

The Effects of Public Opinion on Nuclear Repository

Construction

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During the Cold War, the US prioritized military might by rapidly producing weapons of mass destruction, but nuclear plant production is now focusing on cleaner energy initiatives. Though the shift to cleaner energy alternatives is attractive, nuclear production and waste can be harmful to those living near facilities, especially in cases of reactor meltdowns or radiation leaks. The objective of this study is to examine the extent to which public opinion affects Congressional willingness to approve nuclear repository construction in the United States. This data will be analyzed from a case study comparison of the two most popular projected nuclear repository sites within the United States: the New Mexico Waste Isolation Pilot Plant and the Yucca Mountain repository. The data will mainly be compiled from Federal and State Government reports of geography, legal and policy action, and legislative comparison. The study will also use statewide and geographically localized surveys conducted in potential construction locations indicating citizens' approval or disapproval towards the sites and accessible collective public response. The results of this qualitative analysis suggest that public opinion plays a significant role in congressional willingness to fund and approve construction. Public opinion also appears to be more influential when echoed by state legislators to federal authorities. This research adds to previous examinations of public perspectives on nuclear repositories and analyzes whether public voices are influential if they are at conflict with global prioritization of cleaner energy alternatives.

Developed states view nuclear proliferation as a necessity in the 21st century. While proliferation was initially led by military needs, the global shift to adopt cleaner methods of energy to mitigate environmental impact has encouraged the United States to develop more nuclear plants and find methods of nuclear waste disposal. Maintaining nuclear hegemony has encouraged both the executive and legislative branches to propose new sites for construction and plant improvement. With the increase in nuclear plants comes large amounts of low to highly radioactive waste as a byproduct. As the pace of plant construction far outweighs repositories, the risk of sitting nuclear radioactive waste increases. The urgency to dispose of nuclear waste, along with reliance upon power grids, places a large amount of responsibility on local citizens to provide consent prior to the construction of nuclear plants. The potential risk associated with the presence of reactors or repositories affects public willingness to affirm propositions by the federal government. Varying public opinion and the level of influence it has on the construction of nuclear sites makes this study imperative to understand the relationship between public opinion and nuclear repository construction.

The following literature review will discuss the im-

pacts on public opinion of those living in close proximity and further from the potential sites and their understanding of the cost-benefit analysis of construction. Beginning with the influence of individual values and demographics affecting initial public opinion, then the NIMBY phenomenon that pushes some to accept the facility or "tolerate" it if it is out of their direct line of sight, and finally engaging with the real impact public opinion has on the policy and construction of future sites, the research will evaluate the effect of public opinion on congressional approval of nuclear waste repositories. This study will further advance the literature base by analyzing previous studies of demographic influence and proximity while finding correlations with public opinion and policy shifts in regard to construction. Additionally, this research will further advance the body of research on public perspectives of nuclear production and analyze how, if at all, public voices are influential when at conflict with domestic policy initiatives. With global perspectives shifting on both the acceptance of nuclear energy as a green or efficient and "clean" alternative to fossil fuels and non-efficient energy practices, it is imperative to examine the impact that this has on populations directly affected by their placement and use.

Values Lead Public Opinion

The surge of governmental policy surrounding nuclear power has created a literature base that provides data for levels of public willingness to construct nuclear reactors. Whitfield et al. articulate in their research that previous hypotheses have focused on trust in governmental institutions and environmental policy when considering approval for such sites (2009). The research indicates that personal values based on demographics are the key to understanding differences in willingness and outspokenness amongst those affected most by site placements (Whitfield et al., 2009). The study concludes that it is much easier to raise opposition than support over nuclear policy due to the impact and communication surrounding risks and disasters towards the facilities. In turn, little attention is paid to the transformation of the industry into more sustainable models of growth. History has shown that the public holds a negative outlook on nuclear energy due to a lack of understanding of nuclear power. While the present use of nuclear energy is beginning to focus on sustainable power grid use, previous use of nuclear energy for military gain continues to plague the minds of citizens, who continue to be concerned about physical risks related to living in proximity to radioactive materials (National Research Council, 2001). The design of this study insufficiently identifies specific motivations to interact with the environmental policy and citizen to representative interaction.

Kraft evaluates technological and political challenges faced by the federal government in its efforts to deal with nuclear waste, adding to the surrounding literature regarding government credibility and trust in its attempt to construct nuclear sites and engage in waste disposal (2013). Through a qualitative historical analysis, the author notes that there has never been a permanent solution to the growing nuclear waste problem and public support for nuclear power has declined ever since waste began to accumulate. Public disapproval rate was increased specifically after the Chernobyl and Three Mile Island accidents. Congressional policy was paralyzed when the Carter administration wanted public opinion to be considered in the process of choosing a geological repository site specifically after the Three Mile incident occurred (Kraft, 2013). The previously stark historical association with nuclear plants and energy has created linguistic differences indicating differences in the strength of the values of respondents. When interviewing random samples of international respondents, Keller et al. found that individuals opposed to power plants had more concrete connotations and diverse negative associations with the plants than those approving of them (2011). Differences in perception changed linguistic choice by changing willingness to speak out on the issue, as public turnout at hearings in the U.S. regarding sites' indicated disapproval. The low credibility of the Department of Energy and lack of federal credibility also seems to be related to the public to attend hearings. According to Kraft, public turnout and vocalized disapproval will continue to impede progress, despite the government's habits of pushing through

bills without increasing research of safer alternatives. Nonetheless, he doubts that nuclear energy will dominate the energy markets (Kraft, 2013).

Rosa and Short argue against accepting government authority, as it conflicts with public willingness to accept facility placement (2004). Instead, they doubt the accurate representation of individuals in the government. Their study utilizes cognitive psychology and the siting of hazardous waste facilities, looking at the Yucca Mountain repository site specifically. They argue that social relationships progress tenuous relationships Native Americans find themselves in with the federal government (Rosa and Short, 2004). Previous research concurs with this divide in acceptance of government support due to socio-economic differences, especially in terms of actual benefits from the sites. Affluent, and typically white, individuals are prioritized in the government's choice in location. Communities directly impacted by site construction are typically less wealthy and less likely to reap any positive reward from the site (Benford et al., 1993). This lack of trust and representation of marginalized voices backs Rose and Short's assumptions of efficacy being the value-driven basis for which individuals act as stakeholders in the policymaking process (2004), but lacks a clear explanation or further research regarding policy shifts or inclusion post-fact.

