

U.S Nuclear Policy and Clean Tech After Fukushima Daiichi: A Brief Overview

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Douglas A. Codiga, Esq.
Schlack Ito LLLC
Honolulu, Hawaii, USA

Nuclear Energy in the United States



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U.S. Nuclear Reactors – Current

- * Largest fleet of nuclear reactors
- * Largest consumer of nuclear power
- * 104 nuclear reactors in 31 states
 - * 4 different reactor vendors and 26 operating companies
 - * 80 different designs
 - * 65 sites
 - * 35 boiling water reactors and 69 pressurized water reactors
- * 19.6% of U.S. net electric generation or 807 billion kWh of electricity
- * 23 Mark 1 (first generation) boiling water reactors – same as Fukushima Daiichi

U.S. Nuclear Reactors – Proposed

- * U.S. Nuclear Regulatory Commission recently approved licenses for two new reactors in Georgia - first new licenses since 1978
- * NRC Chair Jaczko dissent: “I cannot support issuing this license as if Fukushima never happened”
- * 1,100 MW Westinghouse AP1000 pressurized water reactors
- * \$8.3 billion federal loan guarantee under Energy Policy Act of 2005
- * Federal tax credit up to \$250 million annually for first 8 years of operation
- * Ratepayer surcharge of \$44 per year increasing to \$120 by 2018



U.S. Nuclear Reactors – Proposed

- * In 2010, U.S. Dept. of Energy projected only six plants would come online by 2035 due to high costs and natural gas supplies
- * Cost as high as \$10 billion per plant with 50% risk of default
- * Standard and Poor's: nuclear rebirth unlikely at this time
- * World Nuclear Association predicts gradual decline in number of operating units over the next two decades

Obama Administration Response



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福島第一原発

BREAKING NEWS

NHK WORLD

WATER SPRAYING OPERATION

NEWSLINE

Public Support Declines

- * Public support for nuclear energy dropped after the Fukushima Daiichi incident
 - * Lowest support since the Three Mile Island incident in 1979
 - * Approval dropped to 45% from the 60% approval rating in 2008
- * Political leaders express concerns
 - * U.S. Senator Barbara Boxer: “Japan is a technologically capable country, and they anticipated earthquakes and tsunamis, but still they didn't have all the failsafes to stop this tragedy from occurring”

Obama Continues to Support Nuclear Energy

- * Congressional testimony by Energy Secretary Steven Chu
 - * U.S. position on nuclear energy “hasn’t changed”
 - * United States “must rely on a diverse sources including nuclear power”
- * In 2011, Obama proposed increasing nuclear federal loan guarantee to \$54.5 billion
- * Obama established “Blue Ribbon Commission on America’s Nuclear Future” under U.S. Dept. of Energy
- * Proposed FY 2013 budget requests \$27.5 billion for U.S. Dept. of Energy, including \$770 million for nuclear energy



"I'm determined to ensure that it's safe. So in light of what's happened in Japan, I've requested a comprehensive safety review by the Nuclear Regulatory Commission to make sure that all of our existing nuclear energy facilities are safe. And we're going to incorporate those conclusions and lessons from Japan in design and the building of the next generation of plants. But we can't simply take it off the table."

President Obama
Georgetown University
March 30, 2011

Response of Nuclear Regulatory Commission



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NRC Background

- * Established by Energy Reorganization Act of 1974
- * Regulations in Title 10 of Code of Federal Regulations
- * Independent regulatory agency created by U.S. Congress
- * Licenses design, construction, operation and decommissioning of commercial nuclear power plants
- * 5 Commissioners appointed by President with no more than 3 from each political party
- * NRC Office of Nuclear Reactor Regulation

Japan Task Force

- * NRC established the Japan Task Force in April 2011
- * Mission of the JTF is to examine NRC's "regulatory requirements, programs and processes" in light of Fukushima Daiichi
- * JTF to identify near-term and longer term actions
- * July 12, 2011 report concluded "a sequence of events like the Fukushima accident is unlikely to occur in the United States" and "continued operation and continued licensing activities do not pose an imminent risk to public health and safety"

JTF Recommendations

- * Replace NRC's "patchwork of regulatory requirements" developed piecemeal over decades with "logical, systematic and coherent regulatory framework"
- * Require nuclear plants to upgrade seismic and flooding protection
- * For Mark I reactors, strengthen station blackout mitigation capability, including reliable hardened vent designs

Impact on U.S. Clean Tech Policy



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- U.S. Energy Information Agency reports renewable energy provided 12% of U.S. energy as of Sept. 2011
- Nuclear provided 10.6% - less than renewables (including hydro)
- Obama FY 2013 budget proposes \$946 million for clean tech, including R&D, clean coal, battery storage
- March 2011 “Blueprint for a Secure Energy Future”

State Policies Promote Clean Tech

- * No major federal energy legislation presently anticipated from U.S. Congress
- * U.S. States promote aggressive clean tech policies
 - * California
 - * Renewable Portfolio Standard - 33% by 2020
 - * Global Warming Solutions Act (AB 32)
 - * New Jersey
 - * Property Assessed Clean Energy
 - * Hawaii
 - * Hawaii Clean Energy Initiative – 70% by 2030





Conclusions

- * No major changes to U.S. nuclear policy post-Fukushima Daiichi
- * Obama Administration continues to support nuclear energy, despite decreased public support
- * Regulatory response by NRC is major focus
- * Clean tech sector promoted by U.S. federal support and aggressive U.S. state policies

Thank You

Douglas A. Codiga, Esq.
Schlack Ito LLC
Honolulu, Hawaii, USA



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