More Power, Scotty: The Case for Nuclear Energy Investment

By “Coach Vance” Trefethen

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More Power, Scotty: The Case For Nuclear Energy Investment

The Center for Strategic & International Studies reported ominously in 2013 QUOTE:

According to the reference case forecast by the U.S. Energy Information Administration, the United States will have about 110 GWe [gigawatts] of nuclear generating capacity in 2030. By contrast, we project that nuclear capacity could drop to about 81 GWe [gigawatts] by that date and to near zero by 2050.[[1]](#footnote-1)

END QUOTE. The end of nuclear energy in the United States in our lifetimes would be a serious environmental and economic mistake. The solution will be to join us as we stand resolved that the United States Federal Government should substantially reform its policies toward the People’s Republic of China.

OBSERVATION 1. The DEFINITIONS.

**Policy**: “a high-level overall plan embracing the general goals and acceptable procedures especially of a governmental body” (*Merriam Webster Online Dictionary, copyright 2016* [*http://www.merriam-webster.com/dictionary/policy*](http://www.merriam-webster.com/dictionary/policy)

**Substantia**l:  “c :  [important](http://www.merriam-webster.com/dictionary/important), [essential](http://www.merriam-webster.com/dictionary/essential)” (*Merriam Webster Online Dictionary, copyright 2016*<http://www.merriam-webster.com/dictionary/substantial>*)*

OBSERVATION 2. INHERENCY, or the structure of the Status Quo. We offer 3 key facts

FACT 1. China wants to invest

China is investing in British nuclear energy and wants to invest in nuclear energy in the USA

Sachin Desai and Kathleen Schroeder 2016. (Desai - law clerk for the Atomic Safety & Licensing Board Panel at the U.S. Nuclear Regulatory Commission. Schroeder - attorney with the Department of Energy General Counsel’s Office for Civilian Nuclear Programs) ENERGY LAW JOURNAL, May 2016 <http://www.felj.org/sites/default/files/docs/elj371/21-85-134-Desai_FINAL.pdf> (brackets added)

UK Chancellor George Osborne has said that CNNC’s [China National Nuclear Corporation] participation could lead to China developing and owning a future nuclear plant in eastern England, possibly at Bradwell, a site earmarked for nuclear development. As part of this deal, Chinese companies are close to submitting for design assessment in the UK its indigenously-designed “Hualong One” reactor for eventual development in Essex. Given China’s activity in the UK, it is not incredible to imagine that China would make its next investment in the United States. Although past efforts by EDF [Electricite de France] to enter the U.S. nuclear market have been unsuccessful, in part due to America’s foreign ownership restrictions that are the focus of this article, China’s recent tactics indicate that they are likely to attempt to enter the U.S. nuclear market soon.

FACT 2. Foreign investment blocked

The Atomic Energy Act blocks foreign ownership of nuclear power plants in the US

James Glasgow and Stephen Markus 2013 (attorneys with Pillsbury Winthrop Shaw Pittman LLP law firm) 25 July 2013 The NRC’s Foreign Ownership Policy: Charting a New Course for the 21st Century <https://www.pillsburylaw.com/siteFiles/Publications/AlertJuly2013EnergyTheNuclearRegulatoryCommissionsForeignOwnershipPolicy71213.pdf> (first brackets added, second brackets in original)

The prohibition on foreign ownership, control or domination of U.S. nuclear power plants is embodied in the Atomic Energy Act of 1954, as amended (AEA), and NRC [Nuclear Regulatory Commission] implementing regulations. Section 103d of the AEA prohibits the NRC’s issuance of a license to own or operate a power reactor to “any corporation or other entity if the Commission knows or has reason to believe it is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government.” The NRC’s regulations implement this requirement by providing that “[a]ny person who is a citizen, national, or agent of a foreign country, or any corporation, or other entity which the Commission knows or has reason to believe is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government, shall be ineligible to apply for and obtain a license.”

