

**Assessing Contention: Understanding Nuclear Waste Storage Opposition in the U.S. and
Canada**

by

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MPP Essay

Submitted to

Oregon State University
In partial fulfillment of
the requirements for the
degree of

Master of Public Policy

Presented May 23, 2012
Commencement June 17, 2012

*This research was supported by the USDA *Higher Education Challenge Grant* “International Comparative Rural Policy Studies Summer Institutes,” (2009-2012).
Master of Public Policy essay of Rebecca Rubenstrunk presented on May 23, 2012

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Abstract

Attempts to site nuclear waste storage facilities are highly contentious. Given that nuclear related facilities are the most commonly opposed types of proposed land uses, one might expect to observe strong contentious interactions between proponents and immediate community members. In some cases, what is expected is not necessarily observed; why? This essay seeks to illustrate the findings of a qualitative international comparative study of opposition mobilization efforts surrounding a proposed low and intermediate level nuclear waste storage facility in Ontario, Canada and a proposed Greater-Than-Class-C waste facility in Washington, USA. The analysis employs the contentious politics framework of theorist Sidney Tarrow by examining relevant political opportunities and the framing methods, repertoires of action and resource mobilization efforts of environmental and public health groups. This research indicates that mobilization depends greatly on site contexts, including historical use and economic conditions, actors' perceived access to decision makers, and collaborative networks between groups.

Introduction

Utilization of nuclear energy and weapons poses a difficult problem. The legacy of both overshadows past accomplishments; that legacy is many tons of radioactive nuclear waste that must be securely contained for hundreds of thousands of years. In both Canada and the United States nuclear wastes are stored on site, which presents safety and security threats to surrounding communities and the countries at large. Neither country has designated permanent waste storage facilities, but there have been attempts to site them. In the past, and in general, nuclear waste siting attempts have not been welcomed by local communities due to fears of contamination, safety, environmental health and economic hardship. Recently, proposals have been put forth for different kinds of storage facilities in two communities: a Greater-Than-Class-C (GTCC) nuclear waste storage facility at the Hanford Site in Richland, Washington, USA, and a semi-regional low level nuclear waste storage facility in Kincardine, Ontario, Canada. In both cases, community groups have organized to block these projects. The purpose of this essay is to examine the mobilization efforts of these groups through utilization of the contentious politics framework, which emphasizes resource mobilization, issue framing, repertoires of action, and political opportunities. In order to understand the context in which the actions being studied were taken, the remainder of this section will provide an overview of key events and policies that have influenced the actions of governments, companies and activists.

Historical U.S. Nuclear Waste Context

The US began generating nuclear waste in the 1940s in order to create atomic bombs during World War II. Shortly thereafter, the government created the Atomic Energy Commission that encouraged peaceful civilian utilization of nuclear energy (United States Department of Energy,

n.d.). In 1957, the first commercial nuclear reactor began producing energy in Shippingport, PA, and within a few decades, the country received one fifth of its power using this technology. The nuclear industry experienced growth through the 1960s but then slowed through the 1970s and 80s due to myriad concerns over safety, the environment, waste storage and inexpensive natural gas supplies (United States Department of Energy, n.d.; World Nuclear Association, 2012). Until 2012, no new nuclear reactors had been approved since 1977. Presently, the U.S. derives 20% of its electricity from 104 nuclear power plants that are located in 31 states and are about 30 years old. In addition, new plants are planned to come on line by 2020 (U.S. Energy Information Administration 2012; World Nuclear Association 2012).

Despite new reactor approvals, a permanent waste facility has not yet been built. The Nuclear Waste Policy Act of 1982 (NWPA) was established in order to assign responsibility for spent fuel and high level nuclear waste management to the the United States Department of Energy; set a timeline for studying and selecting sites on which to construct a deep geological repository; and instructed the Nuclear Regulatory Commission to license the DOE's chosen site, provided it met United States Environmental Protection Agency standards and all other relevant requirements (United States Environmental Protection Agency, 2011). Several sites were initially considered, including the Hanford Site, but in 1987, the NWPA was amended to instruct the DOE to only study Yucca Mountain to be the nation's high level waste repository. Some, including Nevada residents, suggest that the decision to select Yucca Mountain was political and not scientific (Flynn et al., 1995; Blue Ribbon Commission on America's Nuclear Future, 2012). The residents of Las Vegas and surrounding areas have actively opposed the decision, citing economic harm due to perceptions of waste risk, safety and fairness more generally (Flynn et al.,

1995). Wrought with conflict, this decision was ultimately overturned over two decades later in 2009 by President Obama who terminated funding for further activities at the site.

Soon thereafter, Obama called for the Blue Ribbon Commission on America's Nuclear Future. The Commission was comprised of politicians, policy advisors, scientists and environmental organization representatives with expertise in energy issues. Among its eight primary recommendations, one of the most significant was the recommendation for a consent-based siting approach for a national waste repository. Citing success in other countries, the Commission encouraged the consent-based approach as a more efficient and fair method of securing a repository location. In addition, the Commission recommended the creation of a new federal organization to be created to take over the responsibilities of the DOE. The motivation behind the recommendation is the DOE's poor track record and lack of public trust, which would undercut a successful consent-based approach (Blue Ribbon Commission on America's Nuclear Future, 2012).

Historical Canadian Nuclear Waste Context

Canada began generating nuclear power in 1962 in Ontario along the Ottawa River after the end of WWII (Canadian Nuclear Association, 2010). Today, Canada derives 15% of their electricity from nuclear, and Ontario derives about 50% (Ontario Power Generation, 2012). A variety of regulatory agencies, semi-public agencies and legislative acts have shaped the process of nuclear waste management in Canada. The relevant agencies include the Canadian Nuclear Safety Commission, Natural Resources Canada, Nuclear Waste Management Organization, Bruce Power, and Ontario Power Generation. Important nuclear waste management policies or public processes include the Seaborn panel, Nuclear Safety and Control Act, Ontario Energy

Competition Act and the Nuclear Waste Management Act. This section will describe the legislative acts and the roles of agencies and companies.

In 1989, an Environmental Assessment panel led by Blair Seaborn examined Atomic Energy Canada Limited's (AECL) proposed method of nuclear waste disposal: deep geological repository. The process took approximately ten years; after intensive public involvement and presentation of research and scientific information, the panel issued a decision. Although AECL had many technical issues, the panel conceded that the industry probably had a strong enough plan to move forward. However, it was concluded that public acceptance was too low, and thus, the industry needed to gain acceptance before a deep geologic repository would be permitted in Canada. The panel suggested that an independent organization ought to be created, the express purpose of which would be to develop a plan to manage to country's nuclear waste and gain public acceptance (Johnson, 2008).

The same year that the Seaborn Panel made its decision, the Ontario government approved the Ontario Energy Competition Act (OECA), which deregulated the electricity market. The act was in response to Ontario Hydro's monopoly on power, its debt and its high energy rates. The OECA created the Electricity Act, which broke up Ontario Hydro into several smaller companies (Energy Canada, 2011). One of the smaller companies is Ontario Power Generation, from which Bruce Power leases out the reactors. Bruce is Ontario's first private nuclear energy generator (Bruce Power, 2011).

In 2000, the Canadian Nuclear Safety Commission (CNSC) replaced the Atomic Energy Control Board through the Nuclear Safety and Control Act. The Act was introduced in order to provide greater regulatory and enforcement powers, and refocused on health, safety, security and environmental protection (McGill University Environmental Health and Safety, 2011). The

CNSC assumed the AECB's regulatory responsibilities and administers the Nuclear Liability Act, conducts environmental assessments under the Canadian Environmental Assessment Act (CEAA), implements agreements on nuclear safeguards, and consults with Aboriginal peoples (Canadian Nuclear Safety Commission, 2011). Overall, the CNSC's role is to, "...protect the health, safety and security of Canadians and the environment," in addition to peaceful utilization of nuclear energy. The nuclear industry must obtain licenses and certificates to work with nuclear materials from the CNSC (CNSC, 2011). Importantly, the CNSC, though independent, is overseen by Natural Resources Canada (NRC). NRC oversees four main areas: earth sciences, energy, forests, and minerals and metals. It also is responsible for many environmental policies, from the Arctic Waters Pollution Prevention Act to the Import and Export of Rough Diamonds Act (Natural Resources Canada, 2010b).

Two years after the passage of the Nuclear Safety and Control Act, the Nuclear Fuel Waste Act (NFWA) was passed by the Canadian Parliament. The NFWA was in response to the Seaborn Panel's recommendation that waste management be overseen by the Canadian government. It mandated that the nuclear utilities create a separate organization to plan for and manage nuclear waste. Furthermore, the organization would be required to periodically update the Canadian government, establish a trust fund for long-term waste management, and obtain approval after review by the Canadian government for all key activities (Natural Resources Canada, 2009). The organization suggested by the Seaborn Panel was to be an independent one; the Nuclear Waste Management Organization (NWMO) is the response to the panel's suggestion.

Many groups question whether the NWMO is independent, which was a key recommendation in the Seaborn report. The perception among some interviewees was that the

NWMO is not independent whatsoever. The NWMO Board of Directors is staffed almost entirely by industry representatives. Seven out of nine Board members are either current or past CEOs at OPG, high level executives at OPG, or are on OPG's Board of Directors (NWMO, 2011). Many interviewees commented that the NWMO is not independent and only has maintained the nuclear industry's preference for deep geological repository since it has existed. Because of this, some do not view the NWMO as a neutral agency, but one that is vested in the success of nuclear in Kincardine and elsewhere.

