

THE SOCIOECONOMIC EFFECTS OF DECOMMISSIONING ON LOCAL COMMUNITIES: A MEDIA FRAMING ANALYSIS OF THE EXPERIENCE OF WISCASSET, MAINE

Melissa Haller
Department of Geography
Colgate University
13 Oak Drive
Hamilton, NY 13346

ABSTRACT: *As nuclear reactors begin to age in the United States, many are being considered for decommissioning. The decision to decommission a reactor is often based on safety concerns and maintenance costs, with little attention paid to the local impact on the surrounding community. The decommissioning of the Maine Yankee Nuclear Plant in Wiscasset, Maine was the main subject of this case study research. Qualitative content analysis of 85 local and national newspaper articles with respect to relevant media framing theory revealed that the loss of the plant led to pervasive first and secondary impacts on public services, the local school system, and residents' livelihoods.*

Keywords: *Nuclear power, Decommissioning, Wiscasset, Maine Yankee*

INTRODUCTION

In the heyday of the nuclear era in the United States, there were approximately 100 nuclear reactors throughout the nation, providing electricity for commercial and residential property in over 31 states ("How Many Nuclear Plants," 2014). By the late 1980s and early 90s, however, many of the early nuclear reactors began to experience problems, ranging from old and faulty parts, lengthy outages and mounting repair costs, and increasingly strict standards set by the Nuclear Regulatory Commission (NRC) that were economically impossible to meet. Simultaneously, an anti-nuclear movement began to gain momentum in the United States, beginning after the Three Mile Island nuclear meltdown of 1979 and gaining strength as safety and environmental concerns began to arise. These forces worked together to bring about a wave of plant closings and decommissionings of the first generations of civilian nuclear reactors. Combined with the public reactions to the nuclear disaster in Fukushima, the number of decommissioned reactors is set to increase here and abroad (Samseth et al. 2012). Yet only a few social-scientific studies have examined socio-economic consequences of nuclear decommissioning on local communities (e.g., Kotval and Mullin, 1996; Pasqualetti and Pijawka, 1996; Vernet 2003). This paper addresses the emergent issue by empirically examining the media treatment of the consequences of nuclear decommissioning in one small town.

The small village of Wiscasset, Maine was once home to the Maine Yankee Nuclear Power Plant. During operation, the plant employed more than 600 workers, accounted for more than 90% of Wiscasset's budget through the property taxes it paid, and helped to create a thriving, prosperous town through direct and indirect contributions. Given the town's reliance on the nuclear plant, many local residents feared for the future of the town when Maine Yankee officials announced that the plant would close in 1997. However, some studies have concluded that the closing left little impact on the town. Raymond Shadis, who helped to conduct a study by the New England Coalition entitled *Economic Consequences of the Early Closure of Maine Yankee Atomic Power Station* (Shadis, 2008), said of the final results, "In 2002, the New England Coalition commissioned a study of the economic consequences of closing Maine Yankee. To our knowledge, our study was the most extensive and inclusive study of the economic impact of closing Maine Yankee (or any New England nuclear plant) ever done. In our study, we looked at every publicly accessible economic indicator of which we could think: employment, wages, average income, loans, loan defaults, savings, welfare roles, home prices, housing starts and more.... Our study found no discernible impact over five years of Maine Yankee's closing in any economic indicator category on a statewide or tri-county region level" (Shadis, 2008). If economic analysis reveals no statistically significant difference as a result of plant closure, is that the end of Wiscasset's story?

This qualitative study aims to dig deeper into the experience of the town, using an analysis of local and national newspaper coverage, to determine whether and how the community was affected by Maine Yankee's decommissioning. It examines how news media coverage of decommissioning changed before and after the process was complete, and what these changes and patterns tell can us about Wiscasset's experience of nuclear decommissioning, specifically pertaining to economic and social life. I argue that initially, predictions about the

impacts of decommissioning were sensationalized and had a broad geographical scope (e.g., electric rate spike and unemployment); over time the framing of the story was consistently updated and began to focus on more localized, deeper community impacts (e.g., stress on school systems). I discuss the development of media coverage around nuclear decommissioning as an iterative process in which viewpoints and concerns (as well as their geographical scopes) were constantly (re)constructed to reflect the changing conditions within and beyond the community. News coverage ultimately suggests that the community was impacted by the loss of Maine Yankee in subtle yet pervasive ways as a result of the loss of Maine Yankee's tax base and the perception of Wiscasset's uncertain present and future.

THEORETICAL BACKGROUND AND NEWSPAPER COVERAGE

The media plays a key role in forming and shaping community perceptions and actions towards particular phenomena. As a key means of linking the state and businesses to the wider public, it is often a definitive force in forming public opinion. The public's perception towards a particular issue depends upon how it is framed. Gamson and Mogdigliani (1987) define a media frame as "a central organizing idea or storyline that provides meaning to an unfolding strip of events...The frame suggests what the controversy is about, the essence of the issue" (p.147). Because the media plays this central role within communities, it stands to reason that the media is one of the best sources to gain insight on how a particular event impacts the members of a community and how the media, in turn, shapes the perceptions of that event.

