

COMBATING NUCLEAR POWER: DISCOURSES OF JUSTICE, THE
ANTI-NUCLEAR POWER MOVEMENT, AND THE STRUGGLE FOR
ENERGY JUSTICE

A Dissertation

Presented to

The Faculty of the Graduate School

At the University of Missouri

In Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

By

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JULY 2014

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The undersigned, appointed by the dean of the Graduate School,

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COMBATING NUCLEAR POWER: DISCOURSES OF JUSTICE, THE
ANTI-NUCLEAR POWER MOVEMENT, AND THE STRUGGLE FOR
ENERGY JUSTICE

Presented by Jesse P. Van Gerven

A candidate for the degree of

Doctor of Philosophy

And hereby certify that, in their opinion, it is worthy of acceptance.

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DEDICATION

This dissertation is dedicated to everyone out there who made it possible. This includes all the people around the world (past and present) who have made sacrifices to oppose the development of nuclear technologies. Your principles, commitment, and bravery serve as constant sources of inspiration for me. This dissertation is also dedicated to my friends and family, who have all in one-way-or-another pushed me to be the best person I can be, and who have provided me with immeasurable and invaluable amounts of love and support. This is especially true for my parents, Dennis and Claudia, and my wife Mallory—you made this possible and it is dedicated to you.

ACKNOWLEDGEMENTS

Although completing a dissertation is necessarily challenging and somewhat isolating, the completion of this dissertation was by no means done by myself. It was made possible by many, many people whose love, support, and encouragement carried me throughout the process. I am forever grateful to all those who have made an impact on me throughout my journey.

To begin, Dr. Clarence Lo was and is a tremendous source of encouragement, inspiration, and guidance. Dr. Lo played a central role in my decision to come to the University of Missouri to pursue my graduate studies by indicating his willingness to work with and mentor me. For nine years Dr. Lo dedicated time and effort to help guide me through the process of becoming a professional sociologist. At critical points in my intellectual and professional development, Dr. Lo guided me as I struggled to find direction. He recommended key works and helped me explore research options that, without his mentorship, I would have never discovered on my own. His deep understanding of critical theory, political sociology, social movement studies, and other areas has contributed significantly to the present study, as well as my general sociological/theoretical perspective of the world. In this way, his brilliance and insight have not only helped me as a researcher, but also as a teacher and educator. Through my teaching I always strive to help students develop their own critical understanding of the world in hopes of stimulating their desires to change the world for the better. Dr. Lo helped establish and nurture this critical pedagogy, which I believe is crucially important. My hope is to continue to become the kind of researcher and educator that Dr. Lo would be proud to have helped produce.

Of course, this project would not be possible without the help, assistance, and guidance of my other dissertation committee members; Dr. Ibitola Pearce, Dr. James “Sandy” Rikoon, and Dr. Rebecca Scott. I have known Dr. Pearce since my first semester in graduate school when I took her Race and Ethnicity course. Taking this course and working with Dr. Pearce over the following years really opened my eyes to the breadth of critical race and gender theory, and helped fuel a desire to achieve racial justice as a central goal of my scholarship and teaching. Dr. Pearce has advised me and served on every committee I have organized since I arrived at the University of Missouri, and I am forever grateful for everything she has done for me. I have also known Dr. Rikoon since I first came to the University of Missouri when I took a seminar in Political Ecology. This course along with working with Dr. Rikoon and reading his work has had a tremendous impact upon the present study, as well as upon my development as an environmental sociologist. Dr. Rikoon’s advice and feedback over the years has always helped keep me grounded when my tendency is to sometimes get lost in abstract, theoretical considerations. Dr. Rikoon has also always worked to get me to think about other standpoints and perspectives than the ones I generally would focus upon. For these and many other things I am extremely grateful to have known and worked with Dr. Rikoon, and he has had a significant impact on the shape of this project. Last, but certainly not least, I am very grateful to have had the opportunity to get to know and work with Dr. Scott. Working as a research assistant for Dr. Scott gave me valuable experience and insight into the research process that I know will continue to serve me as I develop as a researcher. Additionally, Dr. Scott’s critical theoretical perspective, while very different from my own, has helped sensitize me to different issues of culture and

identity involved in political and environmental conflicts. Dr. Scott's mentorship and advice has really helped strengthen this project and will continue to strengthen my future research efforts.

Beyond the faculty who served on my dissertation committee, I am also deeply indebted to the rest of the faculty in the Sociology Department at the University of Missouri who have helped teach and train me over the course of my graduate studies. I would like to specifically thank Dr. Wayne Brekhus, Dr. John Gallaher, Dr. Jaber Gubrium, Dr. Victoria Johnson, Dr. Amit Prasad, Dr. Joan Hermsen, and Dr. Ed Brent for the opportunity to learn from and work with them. I know that as a professional sociologist I am very much a product of the training I received from these and other faculty. I believe that this training has made me and my graduate student colleagues uniquely situated to make meaningful and significant contributions as both producers of sociological knowledge and educators of young people. In addition to the faculty of the Department of Sociology I would also like to thank Mary Oakes, Debbie Friedrich, Crystal Essen and the rest of the administrative staff in the MU Sociology Department. You are all awesome! Mary and Debbie especially have helped me with countless questions and concerns since even before I arrived in the Department. Having worked with other departments/programs, I can say definitively that your hard work makes the Sociology Department function, and it could not function without you. I would also like to thank the MU library staff, especially Sociology Research Librarians Nancy Turner Meyers and Rachael Brekhus; you both helped me so much with finding the materials and resources that I needed.

This dissertation also would not have been possible without the camaraderie of my fellow graduate student colleagues and friends. Graduate school has been the best time of my life, and you all are a big, big reason why that is the case. It has been an honor and a privilege to not only work with so many bright, fun, and insightful people, but also to have so many of these people be close friends. Those who have already moved on include Brent Stiner, Erin Walsh, Lindsey Hern, Portia Dietrich, Veronica Medina, William Force, David Overfelt, and many more. Those who I am temporarily leaving behind include Braden Leap, Ashley Vancel, Jenna Pirok, Chelsea Platt, Andrew Bisto, Jennifer McKinney, Kara McGee, and everyone else. I would also like to thank the close friends I have made who are not in the Sociology Department, especially Anna Wells, Daniel Dietrich, Kenny Kovax, and Cozette Leaman. Most significantly, I would like to thank David Criger and Stephen Barnard; both of whom are like brothers to me. I know with certainty that I can count on both of you for anything, and I will never be able to express how much your friendship has meant, and will always mean, to me. I am so incredibly lucky to have two friends and colleagues like you! Also, I cannot forget my friends from Colorado, especially Chris Edwards, Max Alicea, Christian Shantz, Jeremy Perkins and Anna Perkins. While I don't see you all as often as I would like, you are all in my thoughts and I miss you all very much. Go Broncos!!!

Most importantly, I would have never been able to start (let alone finish) this dissertation without the help, guidance, love and understanding of my amazing wife and family. I credit my late grandfather, Peter Van Gerven, for helping to first instill a sociological imagination in me. With a fourth-grade education my grandfather had a better understanding of political-economic structures and forces than do many current

decision makers. As a Teamster and veteran of WWII he had a strong understanding of political and economic power, and he never let conservative rhetoric change what he knew to be true. More importantly, Peter was a good and kind man who taught the importance of both working hard and finding a balance between work and play. I love you Grandpa and I miss you every day.

My parent's, Dennis and Claudia, have both done more for me than I can ever hope to recall, and I love them and am thankful for them more than I can ever express in words. You both encouraged and supported me as I decided to pursue the "family business" and go to graduate school, but you never pushed me to go in that direction. You socialized me into the business from the very beginning through watching my Mom complete her dissertation and going to summer classes with my Dad at CU Boulder. Mom, you single handedly taught me how to write. You helped me with every paper I wrote through my undergraduate years, despite the verbal abuse an unappreciative, younger me threw your way. I have always tried to emulate your patience and your commitment to helping your students develop as much as possible. Dad, you gave me my "gift of gab" and helped me develop a skill set that I believe makes me an engaging and effective teacher. I hope to one day be half as good as you. This is all in addition to the *countless* ways you two have helped and supported me throughout my life. I will never be able to thank you enough or to even express how grateful I am to have you as my parents.

Without question, the person most responsible for the completion of my Ph.D. is my wonderful and loving wife, Mallory Van Gerven. Without you as my best friend and partner I would never, ever have been able to even begin graduate school, let alone finish

my dissertation. Day-in and day-out over the past nine years you have given me strength and love, without which I would have given up long ago. You moved to Missouri with me. You listened to me cry. You listened to me complain and vent my frustrations. You also listened to me get excited and celebrate. You literally held-my-hand and rubbed my back as I struggled to find the courage and strength to take the next steps. I love you so much. This is *our* accomplishment, and I cannot wait to begin the next chapter of our lives together. Thank you for everything.

To my parents and my wife Mallory, there is not enough time or space in the world for me to communicate and express to you how much I love you and how thankful I am to have you in my life. What I have written above does not even come close to even beginning to say what I feel. I love you. Thank you.

Finally, to all those who helped along the way but I fail to mention above, my apologies. Do not take it personally and know that your contributions will never be forgotten. And of course, all errors and mistakes remaining in this work are my responsibility alone.

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ABSTRACT

In the present study, I critically analyze the anti-nuclear power movement (or the movement *for* a carbon-free and nuclear-free energy future) in the U.S. using an environmental justice framework. I aim to explore how different conceptualizations/discourses of social and environmental justice are constructed through the claims of social movement organizations on both the national and local levels of the movement. My analyses of national and local level anti-nuclear organizations' claims focuses on issues regarding the public financing of new nuclear construction (through federal "loan guarantees" or CWIP charges), as well as on issues of the management of high-level radioactive waste and other campaigns to increase the safety of nuclear facilities. Throughout these analyses I show how ideas of distribution, recognition, and representation help structure, and are reconstructed through, the arguments made by anti-nuclear groups against the production of nuclear power. My goal is that through critical analyses of the claims made by the anti-nuclear power movement in the U.S., as well as analyses of the historical/structural conditions these claims were made in response to, I am able to distill general principals of what could be termed "energy justice". The identification of general principles of energy justice, similar to the Principles of Environmental Justice, could potentially guide future energy policy and energy systems to ensure social and environmental justice are maximized.

CHAPTER 1: INTRODUCTION

The morning of September 28th, 2010 was overcast and cool. Signs of the approaching fall were everywhere in the town of Vernon, Vermont located on the banks of the southern Connecticut River, three miles north of the Massachusetts state line. Low-hanging clouds gripped the hillsides and gave a sense of forbiddance to the otherwise picturesque New England landscape. As the women approached the gates of the sprawling Vermont Yankee Nuclear Reactor Complex, Frances Crowe knew what they were likely in store for; she had been arrested for her activism for peace and justice many times before. Today she was joined by Hattie Nestel of Athol, Mass.; Ellen Graves of West Springfield, Mass., and Paki Wieland, from Northampton, Mass. The Ragin' Granny's, as they refer to themselves, were there to block the gates of the reactor complex in an act of protest meant to bring an end to the dirty, dangerous, and expensive production of nuclear power and radioactive waste at the site. In recent years, dozens of people had been arrested for non-violent civil disobedience at Vermont Yankee and at the Brattleboro offices of Louisiana-based Entergy Corp., which owns the reactor. Many of the protests were organized by the Shelburne Falls, Mass.-based group Citizens Awareness Network (CAN). As the elderly women peacefully used their bodies to obstruct the entrance of the facility, security personnel and local police were called in to remove the protesters. The women were arrested by police and were released the same day with citations to appear in court that December. "There is no such thing as a peaceful, safe, renewable and cost-effective nuclear power facility," Nestel said following her release from jail.

The campus of Loyola University on the north side of Chicago, IL was largely deserted the first week of June, 2010. Most the university's students had left weeks ago, following the end of the spring semester. In their place slowly arrived over one hundred and twenty five grassroots, anti-nuclear power activists from twenty five states, several American Indian tribes, and five countries. We had come to attend the first National Grassroots Summit on Radioactive Waste Policy, organized primarily by Nuclear Information and Resource Services (NIRS), Beyond Nuclear, and Nuclear Energy Information Services (NEIS). The Summit provided an opportunity for representatives of community organizations affected by commercial and government nuclear activities to network, workshop, and generally engage in the work of solidarity- and movement-building. The nuclear industry and their allies in government were proudly trumpeting that the United States was on the verge of a "nuclear renaissance"; we had come to Chicago to plan the movement's strategy to prevent a "nuclear relapse". Both the Obama Administration and the Department of Energy were actively seeking to increase (by as much as \$50 billion) the amount of federal monies available for financing the construction of new nuclear reactors in the U.S. The Blue Ribbon Commission on America's Nuclear Future had begun their proceedings; albeit without any representation of community organizations that were impacted by commercial and state nuclear activities. It was clear to those in attendance that the U.S. was on the verge of a dramatic change of direction with regards to nuclear power and radioactive waste management. We needed to work together to build strategies and tactics to ensure this change was in the direction of increased social and environmental justice. The consensus going into and

coming out of the summit was “nuclear power is dirty, dangerous, and expensive”. Furthermore, it was agreed that there may in fact not be a scientifically, politically, economically, and/or socially acceptable way to solve the radioactive waste crisis. Thus, the only acceptable course of action going forward is to “STOP MAKING IT!”

On January 25, 2012, eighty eight national, regional and local environmental and anti-nuclear power organizations, and more than 5,400 individuals, sent a letter to then Energy Secretary Steven Chu urging him to reject the then upcoming recommendations from the Blue Ribbon Commission on America’s Nuclear Future (BRC) that would encourage establishment of an “interim” radioactive waste storage dump and begin the transportation of high-level radioactive waste across the U.S. The letter was initiated by organizations representing communities around permanently closed reactor sites, such as Citizen Awareness Network of Shelburne Falls, MA and Citizens Environmental Coalition of Albany, NY. Although the letter was drafted and initiated by 17 local-level, grassroots organizations representing communities living with closed reactors, several national-level anti-nuclear power organizations utilized their networks, connection, and resources to build stronger support for their claims from dozens of additional organizations and thousands of individuals.

The Commission's draft report cites these closed reactors, which are still storing their waste on their sites, as the reason that an “interim” storage site should be established immediately. As the letter states, such a program runs exactly counter to the interests of these communities, “The Commission you appointed is claiming that it is acting in the interest of communities such as ours where closed nuclear power reactors are located,

when in fact the Commission's recommendations are in opposition to our number one priority: isolation of radioactivity from our environment for as long as it is a hazard. Centralizing waste storage for purposes of expanded waste production or for reprocessing is contrary to this goal, and is not responsible policy.” The groups urged Secretary Chu to “apply the logic that is missing” from the BRC report and prevent the transportation of radioactive waste “until a permanent isolation program is available.” The groups also urged the implementation of Hardened On-Site storage of the waste at the reactor sites, as described in a document called *Principles for Safeguarding Nuclear Waste at Reactor Sites*, which has been endorsed by more than 170 organizations. In this and many other cases, the anti-nuclear power movement in the U.S. operates on both the national and local levels in their efforts to stop the production of nuclear power and radioactive waste. Furthermore, there is extensive coordination within the movement between these levels as different types of anti-nuclear organizations work to promote environmentally benign and socially just energy systems.

Introduction/Empirical Problematic

The empirical focus of the present study is on the grassroots opposition to the continued production of nuclear power and the associated continued production of high-level radioactive waste in the U.S. This opposition to nuclear power and the continued production of radioactive waste takes place on both the national and local levels, including at every step of the nuclear fuel chain. This opposition takes place on the *local level* in uranium mining communities where some local resident groups fight to have the contamination from past mining operations cleaned-up and to prevent new uranium

mines from opening. This opposition is also found in communities with uranium fuel-fabrication and enrichment facilities, where some local stakeholder groups feel the environmental and human health costs of such facilities outweigh the economic benefits they provide. As seen from the first vignette above, grassroots opposition is also found in reactor communities where local stakeholder groups fight to shut down existing reactors, prevent existing reactors from being relicensed, and prevent new facilities from being licensed and constructed. Finally, local, grassroots opposition to nuclear energy and radioactive waste is found in (potential) disposal communities, where a broad range of local stakeholders work to keep their communities and environments from being turned into the nation's radioactive waste dump.

While there is a great deal of opposition to the continued production of nuclear energy and radioactive waste on the local level, the movement for a carbon-free and nuclear-free energy future in the U.S. also operates on the *national level*. As demonstrated by the second and third snapshots above, beyond lobbying and other attempts to influence the political process in D.C., national social movement organizations (SMOs) in the U.S. also help coordinate the activities of local groups from around the country. These SMOs help educate people about the dangers of nuclear energy and radioactive waste, and keep people informed about relevant policy developments and the operations of the nuclear power industry. Additionally, they work to facilitate people's involvement in the political process by distributing action alerts, staging protests, and organizing conference calls and summits for grassroots activists.

As I have indicated above, the politics of nuclear power and high-level radioactive waste management in the U.S. take place on the local and national levels.

Consequently, anti-nuclear SMOs in the U.S. have organized and engage in environmental justice energy activism on both of these levels. However, in the United States policy concerning the development and operation of nuclear power plants and the management of radioactive waste is made at the federal level. After World War II President Eisenhower established the Atomic Energy Commission (AEC) to both regulate and promote the use of the “peaceful atom” for non-military purposes. By the 1970s it became clear the dual mandate of the AEC to both promote and regulate the nascent nuclear power industry created an unsurpassable conflict of interests. Public protest over the handling, storage and disposal of radioactive waste began in the late 1950s with regards to ocean-dumping; a practice that was quickly abandoned due in large part to public outcry (Walker, 2009). Public concern over radioactive waste later skyrocketed after a large and serious leak of radioactive waste was widely reported to have happened at the Hanford, WA site in 1973. This event lead Ralph Nader and the Union of Concerned Scientists to denounced the AEC’s handling of radioactive waste at their own facilities, and seriously question their ability to properly regulate commercial facilities (Walker, 2009).

This and other scandals and controversies lead to the Energy Reorganization Act of 1974 that abolished the AEC and created the Nuclear Regulatory Commission (NRC). The NRC is an independent government agency responsible for reactor licensing and renewal, the safety and security of operating reactors, and the safe *regulation* of nuclear materials, including high-level radioactive waste. The NRC’s mission is to *regulate* the nation’s civilian radioactive materials to ensure the protection of public health, public safety and the environment. The relationship between the anti-nuclear movement and the

NRC is somewhat complicated; as is often the case with the relationships between environmental/social justice groups and regulatory agencies. On the one hand, the NRC has regularly been accused of falling victim to “regulatory capture”; where the industry the agency is supposed to regulate effectively takes control of the regulatory agency itself. It is widely perceived within the anti-nuclear power movement that the NRC is beholden to the nuclear power industry, and regularly advances the industry’s interests over the interests of communities and the environment. On the other hand, anti-nuclear SMOs often find themselves also having to defend the NRC and the current levels of regulation from efforts to minimize or eliminate both. In the neoliberal era, most forms of governmental regulation of industry and the market have come under sustained attack from “free-market” ideologues. The NRC has not been an exception. Thus, despite the general level of dissatisfaction felt by the movement towards the NRC, movement actors often find themselves fighting to preserve what minimal regulation and oversight currently exists.

The NRC is targeted primarily by anti-nuclear groups on the local-level concerned with varying issues related to reactor safety, licenses, and license renewal. More specifically, the NRC is the target of anti-nuclear campaigns *against* new reactor licenses and license renewals for existing reactors, campaigns *for* better emergency and evacuation preparedness, and better control of intentional and accidental release of radioactive materials from nuclear power plants. Although national anti-nuclear SMOs, such as NIRS and Beyond Nuclear, contribute to and assist local-level organizations in these campaigns, the campaigns themselves are driven and lead by local organizations representing people and communities more directly impacted by particular nuclear

facilities. The other federal department responsible for the governance of the nuclear industry and nuclear power is the Department of Energy (DOE). The Department of Energy Organization Act of 1977 established the DOE as a Cabinet-level department concerned with policies regarding energy, the nation's nuclear weapons program, and the handling of civilian radioactive waste *disposal*. The DOE is headed by the Secretary of Energy who is appointed by the President. Of great concern for the anti-nuclear movement is the DOE's responsibility for the handling and storage of the nation's civilian high-level radioactive waste, including the "spent fuel" from commercial nuclear reactors.

Grassroots opposition to nuclear power and radioactive waste production in the U.S. has increased dramatically over the past several years, especially in the aftermath of the Great East Japan Earthquake of March 11th, 2011 and subsequent on-going radioactive disaster at the Fukushima Daiichi nuclear power plant. Prior to the on-going Japanese disaster, no nuclear reactor had been licensed in the United States since the late 1970s and none constructed since the mid-1980s. The Three Mile Island accident in 1979 and the Chernobyl disaster in 1986 soured many American's perceptions of nuclear power. According to a *Forbes* magazine cover-story in 1985, "the scale of the U.S. nuclear power program's collapse is appalling" and "the failure of the U.S. nuclear power program ranks as the largest managerial disaster in business history, a disaster on a monumental scale" (Cook, 1985). This slowly began to change over the past decade as the nuclear industry spent over 300 million dollars on lobbying and P.R. efforts to rebrand themselves as the solution to both the problems of "energy independence" and global warming. The industry's efforts were partially realized with the passage of the

2005 Energy Policy Act. This Act established the controversial federal “loan guarantee” program for the development and construction of new nuclear reactors. This program was set-up to provide taxpayer money in the form of “loan guarantees” to help cover the tremendous up-front costs of obtaining a license for and constructing a nuclear reactor, which run between six to ten billion dollars. This led the Nuclear Energy Institute (NEI), the trade group for the nuclear industry, to declare the U.S. was on the verge of a “nuclear renaissance”; a phrase that was picked-up and often repeated by many media outlets. Some nuclear proponents, such as South Carolina Senator Lindsey Graham, claimed the U.S. would have twenty new reactors by 2020. Since 2005, the Nuclear Regulatory Commission (NRC) has received twenty eight applications for “early-site permits” and “combined operating and licensing permits”, all of which have either been delayed or cancelled (NIRS Newsletter, Dec. 2010).

The so-called “nuclear renaissance” was slow to develop and took some unexpected turns under the current Obama administration. In 2010, President Obama cut-off virtually all funding for the development and construction of a high-level nuclear waste repository at Yucca Mountain, Nevada and instructed the Department of Energy to withdraw its license application from the Nuclear Regulatory Commission. (Reflective of the relationship between the two agencies/departments, the NRC is tasked with establishing the environmental and human health guidelines for a nuclear waste repository and with issuing the licenses, but it is the DOE that will actually construct and operate the eventual repository.) This was a dramatic change of direction in federal nuclear waste policy, as the Yucca Mountain site has been the only location studied and developed for permanent high-level nuclear waste storage since 1987 at a cost of over 15

billion dollars, according to the Government Accountability Office. This decision has also proven to be contentious. Washington state and South Carolina have filed a lawsuit against the Department of Energy (DOE). The plaintiffs claim the DOE lacks the authority to withdraw their license application because doing so violates the intent of Congress as expressed in the 1987 Nuclear Waste Policy Act Amendments, which designated Yucca Mountain, Nevada as the site for the nation's first high-level radioactive waste dump. The DOE argues they do have the authority to withdraw the license application because they are the federal agency responsible for the construction and operation of such facilities.

Along with the termination of the Yucca Mountain project the Obama administration created the Blue Ribbon Commission on America's Nuclear Future (BRC) tasked with answering several key questions regarding the future of radioactive waste disposal in the U.S. The BRC was mandated to evaluate possible disposal strategies and issue recommendations in 2011 that were expected to become the basis of new federal radioactive waste policy. The BRC was comprised of industry representatives, nuclear engineers and other technical experts, former Senators and Representatives, policy experts, and labor representatives. Notably absent from the Commission were any representatives from the environmental community, anyone representing impacted communities, or any other opponents of the nuclear industry itself. The Commission's charter emphasized "public participation" and "transparency" would be central in the Commission's proceedings, and both the nuclear industry and their opponents actively participated in and monitored the process.

In addition to the cancelation of the Yucca Mountain project and the creation of the BRC, the Obama administration signaled other shifts in the administration's approach to nuclear energy and radioactive waste disposal. When campaigning in 2008, Obama said he was not a "supporter" of nuclear power, and the only way nuclear power would move forward was if it could compete on the open market, with other energy sources, without government subsidies or taxpayer support. However, in early 2009 President Obama announced he was asking Congress to triple the budget for the "loan guarantee" program (to over \$50 billion) that would funnel taxpayer money to help finance the construction of new nuclear reactors. In sum, beginning in 2009 the Obama administration began to dramatically alter the direction of U.S. nuclear energy and radioactive waste policy in ways that seem to be aimed at facilitating a "nuclear renaissance".

However, as I mentioned above, even with all of this activity favorable for the development of the nuclear industry in the U.S. on the national level, the "nuclear renaissance" has been more a product of proclamation than actualization. This is due in no small part to the efforts of various grassroots campaigns that have opposed the nuclear industry and their allies in government on the local and national levels. No new taxpayer money has so far been allocated for the "loan guarantee" program, despite president Obama's repeated requests from Congress. In 2010 alone, more than 100,000 letters were sent to Congress opposing the expansion of the "loan guarantee" program, along with thousands more phone calls, and thousands more letters sent to the DOE and White House, and thousands of signatures on petitions (NIRS Newsletter, Dec. 2010). This is all in addition to thousands of people working on various local and state-level campaigns.

Only one project has received a “conditional loan guarantee”, while a second potential recipient backed away from being awarded a loan guarantee because the financial risks involved were deemed too great. Attempts by local utilities to extend the lifespan of existing nuclear facilities continue to be met with fierce opposition by concerned local stakeholders in areas around the country. Additionally, the routine and accidental releases of radioactive materials from the nation’s 99 (down from 104 in January 2013) nuclear reactors continue to be a rallying point for activists who demand the closure of these facilities.

And the movement is growing on both the national and local levels. For instance, Nuclear Information and Resource Services (NIRS), a central and very active national SMO, reported having a little less than 8,000 supporters in 2008. By December of 2010 they had grown to over 26,000 supporters plus 6,000+ more on their Facebook pages (NIRS Newsletter, Dec. 2010). It is clear that as the nuclear industry ramped up their activities in order to realize a “nuclear renaissance” in the U.S., so too did the movement for a carbon-free and nuclear-free energy future ramp up their activities to prevent a “nuclear relapse”. In June of 2010 NIRS helped organize the National Grassroots Summit and Forum on Radioactive Waste Policy in Chicago, IL. The summit brought together over one hundred activists from twenty five states and three countries as a means of encouraging solidarity within the movement, fostering communication and coordination, and building a comprehensive strategy. The Summit/Forum was put together in response to the dissatisfaction felt by many activists regarding the composition of the BRC and the disturbing content of the BRC’s first meeting in March 2010. The working consensus that emerged during the Summit/Forum is there may not

be any satisfactory solutions to the problems of safely storing high-level radioactive waste. Therefore, the only sensible course of action is to “stop making more of it!” The movement’s message going into and coming out of the summit was “nuclear power is dirty, dangerous, and expensive!” Also, every step of the nuclear fuel-chain violates the principles of environmental justice and results in environmental inequalities; be it in mining communities, enrichment/fabrication communities, reactor communities, and/or disposal communities.

In the present study, I critically analyze the anti-nuclear power movement (or the movement *for* a carbon-free and nuclear-free energy future) in the U.S. using an environmental justice framework. I aim to explore how different conceptualizations/discourses of social and environmental justice are constructed through the claims of social movement organizations on both levels of the movement. My goal is that through a critical analysis of the claims made by the anti-nuclear power movement in the U.S., as well as analyses of the historical/structural conditions these claims were made in response to, I will begin to be able to distill general principals of what could be termed “energy justice”. The identification of general principles of energy justice, similar to the Principles of Environmental Justice, could potentially guide future energy policy and energy systems to ensure social and environmental justice are maximized. In the remainder of this chapter I will provide a brief overview of how nuclear power is produced, including a discussion of the nuclear fuel chain. I will then review the relevant scholarly literatures on social movements, the environmental justice movement, and political theories of justice to refine more specific research questions and to highlight how the present study is sociologically significant. I will then discuss the data sources

and research methods I utilized, as well as discuss the possible significance of my findings and potential critiques.

Nuclear Power 101 and the Nuclear Fuel Chain

So what is nuclear power and where does it come from? To begin to answer these questions it is necessary to start with some basic chemistry. Atoms are constructed like miniature solar systems. At the center of the atom is the nucleus, and orbiting around it are electrons. The nucleus is composed of protons and neutrons, very densely packed together. For example, hydrogen—the lightest element—has one proton; uranium—the heaviest natural element—has 92 protons (uranium also usually has 146 neutrons that have no electrical charge, and function to make the nucleus stable). The nucleus of an atom is held together with great force. In fact, it has been called the "strongest force in nature." When a nucleus is bombarded with a neutron, it can be split apart, in a process called fission (see figure 1.1). Because uranium atoms are so large, the atomic force that binds it together is relatively weak, making uranium good for fission. This is specifically the case with uranium-235, a relatively rare isotope that has 143 neutrons, rather than the usual 146.

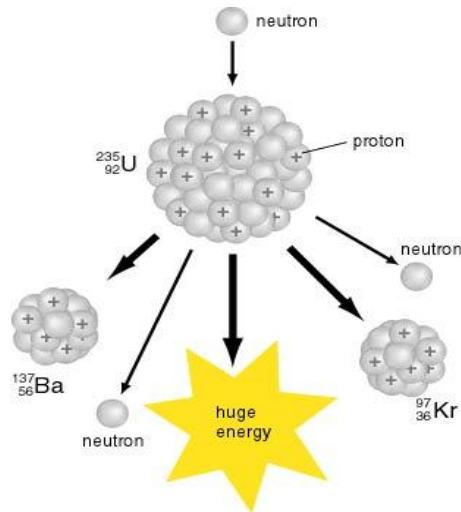


Figure 1.1 Diagram of a uranium nucleus and the process of fission

Uranium is one of the least plentiful minerals on Earth, making up only two parts per million in the earth's crust (by no means a *renewable* resource). Uranium is found in a number of geological formations, and is even found in sea water. To be mined as a fuel, however, it must be sufficiently concentrated, making up at least one hundred parts per million (0.01 percent) of the rock it is in. As it happens, most of the uranium in the U.S. is located on Native American lands. Furthermore, many of the largest reserves of uranium globally also happen to be located on indigenous lands (for example in Northern Niger and Western Australia). Most of the uranium mines in the U.S. are on Navajo and Laguna Pueblo Indian lands in New Mexico and Arizona (Grants Mineral Belt), and other locations in the Southwest. These mines have taken a devastating toll on the native communities near them. Native American miners, most of whom were never informed about the dangers of uranium, were exposed to its particulate and radioactive gases in the mines for decades. They have suffered a large number of lung cancer fatalities, which is

a disease that was virtually unknown to the Navajos and Pueblos prior to uranium mining.

The uranium mining process is similar to coal mining, with both open pit and underground mines. It produces similar environmental impacts, with the added hazard that uranium mine tailings are radioactive. Groundwater can be polluted not only from the heavy metals present in mine waste, but also from the traces of radioactive uranium still left in the rock. Milling often takes place near mines to reduce the transportation of waste rock. Thus mining debits and mill tailings are often put into unlined storage ponds or piled out in the open-air, where they often leach into nearby soil and water. Groundwater that enters the mines, and thus becomes contaminated, is regularly pumped out into nearby lakes and rivers. The situation in the American Southwest was made even worse in the late 1970s when many uranium mines ceased operation because of a steep drop in the price of uranium. Companies across the Southwest abandoned the mines without sealing the tunnels, filling the pits, or removing the large piles of radioactive and toxic tailings. As a result, Native American families have been living in close proximity to these mines and radioactive materials for decades. Tragically, uranium mine tailings were even used to construct roads, homes, buildings, schools, and playgrounds, as part of the infrastructure development that was promised to the Navajos as compensation for the uranium extraction on their lands. Many serious health effects, beyond the lung cancers, have been extensively documented.

As found in nature, uranium is more than 99 percent U-238; unfortunately U-235, a rare isotope, is what is used in power plants. So, once it is mined and milled, the uranium ore is sent to a processing plant to be concentrated into a useful fuel. There are

16 processing plants in the US, although eight are inactive. Most uranium concentrate is made by leaching the uranium from the ore with acids, which creates massive amounts of very dangerous waste. When finished, the uranium ore is turned into U_3O_8 , the fuel form of uranium, and formed into small pellets. The pellets are packed into 12-foot long rods, called fuel rods. The rods are bundled together into fuel assemblies, ready to be used in the core of a reactor (see figure 1.2).

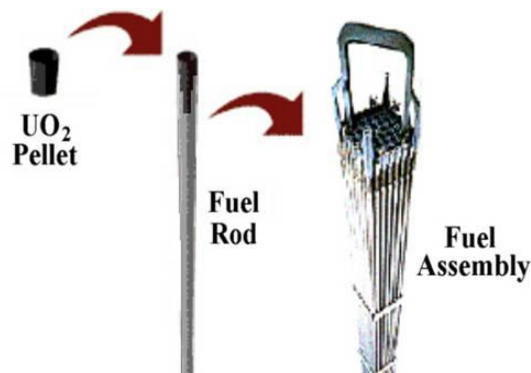


Figure 1.2 Diagram of uranium fuel pellets, fuel rods, and fuel assemblies

In the reactor of nuclear power plants neutrons collide with uranium-235 atoms, splitting them. This split releases neutrons from the uranium that in turn collide with other atoms, causing a chain reaction. This chain reaction is controlled with "control rods" that absorb some of the freed neutrons. Without these control rods the chain reaction would go "critical" and explode as in a nuclear bomb. In pressurized water reactors, the fission releases energy that heats pressurized water to about 520 degrees F in the core of the plant. This hot water is then used to make steam to spin turbines that are connected to generators which produce electricity. There are currently 99 commercial nuclear reactors in operation in the US (down from 104 in January 2013). Commercial

nuclear power plants range in size from about 60 megawatts for the first generation of plants in the early 1960s, to over 1000 megawatts, and many plants contain more than one reactor. In the United States, two-thirds of the reactors are pressurized water reactors (PWR) and the rest are boiling water reactors (BWR). In a boiling water reactor, the water is allowed to boil into steam, and is then sent through a turbine to produce electricity. In pressurized water reactors, the core water is held under pressure and not allowed to boil. The heat is transferred to water outside the core with a heat exchanger (also called a steam generator) and the outside water boils into steam and drives a turbine. In pressurized water reactors, the water that is boiled is separate from the fission process, and so does not become as radioactive (see figure 1.3).

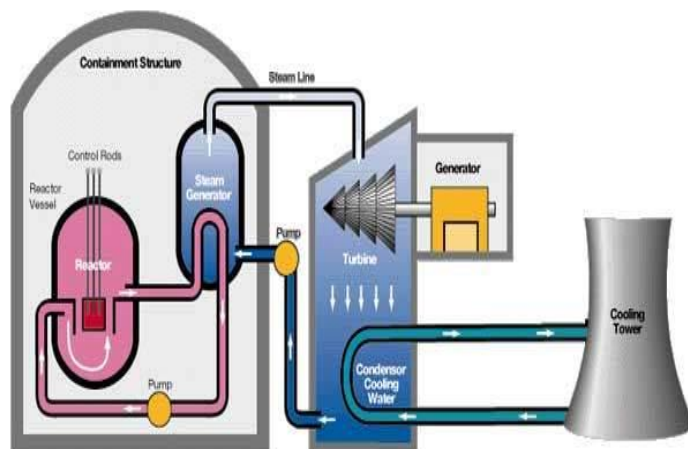


Figure 1.3 Diagram of Pressurized Water Reactor and Cooling Tower

After the steam is used to power the turbine, it is cooled off to make it condense back into water. All plants use tremendous amounts of water (in some cases millions of gallons per minute) from rivers, lakes or the ocean to cool the steam. Some do this with

cooling towers, while others dump the hot water back into nearby bodies of water. The plants that do not use cooling towers are almost all on the ocean, which is used as a big heat sink. For example, Ameren UE's nuclear power reactor in Callaway County, Missouri withdraws huge amounts of water from the Missouri River, evaporates most of it in the cooling tower and returns the remainder; hotter, but not nearly as hot as it would be if it was used in a once through loop in boiling water reactor. The hourglass-shaped cooling towers are the familiar landmark of many nuclear plants. For every unit of electricity produced by a nuclear power plant, about two units of waste heat are rejected to the environment.

95% of all radioactivity created in the U.S, from all sources including nuclear weapons production, is contained in the irradiated fuel—or high-level radioactive waste—from commercial nuclear power reactors. Yet even so-called “low-level” nuclear waste can contain lethally-radioactive and long-lived elements, such as Plutonium-239, Strontium-90 and many others. Radioactive waste is, fundamentally, the lethal byproducts of the nuclear age. The storage and transport of radioactive waste is the most controversial aspect of the nuclear power issue. No nation has yet solved the problem of what to do with this material, which must be shielded from the environment for millennia. Highly radioactive wastes include solid irradiated nuclear fuel assemblies (euphemistically called “spent” or “used” by the industry that creates them) and liquid high-level radioactive wastes resulting from “reprocessing”. Irradiated nuclear fuel rods discharged from commercial nuclear power plants are highly radioactive, a million times more so than when they were first loaded into a reactor core as “fresh” fuel. If unshielded, irradiated nuclear fuel just removed from a reactor core could deliver a lethal

dose of radiation to a person standing three feet away in just seconds. Even after decades of radioactive decay, a few minutes of unshielded exposure could deliver a lethal dose. Certain radioactive elements (such as plutonium-239) in “spent” fuel will remain hazardous to humans and other living beings for hundreds of thousands of years. Other radioisotopes will remain hazardous for millions of years. Thus, these wastes must be shielded and isolated from the living environment for hundreds of millennia.

The most recent estimates put the total volume of commercial HLRW right around 70,000 metric tons—10% more than the storage limit for the now abandoned Yucca Mountain Repository. This waste is being “temporarily” stored in cooling tanks and dry-casks at the reactor facilities where it was produced. Radioactive waste is generated at every phase of the nuclear fuel chain. Whether high-level or so-called “low-level,” no safe, proven, long-term solution has yet been found to manage these wastes. In other words, radioactive waste is a problem because, to varying degrees, it remains highly radioactive for very long periods of time. Radiation causes serious, even fatal, human health and environmental problems, and there is no known technically and/or politically acceptable way to keep it separated from the environment, and consequently human populations. The term “disposal” simply cannot be applied to materials that will remain hazardous virtually forever. There is no place on Earth where one can confidently predict that radioactive waste could remain safely isolated from the environment for hundreds of thousands—millions of years.