OPG has contracted out management of the DGR project to the NWMO (Nuclear Waste Management Organization a, 2012). Their management raised concerns by some interviewees because the NWMO's legislative focus is to locate a national high level repository, and they questioned the motives behind the transfer of management. Although a search for a site for a national high level waste repository is currently underway in Canada, no site has been chosen and the final selection is understood to be years out. The proposed DGR is for low and intermediate level waste and would, if approved, set a waste storage precedent in Canada, a significant event. Figure 1 shows the NWMO's project timeline.

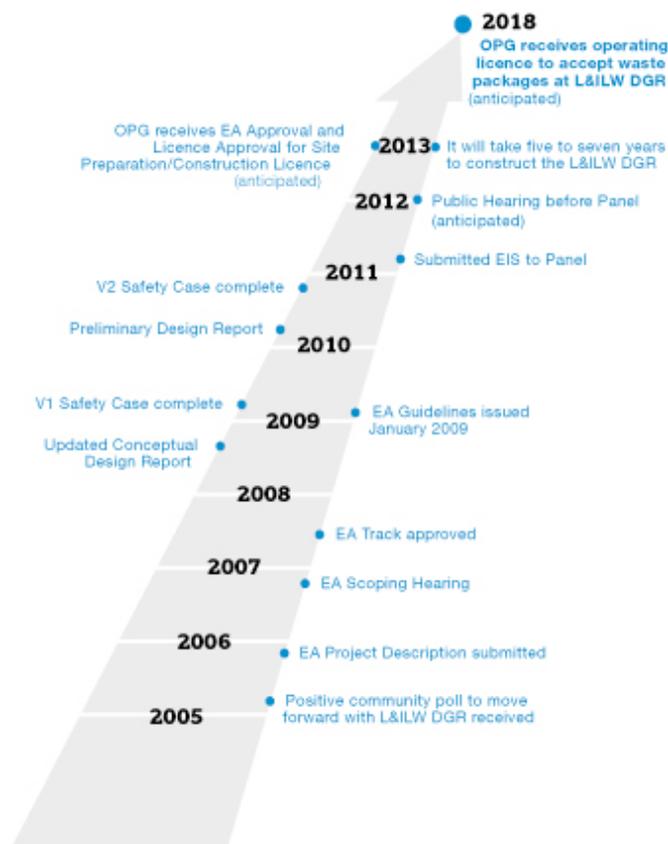


Figure 1: Nuclear Waste Management Organization’s DGR project schedule from 2005 to projected future events (NWMO, 2012).

Theory

The contentious politics framework developed by social movement and contentious politics scholar Sidney Tarrow will be applied to the case studies in order to illustrate and organize the actions of the case study groups. The specific framework is from his 1998 book titled *Power in Movement: Social Movements and Contentious Politics*. The field of contentious politics has historically been concerned with exploration of social movements, which are considered to be sustained contentious interactions between opponents that are, “based on underlying social networks and resonant collective action frames,” (Tarrow, 1998: 2).

Contentious politics is said to occur when, “ordinary people, often in league with more influential citizens, join forces in confrontations with elites, authorities, and opponents,” (Tarrow, 1998: 2). More precisely, in *Dynamics of Contention* by Doug McAdam, Sidney Tarrow and Charles Tilly (2001), contentious politics is conceptualized as:

episodic, public, collective interaction among makers of claims and their objects when (a) at least one government is a claimant, an object of claims, or a party to the claims and (b) the claims would, if realized, affect the interests of at least one of the claimants (pg. 5).

The study of contentious politics has evolved over time, beginning with research on collective action in psychology departments and transitioning to a complex and dynamic model of mobilization. As depicted in Figure 2, the “classical social movement agenda for explaining contentious politics” relies on mobilizing structures, opportunities and threats, framing processes and repertoires of actions as aspects of social change that may ultimately lead to contentious interaction (McAdam et al., 2001). The classical model was later considered to be insufficient for their study of large, complex social movements because it was too static; focused on single social movements, in contrast to episodes over time; emphasized political opportunities and organizational resource expansion, thereby paying insufficient attention to political threats and diminishing resources; and it devoted too much attention to the origins, instead of the later phases, of contention (McAdam et al., 2001). The model was expanded on in order to emphasize dynamic mechanisms and, “puts each of the constituent parts of the classical agenda [...] into motion,” (McAdam et al., 2001: 43). See Figure 3 for a diagrammatic depiction of the updated model.

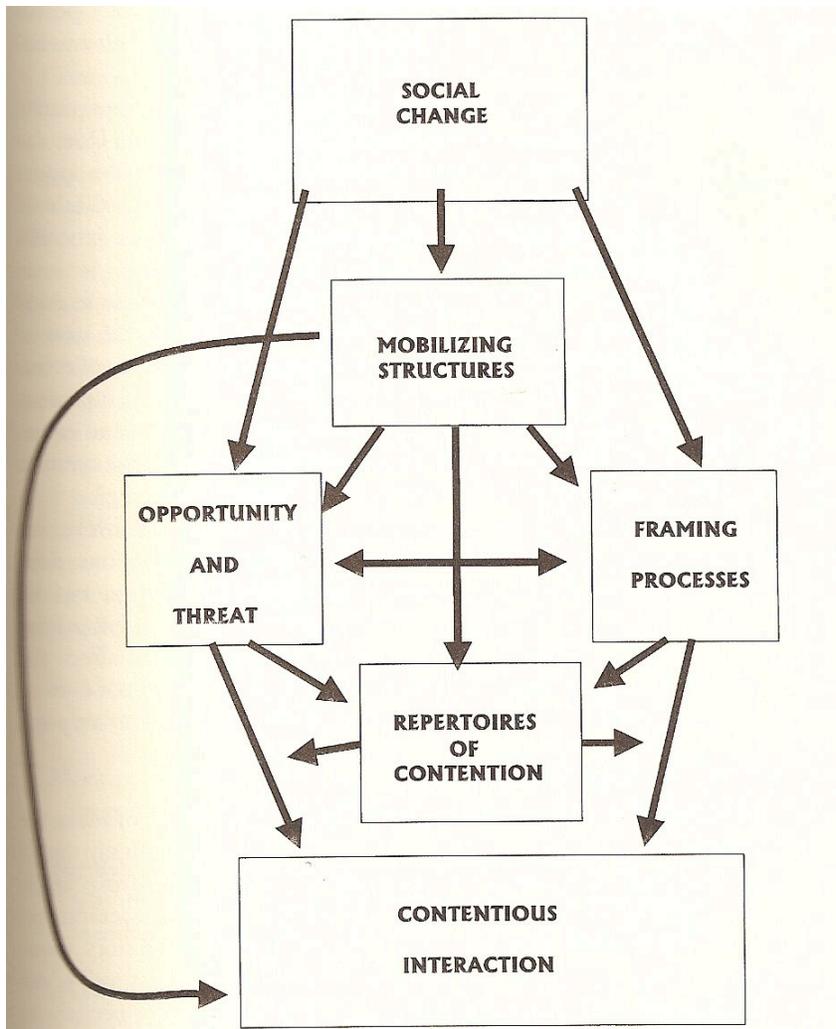


Figure 2: The classical model of contentious politics interaction (McAdam et al., 2001: 17)

Although the classical model was not adequately dynamic for its historic developers, it does offer an appropriate framework for examining the actions of smaller-scale, non-social movement-type events (see Devlin and Yap, 2008; McAdam and Boudet, forthcoming; and Boudet, 2010). Its application in this paper offers an adequate and illuminating organizational method. Further, it enables one to understand the strengths, weaknesses and differences of the groups in the case studies, which ultimately allows one to make informed predictions about decision outcomes. However, it does have limitations in this particular context. As mentioned, it does grant opportunities for outcome prediction, but those predictions cannot account for behind-

the-scenes activities, nor can it account for mobilization that takes place in the future. This weakness would be bolstered if a follow-up assessment was performed after the site decisions were made. To restate, this framework is most appropriate for the examination of events that took place in the past instead of ones taking place in the present, but it is useful to examine the present state of these two contentious episodes and organizes group behavior into meaningful categories for comparison.

The framework, which is explicitly laid out in the classical model, is composed of four main areas: political opportunities, repertoires of action, issue framing and mobilization. Specifically, political opportunities facilitate new forms of contentious actions that coalesce around frames or “inherited cultural symbols,” which ultimately leads to mobilization. The following paragraphs provide more specific information about political opportunities, repertoires of action, issue framing and mobilization. The first branch of the framework is political opportunity, which references the dimensions of a political situation that is external to a social movement that might encourage mobilization. The political opportunity structure might be a, “set of clues” that could indicate when contentious episodes will come about (Tarrow, 1998: 20). Traditional examples of these have been events such as repression or weaknesses in the political system. Political opportunities can be exploited in order to ease engagement or initiation of a social movement. Other theorists have similar definitions of political opportunity but suggest slightly different perspectives. As cited in Boudet, Carmin considers them “elements of the political environment that impose constraints or provide opportunities for activism” (2010: 3). Finally McAdam, McCarthy and Zald provided a more specific set of four considerations for political opportunities: 1. relative openness or closure of institutional and political system, 2.

Stability and instability of elite alignments that typically undergird a polity, 3. Presence or absence of elite allies, and 4. the state's capacity and propensity for repression (1996: 27).

