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The Nuclear Triangle: A Case Study in Nuclear Operations Policy

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Abstract

As nuclear power has evolved from the mid-twentieth century to today, it has experienced phases of rapid growth, regulation, and distrust concerning operations and waste disposal. This study will analyze the policy community active in these changes as they have progressed through the policymaking process and will examine the actors within an “iron triangle” framework to evaluate the community’s relationships, power structure, and effectiveness. Specifically, this thesis seeks to answer two research questions: 1) how does interest group behavior influence nuclear policy communities, and 2) does the iron triangle framework explain the nuclear policy community relationships and outcomes. While historical and background information on the Nuclear Regulatory Commission (NRC) will provide the overall national context, the research is designed as a case study, and as such, will primarily investigate the Palisades Nuclear Power Plant in South Haven, Michigan.

I. Introduction

An intriguing, complex, and unresolved plot marks the tale of nuclear power. Throughout its brief existence in mainstream society, nuclear science has been met with responses running the gamut from worldwide revere to intense incredulity. Likewise, the promises and perils of nuclear energy have evidenced themselves in gripping ways, from unprecedented operational efficiency to the 1986 Chernobyl accident. The immense power contained within nuclear energy is therefore much more than merely chemical; its metaphorical energy has spread into social, political, and environmental fields with vigor over the last five decades. In short, nuclear energy has and continues to be a worldwide phenomenon unlike any other the world has seen.

Due to its far-reaching impact, the specifics of managing nuclear energy bear much inquiry. Analysis of nuclear power's policy domain is crucial in order to understand where the industry is headed and who is making the decisions. By investigating the relationships and structure of the communities in charge of operating nuclear plants, many questions about the origins of nuclear power, as well as its status today, can be answered.

II. History and Overview of Nuclear Power

By most accounts, the dawn of the “atomic age” was ushered in by the bombings of Hiroshima and Nagasaki during World War II in 1945 (Walker and Wellock, 2010). The raw, extreme power contained in this new technology captured the attention and imagination of scientists, leaders, and citizens around the world. Shortly after the bombings, physicists and politicians pursued the use of nuclear power for peaceful, civilian use. Passage of the Atomic Energy Act of 1946 created a “virtual Government monopoly” in this domain and allowed the federal government to have exclusive rights over usage and application of nuclear energy (Walker and Wellock, 2010). As part of the 1946 Act, the U.S. Atomic Energy Commission (AEC) was created to oversee all aspects of nuclear development and use. Within less than a decade, the Atomic Energy Act was amended in 1954 to change the AEC’s mission and goals from a nuclear technology gatekeeper to the technology’s promoter. A detailed discussion of nuclear energy’s past is required in order to understand its rise in popularity during the mid-twentieth century and its sustained use today.

Political and scientific forces combined in the mid-1950’s to accelerate the pace of nuclear proliferation and expansion. The push for peaceful nuclear development during this time was twofold: 1) there was an “impulse to show that atomic technology could serve both constructive and destructive purposes,” and 2) there was a general, strong desire to outpace the USSR and other countries in the successful implementation of nuclear technologies (Walker and Wellock, 2010, pg. 3). As part of its duties under the 1954 Amendments, the AEC was to “1) continue its weapons program, 2) promote the commercial uses of nuclear power, and 3) protect against the hazards of those peaceful applications.” The AEC’s preferred strategy for development placed a heavy emphasis on a “partnership” between the Government and private

companies; this arrangement was thought to increase the efficiency, soundness, and feasibility of the nuclear industry. However, the dual role of the AEC to both promote and regulate the industry eventually became a major difficulty for the organization and “damaged” the credibility of its regulatory and safety programs (Walker and Wellock, 2010, pg. 4). Indeed, as has been noted in the political science community, “a kind of goal displacement occurred,” wherein the easier goal of promotion typically overpowered the more “problematic” goal of regulation (Temples, 1980, pg. 242). At a time when nuclear science was just in its infancy, the intrigue and excitement around this new technology, much of which was promulgated by the government, lead to its popularity among energy providers.

In general, nuclear regulatory guidelines set by the AEC in the early years were charged with ensuring public safety without being overly burdensome to the point of inhibiting nuclear growth. For example, specifically relating to the latter directive, AEC construction permits did not even require finalized technical data on the safety of a facility before issuance of a permit; this allowed for companies to pursue their projects without a burdensome delay (Walker and Wellock, 2010). AEC’s continued championing of the nuclear industry throughout the 1950’s and 1960’s eventually caused the Commission to fall under heavy criticism for its regulatory strategies from other sectors of the government, including its Congressional oversight committee, the former Joint Committee on Atomic Energy (JCAE). In one instance, after reviewing plans for a new type of reactor proposed by the Power Reactor Development Company (PRDC) in 1956, the Advisory Committee on Reactor Safeguards (ACRS), a separate commission also created in the Atomic Energy Act of 1946, found that “there is insufficient information available at this time to give assurance that the PRDC reactor can be operated at this site without public hazard” (Walker and Wellock, 2010, pp. 11-12). Despite this assertion, the

AEC granted the PRDC plant a construction permit based on the fact that uncertainties could still be addressed during the construction phase and that it would be detrimental to delay the introduction of a new technology to the nuclear market. The JCAE's response to the Commission's decision was resoundingly negative and further eroded the AEC's image as a reliable nuclear regulator (Walker and Wellock, 2010).

Beginning in the late 1960's, nuclear technology improved rapidly, allowing for plants to produce more power, but simultaneously resulted in more complex plant designs. Environmental concerns in the 1960's, including air quality, added to the attractiveness of nuclear power, and by 1967, nearly half of all power plants ordered by utilities were nuclear, totaling 31 units in that year alone (Walker and Wellock, 2010). The combination of increased design complexity and overall plant popularity placed a strain on the AEC's ability to license and manage plants across the country. Even though the Commission's staff increased by 50 percent between 1965 and 1970, its licensing and inspection caseload increased by 600 percent during this same time frame. As a direct result, application review times jumped from an average of 1 year in 1965 to over 18 months in 1970, sparking criticism from the industry (Walker and Wellock, 2010, pp. 28-29).

The general trend for the nuclear industry continuing on into the 1970's was increasing complexity both in political and environmental soundness. One of the newest issues to be faced by the agency was the passage of the National Environmental Policy Act (NEPA) in December 1969. Section 102(2)(c) of NEPA "requires all federal agencies to prepare an environmental impact statement (EIS) on major federal actions significantly affecting the quality of the environment" (Percival, Schroeder, Miller, & Leape, 2009, pg. 858). As it related to the AEC, NEPA mandated the agency to evaluate nuclear operation permits not only based on possible radiological effects, but also based upon any and all environmental effects. The agency

complied with this new mandate, but looked to environmental reports prepared by state and other federal agencies, thereby working around a need to conduct any investigations themselves. Environmentalists, Congress, and the courts met this decision with harsh criticism; the AEC's limited interpretation of NEPA was rejected in the D.C. Circuit Court of Appeals case *Calvert Cliffs Coordinating Committee vs. Atomic Energy Commission* (1971). Put plainly, the court declared, "[we] believe that the Commission's crabbed interpretation of NEPA makes a mockery of the Act" (Percival et al., 2009, pg. 862). Furthermore, the court reminded AEC that §102 requires compliance "to the fullest extent possible," and does "not provide an escape hatch for foot-dragging agencies" (Percival et al., 2009, pg. 861). With yet another ruling against its favor, the AEC continued to lose public and political support in an era of increasing environmental concern and demand for energy.

Soon after passage of the Atomic Energy Act of 1954, an idea was proposed to separate regulatory and promotional functions between two agencies, but "this possibility [...] seemed premature and unwarranted" at the time (Walker and Wellock, 2010, pg. 47). Only after years of proven difficulty in housing both functions within one organization was the decision made to dissolve the AEC and formally charge two separate government entities with regulation and promotion. Congress passed the Energy Reorganization Act of 1974, which officially created the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Energy Research and Development Administration (ERDA), placing each in charge of regulation and promotion, respectively (Walker and Wellock, 2010, pg. 49). As the energy crisis peaked towards the mid-1970's, efficacy in nuclear power still existed, but overall public support was waning (Walker and Wellock, 2010). Even with a new agency at the helm, the image of nuclear energy had already been tarnished enough to consistently be met with incredulity.

Despite lingering concerns about the ability of agencies to regulate nuclear power properly, the end of the 1970's witnessed an expansion of agency deference. *Calvert Cliffs* ushered in an era of strict readings on NEPA, thus limiting the ability of the AEC to choose how the Act would be implemented or followed; in contrast, the Supreme Court Case *Vermont Yankee Nuclear Power Corp. v. NRDC* (1978) reinstated some agency discretion in NEPA implementation. The language of NEPA is clear in that agencies must gather information about environmental impacts and alternatives. Of course, what constitutes an "impact" and how many "alternatives" are acceptable have been debated. In the *Vermont* case, the Supreme Court ruled that deference should be given to the agency in question when it comes to how many alternatives must be proposed. Justice Rehnquist stated that an EIS cannot be "found wanting simply because the agency failed to include every alternative device and thought conceivable by the mind of man (Percival et al., 2009, pg. 913). Furthermore, in the same case, the Court explicitly stated that NEPA's "mandate to the agencies is essentially procedural" (Percival et al., 2009, pg. 915). The latter part of the 1970's represented a departure from agency doubt in adequately interpreting statutory mandates, thereby giving the NRC more freedom and agency autonomy.