What agents and processes contribute to media framing? Gunter (2005) identifies three major models of media framing. The Conflict model presents news as elite propaganda, created by a mass media that is tightly bound to the corporations and elites who own and control news sources. This model assumes that coverage of events is selective in order to minimize the threats posed to the interests of powerful elites, often minimizing perceived risk in the process. The Sensationalist model presents news as entertainment, meant to catch readers' attention through eye-catching, unusual, suspenseful, dangerous, or melodramatic stories. This model of media coverage implies amplifying risk in order to create stories that maximize human interest through the creation of victims, villains, heroes, and ongoing suspense. Finally, the Problem Frame model, a more complex explanation of the three, views news coverage as a continuing succession of threats and reassurances that construct and reconstruct problems, crises and enemies.

The Issues Attention Cycle, first coined by Downs (1972), adds a temporal dimension to the evolution of media framing (Chyi and McCombs, 2004). It identifies five chronological stages: (1) the pre-problem stage, (2) alarmed discovery and euphoric enthusiasm, (3) realizing the cost of significant progress, (4) gradual decline of intense public interest, and (5) the post-problem stage. In short, this model outlines how issues are discovered by the media, gain prominence, and then fade from public view, and can be seen as a way to incorporate time into the above media framing models. From a geographical point of view, we may also consider spatial dimensions of the media framing process. In this study I postulate that the early stages of framing focus on geographically broader issues to appeal to a wide audience, while the latter stages are associated with more localized, but more acute and concrete problems. Such conceptualization is inherently related to the debate over the production of scale (Sheppard and McMaster 2004).

The present study applies the framework of media frame analysis to examine news coverages of the effects of nuclear decommissioning. Because decommissioning a nuclear plant poses a different threat to a community than the physical threat posed by an environmental crisis or human conflict, it is important to consider the form taken by the impacts of a plant closing. Wu and Korman (1987) discuss a "ripple effect" (akin to negative regional multiplier effects (e.g., McCann, 2013)) created by the loss of a local plant. The primary impacts of closure include the immediate losses of jobs, income, and property taxes to the town. This can lead to secondary shocks, which include decreased economic activity in local businesses, reduction in earnings at plants which produced supplies for the closed plant, and ultimately unemployment in other sectors. Finally, tertiary shocks can arise, which include an increased demand for social services and welfare, and impacts on personal tax receipts. It is important to keep the progression of plant impacts in mind when considering changes in newspaper coverage over time.

CASE STUDY

The town of Wiscasset, Maine was established in 1760. During its early history, Wiscasset was a busy deep harbor shipping port, known as the largest major harbor east of Boston (Varney, 1886). After the war of 1812, Wiscasset's prosperity began to decline, as the shipping trade slowly became less profitable. Most of the town's

fortunes were never recovered (“Historic Overview,” 2014). Since then, Wiscasset has relied mostly on tourism and the local service industry as its main economic endeavors. More recently Wiscasset has been best known for the Maine Yankee Nuclear Power Plant.

The Maine Yankee Atomic Power Company (MYAPCo), a conglomerate of ten New England power companies representing Maine, New Hampshire, Vermont, Massachusetts, Connecticut and Rhode Island, was formed in 1966. In 1968, construction of the plant began in Bailey Point Peninsula in Wiscasset. Maine Yankee’s history in Wiscasset was not without controversy. During the course of plant operation, three referendums were held to attempt to close the plant. After the Three Mile Island incident of 1979, many local citizens were concerned about the safety of nuclear power in Maine. A trace radioactive nucleoid concentration was found in the area, fueling anti-nuclear sentiment, and allowing the Maine Nuclear Referendum Committee to successfully bring about the first referendum against a nuclear power plant in 1980. In the end, the Nuclear Referendum Committee’s cause only drew 40% of the vote, which was not enough to close the plant (Bisgaard-Church, 2011). Two other referendums were held during the 1980s, and neither referendum was passed.

Although controversial, the plant was an integral part of the Wiscasset community. Maine Yankee once paid approximately \$12 million in property taxes, accounting for over 90% of Wiscasset’s budget, and brought in over 600 workers to the local economy. With the wealth that the community had while Maine Yankee was in operation, it was able to pay for seven fire engines, two state-of-the-art ambulances, a community recreation center, three modern piers, and sewer and water lines that reached the most rural parts of town (Abel, 2012). The school system was one of the best in Lincoln County, and it could afford to bring in students from local communities without school systems to ensure that the region had access to quality education. Additionally, because Maine Yankee’s taxes funded most of the town’s budget, property taxes were kept considerably low for residents. The town in 1995 assessed Maine Yankee at more than 100 percent of market value, and single-family homes at 12 percent of market value. No other local town assessed residential property so low at that time (“Tax Loss,” 1997).

At its peak in late 1980s Maine Yankee produced about one-fourth of the power for the state of Maine (PRIS, 2014). Beginning in the 1990s, the plant began to experience operating problems, ranging from cracks in operating tubes to faulty valves and severed cables. In 1995, Maine Yankee experienced a year-long power outage, caused by leaking steam generator tubes. Later that year, anonymous allegations arose that the MYAPCo intentionally adjusted computer studies of Maine Yankee’s emergency core cooling system in the event of an accident in order to mislead the NRC about the plant’s actual condition. This led to controversy and an NRC investigation into the plant. Several other outages occurred in 1996, and, by 1997, the company announced that the plant would be closed unless a new buyer could be found (UCSUSA, n.d.).

In 1997, decommissioning began. The process was not without legal troubles. During that year, Maine Yankee applied to the Federal Energy Regulatory Commission to increase utility rates in order to make up for its insufficient budget to decommission the plant. Various Maine state organizations, an environmental group, and representatives from other New England states intervened in the proceedings. In the end, a settlement was reached that allowed Maine Yankee to increase costs to ratepayers, provided that various concessions were made. These included issues like donating part of Maine Yankee’s land to an environmental non-profit, reducing returns on equity to shareholders, and returning any profits made from sale of the plant or its land to ratepayers, rather than to shareholders (“MYAPCo V Public Advocate,” 1998).