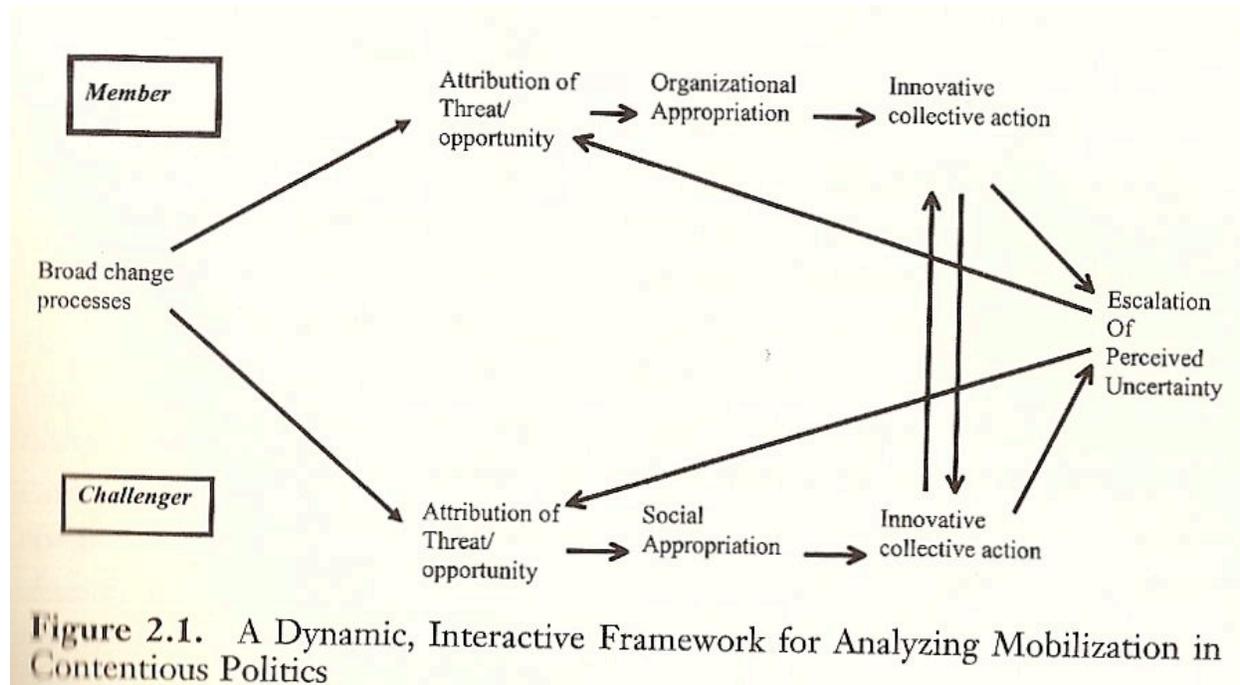


Figure 3: Updated model of contentious politics framework (McAdam et al., 2001: 45)

How actors engage with opportunities and throughout the contentious politics process is referred to as a repertoire of actions. A repertoire of action is a culturally informed set of actions that groups use to act contentiously (Tarrow, 1998). These actions can be long established or developed as needed. Additionally, because some groups consistently engage in certain types of situations, some have repertoire of action prototypes that explain what to do and why to do it in specific and recurring contexts. Examples of action repertoires include protests, strikes, and use of culturally significant symbols (Tarrow, 1998). Providing a critical perspective on the focus on protest events as the “preferred operational measure of social movement activity,” Boudet (forthcoming) explains that it was necessary to emphasize non-institutionalized forms of action in order to differentiate between movements and standard political goings-on (pg. 56). In doing

so, little focus has been paid to more common and routine forms of engagement, such as mailings and press releases and have ignored the balance of actions: "...having made protest events the empirical coin of the realm, movement analysts tend to distort this balance and fail to measure the more routine forms of collective action that are typically the hallmark of contentious politics," (Boudet, forthcoming: 57).

Shared understanding of an issue helps to mobilize actors. This phenomenon has many different names but for the purposes of this paper, it will be called issue framing. Issue framing relates to the problem that is being pursued and identifies members of the "us" and "them" groups (Tarrow, 1998). These content-shaping activities also indicate how mobilizers see and feel about their coalitions and the entities they oppose through "costumes," which they wear when discussing involved members of an issue (Tarrow, 1998: 22).

Finally, mobilizing structures are the means by which groups connect and work with their members and other groups. The significance of mobilizing structures came to light in the 1980s, when scholars saw that it was life in groups that, "transforms the potential for action into social movements," (Tarrow, 1998: 22). These connective structures have been pivotal for creating actual social movements. For example, the civil rights movements relied on networks between black churches to organize and mobilize, and, referencing McAdams 1986 research, the social networks of "Freedom Summer" participants played a significant role in determining whether they engaged in action (Tarrow, 1998). To summarize, social movements in general are not the accumulation of many individuals, but of groups who identify and exploit political opportunities, use culturally informed methods of interaction and employ meaningful frames to the groups and issues around which they mobilize.

In addition to the framework branches described above, contentious politics can be broken down into two additional categories: contained and transgressive. Contained contention occurs when all those that are engaging in contention are, “previously established actors employing well established means of claim making,” (McAdam et al., 2001: 7). Alternatively, transgressive contention occurs when parties to the conflict are new political actors, some of whom “employ innovative collective action,” which are acts that are unprecedented or forbidden (McAdam et al., 2001: 8). Much research has been devoted to the study of transgressive contention, and the above scholars cite its tendency to produce substantial short-term change more often as one of the prime reasons for distinction between the two forms of contention. Further, contained contention more often leads to reproduction of the systems that are being opposed, and is often the medium from which transgressive contention emerges (McAdam et al., 2001: 8).

In addition to the theoretical framework, an understanding of the cultural differences between Canadians and Americans may provide a helpful context in which to consider the results of this research. Although the two countries share a political border, the cultural differences between them are significant. For example, Canadians are more likely to view groups as necessary for society, while Americans believe they prevent the government from doing its work (Pierce et al., 2000). Surveying two communities in Canada and two communities in the U.S., Pierce found that the Canadian communities tended to respond to questions about political identity similarly (as moderate), whereas the U.S. communities differed substantially (as very liberal to conservative). Additionally, the U.S. communities were more politically active than the Canadian communities, and they were more likely to feel that the government listened (Pierce et al., 2000).

Furthermore, in a study of postmaterialist and environmental values of Canadian and U.S. activists and publics, Steger et al. (1989) found that, “both the public and members of environmental groups in Ontario expressed higher levels of support for the value of citizen participation than their counterparts in Michigan,” (pg. 248). Additionally, Michiganders expressed “higher levels of perceived policy influence and higher levels of political participation than their Canadian counterparts,” (pg. 248-249). This is attributed to the ability of U.S. citizens to engage in policy decisions at multiple “points of access,” which is not characteristic of opportunities in Canada (Steger et al, 1989). These examples illustrate the differences between Canada’s collectivist culture and the U.S.’s individualist culture; however, despite differences, both countries do share political and cultural similarities.

Literature Review

Although the contentious politics framework has primarily been used to examine large scale social movements such as revolutions, it remains a useful tool with which to examine comparatively smaller scale periods of contention. The remainder of this section will provide a review of some of the relevant contentious politics and other activism research that has been performed on topics that are pertinent to nuclear waste storage, such as locally unwanted land use opposition. This review will highlight each branch of the contentious politics framework by providing an overview of previous research on a variety of contentious episodes.

Political Opportunities:

Political opportunities come in many forms with respect to siting decisions. Openness of government, including local government, can facilitate action (Boudet, 2010). During two failed liquid natural gas siting attempts in California, the Mare Island Energy Project in Vallejo and

Cabrillo Port in Oxnard and Malibu, the level of openness varied, which resulted in significant differences in initial opportunities to mobilize. In Vallejo, local government had control over the decision and there were many opportunities for the public to interact with decision makers, comment and participate. In Oxnard, the local government had little control over the decision because it had been made with other agencies at higher levels of government; therefore despite access to local government, it was much more difficult for activist to access decision makers (Boudet, 2010).

A different kind of political opportunity can be identified in the environmental assessment legislation in the Philippines, which requires that a project proponent demonstrate social acceptance for their project (Devlin and Yap, 2008). This allowed different groups, including the proponent, to attempt to gain support. Ultimately, due in part to the education that the opposition groups provided, residents did not express acceptance and the license was denied (Devlin and Yap, 2008). Yet another unique political opportunity included the experience of South Africans in St. Lucia. A mining company proposed to mine minerals off the shore and claimed the project would provide jobs, more than eco-tourism. This was contested, but the real political opportunity was in the dramatic shifts in government and culture that was taking place at the time. Indigenous communities had once been kicked off of their land and found that they were not adequately consulted in the initial assessment process. Because the government had recently indicated that indigenous communities had rights the land, they were more adequately included later on, which was the first time marginalized black communities were able to participate in government decision-making that affected their lives (Devlin and Yap, 2008).

Repertoire of Actions:

In a review of American nuclear opposition, Joppke (1993) detailed the many ways groups have engaged in anti-nuclear activism. Repertoires of action vary greatly depending on the political and social contexts. Because the NRC seek out technical expertise from the industry and not public interest groups, those groups have, “preferred the judicial process or congressional lobbying,” in addition to using symbolism, which is the, “fostering the salience of an issue through the calculated use of mass media and the mobilization of public opinion,” (pg. 56). Organizations such as the Natural Resources Defense Council issued strongly worded press releases and employed “catastrophist discourse” to demonstrate the urgency of their message on plutonium proliferation from fuel reprocessing (pgs. 59-60). In 1976, a loose network of very engaged and skilled activists decided to take the issue of nuclear power to the people of California through a referendum called Proposition 13, which called for a phaseout of nuclear power in California unless nuclear companies could demonstrate plant safety, assume full liability insurance, and solve their waste problem. The activists launched a campaign called the Nuclear Safeguards Initiative, which they claimed was not anti-nuclear but in favor of public health. Due to a coalition between the industry and union workers, the Prop. 13 proponents ultimately lost, but the referendum has been labeled, “the most spectacular referendum campaign in the history of U.S. nuclear power,” (Joppke, 1993, pg. 65).