Over the past 30-40 years, international scientific consensus has more-or-less settled on “deep-geological disposal” as the best *available* solution to dealing with radioactive waste. In 1987, Yucca Mountain, Nevada was singled out as the only site for

further study in the U.S. for the development of a permanent high-level radioactive waste repository (HLRWR). Many have argued that the selection of Yucca Mountain was not due to the technical and/or geologic suitability of the site for a HLRWR, but rather the political vulnerability of the State of Nevada in the late 1980s. For example, Yucca is located in a major earthquake zone. Dozens of fault lines crisscross the area, with two directly intersecting the proposed dumpsite. Many hundreds of quakes have struck near Yucca in recent decades, damaging DOE facilities and derailing trains that could one day be used to haul nuclear waste. With the cancelation of the Yucca Mountain Project in 2009 and the inception of the Blue Ribbon Commission on America's Nuclear Future in 2010, the U.S. is at a cross-road with regards to radioactive waste policy. Depending on the legislation that is expected to follow from the BRC's report (issued in 2011), other strategies besides geologic disposal (such as reprocessing and centralized interim storage) might come into play.

Radioactive contamination and social and environmental injustices accumulate at every step of the nuclear fuel chain described above. This is especially true at the front-end and the back-end of the nuclear fuel chain, in uranium mining communities and (eventually) radioactive waste storage communities. The anti-nuclear power movement seeks to put an end to this production chain that costs communities, utility ratepayers, and taxpaying citizens billions of dollars, and creates significant, negative human-health and environmental impacts. Anti-nuclear power organizations seek to halt the “dirty, dangerous, and expensive” production of nuclear power by agitating for principles of what I terms “energy justice”, which seek to include the full consideration of the societal and environmental impacts of energy production into decisions about energy policy. In

order to critically analyze these efforts, I will review the relevant scholarly literatures in the areas of social movement studies, environmental justice, and political philosophy in order to arrive at more specific research questions to guide my analysis.

Literature Review and Research Questions

Social movement theory and research has changed and developed a great deal over the past half-century as new concepts and theories have been introduced in order to explain and understand the emergence of seemingly new kinds of social protest. In the early part of the twentieth century, many scholars viewed protest and social movement activity as irrational and irregular. The “myth of the madding crowd” and the imagery of “group mind” dominated “mass society” theories where protesters were seen as somehow deficient or insufficiently attached to social institutions, and protest itself was seen as “moments of madness” (Jasper, 1997). Then in the 1977 McCarthy and Zald published the enormously influential article “Resource Mobilization and Social Movements: A Partial Theory” which established social movement activity was a normal part of politics as opposed to an aberration within it. Furthermore, they showed social movement activists were “normal” people who were pursuing reasonable goals, rather than irrational people pursuing irrational goals, and they showed how economic resources helped determine what social movements were able to accomplish. “Resource mobilization theory”, as it has come to be called, has spawned an enormous volume of research that together forms a sort of “how-to” manual for social movement activists and organizations by focusing on how activists finance their activities, what tactics are more successful than others, etc.

In general, these studies tended to be very economic in outlook, and focused on how individuals, groups, and organizations calculate costs and benefits (Zald and McCarthy, 1987). By focusing on the resources needed to maintain large, formal organizations the resource mobilization tradition has been amazingly successful at developing and testing specific hypothesis and generating new concepts for the study of social movement organizations (Zald and McCarthy, 1987; Piven and Cloward, 1979). For example, Walsh (1981) uses the rapid growth of social movement organizations around Three Mile Island after the 1979 nuclear accident as data for assessing the strength of resource mobilization theory. He finds evidence for the significance of grievances for precipitating and sustaining social movement activity. He concludes grievances, existing structures, and mobilizing processes should all be considered variables (rather than constants) in seeking to develop better social movement theory.

However, if early social movement theories recognized social movement activity as that of angry, irrational mobs, some versions of resource mobilization theory error to the other extreme by presenting an image of social movement activists and organizations as purely self-interested, rational, and calculating entities whose behaviors can be explained and predicted formulaically. This is where the “political process” models of Tarrow (1994) and McAdam (1982) enter conceptually by recognizing the importance of economic resources, but also recognizing the importance of broader historical, political, economic, and social contexts of mobilization activities. More specifically, political process models demonstrated how important “political opportunity structures” were in determining the success or failures of various social movements. McAdam (1982) identifies three factors that are said to significantly impact a social movement’s chances

of achieving its goals; changing opportunities in the political environment; the existing level of organization in the community; and “cognitive liberation” which he describes as the people’s (individual and collective) assessment of their chances for success.

McAdam focuses primarily on the opportunities provided by the state with regards to the occasional slackening of repressive practices, which otherwise undermine the efforts of social movement activity. Tarrow (1994) defines “political opportunity structures” more broadly as, “consistent—but not necessarily formal or permanent—dimensions of the political environment that provide incentives for people to undertake collective action by affecting their expectations for success or failure. Theorists of political opportunity structure emphasize the mobilization of resources external to the group” (pp. 85). Here we can clearly see the difference in focus between the “resource mobilization” theorists and the “political opportunity” theorists, regarding resources and strategy.

Related to the political process model, especially McAdam’s discussion of “cognitive liberation” is a body of social movements literature concerned with the issues of “framing” and “frame analysis”. Framing refers to the process by which individuals, groups, and organizations identify, interpret, and express social and political preferences and grievances. Framing can also be viewed as a way of organizing interpretations, which guides the ways beliefs and meanings are put together and expressed by movement activists (Taylor, 2000). Most relevant to social movements are “‘collective action frames’ [which] are emergent, action-oriented sets of beliefs and meanings developed to inspire and legitimate social movement activities and campaigns designed to attract public support” (Taylor, 2000 pp. 511; also see Snow and Benford, 1992). Frame analysis in social movement studies did a great deal to correct for the overly structural

focus of both the resource mobilization theories and political process theories, by focusing on issues of collective identity, culture, and symbolically mediated understandings. For instance, the concept of “frame alignment” refers to the process of linking the individual’s interpretive framework with that of the social movement’s, and is absolutely necessary for social movement recruitment and mobilization (Taylor, 2000; Snow and Benford, 1986). According to Capek (1993) and Taylor (2000) “environmental justice”, for instance, has emerged as a “master frame” used to mobilize activists who want to link racism, injustice, and environmental concerns under one conceptual frame. Master frames are styles of punctuation, attribution, articulation and/or ideological frameworks that provide the interpretive medium through which activist identify problems, assign blame, and propose solutions (Taylor, 2000; Snow and Benford, 1992).

As Taylor (2000) argues, it is difficult to examine mass movements that occur over a period of time with a single theoretical lens, because almost by necessity different theories are sensitive to different dynamics involved. Therefore, a number of social movement scholars have begun to synthesize the three theoretical approaches discussed above (McAdam et al., 1996). This multifocal theoretical approach is what guides my analysis of the claims made by social movement organizations working for a nuclear-free future. More specifically, the present study will contribute to the literature on social movements by analyzing how material *and* cultural resources are acquired and mobilized by SMOs on the local and national levels in their fights to oppose the continued production of nuclear power and radioactive waste. I address questions of how resources are conceptualized and utilized in the course of social movement activity, and to what effect. Additionally, following Pellow (2007) I utilize a “political-economic opportunity

structure” approach that recognizes political opportunities are not just provided/produced by the state, but also by corporations and other economic actors who play an increasingly formative role in shaping SMO’s perceptions of their chances for success or failure. This approach is especially valuable for understanding how social movement organizations interpreted, constructed, and responded to the Fukushima disaster as an opportunity to advance their goals of ending nuclear power.

Most significantly, I present a thorough analysis of how the problems of nuclear energy and radioactive waste are framed by SMOs on the national and local levels. Broadly, the movement frames the problems with nuclear energy as being “dirty, dangerous, and expensive”. I explore how these frames are developed and deployed in the claims made by SMOs on different analytic levels to better understand the social and environmental injustices associated with the production of nuclear power. This in-turn will allow for the identification of possible general features of what I call energy justice, which could potentially guide future energy policy and decision-making. For instance, the “nuclear power is expensive” frame dominates the movement’s claims on the national level, when addressing issues of reactor financing and the federal “loan guarantee” program for new reactor construction. The movement’s claims utilizing this frame primarily draw from and reconstruct the social justice paradigm of distribution (discussed below). These claims highlight the distributive injustice of public financing for the construction of privately-owned facilities, which effectively socialize the risks/costs while privatizing the benefits/profits. This indicates the development of environmental and socially just energy systems, or energy justice, will require economic and financing

procedures for new infrastructure development that break from this model of publically financing the private accumulation of capital.

Related to issues of framing is the fact that many anti-nuclear energy SMOs also frame the problem of nuclear energy production as an example of environmental racism, and work to incorporate principles of environmental justice into their claims making, and the decision making processes themselves. This is due to the fact that many of the burdens associated with nuclear energy production (contamination from uranium mining and uranium enrichment/fabrication facilities, the routine and accidental release of radioactivity from nuclear reactors, the burdens of radioactive waste disposal, etc.) are concentrated in communities of color and other low-income areas (Chen, 2011). While the terms “environmental justice” and “environmental racism” are relatively new, the dynamics of environmental inequality and injustice, which the environmental justice movement (EJM) primarily seeks to overcome, are much older. From the movement’s very humble beginnings in places like Warren County, NC and others like it in the early 1980s, the movement has developed into a powerful social force for organizing communities of color and poor and working-class white communities concerned with the increasing environmental pollution and degradation in the places where they live, work, pray, play, and go to school. The EJM has to a remarkable extent managed to redefine environmentalism as intricately connected with the *social* needs of all people, which “brings the environment home”, so to speak. As Capek (1993) observes, “representing more economically marginal actors than do traditional ‘mainstream’ environmental organizations, these grass roots groups are more likely to frame their demands in terms of social justice and to challenge stratification based on race, class, gender, and the

distribution of power. Accordingly, the concept of ‘environmental justice’ has emerged as a prominent part of the national dialogue over citizen empowerment and the environment” (pp. 5).

In the late 1970s and early 1980s local environmental justice groups began forming in predominantly white working-class communities (such as the Love Canal area of Niagara Falls, NY) and communities of color (such as Warren County, NC) that were experiencing potentially lethal environmental degradation, primarily from toxic pollution. As Bullard (1990) argues, “in many instances, grassroots leaders emerged from groups of concerned citizens (many of them women) who see their families, homes, and communities threatened by some type of polluting industry or government policy” (pp. 8). The movement grew a great deal during the 1980s as local groups and activists began collaborating with one another at regional and national gatherings (culminating in the 1991 First National People of Color Environmental Leadership Summit) where they developed and shared strategies, tactics, and ideas. “By the early 1990s the term ‘environmental racism’ had caught fire in social movement, scholarly, policy, and media networks and the call for environmental justice had galvanized one of the most exciting and hopeful social causes of the twentieth century. Environmental justice advocates were regularly engaging polluting corporations, regulators, the courts and elected officials in city councils, in state legislatures, in Congress, and in the White House” (Pellow and Brulle, 2005 pp. 8).

Without doubt, the EJM has significantly altered the directions that environmental research, policy, and activism has taken in the United States. The movement has succeeded in capturing the attention of many high-ranking government officials, as

evidenced by President Clinton signing Executive Order 12898 that mandated all federal agencies ensure environmental justice in their operations. Additionally, despite the many problems and power imbalances associated with high-level advisory committees such as the National Environmental Justice Advisory Council (NEJAC), the existence of such committees, at the very least, reflects recognition of the issue in the political process. Having said this, it is on the local level that the EJM has secured its most concrete and clearest victories, and consequently this is the level where the movement seems to have the most influence and power. The literature is filled with many examples of community activists successfully shutting down noxious incinerators, landfills, and other waste-storage facilities in their communities (Bullard, 2005; 1993). Additionally, there are a number of cases where communities successfully prevented polluting facilities from being built or expanding (Bullard, 2005) and successfully secured federal buy-outs and/or relocations from proven contaminated communities (Capek, 1993; Blum 2008). The environmental justice frame has been “flexible enough to allow Blacks, Native Americans, Latinos, Asians, and Whites concerned with social justice issues to fashion campaigns and develop policies around environment and inequality. Because of its concern with race, class, and gender inequality, the frame was attractive to a wide range of people, yet at the same time, it kept the potency and focus on the environmental inequality of marginalized people” (Taylor, 2000 pp. 562). This multidimensional flexibility and wide-range appeal has allowed anti-nuclear SMOs to adapt the environmental justice frame in creative new ways to address the adverse effects of nuclear energy on people of color and other low-income communities. Furthermore, my analysis of these adaptations and the uses of discourses of justice in the claims made by

the anti-nuclear movement will help identify possible general attributes of socially and environmentally just energy choices.

Current conflicts over nuclear energy policy have important social dimensions when viewed through the framework of environmental racism and the environmental justice movement. This framework links local and community-based activism with more broad-based energy activism on national and international scales (Sze, 2007). Energy (and energy policy) is typically regarded as being a technological issue that is the exclusive domain of technocratic and scientific experts. However, energy policy is also given social and political meanings as it is contested and culturally shaped (Nye, 1998; Tatum, 2000). Energy is racialized through the political processes surrounding the practices of regulation, deregulation, and distribution (Sze, 2005). These racialized dimensions of energy policy can most clearly be seen through the claims made by opponents of nuclear energy regarding the negative consequences nuclear energy development. Environmental justice energy activism is a manifestation of a particular interpretive response of activists and SMOs to the implementation of energy systems that are particularly destructive towards communities of color and low-income communities (Sze, 2005; 2007). Through their claims making, activists and SMOs transform what is normally considered a purely technological issue into a political and moral subject that is open to debate (Sze, 2007). My analysis of how these types of claims are raised by SMOs on different analytic levels provides new insight into the process of racial environmental inequality formation (Pellow, 2007), collective interpretations, responses and actions on different scales, and how different conceptualizations of “justice” inform the claims made.

In this way, through the use of the environmental justice frame and claims that draw from different dimensions of social/environmental justice, activists use the issues of nuclear energy to address other larger problems of democracy and justice. This allows for my analysis of the anti-nuclear movement's claims to be used to begin the process of establishing what principles of "energy justice" would look like in practice, and how the U.S. could move towards such arrangements. More specifically (and discussed in greater detail below), my analysis of the anti-nuclear power movement's claims on the national level regarding the federal "loan guarantee" program for new reactor financing reveals the distributive, recognitional, and representative injustices involved in this program. Second, my analysis of the anti-nuclear power movement's claims on the national level regarding the management of the nation's 70,000+ tons of high-level radioactive highlights the deeply rooted representative, recognitional, and (eventual) distributive injustices that have plagued the nuclear waste management in the U.S. since the beginning and continue to hamper the program's progress. Third, my analysis of the anti-nuclear power movement's claims on the local level regarding "construction work in progress charges" (CWIP) for the financing of new reactor construction and issues of reactor safety reveals similar and different representative, recognitional, and distributive injustices that emerge from local/community standpoints with regards to nuclear projects and facilities. Finally, the identification of these multidimensional injustices associated with different aspects of nuclear power production facilitates the proposal of general features (or principles) of "energy justice". The principles of energy justice which I derive from these analyses, similar to the Principles of Environmental Justice, could be

used to guide future energy policy in ways that ensure the protection of social interests, public health and the environment remain central in future decisions about energy.

In order to carry out such an analysis, however, it was necessary for me to go beyond the traditional, empirical foci of social movement studies discussed above. As Somers (2008) argues in her amazingly influential work *Genealogies of Citizenship: Markets, Statelessness, and the Right to Have Rights* there has been a disciplinary division of labor between sociologists who write about people who fight *for* rights and justice, and political philosophers who write about the *meaning* of those rights and conceptions of justice. While too often sociologists respect this intellectual turf divide, social movements and their participants most certainly do not. Social movement actors and organizations almost always express their motivations and goals in terms of rights, justice, and entitlement. Although concern with resource mobilization, political-economic opportunity structures, and framing are essential for understanding social movement activity, “they should not crowd out attention to the more normatively driven powers of justice and rights. In a pluralist knowledge culture, the empirical and the normative are mutually interdependent” (Somers, 2008 pp. *xiii*). (In)justice, when viewed through the claims made by social movement actors and organizations, is both a normative and an empirical concept. As much as social justice is an empirical arrangement between groups and individuals, it is also normatively perceived as an *a priori* good, and this normative perception has causal powers (Somers, 2008).

But what exactly are the empirical and normative conceptualizations of justice that are constructed in the course of social movement activity? Nancy Fraser (1997; 2000; 2001) explores “folk paradigms” of two interrelated conceptions of justice; those

concerning issues of “distribution” and those concerning issues of “recognition”. These efforts culminated in Nancy Fraser’s and Axel Honneth’s (2003) work, *Redistribution or Recognition? A Political-Philosophical Exchange*, where Fraser’s early theorizing found its fullest expression. According to Fraser (2003) “recognition” has become a key word of our time. This category of Hegelian philosophy has been resuscitated by political theorists in their efforts to conceptualize today’s struggles over identity and difference. On the other hand, “redistribution” was central to social struggles and philosophies of egalitarian liberalism in the Fordist era. This paradigm of distributive justice seemed well suited to analyzing the claims of labor and the poor in that period. Conflicts turned primarily on resources and were disputed in distributive terms, with questions of difference usually being relegated to the sidelines (Fraser, 2003). The terms “recognition” and “redistribution” refer to families of claims made by political actors and social movements. These folk paradigms are often presupposed by social movement and political actors, and are comprised of sets of linked assumptions about the causes of and remedies for injustice.

According to Fraser, “Once the hegemonic grammar of political contestation, the language of redistribution is less salient today...thanks to a sustained neoliberal rhetorical assault on egalitarianism, the absences of any credible model of ‘feasible socialism’, and widespread doubts about the viability of state-Keynesian social democracy in the face of accelerated economic globalization, they [movements who until recently boldly demanded an equitable share of resources] have ceded pride of place to movements focused chiefly on recognition” (Fraser, 2003 pp. 21). This creates what Fraser calls the “problem of displacement” wherein the shift from redistribution to recognition struggles

is occurring in the context of an acceleration of economic globalization. “Thus, cultural conflicts have achieved paradigmatic status at precisely the moment when an aggressively expanding capitalism is exacerbating economic inequality...recognition struggles are serving less to supplement, complicate, and enrich redistribution struggles than to marginalize, eclipse, and displace them.” (Fraser, 2003 pp. 22).

This problem is further exasperated by what Fraser calls “Hegelian identity politics”. The identity model, which is the most common theoretical approach used to study recognition struggles, begins with the Hegelian idea that identity is constructed dialogically through a process of mutual recognition. Proponents of the identity model transpose the Hegelian recognition schema onto the cultural and political terrain. “They contend that to belong to a group that is devalued by the dominant culture of one’s society is to be misrecognized, hence to sustain damage to one’s individual and collective identity.” (Fraser, 2003 pp. 23-4). According to Fraser, the main problem with this is it abstracts misrecognition from its institutional matrix, which obscures its entwinement with distributive justice. By concealing the links between recognition and distribution, misrecognition is stripped of its social-structural (empirical) underpinnings. For example, this approach misses the links, institutionalized in labor markets, between androcentric norms that devalue activities coded as feminine, on the one hand, and female worker’s low wages, on the other. Similarly, this approach misses the links, institutionalized in the social welfare system, between heterosexist norms that delegitimize homosexuality, on the one hand, and the denial of resources and benefits to gay and lesbian couples, on the other (Fraser, 2003). As an alternative way of thinking about the role of recognition in democratic practices, Fraser proposes what she calls the

“status model of misrecognition”. Whereas “identity politics” sees misrecognition as stemming from “free-floating discourse” that foster misrecognition, she argues for an approach that sees misrecognition as stemming from *institutionalized* patterns of cultural value. “My proposal is to treat recognition as a question of *social status*...what requires recognition is not group specific identity but rather that status of individual group members as full partners in social interaction. Misrecognition...does not mean the depreciation or deformation of group identity. Rather, it means social *subordination* in the sense of being prevented from participating as a peer in social life.” (Fraser, 2003 pp. 27 emphasis added) This is a model which seeks institutional remedies for what it sees as institutional harms, which are understood to be based in concrete social relations.

This theoretical model, I believe, is correct for as far as it goes. However, following Fraser’s (2009) phenomenal book *Scales of Justice: Reimagining Political Space in a Globalizing World* I have begun to realize seeing issues of distribution and recognition as the *sole* dimensions of justice only make sense if the nation-state and associated predetermined citizenries are assumed to be the appropriate units of analysis regarding questions and practices of democracy and social justice. Once the “frame” of justice becomes the subject of contestation, as it increasingly has in transnational movements for environmental justice and human rights (Blau and Moncada, 2006), a third dimension of justice and democracy, what Fraser calls the “political dimension”, comes into view (Fraser, 2009). The political dimension of justice deals with politics in its “constitutive sense, which concerns the scope of the state’s jurisdiction and the decision rules by which it structures contestation. The political in this sense furnishes the stage on which struggles over distribution and recognition are played out. Establishing

criteria of social belonging, and thus determining who counts as a member, the political dimension of justice specifies the reach of those other dimensions” (Fraser, 2009 pp. 17). This means who is included in, and who is excluded from, the population of those who are entitled to a just distribution and reciprocal recognition is determined politically, and cannot be understood by considering issues of redistribution and recognition alone.

As is indicated in the quote above, this dimension of justice is focused on issues of “membership” and “procedure” and is primarily concerned with “representation”—as a matter of social belonging and as procedures that structure public processes of contestation. At both levels, according to Fraser (2009), we can question whether the “relations of representation are just”. For instance, do the boundaries of a political community wrongly exclude some who are entitled to representation? And, do the community’s decision-making rules accord equal voice and fair representation in public deliberations to all members? According to Fraser (2009), these issues are conceptually distinct from issues of redistribution and recognition, while being heavily interrelated with them in practice, which requires that we adopt a three-dimensional view of justice. Because “representation” is the defining issue of the political dimension of justice, the characteristic political injustice is “misrepresentation”. “Misrepresentation occurs when political boundaries and/or decision rules function wrongly to deny some people the possibility of participating on par with others in social interactions” (Fraser, 2009 pp. 18). What she calls “ordinary-political misrepresentation” occurs when “decision rules function wrongly”, as for instance when gender-blind rules, in combination with gender-based maldistribution and misrecognition, function to deny women parity of political participation (Hawthornthwaite, 2006 pp. 220-244).

“Less obvious, perhaps, is a second level of misrepresentation, which concerns the boundary-setting aspect of the political. Here the injustice arises when the community’s boundaries are drawn in such a way as to wrongly exclude some people from the chance to participate *at all* in its authorized contests over justice” (Fraser, 2009 19 emphasis added). Frame setting, according to Fraser, is among the most consequential of all political decisions, and she calls this form of injustice “misframing”. The consequence of misframing is a kind of “meta-injustice” where the victim is denied the chance to press first-order claims (for recognition and distribution) in a given political community. The injustice remains even if the victim is included as a subject of justice in another community—as long as the effect of the political division is to put some relevant aspects of injustice beyond their reach. Most serious of all is the case where someone is excluded from membership in *any* political community, which is according to Fraser (2009) the denial of to what Arendt (1973) called “the right to have rights”. Table 1.1 summarizes the basic features of the three dimensions/paradigms of social justice identified in Fraser’s three-dimensional model.

Paradigms of Social Justice	Corresponding Injustice	Primary Social Dimension/Sphere	General Logic of Claims
Distribution	Maldistribution	Economic	Removal of Unjust Difference; economic, environmental, etc.
Recognition	Misrecognition	Cultural	Positive, Institutional Revaluation of Just Difference
Representation	“Ordinary” Misrepresentation and Misframing	Political	Sets the Framework for Claims for Recog. and Distribution

Table 1.1: Different paradigms and/or dimensions of social justice identified by Fraser (2003; 2009), including the corresponding injustices, the primary social sphere/dimension each paradigm is most associated with, and the general logic of the claims that follow from each.

In order to develop such a theory, it is necessary to return to an analysis of social movement activity, because it is here that the normative and empirical foundations of a robust theory of justice are interpreted, constructed, disputed, and disseminated. David Schlosberg’s (2007) *Defining Environmental Justice: Theories, Movements, and Nature* seeks to understand how movements for environmental justice define the “justice” they seek. Schlosberg asks, are the discourses and conceptualizations of justice that emerge from the environmental justice movement (EJM) different from the distributional conceptions of justice that have dominated moral-philosophy since Rawls. It’s not that distributive theories don’t apply to the environmental justice movement. The problem is developments in political theory (i.e. Fraser 2003; 2009) have not been applied to the EJM. Through the application of Fraser’s theoretical framework (as well as other theories of moral and political philosophy) Schlosberg concludes the EJM does not have a single definition of justice; rather, it articulates many. Justice is about distribution, but

it's also about individual and community recognition, participation, and functioning. Groups emphasize different notions of justice on different issues in different contexts, so there is a flexible, heterogeneous and plural discourse of justice. More specifically, "movements use a wide range of conceptions of justice, and we can find arguments in those movements for distribution, recognition, participation, and capabilities. The EJM supplies ample evidence that all of these conceptions of justice are used in *practice*, and that, in fact, a comprehensive understanding of the way that movements define the 'justice' of 'environmental justice' must include all of these discourses" (Schlosberg, 2007 pp. 5).

The present study seeks to bring together and advance the insights of Sze (2005; 2007), Somers (2008), Fraser (2005; 2009), and Schlosberg (2007) through an analysis of the claims made by the anti-nuclear power movement in the U.S. This study extends Schlosberg's (2007) analysis of how discourses and/or conceptualizations of justice underlie, and are constructed through, the political claims making of the EJM to those of the anti-nuclear power movement in the U.S. In this way, I am conceptualizing the anti-nuclear power movement as an example of what Sze (2005; 2007) calls "environmental justice energy activism", which is a distinct and emergent form of environmental justice activism that links traditional local-level, grassroots environmental justice activism to energy activism on broader (national) levels. Examining the claims made by environmental justice energy activists, including those of the anti-nuclear power movement, reveals the multiple dimensions of the social and environmental injustices associated with dirty, dangerous, and expensive energy systems. This is because, as Somers (2008, pp. xiii) has argued, "In a pluralist knowledge culture, the empirical and

the normative are mutually interdependent”. This means what is normatively held to be just is not determined in isolation from historical and existing social arrangements, social hierarchies, and differentials in social power. In other words, what *is* just is not determined by beginning with abstract principles of justice derived in isolation from extant social formations, as is characteristic of liberal, Western moral philosophy following from Rawls. Rather, what *is* normatively just becomes determined through the course of social interaction, communication, and conflict in empirical, historical and political-economic contexts.

In his review of moral-philosophical theories of justice, Schlosberg (2007) notes that of all the theorists he reviewed only Fraser (2003; 2005) began her theorizing with an analysis of real world struggles against existing injustices, which enabled her to develop a more broad and robust theory of justice. Thus, Fraser’s work establishes the utility of a methodological approach that uses analyses of real-world claims for justice (or against injustice) as the foundations for the development of better and more inclusive theories of justice. This methodological approach seems to be somewhat dialectical in nature, in that just and unjust social arrangements are not seen as conceptually separate entities; the nature of each being established by philosophical reflections on abstract principles. Rather, just and unjust social arrangements represent different poles within a single totality, and what is held to be normatively just is determined in relation to historical and existing empirical realities. Therefore, the analysis of the claims made by the anti-nuclear power movement in the U.S. can not only help identify the various dimensions of the social and environmental injustices associated with current energy systems, but also and more significantly, can help begin to establish general principles of what I call

“energy justice” that seeks to maximize social and environmental interests with regards to energy.

The primary aims of the present study and my central research questions follow from the above. More specifically, I am interested in:

- How are material and cultural resources utilized and conceptualized by the anti-nuclear power movement? How do the multiple and complementary framings of the issue act as discursive resources?
- How do the claims made by the anti-nuclear power movement in the U.S. draw from and rearticulate the social justice paradigms of distribution, recognition, and representation on the national and local levels?
- How do claims regarding (un)just distribution, recognition, and representation (with regards to the production of nuclear power and radioactive waste) reveal the significance of the multidimensional injustices associated with this form of energy production?
- How can the identification of these multidimensional injustices provide a first step for both correcting existing injustices, and more importantly, developing socially and environmentally just alternatives in the future?

Therefore, my analysis not only works to highlight the injustices of current energy systems, but also enables me to identify some potential principles of “energy justice” that could guide future policy and decision-making in more socially and environmentally just directions.

In the chapters that follow, I first analyze the anti-nuclear power movement’s claims on the national-level, with regards to the primary issues of new reactor

construction through “federal loan guarantees” and the program for managing the nation’s 70,000+ tons of high-level radioactive waste. More specifically, I analyze the movement’s claims regarding the maldistribution, misrecognition, and misrepresentation involved with the public financing of new nuclear reactors and facilities. This analysis allows me to identify the multidimensional injustices associated with the “loan guarantee” program, and in the concluding chapter, to distill general principles of energy justice regarding the financing and implementation of energy systems. Additionally, I analyze the anti-nuclear movement’s claims with reference to the misrepresentation, misrecognition, and ultimately maldistribution involved with past, current, and future efforts to manage the nation’s high-level radioactive waste. This analysis helps highlight a number of the representative, recognitional, and distributive injustices associated with past, current, and future attempts to manage nuclear waste, which have severely hampered progress from the very beginning. As before, this analysis also enables me to identify several general features or principles of “energy justice” having to do with the minimization of hazardous material production and the concentration/distribution of benefits/burdens associated with energy systems.

Following this, I turn to the claims made by the anti-nuclear power movement on the local-level, in order to present as complete a picture of anti-nuclear activism in the U.S. as possible. In order to maintain consistency between the analyses of the two levels of the movement in the U.S., I again focus on issues of new reactor financing and issues having to do with the more proximate dangers posed by nuclear facilities. More specifically, I explore how local-level anti-nuclear organizations utilize discourses of distribution, recognition, and representation to highlight the multidimensional injustices

associated with financing new reactors through “Construction Work in Progress” (CWIP) charges. CWIP charges are seen to again socialize the risks/costs of new reactor construction by forcing utility ratepayers to finance said construction by paying fees to cover construction costs *before* they are actually receiving the electricity they are paying for. This again shifts the costs and risks of default onto the public (in this case ratepayers) while the privately owned utilities retain control over the eventual profits. As with the analyses on the national-level, this analysis not only facilitates the identification of existing injustices associated with CWIP charges and the public financing of nuclear facilities, but also enables me to propose other general principles of “energy justice” derived from struggles on the local-level. Additionally, on the local level, I examine anti-nuclear organization’s claims regarding the dangers posed to local communities by nuclear facilities, including claims for enhanced safety and security at existing reactors, as well as claims for the permanent closure of unsafe facilities. In this area claims drawing from the paradigms of recognition, representation, and distribution reveal the multidimensional injustices connected to everyday operation of nuclear facilities from the standpoint of local communities. The identification of these multidimensional injustices, once again, allows me to propose additional general principles of “energy justice” that derive from the social locations of affected communities.

Methodology and Data Sources

In order to answer these questions I performed a qualitative, discourse/textual analysis of the news coverage, press releases, action alerts, reports, legal interventions, flyers/leaflets, banners, blogs, letters to editors, op-eds., newsletters, art/music, petitions,

“answer documents”, and “platforms” associated with anti-nuclear SMOs on the local and national levels produced between March 2010 and August 2011. I selected this eighteen month time frame because it encapsulates many important developments in nuclear energy policy in the U.S., which resulted in large volumes of social movement activity and discourse. More specifically, this period of time extends from the cancelation of the Yucca Mountain project and the inception of the BRC (March 2010), through the release of the BRC’s final report (July 2011), which is expected to become the basis of new federal radioactive waste policy. This eighteen month timeframe also includes the movement’s activities and claims during the first six months of the on-going Fukushima nuclear disaster, which allows for an analysis of how this event impacted anti-nuclear social movement activity. It should be noted that this 18 month period is not representative of the “typical” amount or type of anti-nuclear social movement activity. There was far more activity in this period than in any other 18 month period that preceded it over the previous decade. However, for this reason, this period of time is especially illustrative of the breadth of anti-nuclear social movement activity, and examining these activities in this period allows me to form general conclusions about the movement on different analytic levels.

Discourse is based on text (Johnson, 2002). More specifically, “discourse refers to the sum total of the ‘manifestos, records of debates at meetings, actions of political demonstrators, newspaper articles, slogans, speeches, posters, satirical prints, statutes of associations, pamphlets, and so on’ of a time, a place, and a people” (Sewell, 1980 pp. 8-9; quoted in Johnson, 2002, pp. 67). Thus, SMOs operating on different levels are my unit of analysis, with a focus on organizational discourse as it relates to broader, cultural

discourses on energy policy, democracy, and justice. In social movement research, qualitative discourse analysis typically involves an intense focus on movement related texts to identify patterns, linkages, and structures of ideas. This strategy is especially well suited to highlighting the deep structures of ideas and their relations within a movement, and to mapping the normative components of movement activity and formation (Johnson, 2002). Other research methods and data sources, such as ethnography and/or interviews, could be used to explore how *individuals* and *activists* within anti-nuclear SMOs construct and understand these issues. However, my interest is in the ways anti-nuclear social movement *organizations* behave and act as political/organizational actors in the course of political conflict with other political/organizational actors (i.e. the state, regulatory agencies, the nuclear industry, utilities, etc.) And because of the intensive focus on organizations' and the movement's textual materials, textual/discourse analysis is especially well suited for addressing "how questions"; how does the movement express its grievances; how does the movement construct and utilize frames and conceptualizations of justice; how does the movement utilize broader cultural symbols and representations. Therefore, this methodology proved to be an appropriate approach for answering the central research questions discussed above.

As is common in frame and discourse analysis, I will utilize qualitative methods of data reduction, analysis and presentation. More specifically, I first organized a wide array of textual materials by categories corresponding to the analytic levels of the movement. I then ordered these categorized textual materials by sub-categories corresponding to the concepts of distribution, recognition, and representation. These

coding categories were generated by my theoretical interests discussed above, and were ultimately based on my judgment as a researcher. The presentation of my findings below relies on texts that are presumed to be representative of the given category. “Intensive textual analysis must always balance its insights with the looming question of whether the text is representative enough to generalize about its patterns” (Johnson, 2002 pp. 71). I sought to strengthen the argument for the representativeness of my data, and the limited generalizability of my findings, through two strategies. First, my sample size is quite large for discourse analysis. I have reviewed thousands of news reports, press releases, action alerts, reports, legal interventions, flyers/leaflets, blogs, letters to editors, op-eds., etc., and my final dataset consisted of several hundred of these data. Second, I have been an active participant in the anti-nuclear power movement for several years at both the local and national levels. I have served as the Radioactive Waste Policy Analyst for Missourians for Safe Energy (MSE), which is local-level, grassroots safe energy organization based in central Missouri (see below). I have also given testimony at public hearings organized by the Nuclear Regulatory Commission on the issue of radioactive waste storage, and I attended the National Grassroots Summit on Radioactive Waste Policy in 2010. These personal experiences working in and with the anti-nuclear power movement enable me to speak to the representativeness of specific examples in relation to broader movement discourse. Additionally, included in this large sample are several widely distributed and/or “milestone” documents, including movement “platforms” and “answers documents” relating to the Blue Ribbon Commission’s “key questions”; both of which have been signed by hundreds of organizations (on both levels) and thousands of individuals.

My sampling procedure was both strategic and theoretical, reflecting my interests in both discourses of social justice in the anti-nuclear movement and the identification of principles of “energy justice”. On the national level I focused on the five largest and most active anti-nuclear SMOs; Nuclear Information and Resource Services (NIRS), Friends of the Earth (FOE), Beyond Nuclear, Physicians for Social Responsibility (PSR), and the Union of Concerned Scientists (UCS). These national-level organizations not only work closely with one another, but also represent nearly the full-spectrum of professional, dedicated, D.C.-based anti-nuclear organizations. For the local level, I strategically selected active SMOs that represent both different regions of the United States and also who focused on different aspects of nuclear power. More specifically, I selected local-level SMOs working in the Southeast, Southwest, and Midwest, as these are the regions of the country with the greatest concentration of nuclear industry activities going back to the Manhattan Project (Kuletz, 1998). Additionally, I selected SMOs who primarily work on different aspects of the nuclear power issue; such as increasing the safety of operating nuclear reactors, closing unsafe reactors, and fighting the construction of new reactors. These strategic sampling approaches helped ensure my findings on the local level are as representative as possible. Table 1.2 provides a basic overview of some of the anti-nuclear organizations considered for this study.

Anti-Nuclear Organization Name	Level of Operation	Organizational Focus and Campaigns
Beyond Nuclear	National (U.S.)	All aspects of nuclear policy on the federal level, including nuclear development, radioactive waste management, and nuclear safety.
Friends of the Earth (FOE)	National (U.S.)	Work to reduce risks for people and the environment by supporting efforts to close existing nuclear reactors and fighting proposals for new reactors.
Nuclear Information and Resource Services (NIRS)	National (U.S.)	All aspects of nuclear policy on the federal level, including nuclear development, radioactive waste management, and nuclear safety.
Physicians for Social Responsibility (PSR)	National (U.S.)	Focus on educating the public about and eliminating the risks of ionizing-radiation that is associated with the production of nuclear power and radioactive waste.
Union of Concerned Scientists (UCS)	National (U.S.)	Focus on educating the public about and eliminating the risks of ionizing-radiation, as well as the engineering problems at existing nuclear sites.
Citizens Action Network (CAN)	Local (NY, VT, Mass., CN, NH)	Various grassroots, community organizing/empowering campaigns in New England to eliminate nuclear facilities in the Northeastern U.S.
Indian Point Safe Energy Coalition	Local (NY)	New York based organization focused on closing Indian Point NPP, which is the same make/model as those at Fukushima and is 25 miles from New York City.
Missourians for Safe Energy (MSE)	Local (MO)	Missouri based safe energy organization formed to oppose the construction of nuclear reactors in the state, and opposes the ratepayer financing of new reactors.
Nuclear Watch South	Local (GA)	Georgia based organization formed to oppose the construction of nuclear reactors in the state, and engages in non-violent, direct-action across the Southeast
San Lois Obispo Mothers for Peace	Local (CA)	California based organization that emerged from the Abalone Alliance, and has continued to oppose the Diablo Canyon NPP

Shut It Down Affinity Group	Local (VT)	Vermont based organization concerned with closing the Vermont Yankee NPP
Southern Alliance for Clean Energy	Local (FL, GA, NC, SC, TN)	Various grassroots, community organizing/empowering campaigns in the Southeastern U.S. to eliminate nuclear facilities
Vermont Yankee Decommissioning Alliance	Local (VT)	Vermont based organization concerned with closing the Vermont Yankee NPP

Table 1.2: Listing of some of the anti-nuclear power social movement organizations analyzed in the present study, including the organizations’ names, the level of the movement on which they primarily operate (local or national), and aspects of nuclear power they primarily focus upon and/or campaigns in which they are involved. Due to space limitations, not all the organizations considered in this study are listed.