Decommissioning projects spanned the years 1998 to 2005. Even after decommissioning was completed, Maine Yankee continued to be present in the community. The federal Yucca Mountain fuel storage site, a project which was intended to hold spent nuclear fuel from decommissioned reactors, was never completed. As a result, Maine Yankee has continued to store its spent fuel on the former plant’s site, forcing the company to spend a minimum of \$9 million a year to store the fuel, a cost which it has transferred to ratepayers in the form of higher electric rates (“A Brief History,” n.d.). After fourteen years of litigation from the owners Maine Yankee, Connecticut Yankee, and Yankee Rowe, the federal government has finally agreed to pay Maine Yankee \$81.7 million for its failure to complete the Yucca Mountain storage site, which it plans to use to lower electric rates for its customers (Richardson, 2013).

RESEARCH QUESTIONS, METHOD AND DATA

This research builds upon previous analysis of nuclear plant decommissioning, considering the narratives presented by local media. Three main questions are answered: (a) How local media interprets and frames the closing of the Maine Yankee Nuclear Plant; (b) How media coverage changes over time; and (c) What this coverage tells us about Wiscasset’s experience of the decommissioning process. I expect coverage before decommissioning to be

relatively polarized between reporting on pro and anti nuclear voices, given that the community had been divided on the issue. It is hypothesized that some articles will claim that the closure of Maine Yankee would have dire consequences on the local community, while others will favor the environmental and safety benefits of the loss of the plant. Considering that economic analysis has yielded few results, I would expect newspaper coverage after decommissioning to be relatively in line with research, reflecting a community that has rebounded from the loss of its largest economic force.

Qualitative content analysis of the media coverage of an event is suited to capture subtle nuance of community perception and its complexity. It is a method by which the researcher performs a textual analysis of relevant data sources to identify words, concepts, themes, and other emergent patterns, which provide insight into the research topic. It allows us to look beyond aggregate quantitative data, in order to get a sense of the story behind the numbers, thus adding to our understanding of quantitative studies conducted on the subject in question. In this case, content analysis provides unique insight into the experience of Wiscasset and Lincoln County during and after the decommissioning process. While useful, it is, however, imperfect, as any analysis and conclusions gained from this type of research are limited to information presented by newspapers, leaving out important voices and ideas that may not have been covered by the media.

For the purpose of this research, content analysis techniques were applied to newspaper articles with respect to relevant theory. Articles were sourced online from the websites of the newspapers, Google news archives, and the Maine Newsstand database, as well as from the physical archives of the Lincoln County Courthouse in Wiscasset. Articles were located initially from Google, using the search criteria “Maine Yankee,” “Wiscasset,” and “economic impacts” in various combinations. I immediately identified four primary newspaper sources, the *Wiscasset Newspaper*, the *Portland Press Herald*, the *Bangor Daily News*, and the *Lewiston Sun Journal*, as the sources with the greatest number of articles pertaining to Maine Yankee and the local economy. However, in order to ensure a comprehensive study, articles were identified from fourteen different news sources. Local and state papers from Maine and Vermont were used, as well as a number of national newspapers. Eighty-five articles were reviewed in total, ranging from 1982 to 2014. Table 1 identifies the number of articles used from each source.

Table 1: Newspaper sources usedⁱ.

News Source	Number	News Source	Number
Wiscasset Newspaper	29	Seacoast Online	1
Portland Press Herald	27	Times Argus (Montpelier, VT)	1
Bangor Daily News	10	VPR Vermont	1
Lewiston Sun Journal	6	Rutland Herald (Rutland, VT)	1
Maine Biz	2	The Courant (Hartford, CT)	1
The Reformer	2	Working Waterfront (The Island Institute)	1
(Brattleboro, VT)			
Boston Globe	1	WCAX (Burlington, VT)	1

ⁱ Newspaper articles used in this research can be made available upon request.

Qualitative data analysis software, MaxQDA, was used for the purpose of coding and sorting information from each article. Because it was unclear what issues would ultimately be the most important to the community, coding was used to narrow a broad range of issues into more specific categories. Information was sorted between factual information and claims that required further research and review. Three broad categories were identified: Known Information, Partial or Conflicting Information, and Speculative Information (Table 2). This was done in order to determine what was relatively agreed upon about Maine Yankee and its socioeconomic impacts and what information could be expounded upon through this research. Subcategories were formed as each article was read and a new recurrent theme or idea could be identified.

Information within each subcategory was separated between articles which predicted the impacts of the Maine Yankee shutdown and articles which were written in its aftermath, in order to gain a sense of what issues were important to the town before and after decommissioning. After coding and sorting information from all of the newspaper articles, I analyzed my findings in order to determine if there was any pattern to the coverage of decommissioning, and whether or not that pattern could inform my understanding of Wiscasset after Maine Yankee.

Table 2: Categories used to analyze articles.