In a review of activist victories over environmentally damaging projects, Devlin and Yap illustrate several unique action repertoires several communities have employed. In the Philippines, opposition groups sent letters to government officials, including the president, and protest marches in the city of Manila (Devlin and Yap, 2008). In Brazil, activists opposing a dam lobbied the state government while scientists and farmers provided technical public input on the dam’s impact, which ultimately gave rise to public hearings (Devlin and Yap, 2008). Later,

activists engaged in less conventional and more dramatic actions, such as having children read poetry and staging protests. These actions led to an economic evaluation of the proposal by the government, which concluded the project was not going to cover its own costs. One of the main proponents, FIAT, dropped out, effectively closing the door on the proposal (Devlin and Yap, 2008).

Issue Framing:

In their comparative analysis of several blocked environmental assessment project, Devlin and Yap (2008) found that a key factor in the success of project opponents was their ability to defeat the proponents' main argument: that their project was economically beneficial. Despite their other concerns, which were mainly environmental, it was necessary to speak to a different interest. This phenomenon was also seen in an analysis of an anti-homophobia campaign in Mexico. Two activists fighting high HIV levels in the gay male population convinced the conservative president that campaigned on a platform against homosexuality that a governmental anti-homophobia campaign was needed to stop the spread of HIV due to the negative construction of homosexuality in Mexico. They shifted the discussion away from morality to public health, and garnered far more support (Diez, 2010). Although it does not pertain to environmental assessment or facility siting, the case does illustrate how significant issue framing can be.

Resource Mobilization:

Activists from the Boudet (2010) study on the liquid natural gas siting conflict also mobilized in different ways. The Vallejo groups consisted of newer residents who formed and acted quickly. They established new networks instead of relying on existing structures. Two

existing community organizations hosted informational meetings on the proposed gas terminal. A third group called Vallejoans for Community Planned Renewal was created after one of those meetings in a parking lot and it became the most vocal opposition group. Conversely, the Oxnard and Malibu groups had long been established and had much experience with opposing land development proposals due to proximity to Hollywood. The Oxnard groups had watchdogs that monitored energy industry proposals and they quickly mobilized despite a quiet proposal announcement. Opposition remained primarily in Oxnard until draft environmental impact assessments were released. Soon, philanthropists, major environmental organizations and other influential actors devoted massive resources to gaining support, while an uncovered political scandal moved the public and city council in Malibu to oppose the project. Finally, Malibu actors called on celebrities and other high profile individuals to lend support and visibility to their cause (Boudet, 2010).

Methods

Data for this project was gathered from interviews with community group representatives, newspapers and local community members. The news articles were gathered from the internet, and conversations with community members took place throughout the researcher's time in Kincardine and visit to the Hanford Advisory Board meeting in Kennewick. These sources of information helped the researcher to understand the local culture and history at both sites. The main source of data was gathered during one-on-one interviews with representatives of groups that were opposed to nuclear waste storage facilities.

Groups were selected if they submitted comments during the environmental assessment and impact statement public comment period for the corresponding draft environmental impact

statements. These documents were accessed online from the Canadian Environmental Assessment Agency and the United States Department of Energy Office of Environmental Management websites for the proposed Ontario and Washington projects, respectively. Groups were sent email messages to the contact information that was available on the documents, or on their websites if no contact information was available on the comment document. Some interviews were held in-person and others were held over the phone due to the need for very long distance travel.

For in-person interviews, interviewees were asked to select a location where they would feel comfortable discussing their involvement in the process, relationships with other groups and other contentious information, and all interviews were held at the location of the interviewees' choosing. All interviewees were asked whether they consented to being recorded on a voice recorder before signing the consent form; all consented and were voice recorded and transcribed. Interviews were semi-structured. Interviewees were asked to answer questions as a member of the organization they represented. Interview questions focused on methods of engagement, conflict and collaboration, resource utilization and political opportunities. For example, "Was there ever a time when you felt that the [project] was high on the public agenda? What was happening at that time? If not, what about nuclear waste in general? Please expand on how the [project] has been publicized." Interviews were semi-structured; they were guided by a set of questions but interviewees were permitted to tell stories, use examples from other cases and interpret open-ended questions. Figures 4 (Bruce Site interviewees) and 5 (Hanford Site Interviewees) indicate each interviewees number (in place of name) and the type of group that the researcher determined that they represent.

1	General Interest
2	Other
3	Env/Nuclear Awareness
4	Env/Nuclear Awareness
5	Other
6	Env/Nuclear Awareness
7	Env/Nuclear Awareness

Figure 4: Bruce Site interviewees by group type.

8	Political Action
9	Regional Group
10	Regional Group
11	Regional Group
12	Regional Group
13	Regional Group
14	Other

Figure 5: Hanford Site interviewees by group type.

The two communities were chosen to be studied in a comparative context because they share a goal of nuclear waste storage and the commonality of a historical nuclear industry

presence and acceptance. There were other sites and proposals that could have been examined, but these two main factors provided a case study that allowed for more direct comparison between sites. Additionally, the proposals were put forth either within a couple of months of the initial research, as in the case of Hanford, or were actively taking place, as was the case for the Bruce site. Despite some commonalities, they do face different site-specific issues and share little in common in terms of their broader historical background. In order to have a better understanding of the context in which these conversations took place, the following sections will provide a history and situation summary for both case study locations.

Kincardine, Ontario, Canada

Kincardine, Ontario is a small rural community situated on the shores of Lake Huron, and is home to the Bruce Nuclear Generating Station. It has a vibrant downtown with coffee and home decor shops, tourist stops, and several casual dining restaurants. In addition to the downtown area are waterfront views of Lake Huron's rocky and sandy shores. According to 2006 statistics, Kincardine has a population of 11,173, with a median age of 46. About 93% speak exclusively English, which is about 8% more than Ontario on average. Only 6% speak French in addition to English, which is about 6% less than Ontario. Nearly 98% of residents are Canadian and only 4.90% are unemployed. Employment and income are very different for the genders, with women having much lower rates of employment and income. Furthermore, education rates in the community are as follows: 27% of the population over 15 years of age possess only a high school education, while 22% possess no education. Thirty-seven percent are college or university educated, with the remaining 15% possessing less than a Bachelor's degree

or possessing a trade school/apprenticeship education (City-Data, 2010). See figures 6 and 7 for the site location and a mockup of the proposed project.



Figure 6: Location of Kincardine, Ontario, Canada. (Google Maps).

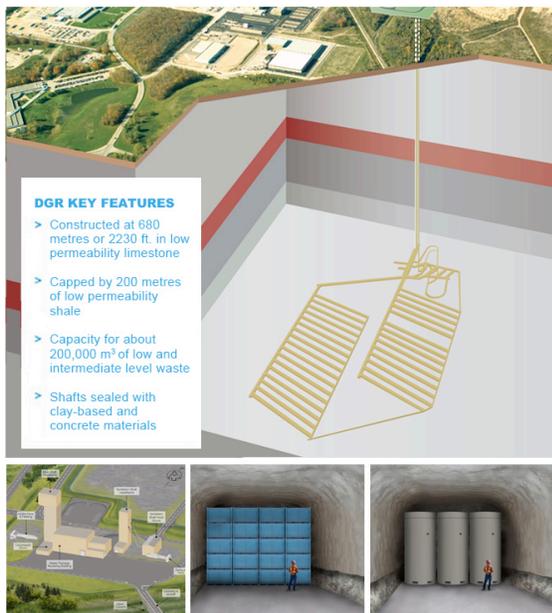


Figure 7: The Nuclear Waste Management Organization's digital image of the DGR (NWMO, 2012).

Kincardine is supported by the area's primary economic driver, Bruce Power, in addition to tourism and the service industry. Bruce is a 2,300 acre facility that houses eight nuclear reactors that, when fully operational, produce 6,300 MW of electricity for residents of Ontario. Privately operated by Bruce Power, it is one of the largest nuclear facilities in the world and generates approximately 20% of the province's energy (Bruce Power, 2011). Bruce began generating energy in 1966 and has experienced growth, but also new challenges as it creates waste without a feasible long-term storage solution. Ontario Power Generation (OPG) owns the property at Bruce, and in response to the storage need, OPG initiated plans for the construction of a deep geologic repository for low and intermediate level nuclear waste on site at Bruce, located about one mile from Lake Huron. Low and intermediate level wastes includes items such as contaminated mop heads, clothing, reactor filters, fluids and others. It does not include spent nuclear fuel. Figure 1 shows the timeline of events from OPG.

From the researcher's observations and conversations in Kincardine it is evident that the community members are very accommodating to the people and events at Bruce. Simply put, Bruce Power and Ontario Power Generation are more than a corporate citizens. They fund family movie nights and scholarships and employ a large portion of Kincardine and the surrounding areas' residents. According to conversations with local residents, everyone knows someone who works at the plant, which seems to partially explain why the locals very rarely object to new site plans. Indeed, during a brief discussion with a Nuclear Waste Management Organization representative who was tabling at a weekend farmer's market, it was explained that the residents are knowledgeable and thus unafraid of proposals such as the DGR. This observation was corroborated by other community members, as well. That the residents are unafraid is particularly significant: save a handful of private citizens, there is support for the construction of

a repository for low and intermediate level waste. In the early stages of planning in 2004, the Kincardine Council used a community poll to determine whether the community would accept the DGR proposal. Sixty percent responded “yes” and 13% responded “neutral”, which the council interpreted as sufficient community support to pursue a hosting agreement (NWMOb, 2012). Although this seems unusual because nuclear sites in general are among the most opposed types of land uses, Burger found that the closer residents lived to the Savannah River nuclear plant, the less afraid they were of a new waste facility (Greenberg et al., 2007). In place of community groups from Kincardine, opposition groups from elsewhere in Ontario were interviewed for this study. There was one exception for a vocal resident who was formerly involved in past opposition project opposition. This resident was the only member of the community that openly spoke out, and was the only representative from a non-group. This person was interviewed because they provided an alternative and visible perspective to the dominant viewpoint.