FACT 3. Nuclear energy future blocked

We can’t grow, modernize, or even just continue nuclear power in the US without foreign investment

Sachin Desai and Kathleen Schroeder 2016. (Desai - law clerk for the Atomic Safety & Licensing Board Panel at the U.S. Nuclear Regulatory Commission. Schroeder - attorney with the Department of Energy General Counsel’s Office for Civilian Nuclear Programs) ENERGY LAW JOURNAL, May 2016 <http://www.felj.org/sites/default/files/docs/elj371/21-85-134-Desai_FINAL.pdf>

The average age of a nuclear reactor in the U.S. is 30 years old. Given the carbon-cutting requirements of the Clean Power Plan and the needs for addressing climate change generally, even if U.S. nuclear reactors do not grow as a share of the energy mix they will need to be replaced in the future. However, if current trends continue, U.S. utilities will need to work with foreign vendors and accept foreign capital to construct new plants. In addition, intangible assets such as expertise and experience with new reactor designs will increasingly have to be imported. This means that foreign ownership and control of the U.S. nuclear fleet will increase by necessity. This may not be something to fear, however. As discussed above, the foreign companies investing the U.S. nuclear industry will not be gaining, but instead providing the know-how and technology; indeed, based on current trends, foreign involvement may become more of a necessity than a preference if we are to maintain the modernity of the U.S. nuclear industry.

OBSERVATION 3. The PLAN, implemented by Congress, the President and the Nuclear Regulatory Commission

1. Congress amends the Atomic Energy Act to allow Chinese corporations to own and invest in nuclear power facilities in the United States. All existing rules on inspection, safety standards, and employee vetting apply, the same as with all other nuclear facilities. Handling of nuclear materials subject to proliferation risk must be controlled by US citizens.
2. Timeline is the day after an Affirmative Ballot
3. Funding from existing budgets of existing agencies
4. All Affirmative speeches may clarify the plan.

OBSERVATION 4. The ADVANTAGES

ADVANTAGE 1. Reduced carbon emissions

A. The Link: Carbon emissions will soar without adequate nuclear capacity

Jesse Jenkins 2015 (researcher, consultant, and writer with ten years of experience in the energy sector and expertise in electric power systems, electricity regulation, energy and climate change policy, and innovation policy) 2 Sept 2015 “Nuclear Retirements Would Sabotage Clean Power Plan Carbon Reductions” <http://www.theenergycollective.com/jessejenkins/2266234/nuclear-retirements-would-sabotage-clean-power-plan-carbon-goal>

In essence, carbon-free electricity from existing nuclear power plants forms the critical foundation upon which further progress towards a lower-carbon power system is supposed to build. Take away that foundation, and the whole project could crumble. Instead of cutting carbon 32 percent below 2005 levels, [emissions could soar due to nuclear retirements](http://thirdway.org/report/when-nuclear-ends-how-nuclear-retirements-might-undermine-clean-power-plan-progress), [undermining the progress](http://www.theenergycollective.com/alextrembath/2257778/clearing-air) achieved by the Clean Power Plan’s regulations on fossil fueled power plants.

B. The Impact: Public health. Human sickness, death and medical costs result from using fossil fuels

Union of Concerned Scientists 2013. (organization of scientists advocating research to solve environmental and social problems; ethical note about the date: the article is undated, but contains internal references to material published in 2013 and none later) “Benefits of Renewable Energy Use” <http://www.ucsusa.org/clean_energy/our-energy-choices/renewable-energy/public-benefits-of-renewable.html>

Generating electricity from renewable energy rather than fossil fuels offers significant public health benefits. The air and water pollution emitted by coal and natural gas plants is linked to breathing problems, neurological damage, heart attacks, and cancer. Replacing fossil fuels with renewable energy has been found to reduce premature mortality and lost workdays, and it reduces overall healthcare costs. The aggregate national economic impact associated with these health impacts of fossil fuels is between $361.7 and $886.5 billion, or between 2.5 percent and 6 percent of gross domestic product (GDP).

ADVANTAGE 2. Improved Safety

A. Link: China is key to the next generation of safer nuclear reactors

NATURE 2016 (international weekly journal of science) 4 May 2016 “The nuclear option” <http://www.nature.com/news/the-nuclear-option-1.19844> (in this context, a “paper” reactor is one that looks good on paper but never gets built)

But so far, only China has shown the kind of long-term, strategic thinking that would be required to launch a real nuclear revival. Nuclear engineers from elsewhere know this, and are racking up frequent-flier points on trips to Beijing and Shanghai to support partnerships that may put paper reactors to the test. Already, China is building a 210-megawatt demonstration of a pebble-bed reactor, led by researchers at Tsinghua University in Beijing. It could come online by next year, marking a first for safer ‘generation IV’ reactor designs.