In a stunning series of events, and after only four years in operation, the newly created NRC was soon tasked with handling the most disastrous nuclear accident in United States history to date- the Three Mile Island (TMI) incident on March 28, 1979 (Walker and Wellock, 2010). Located near Harrisburg, Pennsylvania, the TMI Nuclear Station suffered a partial core meltdown after a pressure relief valve was stuck open, allowing for large amounts of core coolant to escape. Through a series of human and mechanical errors, the problem was not detected until irreparable damage had been done, forcing an emergency shutdown and flooding

of the core (Walker and Wellock, 2010). In the days following the accident, uncoordinated response efforts, confusion about the cause, and conflicting safety reports from the Government and experts fostered a “deepening perception of a technology that was out of control” (Walker and Wellock, 2010, pg. 54). TMI provided evidence that disastrous consequences could result from “unanticipated” events, even minor system failures compounded by simple lack of adequate response. Luckily for TMI, the vast majority of radioactivity was contained in the reactor, and studies have revealed that no increases of cancer in the area have been linked to the 1979 incident (Walker and Wellock, 2010, pg. 56). Although the plant did not have substantial radioactive fallout, it is undeniable that fallout of the political and social variety followed TMI. Because of the accident, NRC officials decided to “reexamine” their safety requirements and revise them accordingly. More stringent construction, operation, and inspections protocols were enforced, and a specific focus on addressing “human factors” was pressed (Walker and Wellock, 2010, pg. 57). Nationwide support of nuclear power remained high even after TMI, with sixty-three percent of respondents in a national survey believing that “nuclear power [is] important to the nation’s energy future.” Despite this strong figure, sixty-three percent of respondents in the same survey also disapproved of the construction of a new power plant near their own communities (Temples, 1980, pg. 254).

Less than a decade after the TMI accident, the worst nuclear disaster in history occurred at the Chernobyl Nuclear Power Plant in the former USSR on April 26, 1986. During a test of Unit 4 at the plant, an uncontrolled reaction precipitated a violent explosion that significantly damaged the containment structure, allowing “massive” amounts of radiation to be released from the plant (Walker and Wellock, 2010, pg. 58). Although the disaster was in no way related to U.S. nuclear operations or design, the net effect was damaging to domestic perceptions of the

safety of nuclear power. At the time of Chernobyl in 1986, it had already been eight years since the most recent nuclear plant had been ordered by utilities, and cancellations for planned units were on the rise. The NRC granted full-power permits to over forty reactors throughout the 1980's, many of which had been licensed to begin construction in the mid-1970's (Walker and Wellock, 2010, pp. 59-60). Despite the continued attractiveness of the nuclear option in relation to "dirtier" alternatives like coal, there were still looming questions about evacuation and emergency strategies that required further attention by the NRC.

Moving out of the 1980's, the NRC found itself needing to address new concerns with its maturing industry, including protocols relating to the decommissioning and relicensing of reactors. From 1947 to 1975, a total of fifty reactors were decommissioned, however the standards for decommissioning those plants were antiquated by the end of the 1980's and early 1990's. The NRC released new rules regarding decommissioning procedures, as well as revisions to its relicensing scheme (Walker and Wellock, 2010). After deliberation, the NRC reduced the length of a license from forty years to twenty years in order to more reliably guarantee aging plants' safety. The 1990's also ushered in an era of "performance-based" regulations that were designed to maintain safety, but also reduce the costs of heavily proscriptive regulatory mandates. The concept behind "performance-based" regulations was that the NRC would set a goal to attain, but allow each licensee to determine how to reach that goal, as opposed to the agency dictating or drawing up explicit guidelines. Many top NRC officials praised this regulatory approach. (Walker and Wellock, 2010, pg. 69). In addition, the agency bolstered its efforts to improve overall quality assurance and consistent plant maintenance, especially in the aftermath of TMI. This was accomplished through the inclusion of two permanent resident inspectors for each reactor in the country, as well as "performance-based"

inspections which included “direct observation of plant activities [...] instead of document reviews that simply demonstrated that a licensee conformed to regulations and procedures” (Walker and Wellock, 2010, pp. 75-76). Overall, the performance standards for plants have become increasingly effective; comparing reactor “up time” (power production) from the 1970’s to today, the current figure is around 90 percent, as opposed to 50-60 percent average “up time” in the 1970’s (Walker and Wellock, 2010, pg. 94).

Within the past 15 years, the nuclear industry has faced even more issues stemming from end-of-fuel-cycle concerns as well as safety questions raised after September 11, 2001. As part of a national nuclear waste strategy, Congress passed the Nuclear Waste Policy Act of 1982 (NWPA), with the ultimate goal of researching, selecting, and operating nuclear waste repositories for the nation by January of 1998; however, in 1987, an amendment to NWPA singled out Yucca Mountain in Nevada as the sole repository for nuclear waste. The NWPA Amendment became widely known as the “screw Nevada bill” and was seen as a “legislative atrocity” by many because of its hasty implementation (Weeks, 2011, pg. 86). For decades afterwards, Nevada officials executed political maneuvers to stave off the impending opening of a repository, including passing state laws banning the disposal of nuclear waste within state borders by any agency (Weeks, 2011). Due to insurmountable political and environmental problems, DOE was not able to meet its 1998 deadline. In 2010, the Obama administration directed the DOE to withdraw its application to the NRC for the Yucca repository, effectively killing the program.

In an attempt to create a fix for the nuclear waste problem, President Obama chartered the Blue Ribbon Commission on America’s Nuclear Future (BRC) in 2010. After investigating past failures and present options, the BRC made recommendations for successful waste solutions

going forward. Firstly, the BRC found that the United States must “commit to a new, more flexible and more adaptive approach to siting and developing” future repositories (BRC, 2012, pg. 73). This approach helps to prevent run-away site-specific projects that might lead to partiality. Furthermore, the BRC recommended that as part of an adaptive process, flexibility be well emphasized. BRC defines flexibility as the ability of project managers to be “able and willing to reevaluate earlier decisions and redesign or change course when new information warrants” (BRC, 2012, pg. 76). As opposed to proscriptive, hard-and-fast deadlines, the flexible nature of “milestones” is preferred by the BRC, as an adaptive staging process can allow for “potential problems to be corrected” early on before they become burdensome to fix (BRC, 2012, pg. 76). In all, the adaptive approach is “more conducive to building and maintaining public support” for long-term projects like a repository (BRC, 2012, pg. 74). In the meantime, however, the safety of this storage method is still debated today, and a nationwide SNF storage plan has yet to materialize at the time of this writing.

In addition to the question of SNF storage, the events of September 11, 2001 have also raised concern over the safety of plants and nuclear fuel from terrorist attacks. After a prolonged discussion between the NRC other interested parties, the NRC argued that current plant safety and on-site SNF storage was adequate to protect the public health, although groups such as the National Academy of Sciences determined that a calculated attack could result in a successful compromise of the safety of nuclear fuel (Walker and Wellock, 2010, pg. 88).

A twenty-three percent increase in demand for energy during the 1990’s and its continual rise speak to the need for greater energy production today (Walker and Wellock, 2010, pg. 94). Currently, 104 active nuclear reactors are responsible for 20 percent of the United States’ electricity supply (Wall, 2007). With virtually no greenhouse gas emissions and the prospect of

a 3,500-year supply of uranium, the benefits of nuclear energy still speak for themselves – especially during a time in which public concerns about global warming and limited energy sources reach new heights (Kessides, 2010). As recent as 2009, the NRC had received 18 operating license applications for 28 new nuclear plants, however only a handful planned to begin construction soon after license approval (Walker and Wellock, 2010, pg. 96). Due to problems past and present, coupled with the U.S. economy’s state of uncertainty and the exceedingly high start-up costs for nuclear plants, it remains to be seen whether or not a “nuclear renaissance” is on the horizon. Although regulators have improved their record over the last few decades, regulatory distrust still lingers for many, leaving the future of nuclear power in a state of flux.

III. Framework

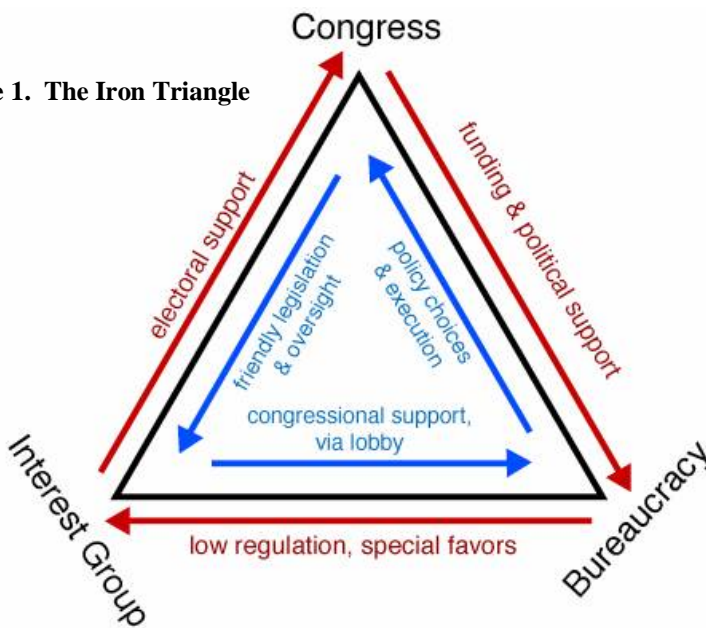
Policy Communities

A crucial component to understanding policymaking is the concept of a policy community, broadly defined as a set of actors, both official policymakers and nongovernmental actors, involved in creating policy within a particular policy domain (Birkland, 2011). These communities substantially impact the direction of a policy issue throughout the policymaking process and can be populated by a variety of actors, including Congress people, federal agencies, experts in the policy domain, and public interest groups (Birkland, 2011). Based on the popular desire for political equality and representation in the policymaking process, it is prudent to focus study on which groups participate in the process, as well as which groups have an impact on the policy outcomes (Golden, 1998). Some communities are structured in a closed, isolated manner, allowing only certain actors into the actual policymaking process; these communities are commonly referred to as “iron triangles.” In contrast, other policy communities are fluid, accessible, and populated by a large number of actors; political scientist Hugh Hechlo labels communities matching these criteria as “issue networks” (Golden, 1998). Although these community structures represent both extremes of the spectrum, iron triangles and issue networks can be used as anchors to help illustrate community-defining features such as actor composition, inclusivity, and rigidity. An analysis of these two community structures will follow, organized by the aforementioned characteristics.