Hanford, Washington, United States

The Hanford Nuclear Site is located in the desert of southeastern Washington State and its history is unique. Prior to the 1800s, the land was mostly used by nomadic tribes and today’s tribal members still consider the land sacred (Department of Energy Hanford a, 2012). It was at that time when the land was further settled by explorers and ranchers, pioneers and other settlers. The area was home to two small but typical Western settlements called White Bluffs and Hanford. In 1943, the fate of these communities was abruptly shift. The War Department prohibited the Native Americans from going to the site and gave the small settlements of White Bluffs and Hanford 30 days to evacuate their homes and land so that top secret work related to

the war could be pursued (Department of Energy Hanford a, 2012). After the residents left, a workforce of 51,000 was recruited to build the nuclear reactors and processors that were necessary for the production of atomic weapons. Most workers were not informed about what they were doing and even the reactors themselves were built without blueprints (Department of Energy Hanford b, 2012). After 13 months, the B Reactor, the world's first nuclear reactor, and the T Plant, the world's first facility for extracting plutonium from irradiated fuel rods, were constructed. In 1945, plutonium from the B Reactor and the T Plant were used in the atomic bomb that was dropped on Nagasaki, Japan. After the war, more nuclear weapons making took place at Hanford in the nine on-site reactors. Most of the reactors were shut down in the 60s and 70s, with the last reactor going off-line in 1987 (Department of Energy Hanford c, 2012).



Figure 8: Location of Hanford in Richland, Washington, USA. (Google Maps).

The legacy of these reactors is the United States' largest nuclear waste site, and the mission at Hanford has been Cleanup since 1989. Cleanup requires management of millions of tons of solid waste, hundreds of billions of gallons of liquid waste, building demolition, and remediation from spills and leaky waste storage tanks, most if not all of which is highly radioactive. These wastes have various fates. Some will be glassified once the vitrification plant

is completed; irradiated fuel rods are stored on-site and will ultimately be stored at the nation's nuclear fuel waste storage facility, which does not currently exist; and transuranic wastes are sent to the Waste Isolation Pilot Plant (WIPP) in New Mexico. The task is monumental, and the mission of cleanup is key, as it prevents new waste generation (Department of Energy Hanford c, 2012).

Hanford is located near the Tri Cities, which is a major metropolitan region in Washington and is comprised of the cities of Richland, Kennewick, and Pasco. According to the Pacific Northwest National Laboratory, "Historically, Hanford has been the most important single entity in the Tri-Cities local economy," (2009). Population growth has mirrored federal budgets and job availability in the local nuclear industry since the 1940s, when the Hanford Site was established. Although income, housing and real estate trends, population growth and other community characteristics have often reflected the activity at Hanford and the PNNL, recent statistical data indicate a decoupling from the Hanford Site. It remains the most important economic factor in the Tri Cities, but other industries such as health care, food processing, and growth at PNNL, which is mostly unrelated to Hanford, have helped to diversify the community (PNNL, 2009). Further, a representative from the Oregon Department of Energy explained that the population values the work at Hanford as a job source, but the preferences are mixed about whether to bring new waste to the site. Although it would create more jobs, site work is highly complex and will continue for decades to come, even without additional waste. The total population estimate for the area in 2010 is 245, 574, of which 73.8% are white and 26% are Hispanic. The median age is 32.9 years of age and the average household income is \$67,635. There is a 9.5% unemployment rate, but of those employed, 42% hold blue collar jobs and 58% hold white collar jobs. For residents 25 years and older, 28.1% graduated from high school, 8.6

hold an Associate's degree, 14.4% hold a Bachelor's degree, and 8.8% hold a graduate degree. 2.3% have no education at all (Tri Cities Development Council, 2011).

In addition to general history and demographics, the history of stakeholder involvement at Hanford is also worth mention. The two images below depict how stakeholders have changed from the 1960s to present (Martin, 2011).

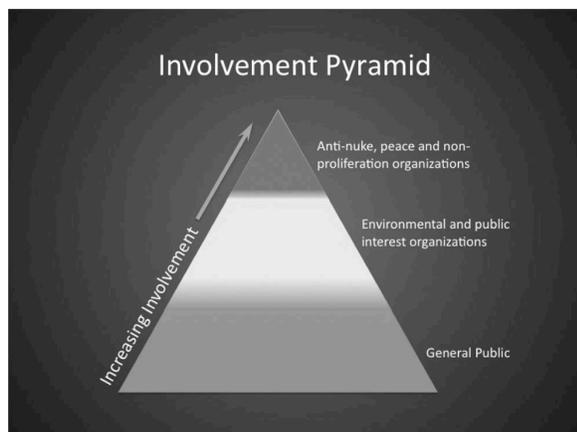


Figure 9: Hanford Stakeholders involvement pyramid. 1960s to early 1980s.

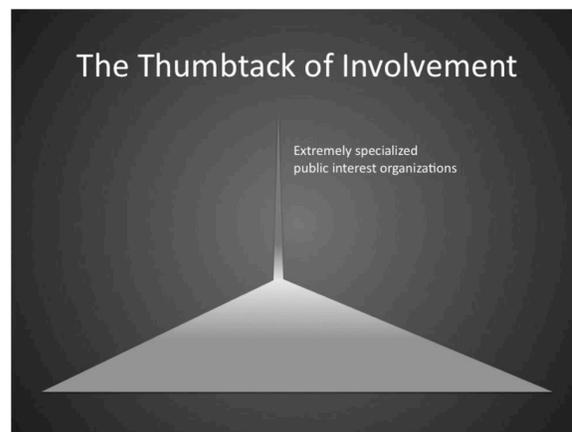


Figure 10: Hanford Stakeholders involvement thumbtack. 1980s to present.

Figure 9 depicts a stakeholder body that ranges from very active anti-nuclear and peace groups to the general public. These groups reflected preferences to 1. cease weapons making at the site, 2. make Hanford activities public, and 3. require that Hanford be regulated (Martin, 2011). Due to political changes around the world, the 1980s signaled major changes at Hanford. Weapons-making stopped, 40,000 pages of documentation on the activities at Hanford were released, and the Tri Party Agreement was signed between the DOE, EPA, and Washington Department of Ecology. These changes required a new set of stakeholders that could provide advice and direction on future cleanup, information on human health hazards, and, importantly, how to involve the public (Martin, 2011). Figure 10 depicts the change to highly specialized groups that focus much more narrowly on Hanford. Martin explains that public involvement was historically very poor, as was outreach; however, with the success of the new groups, involvement improved.

During the researcher's observation and conversations at the Hanford Advisory Board meeting, though, public involvement (which has its own committee) is still a major issue at Hanford and there is presently a push to reach out to younger people.

Although the Tri Cities population is accepting of and fairly reliant on the nuclear industry, the recent Department of Energy proposal to use the site as a "Greater Than Class C Low-Level Radioactive Waste" (GTCC) nuclear waste facility did not elicit much support. Low level radioactive wastes are characterized by the NRC as A, B, C, and Greater Than C, each of which is more radioactive than the next. GTCC is defined by the NRC as the most radioactive of low level wastes because it is "dangerous to [an] inadvertent intruder beyond 500 years," and it must be stored in a DGR (Department of Energy, Office of Environmental Management, n.d.). The draft environmental impact statement (DEIS) named Hanford as one out of six federal facilities as potential sites for a GTCC facility but did not include a preferred site, as is customary in environmental impact statements. The DOE will issue a final EIS that names the preferred site after reviewing public comments and other pertinent analysis (Department of Energy, Office of Environmental Management, n.d). Figure 9 shows a mock up of one type of facility that was proposed for Hanford, a borehole repository.

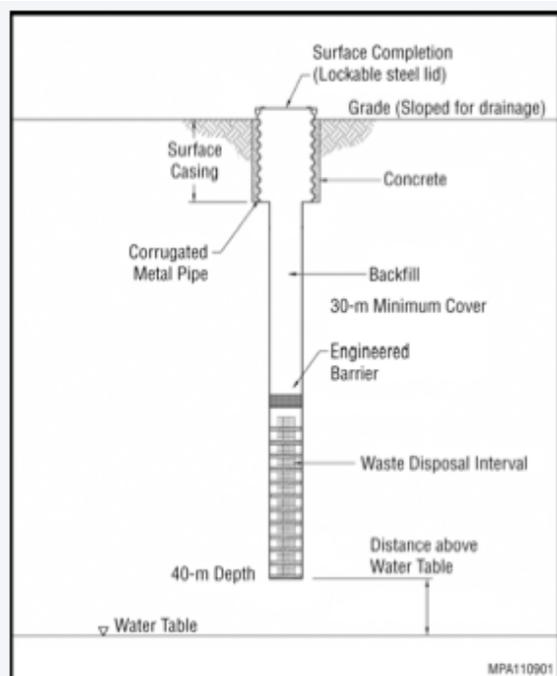


Figure 11: Mock up of borehole-type repository, one of the proposed methods of waste storage at Hanford. (U.S. Department of Energy, 2011).

Results

What follows are the results of the interviews conducted between the researcher and representatives of groups that opposed the nuclear waste storage proposals at the Bruce Site and the Hanford Site. It is organized first by the branches of the classical contentious politics framework (political opportunity, framing, mobilization and repertoire of action) and second by the research site (the Bruce site then the Hanford Site). A special note regarding political opportunity is required: consideration of all three definitions of political opportunity allows for a wider range of situations to be considered but does not employ the term so broadly that it is rendered meaningless. For the purposes of this essay, political opportunities include access to and relationships with decision makers, perceived openness of the participation process, and

events in the news media that related to nuclear waste. Following the results section will be a discussion of the research findings.