The association of risk and demographics are analyzed to further articulate the relation of values of importance to individuals, who find speaking out and becoming politically active in response to zoning is significant. Jenkins-Smith et al. utilize competing hypotheses regarding site opposition to test for basic demographic differences, proximity to the site, political alignment, and policy timeline by utilizing statewide surveys in relation to the Waste Isolation Pilot Plant in New Mexico (Jenkins-Smith et al., 2013). The study found that those positioned closest to the site are most likely to approve of the plant, due to general tolerance by association, while other demographic facts seem to play a confounding role in the way that they accept or oppose the site (Jenkins-Smith et al., 2013). While arguing that public acceptance could exist for these facilities, it proves that longitudinal solvency in garnering public support is possible. The study does not articulate the direct impact of these statewide surveys on any shift in policy or political interaction with the constituents directly affected by the placement of the site.

NIMBY Phenomenon

The Not in My Backyard effect, alternatively referred to as the NIMBY Phenomenon, is cited in much of the literature surrounding plant construction in regard to nuclear energy as it is related to a trend of public disapproval regarding nuclear sites in general. A public survey conducted by Grootuis and Miller utilized mailed surveys checking the willingness of respondents to allow nuclear plant construction if provided with varying levels of compensation and attitudinal responses

towards potential risk associated with its existence (1994). This study found that individuals are most likely to fall between a tolerance or avoidance perspective, largely contingent upon a personal or familial risk of being affected by environmental contamination. Alternatively, those with less of a personal connection to the neighborhood or those who indicate prioritization of monetary value over potential health concerns will tolerate the construction (Groothuis and Miller, 1994). Gaps in this literature include the lack of specificity in relation to nuclear power plants but instead broadens the understanding of the NIMBY effect on those situated near hazardous waste sites.

Related public disapproval towards a permanent repository for nuclear waste has caused this specific type of construction to be listed as the least wanted use of local land. A study compiling the data from the Princeton Survey Research Associates International's Random Digit Dialing respondent's answers regarding the perception of nuclear power was cross-listed with the Fukushima meltdown following a natural disaster (Soni, 2018). This analysis indicates that the closer to the disaster, the less likely individuals will support increasing the countries' nuclear capacity. It is noted that the passage of time and the lessened media spotlight on the issue will reduce the individual's hostility because the risk is no longer at the forefront of their minds (Soni, 2018). This study lacks site-specific analysis of those most closely associated with plants or potential construction but instead offers a general analysis of public perception following independent disasters and willingness to accept the current nuclear policy.

While previous literature expands upon the level of proximity to sites and the high rates of disapproval, Benford et al. analyze the NIMBY phenomenon's interaction with the education provided by federal agencies combined with economic compensation (1993). The article focuses on how this communication between federal agencies and constituents has been uniquely successful in garnering public approval. Analyzing why individuals are unable to entertain a cost-benefit analysis on their own, weighing previous scholarship's findings on why compensation has appeared to be less effective in changing the general consensus of high risk with minimal payoff and whether lack of education about nuclear production and the federal government's research on the risks of radioactive production, the authors evaluate these variables in a survey analysis. The authors employ survey data from random digit dialing, 17 individual interviews, and multiple regression models to analyze public response (Benford et al., 1993). The respondents chosen, living in Boyd County Nebraska, were found to have more concern and opposition to proposed siting of the waste than those living outside of the county but still within the state. Applying their conflict model which takes social stratification, distribution of the nuclear power from the plant, and any other associated benefits to the group most closely affected by its placement are used to further explain the public opposition under the NIMBY effect. The findings indicate that those who were less

educated, younger, married, or female seem to provide the largest amount of concern in response to the construction and presence of these sites. Those who are deemed less concerned about the placement are also those who appear to gain the most from its construction. The authors add that the analysis conducted in Boyd County may be skewed due to its larger aging population, which could affect the rate of resistance or willingness to move in response to potential harm. The economic decline of the community also provides it with less capital in opposing government intervention (Benford et al., 1993).

Public opinion appears contradictory as individuals will respond in ways that indicate that they both support the expansion of nuclear energy - but only when related to nuclear energy to provide for the domestic power grid, as opposed to nuclear energy for military weaponry (Melber et al., 1977). Additionally, a large portion of the opposition to plant sites has been confirmed to be more likely based on the proximity of the individual to the sites proposed for construction as previously indicated. While individuals may find positive outcomes associated with more nuclear energy and sites domestically, when these sites are nearby where the individual lives, the support appears to decrease (Melber et al., 1977). However, in the study conducted by Melber et al. synthesizing over 100 public opinion surveys in the late 1970s, residents of nearby plants seem to favor their existence if the assumed confounding variable of tax revenue from the plant is received by the respondent (1977). The author's account for the psychological constraints associated with their analysis as individuals surveyed nearby sites are more likely to be amicable towards its existence as they grow to normalize its existence and care less about the potential risk. This also would appear to be influenced by the longitudinal effect of receiving some level of monetary compensation over time as opposed to accepting the hypothetical kickback of tax revenue from the plants (Melber et al., 1977).

As acceptance continues to grow as individuals become more accustomed to the existence of these plants, the NIMBY phenomenon seems to reduce entirely to the point where further construction or updates would not upset local citizens. Greenberg utilizes surveys of individuals living within fifty miles of new nuclear sites and those beyond the fifty-mile line to gauge acceptance of waste facilities, building new plants in the same area, and support for new plants (2009). Those living closer to nuclear plants that are already in existence appear to be more familiar with them and as a result, trusting of the local government, influencing their favor towards increasing the capacity of the land by constructing new facilities and in favor of creating waste management sites (Greenberg, 2009). The longer that the local and federal governments are present throughout the plant existence, the more local citizens seem to trust and be more willing to increase the potential risk of having plants and repositories near them.

Public Effects on Congressional Approval

In reviewing the ability for public opinion to sway Congressional policy numerous methods of data collection have been utilized to gain an aggregate of the opinions on particular policies. The influence of public opinion, by way of reviewing national and state-level policies through survey data, on policymaking reviews democratic competence and the willingness of legislators to listen to their constituents and is most common for the analysis of policy responsiveness. Largely contingent upon congressional leaders willing to put chances of reelection on the line, the research conducted by Shapiro reviews previous literature, theoretical trends and past survey data from National Election Studies and General Social Studies indicate national-level trends on policy preferences (2011). On the state and local-level, previous research has recorded polling from the NES and General Social Survey data. Building off this, the author argues that the public is influential. Finding the extent to which public opinion can influence legislative action, in terms of how large a role the federal government plays and the influence the amount of power the citizens maintain, is largely contingent on the differing socioeconomic statuses of the constituents and their influence as a result (Shapiro, 2011). While constituents have utilized the power to remove or elect different congressional representatives over their approval or lack thereof, policy influence is impacted by a multitude of factors. As Shapiro argues, mitigating social and economic factors influence constituent ability to change the direction of bill passage (2011).