Actor composition, that is, the types of actors within the policy community, is one of the key characteristics that differentiate an iron triangle from an issue network. Evaluating this composition reveals which parties are responsible for decision-making within a policy domain, as well as whose interests are at stake. The participants within an iron triangle are limited in

number and are all usually connected with an executive agency. Beginning in the 1960's, Congress delegated increasing amounts of its lawmaking powers to administrative agencies, allowing those agencies to create rules that carry the same weight as legislation (Golden, 1998). In this scheme, Congress "instructs an administrative agency to implement the statute by resolving all the remaining issues," thereby giving agencies "considerable discretion over [...] the substance of regulatory policy" (Percival, Schroeder, Miller, and Leape, 2009, pg. 159). The overall power of iron triangle policymaking therefore lies between 1) an executive agency, 2) the

Figure 1. The Iron Triangle



agency's clientele group (interest groups), and 3) the agency's Congressional oversight committee (Temples, 1980). Taken together, these three groups of individuals make up the three "sides," or sectors, of the iron triangle actor composition. Although the agencies are an unelected branch, a "democratic safeguard" in the form of the

Administrative Procedure Act (APA) of 1946 allows for a public notice and comment period, permitting citizens to directly weigh in on policy decisions (Golden, 1998, pg. 246). As part of the Act, agency decisions are also subject to judicial review; section 706 of the APA specifies the standard for agency review as "arbitrary and capricious" interpretation (Percival et al., 2009, pg. 175). Besides APA provisions, however, there are few avenues for expressing public interest, and recent research still questions whether or not APA recourse provides an adequate check on bureaucracy power (Golden, 1998).

As opposed to the relatively small, bounded set of actors found in an iron triangle, issue networks are characterized by a “large number of participants” (Golden, 1998, pg. 249). Additional members to an issue network might include the media, competing lobbies, and more congressional committees. Overall, these communities include the same kinds actors found in an iron triangle, but also feature an increased variety of groups per sector, and more individual actors per group. For example, whereas iron triangle Congressional input is limited to key committee members, issue networks involve members from all parts of Congress, thereby decentralizing the power and interests of this sector of the community (Birkland, 2011, pg. 157). Furthermore, issue networks incorporate a greater variety of interest groups, which in turn diffuses power from any one particular group or idea. The actor composition of issue networks expands on the limited number of participants present in the iron triangle model.

In addition to the basic composition of participants in the policy community, another delineating attribute is the community’s inclusivity, that is, its accessibility and receptivity to various actors inside and outside the community. Equal representation of public interests relies in part upon the receptiveness of a policy community to different ideas from various groups. In the case of an iron triangle, the most extreme form of this community engages in “behind the scenes” decisions that pursue mutually beneficial solutions for all involved (Temples, 1980, pg. 240). Congressional committees, an executive agency, and the agency’s clientele “enjoy low-visibility cordial relations and produce policy that favors all parties involved” (Golden, 1998, pg. 249). These communities are also distinctly characterized by a great degree of consensus between the actors (Golden, 1998). Combining this policymaking strategy with a small group of familiar actors, it is clear that room for additional or contradictory viewpoints is limited, thereby reducing the level of accessibility to outside members of the policy community (Birkland, 2011,

pg. 156). For example, before the enactment of the National Environmental Policy Act, environmentalists would have found it difficult to demand the Atomic Energy Commission (AEC) to investigate harmful environmental effects of power plants, as the Joint Committee on Atomic Energy, the AEC, and plant operators were not focused on the issue, however these were the only actors directing policy in this area at the time. The tight negotiation within this small network of actors fosters comfortable relationships and has even been labeled a “policy monopoly” (Birkland, 2011, pg. 156).

Unlike the closed nature of iron triangles, high levels of inclusivity, “accessibility,” and “competition” characterize issue networks (Golden, 1998, pg. 249). The broad actor composition of issue networks lends itself to greater receptivity, as pre-figured patterns of policymaking based on established relationships do not form as readily in issue networks as they do in iron triangles. Thus, groups looking to join the community or offer different opinions will have a better chance of doing so. Whereas iron triangle actors become increasingly concerned with material interests for themselves, the base concern for issue networks is a common problem that all actors want to address. Hecló argues that issue networks can be thought of as “shared knowledge groups that tie together large numbers of participants with common technical expertise.” This leads to the “mark” of issue networks, “conflict and competition” (as cited in Golden, 1998, pg. 249). Conflict is in fact indicative of an inclusive policy community, as an increasing number of actors in one community usually results in differing opinions and actors are more likely to pursue compromises in order to formulate policy acceptable to all members of the community. Looking at iron triangles in comparison, the opposite is also true: overwhelming consensus within the community reveals a lack of inclusivity, in part because the actors in the

community are strong enough to enact favorable legislation without the support of many other groups.

Finally, a third crucial distinction between iron triangles and issue networks is the level of rigidity displayed by the policy communities. Rigidity gets at the flexibility of the organization over time, and can serve as a complementary indicator to inclusivity revealing how a community reacts to new ideas or differing viewpoints. As rigidity increases, the potential for impact from one sector of the community decreases. Iron triangles are known for remaining relatively “stable” over time, in part due to their mutually beneficial relationships (Temples, 1980, pg. 240). Actors in iron triangles remain “consistent” and produce predictable policy outcomes (Golden, 1998, pg. 249). Despite the fact that iron triangles are inflexible, rigidity can sometimes be challenged through a phenomenon called the “issue-attention cycle” (Rourke, 1984, pg 51). The overall theory is based on the fact that different issues rise and fall in importance on the public agenda. Peak political and social issues can emerge in a variety of ways, but the general outcome is increased visibility of a specific policy domain and those responsible for its direction within the policy community. Greater attention to a specific domain is not always a positive thing, however. Newly-interested parties may be “extremely suspicious” of a community’s decision-making (usually the agency’s current operating strategies), causing it to fall under heavy scrutiny (Rourke, 1984, pg. 52). Over time, pressure from external groups may even cause the agency to change its direction.

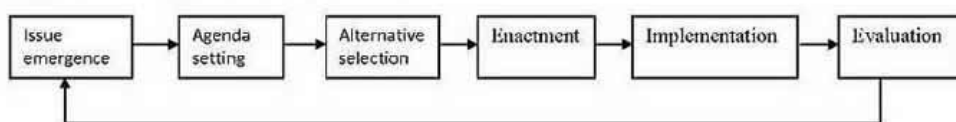
In direct contrast to iron triangles, issue networks feature “fluid” membership and unpredictable policy outcomes. Because of issue networks’ greater accessibility, the overall potential for citizen and group participation is higher than in iron triangles. Issue networks exist to solve problems, and as policy makes its way through the process, actors will enter and exit the

community arena as necessary (Golden, 1998). This open-door scheme makes for unpredictable policy outcomes, as countless groups may affect one piece of policy. Once again, because the goal of an issue network is to fix an issue, a new group of knowledgeable actors is struck up each time another issue emerges, promoting issue-individualized policy-making.

Interest Groups

Within the policymaking process, interest groups only have a finite amount of space for substantive impact on policy decisions. Starting at the “agenda setting” stage of the process, interest groups work to get their concerns within the purview of governmental actors, also known as the “institutional agenda” (Birkland, 2011, pg. 171). Means of access to this agenda are fairly widespread, but a common requirement is that there must be a sizable advocacy group in order to garner more attention. For this reason, smaller groups may consolidate into larger “peak associations” capable of advocating for common beliefs. These peak associations increase the visibility of organizations, as well as their financial stability.

Figure 2. The Stages of the Policy Process



From T.A. Birkland, (2001). *An Introduction to the Policy Process: Theories, Concepts, and Models of Public Policy Making*. Armonk, NY: M.E. Sharpe. (p. 222)

In addition to the formation of larger peak associations, interest groups pursue other strategies in an attempt to influence policy. One primary tactic is lobbying, which involves the direct solicitation of legislative and/or executive official actors to enact policies favorable to a group’s concerns (Birkland, 2011, pg. 139). This strategy usually requires an interest group of considerable size in order persuade official actors to engage with the group. Still within the

agenda setting phase of policymaking, groups may chose to reach out to media outlets in order to garner public support or raise awareness of an issue. The theory here is that increased information distribution will lead to mass public unrest, eventually forcing government representatives to listen to a constituency.

The “alternative selection” phase of the policymaking process also gives public interest groups the opportunity to substantially impact policy (Birkland, 2011). Once an issue is on the agenda, interest groups (presumably sometimes the same groups that brought attention to the issue) may propose specific solutions to members of government. Interest groups with enough resources may even have hired experts in the field to formulate policy alternatives in line with the interest group desires.

IV. Methodology

While historical and background information on the Nuclear Regulatory Commission (NRC) provide the overall national context, this research is designed as a case study, and as such, primarily investigates the Palisades Nuclear Power Plant in South Haven, Michigan. Nuclear power, specifically Palisades, garners much negative attention due to its safety concerns and the waste disposal dilemma. Continued operation of Palisades in the face of recent mounting public uncertainty leads to an ongoing erosion of trust in the plant, its operators, and other interested parties involved with the plant; exploring the actors, permeability of the community, and means of influence are crucial at this juncture in the policy domain. Thus, this study analyzes the policy community active in policy changes through the policymaking process in recent history and also examines the actors within existing policy community frameworks to evaluate the community's relationships, power structure, and inclusivity.