Political Opportunities for the Bruce and Hanford Groups

Political Process Opportunities at Bruce Site:

One primary aspect of political opportunity is the openness of the institutional or political system. In the case of the DGR, there existed many opportunities for groups both in Kincardine and surrounding areas to comment on and ask questions about the proposal. These events include the consulting and comment periods required under the EA process, presence of and outreach by NWMO officials at local events, and the ability of groups to participate in the review process throughout the upcoming Joint Review Panel (with or without the funds that CEAA provides for selected groups to provide expert testimony and other helpful information to the panel members). In that sense, the system is “open,” but this does not adequately reflect the feelings of the community group members.

Interviewee 6 explained that the Canadian government has “stood back and let the nuclear boys run everything,” and that the nuclear industry has strong support both from the Canadian and Ontario governments. Furthermore, they argued that because OPG and the NWMO rely on nuclear power and produce the waste, there is no effective, democratic control-- they are a state within a state, which means that there is no counterbalance. Other interviewees held similar sentiments which indicated that the nuclear industry is less than interested in really listening to the public or community groups. Many indicated they felt that they were spoken to by industry in order for the industry to be able to ‘check off’ a regulatory requirement.

Many activists shared stories of past experiences that color their concerns for further participation and outcomes for the DGR. Interviewee 1 indicated that their organization was consulted and they commented, but their participation and views were not openly available on the assessment websites. They indicated that comments had been edited and feedback was shared slowly. Moreover, Interviewee 1 mirrored the comments of other activists that the industry has such strong backing from the government that they get arrogant and fail to really listen to groups. Finally, they explained that OPG held week long discussions in Toronto, but only gave potential participants two weeks' notice and stipulated that groups could only spend \$4000 on an expert to testify. To Interviewee 1, that created a barrier to effective participation because it greatly limited the organization's ability to select an expert to come and represent their side.

Interviewee 7 explained that during their participation on a past nuclear-related joint review panel, the kinds of questions that could be asked were limited. For example, no one could inquire about qualifications of the experts testifying to the panel. Further, they explained that there was no proper calling of evidence or cross-examination of testimony, and that the public could ask questions but they were not necessarily answered. In sum, Interviewee 7 felt that the process was "paltry." A more outspoken interviewee, Interviewee 2, shared that the joint review panel process is good because it helps to sets up a legal framework for the future, but they had virtually no faith that the members of the panel or the CNSC would take concerns seriously. Interviewee 2 explained that the JRP is a legal process and the EIS is a legal document, but the CNSC can chose to ignore its findings. They stated that "everyone" knows the CNSC will whitewash and approve the project. Importantly, Interviewee 2 shared the sentiment that they did not necessarily consider the process as a "real" assessment, but unless groups treat it as such, they abdicate to special interests. This comment, paired with the perceptions and experiences of

interviewees, points to this group's strong will to participate whether or not obviously exploitable political opportunities are present.

Broad Social Opportunities at Bruce Site:

All agreed that nuclear waste is not high on the public agenda and that the DGR has received almost zero publicity, especially outside of Kincardine, where representation is either supportive or neutral (except for some media on the search for a high level waste repository). However, in addition to concerns about the opportunities throughout the process, interviewees mentioned two events that may have helped create political opportunities: the accident at the Fukushima Daiichi plant in Japan and Bruce Power's attempt to ship radioactive steam generators through major Great Lakes waterways. Some interviewees thought the events, especially in Japan, would be more significant than others. Specifically, Interviewee 7 said that although the nuclear waste side of the equation has not been in the media, that has changed since the accident. Interviewee 5 explained that having relevant issues in the news media is a "big help" to them because people tend to talk about them, such as the food contamination from Fukushima. In addition, the scandal surrounding Bruce Power's plans to ship radioactive steam generators created outrage in affected communities and distrust of the nuclear industry because the public felt that they had been deceived.

Despite these opportunities, most interviewees were skeptical of their facilitation of any real change in the public's perception of nuclear waste, or the ability to change the outcome of the DGR review process. Despite the public's potential ability to connect the concepts, as one interview described, issues leave the media and the public mind fairly quickly. Thus, despite the large social impact the events seemed to have made, interviewees did not attribute to them a

great deal of long-term influence. As mentioned above, there appears to be a lack of strong political and social opportunities for community groups acting on the DGR.

Political Process Opportunities at Hanford Site:

There are two unique characteristics of the Hanford Site. First is the Hanford Advisory Board, a consensus-based, DOE sanctioned advisory board comprised of “interests” (environmental, workers, tribal and others) that write advice for cleanup related agencies. Many of the interviewees sit on this board. Second is the waste import moratorium that was negotiated between the Tri Parties and DOE that bans the import of waste until 2022, or until the vitrification plant is built. The impression most of the HAB members gave was that the proposed GTCC site was not that great of a worry. Interviewee 13 stated that they only involve group members when something is a threat, and the proposal was not yet a threat. It appears that this sentiment stems from a working relationship that the HAB members have with the agencies doing the work at Hanford, especially the DOE office in Richland. Interviewee 10, who sits on the HAB, described the Richland DOE office as cooperative and helpful and said that they provide support, listen to dialogue and implement many of the HAB’s suggestions. Interviewee 10 also explained that because agencies are present at HAB meetings, they hear the dialogue and are able to have a more nuanced understanding of the beliefs and preferences of HAB members. When asked about the DOE’s public participation process, Interviewee 9, another HAB member, agreed and said that “no matter how badly they get raked, they do an okay job.” Interviewee 9 explained that their organization can ask Richland DOE how they used the HAB’s (or group’s) feedback and the staff can explain, and are receptive to new perspectives.

The sentiment regarding interaction with DOE Headquarters is precisely the opposite. Interviewee 9 indicated that with DOE Headquarters, there is a wall created by the rules which

makes it very difficult for the public to participate. They described the DOE process as legalistic and formulaic, and explained that people are asked to stay on topic. Interviewee 8 had even stronger feelings about their group's opportunities with DOE Headquarters. They said they felt that they were a "check off" on a list of things DOE has to do and that the collusion between Headquarters and Washington, who has economics at heart, is "impenetrable" to them.

Interviewee 12 indicated a more metered view on both agencies: Richland chose to go against overwhelming opposition to a recent plan, which indicates that the relationship is not always perfect. Further, because this is a national proposal, not local, it's more difficult to predict how feedback will impact things--and because an alternative was not chosen, there's a possibility that the scales could be tipped more easily. Finally, Interviewee 14 explained how their access to important DOE officials informed their concern:

We met with the document manager the afternoon of the public meeting in Portland just to talk through and explain our concerns and the chair and vice chair of the Oregon Hanford Advisory Board came with us. The word we got from the DOE is that Hanford is not a top candidate. They believe, at least they conveyed to us, that the DEIS would clearly indicate that Hanford is not a favored location. We don't quite read the document that way. It does show some potential impacts at Hanford but we don't believe that the DEIS precludes Hanford from being selected. I don't believe Hanford is their favored choice, I think they would like to look at a combination of deep isolation at the WIPP and potentially some disposal through the new Texas low level waste site. I don't think Hanford is the leading candidate. It's partly technical, and it's partly the realization that they would have a real battle if they tried it.

With respect to broad social opportunities, the Tank Closure Waste EIS (TCWEIS) had recently taken place and changed the waste preferences of the community. Several interviewees indicated that this EIS demonstrated what could happen if wastes were trucked into Hanford, and it concerned people. An initially supportive public ultimately changed their mind. This event helped to unify public and HAB preference about waste imports and thereby created a united

message directed at DOE Headquarters of opposition to the import of new waste. Overall, HAB members and associated groups seemed to have good faith in the moratorium and access to decision makers and, in general, did not seem to be strongly worried. Importantly, the interviewee that identified the fewest opportunities and expressed the least amount of confidence was not involved with the HAB.

Issue Framing by the Bruce and Hanford Groups

Issue Framing by Bruce Facility Groups:

Issue framing was more diverse in the DGR groups. Two main frames and one minority frame emerged: danger to Lake Huron and drinking water, suspicion about true intent, and general safety. Additionally, interviewee 7 stated it was too early to tell what their frames would be. Overall, the “Danger to Lake Huron” frame was the most prevalent. Concerns over OPG’s decision to place the DGR less than a mile from Lake Huron were dominant and very strong. Language such as “totally irresponsible” and “crazy” were employed in one case, while others stated a deep concern that the containers would leak and contaminate a source of drinking water for tens of millions of people. In sum, their main concern was the potential risk to communities downstream, including those that were not consulted, especially Michiganders and other Great Lakes communities.

The second most common frame was the “Ulterior Motive” frame, which stemmed from groups’ distrust of and suspicion about the true motivations behind the DGR. Interviewees 1 and 5 were concerned that high level waste may ultimately be stored at the site, a concern that other groups mentioned but were not completely committed to. This concern arose due to the fact that if the DGR is approved, project management will be turned over to the NWMO, whose mission

is solely national high level waste management. Others, such as Interviewees 3 and 6, were concerned that this site would be used as a “poster child” for nuclear waste storage. They suggested that the nuclear industry was able to find a very willing community to agree to waste storage and that the industry will eventually use Kincardine as an example for why other communities should be willing to house high-level waste.

Finally, the “Inherent Danger” frame emerged as interviewees expressed concerns about the safety of waste storage in multiple areas. Interviewee 2 expressed skepticism due to the regularity with which radioactive contaminants have breached containers at the Bruce facility. More generally, Interviewee 5 was concerned with the history of nuclear spills and accidents, in addition to the fact that plants release radiation.

Issue Framing by Hanford Site Groups:

The Hanford groups had one main frame: No More Waste. Within this frame were differing reasons for opposition to waste import, including concerns for public safety and unfairness, but five of six interviewees stated as their number one concern that there be no further waste brought to the site for any reason. A minority frame focused on the inadequacy of the environmental assessment; in other words, one group felt that the science was not strong enough to justify the proposal. They even requested that the DOE withdraw Hanford from the list of possible sites. Although there were other concerns mentioned, the widely employed “No More Waste” frame was mirrored in public comments that were published during feedback gathering meetings by the DOE in Portland and Pasco, Washington. It was a united message that was clearly articulated to policy and decision makers.