Alternatively, mixing quantitative and qualitative analysis approaches to find the best method of measuring responsiveness and public opinion has been undertaken. Manza and Cook begin by reviewing previous time-series analyses, policy examinations, and journalistic treatments to examine the efficacy of previous literature that is utilized to argue the weight of public opinion in bill passage (2002). Discovering a link between voter opinion and behavior of House members, the authors find that purely quantitative analysis in previous research, provided by the methods listed above, confines findings in their examination of the constituent influence. Without being able to control for the direction of influence of the congressional members on their constituents and other variables such as media coverage of specific policies and their effect on congressional action, the level of analysis is constricted (Manza and Cook, 2002). Additionally, state policy preferences may take precedence in controlling representatives' actions rather than the public opinion of fewer constituents that is highlighted by previous

data. Constraints presented by the previous qualitative scholarship also indicate variance in representatives' willingness to diverge from public opinion as "leaders" in the policymaking process (Manza and Cook, 2002). The research also indicates gaps in the ability to know if respondents, or constituents presented with policy, are restricted in their responses to the questions asked of them due to wording or nuance intended by the interviewers.

Previous literature also presents the problem associated with finding the relationship between public opinion and policy being weakened due to restraints of the common person in adequately responding to or changing policy initiatives due to low levels of knowledge regarding the policymaking process. Having opinions that move in the opposite direction of these policies cannot always overpower representative responsiveness due to the inability to translate this public opinion into legislation (Manza and Cook, 2002). The inability to be consistent in ideological leanings, due to the restrictiveness of qualitative measures and the power of political elites to control policy approval, may also undermine the relationship between public opinion influence in shaping legislation entirely as Shapiro indicates as well (Shapiro, 2011). Manza and Cook also utilize comparative analyses of opinion moving policy over time to determine that when public opinion is coherent it can set parameters on policy. Even with clearly defined public opinion, policymakers may find less visible ways to alter policies so that they are acceptable to the public on face value but may have hidden caveats that move in the originally defined direction of the bill (Manza and Cook, 2002). Less public cohesion over issues dilutes the power of public opinion and may allow the directionality of the influence to move in the inverse, from the political elites to the public, and while it is found that policy is positively correlated to public opinion, there is a wide variation in the extent of responsiveness over time to said opinion.

Public opinion can also run contrary to publicly organized collective groups such as party-aligned organizations, interest groups, and social movement organizations. Authors Burstein and Linton garner their data from previous sociological and political science journals used to analyze, in tandem, the impact of organizations on policy (2002). In order to expand the literature on exactly how these different levels of organizations increase relevant policy outcomes, the authors attempt to identify exactly how much the relevant policy outcome can be augmented by the group influence (Burstein and Linton, 2002). The previous

scholarship articulates that majority favor, being non-collectivized public opinion, may fall out of line with these group-level organizations advocating for specific policy initiatives, leading the authors to challenge whether public opinion can reduce the efficacy of group influence. The authors notice that the frequency of which these groups have influence is lower than expected, especially when considering public opinion on the matter running contrary to the organizations' (Burstein and Linton, 2002). While limited in geographical application, the study provides a unique analysis of how public opinion can silence and have a great pull on policy, even in silencing groups that may have more political, social or economic capital to aid their agenda.

In determining the level of trust citizens are willing to provide the government, the communities that will be impacted by these proposed sites, as noted prior in the NIMBY effect analysis is at a structural disadvantage. In a study conducted by Kelly and Enns, the authors test mass preferences and levels of economic attainment to explain trends of public opinion regarding government efficacy (2010). While the article focuses on public opinion over economic policy among stratified economic classes, the useful application of certain actions increasing inequality and the faith that the citizens then place on the government to act and mediate the problem remains relevant in the discussion of the fruitfulness of public opinion and its interaction with policy passage. In testing their variables using quantitative time-series and GSS data, the authors argue that economic inequality influences public willingness to have the government respond to events that create or worsen inequality. Additionally, they go on to find that when events are expected to increase levels of inequality, trust in the government to fix this inequality or a willingness of the citizens to allow the government's response reduces (Kelly and Enns, 2010). When the proposed policy is perceived to potentially harm a body of individuals already at a structural disadvantage, the reduction in willingness for the citizens to accept the new policy or further governmental action to mediate is indicative of their level of trust.

Public Opinion on Nuclear Issues

While taking the NIMBY phenomenon into account, further application of nuclear-related policy is necessary to set a foundation for the understanding as to the general direction of public willingness to support governmental interest in nuclear energy. In a direct analysis of public opinion and public protest related to general environmental policy, Agnone questions whether the number of protests overall general public support on public policy proposals are positively related to policy being passed within the same year (2007). In mixing the two independent variables, support and protest, the author tests the two against one another, hypothesizing that opinion holds more weight by utilizing chronological data following the nascence of the modern environmental movement around the early 1960s. The US Public Laws data from the Center for American Politics and Public Policy from the University of Washington are applied

to examine the passage of environmental laws. Reported environmental movement protest event data recorded by the New York Times and public opinion data collected by the GSS and Roper Center for Public Opinion data posits similar questions to respondents regarding public policy, with previously identified data sets, and the variables are tested against one another in a Poisson regression model (Agnone, 2007). Controlling for Democratic Party dominance, electoral cycles, environmental advocacy, media attention and laws lagging due to a lack of precedence in passage, the author finds protests and public opinion are positively related to bill passage and the coexistence of the independent variables produces a greater effect on the passage of favorable environmental laws (Agnone, 2007).

Public engagement in politics is accepted as being one of the largest variables in the relationship of determining the degree of separation associated with the issue and the potential impact on the constituent. Due to the precedence of polling statewide and hosting public forums for constituents to voice their concerns or approval for potential nuclear sites and repositories, the measure of interaction is incredibly relevant to the discussion of efficacy in passage. However, in issues of nuclear waste management, Nowlin argues that policy change found in initial nuclear site approval "activates" actors that will perceptually lose when the site is constructed, causing them to engage publicly (2016). Those who are to be the most affected by the construction of the site, especially concerned by risks associated with the transportation and storage of low or even highly nuclear radioactive waste, are most willing to engage because of the perceptual risk (Nowlin, 2016). While the study identifies these upticks in political participation, it does not address the impact of different methods of engagement, including or excluding government officials, and how this affects the completion of the project.