Specifically, this thesis seeks to answer two research questions: 1) how does interest group behavior influence policy communities, and 2) how well does the iron triangle framework explain the nuclear policy community relationships and outcomes. Methodologies for this study include 1) historical documentation to provide a timeline of events and operations, 2) interviews of members from various sectors of the nuclear policy community including interest groups, agencies, and elected officials, and 3) participant observation. Combined, these sources of data provide a comprehensive picture of Palisades' policy community. The information gleaned from these historical sources and primarily from the interviews will enhance citizens', governments', and scholars' understanding of the capacity of external groups to influence policy, as well as the characteristics of Palisades' community in context with existing frameworks.

Historical Background

In October 2010, the Nuclear Regulatory Commission released an account of its own history, as well as the history of nuclear energy at large in a publication entitled, “A Short History of Nuclear Regulation, 1946-2009.” This source is frequently referenced in the introductory sections of this study because of the document’s encompassing history that is unmatched by few other documents discovered in online databases and elsewhere. Sources found through Western Michigan University’s online databases contain largely insufficient data to provide an accurate picture of nuclear history. Of the other sources found, many leave off after the mid-1980’s, creating a clear gap in necessary historical data. By utilizing a source that covers major events in nuclear history written from the national perspective, the study is able to contextualize events at Palisades within a larger thematic backstory.

In addition to federal sources of historical information, I also consulted with sources local to Palisades, as these sources are more likely to have detailed information regarding the plant’s operation than a national-perspective source. The Kalamazoo Gazette is a major newspaper for the Palisades community and has an online archive with articles covering the entire period of the plant’s lifetime. Similar to the NRC’s self-published history, media outlets also generally report on only the most important events, thus helping to narrow the scope of information down from all potential historical records to only the most pertinent for study. Because of these merits, the Gazette is the best option for culling information related to Palisades’ operations. The newspaper’s indexes allow for a search of relevant stories relating to the history of Palisades by using the keyword “Palisades.” This database contains 846 articles related to Palisades over the 1967 - 2013 time period. From the original search results, I began by reading the headlines posted on each results page, starting with the oldest articles first and moving forward in time. If

an article's headline was about Palisades in relation to a sector of the policy community (ex. a government agency, interest group, or elected official), I recorded the date of the article for future research. In this manner, I further pared down the most important articles to those specifically related to the research questions at hand dealing with actors in the policy community. After making a list of approximately 80 articles, I read each article to further determine its pertinence to the study. If the article provided substantive information relating to Palisades' operation and the policy community, I scanned, printed, and indexed the article chronologically in a binder, ultimately numbering approximately 50 articles. Finally, I read and qualitatively analyzed stories on events pertinent to the research questions to construct a timeline with an emphasis on the relationships between and/or amongst the players.

Interviews

In addition to historical background information, another major source of data for this study is one-on-one interviews with members of the policy community. The object of these interviews is to assess the involvement and perceptions of a range of actors from the federal government, state government, local government, agencies, energy industry, and interest groups either responsible for or engaged in dealing with the policies and actions at Palisades. Data collection for this section follows a strategy depicted by John W. Creswell in *Qualitative Inquiry and Research Design: Choosing Among Five Traditions*, a "data collection circle." Part of this method involves "purposeful sampling" (Creswell, 1998). In recruiting subjects for this thesis, the goal is to best represent the wide spectrum of participants involved with the continued implementation of federal energy legislation, the NRC's mandates, and Palisades' operations. Thus, the targeted categories for the study are 1) elected officials, 2) agency personnel, and 3)

interest groups. These three categories comprise the major sectors of an iron triangle policy community and therefore lend themselves to direct cross-examination between the literature and Palisades. There is also a concerted effort to recruit those who hold leadership roles in each of their respective categories, which excludes those holding positions within agencies and organizations that play a minor role in the implementation of policy at Palisades or play a subtle role in its development.

Following the creation of a contact list, the next step is gaining access and making rapport (Creswell, 1998). Making initial contact and developing a relationship through continued communication accomplishes this step. An email to potential interviewees serves as the method for initial contact, in which a request was sent to participate in a phone interview. An HSIRB consent form was also included in the initial e-mail in order to expedite the pre-interview process. If a participant's e-mail address was unobtainable prior to investigation, I contacted the potential interviewee by phone first. A list of all 20 potential interviewees can be found in Appendix A. The goal of the interview pool is to incorporate as many actors from various sectors of the policy community; this is reflected in the number of potential interviewees per category: Elected Officials- 7; Agency Personnel- 3; Interest Groups- 10. Redundancies within each category improve the chances of connecting with at least one representative per category. The approximate length of time that was expected of the interviewee, the nature of the study, our contact information, and a brief summary of why we chose to contact them was all expressed in this recruitment email/phone call.

After initial correspondence, I waited a week to hear back from the contacts, and I utilized the interviews that I was able to obtain in the shortest amount of time. Of the participants that were not available for an interview, I utilized any recommendations for

additional interview participants that the subjects proffered. Had an individual expressed interest in participating, a second email was sent to try and set up a phone interview time if it hadn't already been indicated in the response. There was also an attachment of the types of questions that would be asked throughout the course of the phone interview. The perspectives gained from interviews were ultimately contextualized with the other sources of data in this study (historical record documentation and student participant-observer research).

In an attempt to gain an accurate picture of the policy community, multiple responses from each sector (agency, government, and interest group) were sought. Respondents in each sector number as follows: agency: 1, elected official: 1, interest group: 3. As previously mentioned, multiple attempts to contact all members of the interview pool were made; only the respondents that were able to respond within the interview portion of the study timeline were ultimately interviewed. Four out of five interviews were conducted over the phone using an Olympus DS-500 voice recorder, allowing me to capture the entire conversation for later playback and transcription. All audio files were deleted upon the completion of the study in order to protect the identity of interviewees. The fifth interview was in-person and unrecorded, but a word processor was used to take notes. As part of the interview process, a non-statistical analysis process was employed. Using transcribed audio recordings, a synopsis of ideas was recorded in the form of field notes. After reviewing the data obtained from the interviews, research contrasts and comparisons were made, looking for patterns, along with the development of metaphors. Information was then contracted into a more concise and categorized format. Evaluation of the information was performed utilizing systematic procedures for inductive inquiry and working within the analytic framework from literature.

Questions pertinent to this thesis include the inclusivity of the agency to community input and concern, agency strategy changes, cross-community relationships, interest group strategies, and the effectiveness of interest group strategies in the policy community. For a full list of the questions posed to interviewees, refer to Appendix B. The interview style is comprised of open-ended research questions, thereby allowing me to listen intently to the interviewee and scrutinize, study, as well as continually shape the research process. In order to conduct a thorough review of the material to answer the questions, the synthesized data is reviewed and connections are made between the multiple sources of information. Based upon the foundation of data, a conclusion on Palisades' community's relationships, power structure, and inclusivity is drawn.

An application for permission to pursue interviews was completed in accordance with the Human Subjects Institutional Review Board process. Exemption from full-panel review was granted on February 14, 2013; this exemption is included as Appendix C.

Participant Observation

In addition to both historical information and one-on-one interviews, the study also incorporates first-hand participant observation results. Participant observation is another way to build rapport, which is a major tenet in Creswell's method of data collection. Sources in this category involve actors closely related to the Palisades policy community and therefore have inherent value because of their direct connection to research questions involving community structure. Information gathered from these sources was recorded in the form of field notes and assimilated in the results section as a separate set of data.

Throughout the study time period, roughly November 2012 to April 2013, all attempts to engage directly with the policy process and policy community were made. Interest group

activity was observed by attending Michigan Safe Energy Future (MSEF) planning meetings, and the group also added me to their online listserv. This listserv provided a wealth of information and perspective, as the group was extremely active in sharing documents, analyses, and strategies. MSEF was also active in hosting public events, which I attended when available. The most recent meeting I attended was an event featuring the Union of Concerned Scientists in April 2013. Agency and interest group activity was observed primarily at an NRC public meeting in December 2012.

V. Results

V.I Historical Data

Located just outside of South Haven in Covert Township, Michigan, Palisades Nuclear Power Plant has provided electricity to communities along the southeastern shore of Lake Michigan for over four decades. The plant officially began operations in late December of 1971 and has held a prominent role on the community stage from its inception to today. During its forty-two years of existence, the plant has undergone over one hundred shutdowns, been subjected to scrutiny by dozens of environmental groups under the purview of two different regulatory agencies, and has switched ownership from one major power company to another. In short, Palisades has had an active history. An investigation into this active history is necessary in order to establish Palisades within the context of the community of South Haven and the nuclear era at large.

Construction of Palisades began in March of 1967 after site approval by the former Atomic Energy Commission (AEC) in Covert Township, Michigan, adjacent to Van Buren State Park and roughly 7 miles south of the City of South Haven. According to media sources at the time, a public hearing hosted by the AEC prior to construction did not yield any community concern or objection to the construction of Palisades on the Lake Michigan shoreline. Within two years, Congress enacted the National Environmental Policy Act (NEPA) in 1970, mandating all federal agencies to prepare an Environmental Impact Statement (EIS) for all projects. Since the operation of Palisades was under the authority of the AEC, this forced the commission to “do something it had never been required to do before- consider something other than radiological safety before licensing a nuclear power plant” (KG, Aug. 1972). The environmental issue at stake was the heating of Lake Michigan’s water directly next to the plant and the effect of

increased temperatures on fish populations. Many interested groups pushed for cooling towers to be added to the plant's design in order to mitigate these potentially harmful environmental effects.. Utilizing NEPA, conservationist groups successfully delayed the issuance of a "full power" license from the AEC through hearings on the matter until late 1972, nearly two years after Palisades was scheduled to begin service.