Category	Description	Subcategory
<i>Known Information</i>	Information that is factual and uncontested. This is mostly background information which provided a foundation for the research itself.	Maine Yankee's Controversial Past Reasons for Plant Closing Importance to Local Community Maine Yankee Today
<i>Partial or Conflicting Information</i>	This category describes information that is presented often and from different viewpoints and perspectives within the articles.	Electricity Rates Since Decommissioning Impact on Local Tax Base Unemployment After Maine Yankee Impact on Local School System
<i>Speculative Information</i>	This information is mentioned very rarely within the media, but could provide important answers to some of the questions in this study.	Energy Sources After Maine Yankee Town Savings after Maine Yankee Wiscasset's Economic Transition Impact Beyond Wiscasset

RESULTS

Subcategories which were mentioned most frequently within the media are considered for analysis here, with other information from the remaining subcategories integrated throughout. The four main subcategories include: Electricity Rates, Tax Loss, Unemployment, and Impact on Schools. The first three categories were discussed before and after decommissioning; issues regarding the local school system became prominent after 1997, when decommissioning had begun. In order to discern between predictions and actual impacts, information is listed under "Before Decommissioning" (1982-1996) and "After Decommissioning" (1997-present). Wiscasset's transition after Maine Yankee will also be briefly discussed. Table 3 lists the number of articles in each subcategory.

Table 3: Number of articles surveyed within each category.

Category	Articles Before Decommissioning	Articles After Decommissioning
Electricity Rates	6	4
Taxes	4	17
Unemployment	5	2
Schools	0	12
Wiscasset's Transition	0	6

Before Decommissioning

Electricity rates since decommissioning: Predictions regarding electricity rates in Maine were mixed, but one clear conclusion emerges. Prior to Maine Yankee shutdown, most experts predicted an increase in electricity rates, which would affect a large portion of the state, primarily Lincoln county, Aroostook County (which would be the second most adversely affected by post-Maine Yankee electrical rates), Franklin, Hancock, Kennebec, Oxford, Penobscot, Somerset and Washington counties (BDN, 1987). Predictions ranged from a 20% increase (The Lewiston Journal, 1982) to a 47% increase (BDN, 1987). One article explained that, “Maine Yankee once provided up to 30% of power in the state of Maine, and the approximately 2.6 billion kilowatt-hours of power provided to Maine consumers by Maine Yankee every year saved them \$134 million in fuel costs; rates would have to rise to offset these savings without Maine Yankee” (Lewiston Daily Sun, 1982). A similar article predicted that rate payers would have to accommodate \$1.14 million in decommissioning costs once the process began (PPH, 1997).

Impact on the local tax base: Only four articles discussed the impact on the local tax base prior to decommissioning, and it was briefly acknowledged that the community’s wellbeing could be at stake with the loss of the source of 96% of the municipal budget. One article predicted a decrease in Maine Yankee’s taxes from \$13 million to only \$6 million very early in the process, potentially devastating the local community (BDN, 1998). The taxes paid by residents were low to begin with. According to one article, “the town in 1995 assessed Maine Yankee at more than 100% of market value. It assessed single-family homes at 12% of market value. No other town assesses residential property at such a low percentage of value, said Dave Ledew, supervisor of municipal services in the Bureau of Taxation's property tax department. The result is that the owner of a \$100,000 home in Wiscasset pays \$550 in taxes per year. In the neighboring town of Woolwich, the owner of a \$100,000 home pays \$1,220 in taxes,” (PPH, 1997). Wiscasset residents were used to modest living costs, and early articles feared that this could change with the loss of Maine Yankee. Nevertheless, the impact of potential tax increase, particularly on the school system, was not yet clear.

Impact on employment: During its heyday, Maine Yankee employed about 600 workers within the town of Wiscasset and in the surrounding area. One article remarked that, “half the plant's work force of 480 is expected to be laid off in six months, adding to the loss of over 1,000 contractors who flooded the town every 18 months to refuel the reactor” (Sun Journal, 1997). One source suggested that closure would cause not only the immediate loss of Maine Yankee employees, but would also lead to further layoffs in local businesses and firms, including 700 manufacturing jobs in the lumber, food-processing and paper industries. Those three industries comprised 10% of Maine's overall workforce (BDN, 1987). Another article suggested that between 1,000 and 1,800 jobs would be lost as a direct and indirect result of plant closure (BDN, 1987). For small rural communities, this loss of employment would be devastating.

After Decommissioning

Electricity rates after decommissioning: Information regarding electricity rates after decommissioning is relatively limited (4 articles). One article claimed that the closing of Maine Yankee “has helped bring Maine electricity rates up to fifty percent higher than the national average,” (Portland Press Herald, 2010). A similar article said that, as a result of the loss of Maine Yankee, a relatively low-cost supplier of energy, electricity prices had become entirely dictated by natural gas and other costly electricity sources, causing rates to rise substantially (Portland Press Herald, 2010). The article suggested that without viable low-cost options like coal and hydroelectric power, and with rising operating costs of plants and demand for energy, electric rates would continue to rise. None of the articles surveyed contained any concrete data to back up these claims, and at least one suggested that rates had risen by less than initial predictions had thought. Lastly, one article reported that Maine customers would save approximately \$5 million annually in electric rates as a result of the 1998 settlement (PPH, 1998).

Taxes after decommissioning: The loss of Maine Yankee’s tax base seems to have had a profound impact on the community and its budget. The year-to-year tax contribution of Main Yankee dropped rapidly from nearly \$13 million in 1996 to \$1.6 million in 2001 (Table 4). Faced with a lower town budget, the town cut its full-time police officer staff in half and made other cuts in similar services and departments (PPH, 1999). By 2002, the town’s eight full-time officers had been reduced to five. At the same time, from 2000 to 2001, 911 calls increased by 13% (WN, 2002). In 1999, First Selectman Robert Blagden said the tax rate had to be increased from \$12 to \$15 per \$1,000 of a

property's value. Taxes on a \$100,000 home were allegedly \$1,500 that year. In 1996, the tax bill was \$500 (PPH, 1999).