Resource Mobilization by the Bruce and Hanford Groups

Resource Mobilization by Bruce Site Groups:

Overwhelmingly, collaboration between groups was the main form of mobilization. As Interviewee 6 stated, “The most important form of action is interaction.” All interviewees stressed the importance of collaboration with other groups and acting in coalitions. Specifically with respect to the DGR, which is an extremely technical and complicated project, collaboration was strategic between several groups. Their primary forms of collaboration were information sharing and participation and funding planning. The groups convened in 2008 to divide up the work on the initial federal review document and organize funding applications. Interviewee 7 explained, “Everyone has their areas of interest. We had discussions to sort out what issues each group would pursue and how to avoid overlap, or whether the redundancy would be useful.” Interviewee 4 expanded that these methods ensure that experts are the ones providing the information, which lends credibility. These groups also indicated that there was virtually no conflict between groups, and even if it occurs, relationships are not antagonistic and differences are respected. One interviewee’s comments did not coincide with the other interviewees. They explained that working together was indeed very important, but in his experience, other groups were closed off and less willing to share information. Overall, the complexity of the project demanded collaboration, and the relationships were considered absolutely essential for success.

In addition, some groups had communicated with their members about the DGR, but many of them indicated it was too early to ask members to do anything. At the time of the interviews, the Joint Review Panel had not yet been announced and the groups, both those with and without intervenor funding, were in the beginning stages of planning for further participation. Interviewee 3 explained, “It’s hard to mobilize people around a review that hasn’t started yet,” and Interviewee 6 stated, “People can’t afford to spend their lives fighting

something. You have to wait until the timing is right, timing is very important.” The groups were engaged with one another on the background and planning stages at the time of the interviews, however most indicated that the public and group members would get involved when the time came.

Resource Mobilization by Hanford Site Groups:

Mobilization by the Hanford groups differed slightly from the DGR groups. Although they all agreed that working together was very important, the degree to which planning and information sharing took place varied. Interviewee 12 explained that collaboration was high because everyone was on the same page about the issue. Another said that banding together is best because with the more people involved, the easier it is to share information. With respect to organization and information sharing, one main group organized a committee and invited other groups to join and form a coalition. The group organized meetings and materials and asked other groups to share the information with their members.

Despite this coalition building, some groups stated that they had not even raised the issue to their members. Interviewee 13 mirrored the activists from Ontario by explained that they wait for issues to become actual threats before they call upon members. The GTCC proposal, they felt, was not yet a threat. Additionally, Interviewee 14 expressed an interest in more strategic organization between groups:

I think all of us realize, especially when typically the most available method to comment is through a public meeting, I think we've all realized that the more of us who are working, doing our own things but also keeping in touch with each other in terms of trying to get the message out and get the public to come out, the more effective we can be. I would like us at some point, we've never done this but we've offered it up through the HAB's public involvement committee, is to be a lot more strategic in terms of our collaboration. Knowing that [Organization] will do this, and [Organization] will do this, and the [Organization] will do this and seeing where there are still gaps and maybe where there is unnecessary overlap... we've never really been that strategic.

The groups discussed above were all members of the HAB. Interviewee 8's group is not represented on the HAB and had different views about collaboration. They explained that Oregon is an "awkward" position because the site is in Washington and although an Oregon group sits on the HAB, they do not seek out collaboration with that group. Further, Interviewee 8 explained that the lack of collaboration is not necessarily because they do not agree with the other organization, but because their goals are completely different and it does not make sense for them to work together. More specifically, Interviewee 8 wants change and action and they view the other group as one that focuses on community and public education. However, Interviewee 8's group does work with other groups by signing coalition letters and visiting Senator Merkley's office jointly when meeting on nuclear related issues.

Repertoires of Action in the Bruce and Hanford Groups

Repertoires of Action by DGR Groups:

The action repertoires of the activists opposing the DGR focused primarily on the public commenting periods for the environmental impact statement process and upcoming Joint Review Panel. The actions can be considered in two broad categories: policy intervention and public outreach. Before detailing the policy intervention actions, it is important to restate that groups were chosen if they provided public comments during the years-long EIS process (which began with earlier documents, such as terms of references) and most of the groups have participant funding, which allows them to hire experts and present a case to the JRP. All of those groups indicated that they would participate in line with the needs of the JRP by providing information to the panel to present their case. Except for one, all of those groups also indicated that they

would proceed even if they thought their actions would not influence the outcome. Interviewee 3 indicated that if they were not confident that the JRP members were capable of making an unbiased decision, they would protest by not participating.

Interviewee 2 detailed the most explicit plan for policy interaction, despite not having participant funding. Although they planned to work with other groups, they also would work independently on other aspects, particularly the small things. Interviewee 2 explained that their goal was to “bring forward the deficiencies in analysis and arguments used in support of this project.” They stated, “There is no transparency and no organization. This plan needs to be laid out in complete detail or else it’s meaningless.” For example, they detailed concerns about the proposed property value protection plan in the EIS:

It states that if radiation from this facility effects property values, but there is no analysis of what values should be, or how radionucleotides will be identified from one project or another, no indication of why only radionucleotides are the only thing that generates a stigma that would lower values.

Supplementing this action, Interviewee 2 aims to elucidate inconsistencies between what the nuclear industry claims and what they claim with respect to a wide range of technical and scientific issues in order to make the process more transparent.

Additionally, Interviewee 2 planned to use a technique from past engagement on a proposed new build. Public comments were sought on the proposal and after reading and analyzing it, they submitted several pages of feedback. Interviewee 2 explained that that project was put on hold because of deficiencies on the part of Bruce Power. They found that several pages of their own analysis had been copied and pasted into a document that identified all of Bruce Power’s deficiencies, which is when the interview realized that there were people, “in Bureaucracyland that read what I write.” Interviewee 2 began writing one page papers and submitting them to comment registries so bureaucrats would be able to sit down and read the

analysis without having to schedule time. Eventually, other groups such as the CNSC, United States Geological Survey and Health Canada started expanding the interviewee's analyses and they found they had allies they hadn't realized before. Interviewee 2 stated that they would likely use this technique for the DGR.

When asked if they felt that there was a most effective method of engagement, Interviewee 2 stated that they didn't feel there was one because in their experience, once a group has found an effective method, someone changes the rules. In a similar vein, Interviewee 6 described a responsive strategy:

Let the industry to formulate their position and put it down on paper so it's hard for them to back away from it. Then you can say, 'Here's your position that you've put on your EIS, let's examine that.' If you start interacting before that they can change their tune. They have so many resources, they can talk around you and tie you up, and we don't feel there is any real advantage to do that.

They further explained that their organization tries to "force public hearings," which they have found to be most effective because it is more objective due to documentation of facts. The interviewee explained that if they are able to demonstrate that people have not been told the whole truth, policymakers who are not allied with the nuclear industry begin to question and lose confidence in the industry.

Objectivity and facts were important terms for many groups. They believed that their ability to impact the outcome was because their positions were based on scientific fact. In other words, they believed they were unbiased, and this lack of bias was central to their being influential during JRPs. "We are not interventionists by nature... except when it comes to facts," stated Interviewee 6. Interviewee 4 further explained that because their group roots their position in science, they cannot be "cast off" by policy makers. Additionally, Interviewee 1 explained that, in general, their organization has a "neutral effect" because they represent such a wide

range of interests, unlike Greenpeace, for example. For this reason, the interviewee explained that some think the group represents the public, which also lends them more legitimacy. Unlike other groups, their organization did not focus on spreading their message to the public, and instead, relied on their access to policymakers.

In addition to policy intervention, most of the interviewees explained that they engaged in public outreach. The most common forms of outreach included various forms of electronic communication, such as email lists and listserves. Interviewee 6 explained that they use email lists instead of listserves because it allows them to send people information that relates specifically to their interests, instead of emailing everyone about everything. Five of the seven interviewees said that they would help host some form of in-community engagement event, such as hosting a public workshop, helping community groups by providing information that the public can understand, or assisting new groups with organization development.

Notably, several groups explained what they would not do. Very few groups even mentioned protests, civil disobedience or similar activities-- except to clarify that they had not performed any, and in some cases, would not and do not. Referencing activists in Germany, Interviewee 5 explained, "We are not brave, we don't lay on train tracks, but we do try in other ways." They further commented that opposing nuclear plants can be perceived as a lack of patriotism. Another interviewee stated, "We aren't like Greenpeace, we don't go into communities and do guerrilla activism. We never go anywhere we aren't invited."

Repertoires of Action by Hanford Groups:

The groups involved in the proposed GTCC waste project opposition had varied repertoires of action, although not all of the noted actions were employed against the GTCC

proposal. The first part of the repertoire was political communication. Speaking on behalf of the HAB, Interviewee 3 explained that the GTCC is not under their purview because it is not considered an environmental management project. However, members of the board were concerned about its impacts and used the board's unique composition and access to policy and decision makers to communicate its preferences. The interviewee explained, "We may not and do not lobby congress but we make sure they understand our values transparently." Further, the HAB issued advice on the issue, which is taken very seriously. Virtually all of the interviewees whose groups had a representative on the HAB mentioned their relationship with the local DOE office and access to decision makers because it increased their ability to communicate preferences.

