

The Fukushima Nuclear Incident and U.S. Nuclear Policy

Samantha Surles

I. Introduction

The cost of energy may well be our generation's greatest barrier to advancement.¹ Nowhere is the cost higher or more serious than in the face of disaster, where the fault and the remedy often lie with policy.² Disasters result in a huge and often unpredictable cost in that they inspire sudden shifts in the range of public policy.³ Governments all over the world have offered support to Japan in confronting the Fukushima nuclear incident and the Japanese government has, in turn, been cooperative and forthcoming with information in the midst of a courageous effort to ensure the safety of their people.⁴ Governments, including that of the U.S., have responded to this information with sweeping reform legislation set to affect both energy and environmental policy in the long term.⁵ The new policy arising from Fukushima may send nuclear energy in any of three different directions: it could hamper or harm the nuclear industry, it could have no material effect on the growth and cost of energy, or it could improve on the current policy by filling in large gaps. In order to explore which of these results is most probable, this paper will first examine trends in post-disaster legislation, the legislation itself, and how this legislation attempts to address the Fukushima incident. .

II. Disaster and Policy

¹Craig Pirrong, *Energy Market Manipulation: Definition, Diagnosis, Deterrence*, 31 ENERGY L. J. 1, 1-3 (2010).

²Michael Widener, *Bridging the Gulf: Using Mediated, Concensus-Based Regulation to Reconcile Competing Public Policy Agendas in Hazard Mitigation*. 74 ALB. L. REV. 587, 597-599 (2010).

³*Id.* at 588-590.

⁴INTERNATIONAL ATOMIC ENERGY AGENCY, IAEA INTERNATIONAL FACT FINDING EXPERT MISSION TO THE NUCLEAR ACCIDENT FOLLOWING THE GREAT EAST JAPAN EARTHQUAKE AND TSUNAMI: PRELIMINARY SUMMARY, (June 1, 2011), available at <http://www.iaea.org/newscenter/focus/fukushima/missionsummary010611.pdf>.

⁵Scott Taylor, *Japan's Nuclear Crisis Could Reach the U.S.*, GEO. INT'L ENVTL. L. REV. (Mar. 17, 2011), <http://gielr.wordpress.com/2011/03/17/japan%E2%80%99s-nuclear-crisis-could-reach-the-u-s/>.

Unquantifiable and often unknown factors determine to what extent disasters affect policy and the cost and number of casualties is not always the deciding factor.⁶ There have been a substantial number of energy disasters in the last two years (2010-2011).⁷ The majority of these incidents were coal mining incidents involving explosions or collapses and the average death toll of the incidents in 2010-2011 was forty-one people.⁸ The Upper Big Branch mine explosion in Raleigh County, West Virginia on April 4, 2010, resulted in twenty-nine deaths.⁹ Natural gas and oil incidents accounted for the remaining half of industrial disasters, with an average death toll of seven people.¹⁰ Fukushima, the sole nuclear incident, caused only three deaths, and yet was the most politically relevant disaster since the B.P. oil spill the year before, based on subsequent legislation proposed by Congress in response to it.¹¹

The BP oil spill and the Fukushima meltdown were two energy incidents that incited large volumes of legislation.¹² Since the explosion of B.P.'s Deepwater Horizon oil well off the Gulf of Mexico on April 20, 2011, there have been twenty-seven key pieces of legislation enacted that specifically reference the disaster over a seventeen-month period.¹³ Since the Fukushima Daiichi incident began on March 11, 2011, there have been twenty-three bills proposed involving nuclear energy reform over a seven-month period.¹⁴ The B.P. oil spill bills

⁶ Alexis Madrigal, *25 Other Energy Disasters From the Last Year*, THE ATLANTIC (Mar. 21, 2011), <http://www.theatlantic.com/technology/archive/2011/03/25-other-energy-disasters-from-the-last-year/72814/>.

⁷ *Id.*

⁸ *Id.*

⁹ *Id.*

¹⁰ *Id.*

¹¹ *Deaths Confirmed at Fukushima Daiichi*, WORLD NUCLEAR NEWS (Apr. 3, 2011), http://www.world-nuclear-news.org/RS_Deaths_confirmed_at_Fukushima_Daiichi_0304111.html.

¹² The Library of Congress, *Bill Summary and Status Search Results*, THOMAS, <http://thomas.loc.gov/home/thomas.php> (advanced search “deepwater;” and “nuclear” after March 1, 2011).