A little over three months into the plant's "full power" operations, Palisades experienced its first radioactive leak into the waters of Lake Michigan, prompting a shutdown on January 26th, 1973. Consumers Energy, the owner of Palisades during the time, claimed that a low level of radioactivity was released and that there was "no danger" in the leak. An AEC spokesman stated that plant officials responded properly to the leak by notifying the AEC quickly. During this time, however, the AEC did not require utility companies to alert the public in the event of a leak. Within a day, environmental groups berated the plant, stating that the leak was "an indication that the system is not as safe as the [AEC] and the contractors said it was" (KG, Jan. 1973). New leaks discovered in August of 1973 prompted another shutdown after the previous leaks had been repaired. This time, the plant stayed closed for the remainder of the year. An article published in November of 1973 reveals that in the twenty-month existence of the plant, Palisades had been shut down for about ten months total, roughly half of its lifetime (KG, Nov. 1973).

Throughout most of the 1970's, Palisades' operational history followed a similar pattern: minor leaks, shutdowns, repairs, criticism, and a restart. On average, the plant encountered enough problems to initiate a shutdown about 2-3 times per year. The AEC at various times levied fees against Consumers Energy for poor management and held hearings to determine the validity of accusations brought against the safety of the plant. By the end of the 1970's, the

Nuclear Regulatory Commission (NRC) had replaced the AEC as a regulatory agency, but to little avail for environment groups, which were not simply criticizing the plant anymore, but instead calling for Palisades to be closed permanently (KG, May 1979). In November of 1979, the NRC levied a \$450,000 fine against Consumers Energy (approx. \$1.5 million in 2012 dollars, adjusted for inflation) for improper plant maintenance, the costliest fee ever assessed by the agency at that time (KG, Nov. 1979). Performance of the plant at the close of the 1970's did not improve from its early years; the plant was operational 54% of the time over the past eight years (KG, Nov. 1979).

Stemming from problems in the 1970's, the dawn of the 1980's represented an era of tension between the NRC and Consumers over Palisades. Media articles from the early 1980's include representatives from Consumers Power assuring the safety and cost-effectiveness of nuclear power to the public while simultaneously criticizing the NRC for causing increases in power prices due to new preventative guidelines. For instance, an NRC mandate to equip Palisades with protection from earthquakes drew criticism from the industry for being unnecessary and too costly (KG, Jan. 1980). In an effort to add more transparency to regulation, James Keppler, then-regional director of the NRC for the Midwest, assured communities that a "public awareness program would accelerate" in 1981, thereby allowing members of the public to witness meetings between the NRC and its licensees (KG, Dec. 1980).

Despite earning favorable marks for 1982, Palisades continued to operate under scrutiny for the remainder of the 1980's, but was also able to avoid harsh penalties from the NRC. A media article from 1982 reveals that because of the plant's prior performance, the NRC almost held a "show cause" hearing on why Palisades should not be shut down in early 1981 (KG, Oct. 1982). Instead, Consumers Power convinced the NRC not to take such action. During the mid-

1980's, NRC called for closer monitoring of Palisades due to chronic issues related to steam valves at the plant. Members of the House Subcommittee on Energy expressed "lingering concerns" with Palisades' operation in a memo from 1985 (KG, Aug. 1985). By early 1986, Consumers had a stack of 2,374 outstanding work orders for repairs on the plant; the NRC required a management strategy for these work orders to be prepared before operations could continue (KG, May 1986). As one NRC report put it, there was "a continuing backlog of corrective work requests which was almost unmanageable and a very weak preventative maintenance program" (KG, Sep. 1987). The agency blatantly accused plant officials of "work prioritization based almost exclusively on the establishment of minimum conditions to support plant restart" and felt that management had a "pronounced tendency to try to evaluate problems away rather than [fix] them" (KG, Sep. 1987).

Almost the entirety of the 1990's revolved around one aspect of Palisades: nuclear waste storage. As discussed previously, the Department of Energy (DOE) was charged with the storage and disposal of nuclear waste at the Yucca Mountain repository by January 31st, 1998. Quickly running out of room, Palisades, like many other plants, was eventually forced to implement on-site "dry cask" storage in order to continue operating after the DOE informed utilities that it would not collect waste starting in 1998. By 1993, activist groups and citizens alike began expressing their concerns with nuclear waste being stored near Lake Michigan, presumably for at least a decade. Former State of Michigan Attorney General Frank Kelley petitioned the NRC to hold public hearings before the storage of nuclear waste began. Although no hearing was ever held, the NRC sought public comment in February of 1993 (KG, Feb. 1993).

The NRC granted an on-site nuclear storage license to Consumers Power on April 2nd, 1993, which sparked a firestorm of criticism and inquiry into the NRC's safety guidelines and

legitimacy. Through an agency decision, the NRC added “dry storage casks” to the list of acceptable temporary storage facilities, thus clearing the way for Palisades’ ability to store waste on-site. “Thousands of residents statewide” decried the decision, calling attention to the proximity of the aforementioned casks to Lake Michigan. One resident shared at an NRC public meeting, “You [NRC] come up with these charts to try to cover up and make people feel safe – and it’s not working” (KG, May 1994). Clearly, at this time, the public was feeling excluded from the policymaking process; not only was the public not permitted to have a hearing on the appropriateness of on-site storage, but the NRC seemed to have already made up its mind on how storage was going to be managed.

After the turn of the century, local and national focus shifted to the completion of the Yucca Mountain repository in Nevada. County commissioners and state representatives alike were passing resolutions asking House and Senate members to make sure plans at Yucca would go through; with nuclear waste piling up at Palisades, these issues were of particular concern for many local elected officials (KG, Mar. 2002). Beginning in 2005, a push from environmentalists for the closure of Palisades made headlines ahead of the plant’s scheduled 2007 hearings for relicensing. An article from 2006 reveals that most environmental groups were not optimistic about successfully stopping a relicensing based upon the NRC’s history. The license was renewed in March of 2007, allowing Palisades to operate until March of 2031.

Today, the 777-megawatt plant still provides power to Michigan southwest communities, but also provides a source of anxiety for environmentalists and anti-nuclear groups alike. Questions of small leaks from the on-site cask storage have recently arisen and, with no permanent nuclear waste storage solution in sight after 2010, the problem seems direr than ever. Of greatest concern to many is the age of Palisades. By the time the plant’s current license

expires, the facility will have been in service for sixty years, forty years longer than its original foreseen lifespan as evaluated by the AEC in the 1960's. In addition to age, the plant's documented structural deficiencies highlighted in the 1970's lend themselves well to activists' calls to "shut down" Palisades before it "melts down." Overall, the plant is still receiving a great amount of publicity as it continues to operate on the shores of Lake Michigan.

Throughout its four decades of existence, Palisades has remained in the public spotlight during various eras of nuclear policy and concern. From early design flaws to modern aging concerns, the plant and its relationship with both the community and its regulator have been tested and sometimes damaged. Looking forward, there are no plans to decommission the plant in the immediate future; on the contrary, its current license will keep Palisades operating for another 18 years, at which point another renewal may be possible. The problems facing Palisades and other reactors are many, but the NRC continues to stand by its policies as effective guidelines to operate these plants safely now and in the future.

V.II: Interview Responses & Student Investigator Observations

The Agency

Interviews with an agency respondent began by asking about the perceived receptivity of the organization in relation to "community input and concern." Receptivity level helps illustrate the inclusivity of the policy community, which is major defining factor of communities. On the topic of NRC receptivity to community input and concern, agency respondent felt that the NRC is "highly receptive to hearing what the public has to say," citing the multitude of scheduled meetings between the agency, Palisades, and the public. When further asked about receptivity, translating community input into agency strategy changes, respondent detailed the procedure by

which the agency seeks more “engagement” with the licensee. According to the administrator, “trigger points” are reached based on performance and risk assessments, the results of which dictate whether or not the NRC will take further action with any licensee. During the interview, respondent made it clear that these assessments are “solely” responsible for triggering greater action with a licensee; “public concern” alone was not grounds for greater engagement with Palisades.

However, public relief does exist in the form of a petition for the NRC to take action. This petition is called a 2.206 and can be filed by any citizen or organization. NRC staff evaluate these petitions for standing and other criteria. The process, although used “fairly often,” does not typically yield relief sought by the petitioner. “[The petitioner] will get an answer- a thorough answer,” the administrator explained, however, “it’s likely that [the petitioner is] not going to get the relief [that he or she wants].” In response to criticism from public interest groups decrying the process as “useless,” the agency responds that they are constantly monitoring the site, ensuring that licensees are complying with their respective licenses. Overall, the reasoning for infrequent relief through a 2.206 petition stems from the fact that the agency feels “it would be very rare for us to miss something [...] that a member of the public could identify.”

Respondent was then questioned about NRC response to plants with increased public attention. This question presents a scenario in which more actors in a policy community become involved, and the flexibility or rigidity of the NRC’s response speaks to the agency’s level of ability to engage cooperatively with other members in the community. When thinking about plants with greater public interest, respondent mentioned that the NRC’s strategies change in regards to being “open and transparent.” The administrator cited a couple of examples on how

staff could “go beyond the minimum” when public interest is higher for a specific plant or issue, including open public meetings and publishing a public summary of phone conversations with licensees all in an effort to give the public as much information as possible. Respondent feels that “openness and transparency gives the public interest groups their say,” because giving them information allows them to use that information to file petitions, contact Congress people, or go to the press. In general, transparency and openness to information is a primary tool for the NRC to relate with the public. As the administrator concluded this section of the interview, “When there’s public interest, I tend to bend over backwards in our value of transparency and openness.”