Through an analysis of the claims made by these and other SMOs on the national and local levels of the anti-nuclear power movement in the U.S., my hope is to shed new light on the multidimensional and interrelated injustices associated with the production of nuclear power, in order to propose general principles of “energy justice” that could guide future energy policy and decisions in a more socially and environmentally beneficial direction. I believe the theoretical and methodological approaches I take enable me to explore the contours and deep interconnections between the ideational constructs that inform/underlie social movement activity, and how these can illuminate general features or principles of theories of social, environmental, and energy justice. These new insights and types of knowledge will become increasingly salient as the realities of global warming become more difficult to deny, resulting in a forced-restructuring of energy policy in the U.S. and around the globe. Practically, the findings of this research are relevant to the movement for a nuclear-free energy future itself. I hope my analysis of the discourses of justice the anti-nuclear movement employs on the national and local

levels can help generate new strategies for movement coordination between these levels. I also hope the findings presented below will similarly help identify which discourses and/or combination of discourses are most strategically useful; both in terms of activist mobilization and effect on public policy. Additionally, my findings will be useful for identifying which other broad-based social movements the anti-nuclear movement might form strategic coalitions with.

My interest in the normative as well as the empirical basis of social movement activity might seem problematic and speculative to more empirically oriented sociologists. However, as the discussion above indicates, in a pluralist knowledge culture the empirical and normative are inextricably interdependent. My interest in the differing conceptualizations of social justice that inform social movement activity necessitated I use qualitative discourse analysis, which is well suited for addressing questions of how the movement expresses its grievances; how the movement mixes and combines ideologies and frames; how the movement utilizes broader cultural symbols; etc. By virtue of its intensive textual focus, however, this methodological approach can only secondarily and/or implicitly take-up central “why questions”; why does a particular movement succeed or fail; why does a movement take a certain trajectory; etc. While these questions are undoubtedly important, they fall outside the current focus of my research project.

CHAPTER 2: FEDERAL “LOAN GUARANTEES” FOR FINANCING NEW NUCLEAR REACTOR CONSTRUCTION

“New reactor construction is so expensive and unpredictable that no U.S. utility [or any private investor] is willing to take the risk without the backing of federal loan guarantees, potentially in the hundreds of billions of dollars. Beyond Nuclear and others fight to prevent the mature nuclear industry from seizing any such subsidies which are better spent on true climate solutions such as renewable energy and energy efficiency programs” (Beyond Nuclear, Fact Sheet “Loan Guarantees”, 2/15/2012).

In February 2012 President Obama announced his FY 2013 budget request, which for the first time since 2009 did not call for the expansion of the loan guarantee program for new nuclear reactors. In his FY 2011 and FY 2012 budget requests, which were made during the period of time under examination, President Obama called for a major expansion of the nuclear loan guarantee program. In fact, in both years President Obama specifically endorsed the expansion of nuclear power in the U.S. during his State of the Union Addresses, and then requested the loan program be expanded by \$36 billion on top of the \$18.5 billion already allocated. The original \$18.5 billion dollars was authorized by the Bush Administration in 2007, and the anti-nuclear movement has since dedicated itself to stopping the expansion of the program, and ultimately canceling the program altogether. Thus, the Obama Administration’s cancelation of the \$36 billion nuclear loan guarantee *expansion* in the FY 2013 budget request is viewed as a “huge grassroots environmental victory”, albeit a defensive victory (Beyond Nuclear, Fact Sheet “Loan

Guarantees”, 2/15/2012). This victory was viewed by the anti-nuclear movement as being the result of almost five years of coordinated grassroots actions targeting the President, Energy Secretary Chu and his predecessors and members of Congress who sit on related Committees. NIRS, Beyond Nuclear, and other national-level SMOs have organized the sending of tens of thousands of letters and thousands more phone calls to elected officials.

The issues of federal (taxpayer) financing of new reactor construction is perhaps the most direct way to see the distributive, as well as some of the recognitional and representative, injustices associated with the continued development of nuclear energy. As Sze (2005; 2007) has argued, decision about the production, distribution, and consumption of energy and electricity involve more than just technical/scientific considerations. This is because energy systems take on significant social dimensions as these systems are developed, contested, and implemented. This can be clearly seen by analyzing the “environmental justice energy activism” of groups working to highlight these social dimensions of energy systems, such as anti-nuclear organizations. As I will unpack below, between March 2010 and August 2011 there were several attempts by the President and members of Congress to expand the nuclear loan guarantee program. All of these attempts were met with organized resistance from the anti-nuclear movement. More specifically, my analysis shows how anti-nuclear organizations drew from the social justice paradigms of recognition, representation, and especially distribution to argue against the federal “loan guarantee” program by highlighting the multidimensional injustices associated with the program. Therefore, I argue, it is necessary to identify and correct these multidimensional injustices in order for socially, politically, economically,

and environmentally just energy systems to be financed and developed. Furthermore, following the methodology established by Fraser (2000; 2003; 2009) a productive way to identify (and ultimately correct) such multidimensional injustices is to analyze the claims made by real-world groups working to fight real-world injustices. By examining claims made in existing struggles against existing injustices as the starting point for the development of theories of justice (including energy justice as well as other types) we can begin to understand the full structural and normative extent of both just and unjust social arrangements. In other words, through an analysis of the claims made by anti-nuclear organizations regarding the multidimensional injustices involved with the federal “loan guarantee” program, I am able to not only identify how issues of maldistribution, misrecognition, and misrepresentation influence the program, but also to propose several principles of “energy justice” that could guide future decisions about the development and financing of energy systems. More specifically, I propose that “energy justice” requires that the development of energy systems should minimize up-front, capital-intensive requirements to the greatest extent possible. Additionally, energy justice requires that in cases where public financing of energy systems is necessary, because private financing is unavailable for whatever reason, the eventual profits/benefits should be retained publically. Beyond these primary analytic contributions, the following analysis also secondarily shows how the anti-nuclear power movement’s multiple framings of the issues (that are occasioned by the multidimensional nature of the injustices associated with nuclear power) are strategically vital resources, which enable the formation of coalitions with other organizations not generally concerned with the production of nuclear power. Furthermore, I also find the anti-nuclear movement would

benefit from expanding the implied subject position of *who* is entitled to different dimensions of social and environmental justice. This is especially the case with the associations I find between the distributive injustices of the “loan guarantee” program and the subject position “taxpayers”, on the one hand, and the recognitional and representative injustices associated with the “dirty and dangerous” aspects of nuclear power and subject positions of “communities” and/or “citizens”, on the other.

Round One (April and May 2010): \$9 Billion Authorization in an “Emergency Supplemental Funding Bill”

During the period of time under consideration here, the anti-nuclear movement’s claims regarding the maldistributive aspects of the federal “loan guarantee” program for new reactor construction began immediately. Within this time period the first activities regarding the expansion of the loan guarantee program for new nuclear reactors took place in May of 2010. In February 2010 President Obama announced the first actual nuclear loan guarantee himself after instructing the DOE to award \$8.3 billion in loan guarantees to Southern Company to help build two new reactors at plant Vogtle in Georgia. At this point in time, however, Southern Company and its subsidiary Georgia Power and Electric Co. had yet to accept the loan guarantee, and were at least two years away from receiving a license from the NRC. At this juncture it was clear to anti-nuclear groups the loan “guarantees” were not just guarantees, but rather direct loans from the U.S. Treasury Department, with the actual money coming from the little-known Federal Financing Bank (NIRS Action Alert, 5/26/10).

The \$8.3 billion in loan guarantees awarded to Southern Company left \$10.2 billion available from the \$18.5 billion dollars that were authorized in 2007 for the

construction of new nuclear reactors. However, because the estimated cost of new reactors continued to soar, the DOE realized the \$10.2 billion would only cover one additional project. Initially, the rationale for the loan guarantee program was to provide federal funds (\$18.5 billion) for the construction of *five or six* new reactors, which was believed would stimulate private investment in new reactor construction. This tremendous growth in the expected costs of new reactors is why the Obama administration and the DOE were pushing to triple the loan guarantee program in the following year's budget to \$54.5 billion. Apparently waiting for the following year's budget to be authorized was not acceptable to the DOE who seemed intent on maintain the momentum generated by the loan guarantee award to Southern Company. So on April 28th, while testifying before Congress Energy Secretary Chu argued there was not enough "ceiling" in the current nuclear loan guarantee program, and asked for \$9 billion (out of the additional \$36 billion being sought) to facilitate the awarding of two more loan guarantees in the coming weeks. The result was a \$9 billion dollar authorization that was attached to an emergency supplemental funding bill intended to provide funds for U.S. troops in Afghanistan and Iraq and to provide additional disaster relief money (related to the BP Gulf oil spill).

On May 26th 2010, the day before the House Appropriations Committee was set to consider the bill, NIRS sent out an action alert to their supporters. This action alert encouraged NIRS supporters to contact their representatives and ask them to do everything in their power to remove the nuclear loans; especially NIRS supporters whose representatives were on the House Appropriations Committee. NIRS was quick to point out the new loan guarantee authorization was being included in an "emergency"

supplemental funding bill, even though there was clearly no “emergency” requiring new nuclear loans. For instance, the then most likely candidates to receive the next loan guarantees (Unistar’s project at Calvert Cliffs, MD and Nuclear Resource Group’s project in Southwest TX; both of which are now defunct) were at least two years away from a license from the NRC, and utilities cannot actually receive any loan monies without a construction and operating license (COL). As far as NIRS and other anti-nuclear organizations were concerned, there was clearly no emergency here; except for perhaps the DOE’s desire to score points with the nuclear industry (NIRS Action Alert, 5/26/10). More specifically, NIRS repeatedly referred to the loan guarantee program as a “bailout” of the nuclear power industry, playing off the public’s continued outrage over the federal bailouts for the financial industry in 2008/2009. The NIRS action alert stated the goal of the campaign was to send two clear messages to Washington:

Stopping this \$9 billion deal would send two clear messages: 1) emergency funding bills should not be used for non-emergency pet projects, especially not dirty and dangerous new nuclear reactors. It is obscene to even attempt to put these loans on an emergency bill like this; 2) not only is the \$9 billion unacceptable, so is the full \$54.5 billion the administration wants next year! (NIRS Action Alert, 5/26/10).

From this action alert, several dimensions of the maldistributive injustices associated with the “loan guarantee” program become apparent. Not only is it “obscene” to attach new nuclear loan authorizations to an “emergency” funding bill, but the entire

rational for nuclear loans violates principles of distributive justice. In terms of the maldistribution of financial risks, the concern arises from the fact that capital intensive development projects, such as the construction of new nuclear reactors, face a significant risk of default on loans they receive. In the event an investor-owned utility (such as Southern Company or its subsidiary Georgia Power and Electric) defaults on a federal loan guarantee awarded for the construction of new reactor, taxpayers would be left footing the bill. This is especially problematic considering both the Congressional Budget Office in 2003 and the Government Accountability Office in 2008 estimated the average default risk on a federal loan guarantee for new reactor construction could be as high as 50%. This is why Wall Street refuses to invest in nuclear power; they understand the uncertainty surrounding nuclear power construction makes such investments too risky. For instance, in 2007 six top investment firms told the Department of Energy they were unwilling to finance new reactors in light of the industry's horrible financial track record (van Doren, 2010). Therefore, in the absence of private investments, utilities seeking to build new nuclear reactors must find some way of socializing the risk while retaining private control of any future profits. On the national level; enter the federal loan guarantee program for new nuclear construction.

Hours before the House Appropriations Committee was set to consider the emergency funding bill containing the nuclear loan authorization, the meeting was unexpectedly postponed until after the upcoming Memorial Day recesses. It is unclear why the meeting was postponed. What is clear is NIRS's mobilization was having an impact. According to a NIRS Action Alert sent on May 28th, many of the members of the Appropriations Committee were unaware of the nuclear provisions that had been snuck

into the bill. Additionally, many members of the committee may not have been aware that what appeared to be only a \$90 million dollar authorization—due to the byzantine Congressional budgeting procedures—actually translated into a \$9 billion dollar loan for the nuclear industry with the funds coming straight from the Treasury (NIRS Action Alert, 5/28/10).

On June 16th, 2010 following Congress' Memorial Day recess NIRS sent another Action Alert informing their members the Committee had yet to reschedule the meeting. NIRS's position was the longer the Committee delayed, and the more controversial NIRS and their supporters could make the loan guarantees seem to the Committee, the more likely the whole idea would be scrapped (NIRS Action Alert, 6/16/10). NIRS stated over 5,000 people had sent letters of protest to their representatives, which was contributing to the delay in moving the bill forward. While in terms of absolute numbers 5,000 letters is not a huge volume, compared to say the millions of letters sent in protest of the Keystone XL Pipeline. However, for representatives on the Appropriations Committee to receive 5,000 letters of protest regarding an appropriations bill is significant, as these are usually bills that do not demand a lot of public attention. In the Action Alert, NIRS reiterated their position from earlier Action Alerts, arguing "Not only are taxpayer loans for new reactors not an emergency--they should be stopped entirely!" (NIRS Action Alert, 6/16/10).

From the very outset of the period of time under consideration for this study, the anti-nuclear power movement's arguments against the federal "loan guarantee" program were based on claims regarding distributive (in)justice. This program is seen to be yet another mechanism for socializing the risk while privatizing the eventual profits from

large development projects, which is an unjust distribution of financial benefits and burdens. In other words, having taxpayers assume the financial risks of new reactor construction, while investor-owned utilities retain control of the capital the reactor will eventually generate, unjustly distributes the risks and rewards of such capital intensive development projects. This begins to suggest at least two possible principles of “energy justice”, which are further supported by my analysis of subsequent rounds of conflict over the “loan guarantee” program (discussed below). First, energy justice requires that the development of energy systems should minimize up-front, capital-intensive development requirements to the greatest extent possible. In keeping with very basic market principles, energy systems should be pursued in accordance with the least-cost options that are available. This, of course, requires an honest calculation of the full costs of different energy systems, including the *externalized costs* associated with traditional coal, oil, and gas production, which levels the playing field for renewable energy sources like wind, solar and geothermal. Additionally, these calculations should be done without consideration of the “sunk costs” associated with energy companies existing infrastructure, because the decisions regarding the development of these infrastructure were not made democratically nor were they made to advance social and environmental well-being; which is entire purpose of establishing principles of “energy justice”. Second, energy justice requires that in cases where public financing of energy systems is necessary, because private financing is unavailable for whatever reason, the eventual profits/benefits should be retained publically. This could take the form of dividend payments to taxpayers/ratepayers or future credits toward their energy costs. Both of these potential principles of energy justice could be used to guide future policy to ensure

the most cost-effective energy choices are made, and to ensure public interests are not sacrificed in order to advance private financial gains. Furthermore, the following analyses of subsequent rounds of conflict in this area provide further support for these principles.

Round Two (June and July 2010): \$36 Billion in the FY2011 Energy and Water Appropriations Bill

The anti-nuclear movement's claims regarding the distributive injustices of the "loan guarantee" program were reiterated in the following months, as were additional concerns about representative and recognition injustices. The stakes of the conflict over the "loan guarantees" were raised the following week as reflected in the headline of another NIRS Action Alert sent on June 22nd; "**Correction!!!! House Appropriations Committee to meet Thursday afternoon--June 24--to determine fate of \$9 billion consider \$36 billion in taxpayer loans for new nuclear reactors. Last chance to act and mobilize!**" NIRS had just learned the Obama Department of Energy was requesting the entire \$36 billion in additional loan authorizations, instead of waiting to include the request in the following year's budget. NIRS urged their members to take action immediately and released an advertisement about their campaign against nuclear loans that ran on Alternet and other progressive sites (See Figure 1). On June 24th the House Appropriations Committee's Subcommittee on Energy and Water again abruptly canceled their meeting to consider the following year's energy budget—possibly including the additional \$36 billion dollars the DOE was requesting for nuclear loans. This was the second such cancellation within a month. While it was unclear at the time, the cancellation may well have been related to the over 11,000 letters sent by this point to

Congressional Representatives opposing the expansion of the loan guarantee program (NIRS Action Alert, 6/23/10).



Figure 2.1: NIRS advertisement urging people to oppose the nuclear loan guarantee program.

As revealed the following week, the meeting of the Energy and Water Subcommittee was in fact canceled because of the nuclear loan issue. Apparently, even though the Obama DOE requested the additional \$36 billion, the bill that was brought before the Subcommittee did not include any nuclear loan money. This was largely due to Committee Chairman David Obey and Rep. Donna Edwards, who played key roles in keeping that \$36 billion out of the bill, and NIRS members in their districts were encouraged to write and thank them (NIRS Action Alert, 7/1/10). Ultimately the Subcommittee's meeting was canceled because other members wanted the nuclear loan money and objected when they discovered it was not included in the draft bill. The most vocal about their objections were Democratic Reps. Chet Edwards (Texas), Chaka Fattah (Penn.) and Marion Berry (Ark.). The Action Alert called for people in their districts to

“flood their offices with phone calls! Tell them to stop wasting taxpayer money on the wealthy nuclear power industry” (NIRS Action Alert, 7/1/10).

Representative Edward’s steadfast opposition to the bill because it lacked nuclear subsidies is interesting considering Edward’s was then in a tightly contested race in Texas’s 17th District, in which he had turned the nuclear loan program’s expansion into a campaign issue. More specifically, Edwards supported the expansion of Nuclear Resource Group’s South Texas project in his district, and had begun criticizing his republican opponent for suggesting that federal money should not be used to construct nuclear reactors. According to Ben Schreiber of Friends of the Earth Action, “It is interesting that a \$25 billion preemptive bailout for the nuclear industry appeared in the Energy and Water Appropriations bill shortly after it became a campaign issue for Congressman Chet Edwards. It’s enough to ask whether the House leadership is risking \$25 billion of taxpayer money so one House seat stays in the Democratic column” (Friends of the Earth, Press Release, 7/15/2010). This coincidence appeared to Friends of the Earth as signaling House Democrats were using the DOE loan guarantee program like a campaign credit card. Moreover, this was not an isolated incident of *misrepresentation* and undemocratic practices associated with the recent attempts to expand the loan guarantee program. The \$9 billion dollars for new reactor construction being considered with the emergency supplemental funding bill included funds for nuclear projects in then Majority Leader Steny Hoyer and Whip James Clyburn’s districts (Friends of the Earth Action, Press Release, 7/15/2010). For the anti-nuclear movement these examples clearly show how the *maldistributive* injustices of the nuclear loan guarantee program are

compounded, and in fact facilitated, by the *misrepresentation* and undemocratic decision-making procedures that accompany nuclear development.

The anti-nuclear movement's arguments that taxpayer-backed loan guarantees for new reactors is founded upon and advances distributive injustices took on a new dimension in early July 2010; along with the movement itself gaining new (somewhat surprising) allies. On July 1st NIRS sent out a Press Release with the headline; **Foreign Companies, Workers Are Big Early Winners Under Federal Loan Guarantees for Nuclear Reactors: Taxpayer-Backed Nuclear Loan Guarantees Make July 4th "Energy Non-Independence Day"; 2 of 3 Leading Loan Guarantees Candidates Have Major Foreign Ownership, Large Reactor Component Construction Jobs Are Overseas** (NIRS Press Release, 7/1/10). This press release related to a new report prepared by NIRS entitled, "Nuclear Power: Implications of Loan Guarantees for Reactors with Foreign Control and Foreign Jobs". In this report NIRS documents how many of the then eighteen currently-pending reactor projects in the U.S. involved reactors that were designed by either French or Japanese companies. Additionally, the report showed the immediate employment benefits of the loan guarantees will flow to non-U.S. workers, since virtually all major reactor components are made outside of the United States by foreign companies (NIRS Press Release, 7/1/10). More specifically, the Calvert Cliffs project in Maryland was slated to use a reactor supplied by France's AREVA, and the South Texas project would use a reactor supplied by Japan's Toshiba Corporation. Thus the loan guarantee program is an especially unjust distribution of economic benefits and risks, with the benefits flowing to foreign workers and foreign, state-supported nuclear companies and the risks being borne by the American taxpayer.

Issues of americanism and xenophobia aside, it is interesting to note how the perceived problems with the U.S. loan guarantee program are situated with reference to the globalized nuclear supply chain. Michael Mariotte, then executive director of NIRS, summarized the maldistributive aspects of the loan guarantee program with reference to the globalized nuclear supply chain:

The bailout of the nuclear industry with taxpayer-backed financing of loan guarantees is in no way a triumph for U.S. energy independence. Instead, it is a huge publicly backed corporate welfare arrangement for foreign-owned companies and non-U.S. workers. The non-U.S. companies that stand to be the biggest beneficiaries of taxpayer-backed loan guarantees are both massive in size and profitable. If American taxpayers were upset about bailing out U.S. banks and car companies, they should be furious about being put at risk in order to fatten the bottom line of overseas nuclear companies (NIRS Press Release, 7/1/10).

Interestingly, NIRS was joined in releasing the new report by a senior/intergenerational group, the Alliance for Generational Equity (AGE) and a taxpayer's advocacy group, the Association of Concerned Taxpayers (ACT) to oppose taxpayer-backed loan guarantees. The press release explicitly stated AGE and ACT *do not* oppose privately financed nuclear power, however they *do* strongly object to taxpayer-backed loan guarantees. Therefore, by limiting their framing of the problem to the maldistributive aspects, NIRS was able to form a coalition with these relatively

conservative organizations. In the press release David Herman, vice president of AGE, said:

This is not about whether you support or you oppose nuclear power...Whether it's for banks, car companies, investment firms or nuclear reactors, a bailout is a bailout is a bailout. We need a little less socialism from Washington and a lot more faith in the wisdom of the marketplace...If these companies controlled by French and Japanese interests want to finance new reactors and find investors who want to support that, they have our blessing. But we are not prepared as U.S. taxpayers to allow seniors and other Americans to be ripped off by yet another multi-billion- dollar bailout for another industry (NIRS Press Release, 7/1/10).

Gordon Jones, president of ACT expressed similar sentiments in the press release:

Taxpayer guarantees of private economic actions represent the same kind of implicit subsidy that caused the mortgage meltdown of 2008. Such subsidies encourage behavior that is riskier than unsubsidized individuals and entities would undertake without the guarantees...ACT favors a free market in energy, without government intervention for or against any particular form of power...Decisions about energy production should be

made by market forces, not by politicians in Washington or by bureaucrats at the Department of Energy (NIRS Press Release, 7/1/10)

It is clear from these statements AGE and ACT are concerned with only the maldistributive aspects of the loan guarantee program; not with the misrecognition or misrepresentation associated with the production of nuclear power and radioactive waste. Therefore, although both groups oppose the federal loan guarantee program for new nuclear reactors, I would not consider either to be anti-nuclear social movement organizations. Rather, for both groups distributive justice results from (and is achieved through) the operations of a “free market”. Using the language of “bailouts” and “subsidies”, both AGE and ACT claim it is unjust to risk American taxpayer dollars on projects that will benefit foreign workers and foreign companies.

As an organization AGE is primarily concerned with intergenerational equity in terms of the national deficit and debt, and is motivated by concerns over future generations having to pay off deficits incurred today. AGE’s framing of the issue as “another bailout for another industry” creatively links to the ubiquitous populist rhetoric/anger of the time, best expressed by the Tea Party movement. The basic argument being made is; here’s another example of everyday-people being made to financially support a large, profitable industry, which is unfair to present and future generations. The situation is considered especially problematic because the beneficiaries in this case are *foreign* controlled companies and *foreign* workers. However, AGE’s concerns for intergenerational equity appear to be limited to only concerns over deficit spending; as their neutral support for nuclear power would suggest they see no problem

with leaving future generations tens of thousands of tons of high-level radioactive waste to manage.

Similarly, ACT organizationally promotes conservative tax and financial policies and advocates for a “free market” unencumbered by government regulation/interference. Their framing of the issue as a “subsidy” for the industry (one that distorts market signals and thus disrupts the operations of the market) again plays to the populist rhetoric of the time. Additionally, ACT’s statement partially incorporates insights generated by ecological economists about “bad subsidies” encouraging risky/destructive behavior that otherwise would be discouraged by a “free market” (Foster et al., 2011; Speth, 2008). However, what is most interesting about ACT’s position is the incorporation of specific ideas of just participation/representation that should be involved in the related decision making processes. Opponents of the loan guarantee program primarily frame the problem as one of maldistribution, with alternate framings of the issue (i.e. misrecognition and misrepresentation) being utilized in an auxiliary manner. Here ACT is very explicate about who should make the decisions about energy production; “Decisions about energy production should be made by market forces, not by politicians in Washington or by bureaucrats at the Department of Energy”. On the surface this might appear to some as being undemocratic; especially to many anti-nuclear organizations and activists that are generally very concerned with advancing democratic and other participatory forms of decision-making. But from the neoliberal worldview this group inhabits, freedom of market forces is absolutely synonymous with individual freedom, liberty, and essentially democracy.

Despite the subtle difference between the positions of AGE and ACT, both members of the nascent coalition are potentially important allies for the anti-nuclear movement. These organizations are composed of (and have influence over) people who otherwise may not be concerned with the politics of nuclear power. AGE and ACT are both organizations that generally share little in common with anti-nuclear organizations such as NIRS, Beyond Nuclear, and others. However, because of the multiple and complementary framings of the issue used by the anti-nuclear movement, “frame alignment” between these groups was possible with regards to problems of maldistribution (Snow and Benford, 1986; 1992). This shows the strategic advantage of utilizing multiple and complementary discourses of social and environmental justice in the course of environmental justice energy activism. In different contexts, different discourses of social and environmental justice can be deployed and reconstituted to advance the movement’s interests. In different ways, both AGE and ACT expand the discourse of maldistribution surrounding the loan guarantee program, and in so doing expand the potential audience for the anti-nuclear movement’s message.

Despite the report released by NIRS, AGE and ACT on July 1st, 2010, the House of Representatives passed the emergency supplemental funding bill, including the provision for \$9 billion for new loans for new reactor construction. This was despite the more than 13,000 letters of protest NIRS supporters had sent to their representatives and thousands more phone calls (NIRS Action Alert, 7/2/2010). According to a NIRS Action Alert sent out on July 2nd, 2010, there was no separate vote on the nuclear loans, as they were included in a broader domestic spending package which was approved by a 239-182 vote. Most Democrats voted for the package, most Republicans voted against it. At this

point the movement's attention turned to the Senate, because it earlier passed a different version of the bill (without the nuclear loans), and the Senate then had to decide whether to accept the House version. On July 22nd, the Senate rejected the House-passed emergency supplemental funding bill by a 51-46 vote. Again, most Senate Republicans voted against the bill, not because they oppose nuclear power, but because they are opposed to domestic spending more generally (NIRS Action Alert, 7/23/10). According to a NIRS Action Alert send on July 23rd, the House would surely have to accept the Senate's version of the bill and "these loans [were] now history" (NIRS Action Alert, 7/23/10).

What is most significant about this round of conflict over the "loan guarantee" program is it clearly shows how the multidimensional injustices of the program enable the anti-nuclear power movement to frame their grievances in different terms; alternately focusing on issues of distribution, recognition, and representation. As I have show, these multiple frames of their grievances can be a strategically vital resource that enabled the movement to form a coalition with other groups who are generally not concerned with issues of nuclear power. More specifically, by focusing on the maldistributive aspects of the program, the anti-nuclear movement was able to achieve "frame alignment" (Benford and Snow, 1986) with fiscally conservative groups who only oppose the public financing of development projects. Despite the very different concerns and perspectives of groups such as ACT and AGE from those of anti-nuclear organizations, the above analysis further supports the principles of "energy justice" that I proposed above. Again, through an analysis of the claims regarding the multidimensional injustices associated with the "loan guarantee" program, it appears that energy justice requires advancing the most

cost-effect options available for energy development and that when public financing is required for such development projects, the public should retain control over the eventual benefits and/or profits.

Round Three (June-July 2010): \$9 Billion in *Any* Bill That Could Clear the Senate

Whatever satisfaction the anti-nuclear movement and other opponents of the loan guarantee program were feeling about winning another round in the fight was short-lived. A week later on July 30th, 2010 NIRS sent another Action Alert reporting Senator Hutchison (R-Texas) was trying to attach the \$9 billion authorization to any bill that might get through the Senate. For instance, Senator Hutchinson offered it to a bill to assist small businesses, despite the fact no nuclear company (manufacturer, utility, etc.) could even remotely qualify as a small business (NIRS Action Alert, 7/30/10). Majority Leader Reid, however, refused to let this amendment take up valuable senate floor time. At this point, the DOE was under perceivable pressure to grant loan guarantees for Unistar's project in Maryland and/or NRG's project in South Texas. Representatives from both firms had already publically announced their needs for a loan guarantee in the very near-term, or both projects faced the possibility of collapse (NIRS Action Alert, 7/23/10).

Reflecting the general unproductivity and gridlock that characterized the U.S. Senate in this period of time, nothing more about the expansion of the loan guarantee program for new reactors was seriously considered until following the midterm elections in November 2010. Of course the 2010 elections evidenced the rise in power and influence of the Tea Party movement. This is especially true considering the Tea Party's

success in several high-profile House races, which in part resulted in Democrats losing control of the House. Anti-nuclear organizations and activists were initially unsure what this would mean for the loan guarantee program. On the one hand, Republicans have long supported nuclear power. High-profile Republican Senators such as Lamar Alexander (TN), Orin Hatch (UT), Mitch McConnell, Richard Shelby and others have long advocated for a dramatic expansion of nuclear power in the U.S. and around the world. Moreover, it was a Republican controlled Congress that passed the 2005 Energy Act, establishing the loan guarantee program and securing the program's initial authorizations. However, the Tea Party movement represents a (slightly) different brand of conservatism. As discussed above, by the end of 2010 a growing number of groups who saw themselves as fiscal conservatives were arguing along with anti-nuclear groups that loan guarantees unfairly shifted the risks of default to taxpayers, and government money could be better spent elsewhere. Conservative think tanks such as the Heritage Foundation and other fiscal-conservative groups like The National Taxpayers Union, Taxpayers for Common Sense, the Competitive Enterprise Institute and the Non-proliferation Policy Education Center all signed a letter to Congress on Dec. 8 that called for halting any increase in the amount allocated to the loan guarantees for nuclear plants (International Business Times (IBT), 2010). In short, several of the incoming representatives ran on a platform of fiscal restraint and limiting the kind of government interventions into the market that the loan guarantee program embodied.

Round Four (December 2010): \$9 Billion in the “Continuing Resolution”

Before these issues concerning the new Congress could become relevant, however, the DOE initiated another round of controversy surrounding the loan guarantee program during the “lame duck” session. This time the Obama DOE was asking Congress for the \$9 billion for additional tax-payers loans as a part of the upcoming “Continuing Resolution” that was needed to keep the government funded (NIRS Action Alert, 12/7/10). This was at least the fourth attempt in 2010 to increase the amount of money available for new reactor construction. NIRS reiterated their position, arguing the “loan guarantees” were not “guarantees” but actual *loans*, with the money coming from the Treasury. Not only that, but the money was being given to large, profitable, *foreign* companies such as Toshiba and Electricite de France (EDF), which is the largest electric utility in the world and heavily subsidized by the French State. A NIRS Action Alert rhetorically asked, “When will Congress learn that taxpayers don't want to subsidize giant corporations, especially when they want to build dirty and dangerous new nuclear reactors in our communities!” (NIRS Action Alert, 12/7/10).

Here again we see how frame convergence (Snow and Benford, 1986) is accomplished by situating claims about the dirty and dangerous aspects of nuclear power with reference to concerns about the maldistributive/expensive aspects. This shows how environmental justice energy activism not only involves multiple discourse/conceptualizations of social and environmental justice, but also how these multiple discourses are strategically vital resources. Also note when the dirty and dangerous auxiliary frames (Snow and Benford, 1992) are utilized again the subject position of who is entitled to justice shifts from “taxpayers” to “our communities”. On

some level the association of the subject position “taxpayers” with the expensive/maldistributive frame and “our communities” with the dirty and dangerous frames makes sense given the nature of the two (interrelated) issues. However, isn’t it the case that “our communities” also suffer from the maldistributive aspects of the loan guarantee program? Many of “our communities” are struggling to fund basic social services such as education, infrastructure maintenance, and health services, among many others. Is it not unjust to “our communities” to lavish billions of dollars on profitable, foreign companies while these needs are left unmet? Additionally, “taxpayers” will surely be (and have been) victimized by the dirty and dangerous aspects of nuclear power. “Taxpayers” are exposed the accidental and routine release of radioactivity from nuclear reactors, and will be put at risk by the transportation of high-level radioactive waste. In short, “taxpayers” will be subject to having their concerns misrecognized and their interests misrepresented as well. I believe expanding the discursively constructed subject position of who is entitled to social and environmental justice (with reference to all aspects of nuclear power) would advance the anti-nuclear movement’s cause by broadening their potential audience.

The NIRS Action Alert from December 7th informed their supporters, “With your help, we beat back the first three attempts to increase funding for this program. This one will be the hardest to beat yet, since the Administration's request is wrapped up in a larger package. So we need the loudest outcry possible” (NIRS Action Alert, 12/7/10). Despite the mobilization efforts of NIRS and other organizations, two days later on December 9th the House passed a Continuing Resolution that included \$7 billion of new taxpayer money for nuclear reactors. As before, the anti-nuclear movement’s best bet for stopping

the expansion of the program was in the Senate; where in fact the program's expansion was stopped two weeks later. On December 23rd NIRS releases an Alert with the headline, "Happy Holidays--Another Huge Victory! Government Funding Bill Enacted Without Nuclear Loans!" The Alert went on to say:

THANK YOU! You've done it again! You sent more than 15,000 letters to Congress in December and made many, many phone calls to stop \$8 billion in taxpayer loans for new nuclear reactor construction. And the final government funding bill, signed by President Obama, contains not one dime for new nukes! ...That makes at least seven major efforts over the past two years by nuclear industry backers to increase taxpayer loans for new reactors--and every one of those efforts has been blocked! **Grassroots people power works!** (NIRS Action Alert, 12/23/10).

Round Five (February-June 2011): \$36 Billion in FY2012 Budget Request

In the final round of the conflict over the "loan guarantee" program considered in the present study, the anti-nuclear movement not only again reemphasized their claims regarding the maldistribution of the program, but also in response to the Fukushima disaster on March 11, 2011, began to explicate connect these arguments to others drawing from the social justice paradigms of recognition and representation. These expanded arguments, and the claims for recognitional and representative justice they draw from, further support the principles of "energy justice" that I have proposed above,

while suggesting at least one additional principle relating to the public (as opposed to private) financing of social and environmentally injurious energy systems.

Following the holiday recess the issue reemerged in February 2011 with Obama's FY2012 Budget request, which identical to the previous year's request included an addition \$36 billion dollars for new reactor loan "guarantees". A NIRS Action Alert sent on February 15th, 2011 had the following headline; "Obama FY2012 Budget: Cut Heating Assistance for Poor, Cut Clean-Up of Great Lakes...But Shower Billions of Dollars in Loans to Wealthy Nuclear Utilities and Foreign Reactor Manufacturers!" (NIRS Action Alert, 2/15/2011). In addition to connecting the maldistributive aspects of the loan guarantee program to other pressing social and environmental problems, this Alert encouraged NIRS supporters to remind their Representatives that in budget terms, \$36 Billion in loan "guarantees" shows up as only \$360 million in actual spending. More specifically, the Alert reported:

In the real world, those "guarantees" are actually taxpayer loans. The money leaves the federal treasury and only comes back if the project succeeds. During the first go-round of nuclear construction, fewer than half of the reactors proposed were actually ever built and generated income...There is no reason to believe things will work out any better for the industry this time around--especially if we taxpayers are liable for the bill (NIRS Action Alert, 2/15/2011).

On March 3rd, 2011 just over a week before the Great East Japan Earthquake and the onset of the Fukushima Daiichi nuclear disaster, the battle over the loan guarantee program took a new turn in favor of the anti-nuclear movement. A major poll was released that day by the Wall Street Journal/NBC News that showed cutting subsidies for new reactor construction was the single most acceptable budget cut for the American public. More specifically, the poll showed 57% of Americans found cutting nuclear subsidies was either completely or mostly acceptable, while only 20% think these cuts would be completely unacceptable. No other program areas mentioned in the survey got more than 52%, and most programs were under 50% (NIRS Action Alert, 3/3/2011). The anti-nuclear movement quickly seized the opportunity provided by this new poll data, with NIRS announcing, “In this era of Congressional budget-slashing, with programs that actually benefit real people on the chopping block, we think it's time to step up our demands: Tell Congress not only must it oppose new taxpayer subsidies for new reactor construction, but Congress must cut the existing program to zero” (NIRS Action Alert, 3/3/2011). For anti-nuclear organizations such as NIRS the time seemed ripe for them to go on the offensive and demand the entire program be canceled and funds redirected. NIRS recognized one opinion poll was not going to convince Congress, and implored their supporters to reach out to their Representatives in order to make their voices as loud as possible (NIRS Action Alert, 3/7/2011).

Then came the events of “3/11”, as it is known in Japan. On March 11th, 2011 a 9.0 magnitude earthquake struck off the Northeast coast of Japan killing thousands of people and creating a more than forty foot tsunami that devastated the Fukushima Daiichi nuclear power facility, resulting in the on-going meltdown of multiple reactors and the

worst nuclear disaster since Chernobyl in 1986. In the resulting hectic days and weeks that followed, the world watched as reactor buildings exploded and industry and government officials scrambled to understand what was going on and inform/reassure a concerned public. Many anti-nuclear organizations were absolutely overwhelmed by the task of trying to accurately assess the situation in Japan. In the initial days and weeks that followed 3/11, seemingly nothing about what was happening at Fukushima was totally clear. This was due to both a dire *lack* of official, verifiable information coming from both Japanese or TEPCO officials, and the *overabundance* of speculative reports exaggerating the consequences of the accident and/or baseless assurances that there was no real danger to the public or environment.

The Fukushima disaster affected most (but not all) discussions about nuclear power and radioactive waste in the U.S. For the anti-nuclear movement, Fukushima changed everything; from their multiple and complementary framings of the issues, to an emboldened and increasingly offensive strategy that no longer was content with defensive victories. As mentioned above, anti-nuclear organizations were overwhelmed during the first weeks following 3/11 trying to assess the situation and inform their members and the media. It was a tremendous accomplishment that non-profit, grassroots organizations (like NIRS, Beyond Nuclear, and others) operating on shoestring budgets, were able to so successfully wade through the noise and educate millions of people about the Fukushima disaster directly and through national and international media.

By April 13th, 2011 NIRS had the opportunity to catch its breath and release an Action Alert asking their supporters to tell Congress, “The lesson of this catastrophe is

clear: we must end the use of nuclear power. And that must start with the prevention of any new nuclear reactors” (NIRS Action Alert, 4/13/2011). The Alert goes on to argue,

It is outrageous that the Obama Administration continues to say nuclear power will be part of its "clean energy" strategy and continues to seek \$36 Billion **MORE** in taxpayer loans for new reactor construction. This funding must be stopped, and existing taxpayer subsidies for the nuclear industry withdrawn. How anyone can view the images coming from Japan and continue to claim nuclear power is somehow "clean" is beyond our ability to comprehend. **If ever there was a time for Congress to hear our voice, it is now** (NIRS Action Alert, 4/13/2011).