Table 4: Maine Yankee tax contribution by year.

Year	Tax Contribution
1996	\$12,800,000
1997	\$10,000,000
1998	\$5,797, 719
1999	\$3,600,000
2000	\$2,500,000
2001	\$1,600,000

Tax increases became a major concern in the media in 1999-2000. A 1999 article reported that property taxes had doubled or tripled that year (WN 1999). In 2000, a similar article reported that some property taxes had nearly tripled or quadrupled after Maine Yankee shut down (PPH, 2000). In 2000, taxes were expected to go up even further. As such, community leaders asked the Wiscasset School District to cut some of its budget to offset the tax hikes by more than \$420,000 (WN, 2000). In the same year, however, the school budget ultimately did not decline, causing expected mill rate increases of at least one mill (WN, 2000). According to the Boston Globe, property taxes have spiked by more than ten times higher than taxes during Maine Yankee's operation.

Taxes continued to be reported on by the media in 2002. One resident claimed that his property taxes went from about \$180 to well over \$4,000/year. Another article claimed that a person's taxes climbed from \$200 to \$1800/year (WCAX, 2013). By 2002, Wiscasset's mill rate had risen again, from 17.6 to 19.6, mostly as a result of a loss of Maine Yankee tax revenue. Money was taken from the interest gained on reserve accounts to help to offset taxes. Wiscasset allegedly had between \$12-15 million in reserves, which it had saved up over the years from budget surpluses (PPH, 1999). In 2000, these reserve funds were expected to decrease, leading to mill rates of 21.6-22.6 (WN, 2000). A proposed \$700,000 increase in Wiscasset's school budget in 2002 was expected to increase mill rates from 17.9 to 20.9 (WN, 2002). For a property valued at \$100,000, that would be a \$300 increase annually.

One 2004 article suggested that, without Maine Yankee, the town's valuation would decrease from \$453 million to \$234 million. The same article confirmed that the mill rate had reached 22 that year. Simultaneously, Wiscasset voters were also planning to take \$2 million from reserves (WN, 2004). A later article discussed the outcome of the town meeting that would decide the town's new budget and the amount it would take from reserves to offset taxes. \$90,000 was cut from general government expenditures, and approximately \$100,000 was cut from various public work projects. However, no school budget cuts were made, and \$100,000 was set aside for the legal team that was challenging Maine Yankee on its abatement of the town's valuation of its land. Some town employees were even granted salary increases, a measure which some residents questioned when the town already had \$350,000 in unpaid taxes (WN, 2004). In 2004, the town began to worry that it was spending more than taxes were bringing in, leading to countless town meetings to discuss budget issues. Officials suggested cutting between \$400,000-\$1,000,000 from the budget in order to avoid going into debt. Strategies such as raising taxes, cutting programs, firing a town manager or the city and economic planners, and leasing, rather than buying, public equipment were suggested (WN, 2004). After the budget had been approved, an oversight involving when school budget funds were due was discovered, and residents voted to increase taxes by 34% rather than withdraw a large amount from the reserve account to pay the money in advance (WN, 2004).

In 2005, a continuing legal battle between the town and Maine Yankee was finally settled over taxes. Company officials said they paid \$1.6 million in 2001, \$1 million in 2002 and \$682,000 in 2003. The 2003 amount is significantly lower than the \$3.5 million the town demanded. Maine Yankee agreed to pay the town \$19.8 million in property taxes and impact fees over a span of almost 20 years. Beginning with a payment of \$1.75 million for 2003, the company's taxes will steadily decline to \$600,000 in 2022 (PPH, 2005).

Unemployment after decommissioning: Media coverage of unemployment issues has become much more limited after shutdown. Shortly after decommissioning began, the workforce was decreased from 600 to 166 workers. One hundred former employees retired; of the rest, 60% had found jobs outside of the local area and planned to move away (BDN, 1998). Additionally, two articles suggested that Maine Yankee had provided many programs and job fairs to help former employees to find new jobs, and, in 2000, construction of the dry storage facility was expected to create new, temporary jobs to benefit the region (WN, 2000).

The Wiscasset school system after decommissioning: Aside from the effects on general town services, those on the school system by the loss of Wiscasset's large budget received much attention in many articles after decommissioning. High School enrollment has dropped from 389 to 207 students, jobs have been cut, and tuition subsidies for out-of-town students have been limited. To keep enrollment high, Wiscasset High School has begun taking in students who have been kicked out of their own districts, increasing dropout rates (Wiscasset Newspaper, 2013). The school department reduced its 1998-1999 budget by \$1 million in anticipation of a loss of tax revenue. It also began the process of quitting its school union, Union 48, in order to save money by forming an independent school district (PPH, 1998).

Some newspaper articles were more conflicting about the impact on the school budget. The 1999-2000 school budget was not affected, according to one article. As the property tax valuation for the town declined, subsidies from the state were expected to go up to offset the loss of funding (WN, 1999). However, another article suggested that the school system already began making cuts in 1999, reducing its \$9,430,000 budget to \$8,851,526, and further cuts were expected (WN, 1999). In 2000, despite expected budget cuts, the school's \$8.6 million budget from the previous year was approved, causing tax rates to increase. The community leaders also questioned the school's spending habits; Wiscasset spent nearly \$9,200 per student, compared to the national average of \$5,800 per student (WN, 2000).