In addition to community input and concern, the agency was also questioned on relationships between itself and other members of the policy community, including Congress and the agency’s licensees. This question is important to consider because relationships comprise the structure of the community, and an understanding of the structure of the community is critical when evaluating whether or not Palisades’ community resembles an iron triangle. With regards to Congressional relationships, respondent stated that the Atomic Energy Act of 1954 gives the NRC “complete authority” to regulate plants. All rules generated for use by the Commission are created internally, not legislated by Congress. In this way, the 1954 Act delegates all power and decisionmaking authority to the NRC, leaving no substantive work for Congress. When asked to describe the relationship between the NRC and its licensees, respondent commented that the relationship is “appropriately professional.” The administrator also added that transparency and openness are core values to show the public “how much separation there is between the licensees and the Commission.” For example, “our inspectors don’t have lunch with the licensees,” and, “we ask them not them not to interact socially with the licensees.” Respondent claims that this

separation highlights the value of objectivity held by the NRC. Finally, respondent mentioned that a mutual level of respect exists between the agency and licensees, “even though many times, [the licensee doesn’t] agree with us.”

Keeping on the topic of community relationships, but also in an attempt to get at the previous questions of community input and concern, the next series of questions were designed to evaluate interest group impact on the relationship between the NRC and licensees, such as Palisades. A measurement of impact can assist in understanding the rigidity of relationships in the community. Relationship resilience is yet another delineating aspect that gets at the overall community structure. The question was posed, “Do you feel that anti-nuclear activist groups or any activist groups have any influence on the relationship or impact on what [the relationship] is today?” Respondent answered directly, “I don’t think it changes the relationship between the NRC and its licensee because we live by our values and our processes and procedures.” The NRC administrator said that this answer holds true “regardless of what the public does.” Furthermore, when responding to questions about the centrality of activist group opinions in shaping NRC decisions, the administrator restated that the Commission “listens appropriately to public interest groups,” but at the end of the process, “the Commission has to make their own mind.” Citing reasons such as differentiated community concern based on the problem at hand, including particularly high concern for specific plants, but no public interest in others, respondent feels that “you can’t regulate by public interest.”

Elected Officials

Apart from the agency, the next sector of the Palisades policy community to be explored is the government, most specifically elected officials. As before, a prompt regarding the NRC’s

receptivity to community input helps to illuminate the inclusivity of the policy community. When asked about the NRC's receptivity to community input and concern, a government representative echoed many similar characteristics mentioned by the NRC administrator, including "constant visibility" and "always holding meetings." Overall, respondent feels that these attributes convey a good degree of receptivity. As further evidence of receptivity, the representative feels that because Palisades is on the "watch list" of some public interest groups, the plant shuts down more often. However, despite hearing some concern about the plant's operation, respondent comments that these concerns are "not often." In fact, the majority of constituency requests regarding nuclear power are for additional nuclear power plants to be constructed.

Although nuclear regulation is a federal power and therefore outside the purview of the respondent's jurisdiction, questions regarding the relationship between the NRC, respondent's office, and the public were asked in order to help situate each sector within in the policy community. In reference to the respondent's relationship with the NRC, the only substantial interaction comes from the NRC's disclosure of information to the representative. Because the plant is located within the representative's geographical jurisdiction, the agency provides respondent with updates on shutdowns and general operational status as necessary. On the issue of relating to the public, respondent was asked to quantify the importance of activist group impact on policy decisions. In that capacity, the representative is "always listening," but feels tasked with the responsibility of "separating fact from fiction." In addition, the representative mentioned that constituents expressing concern are usually directed to his or her respective federal representative. However, it is this respondent's experience that the majority of concerns

with Palisades are from out-of-constituency regions, whereas respondent's constituents "put great stock in the safety and efficacy of nuclear power."

Interest Groups

The final sector interviewed in the Palisades policy community is public interest groups, namely anti-nuclear activist groups. All three respondents in this category varied in duration of membership in such groups as well as roles in the groups. When asked to quantify NRC receptivity to community input and concern, two of the respondents directly answered that there is no receptivity present "at all." A third respondent on the same prompt offered a viewpoint that the NRC is "more swayed towards supporting the nuclear power industry than [...] protecting the environment." With the primary objective of all three respondents' interest groups being improved performance and eventual shutdown of Palisades, the activists based their receptiveness of the NRC on observable changes in NRC strategies related to the plant. As one respondent remarked, "[It] is frustrating to think that these [anti-nuclear groups] could work on these issue for 20 years and still have the plants operating." Another respondent, commenting on the NRC public hearings, called the meetings a "dog and pony show," feeling that, "[the NRC is] not hearing our concerns and addressing our concerns, and they just keep telling us [...] that [they] would never let anything happen that would cause a problem for the community. I don't believe that." Respondent goes on to mention examples of NRC's failure to fix problems in Palisades' operations, including unknown month-long system failures. Once again, agency receptivity is mainly based on the NRC's translation of community concern into strategy changes or improved plant performance; receptivity as such has not been witnessed consistently by any of the respondents.

A series of questions relating to interest group strategies helps to illustrate active plans for attaining the goals of these interest groups; the questions also asked members to evaluate the effectiveness of their own strategies. An assessment of interest group strategies addresses the questions of “how” and “why” activist groups target specific actors both inside and outside the policy community. Generally speaking, all respondents mentioned strategies aimed at increasing awareness of the current Palisades situation in an effort to amass supporters in order to more effectively press change in NRC regulation. “Education and communication” are among some of the primary strategies for effecting change; from the viewpoint of respondents, greater access to information will lead to social unrest, sparking greater demand for a change in the regulation of Palisades. One respondent mentioned an idea to advertise about Palisades on a billboard located near communities potentially affected by a Palisades accident. Another respondent spoke generally on the concept of reaching out to an increasing number of groups in order to put “more pressure on area politicians and decision makers.” An organized visit to a United States Senator’s local office was also pursued as another activist strategy to seek change in Palisades’ and the NRC’s operations. In the majority of cases, the overall theme is that “publicity [...] is what’s going to be effective.” As respondents see it, a strong coalition of citizens must be formed in order to place the proper amount of “pressure” on Senators and Congress people. In addition to working through “existing channels” like Congress, the NRC, and the court system, a third respondent felt that advocating for alternative energy sources should be a primary tool in effecting change. As opposed to the other respondents, this activist felt that economics, rather than policy change, would play a major role in getting Palisades closed. On the topic of economics, respondent stated, “one of the strongest reasons that we wanted nuclear energy was because we thought it was going to be less expensive.” Now that alternative energy sources are

increasingly affordable, the political and economic feasibility of them will eventually lead to the transition away from nuclear power.

In addition to interest group strategies of education and communication with outside members of the community, investigator observation revealed that activist groups are also engaged in constant internal communication through e-mail and meetings. Through these forms of communication, activists created a forum for discussion of Palisades updates, news reports concerning nuclear safety, upcoming NRC-hosted meetings, visiting activist groups and experts, and ideas for new strategies. Activists from many different groups and locations commented and were actively engaged with communication. In-person meetings provided group members with the opportunity to revise and reorganize strategies, coordinate efforts, and present group members with personal ideas and suggestions.

The difference in respondents' strategies can be attributed to each individual activist's belief in the importance of interest groups directly shaping policy decisions. When given the opportunity to respond to a scaled quantitative question regarding the importance of interest group impact, two of the respondents, on a scale of 1-10 with 10 being "extremely important," rated the importance as "9" and "10." Respondents with these high values attributed their answers to a belief that "activism is to hold the entities responsible for doing their jobs," as well as the belief that there isn't "any other way that we can affect any change in the nuclear system [other than direct activist impact]." A third respondent rated the importance of direct activist impact as "2." This respondent explains, "I don't really have a lot of faith [...] that policy will drive change. I believe that the economics drive change."

In addition to detailing the strategies employed by activist groups, the interview also focused on a self-assessment of those strategies in relation to the success of achieving goals set

by the organizations as a means of further evaluating interest group significance in the policy community. Responses were generally negative. One respondent plainly stated, “I don’t think we’ve been effective.” Once again, the measuring stick for success is a change in regulatory strategies, to which respondents feel “[the NRC is] continuing onward with the same unsafe practices [...]” The only headway respondents feel they have made is creating an increased level of attention on the NRC and Palisades. One activist commented about a recent NRC public meeting, “If there are enough people anxious about it, [the NRC] will do something. What they *did* [...] was they gave an enormous emphasis on safety factors by the staff at Palisades.” As far as the effectiveness of their current strategies, a respondent stated, “I think that we definitely have made it known that we’re watching [the NRC] very closely and so perhaps in that regard they’re trying to anticipate problems and address them publicly before there’s more of a problem.” Although respondents feel that regulatory strategies have not been altered, there is some semblance of impact recognized by the activists in relation to NRC public meetings.

Attempting to gain a picture of the policy community from the activist groups’ perspective, the next series of questions focused on the perceived inclusivity of the policy community as well as the groups’ placement within that community. These topics speak directly to the thesis question of policy community structure as well as provide a source for comparative analysis with other members of the community. Another scaled quantitative question was posed to respondents, asking them to rank the inclusivity of the policy community on a scale from 1-10, with 10 being “extremely inclusive.” Between all three respondents, the highest rating was a “3,” with the other respondents’ ratings listed as “1” and “2.” Two of the respondents mentioned a certain degree of inclusivity, based on the existence of NRC-hosted public meetings, attendance at the events, and “some reporting” in the newspapers. However, on the

topic of NRC meetings, an activist berated the legitimate inclusiveness of the meetings, stating, “we’re listened to and we’re fed some kind of cockamamie answer that doesn’t answer the questions, but is supposed to appease the public. [NRC officials] never come back and say, ‘okay, we heard your concern and this is how we’re addressing them.’” For this respondent, evidence of policy community inclusivity is based on changes to Palisades’ regulatory strategies. Another activist echoed similar sentiments about a local city council meeting. “All [the councilmen] did was listen. Not exactly with ‘glazed over’ eyes, but they didn’t ask any questions at all. And they went on [with] the next item, as if it didn’t exist.” Even at the federal level, respondents comment on the lack of consideration given to activists and public interest groups concerned with Palisades. One activist refers to a Congressman who is “consistently” more concerned with getting Palisades up and running than with public safety after a shutdown. Yet another source of policy community exclusivity sensed by respondents is the centralized power of nuclear operators, referred to as the “established industry.” Due to economic reasons, a respondent contends, “[the industry is] not very interested in transition.”