In the first month following the onset of the Fukushima disaster more than 40,000 people had sent letters of protest to their representatives, calling for an end to the use of nuclear power in the U.S. (NIRS Action Alert, 4/13/2011).

In mid-May 2011, NIRS began circulating an “organizational sign-on letter” to end the nuclear loan program, which was ultimately signed by over 180 organizations and small businesses. More specifically, 183 organizations signed the letter, representing millions of people from Maine to Hawaii. These groups consisted of national-level organizations, such as Greenpeace, Friends of the Earth, and Clean Water Action, as well as local and regional environmental and peace groups, family farms, food co-ops, and other small businesses (NIRS Organizational Sign-On Letter, 5/25/11). On May 25th the letter was hand delivered to members of the House and Senate Appropriations

Committees on Energy, who were *still* considering the *expansion* of the nuclear loan program. In fact, on Day 5 of the Fukushima disaster (March 15th, 2011) President Obama had again asked Congress for the additional \$36 billion in new nuclear loan authorizations. For many organizations in the anti-nuclear movement this clearly signaled the Administration's refusal to recognize both the seriousness of the Fukushima disaster and the now "obvious" dangers associated with nuclear power.

Consistent with earlier efforts, the letter asked members of the House and Senate Appropriations Committees to reject the new request for the additional \$36 billion, as the expansions of the program represented an unjust distribution of scarce financial resources. Additionally, following Fukushima the anti-nuclear movement continued to go on the offensive by also asking that the unspent \$10.2 billion dollars remaining in the program be rescinded, as well as the \$8.3 billion that had been conditionally offered to Southern Company for the plant Vogtle expansion. In short, the letter argued the Title 17 program for nuclear power should be ended immediately. According to the letter, the Fukushima disaster severely eroded the entire public policy rationale for the program. When enacted in 2005 and funded in 2007, Congress believed "modest funding" (\$18.5 billion) to support the construction of six-to-eight new nuclear reactors would encourage private investment—which even back then was extremely skeptical of investing in new nuclear projects. The letter goes on to argue:

Since then, estimated construction costs have skyrocketed so that it would take more than \$50 Billion to support construction of those same 6-8 new reactors. And Fukushima has provided a stark reminder to the investment

community that a multi-billion dollar investments can turn into much larger liabilities overnight. [On March 10th, 2011] Tokyo Electric Power was one of the three largest electric utilities in the world. Today it is a shambles, facing tens—perhaps hundreds—of billions of dollars in liabilities (NIRS Organizational Sign-On Letter, 5/25/11).

The letter then pointed out the only new reactors being constructed anywhere in the world were being built entirely with government funds, and the private investment community will not put its money into new nuclear power plants, no matter how much support is given through taxpayer dollars. Therefore, the letter concludes, “Title 17 cannot and will not lead to greater private investment in nuclear power and thus cannot and will not achieve its goals” and this alone should be reason enough to end the program *before* taxpayer money is put at risk (NIRS Organizational Sign-On Letter, 5/25/11). The letter then points to the fact that the American people agree, citing poll data from the Civil Society Institute that shows 73% of the American people oppose federal loan guarantees for new nuclear reactors, and the Wall Street Journal/NBC News poll that showed 64% of Americans oppose new reactor construction entirely. Finally, the letter points to the post-Fukushima decisions of Germany and Japan—the world’s fourth and third largest economies respectively. These countries, it is argued, are exploring new energy policies that center on clean renewable energy and increased energy efficiency, and are moving away from nuclear power.

These countries understand that clean energy is indeed the future and that clean energy plants do not explode and release toxic radiation across the world. The United States should join Japan and Germany and become a leader in clean energy rather than falling further behind in the race to implement the energy sources of the 21st century...The Title 17 loan guarantee program for nuclear power unnecessarily risks billions of taxpayer dollars on a program that cannot meet its own goals and that simply diverts our limited resources away from the goal of safe, clean and affordable energy for our nation (NIRS Organizational Sign-On Letter, 5/25/11).

This widely-supported letter encapsulates the many dimensions of the anti-nuclear movement's efforts to fight the "loan guarantee" program during the period of time under examination here. Perhaps the most direct way to see the distributive, as well as some of the recognitional and representative, injustices associated with the continued development of nuclear energy is through the issues of federal (taxpayer) financing of new reactor construction. Energy systems take on significant social dimensions as these systems are developed, contested, and implemented. Therefore, as Sze (2005; 2007) has argued, decision about the production, distribution, and consumption of energy and electricity involve more than just technical/scientific considerations. This can be clearly seen by analyzing the "environmental justice energy activism" of groups working to highlight these social dimensions of energy systems, such as anti-nuclear organizations. Between March 2010 and August 2011 there were several attempts by the President and

members of Congress to expand the nuclear loan guarantee program. All of these attempts were met with organized resistance from the anti-nuclear movement. More specifically, my analysis has shown how anti-nuclear organizations drew from the social justice paradigms of recognition, representation, and especially distribution to argue against the federal “loan guarantee” program by highlighting the multidimensional injustices associated with the program. Therefore, I argue, it is necessary to identify and correct these multidimensional injustices in order for socially, politically, economically, and environmentally just energy systems to be financed and developed. Furthermore, following the methodology established by Fraser (2000; 2003; 2009) a productive way to identify (and ultimately correct) such multidimensional injustices is to analyze the claims made by real-world groups working to fight real-world injustices. In other words, through the analysis of the claims made by anti-nuclear organizations regarding the multidimensional injustices involved with the federal “loan guarantee” program, I am able to not only identify how issues of maldistribution, misrecognition, and misrepresentation influence the program, but also to propose possible principles of “energy justice” that could guide future decisions about the development and financing of energy systems. More specifically, the above analysis has led me to propose that “energy justice” requires that the development of energy systems should minimize up-front, capital-intensive requirements to the greatest extent possible. In keeping with very basic market principles, energy systems should be pursued in accordance with the least-cost options that are available. This, of course, requires an honest calculation of the full costs of different energy systems, including the *externalized costs* associated with traditional coal, oil, and gas production, which levels the playing field for renewable energy sources

like wind, solar and geothermal. Additionally, these calculations should be done without consideration of the “sunk costs” associated with energy companies existing infrastructure, because the decisions regarding the development of these infrastructure were not made democratically nor were they made to advance social and environmental well-being; which is entire purpose of establishing principles of “energy justice”.

Secondly, I have proposed that energy justice requires that in cases where public financing of energy systems is necessary, because private financing is unavailable for whatever reason, the eventual profits/benefits should be retained publically. This could take the form of dividend payments to taxpayers/ratepayers or future credits toward their energy costs. Both of these potential principles of energy justice could be used to guide future policy to ensure the most cost-effective energy choices are made, and to ensure public interests are not sacrificed in order to advance private financial gains.

Throughout the various rounds of the conflict between March 2010 and August 2011, the anti-nuclear movement’s arguments against the loan guarantee program evolved and developed in a number of interesting ways. Different maldistributive aspects of the program were identified and critiqued by anti-nuclear organizations and other concerned groups. By linking their arguments against the maldistributive aspects of the program to critiques of government “subsidies” and “bailouts”, these critiques routinely drew from the populist rhetoric/anger that was so common during this period of time.

Additionally, the preceding analysis has begun to highlight how in the course of environmental justice energy activism, the anti-nuclear movement not only draws upon multiple and complementary discourse of social- and environmental-justice, but also how these varied discourses become strategically vital resources. On the one hand, the anti-

nuclear movement utilizes and reconstructs different discourse of social- and environmental-justice because the injustices of nuclear power are themselves multidimensional; involving unjust practices of maldistribution, misrecognition, and misrepresentation. However, on the other hand, the movement's use of these diverse discourses of justice also enables the movement to be flexible and adaptable, as we see with the coalition between NIRS, ACT, and AGE.

As I have shown, the anti-nuclear movement's efforts to oppose the loan guarantee program for new nuclear reactor construction relies primarily on the discourse of distribution, with the discourses of recognition and representation being used in an auxiliary, complementary manner. As I will show below, with regards to radioactive waste disposal (the other central national-level issues for the anti-nuclear movement in the U.S.) the discursive strategy is quite different. The problems of radioactive waste disposal are primarily framed as problems of misrecognition and misrepresentation, and issues of distributive justice are here used to support this dominant framing/discursive strategy.

CHAPTER 3: HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT

From the early days of the Manhattan Project and the 1954 Atomic Energy Act (which relaxed restrictions on nuclear technologies and began the commercial production of nuclear power) radioactive waste has been seen as *the central problem* of nuclear power production by both critics and proponents of the technologies. Perhaps the most direct ways to see the environmental justice problems created by the production of nuclear power is to examine the issues of radioactive waste storage and disposal. Energy systems take on significant social dimensions as these systems are developed, contested, and implemented (Nye, 2001 ; Sze 2005, 2007). Therefore, decision about the production, distribution, and consumption of energy and electricity involve more than just technical/scientific considerations. This is clearly revealed by analyzing the “environmental justice energy activism” of groups working to highlight these social dimensions of energy systems, such as anti-nuclear organizations. The “unsurpassable social and political obstacles” that necessitated the canceling of the Yucca Mountain Project (discussed below) relate back to deep, structural and normative representational, recognitional, and distributive injustices that have plagued the radioactive waste management program in the U.S. since the very beginning. Therefore, in order for the nuclear waste crisis to be solved in a technically, socially, and politically/economically acceptable manner, it is necessary to identify and correct these multidimensional injustices. A productive way to identify (and ultimately correct) multidimensional injustices is to analyze the claims made by real-world groups working to fight real-world injustices. Furthermore, following the methodology established by Fraser (2000; 2003;

2009), we can begin to understand the full structural and normative extent of both just and unjust social arrangements by examining claims made in existing struggles against existing injustices as the starting point for the development of theories of justice (including energy justice as well as other types) .

Initially the Atomic Energy Commission (AEC) and their industrial contractors (e.g. G.E., Westinghouse, Union Carbide, and others) viewed the radioactive waste problem as a “solvable problem”, and were primarily concerned with quieting what they feared was “unreasonable public hysteria” (Walker, 2009). Following the inception of the “Atoms for Peace” program in 1954, the burgeoning nuclear power industry spent almost as much time, resources and effort on public relations as it did on technical research and development (Walker, 2009). By the mid-1960s the overpowering optimism within the nuclear industry and AEC that a “solution to radioactive waste storage was well on its way” gave way to the realization that radioactive waste had become a “huge and ever increasing problem” (Walker, 2009). By the late ‘60s—early ‘70s, a global consensus (among nuclear states) was reached that geological disposal was the best and only long-term solution for the disposal of high-level radioactive waste. However, in the U.S. the conflict-of-interests created by the dual-mandate of the AEC (to both promote *and* regulate commercial nuclear power) began to give rise to a series of controversies involving the commission and their handling of radioactive wastes.

Public protest over the handling, storage and disposal of radioactive waste began in the late 1950s with regards to ocean-dumping; a practice that was quickly abandoned due in large part to public outcry (Walker, 2009). Public concern over radioactive waste skyrocketed after a large and serious leak of radioactive waste was widely reported to

have happened at the Hanford, WA site in 1973. This event led Ralph Nader and the Union of Concerned Scientists to denounce the AEC's handling of radioactive waste at their own facilities, and seriously question their ability to properly regulate commercial facilities (Walker, 2009). This and other scandals and controversies led to the Energy Reorganization Act of 1974 that abolished the AEC and created the Nuclear Regulatory Commission (NRC). The same year the NRC created a taskforce charged with investigating and explicitly acknowledging the technical, political, organizational, and temporal uncertainties surrounding radioactive waste, including a full consideration of societal and institutional issues (Walker, 2009). Persistent public concern mounted during the '70s, with site suitability studies (for radioactive waste repositories) generating mass protests in MI, NY and Washington D.C. At this point the DOE (created by President Carter in 1977) begins to focus on NM, NV, and WA as states that had been "nuclear friendly" in the past (Walker, 2009).

In 1982 Congress finally acted on the radioactive waste problem by passing the Nuclear Waste Policy Act (NWPA). Among other things, the 1982 Act identified nine possible sites in six states for further study regarding their suitability for an underground geological repository to permanently house high-level radioactive waste. The passage of the 1982 NWPA was possible because of a compromise between legislators from the eastern and western parts of the country regarding the location of sites that would be considered for the development of a repository. The Act included a provision of "regional equity" requiring the federal government to establish two geologic repositories; one east of the Mississippi River and one west of the river. Additionally, the 1982 Act

specified the containment of radioactivity was to be accomplished by the *geologic* features of the repository site, not by engineered barriers.

The Nuclear Waste Policy Act Amendments of 1987 (NWPAA) abandoned the concept of “regional equity” and limited future site selection for a radioactive waste repository to just one site; Yucca Mountain, NV, 90 miles north of Las Vegas. Yucca Mountain is located on the ancestral land of the Western Shoshone and Southern Paiute, as acknowledged by the federal government in the congressionally ratified 1863 Treaty of Ruby Valley. The “1987 Screw Nevada Bill” (as it came to be known) left the state of Nevada and local American Indian groups holding the bag for the nation’s first and only high-level radioactive repository unless (and even once) fatal flaws were discovered that would disqualify the site (Walker, 2009; Van Gerven, 2014; MacFarline and Ewing, 2007; Vandebosh and Vandebosh, 2007; Kuletz, 1998; Jacob, 1990). Since 1987 hundreds of citizen and environmental groups, American Indian Tribes and organizations, and the state of Nevada itself have fought the Yucca Mountain Project at every step of its development. Corbin Harney, a spiritual leader of the Western Shoshone wrote in 2000:

Yucca Mountain, in the heart of the Western Shoshone Nation, is a place of deep spiritual significance to Shoshone and Pauite peoples. Despite this, the federal government plans to send there 98 percent of the radioactivity generated during the entire Nuclear Age... The government has no right to use Yucca Mountain this way. Newe Sogobia –the land guaranteed the Western Shoshone Nation by treaty – includes Yucca Mountain. Even the mere study of the site is a violation of the treaty. The Shoshone people

have made their wishes clear: they want the DOE off their land and their mountain restored to them (Harney, 2000).

According to Beyond Nuclear, “Yucca Mountain was singled out in the first place due to raw politics, not sound science. Yucca Mountain is an active earthquake zone, at risk of volcanic activity, and would have massively leaked any radioactive wastes buried there into the drinking water supply below, as well as the air above” (Beyond Nuclear “Press Release”, 02/03/2010). According to NIRS, more than one hundred international and national groups, and over seven hundred state/local groups opposed the YMP (NIRS “List of Organizations”, 2010). Perhaps most significantly, Native American groups from around the Southwest, including Western Shoshone and Southern Paiute groups, organized a “No Nuclear Waste on Native Lands” campaign. This campaign was directed at changing the fact that, “Every single proposal to store high level nuclear waste in North America targets Native territories. Not only do these proposals represent immense environmental injustices toward Native peoples but the dumps, if authorized, will enable a dying nuclear industry to get some last breaths... Targeting isolated and economically disenfranchised Indians is their one solution. Help us close this loophole. Join the movement to stop nuclear waste on Native lands and create the impetus for our society to move towards wind, solar and other renewable resources” (Harney, 2000).

After years of “site suitability studies” the DOE recommended Yucca Mountain be developed for a high-level nuclear waste repository in 2002. Then President Bush and Congress agreed, and in 2008 the Bush Administration DOE submitted a license application to the NRC for the construction of the repository, which began a review

process that was expected to take up to four years. However, in February 2010 the Obama administration made two crucial moves to end the Yucca Mountain Project (YMP). The FY2011 budget the White House sent to Congress declared that the plan to store high-level radioactive waste at the Yucca site was "not a workable option." The budget proposed eliminating funding for the project office in the fiscal year that began Oct. 1, including all funding for the Office of Civilian Radioactive Waste Management, which managed the day-to-day operations of the project. Secondly, Energy Secretary Steven Chu announced the Energy Department would file a motion to "stay" all license proceedings before the Nuclear Regulatory Commission for 30 days, and then would move to withdraw the license application "with prejudice". Withdrawing the license "with prejudice" means the department could not resubmit the license at a later date, and a new act from Congress would be needed to revive the project.

These moves by the Obama administration were met with much excitement and fanfare from all quarters of the anti-nuclear movement. For many groups (especially American Indian, environmental, and citizen groups in Nevada) these developments were seen as the payoff for more than two decades of relentless opposition and struggle against the YMP. The most active and longstanding opponents of the YMP include the grassroots group the Nevada Nuclear Waste Task Force, the State of Nevada Agency for Nuclear Projects, as well as Western Shoshone Indian organizations, such as the National Council, Defense Project, Shundahai Network, and bands such as the Timbisha Shoshone Tribe in Death Valley. Without these and other group's tireless, and often thankless, efforts for over two decades, the fight against the YMP would have been lost long ago (Beyond Nuclear "Press Release", 02/03/2010). Particularly for American Indian

opponents of the project, this was not just an environmental victory, but also an environmental *justice* victory.

On the other hand, anti-nuclear group's excitement was tempered by the curious language the Obama administration used to frame their decision to terminate the project. The FY2011 Budget Request only noted the Yucca Mountain Project was "not a workable option". Subsequent comments by Administration and DOE officials consistently referred to the "social and political" obstacles hampering the YMP, and claimed as a result an alternative strategy would best serve the public's interests. At no point did the Administration or DOE reference the numerous technical and/or scientific shortcomings of the Yucca Mountain site, which many in the anti-nuclear movement felt should have disqualified Yucca Mountain from consideration. In fact, as far back as 1998, 219 national and state/local groups unsuccessfully petitioned the DOE to immediately disqualify the Yucca Mountain, Nevada site and declare it unsuitable for further consideration as a high-level nuclear waste repository (NIRS, 1998). This petition was filed in response to studies and data that anti-nuclear groups felt should have triggered automatic disqualification of the site pursuant to the 1982 Nuclear Waste Policy Act (NWPA). The NWPA clearly establishes the "suitability" of a site is defined in the Site Suitability Guidelines, which state a site is disqualified at any time during the siting process if the evidence shows that any disqualifying condition exists. The petition claimed the DOE had within its possession evidence and data that support the immediate disqualification of Yucca Mountain.

More specifically, using chlorine-36 as a tracer (which is only present in water exposed to atmospheric testing of nuclear weapons beginning in the late 1940s—1950s),

residues from rainwater less than 50 years old had been detected at the underground depth of the proposed repository. This significant discovery contradicted earlier models of rainwater flow-rates of surface water to the underground water table. This coupled with the groundwater flow model indicated the site met the conditions for disqualification under the Hydrology Guideline, which states a groundwater travel time to the accessible environment of less than 1000 years shall be grounds for disqualification (NIRS, 1998). Therefore the petition concludes, “The proposed Yucca Mountain repository will likely result in significant amounts of radionuclides degrading the quality of off-site supplies of groundwater that are presently suitable for and used for human consumption and crop irrigation...This concern violates ...the Disqualifying Condition for Socioeconomic Impacts” (NIRS, 1998).

These deficiencies with the Yucca Mountain site along with well documented concerns over seismic activity, volcanic activity, and human intrusion at the site lead the anti-nuclear movement to conclude Yucca Mountain could never be shown to be suitable location for a high-level radioactive waste repository. However, none of these issues were raised by the Obama Administration and/or the DOE as grounds for terminating the YMP in 2010. Instead, the decision to terminate the project was repeatedly framed as a result of unsurpassable “social and political obstacles” that resulted in the need for a new strategy regarding the storage of nuclear waste. From a political/organizational point-of-view it is entirely understandable why the DOE would not reference the technical/scientific shortcomings of the Yucca Mountain Site; as the DOE had been denying the significance (and even the existence) of these data for many years. It would have been essentially impossible for them to officially admit there were in fact technical

deficiencies with the Yucca Mountain Site that should have rendered it disqualified years ago. To do so would have thrown light on the widespread practice of “pencil engineering”, whereby officials respond to the failure of a site to meet some pre-established criteria by changing or reducing the threshold for compliance with that criteria. This is exactly what the DOE did with regards to the data relating to water-flow rates. When data clearly showed water moved from the surface into the repository and back out again much, much faster than previously assumed, the response was not to disqualify the site, as required by the 1982 NWPA, but rather to change the guideline.

The Administration’s and DOE’s failure to reference any of these technically disqualifying features of the Yucca Mountain site opened the door for pro-nuclear politicians and organizations to claim the decision to terminate the project was entirely “politically motivated”. More specifically, pro-nuclear groups such as the Nuclear Energy Institute and legislators from South Carolina and Washington State (among others) slammed the decision to terminate the Yucca Mountain Project as a “politically motivated decision” that reflected a backroom deal between President Obama and Senate Majority Leader Harry Reid (D-NV). Reid has opposed the YMP during his entire tenure in the Senate, having suffered the humiliation of the “screw Nevada bill”, which limited site selection to only Yucca Mountain, during his freshman year. Critics of the project’s termination claimed Obama had promised Reid he would end the project, if Reid helped deliver the States of Nevada to Obama during the 2008 Presidential election. The legitimacy of these claims is essentially impossible to determine. However, the consistent failure to reference *any* of the technical problems with Yucca Mountain surely provided fuel for these critics. For many organizations in the anti-nuclear movement it

appeared the Obama Administration had made the right decision, although possibly for the wrong reasons.

Despite the on-going legal battle over the termination of the Yucca Mountain project within the NRC and District Courts, by the end of September 2010 work on the project was essentially terminated. Concurrent with the Administration's announcement (February 2010) that the Yucca Mountain project would be canceled, President Obama instructed Energy Secretary Stephen Chu to form a Blue Ribbon Commission on America's Nuclear Future (the Commission or BRC). The Executive Order addressed to the Energy Secretary dated January 29th, 2010 begins by saying:

Expanding our Nation's capacity to generate clean nuclear energy is crucial to our ability to combat climate change, enhance energy security, and increase economic prosperity... An important part of a sound, comprehensive, and long-term domestic nuclear energy strategy is a well-considered policy for managing used nuclear fuel and other aspects of the back end of the nuclear fuel cycle (Executive Order, 01/29/2010).

This introductory language and the use of the phrase "America's nuclear *future*" in the BRC's title indicates the Commission's foundational assumption; that the use of nuclear power in the U.S. would not only proceed in the future, but would be expanded. The question of whether or not the U.S. should continue to use (or expand) nuclear power had clearly already been answered in the affirmative. Thus, the limited scope of the kinds of questions the BRC could ask and answer severely undercut all of the BRC's

subsequent efforts to proceed openly and transparently. For the anti-nuclear movement *the most important question* (as to whether or not the U.S. should continue to produce nuclear power) was never open for public discussion, and thus the decision reached did not include public input. As I will discuss more below, this is the very definition of misrepresentation and/or “misframing”, as laid out by Fraser (2010), in that the rules governing the decision-making process in this case preclude public participation in *the most fundamental* decision(s) regarding nuclear power.

After noting the importance of sound radioactive waste disposal policy, the Executive Order goes on to say, “Yet the Nation's approach, developed more than 20 years ago, to managing materials derived from nuclear activities, including nuclear fuel and nuclear waste, has not proven effective” (Executive Order, 01/29/2010). As noted above, the EO does not specify why past approaches to radioactive waste disposal were not effective, only that they were. Accordingly, the Executive Order instructed the Secretary of Energy to create the Commission and appoint its members. Those members were to include recognized representatives and experts from a range of disciplines and with a range of perspectives. (Although, for many anti-nuclear groups, the range of perspectives included did not range far enough beyond those of the nuclear industry and their allies in government.) The Commission’s proceedings were to be “open and transparent”. The Commission was tasked with performing a comprehensive review of policies for managing the back end of the nuclear fuel cycle, including all alternatives for the storage, processing, and disposal of civilian and defense used nuclear fuel and nuclear waste. More specifically, the Commission was instructed to consider a broad range of technological and policy alternatives, and to analyze the scientific, environmental,

budgetary, economic, financial, and management issues, among others, surrounding each alternative it considers (Executive Order, 01/29/2010).

In keeping with the fundamental assumption guiding the Commission (that the U.S. would continue or expand the use of nuclear power in the future), the BRC was instructed to only consider policies for managing “the back end of the nuclear fuel cycle”. This is consistent with the broader pattern of hazardous waste regulation in the U.S. first identified by Szasz (1994) in his book, *Ecopopulism: Toxic waste and the Movement for Environmental Justice*. In this work, Szasz argues the passage of the Resource Conservation and Recovery Act in 1976 settled two longstanding questions about the regulation of hazardous (including radioactive) materials in the U.S. One question had to do with whether to regulate production or regulate disposal. In other words, should the government regulate industrial waste by regulating production, and make industry reduce the amount of waste it generates, or should the government not interfere with the production side and instead focus on improving the quality of disposal? The second question had to do with who would construct, own and operate hazardous waste facilities. As Szasz argues, regulation creates demand for hazardous waste disposal/handling facilities, not necessarily supply. So the question was, should the federal government step-up and take the lead in building and operating hazardous waste facilities, or should they be more passive and wait for private sector entrepreneurs to see the business opportunity?

The RCRA of 1976 answered both of these questions, at least partially and temporarily. It became established that the federal government would focus its regulatory efforts on the *disposal* of hazardous waste in the form of “tailpipe

regulations”, thus by-and-large not interfering in the productive affairs of industry. Additionally, it was established the federal government would (at least initially) take the lead in constructing and operating hazardous waste facilities, until the private sector could be more fully developed (Szasz, 1994). As I have shown, this regulatory strategy is continued with regards to the regulation of high-level radioactive waste. The government has decided to deal with the radioactive waste problem at the “tailpipe” or backend of the fuel chain, rather than on the production side of the equation. Also, as established in the 1954 Atomic Energy Act and the 1982 Nuclear Waste Policy Act, and continued with the establishment of the BRC, the federal government would build, own and operate one or more high-level radioactive waste disposal facilities.

However, this regulatory strategy often puts regulatory agencies at odds with movements for environmental justice, including the anti-nuclear movement. The explicate decision to focus regulatory efforts (and thus governmental efforts to protect people and the environment) on the “tailpipe” or backend of the production process means potential protective actions are not being taken at the frontend, where the hazardous materials are actually created. The processes that lead to the creation of hazardous materials are often just as (if not more) important as issues of disposal to environmental justice activists, including the environmental justice energy activists in the anti-nuclear movement. The result in many cases is dissatisfaction on the part of environmental justice (energy) activists with public involvement in decision-making procedures. It is very common for concerned citizens and social movement activists to feel they have played a small, easily dismissed role in environmental and technological decision-making procedures. This is often due to the fact that participants come to

understand many of the most fundamental and impactful decisions have already been made, and thus are “outside the scope” of public involvement.

As it happens, this dynamic often seems to escape the attention of regulatory officials and representatives of polluting industries. Many people and groups, on the other side of the table from the public in these proceedings, often publicly express their confusion and bewilderment about why public participation programs are not considered more legitimate by members of the public. As a result, they tend to rely on more and more “educational” efforts and campaigns, as if the problem is a lack of information on the part of the concerned public (Freudenberg and Grambling, 1994; 2010). What they fail to understand in many cases is concerned members of the public are often exceedingly well informed about the issues at hand. Their concerns are not irrational and based on ignorance; they are often very rational and based on the perceived injustice of limited democratic involvement in decisions that may drastically affect their lives.

Somewhat apart from the problematic regulatory paradigm under which the BRC was created and operated, the composition of the Commission itself initially gave the anti-nuclear movement reason for limited optimism, as well as reason for serious concern. As mentioned above, by-and-large the 15 member Commission consisted of former legislators and nuclear regulatory officials, representatives from the energy and nuclear industries, labor leaders, and other academic experts from the fields of public policy, environmental science and nuclear physics and engineering. Conspicuously absent from the Commission were any representatives from communities impacted by the various stages of the nuclear fuel chain, or representatives from the anti-nuclear movement. According to Mary Olson of the Radioactive Waste Project at NIRS, “a

majority of the Commissioners are individuals who have made, or supported the making of, the radioactive waste in question over the course of their careers... The Blue Ribbon Commission on America's Nuclear Future does include several members who are not directly tied to the nuclear industry, but a controlling share of the seats are held by individuals who, at one time or another, have had primary decision-making authority, or who have personally profited from commercial nuclear technology” (NIRS “Press Release”, 1/25/2012). This is a clear case of what Fraser (2010) calls the injustice of “ordinary misrepresentation”, where some people impacted by the decisions reached do not have adequate representation in the decision-making process. In this case, the injustice of “ordinary” misrepresentation is inflicted on those people and groups who are perhaps *most* impacted by the decisions reached regarding the handling of high-level radioactive waste (e.g. American Indian organizations, uranium-mining and nuclear reactor communities, etc.).

The Commission was co-chaired by *Lee Hamilton*, who helped lead the 9/11 Commission, and *Brent Scowcroft* who has experience as National Security Advisor to President Ford. For some anti-nuclear groups there was limited optimism that Hamilton would be sensitive to the dangers nuclear reactors and radioactive waste pose as terrorist targets, and Scowcroft would be wary of reprocessing technologies, which were banned during his time in D.C. The other thirteen commissioners included: *Mark Ayers*, President, Building & Construction Trades Department, AFL-CIO. The AFL-CIO is explicitly pro-nuclear, I believe reflecting their belief that large, centralized construction projects (e.g. new nuclear reactors, disposal facilities, etc.) are easier to unionize than smaller, more decentralized energy projects like those associated with renewable

energies; *Vicky A. Bailey*, Principal, Anderson Stratton Enterprises, LLC. Bailey has over twenty years of corporate executive and governmental experience in energy and regulated industries, including experience as a public utility corporate executive and as the leading international official for the US Department of Energy; *Albert Carnesale*, Chancellor Emeritus and Professor of public policy and mechanical and aerospace engineering at UCLA. Carnesale is a member the Mission Committees of the Lawrence Livermore National Laboratory and the Los Alamos National Laboratory; *Pete V. Domenici*, Senior Fellow, Bipartisan Policy Center and former U.S. Senator (R-NM). During his years in the Senate Domenici earned a reputation for being one of the most staunch proponents of nuclear power in Washington, and authored the book *A Brighter Tomorrow: Fulfilling the Promise of Nuclear Energy* in 2004; *Susan Eisenhower*, President, Eisenhower Group, Inc., which provides strategic counsel on political, business and public affairs projects for Fortune 100 and Fortune 500 companies, including several nuclear firms and utilities. Eisenhower has experience as an advisor to the DOE on issues of nuclear-nonproliferation and the threats of nuclear terrorism; *Chuck Hagel*, former U.S. Senator (R-NE). Hagel serves on the board of directors of Chevron Corporation, the advisory boards of Deutsche Bank Americas, Corsair Capital, M.I.C. Industries, is a Director of the Zurich Holding Company of America, and is a Senior Advisor to McCarthy Capital Corporation. Through his numerous connections with these financial organizations, Hagel has many economic, political and social ties to the nuclear power industry; *Jonathan Lash*, President, World Resources Institute, which is a non-profit environmental organization that conducts research and policy analysis intended to produce practical solutions to global sustainability challenges. Mr. Lash is a recognized

expert on climate change, energy security, and environment and development policies, and could be considered one of two environmentalists on the Commission; *Allison Macfarlane*, Associate Professor of Environmental Science and Policy, George Mason University and co-editor (Rodney C. Ewing) of *Uncertainty Underground: Yucca Mountain and the Nation's High-Level Nuclear Waste* (MIT Press), which seeks to interrogate the uncertainties found within the different technical dimensions of the Yucca Mountain Project. She was a Social Science Research Council-MacArthur Foundation fellow in International Peace and Security, and has served on National Academy of Sciences panels on nuclear energy and nuclear weapons issues. She has also served as chair of the Science and Security Board of the Bulletin of the Atomic Scientists and serves on the Keystone Center's Energy Board. Her research focuses on environmental policy and international security issues associated with nuclear energy, especially the back-end of the nuclear fuel cycle. While she has previously supported the Yucca Mountain Project, I believe Macfarlane has a much more realistic understanding of the pros and cons of nuclear power, than do most of the other Commission members. For instance, in a 2003 article Macfarlane shows that in order for nuclear power to significantly reduce the amount of CO₂ produced in the U.S. it would require a tenfold increase in the number of nuclear reactors presently operating. This tenfold increase would result in the production of about 70,000 tons of high-level radioactive waste *per year*; which would require constructing and opening a geologic repository the size of Yucca Mountain *every year*! I have included so much of her bio because I deeply respect her work and think she was a tremendous asset on the Commission; *Richard A. Meserve*, former Chairman, U.S. Nuclear Regulatory Commission under Presidents Clinton and

then Bush, where he oversaw the nearly disastrous debacle at the Davis-Bessie plant in Ohio ; *Ernie Moniz*, Professor of Physics, Massachusetts Institute of Technology. Dr. Moniz served as Under Secretary of the Department of Energy from October 1997 until January 2001. In that role, he had programmatic oversight responsibility for the offices of Nuclear Energy and Civilian Radioactive Waste Management, among others; *Per Peterson*, Professor and Chair, Department of Nuclear Engineering, University of California-Berkeley. Dr. Peterson has published over one hundred articles on the subjects of advanced nuclear reactor designs, inertial fusion energy, high level nuclear waste processing, and nuclear materials management; *John Rowe*, Chairman and Chief Executive Officer, Exelon Corporation. Rowe has been a chief executive in the utility industry since 1984, and has been with Exelon Corporation since its inception in 2000. Chicago-based Exelon operates the largest fleet of nuclear power plants in the U.S. and has many longstanding ties with the Obama administration. Rounding-out Rowe's pro-nuclear credentials is the fact he served as the chairman of Nuclear Energy Institute, which is the central lobbying and PR arm of the nuclear industry; finally *Phil Sharp*, President, Resources for the Future and former Representative (R-IN). Sharp currently sits on the board of directors of the Duke Energy Corporation, which operates several dozen nuclear reactors in the Southeastern U.S., and is a member of the National Petroleum Council.

I have included such a lengthy description of the Commission member's professional biographies because these biographies clearly show the representational bias evident in the make-up of the BRC. What Kuletz (1998) accurately termed the "nuclear-industrial-academic-complex" is well represented among the Commission members. The

majority of the Commission's members are former pro-nuclear legislators, former nuclear regulators with many longstanding ties to the industry, nuclear industry executives, and academic experts committed to nuclear technologies. In my informed opinion, only Lash and Macfarlane could accurately be considered "environmentalists". Furthermore, and perhaps most importantly, there are no representatives of communities who are negatively impacted by the nuclear fuel chain, nor any representatives from any quarter of the anti-nuclear movement. This is precisely the type of political injustice that Fraser (2010) refers to as "ordinary" misrepresentation, in that decision-making procedures (regarding the future of radioactive waste disposal) are setup in such a way as to exclude some people and groups who are affected by the decisions reached. As I will argue below, the misrepresentational aspects of the BRC's composition resulted in widespread dissatisfaction, within the anti-nuclear movement, with both the Commission's proceedings and their eventual recommendations.

Overall, as I've shown, before the BRC even held their first public meeting, it was becoming increasingly clear that the Commission was being built around representational injustices on at least two levels; what Fraser (2010) calls the political injustices of "misframing" and "ordinary misrepresentation". The former relating to the fact that *the central question* regarding whether or not to continue to pursue nuclear power was framed as being "outside the scope" of the BRC, and thus did not include public participation or even comment. The latter relating to the fact that the structure of the decision-making process functions wrongly to exclude those who (in this case) are most impacted by the decision-reached regarding the handling of radioactive wastes (e.g. American Indian groups, reactor communities, uranium mining communities, etc.) These

injustices worked in tandem to seriously undercut the perceived legitimacy of the Commission itself, as well as the recommendations that resulted, for those in the anti-nuclear movement

During the first public meeting of the full BRC on March 26th, 2010 Kevin Kamps of Beyond Nuclear gave testimony urging the Commission to “Put a stop, once and for all, to the shameful history of targeting Native American communities and lands with radioactive waste dumps.” Kamps is the “radioactive waste watchdog” for Beyond Nuclear, and specializes in issues of high-level waste management and transportation, new and existing reactors, reactor decommissioning, and federal subsidies related to nuclear technologies. In 2005 Kamps along with Public Citizen documented the history of “radioactive racism” at the heart of national efforts to place high-level radioactive waste in “parking lot dumps” on native lands (Kamps, 2005).

Briefly, Kamps (2005) expresses much of the anti-nuclear movement’s concerns regarding the environmental injustices associated with radioactive waste disposal and nuclear energy production in the U.S. With the passage of the Nuclear Waste Policy Act Amendments in 1987 (NWPAA), Congress created the Office of the Nuclear Waste Negotiator in an effort to open a federal “Monitored Retrievable Storage” (MRS) site for the temporary, interim storage of high-level nuclear waste. The Negotiator was authorized to seek states, counties, or Native American Tribes that might be interested in hosting such a facility in return for compensation. The process was supposed to be “voluntary”, where a state, county, or tribe’s elected representatives could only act under authorization of the majority of their people. However, in a mistake that would be

repeated almost twenty five years later by the BRC (see below), no procedures were established for determining what constituted a “voluntary” host community.

“Voluntary siting” has long been seen as a representatively more just form of hazardous facility siting than are more traditional methods (e.g. the use of “eminent domain”). However, especially when dealing with American Indian communities, “voluntary siting” often does not reflect nor promote more socially and environmentally just methods of decision making. “The economic impoverishment of tribes, the tendency for tribal leaders to act without the authorization or even knowledge of their people, and the Bureau of Indian Affairs’ ability to interfere in internal tribal affairs arbitrarily and capriciously...all mean that these siting processes were all too often not fair, nor truly voluntary” (Kamps, 2005). In other words, injustices of maldistribution (tribal impoverishment), misrepresentation (tribal governance), and misrecognition (BIA) work in tandem to prevent the “voluntary” siting of atomic waste on Native lands from being socially, politically, economically, and/or environmentally just.

In August of 1990 David Leroy was confirmed by Congress as the first Nuclear Waste Negotiator, and in May of 1991 his office sent letters to every state, county, and federally recognized tribe in the country, offering hundreds of thousands (and eventually millions) of dollars for first considering, and then ultimately hosting a dump. Of the 50 states and thousands of counties approached, only four counties officially respond, which represents about a 0.1% response rate. Out of the over five hundred federally recognized Tribes approached, twenty tribes applied for Phase I study grants, which was about a 4.0% response rate, or almost 40 times higher than that of counties (Kamps, 2005). Clearly there was not great interest in “volunteering: for this type of facility on the part of

political units on various levels, or on the part of tribal governments. By August 1992 the four counties that responded to the Negotiator's request were no longer moving forward, due to significant local opposition and the opposition of the State Governors.

Consequently, at this point the Negotiator (and the entire siting process for a MRS facility) began focusing exclusively on Native American communities.