A different form of political communication also took place. Two groups visited Portland policymakers, including the city council and the mayor, Sam Adams. They successfully convinced the council to adopt a statement against the proposal and the mayor even attended and make comments at DOE's public meeting in Portland. Interviewee 8 stated they communication style as a "scare tactic," using language like, "this *will* affect Portlanders and if you don't help us, this will happen and the trucks [of waste] will come through [Portland]." Similarly, Interviewee 11 stated, "There's no doubt that the proposal will kill people." These two groups used the strongest language that conveyed the issue as an immediate threat, which was in virtual opposition to other groups. Additionally, Interviewee 8 expanded on their reasoning for working with policy makers:

I'm older than many activists but I don't do marches down the street anymore. I don't do broad actions, I do focused actions with policy makers. I have no clout, but Sam Adams has clout. I've been trying to get the journalists and mayors fired up but I won't walk down the street holding a placard because I think it's not particularly effective. Occupy Wall Street is effective, I think, because it caught the imagination of people across the nation. But the Hanford thing has been

around so long that people are numb. If they saw a protest march around city hall saying “Close Hanford,” it would be totally irrelevant. It’s too huge first of all, the consequences are so alarming that people can’t even absorb, comprehend or even get upset because it’s so beyond their imagination.

Interviewee 9 mirrored the sentiment that picketing or protesting at this point would be ineffective, not necessarily because citizens are numb to the issue but because, “there are so many things going on right now at Hanford that it’s not the best use of peoples’ time, money and energy.” But they do, along with most of the other groups, encourage their members and the public to call or write letters to politicians or submit letters to op-ed sections in newspapers. Interviewee 9 further stated that they’ve found that if, “10 people from our organization were to call these particular congress people it would overwhelm them. The congressman said, ‘Can you get these people off my back?’ 10 measly calls and you can have an impact.”

Communicating with policy makers was not the only action in the groups’ repertoire. One of the most common actions was engaging citizens through a variety of tactics that ranged from quite simple to innovative. Everyone emailed their members through a listserv, and one group was able to get other groups to share their listserves. Interviewee 11’s group has and had the most resources so they initiated the formation of a coalition, drafted the email content that they shared with other groups, prepared meetings, and provided organizational support. In addition to that, their organization has a “public involvement toolkit” that they use to spread their message. The representative explained that, “We do our research and disseminate it using citizens’ guides,” in addition to creating fact sheets. Several groups hosted (or did host for other issues) public workshops where they explain the issues to the average citizen who does not have the requisite knowledge to understand the assessment content or effectively comment during public hearings. Interviewee 9’s group has, in the past, organized their own public meetings on

Saturday mornings where they brought together different agency representatives and had a more informal conversation, in comparison to the DOE's public meetings, about the issue at hand.

Two groups told stories of actions they have taken in the past to engage citizens that were very innovative. The first action was from a regional group. The representative explained:

It's about making people feel like there is a movement around cleaning up Hanford. One way is kayak tours, where we float down the Hanford Reach. It's an amazing way to connect people with the site: one side is arid lands reserve and on the right, it's huge reactors and pipes coming into the river. We talk about the issue, it's probably the most effective way.

Another group demonstrated how they creatively engaged people in cases where they felt the issue warranted more action. One way was by offering ice cream. They explained:

We put posters up all over the city and most of the people came not knowing anything but that they were getting ice cream. We asked them to comment on an issue and we gave them a binder of information. They had to give a comment to get ice cream. We got 61 comments.

The representative also explained that the group has also tried to connect with people who "communicate differently" through the performances, poetry and a haiku calendar.

Finally, although none of the groups had yet considered engaging in more contentious forms of action such as protests or picketing, many reserved the option in the event Hanford was chosen. As Interviewee 13 put it, "The minute Hanford was chosen, people would freak out. The HAB would go crazy, everyone would be freaking out together and people would work together. There would be public meetings and someone would probably litigate." Another interviewee stated that, "there would be a storm." In addition to public meetings and litigation (which one group did confirm they would pursue), some groups indicated that they would picket, protest and engage in civil disobedience.

Discussion and Conclusion

When asked whether their perception of their organization's ability to influence the decision outcome influenced how they would engage on the GTCC or DGR proposals, all interviewees said no. The following quotes serve as opportunity to compare the two groups' experiences and formulate outcome predictions:

You never know what you can do until you try. That's the scientific method. You don't presuppose the outcome, you do the experiment and see what happens. In this case the experiment is participating. A lot of the problem in affluent societies is that people feel, 'What's the point of trying, it's probably not going to do anything,' which is an illogical way of thinking. What could be more ineffective than doing nothing? [...] They're [activists] doing this because they think it's their duty as citizens to argue for a more sustainable future, a better world, better society. Payoff is immaterial, but that payoff is fundamentally human. It's human to fight for what you believe in [...] If only people would stand up for what they believe in, I think they would be able to transform the world (Interviewee 6)

Isn't that the great value of a democracy? That many of us do things that are ultimately foolish and foolhardy when we could be spending that time making ourselves rich, or doing whatever else that matters in their view. But I think that is one of the great strengths of democracy, is when people give up their time. And maybe their work is frivolous and maybe their work and their efforts are frivolous and pointless and all the rest, but they have given up their time to take a look and do this, and that may ultimately inspire others to do similar things (Interviewee 2)

These quotes demonstrate the conception of Canadian culture that was described in preceding sections, especially with respect to their views on the value of groups. The Canadian groups were practically poetic when discussing democracy and participation. They deeply valued their ability to participate, to pursue what they believed was right-- regardless of whether they thought they could significantly impact the outcome. They thought that their activism and persistence would inspire others, and that, a priori, it was the right thing to do. These groups did attribute to their actions many successes in other cases, and success was defined not simply by whether they got what they wanted, but also the degree to which they were able to improve the process, even for future proposals.

In contrast, research illustrates that when local groups and residents support a project, outside groups have very little success opposing it. In their study of twenty proposed energy projects, Boudet and McAdams explain that, "...it appears from these results that opposition efforts that are largely driven by groups outside of the affected community are not effective in swaying regulators to reject a given proposal," (Boudet and McAdams, forthcoming: 117).

Further:

Nine of the ten projects that experienced no mobilized opposition were approved. Bottom line: absent at least some localized opposition, proposed projects –even ones that present serious, objective risks to the environment – are virtually assured of being approved (129-130).

These findings do not bode well for the DGR opponents (despite their poeticism), given the support the local community and government has for the project. Indeed, the Mayor Larry Kraemer submitted public comments on the DGR stating that the success of the DGR would be his legacy (Kraemer, 2006).

On the other hand, the Hanford groups are "local" in ways that the Canadian groups were not. Specifically, even if groups were from other parts of Washington or even Oregon, most of them worked collectively on the HAB with a wide range of other interest groups and thus represented local opposition. Moreover, there were no significant voices in support of the proposal, which gave their voices greater weight. The Hanford groups perceived there to be strong political opportunities on their side in the form of direct communication with decision and policymakers, political agreements, and the weight of HAB advice. These opportunities made most of them feel confident that their preferences were expressed and likely heard, admittedly with varying feelings of urgency about the proposal. There may be multiple reasons for this sentiment, but one of them may be attributable to the ability of Americans to access the policy processes at multiple points, unlike their Canadian counterparts (Steger et al., 1989). Finally, an

important aspect of their communication was the strong frame they employed: no new waste at Hanford. There was no confusion about what the groups sought, which made their message clear and simple.

The Canadian groups did not identify many significant political opportunities. Even major events such as the tsunami in Japan were not thought to play much of a role for the long-term outcome of the proposed DGR. They did not express confidence about their communication with policymakers, either. That observation is perhaps the greatest difference between the two groups; Canadians identified many fewer political and social opportunities than did the Americans. Again, this may be due to the differences between access to the policy process in the two countries. Furthermore, the Canadian groups did not feel that they were able to consistently influence the policy process, even when participating with the JRP, which may illustrate Lipset's (1990) research that indicated that Canadians tend to support a strong central government and have respect for elites and elite opinions. Their frames, although not as straightforward as the Hanford groups', did clearly identify their concerns. However, it is not evident that they were speaking with one voice.

Finally, both of the groups mobilized to some extent, although no groups had fully mobilized around either issue, mostly due to other more pressing related matters or lack of concern. Most of the groups called on their networks to address their respective issues, but the Canadians were much more precise. Compared to Hanford groups, the DGR groups devoted significant time to keeping other groups informed and organizing research assignments and funding applications together. The Hanford groups did not collaborate as much, but did still manage to get local politicians to come to a public meeting to oppose the GTCC waste site. This difference in collaboration is another example of the cultural differences between collectivist-

leaning Canadians and individualistic Americans, but it likely also related to the groups' levels of concern over the proposals. Additionally, both sets of case study groups indicated that if there was a decision that they did not accept, they would engage in more extensive mobilization efforts. If this were to occur, issue framing could become more important as the groups attempt to connect with the public and government entities in a culturally significant manner. This may be especially true for the DGR groups, many of whom will engage in public outreach and present to the JRP in the coming months. Their current frames might ultimately be streamlined in order to allow the groups to unite around a single message, making a "campaign" more simple and straightforward.

Given this analysis, it seems that the Hanford groups are more likely to impact the outcome in their favor and it is less likely that the DGR groups will. The Hanford groups appeared to have more political opportunities, a more unified and straightforward frame, and their resource mobilization and action repertoires encouraged local opposition and engaged several political elites. The DGR activists did not appear to have many political opportunities, and despite the fact that many of them had participant funding, several of them felt that the JRP process did not necessarily allow them sufficient opportunities to participate effectively. Stated another way, the Canadian groups did not feel heard. Finally, their mobilization and action repertoires, at the time of writing, had not engaged individuals with any political clout, nor had there been significant attempts to sway public opinion in Kincardine. Thus, this lack of opportunity and mobilization in the local community indicate that it may be more difficult for these groups to obtain the outcome that they seek. Despite the activism both the American and Canadian groups have engaged in, it is important to note that project outcomes may ultimately be

unrelated to their actions and may instead be related to economic realities, behind-the-scenes politics, or other circumstances entirely.

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