Continuing with questions regarding policy community characteristics, respondents were also asked to place interest groups in the context of the entire Palisades community. Thinking conceptually about their placement, one respondent posited, “probably at the bottom [of the community],” and further illustrated, “we would definitely be a slice of pie, but not a very large slice.” These conclusions are based, in part, on the lack of observable response to activist group strategies and concerns from other members in the Palisades community. Another respondent comments that interest groups similar to anti-nuclear groups are “peripheral” to both the local community and the NRC. Compared to what respondent labels the “existing power structure,” activist groups have little chance of making much of an impact, especially at the local level

where jobs and county tax revenue would take a hit if Palisades were to shut down. Speaking on the future position of activists in the policy community, a respondent comments that such interest groups “will continue to be [periphery] unless there is some dramatic change in the way [...] people think about things.”

Supplementing questions about the perceived structure of the policy community, interest group members were also interviewed on the relationship between NRC and Palisades, as well as confidence in the NRC’s overall abilities to regulate Palisades. This question provides a direct cross-examination of the agency’s relationships utilizing an identical question posed to the agency itself, which serves the purposes of 1) adding depth to the understanding of the NRC-Palisades relationship and 2) illustrating the level of continuity in perceptions of the NRC-Palisades relationship from a different sector of the community. Continuity speaks to the degree of consensus within the community, which is a defining feature in determining what community model fits Palisades best. Responses relating to the NRC’s ability to regulate were generally negative. One respondent directly stated, “I don’t have any confidence.” One reason for a lack of NRC confidence offered by respondents is that the agency’s own existence would be threatened if it chose to shut down plants. Respondent explains, “it’s hard for [...] an organization to make changes that would eliminate [its] own job.” On regulatory abilities, another activist acknowledged, “I think that [the NRC has] the rules in place,” but continued on to criticize the effectiveness of application to an industry “that’s dragging its feet.” One respondent’s efficacy in the NRC’s regulation abilities is directly related to perceptions of the NRC-Palisades relationship. As the activist explains, “I think [NRC staff] are in place too long and so therefore they develop personal relationships with people they’re working with at the

plant, and I think that interferes with [the NRC's] ability to take definitive action and administer sanctions.”

Participant Observation

Activist meetings, such as those put on by visiting experts in the nuclear policy community, deepened the understanding of relationships within the Palisades policy community. For example, during an investigator-attended meeting, an expert from a widely respected interest group commented on the policy community structure surrounding nuclear power plants across the country, including Palisades. According to the expert, the NRC's regulatory agenda and success has much to do with Congressional desires. On numerous occasions, attempts by the NRC to enforce stricter regulations on plants have been met with Congressional threats to withdraw or limit funding to the agency. This, according to the expert, leads to the conclusion that the NRC is simply an agency controlled by Congress. The agency is capable of creating sound technical rules and requirements, but lacks the necessary political insulation to properly pursue their task of ensuring public safety.

VI. Discussion

After compiling results from the Palisades case study, an application of the literature on iron triangle and issue network frameworks will be applied to the data in order to answer the research question at hand, namely: how well does the iron triangle framework explain the nuclear policy community relationships and outcomes. Data from the previous section will also be used to evaluate the second research question involving how interest group behavior influences nuclear policy communities. The Palisades policy community as understood through research will be evaluated on the three community characteristics of actor composition, inclusivity, and rigidity, as detailed in both iron triangles and issue networks. From this discussion, a conclusion of the accuracy of the iron triangle framework to describe Palisades' policy community will be reached. After an evaluation of the policy community, a discussion of interest group strategies will follow.

The first criterion upon which the Palisades policy community will be evaluated is actor composition. During the late 1960's, Palisades' main policy community was comprised of the former Atomic Energy Commission (AEC) and Consumers Energy. It was during this era of nuclear regulation that the regulatory agency was also the industry promoter, as directed by the former Joint Committee on Atomic Energy (JCAE). During the licensing of Palisades, no third parties raised any concerns about the construction of the plant. The only actors involved at this time were the agency, the agency's clientele (Consumers), and the JCAE. Based on the small number and types of actors involved during Palisades' licensing, the community's actor composition most closely resembled an iron triangle. However, only two years after Palisades received its license and began construction, the National Environmental Policy Act (NEPA) was

passed, providing an avenue for groups contending AEC decisions on environmental grounds to join the policy community.

Beginning in the early 1970's, conservationist groups demanded hearings on the plant's design in an effort to force Consumers to add cooling towers to Palisades to counteract negative environmental effects. The inclusion of such groups in the formal policymaking process provides evidence that Palisades' prior iron triangle policy community was breaking down, as standard iron triangles do not allow for any more actors than an agency, a client, and a Congressional committee. In fact, the passage of NEPA alone was indicative of a broadening set of actors; powerful committees were not controlling overall Congressional activity during this era. As the 1970's progressed, however, the number of actors in the policy community seemed to shrink back towards a model more consistent with an iron triangle. Throughout this decade, the plant's poor performance was met with harsh criticism from environmentalists, but as opposed to the groups' prior success in asserting power during the cooling tower debate, Palisades continued to operate without hindrance on behalf of the environmentalists. Although fines and sanctions were imposed on Palisades by the AEC, the Commission appeared to be the only arbiter to whom Palisades was required to answer, thus signaling a narrowing of the policy community.

In relation to actor composition of the Palisades policy community, the 1980's witnessed a continued trend of iron triangle-like regulation from its new agency, the Nuclear Regulatory Commission (NRC). Beginning operations in 1975, the NRC's sole responsibility as regulator (no longer a promoter, as well) placed the agency in a unique position to reprimand Palisades for its overall poor performance. During the early 1980's, however, the NRC was convinced by

Consumers Energy to hold off on hearings that could lead to Palisades' shutdown. This kind of agency-clientele negotiation is similar to what one would expect from iron triangle actors.

Even from the 1990's onward, Palisades' policy community still contained a small, limited number of actors when formulating policy. For example, one of the biggest issues of the 1990's for Palisades was nuclear waste disposal. Despite public outcry of "on-site" spent nuclear fuel (SNF) storage, casks were added to the list of NRC-approved temporary storage facilities through an agency decision in 1993; no public hearing was ever held. This decision allowed the plants to continue operating, but seemingly ignored the voices of interest groups against the measure. Once again, a small subset of actors seemed to be in charge of making decisions in this policy domain, a characteristic consistent with iron triangle communities. As recent as 2007, the NRC engaged in yet another independent decision involving Palisades, this time extending the operating license of the plant to 2031. Anti-nuclear activist groups and some citizens were opposed to the measure, but the renewal was approved anyway.

In addition to actor composition, the Palisades policy community can also be evaluated on its overall inclusivity of internal and external actors. Inclusivity is a measure of the community's receptivity and accessibility to actors both inside and outside of the network. Communities resembling an iron triangle would be prone to exclusive traits, whereas the issue network framework emphasizes a great deal of inclusivity. In 1980, James Keppler, then-regional director for the NRC's Midwest, stated that an increasing amount of public "awareness" programs would be implemented over the coming years, allowing for greater transparency of the agency. Today, responses on the policy community's inclusivity are mixed across sectors of the community.

Both the agency and government respondents in this study felt that the NRC is “highly receptive” to community input and concern based on the frequency of public meetings held between the NRC, licensees, and the public. An agency respondent characterized the NRC’s efforts at transparency as one of the agency’s greatest tools in public relations. The concept behind transparency is to give other actors in the community the opportunity to gather information from agency processes and then use that information in beneficial ways. However, public interest group responses clashed directly with these assessments of NRC inclusivity and overall community inclusivity. For activist respondents, inclusivity is measured by the translation of community concern into strategy changes or improved plant performance. In this respect, respondents feel excluded and unsuccessful in their attempts to shape policy. When asked to rank the community’s inclusivity on a scale of 1-10 with 10 being “extremely inclusive,” the mean response from activists was “2.” One respondent comments that “[the NRC is] continuing onward with the same unsafe practices,” despite public comment decrying agency direction. To that end, relief in the form of a “2.206” petition can be filed against the NRC by activists or citizens; this petition requests that the Commission take specific action on a plant or issue. Despite being offered as an avenue for public interest group inclusivity, an agency respondent reveals, “it’s likely that [the petitioner is] not going to get the relief [that he or she wants].” The reasoning for infrequent relief through a 2.206 petition stems from the fact that the agency feels “it would be very rare for us to miss something [...] that a member of the public could identify.” A skeptical mindset such as this one serves to re-emphasize a certain amount of exclusivity displayed by the community when concerns of safety issues arise.

Besides interaction with the NRC, interest group members also cite evidence of exclusivity in other sectors of Palisades’ policy community. From local city councils to

Congressional representatives, activists cite an overwhelming desire on behalf of the governmental sector to keep Palisades operational. To some extent, respondents contend, their concerns fall on deaf ears, “as if [they] didn’t exist.”

The final dimension by which the Palisades community will be measured is its rigidity. Rigidity gets at the flexibility of the organization over time, and can serve as a complementary indicator to inclusivity, revealing how a community reacts to new ideas or differing viewpoints. As rigidity increases, the potential for impact from one sector of the community decreases. During the case study, an agency respondent was asked to evaluate the impact of interest group activity on the NRC’s relationship with its licensees. Respondent claims that the relationship had not been affected by the public interest sector, nor would it be affected “regardless of what the public does.” In this instance, it’s clear that the relationship between agency and licensee is very rigid, even under pressure from another sector of the policy community. As opposed to regulating by public interest, the agency chooses to abide by its own policies and procedures. Despite the claim of unchanging strategies under pressure, agency respondent did cite an increased sensitivity to the need for transparency in plants with heightened public interest, mentioning efforts to “bend over backwards” in regards to transparency and openness.