In fact, during a truly revealing speech Leroy gave in 1991 before The National Congress of American Indians (which is comprised of tribal chairpersons and is the oldest Native American organization in the U.S.) entitled "Federalism on Your Terms: An Invitation for Dialogue, Government to Government", the Negotiator argued Native American Tribes are incredibly well suited (even preferable) for storing the country's high-level nuclear waste. Quoting the famous Duwamish leader Sealth (more commonly known as Chief Seattle) many times, Leroy cites the Native American values of long-term health and sustainability as reason for this belief (Kamps, 2005). More specifically, Leroy infamously argued:

It is the Native American cultures of this continent which have long adhered to the concept of planning for many generations of future unborn children in the decisions which are made today...With atomic facilities designed to safely hold radioactive materials with half-lives of thousands of years, it is the Native American culture and perspective that is best designed to correctly consider and balance the benefits and burdens of these proposals (Quotes in Kamps, 2005).

For many American Indian representatives in attendance, Leroy's connecting some ill-conceived idea of a "Native ethic" with nuclear waste storage was not only patronizing, but also "the granddaddy of all oxymorons" (Kamps, 2005). Grace Thorpe, the renowned American Indian activist, bristled at the federal agency's attempt to co-opt tribal traditions in 1993 when speaking before the National Congress of American Indians by saying, "It is wrong to say that it is natural that we, as Native Americans, should accept radioactive waste on our lands, as the U.S. Department of Energy has said" (Quoted in Kamps, 2005).

By August of 1993 only the Mescalero Apache Tribe (New Mexico) and the Skull Valley Band of Goshutes (Utah) were still moving forward with preliminary negotiations regarding a MRS site. In October of 1993 Congress voted to effectively end the work of the Nuclear Waste Negotiator and the office's funding expired in December of 1994. This was largely due to opposition from states like New Mexico who feared a MRS site would be sited without their permission, control or profit (Kamps, 2005). Also, the nuclear power industry and its supporters in Congress had grown impatient with the lack of success of the Negotiator, and instead began pushing for "interim storage" of high-level radioactive waste; a strategy that would be continued over two decades later by the BRC (See below). Additionally, grassroots Native American activists like Grace Thorpe also played a very important role in the demise of the Negotiator program (Kamps, 2005)

However, by December of 1993 thirty three nuclear utilities organized themselves into a private consortium and picked up negotiations (where the Nuclear Waste Negotiator left-off) with the Mescalero and Skull Valley tribes. By March 1994 the consortium was in serious negotiations with the Mescalero Tribe, which involved the

consortium sending large amounts of money to the Tribe's Council Members (Kamps, 2005). At this point, the lack of democratic decision making (and thus representational justice) became blatantly apparent; as did the general problems with seeking "volunteer" host communities without specifying how these would be determined. Rufina Marie Laws, a Mescalero Apache living on the reservation, began publically opposing the dump and formed a group called Humans Against Nuclear-Waste Dumping (HANDS) (Kamps, 2005). By the end of 1994 the consortium had reached a tentative agreement with Mescalero Tribal Council. Although the Tribal Council had been in negotiations resulting in this agreement for over three years, tribal members themselves knew little about the proposal. No public meetings had been held, despite a petition being signed by 221 tribal members in 1992 requesting such a meeting to discuss the pros and cons of the proposed facility. Although the tribal Council refused the petition's request (to hold a public meeting on the issue), tribal members invited speakers and held the meeting anyway in August of that year (Kamps, 2005). When the proposal to host the MRS dump finally come before the Tribe for a vote in January of 1995, the Mescalero Apaches voted 490 to 362 to deny the proposal.

But in March 1995 a second petition drive calling for a second referendum was under way. Although tribal officials characterize the second petition drive as a "grassroots initiative", the move to overturn the referendum was led by the Tribal Housing Director. This proved to be especially problematic because as the tribal official heading up the petition drive was also in charge of tribal housing and other support services, many tribal members feared voicing opposition to the dump, lest they suffer retaliation and loss of services (Kamps, 2005). Although the signature sheets were never

made public, it was determined by tribal officials that the petition had gathered enough signatures and a second vote took place. This vote overturned the previous referendum by a vote of 593 to 372, approving the dump on their land. Ironically, however, a month after Mescalero Apaches voted to “approve” the dump, the consortium of nuclear utilities dissolved due to the dissatisfaction of many of its thirty three members with the progress it had made. In May of the following year the Mescalero Tribe breaks off negotiations with the consortium following continuous resistance and opposition by tribal members. At this point the original consortium reorganized itself with eight remaining members in Private Fuel Storage LLC (PFS) and resumes negotiations with the Skull Valley Band of Goshutes; the other Indian tribe to have proceeded past the first steps with Nuclear Waste Negotiator (Kamps, 2005).

The legitimacy of democratic/representative governance of the Skull Valley Band of Goshutes is similarly suspect, especially with regards to the issues of a Monitored Retrievable Storage (MRS) site for radioactive waste on their reservation. The push for such a facility began in 1992 when Lawrence and Richard Bear, Chair and Vice Chair of the Skull Valley Goshute Tribe, begin to make decisions without the knowledge of the General Council (the General Council refers to the entire adult membership of the Skull Valley Band). The Bears hired a “Tribal attorney” named Danny Quintana, a non-Indian who first brought the possibility of a waste storage facility to the Bears’ attention, and who stood to capture a large share of the money the project would eventually bring (Public Citizen, 2005). The Bears then created the unauthorized Tribal office of Project Manager (and appointing Leon Bear the head), which proceeded to get involved in the U.S. Office of the Nuclear Waste Negotiator’s Monitored Retrievable Storage Project

using Tribal funds without informing or getting the approval of the General Council. At this point a Phase I grant of \$100,000 from the Office of the Nuclear Waste Negotiator was awarded to the Tribe to investigate the benefits and impacts of siting a MRS at Skull Valley, despite the fact the General Council had not approved involvement in this project (Kamps, 2005).

Dissatisfaction with the Bears' leadership continued to grow among tribal members, due in large part to the Bears' support for MRS dump, and on January 8th, 1994 a recall election was held. Tribal political procedures required a quorum of the General Council. A quorum requires that more than half of the Tribe's adult members attend the meeting. With 43 of the 70 members of the general Council present, the Bears were voted out of office by a majority of the voting members present (Kamps, 2005).

Additionally, a resolution was passed that rejected Danny Quintana as "Tribal attorney" and furthermore asserting that he never legitimately represented the Tribe in any way whatsoever. Three days later, there was a meeting at the Headquarters of the Bureau of Indian Affairs in Salt Lake City, UT concerning the recall elections. Despite acknowledging the recall elections were technically valid, the BIA decided it would not certify the election until the BIA had polled the entire General Council. This was due in part to Danny Quintana arguing all voting members of the General Council had not properly notified of the recall meeting/vote. The BIA agreed, although there is no legal basis in BIA procedure for this interference in an internal Tribal election (Kamps, 2005). On January 31st, the BIA found their poll to be a tie between those who wanted a new election, and those who were content with the recall proceedings. The BIA then ruled "the status quo should continue", which by their own definition would mean the recall

elections stand. (Kamps, 2005). However, the BIA determined that Lawrence, Richard, and Leon Bear would still be the Tribal officers. It's relevant to note that when asked two months later to produce the mailed-in poll ballots, the mailing list, and the list of those returned, etc., BIA says that it is unable to do so, because all of the documents have been destroyed (Kamps, 2005).

This clear violation of Tribal sovereignty, and thus representative justice, set the stage for the eventual construction and operation of a MRS radioactive waste site on the Skull Valley Goshutes Reservation. In December of 1996, again without the knowledge or authorization of the General Council, Leon Bear signed a preliminary lease agreement with Private Fuel Storage, LLC (PFS) for an undisclosed amount of money. In May of 1997 an official lease agreement is signed by Leon Bear and PFS, again without the General Council's approval. The BIA approved the official lease agreement three days later, although the BIA claims to have no record of the process used to review the lease. The rubber stamped approval of such an important document violates the BIA's trust responsibility to the Skull Valley Goshute Tribe and its individual members (Kamps, 2005). The final hurdle for PFS was cleared in May of 2000 when they signed a deal with Toole County (the county in Utah surrounding the Skull Valley Goshute Reservation) in exchange for the county's support of the dump. The agreement purportedly provided the county at least \$90 million, and possibly more than \$200 million, over the supposedly maximum 40 years that irradiated nuclear fuel could be stored on the reservation (Kamps, 2005). As part of the deal the Toole County commissioners who were signatory to that contract were required not say anything negative about PFS that might restrict or hinder PFS from moving forward in their license

with the NRC. On February 24th, 2005 the NRC's Atomic Safety Licensing Board approved PFS's preliminary license, and the full five-member NRC approved the official license in April of that year (Kamps, 2005).

In his testimony before the Blue Ribbon Commission's first public meeting in 2010 Kamps sought to have this shameful, illegal and unjust history of discriminatory siting policies explicitly *recognized* by the BRC. More specifically, Kamps repeatedly implored the Commission to not only acknowledge how these unjust, discriminatory policies were in-and-of-themselves wrong and indefensible, but also significantly contributed to the failures of previous efforts to craft nuclear waste disposal policy. Thus this history needs to be taken into consideration when thinking about how to proceed in new directions with regards to radioactive waste disposal. Moreover, he asked the Commission to end this pattern of radioactive racism expressed in the targeting of Native Lands and Peoples for radioactive contamination. Sadly for Native American communities and the broader anti-nuclear movement concerned with energy justice, Kamps' pleas fell on deaf ears. As I explore below, the BRC essentially disregarded the injustices of these past efforts to develop radioactive waste disposal policy, and recommended that moving forward the U.S. should pursue the same basic strategy of coercing impoverished, marginalized communities to "volunteer" to host such facilities. This glaring neglect of past and potential future environmental (in)justice issues by the BRC was succinctly summarized by the Blue Ridge Environmental Defense League (BREDL) in their response to the Commission's eventual recommendations. BREDL stated in their response, "[we] can find no reference for or commitment to the principles of environmental justice by the Blue Ribbon Commission... The Blue Ribbon

Commission must not overlook important issues of environmental justice...[because] the ongoing struggle for environmental justice is part of the great change which seeks to alter society to become more humane towards respect for all living things” (BREDL “Response to BRC’s Draft Report”, 10/31/2011).

As I have discussed above, the Blue Ribbon Commission on America’s Nuclear Fuel was tasked with answering several “key questions” regarding the management, storage, and disposal of the nation’s civilian radioactive materials, include the near 70,000 tons of high-level radioactive waste produced by nuclear power plants around the country. The BRC’s Report to the Secretary of Energy released on July 29th, 2011 contained seven “key” recommendations, as well as several suggestions for proposed legislative changes and tips for getting started with the process of siting new nuclear waste management facilities. Echoing the perspective of the BRC’s Charter (discussed above) The Report begins by noting, “America’s nuclear waste management program is at an impasse...The approach laid out under the 1987 Amendments to the Nuclear Waste Policy Act—which tied the entire U.S. high-level waste management program to the fate of the Yucca Mountain site—has not worked to produce a timely solution for dealing with the nation’s most dangerous nuclear materials” (BRC, 2011 pp. iii). The Report argues that the multiple reactor accident at Fukushima Daichii in March 2011 brought the problems of nuclear waste into the public eye as never before. Therefore, The Report continues, a new strategy is needed for managing the back end of the nuclear fuel chain, because continued failure to do so has already proven damaging and costly. They explain by damaging they mean damaging to the prospects of continued nuclear energy

production; damaging to federal-state relations; damaging to public confidence in the federal government; and damaging to America's standing in the world as "a leader on global issues of nuclear safety, non-proliferation, and security" (BRC, 2011 pp. iii). The costs of radioactive waste policy failure are said to fall on utility ratepayers, communities who have become unwilling hosts of long-term nuclear waste storage facilities (at existing reactor sites where the wastes were generated), and U.S. taxpayers who face mounting liabilities because of the failure of the federal government to meet waste management requirements.

Interestingly, The Report's introduction also notes that beyond addressing these damages and costs, a new strategy is also needed for *ethical* reasons. The BRC states the "[current] generation has a fundamental ethical obligation to avoid burdening future generations with the entire task of finding a safe permanent solution for managing hazardous nuclear materials they had no part in creating" (BRC, 2011 pp. iii). From this it is clear that the BRC was conscious of issues of fairness and social justice associated with radioactive waste policy, at least with regards to future generations. However, as I discuss below, according to anti-nuclear SMOs the BRC's awareness of issues of social justice did not extend to considerations of current or historical inequalities between social groups. Thus anti-nuclear SMOs fear the general strategy the BRC recommended will continue the historical pattern of targeting marginalized communities (especially American Indian communities) for the development nuclear waste storage sites; a practice that is rooted in and made possible by existing distributive, representative, and recognitional injustices. In the remainder of this chapter I will first briefly review the BRC's recommendations before analyzing the responses of anti-nuclear social movement

organizations. I will show how discourses of distribution, recognition, and representation structure the movement's various framings of the issue, which reveals the multiple and interrelated dimensions of the perceived injustices associated with the production of nuclear energy and radioactive waste storage. Furthermore, clear understandings of the perceived injustices will enable the development of a robust theory and application of principles of "energy justice".

The strategy the BRC recommends has seven "key elements", the first of which is to develop a new, consent-based approach to siting future nuclear waste management facilities (BRC, 2011). Finding sites where all affected units of government (host state or tribe, regional and local authorities, and host communities) are willing to support or at least accept a facility has proven to be especially difficult. The crux of the problem stems from the federal/state/tribal/local rights dilemma, which is obviously not unique to the radioactive waste issue. However, the BRC argues that experience in the U.S. and around the world shows that attempts to force a top-down, federally mandated solution will take longer, cost more and have lower odds of eventual success. Thus the approach they recommend is "explicitly adaptive, staged, and consent-based", which they believe can provide flexibility and sustain the public trust and confidence needed to complete such controversial facilities (BRC, 2011 pp. vi). More specifically, the first step in siting new nuclear waste management facilities should be to develop a set of basic initial siting criteria, in order to ensure that time is not wasted investigating sites that are clearly unsuitable. The next step is then to develop a "generic standard" and supporting regulatory requirements early in the siting process. The BRC believes pre-established and generally-applicable standards and guidelines are more likely to earn public

confidence than site-specific standards, and will support the consideration of multiple sites (BRC, 2011). This includes establishing initial program milestones laid out in a mission plan to allow for review by Congress, the Administration, and stakeholders. The final and surely most controversial step is to “encourage expressions of interest” from a variety of communities that have potentially suitable sites.

“In practical terms, this means encouraging communities to volunteer to be considered to host a new nuclear waste management facility while also allowing for the waste management organization to approach communities that it believes can meet the siting requirements” (BRC, 2011 pp. vii). Unsurprisingly, considering the history of radioactive racism discussed above, the anti-nuclear power movement expressed deep reservations about how “volunteer host communities” would be identified and selected. The BRC acknowledges the approach they recommend will involve lengthy negotiations with potentially affected state, tribal, and local governments and other entities. And in this context, they argue, any negotiation or selection process that is prescribed in detail up front is unlikely to work. Rather, “Transparency, flexibility, patience, responsiveness, and a heavy emphasis on consultation and cooperation will all be necessary” (BRC, 2011 pp. vii). As I analyze in more detail below, the lack of specificity with regards to *how* “volunteer host communities” will be determined, identified, and selected is seen as problematic for anti-nuclear organizations considering the context of past policy failures. Despite the BRC’s assurances and repeated usages of words like “transparency”, “consultation”, and “cooperation”, many anti-nuclear power organizations fail to see how this new strategy is meaningfully different from the failed strategies of the past.

The second key recommendation contained in the BRC's report is to establish a new organization to implement the waste management program. While acknowledging some "notable successes" of the Department of Energy (DOE) and its predecessor agencies, the overall record of the DOE and the federal government with regards to nuclear waste does not inspire confidence. "For this and other reasons, the Commission concludes that new institutional leadership is needed. Specifically, we believe a single-purpose, Congressionally-chartered federal corporation is best suited to provide the stability, focus, and credibility needed to get the waste program back on track" (BRC, 2011 pp. viii). The central task of the new organization would be to site, license, build, and operate facilities for the consolidated interim storage and final disposal of high level nuclear waste. They recommend the organization be directed by a board nominated by the President, confirmed by the Senate, and selected to represent a range of expertise and perspectives. The third key recommendation (closely connected to the second) is for this new organization to have access to "utility waste disposal fees" and for these monies to be used for their intended purpose. The 1982 Nuclear Waste Policy Act created a "polluter pays" funding mechanism to (theoretically) ensure the costs of disposing of commercial nuclear waste would be paid by utilities and their ratepayers, with no impact on taxpayers and the federal budget. A fee was assessed on every kilowatt-hour of nuclear-generated electricity as quid pro quo payment in exchange for the federal government's legal obligation to begin accepting commercial nuclear waste beginning in 1998 (a commitment established in the 1982 NWPA). However, the fund has never worked as intended. A series of Executive Branch and Congressional actions have made the approximately \$750 million per year in annual fee revenues, and the unspent \$25

billion balance, effectively unavailable to the waste program (BRC, 2011). The Commission notes that new legislation will be needed in order to transfer the unspent balance in the Fund to the new waste management organization, and this will need to be done as soon as possible because it will enable key subsequent actions the Commission recommends.

For instance, the fourth key recommendation is to begin prompt efforts to develop a new permanent geologic disposal facility. “The conclusion that disposal is needed and that deep geologic disposal is the scientifically preferred approach has been reached by every expert panel that has looked at the issue and by every other country that is pursuing a nuclear waste management program” (BRC, 2011 pp. ix). The BRC argues that deep geologic disposal capacity is an essential component of any comprehensive nuclear waste management system because very long-term isolation from the environment is the *only* responsible way to handle these materials. The commission explicitly does not take a position on the Administration’s decision to withdraw the license application for the Yucca Mountain repository. However, they do note that regardless of what happens with Yucca Mountain the country’s inventory of nuclear waste will soon surpass the total volume that could be stored there. Therefore, the U.S. would have to find a second disposal site even if Yucca Mountain goes forward, and they believe the approach they set forth provides the best strategy for assuring progress (BRC, 2011 pp. x).

The fifth key recommendation made by the BRC, to begin prompt efforts to develop one or more “consolidated interim storage” facilities, is one of the most problematic from the point of view of the anti-nuclear power movement. The BRC argues that interim storage is another crucial element of a national waste management

system, because it would allow the federal government to begin the orderly transfer of nuclear waste from reactor sites to “safe and secure” centralized facilities independent of the schedule for operating a permanent repository (BRC, 2001 pp. x). The arguments in favor of consolidated storage are strongest for “stranded” waste located at shutdown plant sites, and this waste should be the first in line to be transferred so the sites can be completely decommissioned. Furthermore, the Commission argues consolidated storage would provide valuable “flexibility” in the waste management system that could provide significant cost savings for both ratepayers and taxpayers when a significant number of plants are shut down in the future. To allay state and community concerns that a temporary storage site could become a de facto permanent disposal site, the Commission argues the program to establish a consolidated storage site needs to be accompanied by a parallel disposal program that is “effective, focused, and making discernible progress in the eyes of key stakeholders and the public” (BRC, 2011 pp. x). The Commission also notes they received extensive public comments that show many people fear the transportation of nuclear waste that will be a part of any consolidated storage or disposal program. (In fact, this is the only explicate mention of public comments contained within the Report.) Once a temporary or permanent site has been developed the 70,000+ tons of high-level radioactive waste will have to be moved from the seventy reactor sites where it was produced and is currently stored via trains, trucks and barges. Despite noting the extensive public comments of concern, the Commission argues the existing standards and regulations for transporting radioactive waste has “functioned well and the safety record for these types of materials has been excellent” (BRC, 2011pp. xi). Nevertheless, the Commission argues state, local, and tribal officials must be involved in efforts to

communicate with the public and address these concerns, and so must be given the information and resources needed to carry out these roles and obligations.

The sixth and seventh recommendations made by the BRC are for the U.S. to support advances in nuclear energy technology and to take an active leadership role in international efforts to address safety, security, and non-proliferation concerns. Unsurprisingly given the composition of the Commission (discussed above) they claim “advances in nuclear energy technology have the potential to deliver an array of benefits across a wide range of energy policy goals” (BRC, 2011 pp. xi). They recommend the NRC develop a regulatory framework for “advanced” nuclear energy systems that will lower barriers to commercial investment by increasing confidence that new systems could be successfully licensed. Additionally, as more nations (potentially) begin producing nuclear power the U.S. urgently needs to take on a leadership role on issues of safety, non-proliferation, and security. However, according to the Commission, the U.S. cannot exercise effective leadership on these issues related to the back-end of the nuclear fuel chain as long as its own program is in disarray; effective domestic policies are needed to support the U.S. international agenda.

The report concludes by again noting that the Fukushima disaster has focused new attention on issues of nuclear safety around the world. The Commission feels the nuclear waste problem is somewhat unique in that there is wide agreement (or so they claim) about the “outlines” of a solution. The Commission argues that we know what we have to do, we know we have to do it, and we even know how to do it. The core difficulty is the same as it’s been for thirty years: “finding a way to site these inherently controversial facilities...in a manner that allows all stakeholders, but most especially host communities,

states, and tribes, to conclude that their interests have been adequately protected and their well-being enhanced—not merely sacrificed or overridden by the interests of the country as a whole” (BRC, 2011 pp. xiv). The Commission believes the approach they have suggested, with the emphasis on words like “transparency”, “flexibility”, “accountability”, and “meaningful consultation”, is the most likely to produce positive results moving forward.

However, for the anti-nuclear movement simply repeatedly using these legitimacy-granting words and phrases is not the same thing as actually developing an *alternative* technically/environmentally defensible and socially/politically just plan for dealing with the radioactive waste crisis. That said, the anti-nuclear movement supports some of the Commission’s recommendations, but overall the movement’s responses reflect the movement’s perception that there is far more the same than different between what the BRC recommended and the failed policy approaches of the past. From the movement’s perspective, not only did the BRC not address past representative, recognitional, and (potential) distributive injustices associated with nuclear waste policy, but they also leave the door open for a continuation of these multidimensional injustices moving forward. The failures to address these interrelated injustices are widely recognized to have contributed to the past failures of radioactive waste disposal policy (although not necessarily in these terms). Consequently, the anti-nuclear movement’s responses to the BRC’s recommendations draw from and reconstruct the social justice paradigms of distribution, recognition, and representation. The movement’s agreements and disagreements with the Commission’s recommendations are founded upon these interrelated dimensions of energy justice. Therefore, an analysis of the anti-nuclear

movement's responses to the Commission's recommendations enables me to theoretically identify the general features of just energy systems, which can help guide future policy to ensure social, political, and economic justice is associated with future energy systems.

Immediately following the release of the BRC's report Beyond Nuclear released a statement expressing their general disappointment with the Commission's recommendations. They began by noting, "There remains no viable solution for either the management or certainly the 'disposal' of radioactive waste. Yet, the one essential recommendation that is not contained in the DOE report is to stop making any more of it" (Beyond Nuclear "Press Release", 1/26/2012). With regards to high-level radioactive waste, the anti-nuclear movement's first and most-insistent demand is to "stop making more of it!" Given the past and (likely) future difficulties creating technically/environmentally sound and socially and politically/economically just radioactive waste disposal policy, the anti-nuclear movement feels it is extremely reckless to continue producing more of these materials without an adequate solution for their disposal. NIRS made the same argument in a list of talking points they put together to help people with making public comments on the BRC's report:

Zero Point: We support the identification of responsible radioactive waste management plans for the waste that currently exists. However we know, unequivocally, that there is zero **guarantee** that the tens of thousands of tons of deadly material... will be contained and isolated from the biosphere for the hundreds of millennia that it will remain a hazard. Therefore it is only logical, based on the principle of **precaution**, that [the] report clearly

reflect that **stopping the generation of any additional radioactive waste** will assist the implementation of any reasonable and responsible waste management plan (NIRS “Talking Points for BRC Public Meetings”, 1/25/2012, emphasis in original).

In fact, this basic point about the irresponsibility and injustice of producing such hazardous substances was also made by Grace Thorpe back in 1993 during a speech before the National Congress of American Indians. Thorpe leapt over the normal foci of technocratic driven public debates about radioactive waste disposal (such as siting criteria, program milestones, millirems, etc.) to pose the central question at the heart of these debates; “What kind of society permits the manufacture of products that cannot be safely disposed of? Shouldn’t we have a basic law of the land that prohibits the production of anything we cannot safely dispose?” (Statement of Grace Thorpe to the National Congress of American Indians, December 1, 1993, Sparks, NV, quoted in Kamps, 2005).

Furthermore, the fact that the possibility of ceasing to produce more radioactive waste (thus ceasing to produce more nuclear powered electricity) is not even considered anywhere in the Commission’s report is in part explained by the representational injustices associated with the Commission’s mandate and composition. As I discussed above, from the Executive Order instructing the Energy Secretary to create the BRC, and the Commission’s Charter, it is clear that the foundational assumption guiding the BRC was the U.S. would continue to produce nuclear powered electricity and high-level radioactive waste in the future. Thus, the most important question for the anti-nuclear

movement (as to whether or not the U.S. should continue to produce nuclear power) was never open for public discussion, and thus the decision reached did not include public input. This is unsurprising given the composition of the Commission itself, with the overrepresentation of interests that benefit from nuclear power, and the underrepresentation of interests that are burdened. This is a paradigmatic example of what Fraser (2010) refers to as the representational injustice of “misframing”, in that the rules governing the decision-making process in this case precluded public participation in the most fundamental decision(s) regarding nuclear power. The question of whether or not the U.S. should continue to use (or expand) nuclear power had clearly already been answered in the affirmative. This limited the scope of the kinds of questions the BRC could ask and answer, and from the anti-nuclear movement’s point-of-view, severely undercut all of the BRC’s subsequent efforts to proceed openly and transparently. Because the Commission failed to adopt “stop making waste” as its central theme, the movement argued the Commission’s “strategy” was really just a plan to enable the further production of more waste. Following from the movement’s claims in this regard, I propose an important principle of “energy justice” requires that energy systems be developed in such a way as to minimize the production of hazardous by-products associated with energy production to the greatest extent possible. This would work to minimize the socially and environmentally harmful consequences of energy systems, which have historically disproportionately burdened minority and low-income communities.

The link between hazardous material production and disproportionate burdens on low-income and minority communities, and thus the rationale for this principle of energy

justice, is supported by the Blue Ridge Environmental Defense League (BREDL) response to the Commission's recommendations. More specifically BREDL argues, "The Blue Ribbon Commission must include steps to avoid disproportionate, adverse environmental impacts on low income and minority populations and impacts of important religious, subsistence, or social practices. Finally, it should address the question of ending the production of dangerous materials which cannot safely be disposed" (BREDL "Response to BRC's Draft Report", 10/31/2011). BREDL defines environmental justice as:

Environmental Justice is about social transformation directed towards meeting basic human needs and enhancing our quality of life—economic quality, health care, housing, human rights, environmental protection, and democracy. In linking environmental and social justice issues the environmental justice approach seeks to challenge the abuse of power which results in poor people having to suffer the effects of environmental damage caused by the greed of others (BREDL "Response to BRC's Draft Report", 10/31/2011).

Drawing from Schlosberg (2007) and expanding on this definition, BREDL explains:

The principle of environmental justice incorporates 1 the equitable *distribution* of environmental risks and benefits; 2 the meaningful *participation* in environmental decision-making; 3 the *recognition* of

community life, local knowledge, and cultural difference; and 4 the capability of communities and individuals to function in society. It means avoiding disproportionate adverse environmental impacts on low income populations and minority communities (BREDL “Response to BRC’s Draft Report, 10/31/2011”, emphasis added).

From this definition and discussion of environmental justice by a large, regional anti-nuclear organization we can clearly see the applicability of the environmental justice framework to the conflicts over the production of nuclear power and radioactive waste. More specifically, these claims by the BREDL show that the conceptualization of environmental justice as consisting of interrelated dimensions of distribution, recognition, and representation is explicitly present within the anti-nuclear power movement itself. While it is somewhat uncommon for most anti-nuclear organizations to express their claims, desires, and grievances in precisely these terms (derived from the liberal political theory), these “families of claims” also operate as “folk paradigms of justice” that are often presupposed by social movement actors/organizations and consist of sets of linked assumptions about the causes of and remedies for injustice (Fraser, 2005). Most significantly, from this analysis and discussion it is clear there is significant disagreement between the BRC and the anti-nuclear movement with regards to the environmental (in)justice implications of past, present, and future efforts to manage high-level radioactive waste.

In terms of agreement, the anti-nuclear movement generally agrees with the BRC’s recommendation that one or more permanent, geological facilities for nuclear

waste need to be developed. As noted in the Report, virtually every expert assessment of the radioactive waste crisis has concluded that deep, permanent geological disposal is the best option for the possible containment of these materials from the biosphere for upwards of one million years. Many anti-nuclear organizations agreed with the Commission that developing “generic” rather than “site-specific” standards and regulations, and doing so before site selection begins, will help build public confidence in a permanent waste repository program. As we have seen with the Yucca Mountain project, site-specific standards can too easily become “movable goalposts” in the service of advancing a particular site/decision, rather than protecting public health and the environment. The movement and the Commission agree that having an established set of general guidelines and regulations will leave less room for the kinds of “pencil engineering” that characterized the Yucca Mountain project; which is seen to have severely eroded public confidence in the program. As I will discuss in more detail in the concluding chapter, I believe the development of generic standards for the protection of public health and the environment with regards to the implementation of energy systems is an important element in policy meant to achieve “energy justice”. Doing so helps to ensure public health and the environment remain central to decisions about energy production, by also working to ensure the best scientific knowledge and practices are put into the service of protecting social interests, rather than advancing primarily economic and/or political objectives.

Another area of agreement between the BRC and the anti-nuclear movement is the belief that the Department of Energy (DOE) has worn out its credibility and failed miserably to inspire confidence or trust in the U.S. nuclear waste management program.

Many anti-nuclear organizations agree that given the DOE's almost unblemished record of underperformance in this area, they should no longer be in charge of the waste disposal program. However, anti-nuclear movement organizations have serious reservations about, or even strongly oppose, the creation of a Congressionally-chartered federal corporation, and/or any move to privatize radioactive waste management. These reservations and concerns about the privatization of radioactive waste disposal programs are based upon the recognition of past representational and recognition injustices, and the fear that these injustices would reemerge moving forward. For example, Physicians for Social Responsibility (PSR) argues their reservations about such an organization stem from the fact that other federal corporations, such as the Tennessee Valley Authority (TVA), have little Congressional oversight, little public accountability, and often carry serious debt (PSR "Comments on BRC's Draft report", 10/5/2011). NIRS argues that all aspects of radioactive waste management must be subject to the requirements of the Sunshine laws including the Freedom of Information Act and others that are meant to ensure transparency and public access to participation and information (NIRS "Talking Points for BRC Public Meetings", 1/25/2012). The basic concerns from the anti-nuclear movement's point-of-view are that the creation of a federal corporation to manage the radioactive waste storage program would further diminish and marginalize the already easily dismissed role public/community concerns play in the program. In other words, the movement fears the creation of a new federal corporation would further the representational injustices that favor the nuclear industry over the public, which leads to a misrecognition of public concerns, and ultimately a maldistribution of the burdens associated with radioactive waste disposal.

With regards to the anti-nuclear movement's disagreements with the BRC's recommendations, two issues are paramount; the logic of "centralized interim storage", and related concerns over the process for identifying/establishing "volunteer host communities". The anti-nuclear power movement in the U.S. at both the national and local levels has forcefully and consistently opposed all efforts to move radioactive waste from the site of its generation *before* a permanent disposal site is available. Be it in response to proposals to establish "monitored retrievable storage" in the 1990s or "centralized interim storage" today, the movement has argued that interim storage should be at the point of generation, and these extremely hazardous wastes should be moved only once. Reactor sites are already de facto interim storage sites, and the exact same storage technologies would be used at the new "interim" facility, while incurring the additional risks of at least one extra round of transportation over the nation's roads, rails, and waterways. As NIRS has argued, "An 'interim site' is never the consolidation of waste unless and until the generation of new waste at all other sites stops. Until then, it is only one more site" (NIRS "Talking Points for BRC Public Meetings", 1/25/2012). Like Superfund sites, NIRS argues the responsibility for the generation of nuclear waste should extend to all corporations that contributed to and profited from the waste's generation.

Furthermore, Physicians for Social Responsibility (PSR) highlights the fact that the Commission's recommendation that the "United States should proceed promptly to develop one or more consolidated interim storage facilities" ignores past failed efforts to develop such sites and fails to explain how such an effort will succeed *this* time around (PSR "Comments on BRC's Draft Report", 10/5/2011). The Commission's explicate

assumption that finding an interim storage facility “should be less difficult, particularly if it is accompanied by attractive incentives” does not comport with the past failures of the Nuclear Waste Negotiator (discussed above). The Commission does not examine the relevant political, social, or economic reasons for these past failures, nor do they explain why compensation failed in the past, but is believed to work this time. Additionally, PSR brings to light how the reasons presented in the BRC’s Report for recommending off-site “interim” storage are flawed. For example, according to PSR, the Commission overemphasized the scope of the nuclear waste problem from so-called “orphaned” (permanently closed) reactor sites. There are currently only ten of these sites in the country, and they can be addressed relatively easily on a case-by-case basis, rather than using them as the foundation for a decision to move the waste from more than seventy locations around the country. “One or more ‘interim’ sites will take at least a decade to find and license and another couple decades to package and transport the waste. This is not a small project and, as a result, will take attention and money away from the ultimate goal of developing a permanent geologic repository” (PSR “Comments on BRC’s Draft Report”, 10/5/2011).

In their report the BRC claims their desire to establish CIS is in part motivated by the Commission’s desire to be fair and just with communities that live adjacent to “orphaned” nuclear waste at closed nuclear reactor sites. However, according to a letter that was initiated by organizations representing communities around these permanently closed reactor sites, this recommendation runs exactly contrary to their desire to see radioactive waste completely isolated from the biosphere. The letter, addressed to then Secretary of Energy Stephen Chu, states:

The Commission you appointed is claiming that it is acting in the interest of communities such as ours where closed nuclear power reactors are located, when in fact the Commission's recommendations are in opposition to our number one priority: isolation of radioactivity from our environment for as long as it is a hazard. Centralizing waste storage for purposes of expanded waste production or for reprocessing is contrary to this goal, and is not responsible policy (NIRS "Press Release", 1/25/2012).

The Commission was claiming to be working *for* these communities, but was clearly not working *with* these communities. This is a clear-cut case of misrepresentation (lack of impacted community representation on the Commission) leading to misrecognition of the desires and concerns of these communities. In all 88 national, regional and local environmental organizations, and more than 5,400 individuals signed this letter to Energy Secretary Steven Chu urging him to reject the recommendation from the BRC that would encourage the establishment of an "interim" radioactive waste storage dump and begin the transportation of high-level radioactive waste across the U.S. Reflecting on the misrepresentation of these communities within the BRC's proceedings, and the misrecognition of these community's concerns, Mary Olson of the Radioactive Waste Project of Nuclear Information and Resource Service said, "Our voices have been heard, but disregarded. This comes as no surprise since a majority of the Commissioners are individuals who have made, or supported the making of, the radioactive waste in question

over the course of their careers. Of course they want to move it--they want to make more" (NIRS "Press Release", 1/25/2012).

The letter initiated by organizations representing communities near closed reactors also undercut the BRC's argument that the lessons from Fukushima necessitate centralized storage. We now know the ongoing problems at Fukushima do not stem from the dry cask storage of nuclear waste at the site. The dry casks survived the earthquake and tsunami intact. Rather, it is the spent fuel pools that are vulnerable due to their continuous need for water and electricity. Therefore, it is unclear how the Commission concluded a lesson from Fukushima is for the U.S. to move nuclear waste off-site. Doing so will not eliminate the need for spent fuel pools, as the fuel removed from reactors needs to be submerged in these pools for at least five years to cool. What needs to be done, according to this letter, is overcrowded fuel pools need to be reinforced and thinned out, with as much waste as possible moved to reinforced dry casks following the Principles of Hardened On-Site Storage (HOSS).

The Principles of Hardened On-Site Storage have been signed by more than 170 national and local anti-nuclear organizations from all fifty states who agree HOSS is the most sensible option for addressing the *immediate* threats posed by nuclear waste at reactor sites. These principles are based on the belief that irradiated fuel must be stored as safely as possible as close to the site of generation as possible. Transporting waste away from the reactor site to an interim facility should only be done if the site of generation is unsuitable for HOSS (in which case the site should not have been licensed for a nuclear facility in the first place). HOSS facilities are not meant to be permanent, and thus should not be constructed deep underground. The waste needs to be retrievable,

and needs to be monitored with real-time radiation and heat measurements (NIRS “Principles for Safeguarding Nuclear Waste at Reactors”, 3/24/2010). The overall goal of HOSS is to make the amount of radioactive releases, even in the case of a severe attack, so low that the storage system would be an unattractive terrorist target. HOSS facilities need to be robust enough to withstand such things as a direct hit from a high-explosive or a large plane full of fuel, which would also make them very effective against natural disasters such as earthquakes. Diagram 3.1 below shows the basic proposed design for HOSS facilities, including the foundation and vents to allow for additional fuel cooling.

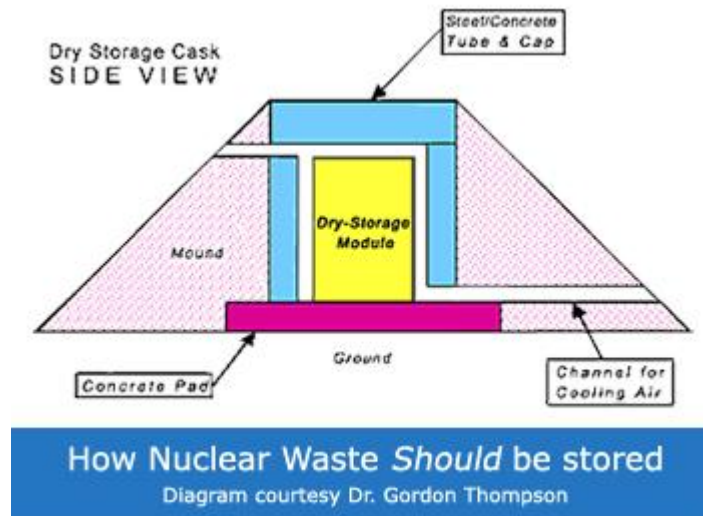


Figure 3.1 Diagram of Hardened On-Site Storage facility for nuclear waste.