This issue affected not only Wiscasset, but also the towns of Alna (which has no schools of its own), Westport (which has no schools of its own), Dresden (which has no 7-12 school of its own), Edgecomb, Woolwich and Whitefield, which all had tuition students in the Wiscasset school district. Until recently, Wiscasset charged 50% of the state allowable tuition; it now charges 75%. Wiscasset plans, over the next three years, to increase tuition to 100% of the state allowable tuition ("Final Report," 1998). To relieve crowding and lower costs, Wiscasset told the town of Dresden that its students had to find other schools to attend starting in the fall of 1999, unless they were in high school (PPH, 1998). In 2000, one article about ailing economies in the region reported that, "In Alna (population 600), which sends its students to Wiscasset schools, there is a move to dissolve the town entirely in an effort to control spending, especially education costs" (PPH, 2000).

Articles about the school system appeared less frequently after 2002. That year, budgetary concerns brought about by a proposed increase in school funding caused the town to question its choice to pay 55% of its teachers within the upper salary range for the district (WN, 2002). In 2008, Wiscasset considered making even more cuts, after total enrollment had dropped from 1,100 students to 765 within just a few years (PPH, 2008). Although media coverage has declined, issues facing the school system appear to be ongoing as Wiscasset's tax base declines.

Wiscasset's transition: Some articles written after decommissioning seem to be hopeful, suggesting that new business may be coming to Wiscasset to offset the loss of Maine Yankee. However, it is important to note that most of these articles were speculative, and a large portion of the proposed projects were never completed. In 1999, Boothbay Harbor commissioner and selectman John O'Connell created a plan to promote business development in the region, citing bringing in a technology park, increasing cultural and historical tourism, and promoting a call center and vocational school in the region to promote strong job skills and employment (WN 1999). In 2003, Wiscasset tried to buy former Maine Yankee land for use as an office park (PPH, 2003). It is unclear whether those plans were carried out. In 1997, American Pelagic Fishing Co. and Atlantic Aircraft Sales were interested in moving in (PPH, 1997). According to Wiscasset's business directory, neither company carried out these plans.

Trying to recreate Wiscasset's prosperity has not been without both successes and costs. In 2005, Wiscasset laid off its economic developer and combined the position with the town planning position, calling it the director of economic and community development. This helped to save the town money, and apparently to streamline its economic strategy. However, the town has become more hopeful as time has gone on, stating that "the town's resources, including an airport and its coastal location between Bath/Brunswick and Camden, already go a long way toward attracting business investment" (Maine Biz, 2005). Articles about Wiscasset after Maine Yankee present a picture of both struggle and success.

DISCUSSION

The articles published around 1982-1997 correspond primarily to the second stage of the issue attention cycle, the "alarmed discovery" phase. Early media accounts of the possible impacts of decommissioning relied almost entirely on predictions from experts who expected the worst; numbers like "20% increase" and "47% increase" in electricity rates and job losses for 1,000 contractors and 700 people in manufacturing portrayed a much bleaker future than what was reported by later articles. Reports of Maine Yankee as a "vital energy source" create

the image of a looming crisis in the wake of decommissioning. From paper to paper, it seems that little agreement was reached regarding the possible impact of Maine Yankee's closure, other than the fact that it would hurt the local communities. Rather than polarized coverage of both sides of the issue, as I had expected, early coverage on the possibility of closure seems to follow a sensationalist model of framing; articles seem to mostly create a sense of suspense or imminent risk as a result of closing, and anti-nuclear voices seemed to rarely get coverage.

The third stage of the issue-attention cycle, "realizing the cost of significant progress," begins during and shortly after decommissioning, from 1998-2005. The narratives constructed by the media seem to shift their attention towards some issues and away from others. While early articles warn of a large increase in electricity costs for the state of Maine, articles written during this period do not have such a heavy focus on rates. Many articles make the issue seem much less significant, citing the offsetting of higher electric rates as a result of settlements reached with Maine Yankee. Unemployment coverage takes a similar turn: while many workers were laid off by the company, reports suggest that most of those workers either found work elsewhere very early on or retired. The expected "ripple effects" (Wu and Korman 1987) on other industries received little media coverage.

On the other hand, newspapers increasingly focus on taxes during the post-decommissioning period. Multiple headlines warn of increased mill rates and significant property tax increases while Maine Yankee's contributions to the local tax base continually dwindled. Local reports discussed town meetings held to determine what the town would do about its declining tax revenues. One of the most significant and controversial tax issues turned out to be the impact on local schools. As taxes became a more prominent issue in the media, stories about the impact on the school system began to slowly emerge. Enrollment dropped as families formerly employed by Maine Yankee moved away and towns were asked to leave the district. While federal funding and increased local tax rates helped to ease the burden placed on the school district, it was not without challenges. Town services and programs, the local school system, and property tax rates were all interconnected to Maine Yankee and its importance to the tax base. The continuous media coverage reflected the importance of this issue through the evolution of its framing of the issue, as it constantly constructed and reconstructed the threats that closure posed to the community as the process went forward.

The fourth stage of the issue attention cycle, "gradual decline of public interest," is slowly taking shape. As decommissioning was completed by 2005, more recent articles report on the efforts and some successes of economic development, citing new and expanded businesses that have helped to stimulate the local economy. The transition process, however, is ongoing. By 2005, the town had reached agreements with Maine Yankee on its future tax contributions, giving it more time to adjust to a smaller tax base, but not ultimately solving the problems caused by the loss of 90% of its budget. Many of the development and business plans that the town anticipated have fallen through, or have yet to come to fruition. Progress is slow, and recent articles continue to discuss the legacy left behind by the loss of the town's nuclear plant.