The largest indication of public actor activation during the proposal and approval process is indicated in the Yucca Mountain Repository Site disapproval. Danielle Endres articulates this through a case study of the public commentary period following the site authorization. Through examinations of media and commentary provided by citizens included in public meetings led to discuss the site, the study provides a qualitative analysis of public opinion (Endres, 2009). The public commentary process was necessitated by the Nuclear Waste Policy Act in order to increase public confidence and site transparency in the formative stages of the process (Funk and Sovacool, 2013). Endres' study finds that through direct communication, there is a shift in the way that individuals are able to engage directly with the Department of Energy and increasing methods of communication are found to have a positive correlation with resistance to nuclear policy (Endres, 2009). Likely due to the spotlight held on the site itself and open forum for individuals, this increase of communicative relationships with differing levels of the government allows the level of resistance to be recorded. Instead of

pushing citizens to the sideline, Endres offers a new perspective on the increasing, though minimal, willingness for government agencies to respond to public perception regarding these sites in taking direct statements from the forums. The study does this through one of the highly contested repository sites proposed for nuclear waste, however, there is still work to be done in analyzing the direct link between congressional approval and citizen disapproval to analyze whether the response is binding or non-binding.

Though the influence of the political mechanism is framed in a way to increase the knowledge surrounding public opinion influence, appeals from a larger public may prove to be more fruitful than from just those within proximity. A second case study of Yucca Mountain, including alternative considerations for repository sites, indicates a level of congressional ability to override public opinion. Alex Funk and Benjamin Sovacool articulate that the Nuclear Waste Policy Act was intended to increase civil discourse and influence on policy (2013). The ability for a congressional override of citizen disapproval could outweigh the power that was supposed to be afforded to those in proximity as consideration did not cease but the progression of constructing the site itself was stopped (Funk and Sovacool, 2013). Consent of the public is noted as being too lengthy to the policy process and, the authors articulate, serves a reason as to why this approach will be unlikely to be adopted in long-term policy approval.

While scholars may disagree on the true impact public opinion directly had on the willingness of Congress to approve the new repository site, the Government Accountability Office was utilized as an outside actor aiding the federal government in analyzing this recent project. Their analysis covered the initial site consideration, what the repository would do for federal amounts of nuclear waste, and what role it played in the context of future plans to construct a long-term repository site. The Government Accountability Office produced a report detailing the proposal for the Yucca Mountain repository by the Department of Energy, reviewing the main factors behind its inability to be approved (2011). Additionally, the Office used this data and analysis to project how future projects should be carried out if they were to have higher levels of efficacy (Government Accountability Office, 2011). A year after the initial proposal, the Secretary of Energy announced the termination of the plans at Yucca Mountain and the President's budget proposal proposed elimination of all funding towards the site, prompting multiple states and parties to sue the department over

the termination (Government Accountability Office, 2011). GAO research for the federal government included qualitative analysis, direct statements from the Secretary of Energy, DOE documents, and direct reports on the site to find the impacts and lessons from past waste management projects (2011). Findings regarding the potential benefits of termination argue that public disapproval was incredibly high with this particular method of disposal and the site, especially amongst Nevada natives and Native American populations. The report also noted that credibility for the Department of Energy is incredibly low due to previous mismanagement of repository site experience in three other states. Mentioning that social and political opposition is an obstacle that must be overcome, the report concludes that legislators and bureaucrats must be clear in their policy, educate the public, and provide economic incentives to ensure public support and trust (Government Accountability Office, 2011).

In a secondary analysis by the GAO on spent nuclear fuel management, the Office goes further in identifying obstacles the federal government and DOE specifically face when holding nuclear waste at interim storage facilities (GAO "Spent Nuclear Fuel Management", 2014). The first three factors identified include the concern around the implementation of vague strategy plans, licensing taking a longer time period than expected, and issues with the transportation of hazardous materials. The fourth obstacle is achieving public acceptance of the storage and transportation of the waste, which is incredibly difficult to overcome through structural changes alone. The findings of previous reports conducted by the Congressional Office of Technology and National Research Council of the National Academies agree with the GAO in determining that public disapproval and opposition rates are the same between repository and interim storage sites for nuclear waste (GAO "Spent Nuclear Fuel Management", 2014). On numerous occasions, it is noted that initial acceptance of these sites may be recorded but public disapproval and legal disputes create impediments in the process of construction and conclusion to these projects. It is noted that the Waste Isolation Pilot Plant in New Mexico had public opposition, though the site was constructed with the DOE and State officials working in conjunction. The GAO concludes by articulating public outreach is necessary as the DOE continues to attempt to build more of these sites to keep up with current rates of nuclear waste (GAO "Spent Nuclear Fuel Management", 2014).

In recognizing public confidence in the federal government is at an all-time low, the National Aca

demy of Sciences undertook answering why previous public support has not been in favor of government action with nuclear energy (National Research Council, 2001). Utilizing data analysis primarily driven by research conducted domestically and abroad, the study finds societal variables that have produced definitive trends. Negative social connotations driven largely by the engagement of the United States in nuclear warfare has driven social stigma and the increased perception of risk surrounding exposure to and acceptance of nuclear sites (National Research Council, 2001). While citizens understand the mounting amount of nuclear waste the country now holds, they also recognize that the worries regarding public health and safety in conjunction with finding adequate measures for consolidating waste have not yet been met. The study also finds that distributional and procedural inequity brought on by the policy process both in the allocation of positive and negative impacts of the given site location and risk is typically localized to specific demographic-based groups (National Research Council, 2001). Recommending increased research and social inclusion could potentially solve these shortcomings and lack of faith. Echoing the reports from the Government Accountability Office, the Council finds that the only way to potentially solve for shortcomings in confidence is more long-term policy planning.

Hypotheses

The scholarly literature surrounding public opinion and its effect on congressional approval of funding and construction of nuclear energy, focusing on repositories and waste is multifaceted. Not providing much in the way of information or incentive to communities that are seen as geologically beneficial or “low risk” in terms of potential hazards to safety or health, more concern is put into finding a site as opposed to garnering public support. Finding it to be more and more difficult to expand the nuclear capacity of the country due to negative public opinion surrounding nuclear sites, and a mounting dilemma caused by the increasing amount of untouched nuclear waste, Congress faces numerous problems surrounding nuclear energy. The argument in this study is that public opinion, especially negative, has an impact on Congressional willingness to complete nuclear construction projects. From this, two hypotheses can be offered:

H 1 : Negative public opinion has a positive relationship with a lack of Congressional funding and approval for nuclear site construction.

H 2 : State policy preferences on nuclear waste, when in agreement with public opinion, increase the probability of Congressional willingness to approve nuclear repository construction.