Given that even in the best-case-scenario the U.S. is decades away from having operational “interim” storage or permanent disposal facilities, the anti-nuclear movement believes the U.S. needs to move as quickly as possible to secure the wastes, where they are currently located, to the greatest extent possible. In the letter sent by organizations representing reactor communities to the Energy Secretary, these groups ask the Secretary:

Don't move the waste from the reactor sites for now—until a permanent isolation program is available... Harden waste storage at the reactors—heed, adopt and implement the Principles for Safeguarding Nuclear Waste at Reactor Sites as has been repeatedly presented to the Blue Ribbon Commission... Our sites are not suitable for waste "disposal" and so we will remain engaged until there is a path forward for permanent isolation of this waste for as long as it is a hazard (NIRS "Letter to the Secretary of Energy", 1/25/2012).

The fact that these requests were made by organizations representing the subject position of communities living with nuclear reactors gives these requests extra legitimacy and standing. The Commission claimed they were working *for* the interests of these communities when they recommended centralized interim storage of nuclear waste. However, due to the lack of representation of these communities within the Commission, their interests were misrecognized and used as an excuse to further the interests of the nuclear industry at the expense of these communities' actual desires. The anti-nuclear movement exerts much of their efforts working to *oppose* various pro-nuclear policies and practices. The Principles for HOSS are one of the major policy proposals that the movement can strongly *support* and advocate for, so long as the implementation of HOSS is not used as an excuse to continue creating more radioactive waste. The fact that HOSS is strongly supported by groups representing reactor communities, who might appear to benefit from the moving of radioactive waste away

from their communities to a centralized facility, takes away a big part of the legitimacy the Commission was trying to wrap around their recommendation.

As I have discussed above, radioactive waste has long been seen as *the* crucial issue with regards to nuclear energy by both critics and proponents. Furthermore, the issues of radioactive waste storage and disposal are perhaps the most direct ways to see the environmental justice problems created by the production of nuclear power. As Sze (2005; 2007) has argued, decision about the production, distribution, and consumption of energy and electricity involve more than just technical/scientific considerations. This is because energy systems take on significant social dimensions as these systems are developed, contested, and implemented. This can be clearly seen by analyzing the “environmental justice energy activism” of groups working to highlight these social dimensions of energy systems, such as anti-nuclear organizations. The “unsurpassable social and political obstacles” that necessitated the canceling of the Yucca Mountain Project relate back to representative, recognition, and distributional injustices that have plagued the radioactive waste management program in the U.S. since the very beginning. Therefore, it is necessary to identify and correct these multidimensional injustices in order for the nuclear waste crisis to be solved in a technically, socially, and politically/economically acceptable manner. Furthermore, following the methodology established by Fraser (2000; 2003; 2009) a productive way to identify (and ultimately correct) multidimensional injustices is to analyze the claims made by real-world groups working to fight real-world injustices. By examining claims made in existing struggles against existing injustices as the starting point for the development of theories of justice

(including energy justice as well as other types) we can begin to understand the full, structural and normative extent of both just and unjust social arrangements.

The program for managing the 70,000+ tons of high-level radioactive waste produced in the U.S. will be unprecedented in human history. The eventual permanent disposal of these extremely hazardous materials will involve the construction of one or more facilities that must keep them isolated from all living things for upwards of one million years. For context, the Pyramids of Giza are roughly 5,000 years old; written language has existed for roughly 10,000 years; and *homo sapien sapiens* (modern human beings) have existed for roughly 100,000 years. The only nation to begin to address their high-level radioactive waste problem is Finland, which has begun the construction of a high-level radioactive waste repository. Although Finland's program is decades ahead of the program in the U.S., and they have less than 10% of the total volume of radioactive waste in need of disposal, the project is not expected to be completed for at least another one hundred years. Therefore, even if the U.S. was ready to begin construction of a permanent disposal facility today, the project would likely require more than a century and extraordinary amounts of resources to complete. It follows from this (and the above analysis) that an important principle of "energy justice" requires that energy systems be developed in such a way as to minimize the production of hazardous by-products associated with energy production to the greatest extent possible. This would work to minimize the socially and environmentally harmful consequences of energy systems, which have historically disproportionately burdened minority and low-income communities.

Since the beginning of commercial nuclear power production the nuclear industry's and U.S. government's perception of the radioactive waste problem has evolved from "easily solvable" to "serious and growing" to "possibly without satisfactory solution". Public concern over the handling of radioactive waste in the U.S. began in the 1950s, and eventually resulted in the dismantling of the Atomic Energy Commission and the creation of the Nuclear Regulatory Commission and later the Department of Energy. Shortly thereafter, the 1982 Nuclear Waste Policy Act began the current program to manage the nation's highly radioactive nuclear waste, and with the Amendments to this Act that were passed in 1987, the fate of the program was tied to the development of the Yucca Mountain repository.

That was until President Obama announced the cancelation of the Yucca Mountain Project in 2010 due to "unsurpassable social and political obstacles" that prevented the project from moving forward as planned. This was seen as a tremendous victory by the anti-nuclear movement in the U.S., and especially as an environmental justice victory for American Indian groups living in the vicinity of Yucca Mountain. From the passage of the 1987 Nuclear Waste Policy Act Amendments, which singled-out Yucca Mountain as the only site to be considered for a permanent repository and created the Office of the Nuclear Waste Negotiator, the U.S. nuclear waste management program has been rife with representative, recognitional, and distributional injustices. As I discussed above and elsewhere (Van Gerven, 2014), the development of a nuclear waste repository at Yucca Mountain would have resulted in extensive environmental injustice for the Western Shoshone and Southern Paiute peoples who live in the region. In distributive terms, these minority, low-income groups would have been more negatively

affected by the project than any other group in the general population. Moreover, American Indian groups in the Yucca Mountain region were not allowed to meaningfully participate in the decision-making process, and thus were subject to significant misrepresentation. The misrepresentation of American Indians in the decision-making process resulted in repeated misrecognition of their perspectives and concerns, and even the maldistribution of financial and other types of resources; beyond the maldistribution of the risks associated with the disposal of radioactive waste (Van Gerven, 2014).

The anti-nuclear movement's responses and reactions to the activities of the Nuclear Waste Negotiator in the 1990s show the multidimensional injustices of nuclear energy production and radioactive waste disposal are by no means limited to the Yucca Mountain project alone. The Negotiator's efforts to find volunteer communities who were willing to host such facilities (in return for financial compensation) immediately and exclusively focused on impoverished American Indian communities. Thus the entire program was predicated upon taking advantage of preexisting distributive injustices that left these communities in situations desperate enough to consider the proposal. On top of this came the representative and recognitional injustices that stem from the somewhat unique social, political, and economic position of American Indian groups in the U.S. Issues of Tribal governance, the democratic legitimacy of Tribal leaders, the influence of the Bureau of Indian Affairs (BIA), and others makes questions of "who is volunteering whom for what" very difficult to answer. As I discuss in more detail in the concluding chapter, the establishment of socially, politically, and economically just energy systems, and thus "energy justice", will require the explicate acknowledgement of preexisting

injustices and inequalities, combined with concrete policy mechanisms to ensure the burdens are not being disproportionately bore by the most vulnerable.

As the above analysis has hopefully made clear, the injustices associated with efforts to manage nuclear waste are not just significant for their roles in past failures. Despite the initial excitement felt in the anti-nuclear movement about the cancelation of the Yucca Mountain Project, concerns quickly returned as the movement came to understand the mandate, assumptions, composition, and eventual recommendations of the Blue Ribbon Commission created to develop alternative strategies. From the charter and the mandate that created and guided the Commission, deep, structural representational injustices are plainly evident. The decision as to whether or not the U.S. would continue to produce more radioactive waste (and nuclear power) had clearly already been answered in the affirmative. The fact that what is seen by the anti-nuclear movement as *the* central question concerning radioactive waste management had already been answered without any public participation is a textbook case of what Fraser (2009) labels the representational injustice of “misframing”. More specifically, misframing occurs whenever important aspects of the decision-making process take place beyond the scope of public input or participation; which is clearly the case here. Moreover, the composition of the Commission itself reflects the other dimension of representative injustice, which Fraser (2009) labels “ordinary misrepresentation”. While the interests, concerns, and perspectives of the nuclear-industrial-academic-complex (Kuletz, 1998) were well represented on the Commission, there were no members representing impacted communities, environmental groups, and/or really anyone who did not personally or

professionally benefit from the continued production of radioactive waste and nuclear power.

Both dimensions of the representational injustices that structured the BRC severely undermined the legitimacy of the Commission's claims to be taking public comment/participation seriously, as well as the Commission's eventual recommendations. Despite this, however, there were some areas of agreement between the anti-nuclear movement and the BRC's recommendations. More specifically, the anti-nuclear movement generally agreed with the Commission that the DOE had lost its credibility and should no longer be in charge of the radioactive waste management program; although the movement is extremely skeptical of any efforts to privatize the program in response to these failures. Additionally, there was agreement that the U.S. needs to establish one or more permanent, deep geologic disposal sites as the best long-term solution to the radioactive waste crisis. Significantly, there was also agreement that "generic standards/regulations" need to be established prior to the site selection process for such inherently controversial facilities. Both the Commission and the movement agree that doing so will keep the protection of public health and the environment central in decisions about radioactive waste management, and thus will increase public confidence and acceptance of the program. As I will discuss in more detail in the concluding chapter, achieving "energy justice" through developing and implementing socially, economically, and politically just energy systems will require the creation of preexisting guidelines and standards meant to protect public health and the environment, which are less open to manipulation than site-specific guidelines.

Where disagreement between the Commission's recommendations and the anti-nuclear movement was the greatest was around the issues of "centralized interim storage" and the prospects/procedures for establishing "volunteer host communities". It is with regards to these issues that we can clearly see how representational injustices contribute to recognitional and (eventually) distributive injustices in this case. The Commission claimed the need for centralized interim storage was largely driven by our collective responsibility to communities living near permanently closed reactors that continue to store "orphaned" waste. However, there was no representative from these communities (or any other type of community impacted by nuclear power and radioactive waste) on the Commission. The response from organizations representing these communities indicated the Commission's recommendation misrecognized their desires and concerns. These community organizations and the broader anti-nuclear movement feel moving the waste before a permanent facility is in place, and before the production of more waste has ceased, is contrary to their desire for the waste to remain isolated from the biosphere. Speaking as the most proximate stakeholders, who could be seen as benefiting from the centralizing of waste storage, they want to see the waste made as safe and secure as possible where it is currently located, in order to avoid the creation of yet another nuclear site. The problems here stem back to the representational injustices that structured the Commission's composition and procedures, which resulted in the misrecognition of these communities concerns and desires.

The preceding analysis of the underlying discourses of justice utilized and constructed by the anti-nuclear movement in the U.S. with regards to radioactive waste management has revealed how issues of misrepresentation, misrecognition, and

(potentially) maldistribution have continuously plagued the waste management program. As Fraser (2003, 2009) has shown, analyses of the claims made for social justice can help us identify the multiple dimensions of real-world injustices, which enables the development of robust theories of justice. As I will discuss in more detail in the final chapter, through this analysis of the claims made in actual struggles against unjust energy production, I am able to begin to identify the general features or principles that together could guide the implementation of just energy systems and the achievement of energy justice. For instance, the above analysis has identified that an important principle of “energy justice” requires that energy systems be developed in such a way as to minimize the production of hazardous by-products associated with energy production to the greatest extent possible. Also, my analysis has shown that “energy justice” could be advanced by developing and using “generic standards” to protect public health and the environment, which will help ensure these goals remain central to future decisions about energy production. Additionally, I have proposed just energy policy needs to be in part based upon the explicate recognition of existing social and political/economic inequalities, and include concrete mechanisms for ensuring the burdens of energy choices are not disproportionately borne by marginalized populations. These and other features of just energy policy that emerge from the analysis of the anti-nuclear movement’s claims in other arenas will be expanded upon and further theorized in the concluding chapter.

CHAPTER 4: STATE/LOCAL FINANCING OF NEW NUCLEAR REACTOR CONSTRUCTION AND THE FIGHTS FOR INCREASED NUCLEAR SAFETY

As I have discussed in the introductory chapter above, the politics of nuclear power production and the associated production of high-level radioactive waste in the U.S. takes place on both the national and local levels. Consequently, in the U.S. the anti-nuclear power movement's opposition to the generation of nuclear power and radioactive waste is organized on both of these levels. Although, as I have discussed in the preceding chapters, much of the policy concerning the production of nuclear power and radioactive waste management is made at the federal level, it is the case that state and local level anti-nuclear organizations undertake localized campaigns to mitigate the socially and environmentally injurious aspects of this form of energy production. Local (as opposed to national) anti-nuclear organizations in the U.S. generally organize around, and focus upon, one or more specific aspects of nuclear power and radioactive waste production that impact and concern the communities/localities they represent.

These organizations are found in uranium mining communities where some local resident groups fight to have the contamination from past mining operations cleaned-up and to prevent new uranium mines from opening. This opposition is also found in communities with uranium fuel-fabrication and enrichment facilities, where some local stakeholder groups feel the environmental and human health costs of such facilities outweigh the economic benefits they provide. Grassroots opposition is also found in reactor communities where local stakeholder groups fight to shut down existing reactors, prevent existing reactors from being relicensed, and prevent new facilities from being

licensed and constructed. Finally, local, grassroots opposition to nuclear energy and radioactive waste is found in (potential) disposal communities, where a broad range of local stakeholders work to keep their communities and environments from being turned into the nation's radioactive waste dump.

For example, in 1989 the Nuclear Regulatory Commission (NRC) began review of a proposal submitted by Louisiana Energy Services (LES) to build the nation's first privately owned uranium enrichment plant in Claiborne Parish, LA. The proposed site was located one-fourth of a mile from the town of Center Springs and one and one-fourth miles from the town of Forest Grove. Both were predominately African-American communities founded in the 1860s, and both had poverty rates above 60% (Bullard, 2000 pp. 130). Residents from these cities and the near-by city of Homer organized themselves into a group called Citizens Against Nuclear Trash (CANT), and challenged the site selection process and proposed outcome. They acquired the services of the Sierra Club Legal Defense Fund (which has since changed its name to the Earthjustice Legal Defense Fund) and sued LES. They claimed LES and the NRC staff were engaging in environmental racism. The suit drug on for more than eight years, during which time CANT continued to argue that two African-American communities had been rendered "invisible" since they were not even mentioned in the NRC's draft environmental impact statement (Bullard, 2000 pp. 131). In fact, only after sustained and intense public outcry did the NRC even attempt to address the obvious environmental justice and "disproportionate impact" implications. And even then the Final Environmental Impact Statement devoted less than one page to addressing the environmental justice

implications of siting a uranium enrichment plant in a predominately poor, African-American community.

Throughout the lawsuit CANT presented evidence showing that as LES narrowed their site selection process, from national to the state of Louisiana to Claiborne Parish, the aggregate percentage of the black population within a one-mile radius of the proposed sites continued to rise; from 28% to 37% to 65%; and finally 97% black population within a one-mile radius of the “LeSage” site on Parish Road 39 (Bullard, 2000 pp. 130-1). Overall, beyond claiming their communities had been rendered “invisible”, CANT argued that the NRC’s environmental impact statement was inadequate because it failed to accurately assess the costs and benefits of the proposed plant. More specifically, they argued the costs had not been analyzed in relation to the nearby communities where the disproportionate burden of health and safety, property values, accidents, traffic, noise, not to mention radioactive dust in the air and water, would all be most severe. Additionally, CANT argued both LES and the NRC had failed to consider (much less justify or legitimate) the inequitable distribution of costs and benefits to white and African-American populations. Nor did either the NRC or LES acknowledge how the proposed action would follow a clear national pattern of “institutionally biased decision-making [that] leads to the siting of hazardous facilities in communities of color and results in the inequitable distribution of costs and benefits to those communities” (Quoted in Bullard, 2000 pp. 131-2).

After more than eight years, in May of 1997 the three-judge panel of the NRC Atomic Safety and Licensing Board issued a final decision finding “racial bias played a role in the selection process” and denied the permit. The NRC’s decision was appealed

by LES and upheld the following year. The claims made by CANT throughout this process clearly draw from and rearticulate the social justice paradigms of recognition, distribution, and representation. This is reflective of the actual recognitional, distributive, and representational injustices involved in this case. The misrecognition (or rather almost total lack of recognition) and misrepresentation of the people of Forest Grove and Center Springs within LES's proposal and the NRC's environmental impact statement facilitated the distributive injustice of siting a uranium enrichment plant in an impoverished community of color. These multidimensional and interrelated injustices are revealed and identified through an analysis of the claims made by this and other groups engaged in real-world struggles against real-world injustices. Moreover, the analyses of the claims made by such groups engaged these types of struggles can be used to not only identify the existence and extent of unjust social arrangements, but also to suggest possible principles or features of arrangements that are more socially just.

As I have argued throughout this study, decision about the production, distribution, and consumption of energy and electricity involve more than just technical/scientific considerations. This is because energy systems take on significant social dimensions as these systems are developed, contested, and implemented (Sze, 2005; 2007). This can be clearly seen by analyzing the "environmental justice energy activism" of anti-nuclear power organizations like CANT and others working to highlight these social dimensions of energy systems on the local level. As I will show below, analyses of the claims made by local level anti-nuclear power organizations supplements and adds to the conclusions I have identified from the analyses of national level organizations. More precisely, the analysis of claims made by local level anti-nuclear

organizations also reveals how these groups draw upon and reconstruct the social justice paradigms of distribution, recognition, and representation in their arguments against the financing of new reactor construction through “construction work in progress” (CWIP) charges to utility ratepayers, and in their struggles for the increased safety and security of nuclear facilities.

Again, following the methodology introduced by Fraser (2000; 2003; 2009) this analysis not only helps establish the existence and extent of the multidimensional injustices involved with these issues of nuclear energy production, but more significantly, also enables me to propose possible features or principles of what I am calling “energy justice”. My hope is these principles of energy justice could be used to guide future decisions about energy in more socially and environmentally beneficial directions. More specifically, I will show how the distributive, representational, and recognitional injustices associated with CWIP financing parallel those associated with the federal “loan guarantee” program on the national level. Both are seen to be mechanism for socializing the financial costs/risks of constructing new nuclear reactors, while enabling investor-owned utilities to retain control of any eventual financial benefits/profits. Analyzing the claims made by local level anti-nuclear organizations regarding this issue both enables me to identify additional dimensions of the principles of energy justice I have already proposed above, as well as to propose additional principles of energy justice that emerge from the local level standpoint. Following this, I show how representational, recognitional, and distributive injustices are involved in local anti-nuclear organization’s efforts to increase the safety and security of nuclear facilities. These efforts include campaigns to close unsafe reactors, prevent existing reactors from being relicensed and/or

new reactors from receiving a license, and generally increasing the safety mechanisms and emergency preparedness for existing nuclear facilities. And once more, my analysis of how local level organizations draw from and reconstruct different discourses of justice not only helps me establish the existence and extent of the multidimensional injustices associated with the operation of nuclear facilities, but also enables me to identify and propose possible features or principles of “energy justice”.

The Maldistribution, Misrepresentation, and Misrecognition of CWIP Financing for New Nuclear Reactor Construction

As I discuss above, the claims made by local level anti-nuclear organizations in their arguments against “construction work in progress” (CWIP) charges draw from and reconstruct the social justice paradigms of recognition, representation, and most prominently the paradigm of distribution. Analysis of these claims and the discourses of justice they draw from, along with the analysis of the historical and social/political/economic contexts from which they emerge, reveals the multidimensional injustices associated with this mechanism for financing new nuclear reactor construction. Furthermore, such analysis of existing injustices allows me to propose and refine possible principles of what I am calling “energy justice” that could guide the development of more socially and environmentally just energy systems moving forward. Basically, the arguments made by local level anti-nuclear organizations against CWIP charges mirror those made by national level organizations with regards to the federal “loan guarantee” program. Given the complete unwillingness of private investors to invest their money in the construction of nuclear reactors, which are extremely long-term, high-capital and high-risk projects, and given the fact that the \$10 billion dollar average price of a new

reactor is beyond what any electric utility can afford to finance itself, the only way new reactors can be constructed in the U.S. is to publically finance them with either taxpayer money or, in the case of CWIP charges, ratepayer money.

Within the 18 month period of time under consideration for this study, several local level anti-nuclear organizations in different states were engaged in campaigns against the establishment of CWIP charges to finance new nuclear reactors. One such organization, with which I am the most familiar, was Missourians for Safe Energy (MSE). While there were other local anti-nuclear organizations working on this issue during this time, the arguments made by MSE, and discourses of justice that informed them, are very representative of the arguments made by other groups in other locations (such as Iowa and Florida) around the country. MSE is an anti-nuclear and pro-safe energy organization based in Columbia, MO with members from around the state. They are a 501(c) 3, non-profit organization that engages in public education and advocacy for a carbon-free and nuclear-free energy future. Concerned citizens in Missouri organized themselves into MSE in the early 1970s in response to their anger over the construction of nuclear reactors in central Missouri. In 1976 Union Electric (the local utility that has since changed its name to AmerenUE) was using CWIP charges to finance the construction of two huge 1150 megawatt reactors in Callaway County. Because the Public Service Commission (a regulatory commission used by many states to oversee electric utility companies that are “natural monopolies”) had approved CWIP charges both reactors were being constructed simultaneously. In that same year Missouri voters passed Proposition One by a 2-1 margin, which made CWIP charges illegal in the state. When the new law pulled the plug on ratepayer financing, UE first announced a delayed

construction schedule for Callaway 2, and then several years later, canceled the project altogether. When Callaway 1 was completed in 1984 it wound up costing more than \$3 billion, and UE went to the PSC asking for a 70 percent rate hike to pay for it. According to MSE, if CWIP funding had remained in place, it is likely that UE would either have sunk hundreds of millions more into Callaway 2 before realizing that it was not needed, or that they would have actually completed it. Either way, it was not needed and consumers would have had to pick up the cost—hundreds of millions, if not billions—to pay for this massive plant that has proven unneeded right up to the present time.

From the standpoint of local level anti-nuclear organizations, such as MSE, there are several interrelated injustices associated with ratepayer financing of new reactor construction. First, CWIP financing encourages overbuilding and removes important opportunities for democratic oversight. When CWIP financing is in place utilities lose the incentive to build only the capacity they expect to need, because they are no longer financially responsible for the risks/costs. Also, without CWIP charges, before the costs of a new plant are added to the utility's ratebase and included in customers' bills, careful auditing of all expenditures is done. There is the opportunity for the PSC staff, the Public Counsel (representing public interests before the PSC) and consumer groups to challenge the legitimacy of expenditures. But, with the introduction of CWIP charges, the opportunities for these types of prior oversight are removed. Thus, a representational injustice that limits democratic-decision making on the local level follows from the introduction of CWIP financing, which sets the stage for misrecognition of public interests in relation to the interests of investor owned utilities. I believe it follows from this analysis of the arguments made by local anti-nuclear organizations, and the historical

and contemporary contexts they emerge from, that a possible principle of “energy justice” requires that decisions about the development and implementation of energy systems need to include mechanisms for facilitating public involvement at all relevant levels to the greatest extent possible. Because decisions about energy systems in the U.S. are made on multiple levels (local, state, regional, national), and because the impacts of those decisions are felt on multiple levels, democratic decision making based upon public input and participation is required on all these levels so that the public interests on any one of these levels are not sacrificed for those on another (or for private interest of capital accumulation).

Second, local level anti-nuclear organizations claim CWIP charges are patently unfair, and not only because they transfer the risk from investors to customers. It is true that utility stockholders continue to earn a rate of return on their investment commensurate with risk-taking; but with CWIP charges the utilities’ customers would actually be the ones assuming the risk by paying for plants that may never be completed or produce power. Nuclear utilities, such as AmerenUE, generally try to argue that CWIP charges are a “pay-as-you-go” plan that reduces future “rate shock”. This argument suggests that it will *benefit* customers to pay for a new plant in advance, as it will reduce accrued finance charges, and thus the ultimate cost of the plant. However, as MSE and other local level anti-nuclear organizations have shown, this reasoning is severely flawed from a social and economic justice point of view. For one thing, paying in advance is inequitable to people who are paying now but will never receive power from the plant. This is especially relevant to the elderly and many other people, given the highly mobile nature of contemporary society that results in people frequently moving

from one location to another. For another thing, CWIP charges also mean that customers who pay now are paying more than the nominal value of their money. Given the “time value of money”, the present value of a dollar this year is much greater than the present value of a dollar 10 years from now. If the extra money that utilities want ratepayers to pay now were to remain in their hands, it could be earning interest in a bank account or it could be invested in other financial assets. Alternatively, this money could be invested in making the ratepayer’s homes or businesses more energy efficient (more insulation, better lighting, more efficient appliances, etc.). This would not only lower present utility bills, but it would also reduce future demand for additional power. In any case, local level anti-nuclear power organizations argue that ratepayers would be better off holding onto their money.

These general arguments made by local anti-nuclear organizations against CWIP financing for new reactor construction were employed and further specified by MSE in 2008, 2010, and 2011 when AmerenUE sought to pass legislation that would overturn Proposition One, and allow the utility to use CWIP charges to finance an “early site permit” for a second reactor in Callaway County. In a letter from MSE that was delivered to Missouri State Senators dated January 31, 2011, MSE points out that while the legislation in question would only allow for CWIP financing to be used by AmerenUE to obtain an “early site permit”, this would set an unfortunate precedent and essentially be the “proverbial ‘nose of the camel under the tent.’ If Ameren and their partners decide to attempt construction of a new reactor at Callaway, they would certainly be back asking [the state legislature] to authorize CWIP charges for all construction expenses” (MSE “Letter to Missouri State Senators”, 1/31/2011). The cost of obtaining an “early site

permit” is miniscule (\$40-\$45 million according to AmerenUE’s estimates) compared to the massive costs of building a plant. The letter further argues, if the investment community deems this minimal expenditure imprudent, it is extremely unlikely that they would be willing to underwrite a project that may take a decade to complete and cost \$10 billion or more.

Nuclear projects have historically been extremely risky, with a high cancellation and default rates, and huge cost overruns on plants that have been completed. Callaway 1, for example, was completed at more than six times its original cost estimate, and upon completion, Union Electric went directly to the Public Service Commission asking for a 70 percent rate hike. Even after adjusting for inflation, the completed reactors of the last generation ended up costing more than three times their initial cost estimates (MSE “Letter to Missouri State Senators”, 1/31/2011). Nuclear power has a 50+-year track record, and despite massive subsidies (\$154 billion in 2007\$ between 1950-1990), it has repeatedly failed the test of the marketplace (Makhijani, 2007). This is what lead Forbes Magazine in 1985 to described the failures America’s nuclear power industry as “the largest managerial disaster in business history, a disaster on a monumental scale” (Cook, 1985). The letter goes on to conclude, “the private sector rightly deems new nuclear plants too risky to finance. As such, utilities interested in new nuclear units demand the risk be transferred to the ratepayers or the taxpayers. This is patently unfair to Missouri families and businesses” (MSE “Letter to Missouri State Senators”, 1/31/2011). This is especially true, according to MSE, given that investments in energy efficiency can eliminate the need for new plants at a tiny fraction of the cost, and considering that wind power is already significantly cheaper than coal or nuclear. These clean alternatives

(energy efficiency and wind power) can be installed far more quickly—providing jobs and energy in the near term—and are certain investments, unlike cancellation and default-plagued nuclear projects (Makhijani, 2007).

As the conflict and the political process played out over the next several months, Missourians for Safe Energy received support and expressions of solidarity from national level anti-nuclear organizations such as Nuclear Information and Resource Services (NIRS). This provides a clear example of movement coordination and resource sharing between the different levels of the anti-nuclear movement in the U.S.. In fact, on February 16, 2011 NIRS sent a letter to their members and supporters on behalf of MSE and others in Missouri fighting the introduction of CWIP charges. The letter reflected and reiterated the arguments made by MSE, and similarly drew upon ideas of distributive justice to structure their positions. More specifically NIRS informed their members:

The Missouri legislature is currently considering legislation that would force ratepayers to foot the bill for some costs related to the Callaway-2 nuclear reactor before it is built and operating. This violates the will of Missouri voters, who passed a ban on Construction Work In Progress (CWIP) charges by a nearly two-to-one margin. And while this legislation is limited in scope, it's just the foot in the door. If Ameren receives a permit to build this reactor, you can bet they'll be back looking in ratepayers' wallets for the \$10 Billion or more it would cost to actually build the thing (NIRS "Action Alert", 2/16/2011).

Active members of MSE, including myself (as I have served as the “radioactive waste policy analyst” for MSE since 2010), were very appreciative of the support and involvement of NIRS in this local campaign.

I think it is important to point out that the expressions of solidarity and cooperation went both ways, between national and local level anti-nuclear organizations, with regards to these issues of public financing of new reactor construction. The parallels between the two approaches (“loan guarantees” and CWIP charges) and the multidimensional injustices associated with both were patently obvious to organizations working on both levels of the movement. Consequently, throughout the eighteen month timeframe under consideration here, MSE worked to distribute and spread awareness of each and every action alert and petition NIRS and other national level groups put together regarding the federal loan guarantee program (discussed in previous chapters). “People power” is without question the most important resource the anti-nuclear power movement has at its disposal. Anti-nuclear organizations on all levels are fully aware that they can never hope to outspend the nuclear industry in terms of lobbying, public relations, etc. Their best hope is to mobilize and educate as many people as possible to make their voices heard in the decision-making and political processes, in hopes that democratic principles will win out in the end. NIRS sending an action alert to their 20,000+ supporters informing them of what MSE was fighting against and asking them to make their voices heard was a significant contribution of social/network resources that helped ensure the legislation eventually stalled.

While the movement’s multiple framings of issues allowed national level groups to form a coalition with other fiscally conservative groups like American for Generational

Equity (discussed in previous chapters) against the “loan guarantee” program, MSE was able to similarly form a coalition with other environmental organizations who generally oppose nuclear power (such as Missouri Coalition for the Environment) and other large utility customers who generally did not take a position on nuclear power. MSE’s most significant ally was Noranda Aluminum Holding Corporation which operates a large aluminum smelting plant in Southeastern Missouri. Noranda is the largest industrial consumer of energy in the state, and they were motivated to get involved with the CWIP issue out of fear the additional energy costs would hurt their profitability. Noranda was able to devote significant financial resources to the conflict, helping to pay for state-wide television advertisements encouraging Missourians to contact their legislators to tell them to vote against CWIP financing. Additionally, because Noranda is the largest industrial electricity consumer in the state who employs large number of people, they were able to exercise leverage in negotiations with AmerenUE and were able to put meaningful pressure on state legislators in Jefferson City. In sum, the multidimensional injustices associated with federal “loan guarantee” program enabled national level anti-nuclear organizations to frame the issue in different ways, drawing from interrelated paradigms of justice, which allowed for a coalitions to form between anti-nuclear groups and other organizations not generally concerned with nuclear power. In much the same way, MSE and other local level anti-nuclear organizations were able to frame the problems of CWIP financing in different ways, again drawing from the interrelated paradigms of social justice, which enabled them to form a coalition that included large industrial users of electricity, which were generally not concerned with nuclear power per se, but were very concerned about the distributive injustices CWIP financing would produce.

My analyses have shown that while issues of distributive justice were paramount in both cases, problems of representational and recognitional injustices also emerge, reflecting additional dimensions of the injustices involved. These additional dimensions of the injustices associated with the public financing of new reactor construction, specifically through CWIP charges, became especially apparent following the multiple reactor meltdowns at Fukushima in March 2011. For instance, two weeks following the onset of the Fukushima disaster MSE delivered another letter to the Missouri State Legislature that reiterated their earlier arguments against the partial repeal of the law banning CWIP charges and added the claim, “Fukushima Daiichi means absolutely no private investment in new nuclear” (MSE “Letter to State Legislatures”, 3/25/2011). MSE again pointed out the fact that after losing tens of billions in the “great nuclear crash” of the 1980s, Wall St. has refused for nearly three decades to consider financially risky new nuclear plants as an acceptable investment option. And while the industry had hoped that a so-called “nuclear renaissance” would change this, dramatic cost escalations and utilities backing away from or putting off new nuclear projects has remained the norm. And most significantly, “any remaining hopes for a market-based turnaround went out the window with the multiple meltdowns in Japan” (MSE “Letter to State Legislatures”, 3/25/2011).

MSE predicted (and were latter proven correct) that following the disaster in Japan, “We will surely hear from the industry that new nuclear units are safer. The reality, however, is that nuclear power presents unique catastrophic risks. While the likelihood of occurrence can be reduced, there are still a large variety of disaster scenarios. And given that each reactor core contains the radiological equivalent of 1,000

Hiroshima bombs, the potential losses are astronomical” (MSE “Letter to State Legislatures”, 3/25/2011).

While the likelihood of the occurrence of these risks might be low (and could be potentially reduced), there are still a large variety of disaster scenarios. And given that each reactor core contains the radiological equivalent of roughly 1,000 Hiroshima bombs, the potential losses are astronomical. Thus nuclear disasters represent a case of what Freudenburg and Gramling (2012) refer to as “low-probability high-consequence” events that existing regulatory mechanisms are notoriously awful at recognizing and addressing. Former NRC commissioner Peter Bradford highlighted the connections between the “unique catastrophic risks” of nuclear power and investor’s unwillingness to get involved in nuclear projects. Speaking with regards to the Three Mile Island accident of 1979, Bradford said, “Wall Street learned that a group of licensed operators no worse than any other could transform a billion-dollar asset into a two billion dollar clean-up in ninety minutes” (Quoted in MSE “Letter to State Legislatures”, 3/25/2011). The costs of the Fukushima disaster will dwarf those associated with Three Mile Island. The economic losses from the meltdowns at Fukushima are already estimated to be in the tens of billions and could easily reach into the hundreds of billions by the time some semblance of a solution is in place. This means because of the “unique catastrophic risks” associated with nuclear power, it is virtually certain that private investment capital will not back any new nuclear projects now or in the foreseeable future. In other words, because the production of nuclear power has the potential to create such dramatic environmental as well as social, economic, and political damages, the market simply will not get involved in nuclear development. It seems almost ironic that not only are ratepayers and/or

taxpayers being unjustly forced to pay for energy development project that are financially hazardous, but also these same projects carry the potential to do almost incalculable environmental and social, political, and economic damages that would negatively impact these same ratepayers and/or taxpayers.

Local level anti-nuclear organization's arguments against CWIP financing clearly incorporate ideas of distributive, recognitional, and representational (in)justice. Beyond the fairly obvious distributive injustice of saddling ratepayers with the risks/burdens of financing new reactors, while investors retain the eventual profits, other less obvious distributive injustice also emerge. CWIP financing of new reactors is inequitable not only for those who are paying upfront for a product/service they may never receive, but also for anyone who could use the same money for any number of more useful/beneficial purposes. Beyond these obvious and less obvious distributive injustices, my analysis of anti-nuclear groups' arguments reveals the roles of representational and recognitional injustices as well. The establishment of CWIP charges necessarily takes away important avenues for public oversight and protection with regards to the development and implementation of energy systems, by essentially granting utilities a blank check to proceed with development projects. This all but removes the role of public input into decisions about energy system development, which has been shown to lead to the misrecognition of public/consumer interests at the expense of capital accumulation. This is all compounded by the fact that the distributive injustices at work here are being used to facilitate the development of an energy system (nuclear power) that carries "unique

catastrophic risks”, which could potentially harm the same people being cajoled into financing their development.

Therefore, following from this analysis, I suggest that another possible principle of “energy justice” requires that decisions about the public financing of energy systems must include mechanisms that protect the interests of the public both as citizens/taxpayers and also as consumers/ratepayers. As should be clear, the anti-nuclear movement’s claims against federal “loan guarantees” on the national level and CWIP financing on the state/local level share many important similarities with regards to the distributive, representational, and recognitional injustices involved. This is unsurprising considering both “loan guarantees” and CWIP charges are essentially mechanisms for socializing the risks of energy system development. What is different is the subject position of who is subject to the distributive, representational, and recognitional injustices. Therefore, the conclusions I have drawn from the analysis of local-level opposition to public financing of new reactors adds additional considerations and dimensions to the principle of justice that I derived from my analysis on the national level. This supports Fraser’s (2009) contention that the “scale” of justice is important when trying to theoretically or empirically determine what constitutes just social arrangements. In other words, because conflicts over social, environmental, and energy justice in the U.S. take place on multiple scales (local, regional, national), theories of justice in any of these domains needs to be sensitive to the injustices that can arise one or between these levels.

The Misrecognition, Misrepresentation, and Maldistribution Involved in Efforts to Increase the Safety of Nuclear Facilities

Campaigns to increase the safety of nuclear facilities, including campaigns to close unsafe and unneeded nuclear reactors, flourished in the U.S. on both the national and local levels and included significant organized protest in the 1970s. Perhaps the most famous of these protests were the Clamshell Alliance's protests at the Seabrook Station Nuclear Power Plant in New Hampshire and the Abalone Alliance's protests against the Diablo Canyon Nuclear Power Plant in Southern California. Both the Abalone Alliance and the Clamshell Alliance are local anti-nuclear organizations formed in the 1970s to oppose the construction of nuclear reactors in their states. Thousands of anti-nuclear demonstrators were arrested at both locations in the late 1970s while engaging in non-violent, direct-actions; including some 2,000 members of the Clamshell alliance occupying the Seabrook nuclear power plant in 1977. In addition to these notable local level protests against nuclear power, there were also significant national level protests against nuclear power, especially following the Three Mile Island (TMI) accident in 1979. More specifically, 65,000 people including the Governor of California demonstrated against nuclear power in Central Park in New York City in May of 1979. And in September of that year almost 200,000 people attended a protest against nuclear power in Washington D.C. (Giugni, 2004). These local and national protests over the production of nuclear power and radioactive waste received significant media and public attention.

However, within just a few years, by the early 1980s much of the anti-nuclear activism in the U.S. pivoted from a focus on nuclear power and radioactive waste to the issues of nuclear weapons. For instance, On June 12, 1982, one million people

demonstrated in New York City's Central Park against nuclear weapons and for an end to the cold war arms race. It was the largest anti-nuclear protest and the largest political demonstration in American history (Schell, 2007). There are at least two reasons why the anti-nuclear movement in the U.S. switched focuses so rapidly in the early 1980s; one of which I have already discussed. More specifically, the unsustainable economic model of the nuclear industry was becoming readily apparent by this time, and had been utilized by the anti-nuclear movement throughout the 1970s. As I have discussed above, major cost overruns and construction delays were endemic within the nuclear industry “boom years” of the 1960s and 1970s (Cook, 1985). In fact, much of the anti-nuclear movement’s political strategy during the 1970s was to work to delay and then further delay the construction of nuclear facilities, knowing the economics become more unfavorable the longer they could stall the project. So, by the early 1980s, with the assistance of the anti-nuclear movement, the nuclear industry was collapsing under the weight of their own incompetence. The other major reason for the switch in focus had to do with the election of Ronald Reagan in 1980, who immediately after taking office in 1981 began escalating the U.S. nuclear weapons program to new heights not seen before or sense. This along with the corresponding spike in Cold War hostilities, and the strength of the broader peace movement of that era in the U.S., drew many anti-nuclear power activists and organizations into the pressing conflict over nuclear weapons reduction (Joppke, 1993).