Between 1982 and today, coverage on the decommissioning of Maine Yankee has most nearly followed a problem frame model of media framing. The media, not knowing what the true impacts of decommissioning would be but intending to capture public interest, first constructed a story of immediate economic peril for the community, with impacts being felt by a widespread sector of the state and region. Later articles deconstruct some of the threats presented by earlier coverage, while amplifying others as the true impacts of decommissioning are felt, clearly aiming to both inform and hold public attention. An important spatial component to the issue-attention cycle emerges here: the story that is finally constructed by coverage is not state-wide, but local, converging on a more specific narrative about the subtle but pervasive impacts felt by Wiscasset and some nearby towns. The media follows a clear pattern, beginning with generalized, inconsistent, and sensationalized reporting, followed by more specific, consistent reporting as the issue unfolded and the impacts became more apparent. The story was constructed, deconstructed, and reconstructed as more information became known, starting with predictions from experts and ending with local conditions, data, and personal accounts as impacts became more concrete and visible. In the case of Wiscasset, the problem frame model was relatively linear, following a clear path as it moved through the issue-attention cycle.

How does media coverage inform my understanding of the impacts of decommissioning? The town of Wiscasset was clearly impacted by the loss of its nuclear plant. The impact is not equal or profound for every community member, but it is present. The loss of the majority of Wiscasset's town budget has caused economic hardship and anxiety, as is clearly reflected by newspaper coverage, which has changed the community and its members in important ways. The impacts faced by the community have not been immediate, but have emerged over time, and have taken different forms than early predictions expected. While numbers and statistics can illustrate a big picture, qualitative methods can shed light on the whole story. A study, like that conducted by Shadis and the New England Commission on Nuclear Power, may not thoroughly consider short term, micro-level impacts on households or individuals. Political context is also worth noting: the NECNP study was produced in support of

future nuclear decommissioning, and has been cited in local newspapers as justification for closing Vermont Yankee and other plants. The NECNP itself is a group whose main focus is informing “the public and government agencies of the hazards and risks of nuclear power” and was consistently one of Maine Yankee’s most vocal opponents (NECNP, 2015). While effective at showing audiences that nuclear decommissioning is not “scary,” such a study may be skewed towards a more positive outlook of decommissioning in line with the organization’s stance on the topic. As a result, such economic statistics may not effectively reveal the impact on the school system or the community’s ongoing struggle to meet its expenses while keeping taxes low and reserve money high. Context is important, and a more holistic approach to research is necessary to gain a better understanding of the whole picture. Local media sources provide us with the story behind the numbers, allowing us to hear the human accounts of the town’s experience, and the very real, ongoing effects that the town has dealt with over time.

CONCLUSION

As nuclear plants age and nuclear power slowly loses public favor, more and more plants are facing closure and decommissioning. Regardless of one’s stance on nuclear energy, the impact of decommissioning on host communities is an important public and policy concern. This case study examined the patterns displayed by media coverage of decommissioning and the local economic conditions in Wiscasset, Maine, a former home of the Maine Yankee Nuclear Plant. Through analysis of key regional and local newspapers, qualitative content research revealed that the local government and community members were impacted by the loss of the majority of the town’s tax base, and the resulting struggle to maintain the town budget through tax increases and the use of reserve funds. Media coverage created the image of a region uncertain of what the consequences of the loss of their nuclear plant would be, followed by a local government and community struggling to maintain their status quo while transitioning to a post-Maine Yankee economy. While not everyone was affected equally by the closure, and the town is slowly attempting to rejuvenate its tourism and service based economy, increases in property taxes and loss of town funding created pervasive first and secondary impacts. While data can provide a clear measurement of the economic health of the region, the decrease in quality of life faced by the small town is a uniquely human impact which cannot be ignored.

This study shows some of the critical effects of nuclear decommissioning, such as the impact on school systems, which have not been clearly articulated in earlier studies, which tend to focus on aggregate economic indicators. Further studies based on interviews or surveys are warranted to understand the complexity of the issues as well as the response of the residents and communities to the negative shocks. For example, rather than simply highlighting the negative effects on school systems, an in-depth investigation may shed light on how teachers, parents and administrators might have creatively dealt with dwindling financial support from the town, possibly mobilizing various social and cultural capital available to them. Such local agency is usually less visible and may not be considered news-worthy, but could nevertheless be essential in mitigating negative consequences of external shocks. Better understanding of local shocks such as decommissioning would be invaluable for future communities.

ACKNOWLEDGEMENTS

Special thanks to Daisaku Yamamoto, Associate Professor of Geography at Colgate University, for all of his help and guidance throughout the completion of this project. Additionally, this project could not have been possible without funding from Colgate University’s Office of Undergraduate Research and help from the people at the Lincoln County Courthouse Archives.

REFERENCES

Abel, D. 2013. A nuclear plant closes and the town feels the pain for years afterward. *The Boston Globe*. 18 September.

Arvisu, S. 2013. *Media Framing: When Journalists Keep It Real and What It Means for Advocates*. Frame Works Institute. <http://www.frameworksinstitute.org/blogs/alumni/2013/01/media-framing-when-journalists-keep-it-real-and-what-it-means-for-advocates/> (Last Accessed 19 October 2014).