Alternatively, the null hypothesis for H 1 will also be examined, insofar as negative public opinion has no relationship between Congressional funding and approval of site construction. Additionally, the null for H 2 will also be tested as state policy preferences regarding nuclear energy, with public support, do not seem to influence the relation-

ship with Congressional approval.

Methodology

This paper draws on local, state and federal research and data regarding the two largest repository locations considered for siting and construction. Previous utilization of GSS data indicates general opinion on nuclear power and the number of plants the federal government has though it may not include the nuanced reasoning behind individuals providing support or opposition (Soni, 2018). Because of this, qualitative analysis will be chosen to focus on the two largest case studies and display the differences between the cases provided to better understand the differences in completion. Qualitative case study analysis provides access to the overall assessment of the properties of the cases chosen with smaller populations, in order to create a generalizable yet somewhat restrictive application to related future cases (Gerring, 2004). The cases selected are the New Mexico Waste Isolation Pilot Plant and Yucca Mountain Repository, the two most popular site locations and with differing outcomes to the proposal. Descriptive covariational inferences with greater depth and hopefully illustrate the variables at play for the future potential of alternative repository siting locations (Gerring, 2004). Site selection in terms of what waste would be placed in the repositories and site geology, justifying the use of the repository and why construction at the specific location will be analyzed first. Following this State-level reaction in terms of its policy and legal based interaction with the federal government will be considered. Finally, the Citizen-level reaction will be considered, with a direct focus on the communities directly affected by the placement of the repositories. Further insight into their reactions on a local, state and federal level will be considered. The outcomes of both cases are necessary to consider following this tiered level of qualitative analysis to capture the impact of the engagement and assess what public effect brought about in the site construction process.

Using archival government data on proposed site projects or previous site projects accessed from public government files on nuclear energy can provide a baseline for the projects, the response they receive, and whether there is enough faith in the project to fund and complete the project. Primary sources for federally-related data are found through the Department of Energy responsible for site location and management as well as site data prior to construction for both sites. The National Conference of State Legislatures (2017) and the Department of Energy’s Waste Isolation Pilot Plant website provides closer analysis for federally related data and qualitative analysis of the WIPP case study (US Department of Energy “Waste Isolation Pilot Plant”). Alternatively, the Department of Energy’s research and data concerning Yucca Mountain will be the primary focus of the federally-related data collection for this site (Nuclear Regulatory Commission, 2010). These are the most relevant and federally operated sites indicating their biases towards wanting to open the repositories

but requiring a level of transparency and data open to the public.

On the state-level data collection, primary sources come from state-level offices and supplementary secondary sources analyzing state data. The New Mexico WIPP case data collection comes from the University of New Mexico's Institute for Public Policy with further analysis in previous scholarship by Jenkins-Smith et al. (2011) and the National Conference of State Legislatures (2017). In consideration of the Yucca Mountain case, the Nevada Governor's Office (2002, 2012), State of Nevada's Nuclear Waste Library (Agency For Nuclear Projects 2004), and Nevada State Telephone Survey (Nuclear Waste Project Office 1994). There are no clear biases in these data sources but span over a period of time in longitudinal survey data, appear to be impartial, unbiased, and transparent in their processes. The university data utilized for the WIPP case was found and used through secondary source analysis. However, conducted surveys were not found during the data collection process and no clear bias was indicated in their collection and analysis through the scholarship. Only graphed data encapsulating the longitudinal research by the University was utilized during the case analysis.

Direct citizen interaction can be analyzed through aforementioned statewide surveys conducted in New Mexico and Nevada in particular, as these served as two of the largest spots for repository contention (Jenkins et al. 2011; Nowlin 2016). Public hearings and statewide surveys offer nuance in positionality and ideology. Statewide surveys also allow coding of individuals' responses to whether individuals find the repository to be safe or are willing to have it open. This study will utilize previously collected data by the University of New Mexico's Institute for Public Policy and Northwest Survey and Data Services which conducted statewide surveys in both New Mexico and Nevada, previous data can be analyzed regarding the one successful and failed repository sites in the US (Jenkins et al. 2011; Agency for Nuclear Projects 2004). Additionally, qualitative studies of citizens engaged in public discourse surrounding the repositories such as interviews conducted with Southern Paiute and Western Shoshone individuals through previous academic research and the use of nonprofit and citizen-led coalition websites and statements were gathered for both sites. This was the closest to receiving data first-hand available during this time of research and proved to be useful in understanding the willingness to publicly disapprove or engage in activism regarding the repository construction.

Finally, the finalization of construction of the nuclear repositories will be discussed. Whether the levels of public engagement, state engagement, or both, play a factor in this completion will be considered. This outcome largely influences the way proceeding sites are found to be constructed considering the level of public opinion and whether this influences increasingly important policy initiatives.

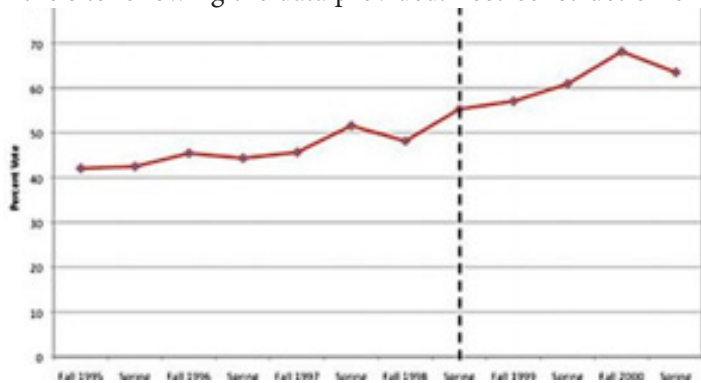
New Mexico Waste Isolation Pilot Plant

The New Mexico Waste Isolation Pilot Plant was the first and only of its kind to be created to meet the increasingly large need for storage of hazardous radioactive waste. This need was recognized as the progression of nuclear proliferation and following industry use. The increased use by the military industrial complex has led to a large amount of associated transuranic waste which requires ensured containment (National Conference of State Legislatures, 2017). Without this, the risks of radioactive contamination in facilities not made to house these materials could pose external risks to nearby ecology and communities. The cost of managing this waste at associated plants that produce the energy and the safety of surrounding areas and those working with it justified the search for and development of a Waste Isolation plant.

