greatest nation on the Earth into the future.[3] While the utopian image of a nuclear-powered society that President Eisenhower dreamed politics of nuclear energy,[5] or of all the factors influencing the nuclear industry.[6] Rather, this article seeks to analyze how the domestic nuclear community can best plan for low-risk/high cost events. This analysis must be set within a proper historical context, as history defined the current planning processes.

A. Early 1940s–1946: Atomic Weaponization

The genesis of nuclear energy traces to the attempts, and eventual success, to harness the power of the atom for warfare by the U.S.[7] Of particular note is the Manhattan Project, a joint effort between "industry, the military, and tens of thousands of some debate as to the propriety of using an atomic weapon, the two bombs dropped on Japan were undoubtedly effective and brought about the Japanese surrender on August 14, 1945.[10] From this, the U.S. public roundly supported the prospect of ultimately deriving electricity from the same research that produced the war-ending bombs.[11]

B. 1946-Mid-1960s: Moving From Weaponization To Commercialization

As the Manhattan Project succeeded in producing two nuclear weapons, the Project also succeeded in generating ideas that would be the foundation for the current nuclear energy community.[12] To nurture these fledgling ideas, Congress passed the Atomic Energy Act of 1946

requiring license holders to obtain liability insurance, with limited aggregate liability coverage, in exchange for the possibility that the federal government may satisfy some of amounts of energy that this nation will require for many generations to come."[38] Indeed, the Report can be seen as the culmination of the positive public image of nuclear energy, and the unified legislative and regulatory efforts of the previous sixteen years.[39] Not surprisingly, it called for the federal government to "take the lead in developing and demonstrating the technology in such ways that economic factors will promote industrial applications in the public interest and lead to a self-sustaining and growing nuclear power industry."[40] In pertinent part, this led to the conclusion that "[t]he Government must clearly play a role" in subsidizing nuclear energy, as "the product does not meet some hitherto unfilled need," and the industry cannot otherwise compete with existing conventional fuel sources.[41] What would later become clear was how overly optimistic the industry's and the AEC's estimates were regarding the cost of developing nuclear reactors.[42]

Given the increasing number of nuclear stakeholders and the growth of federal environmental laws, the nuclear community ceased to be as closed and efficient as it once was. Private industry broke ground for reactors throughout the country. However, as construction continued, the actual cost of building nuclear power plants far exceeded the estimates that led to the boom of reactor orders between 1965 and 1975.[43] The public also became involved in the nuclear energy community because its production resulted in thermal and radioactive pollution. I pollution.[45] Three years later, Congressional hearings regarding nuclear plant emergency cooling systems exposed the downside of such a tight-knit industry-regulatory relationship, as the hearings found multiple shortcomings in the AEC's regulations and enforcement of those regulations.[46] In 1975, a group of highly regarded Manhattan Project and AEC scientists publically called for a decline in the construction of nuclear reactors pending amendment of the existing safety regulations pertaining to particular safety concerns.[47]

"licensing and related regulatory functions of the [AEC]."[52] This split explicitly aimed to guarantee the "adequacy of technical and other resources necessary for the performance of each [set of responsibilities]."[53] Thus, Congress sought to move away from the tunnel-vision attendant with the AEC's sole dominion over the nuclear community, as this administrative framework failed to adequately address many of the economic and environmental problems that accompanied the growth of the nuclear industry.

Despite Congress' efforts, the domestic nuclear community was unable to reverse the deep flaws within the regulatory framework. The Three Mile Island incident exposed these flaws. On March 28, 1979, a failure in the cooling system at the Three Mile Island (TMI) nuclear plant threatened the stability of the core and resulted in a release of contaminated coolant.[54] Considered primarily a human error, the incident at TMI "caused the [NRC] to tighten and heighten its regulatory oversight" of the nuclear industry.

the cause of the explosion that occurred in one of the reactors.[68] The vented radiation and the radiation that escaped through explosion-caused structural weaknesses combined to produce the worst nuclear accident since Chernobyl, with an estimated damage total of seventy-five billion dollars.[69]

III. THE DOMESTIC RESPONSE TO FUKUSHIMA

A. Direct Domestic Effects

Despite the severity of the incident at Fukushima, it will likely not have any material affect directly on the U.S. A study conducted by the Congressional Research Service determined that there were four main vectors of radiation pollution worthy of study.[70] The first worry was that contaminated ocean water could carry radiation to U.S. shores, specifically because there was a direct leak from a reactor's seawater inlet point into the Pacific Ocean.[71] However, the study concluded that the amount of radioactive material released into the ocean would be so diluted that it would not have any material effect on the U.S.[72] This is not to say that there are not contamination worries in the Pac

The third possible radiation vector studied was wind. While monitors did detect trace amounts of radiation in rainwater in early April 2011 in California, Idaho, and Minnesota, these amounts were too low to endanger the U.S.[75] The fourth and final possible vector for radiation pollution was the contaminated debris swept away from the site.[76] This too posed little danger of contamination.[77] However, other dangers pertain to the floating debris field. In fact, "a derelict 150-foot Japanese fishing vessel, spotted off the British Columbia coast in March 2012, was sunk by the U.S. Coast Guard as a hazard to navigation."[78] Thus, besides contaminated fish imported from the Western Pacific and stray debris in shipping lanes, the disaster had little in the way of direct effects on the U.S.

B. The Effect Of Fukushima On The Current Domestic Nuclear Community

While the events at Fukushima did not result in any direct danger to the U.S., the nuclear industry should internalize from Fukushima. The first lesson was the value of the emergency response centers (ERCs) in place at Fukushima.[82] Emergency response centers are seismically-isolated facilities that allow some measure of control.[83] In addition to a limited amount of control over on-site systems, ERCs allow monitors to track the statuses of various systems, in order to inform emergency response actions.[84] The information deficit often inherent in a natural disaster limited the effectiveness of TEPCO's response actions. However, the monitoring information provided by the ERC's was instrumental in limiting the inadequacies of response methods. Another bright spot from the Fukushima disaster was the "innovative and resourceful actions" employees took in response to ever-changing disaster conditions.[85] This point is particularly noteworthy in constituting a significant example of universal progress in the training of nuclear plant operators, as both TMI and Chernobyl were primarily considered the result of human error.[86]

INPO also identified some "significant operational lessons" that the Fukushima disaster and TEPCO's emergency response can teach the domestic nuclear community.[87] INPO found that Fukushima served as a sharp reminder of the need for a redundant and multi-layered emergency response plan.[88] It is not unreasonable to dismiss this conclusion as merely a product of hinds emergiePO e