¹³ The Library of Congress, *Bill Summary and Status Search Results*, THOMAS, <http://thomas.loc.gov/home/thomas.php> (search “deepwater”).

¹⁴ The Library of Congress, *Bill Summary and Status Search Results*, THOMAS, <http://thomas.loc.gov/home/thomas.php> (advanced search “nuclear” after date March 1, 2011).

focused on the clean-up of a disaster that had a large and lasting impact on the U.S.¹⁵ Hundreds of lawsuits seeking damages for impact on land and livelihoods have been filed.¹⁶ These lawsuits will test mettle of the Oil Pollution Act of 1990, which set up a framework for national emergency response based on past oil spills such as the Exxon Valdez spill of 1989.¹⁷ There were immediate concerns in the realm of energy and environmental law that the new framework established for nuclear energy following Fukushima will cripple clean energy development in the United States.¹⁸

Since 2005, the Energy Policy Act has governed nuclear policy in the U.S., emphasizing the importance of nuclear energy in future American energy dependence, thereby lowering energy costs and increasing domestic control of energy sources.¹⁹ The law granted the largest block of tax credits to nuclear energy and opened the pathway for nuclear investment.²⁰

III. New Legislation as a Response to Fukushima

An examination of the legislation introduced after the Fukushima disaster provides a sense of legislative priorities that correspond closely to the concerns arising from the Fukushima incident.²¹ Of the twenty-three bills introduced in Congress related to nuclear energy reform, eleven bills have to do with a reorganization of safety regulations, seven reorganize federal regulatory budgets and funding, and six large bills address nuclear disaster emergency

¹⁵ John Wyeth Griggs, *BP Gulf of Mexico Oil Spill*, 32 ENERGY L.J. 57, 59 (2011).

¹⁶ *Id.* at 59.

¹⁷ *Id.* at 59.

¹⁸ Taylor, *supra* note 5.

¹⁹ Benjamin K. Sovacool, *National energy governance in the United States*, 4 J. WORLD ENERGY L. & BUS. 97 (2011).

²⁰ SALVATORE LAZZARI, CRS REPORT: ENERGY TAX POLICY: HISTORY AND CURRENT ISSUES, (June 10, 2008), available at <http://www.fas.org/sgp/crs/misc/RL33578.pdf>.

²¹ The Library of Congress, *Bill Summary and Status Search Results*, THOMAS, <http://thomas.loc.gov/home/thomas.php> (advanced search “nuclear” after March 1, 2011).

response.²² The bills regarding safety and procedural regulations introduced immediately after the incident involved licensing of nuclear reactors.²³ Those introduced in the months following, as the details of the Fukushima incident became known, focused on the maintenance and storage of spent fuel cells, the sale of federal stores of enriched uranium, and promotions of smaller scale nuclear energy initiatives.²⁴ The storm of funding bills in July redirected federal money away from the Nuclear Energy Account, towards research and stable fuel storage facilities. Congress also prevented the federal government from reissuing licenses to the Diablo Nuclear Power Plant. Subsequent bills focus mainly on safety and research.²⁵

This distribution of priorities is closely related to the series of events leading up to the Fukushima incident.²⁶ The International Atomic Energy Agency reported that the primary issues identified from initial reports on the incident involved the importance of evacuation plans, the underestimation of seismic activity and tsunami risk, relaxation of system diversity and redundancy requirements with regards to extreme floods, the legal regulatory framework for handling extreme external events, planning for worst case scenarios, equipment and resources for ensuring essential safety functions, and hydrogen risk mitigation.²⁷ The Nuclear Power Plant Safety Act of 2011, the first bill introduced after the Fukushima incident, is a hazard assessment bill to ensure that “nuclear power plants can withstand and adequately respond to earthquakes, tsunamis, strong storms, or other events that threaten a major impact,” and also discusses loss of primary and backup electric power and focus on core cooling.²⁸ This was followed up by a bill

²² *Id.*

²³ *Id.*

²⁴ *Id.*

²⁵ *Id.*

²⁶ INTERNATIONAL ATOMIC ENERGY AGENCY, IAEA INTERNATIONAL FACT FINDING EXPERT MISSION TO THE NUCLEAR ACCIDENT FOLLOWING THE GREAT EAST JAPAN EARTHQUAKE AND TSUNAMI: PRELIMINARY SUMMARY, (June 1, 2011), *available at* <http://www.nisa.meti.go.jp/english/files/en20110601-1.pdf>.