Searching for a reasonable location for a pilot repository plant, scientists with the United States Federal Government found the current location of the Waste Isolation Pilot Plant in Southeast New Mexico. Following this, authorization of the facility was granted in 1979 with construction following within the decade (National Conference of State Legislatures, 2017). The New Mexico WIPP was identified largely due to its geological composition being ideal by the National Academy of Sciences and U.S. Atomic Energy Commission. Geographically and geologically, the site hosts a two-thousand-foot thick salt bed from the previous existence of the Permian Sea. The waste's radioactivity is isolated by the existence of the impermeable and stable salt formation, allowing the addition of the waste to not interfere with surrounding ecology or the nearby community (National Conference of State Legislatures, 2017).

The transuranic waste hosted at this site, according to the Department of Energy, are items contaminated with plutonium and other radioactive elements from any point during the process of defense-generated power. However, this waste is low-level contamination from the military as opposed to civilian complexes utilizing nuclear power. Specific use of the waste has been noted as a previous point of contention among state representatives as an issue of federalism (Downey, 1985). Finding whether the state's autonomy was at risk with this federal proposal led representatives and community members to become an integral part of the negotiation process as they decided as to whether the placement was a risk they would be willing to take. In 1981, the state sued the federal government questioning the authority they had to override state authority to test and monitor the site. The settlement to the case birthed the Consent and Cooperation agreement between the Department of Energy and New Mexico. This agreement required an increase of communication and approval from the state in federal wishes to expand or hold the site to specific hazard or environmentally related standards (National Conference of State Legislatures, 2017).

While the state holds onto levels of autonomy considering the federal government's choice to place the facility within its borders, this also sparked the need to include community members in the discussion. Prior studies done by the University of New Mexico's Institute for Public Policy have been condensed to analyze New Mexico residents' responses to the introduction of the planned repository in the years leading up to the repository construction. Public response to the construction and opening of the WIPP was identified at sitting just higher than forty percent (Jenkins-Smith et al., 2011). Alternatively, this continued to steadily increase past the fifty percent mark leading up to the initial construction date. Public support, though below fifty percent initially, seemed to be largely in favor of the opening and construction of the site following the data provided. Post-construction of



the plant, the support for it continued to increase from fifty-five percent to over sixty percent (Jenkins-Smith et al., 2011). This indication of a willingness to open the WIPP follows a pattern unlike previous research indicating large hesitation over risk associated with radiation and waste storage.

While the state assessment of public opinion was being carried out, community members banded together to create coalitions to speak on behalf of their concerns. This too was supported by the state government as public releases of the hearings and voiced concerns were recorded and made available to the public at large. On a grassroots level a prominent citizen-led organization, The Citizens for Alternatives to Radioactive Dumping, was built from the initial surveys utilized in Carlsbad and New Mexico to advocate on behalf of the communities to be affected by the opening of the WIPP Facility (Citizens for Alternatives to Radioactive Dumping). The general dissatisfaction of particular groups within the public led these individuals to create a coalition that spoke on behalf of underrepresented citizens in public hearings and through alternative methods of advocacy. While smaller advocacy groups have grown from the initial proposition of the Waste Isolation Pilot Plant, inclusion and transparency in the process is a concern both citizens and the state have fought for. Additionally, the number of these coalitions has not been publicly disclosed nor seemingly influential enough to stop the construction process or place much further weight on the discontent associated with the site. The Waste Isolation Pilot Plant has been active since the spring of 1999. Despite community-level engagement, state and feder-

al acceptance over the dispersion of rights and access to the facility has led to the continued use of the facility for over 20 years. The site recently faced a Draft Renewal for the Project, extended through February 20th of 2020. According to the Department of Energy's page on the New Mexico Waste Isolation Pilot Plant website, the site has aided in cleaning up over twenty-two nuclear generator sites across the domestic United States (US Department of Energy "Waste Isolation Pilot Plant"). Specifically, over 170,000 waste containers have been disposed of on-site and there are guided tours of a nearby museum open to the public (US Department of Energy "Waste Isolation Pilot Plant"). Post-construction relations appear to remain high, enough to the point that draft renewals and public commentary remains an integral process of the site's maintenance.

Yucca Mountain Repository

The Yucca Mountain Repository site location was chosen initially in 1987. The site was planned to be a site to receive generalized spent nuclear fuel. No specification of federal military usage is indicated, suggesting regular nuclear plants utilized for energy outside of defense means would be sent to the proposed repository. The site was intended to hold 77,000 tons of high-level waste from the US and countries abroad (Office of Civilian Radioactive Waste Management, 1986). The geology of the site is unique in that the volcanic rock that makes up the site makes up the foundation of the mountain. It contains a fault that extends down to one thousand five hundred feet below the surface. Geological concerns regarding the existence of the fault line and potential earthquakes causing ruptures in the ash-based sediment of the location were considered in location siting (Yucca Mountain Project, 2017). If a natural event like an earthquake were to occur, risks of nuclear waste spillage are possible.

Considering the state level reaction, this has differed overtime on the Governor's behalf. A Notice of Disapproval to Congress was submitted by Nevada's previous Governor Kenny Guinn on April 8th of 2002. In the notice, the denial of trust in the Department of Energy is articulated. Denial of the impact on communities from previous nuclear testing in Nevada during The Cold War from the past to the present is acknowledged by the Governor. In the letter, four consecutive legal actions against the project are addressed associated with the use of site recommendations by the federal government and resource allocation (Office of the Nevada Governor & Guinn, 2002). Challenges to the Department of Energy's Environmental Impact research and the licensing suits are claimed to also be in the works. Utilizing the consideration of risk and public safety, the Governor submitted this notice in an effort to quell the movement to use Yucca Mountain despite geological findings that indicate a lack of safety and a concern for the already impacted communities from previous nuclear testing and associated radiation. Arguing the counties cannot speak for themselves and Nevada has already taken on its burden

as a nuclear testing ground and passage for radioactive waste, the Notice of Disapproval in the initial years of DOE site control lay the foundation for disapproval among state residents (Office of the Nevada Governor & Guinn, 2002).

In tandem with citizen reaction and engagement with the proposed repository site, a statewide survey was conducted to gauge initial public reaction. Nevada State Telephone Survey indicates just over fourteen percent acceptance towards repository in 1989 with a nominal increase of one percentage point in the Spring of 1991 (Nuclear Waste Project Office, 1994). That following Autumn saw a jump of almost four full percentage points within the same year, up to nineteen percent meeting the final listed twenty-one point two percentage points in the Spring of 1993 provided by the table Survey. The final Nevada State Survey found just under twenty-one percent in 1993, meeting twenty point nine percentage points related to acceptance in 1994 (Nuclear Waste Project Office, 1994). Remaining lower twenty-two percent, it is evident from longitudinal data public opinion remains in disagreement with the proposal to construct the repository site.