Having said all this, campaigns to increase nuclear safety and to close nuclear reactors in the U.S. continued through the 1980s, 1990s and the first decades of the 21st century. Just without anywhere near the numbers or the visibility of their predecessors. These included successful campaigns, like the one that eventually succeeded in closing

the Yankee Rowe Nuclear Power Plant in Vermont; as well as (presently) unsuccessful campaigns, like the one to close the Crystal River Nuclear Power Facility in Southern Florida. The event that provided much needed fuel for these campaigns to increase reactor safety in the U.S., as well as a renewed public and media visibility, was the multiple reactor meltdowns at Fukushima Daiichi in Japan on March 11th, 2011. In the weeks and months that followed the onset of this ongoing tragedy, existing campaigns to increase reactor safety in the U.S. took on a sudden new urgency. Local anti-nuclear organizations and activists found themselves with an audience, and a level of general public interest, that they had not experienced in decades. Furthermore, new campaigns for increased nuclear safety and new anti-nuclear organizations were forming and emerging around nuclear facilities (especially nuclear reactor facilities) across the country.

Analyzing the claims for increased nuclear safety made by local anti-nuclear organizations in the wake of the onset of the Fukushima disaster, including claims for the closing of unsafe reactors, shows how ideals of representational, recognition, and distributive (in)justice underlie and are reconstructed through social and political conflicts over energy production. Analysis of these claims and the paradigms of justice that help structure them, combined with an analysis of the historical and social, political, and economic contexts from which they emerge, helps establish the existence of actual representational, recognition, and distributive injustices associated with the daily operation of many nuclear facilities. More specifically, I show the operation of unsafe nuclear facilities is based upon representational injustices within the operations of the Nuclear Regulatory Commission and state-level regulators that prevent sufficient public

participation in decisions about the (continued) operations of these nuclear facilities. My analysis of the claims made by local anti-nuclear organizations shows how these representational injustices lead to the unjust misrecognition of public concerns and interests, which ultimately facilitates the maldistribution of benefits and burdens between public interests (local communities, citizens/taxpayers, consumers/ratepayers) and private interests of capital accumulation (the nuclear industry including investor-owned utilities). And most significantly, as I have been arguing and (hopefully) demonstrating throughout this study, identifying these empirical and normative injustices enables me to propose possible principles or features of what together I am calling “energy justice”. Taken together, it is my hope that the principles of “energy justice” that I have proposed, following from my analysis of the anti-nuclear power movement in the U.S., will be an important step in establishing a sociologically informed framework that can be used to evaluate the (un)desirability of different energy policies and energy systems.

One such campaign that was already well underway by the onset of the Fukushima meltdowns, but gained considerable attention and momentum following the disaster, was the campaign to close the Vermont Yankee Nuclear Power Plant located on the Connecticut River outside of Vernon. While there were other similar campaigns to increase the safety of nuclear facilities and close unsafe reactors around the U.S., I have chosen to focus on the case of Vermont Yankee because it is typical of these kinds of conflicts/campaigns in some respects, while being unique in regard to the large amount of anti-nuclear organizational activity and eventual outcome. More specifically, it is typical of campaigns to close unsafe nuclear facilities in that the claims made by local level anti-nuclear organizations express and reflect the importance of representative, recognition,

and distributive justice, which highlights the central problems with misrepresentation of public concerns/desires within the NRC leading to the misrecognition of these and ultimately the maldistribution of both social and environmental benefits and burdens.

One such local anti-nuclear organization that was very active in the conflict over VY was Vermont Citizens Action Network (VTCAN). VTCAN is a grassroots anti-nuclear, pro-safe energy organization pushing to maximize democratic decision making and control over the decision to close VY and establish a clean, renewable energy system. In a factsheet about where the waste from VY goes, that was produced by VTCAN during the conflict over the closure of VY, many of the interrelated injustices associated with the operation of this reactor (and all other reactors) are highlighted, including the environmental injustices on different levels and in different locations. To answer the question, “where does the waste from Vermont Yankee go?” VTCAN first points out, “The waste stream is long and wide. While much of Vermont Yankee’s environmental impact is in the tri-state area (Vermont, Massachusetts and New Hampshire), it starts and ends far from our small corner of New England” (VTCAN “Nuclear Waste Factsheet”, 2010). The organization goes on to highlight how as part of its routine operation, Vermont Yankee vents radioactive material into the air through its cooling system on a routine basis. Many of the gases released break down into radioactive particles that settle in surrounding communities as a kind of “fall-out.” According to VTCAN, Vermont Yankee has released over 400,000 curies of radioactive waste into the air during its 36-year history.

In addition to these “routine releases” of radioactivity into the air, VTCAN claims VY has released more than an additional 2,000 curies of radioactivity into the

Connecticut River, in the form of tritium and other and other radioactive contaminants released by the plants cooling system. Furthermore, these environmental degradations correspond with environmental injustices accumulating locally, especially in the town of Vernon, VT. Due to Vernon's proximity to VY, the residents of this town suffer these negative consequences to a greater degree than do other populations; as well as the increased risks associated with the over 5,000 tons of high-level radioactive waste stored seven stories in the air at the site (VTCAN "Nuclear Waste Factsheet", 2010). However, what is most significant about VTCAN's claims and arguments about the interrelated injustices of nuclear power production in New England is their explicate acknowledgement of the *other environmental injustices* that victimize other people in other places as a result of the operations of VY. This clearly shows how issues of (in)justice are of central importance with regards to the conflicts over nuclear power and other dirty, dangerous, and expensive energy systems. VTCAN points out that:

"Low-level" radioactive waste, which includes all waste except the used fuel, is shipped to Barnwell, SC. Barnwell is a poor, rural, 48% African American community that hosts the country's primary radioactive waste dump. Although the dump is slated to close in 2009, within a few years the community's water supply will become contaminated by waste leaking from the dump, raising concerns about environmental racism. After the Barnwell dump closes, more radioactive waste may have to be stored in Vermont unless another community is forced to host a nuclear waste dump (VTCAN "Nuclear Waste Factsheet", 2010)

This clearly reflects the organization's awareness of the fact that the operations of this and all other nuclear power facilities do not just create distributive, recognitional, and representational environmental injustices for local stakeholders, but also for other poor and/or otherwise marginalized communities in many different locations. This cascading flow of environmental and energy injustices is by no means limited to the shipment of so-called "low-level" radioactive waste to South Carolina. For instance, VTCAN goes on to note how:

Contaminated uniforms, gloves, and booties are sent off-site to be "cleaned" at industrial laundries that serve the nuclear industry. The closest such laundry is operated by UniFirst, Inc. in East Springfield, MA, a largely minority and immigrant community. These laundries routinely have bad safety and working conditions, fail to train their employees about radiation hazards and discharge radioactive and chemical waste into the local water supply. The UniFirst/NTS laundry in East Springfield has repeatedly dumped waste in the local sewage system and even the pond in a nearby park. Workers have been endangered by fires and spills in the plant. (VTCAN "Nuclear Waste Factsheet", 2010.)

Furthermore, and just as significantly for the present study, VTCAN links the national and local levels of anti-nuclear power movement in the U.S. through issues and a framework of environmental (in)justice when they argue, "The beginning of the "nuclear

fuel chain” is the mining and refining (called milling) of uranium ore. Mining and milling operations produce immense amounts of radioactive and chemical waste. They are mostly located on Native lands in the Dakotas, the Province of Ontario and the Southwest. For every pound of uranium that is used in a reactor, 3,500-4,000 pounds of radioactive uranium tailings are generated” (VTCAN “Nuclear Waste Factsheet”, 2010.). These and other claims made by VTCAN (and many other similar claims made by other local and national anti-nuclear organizations) clearly show that ideas of justice, fairness, rights, and entitlements are powerful motivators that propel these organizations in their fight against unjust power systems. This provides important validation of the theoretical and conceptual approaches I utilize in the present study. Given the importance of ideas about justice demonstrated above, it is important to examine how these organizations draw from and reconstruct the multiple and interrelated dimensions of justice associated with ideas of distribution, recognition, and representation.

The stage was set for the conflict over Vermont Yankee (VY) back in 2002 when Louisiana-based Entergy Corporation purchased the plant. In exchange for state approval of the purchase, Entergy signed a memorandum of understanding agreeing that in order to renew its operating license beyond its original expiration in March, 2012 they would need legislative approval from the state (Blanding, 2012). However, beginning in 2007 a series of troubling events began to erode public confidence in the facility and in Entergy’s ability to operate it safely. In 2007 one of the plants hour-glass shaped cooling towers suddenly and unexpectedly collapsed due to structural deficiencies in its construction, throwing water and debris into the Connecticut River. Following this, in

the same year Entergy attempted to spin off VY and five other plants into a highly leveraged company to be called Enexus. This move was decried by both the public and Vermont lawmakers for fear the new highly-leveraged company would not be in a position to operate the plant safely nor fully decommission the plant once it was permanently eventually closed (Blanding, 2012). The final straw that all but totally removed whatever public support remained for VY came in January 2010 when Entergy announced they had discovered radioactive tritium leaking into the groundwater surrounding the plant. Tritium is a radioactive isotope of hydrogen, which mimics its nonradioactive counterpart, and thus is easily absorbed into the human body. Entergy officials first testified under oath that there were no underground pipes below the facility from which the waste could leak. Shortly afterwards it was found, and the company eventually admitted, that such pipes did in fact exist, and been leaking tritium since at least 2005 (Blanding, 2005). Tests later showed the levels of contamination were below those considered harmful to humans, according to the EPA's and the NRC's guidelines, but the damage to Entergy's dwindling credibility was already done.

Here we are seeing clear evidence for the fact that the foundational problem in this case, and all other conflicts over increasing the safety of nuclear facilities, has to do with the lack of public confidence in the Nuclear Regulatory Commission's (NRC) willingness and/or ability to effectively regulate the production of nuclear power in the interests of protecting public health and the environment. After all, local anti-nuclear organizations, other citizen groups, and eventually the state legislature (discussed below) would not have to fight to close VY if the NRC was adequately monitoring the plant and preventing events like cooling towers collapsing and radioactive water leaking from

submerged pipes. Of course this last statement assumes nuclear power plants can, in fact, be adequately monitored so as to actually protect public health and the environment, which is by no means certain.

Recent independent monitors and other watchdogs, including both local and national anti-nuclear organizations, have shown the NRC has moved away from enforcement of regulations and has “fallen down on the job”. Despite having a staff of over 4,000 the NRC audits only 5% of activities at plants in the U.S. in a given year (Blanding, 2012). Since the year 2000, the NRC has approved sixty-two out of sixty-two applications it has received to relicense existing reactors for an additional twenty years beyond their initial thirty-four year projected lifespan. This is despite mounting evidence that especially “first-generation” plants built in the 1960s are being dangerously approved for operation beyond what their design and constitutive materials can handle (Makhijani, 2007). In fact, according to a report by the NRC’s own inspector general, the NRC had done little more than rubber-stamp the process by literally cutting and pasting, word for word, information from nuclear companies’ applications into its approvals (Blanding, 2012). In June of 2011 the *New York Times* reported the number of civil penalties issued by the NRC to nuclear operators had dropped by 80% since the late 1990s. Even worse is the fact that the same month the AP released a report that found when plants have failed to meet safety and performance guidelines, the standard response from the NRC has been to lower its standards, through “pencil engineering”, to get the plants back into compliance; rather than issuing penalties and forcing nuclear operators to abide by guidelines put in place to protect public safety and the environment (Donn, 2011). According to the Union of Concerned Scientists (UCS), nearly half of all reactors

fail to meet fire safety guidelines enacted in 1980, and only 60% are in compliance with “voluntary” standards on groundwater pollution. Given this it is not surprising that the AP reports 75% of nuclear reactors in the U.S. have leaked radioactive tritium into groundwater (Donn, 2011).

Returning to the case of Vermont Yankee, responding to overwhelming and sustained public outcry, the State Senate denied approval for VY’s license renewal in February 2010. Entergy immediately sued, claiming the state lacked the authority to close the plant since it was doing so on the grounds that the plant was unsafe. Entergy’s lawyers argued that according to federal law, only the Nuclear Regulatory Commission (yes, *that* Nuclear Regulatory Commission) has the authority to close a nuclear power plant because of safety concerns (Blanding, 2012). During the trial Entergy’s lawyers showed clips of Vermont lawmakers discussing and debating the issue, in which they “bent-over-backwards” to avoid using the word “safety” to avoid being preempted by federal law. Instead they referenced “reliability” concerns, “economic effects”, and “environmental concerns”, which Entergy’s lawyers argued was nothing more than pretext for the main concern of safety. One of the features that makes this case unusual is that the state legislature in this case was supportive of local anti-nuclear organizations concerns about the safety of the plant. In many other cases, (New York, California, Florida, Michigan) state legislatures at best are divided on the issue of nuclear power, and at worst fully support the development of nuclear facilities in their state in accordance with “growth machine” politics that see any development projects (especially really *big* development projects like nuclear facilities) as inherently good, despite any negative social or environmental consequences (Logan and Molotch, 2007). It strikes me as ironic

that in this case state legislators actually concerned with protecting the health and safety of the people and environment were forced to employ other, auxiliary framings of the problems with nuclear power production. Again, the multiple and interrelated problems with nuclear power production, and the multiple and interrelated injustices that they embody, enables anti-nuclear activists and *politicians* (in this case) to frame the issues in strategically different ways, which proves to be an important resource.

One of the primary reasons state legislators in Vermont took such a strong and unusual stand against the nuclear power industry is local level anti-nuclear organizations and grassroots activists were relentless in their efforts to make their voices heard. This included multiple non-violent, direct-action campaigns aimed at Entergy, which included hundreds of protesters being arrested at the VY facility, as well as at Entergy's headquarters in New Orleans, LA. For example, on January, 18th 2011 fourteen women of the Shut It Down Affinity group were arrested for blocking the driveway at VY while participating in a walking meditation to mourn cancer deaths caused by radioactive emissions. The arrest marked the fourteenth time since 2005 that women from this group have been arrested for engaging in non-violent, direct-action at either the VY nuclear power plant or Entergy's local headquarters in Brattleboro, VT to shut down Vermont Yankee (Shut It Down Affinity Group "Press Release", 1/20/2011). Prior to their arrests, the women participated in a walking meditation while remembering friends, family, and all who have died from or suffer from cancer caused by radioactive emissions. The participants wore black clothing and donned white death masks during the procession. Following their release, the women released a statement that reads:

No corporation has the right to poison our air, water, environment, and the future of humanity. We come to Vermont Yankee today representing the harbingers of death that emanates from this reactor...We cry for our children, their children, and those many generations that will have to suffer from the poisons that are emitted from Vermont Yankee...We call on the state to act responsibly and join us in shutting down Vermont Yankee NOW! We call on all persons who do not want to see their air, water, environment, and life killed by this nuclear reactor to join us in shutting it down by such citizens' non-violent actions now. Don't wait-tomorrow may be too late! (Shut It Down Affinity Group "Press Release", 1/20/2011).

Local level anti-nuclear groups such as the Shut It Down Affinity Group, Vermont's Safe and Green Campaign, The Vermont Yankee Decommissioning Alliance, VT Citizens Awareness Network, and others organized meetings and strategy building sessions in order to facilitate a "People's Campaign to Close Vermont Yankee" (People's Campaign to Close Vermont Yankee "Open Letter", 8/15/2011). In an open letter to local activists and concerned citizens, written by these organizations inviting people to attend a planning session in August, 2011, the local anti-nuclear movement's position on closing Vermont Yankee was fully expressed. Claims for representative, recognitional, and distributive justice are woven together throughout the organizations' position. Analysis of these claims, in conjunction with an analysis of the historical and social, political, and economic contexts in which they were developed, reveals the importance of

existing injustices associated with the operation of unsafe nuclear facilities, which enables me to propose potential principles of “energy justice” that can work to correct these interrelated injustices moving forward.

The letter begins by stating the purpose of the meeting is to, “develop a *people's campaign of nonviolent direct action* to shut down Vermont Yankee...Vermonters and our tri state community have worked for 20 years to shut down Vermont Yankee and are committed to a green energy future. Our voices were resoundingly heard when the Vermont Senate voted overwhelming to replace Vermont Yankee in 2012. Now Entergy is trying to undermine the will of the people and steal our vote away (People’s Campaign to Close Vermont Yankee “Open Letter”, 8/15/2011 emphasis in original). They supported the state of Vermont in its efforts to fight Entergy, but they also felt it was important to let Entergy, the courts, the media, and world know *the people* of Vermont and surrounding communities in New Hampshire and Massachusetts would not allow a Louisiana-based, profit-driven energy company to “subvert democracy and imperil the future of the New England region”.

The connections between the subversion of democracy and representative injustices, on the one hand, and the misrecognition of people’s interests and desires and the maldistribution of benefits and burdens (between private and public interest), on the other, is made explicate as these organizations layout the rationale for their anti-nuclear activism:

We, the People, cannot allow a mega-corporation like Entergy to subvert democracy and continue irradiating our region while adding to the tons of

high level nuclear waste stored high above the banks of the Connecticut River. The people of this region - by means of petitions, letters, public hearings as well as demonstrations, and votes by the Vermont legislature and annual town meetings - have long and repeatedly expressed their will to close Vermont Yankee and replace its power with safe, renewable alternatives. Many nations - including Germany, Italy, Switzerland, and Japan - are taking action to halt the continued use of nuclear power. Vermont has done the same (People's Campaign to Close Vermont Yankee "Open Letter", 8/15/2011).

The post-Fukushima context emerges later in the letter from the organizations' argument:

In the aftermath of Fukushima, there is no longer any doubt that nuclear power is an imminent threat to our lives, health, environment, and livelihoods. Vermont Yankee, approaching the end of its 40-year operating license, and running at 120% of its original design capacity, is an aging Mark-I reactor, identical in design and age to the reactors that exploded and melted down in Fukushima. The inadequacy of the Mark-I design has long been known, yet the Nuclear Regulatory Commission has allowed 23 of these reactors to continue to operate in America. It is time to close these dangerous reactors, starting here and now with Vermont

Yankee (People's Campaign to Close Vermont Yankee, "Open Letter"
8/15/2011).

The claims made by these local anti-nuclear organizations clearly draw from, reconstruct, and recombine ideas reflective of the social justice paradigms of representation, recognition, and distribution. These claims emerge from over twenty years of real-world struggle against nuclear utilities and federal regulators to increase the safety of nuclear facilities, and to close this unsafe reactor. Analysis of these claims along with an analysis of the relevant contexts helps identify the real-world injustices that plague the operation of unsafe nuclear facilities, in this case and many others around the U.S. and the world. For instance, the NRC's readiness to grant VY a twenty-year license extension despite the repeated expressions of the interests of the people of Vermont—through petitions, letters, public hearings, demonstrations, and votes by the state legislature—clearly exemplifies a lack of democratic decision making and thus significant representative injustice. But, as these local anti-nuclear groups claims bring to light, democracy is not just being passively subverted here; it is being subverted by Entergy, a "mega-corporation" who along with the rest of the nuclear industry use their tremendous resources to gain undue influence over the political and regulatory process. Therefore, the concerns of the people in this case are institutionally misrecognized at the federal level by NRC, which enables the distributive injustice of radioactive waste to continue to accumulate on the banks of the Connecticut River. This is a distributive injustice in at least two respects. It is a distributive injustice in relation to the accumulation of radioactive waste at the site, which burdens local communities with the

proximate risks of contamination, safety, environmental degradation, property devaluation, etc. It is also a distributive injustice in terms of the interests of out-of-state corporate actors being advanced at the expense of the interests of local stakeholders.

Furthermore, as I have argued throughout this study, following the methodology of Fraser (2000; 2003; 2009), identifying the existence and extent of these multidimensional injustices through such an analysis, allows me to propose possible principles or features of what together could be considered a model of “energy justice”. These principles of energy justice could be used as a framework for developing sociologically informed arguments for/against the development of different energy systems, and thus guide future policy and decisions in more socially and environmentally just directions. More specifically, the analysis of the claims made by local anti-nuclear organizations in the campaign to close VY (above), suggests at least two additional principles of energy justice should be considered. The first follows from my analysis of the above conflict in the post-Fukushima context, and is in fact one of *the central* lesions I believe should be derived from Fukushima and other energy disasters (Three Mile Island, Chernobyl, BP’s Deep-Water Horizon blowout, etc.). Following from the above analysis and consideration of other cases, I suggest that a possible principle of “energy justice” requires that energy systems need to be developed in such a way as to reduce the possibility of catastrophic accident, even so-called “low-probability, high-consequence” catastrophes, to the greatest extent possible. Given that such events, like nuclear reactor meltdowns or deep-sea oil rig disasters, are by definition “low-probability” it is not surprising that regulators and industry have been shown to become complacent with regards to such scenarios. However, it has also been shown that often the probability of

these “low-probability, high-consequence” events proves greater than industry or regulators initially believed to be the case. Additionally, it has often been the case that the consequences of these disasters are felt most severely by poor and otherwise marginalized communities, which represents multiple injustices in its own right. Safe and clean energy systems are increasingly becoming a possibility, and energy justice requires that they be developed to the greatest extent possible.

The second possible principle of “energy justice” that I believe follows from the above analysis has to do with the foundational problem within the conflict to close VY, and all other such conflicts to increase the safety of nuclear reactors in the U.S. Beyond the operational incompetence of Entergy Corporation to effectively and safely manage the facility, lies the more central and general problem of the Nuclear Regulatory Commission’s (NRC) unwillingness and/or inability to effectively and adequately regulate the nuclear industry in the service of protecting public interests, public health, and the environment. I suggest that given the multilevel and interrelated social, political, and economic dimensions of energy systems (that have been the basis of the present study), and the vital role that energy plays in contemporary society, “energy justice” requires that the implementation, production, and distribution of energy systems must include strong, effective, and independent regulatory oversight. More specifically, I propose that energy justice requires concrete mechanisms are put into place to ensure “regulatory capture” does not follow from the industry to be regulated effectively taking control of the regulatory body itself. This could include procedures to stop the “revolving-door” between industry insiders, lobbyists, and regulatory bodies, and/or

potential third-party audit/review of the regulator's record with regards to public and private interests.

Both of these potential principles or features of “energy justice” that I have proposed following from the above analysis, along with the other principles that I have suggested followed from previous analyses in previous chapters, will be further fleshed-out and expanded upon in the concluding chapter. By expanding and further specifying the possible features of “energy justice” that I am proposing, I am able to suggest a possible model for conceptualizing the relationships and the flow of different dimensions of injustice that I have shown are associated with the continued production of nuclear energy. I argue that while this model is by no means definitive, it does help us think about the relationships between the multidimensional and interrelated injustices associated with nuclear and other dangerous forms of energy production. My goal in developing a set of possible principles of “energy justice”, from the beginning, has been to take a step towards establishing a sociologically informed framework that could be used to establish sociologically informed arguments for/against the development of alternative energy system and/or energy policies. And clearly this framework was derived through an analysis of anti-nuclear organizations claims and arguments *against* nuclear power. So I conclude by applying the principles of energy justice to the case for expanding the use of renewable energy sources such as solar, wind, and geothermal.

CHAPTER 5: CONCLUSION

As I have been arguing throughout this dissertation, decision about the production, distribution, and consumption of energy and electricity involve more than just technical/scientific considerations. This is because energy systems take on significant social dimensions as these systems are developed, contested, and implemented (Sze, 2005; 2007). This can be clearly seen by analyzing the “environmental justice energy activism” of groups working to highlight these social dimensions of energy systems, such as anti-nuclear organizations. My analysis of national and local level anti-nuclear organizations’ claims has focused on issues regarding the public financing of new nuclear construction (through federal “loan guarantees” or CWIP charges), as well as issues of the management of high-level radioactive waste and other campaigns to increase the safety of nuclear facilities. Throughout these analyses I have shown how ideas of distribution, recognition, and representation help structure, and are reconstructed through, the arguments made by anti-nuclear groups against the production of nuclear power. Furthermore, I have shown how these analyses combined with analyses of the historical, and social, political, and economic contexts from which the movement’s claims emerge, reveals the existence and extent of actual, multidimensional, and interconnected injustices associated with the production of nuclear power and other dirty, dangerous, and expensive energy systems. Most significantly, following the methodology utilized by Fraser (2000; 2003; 2009) by examining claims made in existing struggles against existing injustices as the starting point for the development of theories of justice (including energy justice as well as other types) we can begin to understand the full structural and normative extent of both just and unjust social arrangements. This has

allowed me to propose several (8-9) possible principles of what together could be referred to as “energy justice” that could be used to guide future energy policy and decision making. My goal in proposing these potential principles of energy justice is to take a first step towards establishing a sociologically informed framework that can be used to build sociologically informed arguments for/against the adoption of particular energy systems and other types of energy policy. My hope is that by doing so future choices about the production, distribution, and consumption of energy can be made in as socially and environmentally beneficial a way as possible.

As I mentioned at the end of the “Local Level” chapter above, in the remainder of the Conclusion Chapter I will, first, review the analyses that facilitated my proposal of the various features or principles of “energy justice”, as well as further specify and elaborate on the principles themselves. This will be done in the context of continued debate about the role nuclear power could/should/will-not play in reducing greenhouse gas emissions and curbing climate change. (For instance, James Hanson, perhaps one of the best known climate scientists has recently “swallowed the pill” on nuclear power, and not only declared nuclear power will be essential for addressing climate change, but also specifically encouraged people *not to support anti-nuclear organizations* (!!!) due to their efforts to block the implementation of nuclear power.)

Second, by expanding and further specifying the possible features of “energy justice” that I am proposing, I am able to suggest a possible model for conceptualizing the relationships and the flow of different dimensions of injustice that I have shown are associated with the continued production of nuclear energy and other unjust energy systems (Figure 5.1). I argue it is often the case in conflicts over nuclear power that

representative injustices, embodied in biased/undemocratic decision-making processes and procedures, leads to the institutionalized misrecognition of public interests and desires on different levels, which furthers distributive injustices, both in terms of economic and environmental benefits and burdens, and in terms of public vs. private interests. However, this simple progression imposes an artificial starting point, because the answer to the question, “why do the representational injustices emerge?” is preexisting recognitional and distributive injustices (represented by the bottom arrows running right-to-left). I argue that while this model is by no means definitive, it does help us think about the relationships between the multidimensional and interrelated injustices associated with nuclear power and other dirty, dangerous, and expensive forms of energy production. Thus I aim to present practical and applicable suggestions as to how energy systems should/could be pursued and developed moving forward, based on analyses of the environmental justice energy activism of the anti-nuclear power movement in the U.S.

I conclude, thirdly, by acknowledging, addressing, and responding to possible limitations and shortcomings of the present study. More specifically, I respond to questions of, “why energy justice” and “how are the principles of energy justice distinct from the Principles of Environmental Justice”. This includes responses to possible critiques of Fraser’s framework and the associated liberal political categories of distribution, recognition, and representation that structure so much of the proceeding analyses. Additionally, I address some of the methodological shortcomings associated with the analyses of organizational claims making during a limited timeframe by highlighting the analytic advantages this approach provided given my central research

aims and goals discussed above. This discussion begins to point the way towards directions of future research that are needed to more fully develop and realize a theory of energy justice.

Potential Principles of Energy Justice

As I briefly mentioned above and showed in greater detail in the preceding chapters, my analyses of the U.S. anti-nuclear movement's claims made in their struggles against nuclear power shows how these claims draw from and reconstruct ideas of distributive, recognitional, and representational (in)justice. I have argued that analyses of these claims in combination with analyses of the historical and social, political, and economic contexts from which they emerged, allows for the identification of existing and interrelated distributive, recognitional, and representational injustices associated with the production of nuclear power and other dirty, dangerous, and expensive forms of energy production. These analyses allow me to propose possible principles of "energy justice" that together could form a sociologically informed framework that could be used to develop sociologically informed positions for/against the development of various energy systems. Taken together, these principles of energy justice clearly show that the continued development and production of nuclear power is made possible by, and results in, the continuation of distributive, recognitional, and representational injustices.

Therefore, from a sociological and "energy justice" point-of-view, energy policy going forward should move away from nuclear power and towards more socially and environmentally just sources of energy and electricity. This is especially significant because the role that nuclear power could/should/will-not play in future energy choices to

mitigate the effects of climate change is very much up for debate. Especially in the U.S. and Eastern Europe, political-economic elites are misguidedly working to sustain and/or resuscitate nuclear power as a viable solution in their efforts to increase “energy security” and to reduce carbon emissions and combat climate change. My review and expansion of the possible principles of energy justice that I have proposed demonstrates why all such efforts to force nuclear power into proposed solutions for climate change are misguided, not only because of the associated injustices, but also because these efforts necessarily take away resources (time and money) from other more socially and environmentally just solutions.

To begin with, my analysis of national level anti-nuclear organizations’ claims regarding the multidimensional injustices associated with federal “loan guarantee” program for financing new nuclear reactor construction, along with the historical and social, political, and economic contexts, lead me to propose the first two (or three) possible principles of energy justice. More specifically, between March 2010 and August 2011 there were several attempts by the President and members of Congress to expand the nuclear loan guarantee program. All of these attempts were met with organized resistance from the anti-nuclear movement. My analysis above shows how anti-nuclear organizations drew from the social justice paradigms of recognition, representation, and especially distribution to argue against the federal “loan guarantee” program by highlighting the multidimensional injustices associated with the program. The first principle of energy justice that I proposed following these analyses is; energy justice requires that the development of energy systems should minimize up-front, capital-intensive requirements to the greatest extent possible. In keeping with very basic market

principles, energy systems should be pursued in accordance with the least-cost options that are available. This, of course, requires an honest calculation of the full costs of different energy systems, including the *externalized costs* associated with traditional coal, oil, and gas production, which levels the playing field for renewable energy sources like wind, solar and geothermal. Additionally, these calculations should be done without consideration of the “sunk costs” associated with energy companies’ existing infrastructure; because the decisions regarding the development of this infrastructure were not made democratically nor were they made to advance social and environmental well-being; which is the entire purpose of establishing principles of “energy justice”. Also, given that time and money are closely related in the context of energy system development, with increases in the former often leading to increases in the latter, it follows that energy justice requires that decisions about the development of energy systems should also be made in accordance with the shortest possible timeframe for completion. This is especially significant when decisions about energy systems are being made in the context of policy decisions to address/mitigate climate change. Time is of the essence with regards to addressing climate change. Virtually all serious climate scientists agree that humanity has either run out of time (or is rapidly running out of time) to head off the most disastrous consequences of climate change. Therefore, what are needed are new energy strategies that can be implemented as cheaply and quickly as possible.

The second principle of energy justice that I proposed following these analyses is; energy justice requires that in cases where public financing of energy systems is necessary, because private financing is unavailable for whatever reason, the eventual

profits/benefits should be retained publically. This could take the form of dividend payments to taxpayers/ratepayers or future credits toward their energy costs. It also follows from this analysis, and the analysis of local level anti-nuclear organizations' arguments against CWIP charges, that a related (sub)principle of energy justice is; energy justice requires that decisions about the public financing of energy systems must include mechanisms that protect the interests of the public both as citizens/taxpayers and also as consumers/ratepayers. Ensuring that the potential profits/benefits are retained publically by either taxpayers or ratepayers, as opposed to privately by investor owned utilities, would significantly alter the incentive structure that leads privately-held nuclear utilities to pursue such public financing in the first place. As is, nuclear utilities are encouraged to seek public financing for new reactor construction, because doing so shifts the risk of the upfront investment onto the public, while enabling the firm and its investors to control the eventual/potential profits, which are earned based upon the risk they are no longer taking. However, if the eventual/potential benefits were retained by the public, then the nuclear utility loses the incentive to embark on the project in the first place, which could lead them to pursue more environmentally and socially, economically, and politically just energy systems that are cheaper and quicker to implement.

Both of these first two potential principles of energy justice could be used to guide future policy to ensure the most cost-effective energy choices are made, and to ensure public interests are not sacrificed in order to advance private financial gains. Perhaps the most direct way to see the distributive, as well as some of the recognitional and representative, injustices associated with the continued development of nuclear energy is through the issues of federal (taxpayer) financing of new reactor construction.

One of the most central problems with the production of nuclear power has always been (and increasingly continues to be) the fact that nuclear power plants/reactors are extraordinarily expensive to build and take a very long time to construct. This fact goes a long way in explaining why the construction of new nuclear reactors in the U.S. all but ceased in the late 1970s, and why Forbes magazine called the collapse of the nuclear power industry in the U.S. “the greatest managerial failure in U.S. business history” (Cook, 1985). While nuclear power was initially billed as being “too cheap to meter”, it is now clear that nuclear power is in fact “too expensive to matter”.

While these principles of energy justice were derived from analyses of the arguments against nuclear power and the associated problems with this form of energy production, they also apply more generally to other potentially problematic energy systems. For example, some policymakers, observers and analysis (especially those with ties to the oil/gas/coal industries) are strong proponents of “clean coal” technologies, including so-called carbon-capture and sequestration technologies, which are said, would facilitate the continued use of coal for energy production while significantly reducing the amount of greenhouse gases released into the atmosphere. The problem is, following from the first principle of energy justice above, these technologies do not yet exist anywhere in the world, except for on paper. It will take *significant* amounts of time and money to make these technologies a reality, while all the while the ultimate benefits/results will remain uncertain due to the fact that these currently remain hypothetical technologies. Especially when decisions about energy are being made in the context of efforts to address climate change, time and money are both in short supply. As I will discuss below, however, the implementation of renewable energy systems based

upon solar and wind production and energy efficiencies, does follow from these first two principles of energy justice because such systems do not require massive forms of public financing, and the public financing of such systems that does exist (i.e. tax credits for new installed capacity) primarily benefits public as opposed to private interests.

Other, similar, issues limit the role nuclear power can possibly play in addressing climate change, beyond the prohibitive costs and lack of private investment. James Hanson, perhaps the best known and most respected climatologist in the U.S. recently published a letter in the *New York Times* where he argued the planetary threats posed by increasing greenhouse gas emissions are so grave that any and all efforts to curb their release must be undertaken. In this letter Hanson singles out nuclear power as an “essential” component for curbing greenhouse gas emissions, citing the potential for “fourth generation” reactors, such as “pebble-bed reactors” and “thorium-fuel reactors” that are said to have solved all the problems of earlier generations. Hanson even went so far as to encourage people not to support anti-nuclear organizations due to their opposition to the development and implementation of nuclear technologies. Hanson is without question one of the foremost authorities on the issue of climate change. However, Hanson does not have a good understanding of the promises versus the realities of nuclear power. For one thing, as with carbon capture and sequestration technologies, so-called “fourth generation” reactors do not exist anywhere in the world, except on paper. Given that nuclear power companies have such difficulties trying to finance the construction of “conventional” reactors, none of them are racing to start developing new prototype reactors. There is no reason to believe that developing and constructing never-before-built “fourth generation” reactors will be any less prone to tremendous cost

overruns and construction delays. Additionally, in order for nuclear power generation to make a significant contribution to curbing greenhouse gas emissions, several hundred new reactors would need to be constructed and brought online over the next ten to twenty years. Bracketing the issues of increasing the chances of nuclear disaster and the increase in the radioactive waste crisis that would follow from this approach (both of which are discussed below), there are only a handful of facilities in the world that can produce the massive, steel “reactor pressure vessels” that are needed to safely contain the nuclear reaction inside the reactors. According to recent studies by MIT and International Atomic Energy Association (IAEA), available forges in Japan, China, Russia, and the U.S. together are only capable of producing about fifteen of these in a given year. Therefore, it is virtually impossible for enough new nuclear reactors to be constructed in a short enough time span to make any kind of a significant contribution to efforts to fight climate change.

Following the analyses of how anti-nuclear organizations use discourses of justice in their arguments against federal “loan guarantees” (that I used to establish the existence of real-world injustices associated with the program and to propose the first two principles of energy justice) I turned to historical and contemporary analyses of anti-nuclear organizations’ claims regarding the management of high-level radioactive waste in the U.S. The high-level radioactive waste that is the unavoidable byproduct of nuclear power production has been seen as the central issue with regards to nuclear power since the beginning of commercial nuclear power production, by both proponents and opponents of the technology (Walker, 2009). Additionally, the issues of radioactive waste storage and disposal are perhaps the most direct ways to see the past, present, and

future environmental justice problems created by the production of nuclear power. My analysis shows how the “unsurpassable social and political obstacles” that necessitated the canceling of the Yucca Mountain Project relate back to interrelated distributional, recognitional, and representative injustices that have plagued the radioactive waste management program in the U.S. since the very beginning. Following from my analysis of anti-nuclear groups’ claims on this issue, combined with analyses of the historical as well as current social, political, and economic contexts, (that together allowed me to establish the existence and extent of the associated multidimensional injustices) I proposed three additional possible principles of energy justice that should be used to guide future decisions about energy in more socially and environmentally just directions.

The third principle of energy justice that I proposed (the first following from the analysis of radioactive waste management) is energy justice requires that energy systems be developed in such a way as to minimize the production of hazardous by-products associated with energy systems to the greatest extent possible. This would work to minimize the socially and environmentally harmful consequences of energy systems, which have historically disproportionately burdened minority and low-income communities. As Bullard (2000) clearly lays-out in one of the first sociological studies of environmental racism, whenever there are environmental benefits to be enjoyed and environmental burdens to be avoided, those benefits and burdens are distributed unequally along social hierarchies of race and class. This results in dirty, dangerous, and otherwise harmful facilities and by-products of energy production becoming concentrated in communities-of-color and other low-income communities.

In this case, what is true for environmentally harmful facilities in general, is also true when it comes to the harmful effects of energy production. Sze (2005) clearly shows how the harmful effects of coal-fired power plants (air pollution, coal ash, dust, etc.) disproportionately and unjustly impact communities-of-color in New York City due to the fact that such plants are overly concentrated in these communities. Furthermore, as my analysis above has shown, efforts to manage the lethal by-product of nuclear power production (high-level radioactive waste) have consistently been at the expense of low-income, minority communities, especially American Indian communities in the Southwestern U.S. From the operations of Nuclear Waste Negotiator and the search for a “monitored retrievable storage” site to the railroading of the Yucca Mountain Project to future efforts to find “volunteer host communities” for a nuclear waste repository, American Indian communities have consistently been targeted in proposals to manage radioactive waste. Therefore, working to follow the third principle of energy justice would help eliminate this problem at the source, by minimizing (to the greatest extent possible) the production of hazardous materials associated with energy production that would otherwise most likely become concentrated in poor and/or minority communities. High-level radioactive waste, tons of which are produced at every operating nuclear reactor in the country (and world) every year, is among the most harmful substances in existence, and no nation on Earth has yet developed an environmentally, and/or socially, politically, and economically acceptable way of disposing of these wastes. Some of the transuranic elements created as “fission-daughters” during the chain reaction inside the nuclear reactor, and found within high-level radioactive waste, such as plutonium-239, have a “hazardous life” of hundreds-of-thousands of years; making them a hazard to all

living things virtually forever. Therefore, clearly, following from this third principle of energy justice, nuclear power should no longer be pursued because its production is based-upon and reinforced multidimensional social and environmental injustices.