²⁷ *Id.*

²⁸ H.R. 1242, 112nd Cong. § 2 (2011).

on reactor licensing, in which a host of assessments, plans, and other requirements must be rendered before receiving or renewing a license for commercial nuclear facility operation.²⁹ The Furthering International Nuclear Safety Act of 2011³⁰ and the Nuclear Disaster Preparedness Act³¹ complete the round of early legislation, issued before the Nuclear Regulatory Commission report on July 12.³² The first addresses the global concerns of nuclear incidents with regards to the spread of radiation, the contamination of commercial food products, and international interests of promoting safe civilian nuclear power programs.³³ The second requires the president and the executive branch to present to Congress a preliminary nuclear disaster plan, specifying which agencies and/or individuals will be responsible for managing response to a nuclear emergency with leaking radiation.³⁴

IV. The New Nuclear Policy

Economic and legal energy experts immediately predicted that any legislation arising as a result of Fukushima would make nuclear energy even more expensive and economically unsound.³⁵ Studies in the past have shown that construction costs following legislation in response to the Three Mile Island nuclear disaster were ninety-five percent higher than before, with electricity costs rising forty percent.³⁶ Some, such as Mark Cooper with the Vermont Law Energy Institute, have argued that increasing construction costs before Fukushima had already ensured that even a government subsidized nuclear program could not compete with lower-cost

²⁹ H.R. 1268, 112nd Cong., §2 (2011).

³⁰ S. 640, 112nd Cong. §1 (2011).

³¹ H.R. 1694, 112nd Cong. §1 (2011).

³² U.S. NUCLEAR REGULATORY COMMISSION, RECOMMENDATIONS FOR ENHANCING REACTOR SAFETY IN THE 21ST CENTURY (July 12, 2011), available at <http://www.psr.org/assets/pdfs/recommendations-for-enhancing-reactor-safety.pdf>.

³³ S. 640, 112nd Cong. §1 (2011).

³⁴ H.R. 1694, 112nd Cong. §1 (2011).

³⁵ John Cramer, *New Study Shows Nuclear Economics Worse After Fukushima*, VERMONT LAW SCHOOL, (Mar. 24, 2011), www.vermontlaw.edu/x12454.xml.

³⁶ *Id.*

alternatives.³⁷ The question remains, what is the new policy direction, how vastly different is this policy, and what is the cost to U.S. clean energy sector?

Three bills stand out as the spine of the new policy that will affect nuclear power in particular and energy in general. The Nuclear Power Plant Safety Act was introduced in the House eighteen days after the onset of the Fukushima incident.³⁸ It deals with nuclear power and focuses on the redundancy of safety and utility systems in the event of a major disaster, risk assessments for various hazards, and amendments regarding loan guarantees to the Energy Policy Act of 2005.³⁹ The Infrastructure Jobs and Energy Independence Act was introduced to the House in early May.⁴⁰ It focuses on how nuclear energy will be regarded in the larger context of U.S. energy reform, and even more largely infrastructural reform, post Fukushima.⁴¹ Whereas the Energy Policy Act of 2005 gave the greatest credit to nuclear energy, the Infrastructure and Energy Independence Bill regards nuclear as a brief line item and extends funds for “loan guarantees for commercial nuclear power plants, the disposition and recycling or reprocessing of spent fuel..., and the financing of long-term safe storage and spent fuel.”⁴² The bill focuses largely on increasing the efficiency of electric, petroleum, and natural gas resources.⁴³ Finally, the Nuclear Energy Research Initiative Improvement Act was recently introduced to the Senate in late May.⁴⁴ The act is intended to “amend the Energy Policy Act of 2005 to require the

³⁷ MARK COOPER, POLICY CHALLENGES OF NUCLEAR REACTOR CONSTRUCTION: COST ESCALATION AND CROWDING OUT ALTERNATIVES 5-17 (September 2010), *available at* http://www.vermontlaw.edu/Documents/IEE/20100909_cooperStudy.pdf.

³⁸ H.R. 1242, 112nd Cong. § 1 (2011).

³⁹ *Id.* at 1.

⁴⁰ H.R. 1861, 112nd Cong. § 107 (2011).

⁴¹ *Id.* at 1.

⁴² *Id.*

⁴³ H.R. 1861, 112nd Cong. § 1 (2011).

⁴⁴ S. 1067, 112nd Cong. §1 (2011).