Table 1
Yucca Mountain Referendum
Nevada Survey Results 1989, 1991, and 1993
(In Percent)*

	Spring 1993	Autumn 1991	Spring 1991	Autumn 1989
Vote For	21.2%	19.0%	15.4%	14.4%
Vote Against	71.0	73.8	80.2	69.4
Wouldn't Vote	0.6	0.6	0.4	7.4
Don't Know	6.8	6.5	3.8	7.8
Refused	0.4	--	0.2	1.0
Number of Respondents	803	504	500	500

*May not total 100 percent due to rounding.

Federal government trust between the communities most affected, the South Paiute and Western Shoshone tribes are incredibly low. Due to previous government testing of nuclear weaponry close to Yucca Mountain and on tribal land during the Cold War acknowledged by the 2002 Notice of Disapproval, the impacts of the testing are still felt (Office of the Nevada Governor & Guinn, 2002). From the 1950s to mid-1990s, the ramification of the amount of nuclear radiation from the tests sank into the soil and water of the reservations. Cancer rates among these groups are incredibly high to the radiation exposure, and previous DOE reports finding risks of the repository would be minimal are viewed as untrustworthy as a result (Office of the Nevada Governor & Guinn, 2002). Previous legal suits have been brought against the federal government such as the 1951 case brought by the Western Shoshone tribe for illegally taking or utilizing tribal land designated in previous land treaties between the federal and tribal governments (Brian, 2017). Beyond the historical precedence, the cultural significance of the land also largely influenced the level of response by the tribal bodies. As a place of burial, spirituality, ceremonies and other culturally significant markers, Yucca Mountain is uniquely important to the identity of the native communities inhabiting the reservations surrounding it (Endres, 2013).

In communal response, differing levels of activism-based responses were issued to back off federal pushes to construct. Thirty-nine nonprofit and environmental organizations filed claims against the Department of Energy to review the site activities of the Department and conduct independent analysis in 1998 (Bobb, 2007). This lawsuit ended in a settlement providing funding for the independent studies through the Citizens' Monitoring and Technical Assessment fund largely seen in Clark University-sponsored publications (Bobb, 2007). This was in combination with and followed by, protests, media activism and public hearings which led to community organizations such as the socio-political organization created by Western Shoshone citizens, the Shundahai Network, to address concerns associated with health risks of nuclear radiation already faced by the tribes (Nieves, 2000). The combination of Western Shoshone and Southern Paiute individuals coming together to protest the site construction, the repository was seemingly shut down in its tracks to construction (Nieves, 2016). Public attention garnered to the issue beyond those living within the surrounding area and the state of Nevada was raised concerning the site and the impact on the communities to be most affected by it.

While the Obama Administration appeared to end the project construction at Yucca Mountain in 2009, the Office Motion to Withdraw was filed on March 10th of 2010 by the Department of Energy (Nuclear Regulatory Commission, 2010). Following this motion, Congress provided five million dollars to be allocated to the Blue Ribbon Commission on America's Nuclear Future to find, evaluate and recommend alternative sites for a future high-level waste repository. Though seemingly ended, in a recent letter to the Secretary of Energy Dr. Steven Chu, in 2012, the previous Governor of Nevada, Brian Sandoval, articulated that the defunct Yucca Mountain Repository location was not to be considered for further projects and waste management (Office of the Nevada Governor, 2012). The letter also indicated that no further location within the bounds of the state should be considered for possible nuclear waste storage facilities as the Blue Ribbon Commission continues its search for alternative repository sites. Referencing the Nevada statute 459.910, Sandoval adds, it is "unlawful for any [...] governmental entity to store high-level radioactive waste in Nevada," making a clear response to the noted "suspended" title of the Yucca Mountain location in the consideration of nuclear repositories by the Nuclear Regulatory Commission (Office of the Nevada Governor, 2012).

Analysis

The chosen case studies of both the New Mexico Waste Isolation Pilot Plant and the Yucca Mountain Repository provide a divergence in outcomes of bill passage to construct the nuclear waste repositories. The following analysis focuses on each portion of the multi-faceted approach of the case studies from geological and historical differences, state and federal interactions, before finally focusing

on civilian opinion to explain the differing outcomes. Restraints of the study and where further academic research can be focused will also be noted. Historical and geological context seem to be intertwined in an axis of analysis for the study. Considering more closely the demographics and cultural significance of the site alongside the geological composition is necessary for assessing the weight of public opinion and its influence on pushes to construct the repositories. The New Mexico WIPP was constructed on land not identified as holding much in terms of cultural or historic significance but, rather, provided salt flats and adequate geological conditions for the waste to be held in a low-risk capacity (National Conference of State Legislatures, 2017). The Yucca Mountain site's foundation of volcanic ash and its proximity to major and minor fault lines plays a role in justifying the potential risk of radioactive spillage (Yucca Mountain Project, 2017). Additionally, the location is recognized as sacred by both the South Paiute and Western Shoshone tribes in terms of ancestral burial location and spiritual significance. This, coupled with the outrage from previous nuclear testing on nearby land and radiation poisoning through soil, air, and water impacting both tribes, adds to the tenuous undertaking of the site. As indicated previously by the Government Accountability Office in numerous reports, trust in the Department of Energy overall is increasingly low (Government Accountability Office, 2011). Additionally, public disapproval for repositories remains high, making the level of communication and community trust-building a necessary process in the wish to construct (GAO "Spent Nuclear Fuel Management", 2014). Believing inclusion in the process maximizes public acceptance, the National Research Councils' understanding of how to increase trust and willingness to build may be disproved through the Yucca Mountain case (2001). The Yucca Mountain study outcomes also agree with previous literature on the low levels of governmental trust being linked to worsening or influencing current levels of inequality, in application to further loss of tribal autonomy over the reservation (Kelly and Enns, 2010). Lacking little in historical significance, the choice to approve the New Mexico site could also be easier as considerations of worsening inequality appears to be absent from the discussion. As a result, the foundational support geologically and historically provides the New Mexico WIPP case as being much easier to pass within public favor in comparison to the Yucca Mountain case.

