United States Should Remain Engaged on Nuclear Power: Geopolitical and National Security Considerations*. New York: Center on Global Energy Policy, Columbia SIPA.

Burstein, Paul. 2003. “The Impact of Public Opinion on Public Policy: A Review and an Agenda.” *Political Research Quarterly* 56 (1): 29–40.

California Independent System Operator, California Public Utilities Commission, and California Energy Commission. 2020. *Preliminary Root Cause Analysis: Mid-August 2020 Heat Storm*. October 6.

California Legislature. 2022. *Senate Bill No. 846, Diablo Canyon Powerplant: Extension of Operations*. Chapter 239, Statutes of 2022.

California Senate Rules Committee. 2022. "SB 846 Senate Floor Analysis." Office of Senate Floor Analyses, September 1.

Cantor, Robin, and James Hewlett. 1988. "The Economics of Nuclear Power: Further Evidence on Learning, Economies of Scale, and Regulatory Effects." *Resources and Energy* 10 (4): 315–35.

Carley, Sanya. 2011. "The Era of State Energy Policy Innovation: A Review of Policy Instruments." *Review of Policy Research* 28 (3): 265–94.

Clulow, Zeynep, and David M. Reiner. 2022. "Democracy, Economic Development and Low-Carbon Energy: When and Why Does Democratization Promote Energy Transition?" *Sustainability* 14 (20): 13213.

Cable News Network (CNN). 2024. "2024 Presidential Election Results."

Dahl, Robert A. 1956. *A Preface to Democratic Theory*. Chicago, IL: University of Chicago Press.

Dahl, Robert A. 1989. *Democracy and Its Critics*. New Haven, CT: Yale University Press.

Davis, Lucas W. 2012. "Prospects for Nuclear Power." *Journal of Economic Perspectives* 26 (1): 49–66.

Divan, Deepak, and Suresh Sharma. 2024. *Energy 2040: Aligning Innovation, Economics, and Decarbonization*. New York: Springer.

Duke Energy Florida. 2014. "Earnings Surveillance Report for the Twelve Months Ended August 31, 2014." Submitted to the Florida Public Service Commission, October 15.

Florida Legislature. 2006. *An Act Relating to Energy (Florida Renewable Energy Technologies and Energy Efficiency Act)*. Chapter 2006-230, Laws of Florida.

Florida Senate. 2013. *An Act Relating to Nuclear and Integrated Gasification Combined Cycle Power Plants*. CS for CS for SB 1472, 3rd Engrossed.

Florida Public Service Commission. 2013a. "Document No. 04569-13: Consumer Correspondence Regarding Duke Energy." October 15.

Florida Public Service Commission. 2013b. "Document No. 00302-13: Consumer Correspondence Regarding Docket 130009." October 1.

Florida House. 2006. HB1473 filing record. March 5.

Gallup. 2024. *March GPSS: The Environment* [Dataset]. Washington, DC: Gallup.

Gilens, Martin, and Benjamin I. Page. 2014. "Testing Theories of American Politics: Elites, Interest Groups, and Average Citizens." *Perspectives on Politics* 12 (3): 564–81.

Greenberg, Michael. 2009. "Energy Sources, Public Policy, and Public Preferences: Analysis of US National and Site-Specific Data." *Energy Policy* 37: 3242–49.

Grubler, Arnulf. 2010. "The Costs of the French Nuclear Scale-up: A Case of Negative Learning by Doing." *Energy Policy* 38 (9): 5174–88.

Gupta, Kuhika, Matthew C. Nowlin, Joseph T. Ripberger, Hank C. Jenkins-Smith, and Carol L. Silva. 2019. "Tracking the Nuclear 'Mood' in the United States." *Energy Policy* 133: 110888.

Hall, Richard L., and Alan V. Deardorff. 2006. "Lobbying as Legislative Subsidy." *American Political Science Review* 100 (1): 69–84.

Heffron, Raphael J. 2012. "Nuclear New Build in the United States 1990–2010." *Technological Forecasting and Social Change* 80: 876–92.

Hibbs, Mark. 2017. "Does the U.S. Nuclear Industry Have a Future?" *Carnegie Endowment for International Peace*, August 10.

Hughes, Llewelyn, and Phillip Y. Lipscy. 2013. "The Politics of Energy." *Annual Review of Political Science* 16: 449–69.

Hultman, Nathan E., and Jonathan G. Koomey. 2007. "The Risk of Surprise in Energy Technology Costs." *Environmental Research Letters* 2 (3): 034002.

Judy, 2013. Levy County nuclear reactor cost data. (Source document on file with author.)

Joskow, Paul. 1974. "Inflation and Environmental Concern: Structural Change in the Process of Public Utility Price Regulation." *Journal of Law and Economics* 17 (2): 291–327.

Kwon, O. Hwang, Katie Vu, Naman Bhargava, Mohammed I. Radaideh, Jacob Cooper, Veda Joynt, and Majdi I. Radaideh. 2024. "Sentiment Analysis of Public Support for Nuclear Power." *Renewable and Sustainable Energy Reviews* 200: 114570.

Lax, Jeffrey R., and Justin H. Phillips. 2009. "How Should We Estimate Public Opinion in the States?" *American Journal of Political Science* 53 (1): 107–21.

Lax, Jeffrey R., and Justin H. Phillips. 2012. "The Democratic Deficit in the States." *American Journal of Political Science* 56 (1): 148–66.

LegiScan. 2024. *LegiScan API* [Dataset]. LegiScan LLC.