While the hazardous by-product of nuclear power is somewhat unique in its sheer-concentrated-lethality and the length of time it will remain a hazard, this principle of energy justice also applies to other dirty and dangerous methods of energy production. For example, it could be argued that the growing release of CO₂ and other greenhouse gases from coal-fired power plants constitutes a global hazard, that following the third principle of energy justice, should be reduced to the greatest extent possible. Additionally, following from this principle, the hazards posed by coal ash, as well as the hazards and devastation caused by mountaintop removal, also mean that energy systems based upon coal should be replaced with other cleaner and safer forms of energy production (such as solar and wind, which I discuss below.)

The fourth principle of energy justice that I propose (the second following from the my analysis of the radioactive waste issue) is energy justice requires the explicit acknowledgement of preexisting injustices and inequalities, combined with concrete policy mechanisms to ensure the burdens are not being disproportionately bore by the most vulnerable. My analyses of past, present, and (potential) future environmental injustices associated with efforts to manage high-level radioactive waste, which clearly showed how previous multidimensional injustices and preexisting inequalities impacted present processes, led me to propose this principle highlighting the role of history in current conflicts. If energy justice is the goal, then present and future decisions about the development and implementation of energy systems must be made by acknowledging the

existence of past and current social inequalities, in order to avoid reinforcing these inequalities through the development of energy systems. However, to achieve energy justice, I believe it is necessary to go beyond simply acknowledging social injustices and inequalities in decision-making and political processes. This explicit acknowledgement must be combined with inflexible policy mechanisms and procedures intended to ensure the harmful effects of a given energy system are not being unjustly concentrated in poor and/or minority communities. This could include the establishment of meaningful/powerful oversight and regulation of energy decisions that are independent of both the energy industry and their allies in the state; perhaps through the empowerment of citizens councils established to ensure environmental justice requirements and directives are enforced. Of course, following the third principle of energy justice will render the fourth principle increasingly unnecessary, as safer and cleaner energy systems are pursued that produce less and less hazardous by-products that might otherwise be concentrated in marginalized communities.

The fifth principle of energy justice that I propose (the third and final principle to emerge from my analyses of the radioactive waste issue) is energy justice requires the establishment of preexisting guidelines and standards meant to protect public health and the environment, which are less open to manipulation than site-specific guidelines. This would not only greatly increase public and environmental protections from the human health and environmental dangers posed by some energy systems, but would also greatly increase public confidence in both the energy industry and especially in regulatory bodies meant to oversee the industry. My analysis of the anti-nuclear movement's claims regarding the multidimensional injustices associated with both the Yucca Mountain

Project and the ordinary operations of the Nuclear Regulatory Commission (NRC), lead me to propose this principle. In both cases, “site-specific” guidelines, as opposed to “general” guidelines, were easily and repeatedly (in the case of the NRC) relaxed in response to the failure of specific sites to meet those guidelines.

At Yucca Mountain, water was found to have traveled from the surface to the depth of the proposed repository and back out into the environment in much, much less time than initially thought possible. According to the “site-specific” guidelines developed strictly for Yucca Mountain to protect public health and the environment, this discovery should have immediately disqualified the site from further consideration. However, instead, the Department of Energy (DOE) engaged in the apparently widespread practice of “pencil engineering” by changing the guideline and allowing for much faster travel times for water moving into and out of the repository. Similarly, an AP report from 2010 showed the extensive use of “pencil engineering” by the NRC in their oversight of nuclear facilities around the country. Again and again, if pipes were found to be leaking more than allowed under the site-specific regulations, or if corrosion on reactor components was found to be proceeding faster than allowed under the site-specific regulations, the regulations themselves were changed to bring the facility into compliance, rather than the NRC forcing the operator to take ameliorative actions. This not only sacrifices the protection of human health and the environment in favor of the financial interests of nuclear operators (a common progression of representational injustices leading to misrecognition and ultimately maldistribution, which I discuss in more detail below), but also severely damages the public credibility and legitimacy of both the energy industry and state regulators. “General” guidelines that are developed

independently of considerations of any one site or the interests of specific nuclear operators (or other specific economic actors) have been shown to be less open to this kind of manipulation. Therefore, with the promotion of social and environmental justice associated with energy systems as the goal, energy justice requires that general guidelines be put in place to guide the development of energy systems in such a way as to ensure the protection of public health and the environment are not sacrificed in order to advance a certain project or private interests.

Turning my attention from analyses of the claims made by national level anti-nuclear organizations regarding federal “loan guarantees” and the management of radioactive waste to the claims made by local level anti-nuclear organizations pertaining to Construction Work In Progress (CWIP) financing and campaigns to increase the safety of nuclear facilities, allowed me to propose three additional principles of energy justice. The principles of energy justice that I propose following the analyses of local level organizations’ claims in these areas share certain similarities with those above, as well as complement and supplement them. The sixth principle of energy justice that I propose (the first following from my analyses of local level anti-nuclear organizations) is energy justice requires that decisions about the development and implementation of energy systems need to include mechanisms for facilitating public involvement at all relevant levels to the greatest extent possible. Because decisions about energy systems in the U.S. are made on multiple levels (local, state, regional, national), and because the impacts of those decisions are felt on multiple levels, democratic decision making based upon public input and participation is required on all these levels so that the public interests on any

one of these levels are not sacrificed for those on another (or for private interests of capital accumulation).

This principle of energy justice emerged from reflections on the analyses of the claims made on both the national and local levels of the anti-nuclear movement in the U.S. While it is true that most of the politics and decisions about nuclear power in the U.S are made at the national level, important aspects of the multidimensional and interrelated injustices associated with nuclear power (and other dirty, dangerous, and expensive forms of energy production) are revealed by looking to local level conflicts and contexts. I realize it will be exceedingly difficult, if not impossible, to ever fully implement this kind of multi-level democratic decision making procedure in the area of energy policy or any other policy arena. Time is in short supply with regards to the onset of the effects of climate change, and this method of deep-democratic decisions making surely will not be conducive to making quick decisions. However, I do believe it is a desirable goal to strive towards, even if it is never fully attained. Past decisions that have resulted in our current fossil-fuel and nuclear based energy system were not made even close to democratically, and, at least partially as a result of this, have been shown to historically and currently reproduce social and environmental injustices and inequalities. The establishment of socially, politically, economically, and environmentally just energy systems, and thus “energy justice”, will therefore require the establishment of deeply-democratic methods of decision making on multiple levels.

The seventh principle of energy justice that I have proposed is closely associated with the third principle that I discussed above. More specifically, energy justice requires energy systems need to be developed in such a way as to reduce the possibility of

catastrophic accident, even so-called “low-probability, high-consequence” catastrophes, to the greatest extent possible. This principle follows from my analysis of anti-nuclear groups’ claims in conflicts over increasing the safety of nuclear facilities in the post-Fukushima context, and is in fact one of *the central* lesions I believe should derived from Fukushima and other energy disasters (Three Mile Island, Chernobyl, BP’s Deep-Water Horizon blowout, etc.). Given that such events, like nuclear reactor meltdowns or deep-sea oil rig disasters, are by definition “low-probability” it is not surprising that regulators and industry have been shown to become complacent with regards to such scenarios (Perrow, 1984). However, it has also been show that often the probability of these “low-probability, high-consequence” events proves greater than industry or regulators initially believed to be the case. Additionally, it has often been the case that the consequences of these disasters are felt most severely by poor and otherwise marginalized communities, which represents multiple injustices in its own right. While the consequences of energy disasters are truly global in scope (and in the case of nuclear meltdowns, they are disasters with a beginning but practically *no end*), the most severe and immediate consequences are felt locally by communities living proximate to the source. Thus, my analysis of the discourses of justice used by local level anti-nuclear organizations, combined with analyses of the relevant contexts, supplements and supports the first principle I proposed above, which followed from analyses of national level organizations. This confirms Fraser’s (2009) contention that “issues of scale” are important when exploring existing injustices and/or theorizing just alternatives. In short, the magnitude of the potential catastrophic consequences that can result from a nuclear accident means, following this principle of energy justice, nuclear power should not be pursued moving

forward. Safe and clean energy systems are increasingly becoming a possibility, and energy justice requires that they be developed to the greatest extent possible.

The final principle of energy justice that my analyses of the anti-nuclear movements' claims and the associated contexts have lead me to propose is related in many respects to some of the previous principles. That is, the eighth principle of energy justice (the third derived from my analyses of local anti-nuclear organizations, and the final principle to be proposed in this study) is energy justice requires that the implementation, production, and distribution of energy systems must include strong, effective, and independent regulatory oversight. More specifically, I propose that energy justice requires concrete mechanisms are put into place to ensure “regulatory capture” does not follow from the industry to be regulated effectively taking control of the regulatory body itself. There are fairly obvious, deep, structural problems with asking agencies of the state to effectively regulate private industries (in order to protect public health, well-being, and the environment) when the state is financially dependent on these same private industries for its continued functioning. Furthermore, recent history has provided ample examples of the “revolving door” between industry officials, insiders, and lobbyists, on the one hand, and supposedly independent regulatory agencies, on the other.

Although the necessity of impactful oversight has been implied in some of the previous principles discussed, I decided to include this principle as a standalone because of the Nuclear Regulatory Commission's (NRC) unwillingness and/or inability to effectively and adequately regulate the nuclear industry in the service of protecting public interests, public health, and the environment. Possible mechanisms to stop the

“revolving-door” between industry insiders, lobbyists, and regulatory bodies, could include potential third-party audit/review of the regulator’s record with regards to public and private interests. Additionally, meaningful public input into the appointment and confirmation processes for regulators could function to break up the incestuous relationships between regulators and regulated industries. The bottom-line is decisions about the implementation and development of energy systems are too important to the functioning of 21st century societies (not to mention the global climate), and the consequences of these decisions have far too great an impact on too many people to be inadequately regulated. The history and current practices of regulation over the energy industry, including the nuclear power industry, shows time and time again the financial interests of the industry are prioritized at the expense of the protection of public interest, public health, and the environment. (Once again this follows the pattern of misrepresentational injustices within regulatory agencies feeding the misrecognition of public interests and concerns in the political process, which ultimately can/does result in the maldistribution of economic and environmental benefits/burdens.)

As I have already said, my goal in working to propose these potential principle of energy justice is to take a first-step towards establishing a sociologically informed framework that can be used to build sociologically informed arguments in opposition or support of various choices about the development and implementation of energy systems. I do not suggest that these principles I have proposed (and discussed above) are by any means definitive, nor do I suggest this list I have proposed is complete. Further research into the discourses of justice utilized by environmental justice energy activists (including anti-nuclear activists) in their claims against dirty, dangerous, and expensive energy

systems, combined with analyses of the relevant historical and social, political, and economic contexts, will surely reveal additional dimensions of injustice associated with current energy systems, which will facilitate the identification of additional principles of energy justice not included here. Furthermore, I expect future research in this area will lead to significantly revising and/or completely removing some of the principles discussed above out of consideration of new information and data.

Considering these principles, and the framework they collectively provide, were developed through analyses of the claims made by anti-nuclear organizations, it should not be surprising that together these principles suggest nuclear power should no longer be pursued due to the multidimensional and interrelated injustices involved. For one thing, nuclear power is prohibitively expensive. The tremendous upfront costs and the extremely long construction schedules, combined with the high-risk of eventual project failure (~50%) means that every nuclear development project in the U.S. and around the world is being publically financed, due to a complete lack of private investment. And at least in the U.S., despite the fact that nuclear facilities are publically financed, the eventual/potential revenues and profits are retained by privately owned nuclear utilities and their investors. Additionally, nuclear power is unique amongst energy sources in the extraordinary hazardous and lethal nature of the waste it produces, and the severity and extent of potential accidents. No other energy source produces such extraordinarily lethal and long-lived byproducts that require total isolation from all living things for hundreds of millennia. No other energy source creates the same possibility of large areas of the Earth becoming forever uninhabitable due to severe radioactive contamination. Given these facts, no one can *honestly* claim that nuclear power is a “clean” energy source that

belongs in the same conversation as other clean, renewable energy sources like solar and wind power. Furthermore, and just as significantly, the historical and current operations of nuclear power production in the U.S. have been/are facilitated by undemocratic decision-making that fails to adequately regulate the commercial nuclear industry, and continually advances the private interests of the industry at the expense of the public interests of communities, taxpayers and ratepayers. The production of nuclear power has in part been made possible by exploiting and reinforcing existing social injustices and inequalities, including a lack of democratic decision involving affected communities and individuals on different levels. This often involves the use of “site specific” guidelines that can more easily be altered to reflect private economic interests, rather than “generic” standards that have been showed to better reflect and protect the interest of public health and the environment.

I believe that each of these problems with nuclear power indicate that from a sociological and social justice point-of-view nuclear power is not an acceptable option for current or future energy systems. The argument against nuclear power is especially strong when all of these problems are taken together and evaluated through an energy justice lens. However, as I suggest above, I believe these principles of energy justice can also be used to make arguments for and against other types of energy systems currently being used and considered around the U.S. and around the world. For example, I believe these principles could be used to construct a sociologically informed argument against the continued use of coal, natural gas, and/or petroleum. Especially on a global scale, the increasing release of CO₂ and other greenhouse gases from coal-fired power plants surely constitutes a hazardous byproduct, not to mention the coal ash ponds, the slurry, and the

extensive environmental damages caused by mountain top removal. Energy justice requires that these types of hazards be minimized to the greatest extent possible. Similarly, issues surrounding shale gas extraction (or natural gas “fracking”) have recently caused significant conflict in parts of the U.S. The lack of adequate regulation of the natural gas industry and a lack of democratic decision making on relevant levels has resulted in “fracking” operations being exempted from the Clean Water Act and not having to report the ingredients of the fluids they use in their operations. Energy justice would require strong and meaningful regulation of the natural gas industry, occasioned by strong democratic decision making on the local, regional, and national levels. Additionally, deep-sea oil extraction, Arctic drilling, and Tar Sands oil extraction and transport pipelines all create the possibility for extreme catastrophic accidents. Given that other technologies and potential energy systems exist that do not carry these kinds of catastrophic environmental and social risk, energy justice requires that the safest cleanest technologies be developed to the greatest extent possible.

As I just briefly discussed, I believe the principles of energy justice that I have proposed are not specific to the case of nuclear power, but rather can be used to evaluate different types of energy systems and technologies. Furthermore, as I will discuss below, these principles of energy justice can be used to make sociologically informed arguments in favor of the development of clean, safe, renewable, and affordable energy systems; such as those based upon wind, solar, and energy efficiency. However, before I develop this argument in favor of clean and renewable energy systems, I would like to first reflect upon the relationships between the different dimensions of the interconnected injustices

associated with nuclear power production, which have emerged from the various analyses above.

Common Progression or Flow of the Dimensions of Injustice

I believe the possible principles of energy justice that I have proposed represent a first step in developing a sociologically informed theoretical framework that can be used to construct sociologically informed arguments in favor/opposition of various forms of energy systems. It is my hope that this framework and the arguments it can be used to develop will help advance the goals of social and environmental justice with regards to the production, distribution, and consumption of energy and electricity. These principles were developed through the analyses of the claims made by national and local anti-nuclear organizations in the U.S. during the course of their efforts to stop the production of nuclear power and radioactive waste. Following the methodology utilized by Fraser (2000; 2003; 2009), using the analyses of the claims made by real-world groups fighting real-world injustices as the starting point for theorizing about energy (in)justice (combined with analyses of the relevant historical and social, political, and economic contexts) enabled me to explore the features/contours of both just and unjust social arrangements. And as I just discussed, this methodological approach in part facilitated my proposing the potential principles of energy justice and the overall energy justice framework. However, in reflecting upon the analyses presented in the preceding chapters (in order to identify these potential principles) I also began to identify a common pattern, progression and/or flow between the different dimensions of injustice associated with the production of nuclear power.

More specifically, and to different extents in the cases discussed above, it seems that within conflicts over dirty, dangerous, and expensive energy technologies, including nuclear power, representational injustice often lead to and facilitate recognitional injustices, which together reinforce and recreate distributive injustices of environmental and economic benefits and burdens. Put another way, it is often the case in conflicts over nuclear power that representative injustices, embodied in biased/undemocratic decision-making processes and procedures, leads to the institutionalized misrecognition of public interests and desires on different levels, which furthers distributive injustices, both in terms of economic and environmental benefits and burdens, and in terms of public vs. private interests. This basic progression of different dimensions of injustice is represented below in figure 5.1.

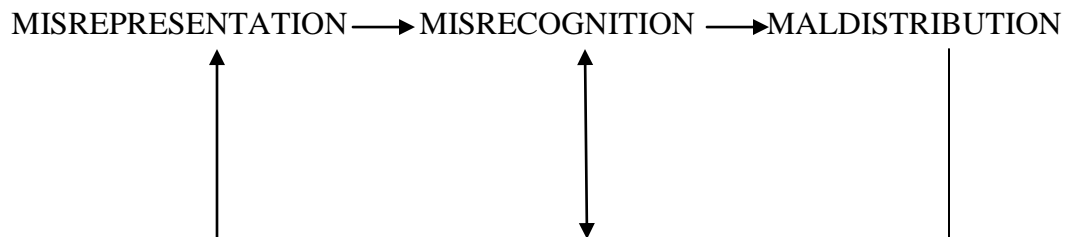


Figure 5.1: Common progression of the different dimensions of injustice associated with the production of nuclear power and other unjust energy systems. Misrepresentational injustices often facilitate the institutionalized misrecognition of public interests/concerns, which can/does result in maldistributive injustices. The initial misrepresentation is often occasioned by prior distributive and recognitional injustices.

However, this simple progression somewhat imposes an artificial starting point, because the answer to the question, “why do the original representational injustices emerge?” is preexisting recognitional and distributive injustices (represented by the bottom arrows running right-to-left). I argue that while this model is by no means

definitive, it does help us think about the possible relationships between the multidimensional and interrelated injustices associated with nuclear power and other dirty, dangerous, and expensive energy systems. Furthermore, this model helps us think about the deep and necessary connections between social, environmental, and energy justice, on the one hand, and democracy and democratic decision making on the other.

This progression or flow of interrelated injustices emerges to different extents in the various conflicts over nuclear power discussed above. For example, in the recent conflicts over the possible expansion of federal “loan guarantees” for new nuclear reactor construction, we can begin to see how this plays out on the national level with regards to financing new nuclear facilities. The representational injustices in this case were manifested in institutionalized bias in the decision-making process at the Congressional level. Key members of Appropriation Committees and Water and Energy Committees, who were working to advance legislation to expand the “loan guarantee” program, were not representing the interests of citizens and taxpayers. Rather, due to the influence granted to the nuclear industry through their lobbying efforts and campaign contributions, the democratic process was being subverted through the representation of industry interests over public interests. This is closely connected to the resulting misrecognition of public concerns and interests and the eventual maldistribution of economic benefits and burdens. More specifically, following the representational injustices, public concerns about the risks taxpayers would bear by financing new reactor construction were not justly recognized within the decision making process, rendering these concerns practically invisible. And with the misrecognition of public concerns in place, the

maldistribution of economic benefits and burdens between private and public interests would have ensued as the program moved forward.

A very similar progression of the different dimensions of injustice also emerges from the above analysis of local anti-nuclear group's campaigns against Construction Work In Progress (CWIP) charges. In this case and on this level the initial representational injustices emerge within the institutionalized bias in decision-making procedures at the state and/or local level, including state legislatures, the operations of Public Service Commissions, Public Councils, and other local-level regulatory bodies. These representational injustices involved limiting democratic decision making and public oversight over the development of energy systems by essentially granting electric utilities a blank check to proceed with expensive and financially risky development projects. Thus both CWIP financing and federal "loan guarantees" are mechanisms for socializing the risk of nuclear energy development projects, while allowing private, investor-owned corporations to retain control of any eventual benefit/profit. Consequently, CWIP financing is advanced through the subversion of the democratic process that is occasioned by the undue influence the nuclear industry is able to exert through their financial resources and lobbying efforts. As before, but on the local level, this unjust misrepresentation of public interests and desires feeds directly into the institutionalized misrecognition of these same public desires and interests. Public concerns and fears regarding the unjust risk of public financing for new reactor construction remain misrecognized in the political processes, which paves the way for the maldistribution of benefits and burdens between public and private interests. The

inequitable maldistributive injustice in this case is especially evident with regards to people who will ultimately be paying for a product and/or service they will never receive.

While this pattern of misrepresentation leading to misrecognition leading to maldistribution (with the initial misrecognition in part resulting from previous recognitional and distributive injustices) can be seen in the cases of conflict over the public financing of new nuclear reactors, it is especially evident in cases of conflict over increasing the safety of nuclear facilities and the management of radioactive waste. As the above analysis of local anti-nuclear organizations' efforts to increase the safety of nuclear facilities, including permanently closing unsafe reactors, shows, the operation of unsafe nuclear facilities is based upon representational injustices within the operations of the Nuclear Regulatory Commission and state-level regulators that prevent sufficient public participation in decisions about the (continued) operations of these nuclear facilities. My analysis of the claims made by local anti-nuclear organizations shows how these representational injustices lead to the unjust misrecognition of public concerns and interests, which ultimately facilitates the maldistribution of benefits and burdens between public interests (local communities, citizens/taxpayers, consumers/ratepayers) and private interests of capital accumulation (the nuclear industry including investor-owned utilities). More specifically, my analysis of the campaign to close Vermont Yankee especially highlights the central problems with misrepresentation of public concerns/desires within the NRC leading to the misrecognition of these and ultimately the maldistribution of both social and environmental benefits and burdens. As my analysis of these local anti-nuclear groups' claims brought to light, democracy was not just being passively subverted in this case; it was being subverted by Entergy, a "mega-corporation" who

along with the rest of the nuclear industry use their tremendous resources to gain undue influence over the political and regulatory process. Therefore, the concerns of the people in this case were institutionally misrecognized at the federal level by NRC, which enabled the distributive injustice of radioactive waste to continue to accumulate on the banks of the Connecticut River.

While the progression of the different dimensions of injustice that I am proposing is fairly clear in this case, this same progression also clearly emerges in different ways at different points in time and on different levels in the case of past and current efforts to manage high-level radioactive waste. As I have said before, the issue of radioactive waste management (storage and/or disposal) is perhaps the most direct way to see the interrelated and multidimensional environmental and energy injustices associated with the production of nuclear power. There has been a clear historical, national pattern of targeting Native American lands and communities with radioactive waste dumps. As the above analysis has shown, the brief operations of the Office of the Nuclear Waste Negotiator consisted primarily of trying to exploit past and current representational injustices within Tribal governments and decision-making procedures, which involved the deep misrecognition of Tribal members' fears and concerns (in some cases a total lack of recognition, rendering people's concerns functionally invisible). And of course, this was all part of an effort to establish and reinforce distributive injustice by concentrating radioactive waste on Tribal lands, which would clearly harm/burden Tribal members far more than any other section of the public. As Kamps (2005) argued, "The economic impoverishment of tribes, the tendency for tribal leaders to act without the authorization or even knowledge of their people, and the Bureau of Indian Affairs' ability

to interfere in internal tribal affairs arbitrarily and capriciously...all mean that these siting processes were all too often not fair, nor truly voluntary”. This example really highlights the ways that preexisting distributive and recognitional injustices set-the-stage for and facilitate representational injustices that in turn reinforce and recreate further recognitional and distributive injustices through time.

Almost twenty five years later this same progression of the different dimensions of injustice emerges in the procedures and eventual recommendations of the Blue Ribbon Commission on America’s Nuclear Future (BRC). As the analysis above demonstrates, before the BRC even held their first public meeting, it was clear the Commission was being built around representational injustices on at least two levels; what Fraser (2010) calls the political injustices of “misframing” and “ordinary misrepresentation”. The former relating to the fact that *the central question* regarding whether or not to continue to pursue nuclear power was framed as being “outside the scope” of the BRC, and thus did not include public participation or even comment. The later relating to the fact that the structure of the decision-making process functions wrongly to exclude those who (in this case) are most impacted by the decision-reached regarding the handling of radioactive wastes (e.g. American Indian groups, reactor communities, uranium mining communities, etc.). However, the “nuclear-industrial-academic-complex” (Kuletz, 1998) was well represented among the Commission members. The majority of the Commission’s members were former pro-nuclear legislators, former nuclear regulators with many longstanding ties to the industry, nuclear industry executives, and academic experts committed to nuclear technologies. This unjust misrepresentation clearly and explicitly (especially in the case of “orphaned” reactor communities) lead to the

institutionalized misrecognition of affected communities' and the public's concerns and interests. And furthermore, the BRC's primary recommendation to establish one or more "centralized interim storage" sites would by definition create distributive injustices for whomever (most likely American Indian groups) lives in proximity to these sites.

In short, I believe reflecting upon the analyses that I preformed on the discourses of justice utilized and reconstructed in the claims made by anti-nuclear groups, as well as the analyses of the historical and social, political, and economic contexts from which they emerged, reveals a common pattern or flow of the different but interconnected dimensions of injustices that are associated with the production of nuclear power and other dirty, dangerous and expensive energy systems. I realize it could be argued that perhaps in my efforts to identify all three dimensions of injustice (distribution, recognition, and representation) in these cases I am stretching Fraser's (2003; 2009) model and bit far; especially with regards to the dimension of recognition being applied too loosely. I believe there is some validity to this potential argument, but I believe it is necessary to point out that I am not suggesting all three dimensions are always equally significant in all cases. I believe the representational and distributive injustices identified above are the most significant dimensions in the cases in question. However, I would contend that there are recognitional injustices involved in these processes, and these provide a conceptual and empirical link between the more obvious representational and distributive injustices. Fraser's (2009) central point in arguing for a three-dimensional conception of justice is real-world injustices are generally rooted in the social, political, and economic spheres of society, and thus just alternatives must also consider all three dimensions.

Also, I think part of this potential issue is Fraser's (2000; 2003) institutionalized status model that sees misrecognition as being connected to social structure and institutions. I really think this is a valuable and important insight into the realities of misrecognition, *visa-vie* the more Hegelian, free-floating discourse model of recognition scholars such as Honneth (1996; 2012). Fraser's (2000; 2003) "status model" of recognition makes misrecognition easiest to identify in decision-making and/or political processes. Because what needs to be recognized is culture, identity, and other desirable differences *within institutionalized frameworks of decision-making*, as opposed to within free-floating discourse, issues of recognition and representation are necessarily closely connected within Fraser's model. While the issues of misrepresentation and misrecognition are closely connected in practice, it is a mistake to collapse these categories by only seeing the representative dimensions. I believe what we have in the cases analyzed for the present study are closely related, yet distinct, representational and recognitional injustices, in addition to issues of maldistribution.

Furthermore, I believe that one of the major sources of analytic utility that the model I am proposing provides is it helps us think about the deep and necessary connections between the advancement of social justice, on the one hand, and democratic governance and decision making, on the other. The model I propose for thinking about the flow and/or progression of different dimensions of injustice in real-world struggles over energy gives issues of representation (and thus democracy and the political sphere) a very central role. I acknowledge that past and preexisting recognitional and distributive injustices feed into and help create representational injustices. But it is these representational injustices that facilitate the *institutionalized* misrecognition of

communities', taxpayers', ratepayers', and generally the public's concerns and interests. Therefore, it is a closely connected combination of misrepresentation and misrecognition that gives rise to maldistributive policies concerning environmental and economic benefits and burdens.

As is probably clear at this point, I am deeply committed to the ideals of democracy, and I believe the primary goal of "emancipatory social science" (Wright, 2012) should be to help keep fragile, democratic experiments alive and to help them flourish and grow. This is probably why issues of democratic participation in decision making and adequate public oversight and regulation are either directly or indirectly connected with each of the principles of energy justice I have proposed. Utilizing these principles (and the framework they collectively provide), I have constructed arguments against the development and implementation of nuclear power and other dirty, dangerous, and expensive energy systems, based in large part on the fact that such developments are carried out through the subversion of democratic processes. However, these principles of energy justice and the democratic ideals that are either directly or indirectly connected to them, can be used to make a sociologically informed argument in favor of an energy systems based upon renewable energy sources, such as wind and solar power. The development and implementation of such a renewable energy system can be done democratically, and in fact could be a part of strengthening democratic decision making processes in the U.S. in general.

Potential Conceptual and Methodological Shortcomings

I believe the conceptual frameworks that I have utilized and developed for this study, as well as the methodological approaches I have taken, are especially well suited for addressing the central research questions that motivated this project. However, as with all theoretically informed empirical research projects, I made specific conceptual and methodological decisions that produced both advantages and disadvantages with regards to the research questions driving this study, as opposed to other related and important questions. And because no one study, no one conceptual framework, nor one research methodology can do everything, certain possible critiques and/or shortcomings of the present study emerge. For instance, it could reasonably be asked, “Why do we need energy justice” and “how is it different from environmental justice”. These are fair questions considering the close connection between energy issues and injustices and environmental issues and injustices. However, I would respond that we need to think about energy conflicts as a distinct terrain for disputes over social justice because of the absolutely vital and central role energy systems specifically play in the development and functioning of modern societies. Decisions about the development and implementation of energy systems have significant consequences for all social, political, and economic organizations, including the mollification or enhancement of social inequalities and hierarchies. As new energy systems are developed and implemented it significantly alters exiting forms of production, consumption, and communication. The far reaching social, political, and economic impacts of energy system development and implementation mean special attention must be paid to the connections between these systems and the development or hindrance of social justice. Furthermore, I believe

energy issues (including issues of energy justice) can be accurately conceptualized as a subcategory of broader environmental issues. The relative benefits and burdens of different energy systems can be conceptualized in environmental terms, relating to environmentally just or unjust arrangements. However, it is important to work towards energy justice *as well as* environmental justice because focusing on the specific goals of energy justice will contribute to the achievement of the broader goals of environmental justice.

A second related possible critique has to do with my use of the liberal political categories of distribution, recognition, and representation that are central to Fraser's and my framework. For some social scientists, especially those who have taken the cultural/discursive turn, my use of these (or frankly any other) categories is highly suspect, and could be seen as an artificial imposition of preconceived categories by me (the researcher) on to the social world. The concern from this point of view could be that my use of these categories does not help us understand the issues involved, but rather simply substitutes my own views of the issues for those of the subjects of this study. In short, the concern may be that I am essentializing and reifying the complexity of my data.

I believe this possible critique reflects a very deep division within the social sciences generally, and the discipline of sociology specifically. Following the downfall of historical materialism's paradigmatic dominance in the social sciences, many researchers and theorists began rejecting theories and conceptual frameworks that emphasized commonalities and "sameness" in favor of those that emphasized complexity, contingency, and "difference". This rejection was occasioned by the correct realization that some (perhaps many) uses of historical materialism resulted in overly

deterministic views of the social world, which left little to no room for variations, contingency, complexity, and/or human agency. The constructivist turn resulted in tremendous increases in our understandings of how symbolically-mediated communication and interaction resulted in the social construction of reality. The problem is, I believe, that during this paradigmatic transition some researchers have thrown the baby out with the bathwater, and effectively swung the conceptual pendulum to other extreme by failing to recognize and/or acknowledge commonalities among or between social groups. This is exactly what Fraser (2003) refers to as the “problem of displacement”, wherein theories of recognition do not complement/supplement theories of distribution, but rather replace them all together.

I do not believe it is a coincidence that this “problem of displacement” has emerged in *exactly* the same historical period that has seen the global rise of neoliberal economic theory that has drastically accelerated domestic and global economic inequalities to levels never before seen. In other words, at the moment in time when what is needed are strong and robust theories of distributive justice to combat accelerating inequalities associated with neoliberalization, what is happening is the displacement of these theories with theories focusing solely on recognition and difference. This is exactly why I utilize and build upon Fraser’s framework, because it enables me to bring together (into a single framework) concerns with the discursive construction of reality and historical material conditions. While it is true that it is easier and “neater” to develop social theory from one extreme or the other, I do not believe theoretical extremism is useful; whether it comes from the historical materialist side or the social constructivist side. The social world is extremely complex. It follows that theories of the social world

should reflect that complexity and resist any and all urges to present the social world as something that can only be understood in this or that way. This is why Fraser's framework, and the liberal political categories it builds upon, was an appropriate framework for the present study. Real world injustice, including those associated with the energy systems, simultaneously stem from the social, political, and economic spheres of society. Thus we need a theoretical framework that is sensitive to not only historical materialist political and economic structures, but also to discursive constructions in the realm of cultural interaction and communication. And Fraser's concepts of distribution, recognition, and representation allow for the simultaneous consideration of both these domains, as well as a synthesis of the insights that are generated from both ends of the conceptual spectrum.

A third possible area of critique of the present study has to do with the methodological decisions I made and the approaches I utilized. More specifically, it could be seen as problematic that I limited my data to claims made by anti-nuclear groups during the eighteen month timeframe from January 1, 2010 through August 1, 2011. This decision creates the possibility that the conclusions I reach are specific to this particular period of time, and are not generalizable beyond this eighteen month window. However, I decided to focus on this particular period of time for strategic and theoretical reasons. I selected this eighteen month time frame because it encapsulates many important developments in nuclear energy policy in the U.S., which resulted in large volumes of social movement activity and discourse. More specifically, this period of time extends from the cancelation of the Yucca Mountain project and the inception of the BRC (March 2010), through the release of the BRC's final report (July 2011), which is expected to

become the basis of new federal radioactive waste policy. This eighteen month timeframe also includes the movement's activities and claims during the first six months of the on-going Fukushima nuclear disaster, which allows for an analysis of how this event impacted anti-nuclear social movement activity. It is true that this 18 month period is not representative of the "typical" amount or type of anti-nuclear social movement activity. There was far more activity in this period than in any other 18 month period that preceded it over the previous decade. However, for this reason, this period of time is especially illustrative of the breadth of anti-nuclear social movement activity, and examining these activities in this period allows me to form general conclusions about the movement on different analytic levels. Furthermore, the historical materials I include in the data and discuss in the analyses indicate the movement's uses of discourses of justice, and the interrelated and multidimensional injustices of nuclear power these reflect, are not unique to this period of time.

A possible related methodological critique has to do with my decision to focus on organizational claims making in political conflict as the unit of analysis for this study. My interest was in the ways anti-nuclear social movement *organizations* behave and act as political, organizational actors in the course of political conflict with other political/organizational actors (i.e. the state, regulatory agencies, the nuclear industry, utilities, etc.). I was specifically interested in how anti-nuclear *organizations* utilized and reconstructed different paradigms of social justice in their claims making in political conflict with other organizational, political actors. Thus, SMOs operating on different levels are my unit of analysis, with a focus on organizational discourse as it relates to broader, cultural discourses on energy policy, democracy, and justice. And because of

the intensive focus on organizations' and the movement's textual materials, textual/discourse analysis is especially well suited for addressing "how questions"; how does the movement express its grievances; how does the movement construct and utilize frames and conceptualizations of justice; how does the movement utilize broader cultural symbols and representations.

However, by focusing my analyses on the level of organizational claims making during political conflict there are important questions I am not able to consider. For example, my data does not reveal anything about the personal/individual drives, motivations, and desires that fuel activists' social movement participation. Nor does my data reveal how perceptions and experiences with broader systems of racism, sexism, class domination, etc. propel people to dedicate their time and energies to fighting nuclear power. Similarly, my data and methodological approach do not tell us about the roles race, class, gender, etc. play within anti-nuclear organizations, which could significantly impact the organization's claims themselves, and thus alter our conceptualizations of energy justice. A related blind spot of the present study could be the fact that I focus upon *public* claims making in the course of *political conflict*. This means that the claims being made might reflect what is perceived to be the most strategically advantageous form of argumentation, rather than what are perceived to be the biggest or most serious problems with nuclear energy and other dirty, dangerous and expensive energy systems. However, I believe following Somers' (2008) point about the normative and the empirical being mutually interdependent, there is analytic utility in looking at exactly how claims are made to maximize strategic advantage in different contexts as a means for identifying the structural and normative features of both just and

unjust social arrangements. Focusing on the discourse used in claims making reveals the normative component of (in)justice reflecting beliefs and ideas that themselves have causal powers. Focusing on the historical and social, political, and economic contexts that make different discourses strategically advantageous in different settings reveals the empirical and structural components of (in)justice that consist of concrete relations between people and groups.

There is definite validity to these possible methodological critiques, and future research utilizing alternative methodologies is needed to begin to address the important questions raised above. For example, rather than focusing on organizational claims making during the course of political conflict, future research could utilize ethnographic and/or interview methods to begin to shine light on questions of what motivates activists to dedicate their time and resources to fighting the production of nuclear power. Ethnographic fieldwork within anti-nuclear organizations could begin to produce knowledge about the roles of race, class, and gender within anti-nuclear organizations that might impact our understandings of what constitutes energy justice. Similarly, conducting and transcribing in-depth interviews with anti-nuclear activists and organizational leaders could begin to answer questions about how experiences with broader systems of racism, sexism, and class domination compel activists into social movement activity. In-depth interviews would also reveal possible internal conflicts and/or divisions that shape and impact the claims the organization makes publically, as well as any significant differences between members' beliefs and perceptions and those reflected in the organizations' political claims making.

In the present study, I critically analyzed the anti-nuclear power movement (or the movement *for* a carbon-free and nuclear-free energy future) in the U.S. using an environmental justice framework. I aimed to explore how different conceptualizations/discourses of social and environmental justice are constructed through the claims of social movement organizations on both levels of the movement. My goal was that through critical analyses of the claims made by the anti-nuclear power movement in the U.S., as well as analyses of the historical/structural conditions these claims were made in response to, I would begin to be able to distill general principals of what could be termed “energy justice”. The identification of general principles of energy justice, similar to the Principles of Environmental Justice, could potentially guide future energy policy and energy systems to ensure social and environmental justice are maximized. This study thus represents a very preliminary first-step in this process of theory and social justice building. As the preceding analysis has shown, more research utilizing multiple and complementary methodologies is needed in the future, not only on the anti-nuclear power movement, but also on other movements for safe and clean energy systems. Humanity is entering the second decade of a century that so far has been characterized by rapidly increasing social inequalities (domestically and globally) and rapidly increasing climate change; both of which present serious and growing threats to the stability of all civilizations. Energy systems provide connective tissue between these two existential threats. The connections between energy systems and social systems, and between energy (in)justice and social (in)justice are plainly evident when we examine the claims made by groups fighting to highlight the social dimensions of energy systems, such as anti-nuclear groups and others. If humanity is to reverse the trends of widening

social inequalities and increasing environmental and climatic disruptions, then we must not overlook these social dimensions of energy production, distribution, and consumption. In fact, advancing the cause of energy justice may prove to be an essential component of working towards broader goals of social and environmental justice. And advancing the cause of energy justice will require far more research from more disciplines utilizing more methodologies to advance as clear a picture as possible of what both just and unjust energy systems can look like in the future.

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