On a governmental level, the amount of state legislation and direct state to federal communication through representatives seems to hold some level of sway as well. While New Mexico state legislators pushed for a balanced level of federalism, this was spurred by the initial legal suit over monitoring over the site which led to the Consent and Cooperation agreement (National Conference of State Legislatures, 2017). However, higher levels of acceptance that steadily grew up until construction, served to strike a balance in favor with the public. The Yucca Mountain case indicates state-level disapproval following a state-sanctioned telephone survey finding support to be below twenty-one

percent publicly (Nuclear Waste Project Office, 1994). Echoing tribal sentiment, the Governor's Notice of Disapproval reached the federal government in 2002 and continual communication between the Governor and the Energy Secretary has continued into the past decade to ensure the construction of the repository does not occur. There is reason to believe this level of precedence and increased state-level engagement influences willingness to continue construction and completion of the repository site especially as previous scholarship has found that when political elites are at odds with the public, bills may pass regardless (Manza and Cook, 2002). The Yucca Mountain case is unique in having state and local government officials in agreement with the public disapproval, though it does confirm the higher levels of efficacy these actors can have in blocking bill passage. A correlation between tribal autonomy and historical precedence of state versus federal government acknowledgment of these rights may also confirm previous findings indicating social factors influence representatives' willingness to respond to the disapproval of constituents (Shapiro, 2011). In comparison, the passage of the WIPP may also be found to not require a divergence of political actors and their constituents due to higher levels of approval overall.

The interplay of risk-benefit analyses with public opinion and the willingness to open nuclear facilities bring the discussion to pure public opinion. The two case studies' findings would indicate that higher levels of disapproval are positively related to the discontinuation of the proposed repository site, as found in the Yucca Mountain case study. Prior scholarship argues that outside of socioeconomic factors, public support for power plants and geological repositories remains generally low in the wake of previous nuclear reactor meltdowns (Soni, 2018; Kraft, 2013). Once built, higher levels of approval for the sites may be due to familiarity and a perceived reduction in risk due to the passage of time following construction, as found in the New Mexico WIPP study. This would confirm the findings from Greenberg and Melber et al.'s analysis of higher levels of acceptance following the familiarity of local communities to nuclear plants after they have been constructed and risks appear to remain low (2009; 1977).

Levels of engagement from different activism-based mediums in displaying acceptance or disapproval vary between site locations. Depending on socio-economic demographics, historical context, and level of communication or interaction with the community throughout the site scouting to the construction period may be correlated to the case study outcomes. As previously found, trust in government institutions and the relationship of the community responding to nuclear repository polling to environmental policy plays a large role in public responsiveness (Whitfield et al., 2009). Secondly, previous literature has found that when in tandem, protests and public opinion swaying in disapproval of the repository location have been found to be most effective in changing policy direction with environment

ally related bills (Agnone, 2007). While the communication between both civilian and government actors exists due to the Nuclear Waste Policy Act, the level of government responsiveness may be higher in comparison to non-nuclear related bills, making the efficacy of the Yucca Mountain community higher (Endres, 2009; Funk and Sovacool, 2013). This would support the correlation between the publicly held protests, local public disfavor, and mass public disapproval of the Yucca Mountain repository location influencing the end of the project. In comparison, the New Mexico WIPP site holds less in terms of cultural or public significance. Likely due to this, the level of activism and civic engagement expressing disapproval is relatively low and less documented.

As mentioned previously, the level of social capital and precedence of communication with government officials can largely influence the weight of the public opinion in its ability to influence (Benford et al., 1993). Tribes such as the South Paiute and Western Shoshone have been historically denied respect in relation to federal governmental actions, especially with the testing and exposure of the peoples to nuclear weapon testing and resulting radiation. Tribal sovereignty over reservation lands and their people has been challenged numerous times since the establishment and recognition of tribes as sovereign bodies in general. Seen in the analysis by Rosa and Short and noted in the case study analysis of this research, distrust in the government and a lack of perceptual benefit from the repository construction adds to the value-driven disapproval of the Yucca Mountain location (Rosa and Short, 2004; Benford et al., 1993). This would, alternatively, prime those surrounding the New Mexico WIPP to have a larger amount of social capital in their state and federal interactions and likely increase their willingness to trust both state and federal government officials. This would likely mean that a further attack on sovereignty and autonomy of the Shoshone and Paiute peoples would “activate” a higher level of distrust leading to engaged activism spanning across numerous platforms and, as a result, to increased amounts of traction among the greater public at large (Nowlin, 2016). This confirms previous findings of the efficacy of collective group disapproval when public disapproval moves in the same direction with the Yucca Mountain case (Burstein and Linton, 2002). Alternatively, though there may have been collective group action with the New Mexico WIPP case study, the lack of documented press around these groups may contribute to the findings that collective groups, in opposition to public approval, may reduce overall group efficacy. This level of multi-platform engagement and increase of at-large public awareness likely spurred the end of the federal government’s desire to construct the repository at the site.

Conclusions

Based on the hypotheses, this study finds that both hypotheses are illustrated by the case studies. More specifically, the Yucca Mountain case maintained higher levels of disapproval than the New Mexico case and did not complete the approval into the construction process. This would confirm H 1 . H 2 concerning the collaboration of state nuclear policy and public opinion moving in the same direction in Congressional approval is confirmed by both case studies as well. In the WIPP case study, state policy does not conflict with the existence of a nuclear repository, contrary to Nevada state policy applied to the Yucca Mountain case. In fact, the creation of new policy through the Consent and Cooperation agreement moved the state policy to accept the repository in New Mexico, and with increasing levels of public support, Congressional approval and construction occurred. This research contributes to the body of research by analyzing why repositories, as opposed to nuclear plants, may be affected by public opinion when in conflict with global and national prioritization of nuclear generation. Minimal qualitative research has been conducted in analyzing the efficacy of public opinion influencing repository construction. This emphasizes the need to spotlight as to why the socio-cultural differences in publics affected by site choice influence the completion of these projects on a multi-platformed analysis of outcomes. This study also finds that the role public opinion plays in the approval process for these sites likely has higher levels of efficacy when in tandem with communication or direct political approach from state officials, especially when this communication is valued.

While this study focuses on two of the largest and most relevant cases concerning nuclear repositories, it is limited to two cases only and does not look to future site consideration and current trends of acceptance in other possible locations. Expanding the level of research to proposed sites and analyzing the long-term effects of public opinion in Yucca Mountain, as current and future administrations can reopen the project, can better illustrate public opinion’s influence. Quantitative analysis of what level of approval or disapproval is required to become influential should be considered in further analysis of the policy process concerning repositories. Additionally, the varying level of what role the at-large public plays in contributing to direct public opinion of those consulted about the proposed site would need to be done to confirm these findings. This study does not include a quantitative analysis of citizen approval and disapproval over time which may provide a more specific and comprehensive overview of trends for acceptance and disapproval as previous studies indicate. This study also does not take into account citizen compensation and current economic conditions which, as previous studies indicate, could play a role in acceptance especially in comparison with the difference in communities at both chosen locations.

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