Lincoln, Abraham. 1989 [1863]. "Address at Gettysburg, Pennsylvania." In *Speeches and Writings 1859–1865*. New York: Library of America.

López Lloreda, Claudia. 2025. "Is a 'Nuclear Renaissance' Possible in the United States?" *Undark*, September 8.

Lovering, Jessica R., Arthur Yip, and Ted Nordhaus. 2016. "Historical Construction Costs of Global Nuclear Power Reactors." *Energy Policy* 91: 371–82.

Lopez, 2022. (News report on Newsom and Diablo Canyon legislation.)

MacKerron, Gordon. 1992. “Nuclear Costs: Why Do They Keep Rising?” *Energy Policy* 20 (7): 641–52.

Massachusetts Institute of Technology Nuclear Reactor Laboratory. 2025. “The Fission Process.”

Meckling, Jonas, Phillip Y. Lipscy, Jared J. Finnegan, and Florence Metz. 2022. “Why Nations Lead or Lag in Energy Transitions.” *Science* 378 (6615): 31–33.

Mildenberger, Matto, and Leah C. Stokes. 2019. “The Energy Politics of North America.” In *The Oxford Handbook of Energy Politics*, edited by Kathleen J. Hancock and Juliann Emmons Allison, 407–28. New York: Oxford University Press.

Miller, Nicholas L., and Tristan A. Volpe. 2023. “The Rise of the Autocratic Nuclear Marketplace.” *Journal of Strategic Studies* 46 (6–7): 1325–63.

Minnesota Law Review Editorial Board. 1982. “A Preemption Analysis of California’s Moratorium on Nuclear Plant Construction.” *Minnesota Law Review* 66: 1258–81.

Monroe, Alan D. 1979. “Consistency Between Public Preferences and National Policy Decisions.” *American Politics Quarterly* 7 (1): 3–19.

Monroe, Alan D. 1998. “Public Opinion and Public Policy, 1980–1993.” *Public Opinion Quarterly* 62 (1): 6–28.

Neij, Lena. 2008. “Cost Development of Future Technologies for Power Generation.” *Energy Policy* 36: 2200–11.

Nicol, Katherine. 2010. “America’s First Civilian Nuclear Plant.”

Nuclear Energy Institute. 2024. “U.S. Nuclear Plants.”

Page, Benjamin I., and Robert Y. Shapiro. 1983. “Effects of Public Opinion on Policy.” *American Political Science Review* 77 (1): 175–90.

Parenteau, Patrick A. 1976. "Regulation of Nuclear Power Plants." *Environmental Law* 6 (3): 675–728.

Pacific Gas and Electric Company. 2016. "PG&E, Labor and Environmental Groups File Diablo Canyon Joint Proposal." Press release, August 11.

Raughley, 1999. (Deregulation history of U.S. electrical power industry.)

Richter, Thomas, and Stefan Wurster. 2016. "Policy Diffusion among Democracies and Autocracies." *Global Policy* 7 (4): 541–47.

Schneider, Mycle, and Antony Froggatt. 2013. *World Nuclear Industry Status Report 2013*. Paris and London.

Shleifer, Andrei. 1998. "State versus Private Ownership." *Journal of Economic Perspectives* 12 (4): 133–50.

Slovic, Paul. 1987. "Perception of Risk." *Science* 236 (4799): 280–85.

Smith, Mark A. 1999. "Public Opinion, Elections, and Representation." *American Journal of Political Science* 43 (3): 842–63.

Southern Alliance for Clean Energy. 2014. "2013—A Big Year for Florida's Fight against the Nuclear 'Tax'." January 7.

Stimson, James A., Michael B. MacKuen, and Robert S. Erikson. 1995. "Dynamic Representation." *American Political Science Review* 89 (3): 543–65.

Stop the Duke Energy Rip Off. 2013. "Stop the Duke Energy Rip Off!" Change.org, September 28.

Subramanian, R. R. 2010. "The Politics of Nuclear Energy." *Strategic Analysis* 34 (6): 806–11.

Taylor, Timothy R. B., David N. Ford, and Kenneth F. Reinschmidt. 2012. "Impact of Public Policy and Societal Risk Perception." *Journal of Construction Engineering and Management* 138 (8): 972–81.

Temples, James R. 1980. “The Politics of Nuclear Power.” *Political Science Quarterly* 95 (2): 239–60.

Times Staff Writer. 2013. “Crystal River Nuclear Plant: $1.3B and Counting.” *Tampa Bay Times*, February 5.

Tocqueville, Alexis de. 2000 [1835–1840]. *Democracy in America*. Chicago, IL: University of Chicago Press.

U.S. Department of Energy. 2024. “Biden-Harris Administration Finalizes Award of $1.1 Billion.” January 17.

U.S. Department of Energy. 2025. “5 Fast Facts about Nuclear Energy.”

U.S. Energy Information Administration. 2024. “How Many Nuclear Power Plants Are in the United States?”

U.S. Nuclear Regulatory Commission. 2024. “Backgrounder on the Three Mile Island Accident.”

U.S. Nuclear Regulatory Commission. 2025. “Power Reactors.”

Wellock, Thomas R. 1998. *Critical Masses: Opposition to Nuclear Power in California, 1958–1978*. Madison: University of Wisconsin Press.

Wlezien, Christopher, and Stuart N. Soroka. 2016. “Public Opinion and Public Policy.” *Oxford Research Encyclopedia of Politics*.

Yeo, Sara K., et al. 2013. “Partisan Amplification of Risk.” *Energy Policy* 67: 727–36.