Barcelo Vernet, J. 2003. Social and economic aspects of the decommissioning of nuclear installations. Presented at *Proceedings of The Safe Decommissioning for Nuclear Activities*. 403–410

Bisgaard-Church, E. 2011. *Citizens protest against Maine Yankee Nuclear Power Plant, Wiscasset, Maine, 1979-87*. Global Nonviolent Action Database. <http://nvdatabase.swarthmore.edu/content/citizens-protest-against-maine-yankee-nuclear-power-plant-wiscasset-maine-1979-87> (Last Accessed 19 October 2014).

Brown, J., & Brutoco, R. 1997. *Profiles in power: The antinuclear movement and the dawn of the solar age*. New York: Twayne.

Chyi, H., & McCombs, M. 2004. Media salience and the process of framing: Coverage of the Columbine school shootings. *Journalism & Mass Communication Quarterly*. 81(1), 22-35.

Downs, A. 1972. Up and down with ecology: The "issue attention cycle" *The Public Interest*. 38-50.

Gamson, W., & Modigliani, A. 1987. The changing culture of affirmative action. In *Research in political sociology*. Bingley, UK: Emerald JAI.

Gunter, V. 2005. News media and technological risks: The case of pesticides after Silent Spring. *The Sociological Quarterly*. 46(4): 671-698.

Historic and Prehistoric Overview. n.d.. The Town of Wiscasset.

http://www.wiscasset.org/visit/historic_and_prehistoric_overview/ (Last Accessed 19 October 2014).

How many nuclear power plants are in the U.S. and where are they located? 2014. U.S. Energy Information Administration. <http://www.eia.gov/tools/faqs/faq.cfm?id=207&t=21> (Last Accessed 19 October 2014).

Kotval, Z., & Robert Mullin, J. 1997. The Closing of the Yankee Rowe Nuclear Power Plant: The Impact on a New England Community. *Journal of the American Planning Association*, 63(4): 454–468.

Maine Yankee: A Brief History. n.d.. Retrieved from <http://www.maineyankee.com/public/MaineYankee.pdf>

Maine Yankee Atomic Power Company V. Public Advocate, State of Maine. 1998. Maine Yankee.

<http://www.maineyankee.com/public/pdfs/ferc/ferc.pdf> (Last Accessed 19 October 2014)

The Maine Yankee Decommissioning Advisory Panel: A Model for Public Participation in Nuclear Projects. 2005. Maine Yankee. <http://www.maineyankee.com/public/cap%20final.pdf> (Last Accessed 19 October 2014).

Maine Yankee Decommissioning Experience Report. 2004. Maine Yankee. <http://www.maineyankee.com/public/pdfs/epri/my%20epri%20report-2005.pdf> (Last Accessed 19 October 2014).

Maine Yankee. 2014. PRIS. Retrieved from <http://www.iaea.org/PRIS/CountryStatistics/ReactorDetails.aspx?current=649>.

Maine Yankee. n.d.. Retrieved from http://www.ucsusa.org/assets/documents/nuclear_power/maine-yankee.pdf

New England Coalition on Nuclear Pollution. (n.d.). Retrieved April 18, 2015, from <http://necnp.org/about-us/NuclearPowerMaineYankee>. 2012. Retrieved from <http://maineencyclopedia.com/nuclear-power-maine-yankee/>.

Pasqualetti, M. J., & Pijawka, K. D. 1996. Unsiting Nuclear Power Plants: Decommissioning Risks and Their Land Use Context. *The Professional Geographer*. 48(1), 57–69.

Public Information. n.d. Maine Yankee. <http://www.maineyankee.com/> (Last Accessed 19 October 2014).

Richardson, W. 2013. US pays Maine Yankee nearly \$82 million; money will benefit Maine ratepayers. *Bangor Daily News* February 6. <http://bangordailynews.com/2013/02/06/business/maine-yankee-collects-81-million-in-waste-suit-company-says-money-will-benefit-ratepayers/> (Last accessed 19 October 2014).

- Samseth, J. et al. 2012. Closing and Decommissioning Nuclear Power Reactors. *UNEP Year Book*, 35–49.
- Shadis, R. 2010. Shutting VY would have little economic impact on region. *Brattleboro Reformer*. February 6.
- Shadis, R. 2008. *Economic Consequences of the Early Closure of Maine Yankee Atomic Power Station Wiscasset, Maine*. IBattleboro.com. <http://www.ibattleboro.com/article.php/20080321114120641/print> (Last Accessed 19 October 2014).
- Sheppard, E., & McMaster, R. 2004. *Scale and geographic inquiry: Nature, society, and method*. Malden, MA: Blackwell Pub.
- Varney, G. 1886. *History of Wiscasset, Maine*. <http://history.rays-place.com/me/wiscasset-me.htm> (Last Accessed 19 October 2014).
- Wait, L. 2012. *Wiscasset: That town across the Sheepscot River*. Maine Crime Writers. <http://mainecrimewriters.com/uncategorized/wiscasset-that-town-across-the-sheepscot-river> (Last Accessed 19 October 2014).
- Wakefield, S., & Elliot, S. 2003. Constructing the news: The role of local newspapers in risk communication. *The Professional Geographer*. 55(2): 216-226.
- Wu, S., & Korman, H. 1987. Socioeconomic Impacts of Disinvestment on Communities in New York State. *American Journal of Economics and Sociology*. 46(3): 261-271.
- Yamamoto, D. (2011). Regional Resilience: Prospects for Regional Development Research. *Geography Compass*. 5(10): 723–736.