As was mentioned in the previous section, interest group respondents based their evaluation of inclusivity on strategy changes pursued by the NRC. In many respects, these respondents based their evaluation of rigidity on similar criteria. Unchanging strategies provide further evidence of their ineffective impact, compounded by the low level of inclusivity felt of the community. However, multiple activist respondents commented on interest group ability to “make it known that we’re watching” the agency very closely, which might have the effect of encouraging the NRC to anticipate problems before they happen. One respondent noticed a

distinct emphasis on a particular safety concern during one NRC public meeting that had been criticized by interest groups prior to the meeting. So, in some respects, it does seem that a certain amount of flexibility is being felt within the community as a response to public concern. The perceived shift in public meeting strategies from both “sides” of the community provides a clear example of some kind of impact made by public interest groups.

As it relates to activist group priorities, directly shaping policy decisions is extremely high. On a scale of 1-10, with 10 being “direct policy impact is extremely important,” the mean response was “7.” Among reasons for these responses was the belief that nothing can be done about the nuclear system except through direct policy impact. Based on these responses, activist responses praising the need for greater support make sense. As part of a strategic plan to impact policy, activist respondents listed “education and communication” as primary methods for attaining that goal. The more information available to the public about Palisades, the more likely public support could be amassed and used to change the direction of said policy. Respondents point to Congress’s mandate to dutifully represent constituency desires and feel that the public just needs more information in order to make this happen.

VII. Conclusion

Based on the evaluation of policy community frameworks applied to Palisades, it is apparent that neither the iron triangle nor the issue network provides an adequate depiction of this policy community. After applying the three characteristics of actor composition, inclusivity, and rigidity to Palisades, the best-fitting framework for this case study should be described as a “glass triangle.” This framework serves as a hybridization between the classic iron triangle and issue networks, combining elements of each to create a unique policy community.

While it is true that the “iron” aspect of the triangle no longer exists due to increased transparency, based on this case study, decisionmaking is still bound up between a smaller network of individuals, including the agency, Congress, and the nuclear industry. In this respect, issue networks do not provide an accurate understanding of the policy community, as a traditional issue network is much more open, fluid, and inclusive. Interest groups have the ability to witness and see interactions between the agency and licensees, but their power is still limited by a vestigial structure predisposed to exclusivity. As has been revealed through discussion, the success of interest groups in affecting policy remains miniscule, but can be thought of as a “crack” in the glass of this weakened triangle. The fact that both the NRC and anti-nuclear activist groups recognize increasing attention to nuclear power and the need to be more transparent might suggest that the policy community structure is weakening and moving towards an issue network framework.

The limitations of this study are primarily centered on a lack of representation from all members of the policy community. While a number of activist respondents were included in the study, both agency and government representative categories were lacking and, therefore, may not describe the Palisades policy community as accurately as possible.

Based on the conclusions of this study, a greater understanding of the capabilities and limitations of each sector in the policy community may be gleaned, providing a source for informed strategic planning for members of the community in designing future policy.

VIII. Appendices

Appendix A: Policy Community Interview Pool

Subject Name	Title	Research Category	Representation	Phone	E-mail
Fred Upton	U.S. House Representative	Elected Official: Federal Government	MI District 6, House Committee on Energy and Commerce	(202) 225-3761	Web Form
Carl Levin	U.S. Senator	Elected Official: Federal Government	State of Michigan	(202) 224-6221	Web Form
Debbie Stabenow	U.S. Senator	Elected Official: Federal Government	State of Michigan	(202) 224-4822	Web Form
John Proos	Michigan State Senator	Elected Official: State Government	MI State Senate District 21	(517) 373-6960	SenJProos@senate.michigan.gov
Aric Nesbitt	Michigan State House Representative	Elected Official: State Government	MI State House District 66	(517) 373-0893	AricNesbitt@house.mi.gov
Robert Burr	Mayor	Local Government	City of South Haven, Michigan	(269) 637-6276	rburr@south-haven.com
John Mike Henry	County Commissioner	Local Government	Van Buren County, Michigan District 1	(269) 214-6496	---
Charles Casto	Regional Administrator, Region III	Federal Agency	NRC	---	chuck.casto@nrc.gov
Thomas Taylor	Senior Resident Inspector	Federal Agency	NRC	(630) 829-9662	---
April Scarbeary	Resident Inspector	Federal Agency	NRC	(630) 829-9662	---
Tony Vitale	Site Vice President	Interest Group: Corporation	Entergy-Palisades	(630) 829-9662	---
Mark Savage	Communications Manager	Interest Group: Corporation	Entergy-Palisades	(269) 764-2333	msavage@entergy.com

Kevin Kamps	Radioactive Waste Watchdog	Interest Group: Anti-Nuclear	Beyond Nuclear	(301) 270-2209 ext. 1	kevin@beyondnuclear.org
Maynard Kaufman / Barbara Giesler	Michigan Land Trustee	Interest Group: Land Use	Michigan Land Trustees	(269) 650-1758	maynardkaufman@wmich.edu
Alice Hirt	Board Member	Interest Group: Anti-Nuclear	Don't Waste Michigan	---	alicehirt@charter.net
Gail Snyder	Member	Interest Group: Anti-Nuclear	Southwest Shoreline Renewable Energy	(630) 363-6417	gail.snyder@comcast.net
Bette Pierman	Member	Interest Group: Anti-Nuclear	Southwest Shoreline Renewable Energy	(269) 925-9695	bette49022@yahoo.com
Kraig Schultz	Owner	Interest Group: Anti-Nuclear	Schultz Engineering	(616) 296-0362	kraig@schultzengeering.us
Tom McCullough	President	Interest Group: Citizens	Palisades Park Neighborhood Association	(269) 764-1363	---

Appendix B: Interview Questions

Part I: Involvement/Process (Agency/Licensee)

1. How long have you been involved with the NRC and what is your role in the organization?
2. What is/are the goal(s) of the NRC?
3. How receptive do you feel the NRC is in regards to community input and concern?
4. In what ways does the NRC adjust its strategies in order to meet the concerns of citizens?
5. What factors does the NRC take into consideration when evaluating whether or not heightened safety protocols should be enforced at the Plant?
6. How would you describe the relationship between the NRC and its licensees?
7. Do you feel that anti-nuclear activist groups have impacted the relationship between the NRC and its licensees, and if so, in what ways?
8. How central are the opinions of outside interest groups and citizens in shaping your decisions?
9. How often does the NRC hold meetings with licensees? How often does the NRC hold meetings of this caliber with citizens and activist groups?
10. How many plants has the NRC shut down for extended periods since the agency's inception? How many plants has the NRC decommissioned?

Part II: Perspective & Strategies (Interest Groups)

1. If you are involved in an organization, how long have you been involved with that organization, and what is your role in the group?
2. What is/are the goal(s) of your organization?
3. How receptive do you feel the NRC is in regards to community input and concern?
4. In what ways does your group seek to influence Palisades' policy community?
5. How successful do you feel your organization is in effecting a change in regulatory strategies?
6. How much confidence do you have in the NRC to effectively and safely regulate Palisades or nuclear plants in general?
7. What does your organization ultimately hope to accomplish as a direct result of activist strategies?
8. On a scale of 1-10, how inclusive do you feel the current policy community is?
9. On a scale of 1-10, how important is it to you that activist groups make a direct impact on policy decisions?
10. Where does your organization see itself in the context of Palisades' policy community?

Part III: Government

1. How long have you served as an elected official in your current office?
2. Does your office take a stance on the viability or appropriateness of nuclear power? If so, elaborate on that position.
3. How often does your office handle constituent concerns regarding Palisades Nuclear Power Plant or nuclear power in general?

4. How involved are you/have you been with the creation or enforcement of legislation in the nuclear policy domain?
5. Where do you see your position in the context of Palisades' policy community?
6. Based upon your experiences and the experiences of your constituents, how receptive do you feel the NRC is in regards to community input and concern?
7. How would you describe your relationship with the NRC and its licensees?
8. If you encounter competing interests within your jurisdiction over the appropriateness of nuclear power, how does your office reconcile these interests?
9. When deciding on how agencies' policies should be revised, what considerations are afforded the most weight in the decisionmaking process?
10. On a scale of 1-10, how important is it to you that activist groups make a direct impact on policy decisions?

Part III: Nuclear Waste (All)

1. How feasible do you find the guidelines for nuclear waste disposal, as set down by the Blue Ribbon Commission in 2010?
2. How important is the consent and agreement of a potential host community?
3. What do you feel is our best option for disposing of nuclear waste?
4. On a scale of 1-10, rate the effectiveness of the nation's current nuclear waste disposal scheme.
5. On a scale of 1-10, rate the safety of the nation's current nuclear waste disposal scheme.

Appendix C: HSIRB Exemption/Approval

(See attached HSIRB document).

Appendix D: References

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WESTERN MICHIGAN UNIVERSITY



Human Subjects Institutional Review Board

Date: February 14, 2013

To: Denise Keele, Principal Investigator
Jordan Lewis, Student Investigator for thesis

From: Amy Naugle, Ph.D., Chair *Amy Naug*

Re: Approval not needed for HSIRB Project Number 13-02-36

This letter will serve as confirmation that your project "The Nuclear Triangle: A Case Study of Nuclear Operations Policy" has been reviewed by the Human Subjects Institutional Review Board (HSIRB). Based on that review, the HSIRB has determined that approval is not required for you to conduct this project because you are analyzing a policy and not collecting personal identifiable (private) information about individuals.

Thank you for your concerns about protecting the rights and welfare of human subjects.

A copy of your protocol and a copy of this letter will be maintained in the HSIRB files.