Secretary of Energy to carry out a research and development, and a demonstration program to reduce manufacturing and construction costs relating to nuclear reactors.”⁴⁵

Taken as a whole, the intentions framed by these three high-impact bills signal an enduring, but qualified, commitment to the Energy Policy Act of 2005. The Nuclear Power Plant Safety Act, the earliest of the three, places the greatest economic demands on the industry but amends the 2005 Act to ensure that all potential risks in guaranteeing loans are based on the Fukushima incident.⁴⁶ The remaining two bills appear to raise safety standards while lowering cost, but still maintain nuclear energy as a viable source of clean energy.⁴⁷ These three bills suggest that the Fukushima incident, instead of destroying the old policy, may have served to unearth several unanswered questions of the old nuclear energy policy such as the safe storage of spent fuel cells, the cost-efficiency of mitigating risk, the burdens of construction, and the legal framework for disaster response.⁴⁸ The legislation may not so much kill the old policy as force the economy and the government to cooperate in correcting large gaps in the old policy in a cost-effective manner.

After the initial storm of legislation, the nuclear industry touted the continuing viability of nuclear energy as an environmentally sound energy source in the face of Fukushima reforms as research continues to develop safer and more cost-efficient technologies and polices.⁴⁹ The first large-scale report from the Nuclear Commission was issued on July 12, 2011, and subsequently opened for discussion before the full commission with stakeholder input.⁵⁰ The

⁴⁵ *Id.* at 1.

⁴⁶ H.R. 1242, 112nd Cong. § 3 (2011).

⁴⁷ See H.R. 1861, 112nd Cong. § 1 (2011); S. 1067, 112nd Cong. § 1 (2011).

⁴⁸ The Library of Congress, *Bill Summary and Status Search Results*, THOMAS, <http://thomas.loc.gov/home/thomas.php> (advanced search “nuclear” after March 1, 2011).

⁴⁹ News Release, Nuclear Energy Institute, Lessons Learned from Japan Will Guide Nuclear Energy Industry Safety Improvements (May 10, 2011), *available at* <http://www.nei.org/newsandevents/newsreleases/lessons-learned-from-japan-will-guide-nuclear-energy-industry-safety-improvements>.

⁵⁰ NUCLEAR REGULATORY COMMISSION, *supra* note 32.

NRC task force report, in general, advocated a revision of the “patchwork” nuclear regulations, including several specific recommendations pulled from the incident in Japan, and implemented with the practical support of industry initiatives.⁵¹ Industry stakeholders all appear to agree that Fukushima *should* affect policy to some degree with regard to power and spent fuel cells.⁵² Their principle concern is not with the federal legislative initiative to research and confront these problems but with the executive policy framework to be established in answer to that legislation.⁵³ In its initial response to the Task Force’s recommendations, the Commission did not seem overeager to adopt the changes and especially not without an in-depth assessment of risks, stakeholder claims, and technical input.⁵⁴ The most controversial segment of the NRC Task Force report recommends “establishing a logical, systematic, and coherent regulatory framework for adequate protection that appropriately balances defense-in-depth and risk considerations.”⁵⁵ This suggests that even a re-write of policy would take care to implement cost concerns and avoid unnecessary over-regulation.⁵⁶

V. Conclusion

Of the many questions now facing the nuclear industry after Fukushima, the most fundamental one is difficult to answer. Can the nuclear industry retain its status as an important cornerstone of the cleaner, cheaper domestic energy movement while addressing the great problems of high-risk-low-probability incidents and economic viability? Congress may have tacitly answered this question in the new legislative framework, which works hard to reconcile

⁵¹ *Id.* at xii-x.

⁵² *Id.* at xii-x.

⁵³ Michael Blake, *Insights from the Fukushima Daiichi Accident*, NUCLEAR NEWS, September 2011, at 30.

⁵⁴ *Id.* at 29-30.

⁵⁵ NUCLEAR REGULATORY COMMISSION, *supra* note 32, at 22.

⁵⁶ *Id.* at 22.

risk with cost and to save the hardest questions for extensive research and review.⁵⁷ Perhaps the most telling shift in policy is revealed in the Infrastructure Jobs and Energy Independence Act, which struggles to reconcile a huge number of the major political concerns of the day: economic growth, job creation, energy independence, environmental sustainability, and national security.⁵⁸ Nuclear energy still plays a part in this bill and, therefore, in all of these goals, though it remains to be seen how the closure of the waste disposal and safety gaps in the old policy will affect nuclear energy in the coming years.

⁵⁷ The Library of Congress, Bill Summary and Status Search Results, THOMAS, <http://thomas.loc.gov/home/thomas.php> (advanced search “nuclear” after March 1, 2011).

⁵⁸ H.R. 1861, 112nd Cong. § 1, 107 (2011).