B. Impact: Disasters avoided. New reactors avoid disasters like Fukushima

James M. Acton 2011 (co-director of  the Nuclear Policy Program and senior associate at the Carnegie Endowment for International Peace; physicist by training; member of the [Nuclear Security Working Group](http://nuclearsecurityworkinggroup.org/); a former member of the International Panel on Fissile Materials) 14 Mar 2011 “Reduce Risk of Nuclear Energy” <http://carnegieendowment.org/2011/03/14/reduce-risk-of-nuclear-energy-pub-43052>

For nuclear energy to expand, the public must trust the nuclear industry. It must trust reactor operators to run their reactors safely. It must trust regulators to ensure there is adequate oversight. And, most importantly perhaps, it must trust reactor designers to create new reactors that do not share the vulnerabilities of older ones. This last point is crucial. New reactors, with enhanced safety features, would almost certainly not have befallen the same fate as those at Fukushima Daiichi, which is four decades old.

ADVANTAGE 3. Economic benefits

A Michigan study finds big gains in jobs and revenues even from only 3 nuclear plants in that state

Dr. Mark Berkman and Dr Dean Murphy 2015 (Berkman – PhD in public policy analysis. Murphy - Ph.D. in Industrial Engineering and Engineering Management) Sept 2015 Michigan Nuclear Power Plants' Contribution to the State Economy” Sept 2015 <http://www.nuclearmatters.com/resources/reports-studies/value-of-nuclear-michigan>

Three nuclear plants, comprising four nuclear reactors, operate in Michigan, representing about 4,000 megawatts (MW) of capacity and nearly 32 million megawatt hours (MWh) of annual electricity generation, as shown in Table 1 and illustrated in Figure 1.1 Michigan is served by two independent system operators, PJM and MISO.

**END QUOTE. Berkman and Murphy go on to say elsewhere in the same article QUOTE:**

Our analysis has determined that nuclear plants operating in Michigan:   
contribute approximately $596 million to state gross domestic product (GDP) ($842 million in gross output). account for 3,200 in-state full time jobs (direct and secondary).   
help keep electricity prices low. Michigan consumers would pay $37 million more annually (2015$) and over $300 million more over the next ten years (on a present value basis) without these plants   
are responsible for $23 million in net state tax revenues annually.

2A EVIDENCE: Nuclear Energy Investment

OPENING QUOTES / AFFIRMATIVE PHILOSOPHY

Now is the critical time to rejuvenate the US nuclear industry

Nuclear Energy Institute 2014 (nuclear energy industry trade association) “Nuclear Energy’s Economic Benefits — Current and Future” Apr 2014 <http://www.nei.org/CorporateSite/media/filefolder/Policy/Papers/jobs.pdf?ext=.pdf>

Since 1980, the U.S. nuclear supply chain has contracted because of the lack of new nuclear plant construction in the U.S. and abroad. Thanks to nuclear energy expansion in the U.S. and around the world, the U.S. has a unique opportunity to rejuvenate its nuclear manufacturing sector through investment in state-of-the-art factories and processes to supply the high-precision, high-quality components necessary for nuclear technologies.

INHERENCY

The Atomic Energy Act prohibits foreign companies from owning nuclear power plants in this country

Sachin Desai and Kathleen Schroeder 2016. ( Desai - law clerk for the Atomic Safety & Licensing Board Panel at the U.S. Nuclear Regulatory Commission. Schroeder - attorney with the Department of Energy General Counsel’s Office for Civilian Nuclear Programs ) ENERGY LAW JOURNAL, May 2016 <http://www.felj.org/sites/default/files/docs/elj371/21-85-134-Desai_FINAL.pdf>

The primary legal barrier to foreign investment in U.S. nuclear reactor industry is found in the Atomic Energy Act’s (AEA) prohibition on foreign ownership, control, or domination of U.S. nuclear reactor licensees, herein called the “FOCD provision.” As we will discuss further, the AEA prohibits granting a nuclear reactor construction or operating license to a “*corporation or other entity* if the Commission knows or has reason to believe *it is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government*.”

A/T “NRC is relaxing the ownership rules” – They tried but got conflicting opinions and the issue is far from settled

Sachin Desai and Kathleen Schroeder 2016. ( Desai - law clerk for the Atomic Safety & Licensing Board Panel at the U.S. Nuclear Regulatory Commission. Schroeder - attorney with the Department of Energy General Counsel’s Office for Civilian Nuclear Programs ) ENERGY LAW JOURNAL, May 2016 <http://www.felj.org/sites/default/files/docs/elj371/21-85-134-Desai_FINAL.pdf>

The Staff Requirements Memorandum endorsed the Staff’s middle ground approach, and unanimously approved going forward with Option 3. Specifically, the Commission instructed the Staff to both revise its SRP and create a regulatory guide to “mitigate the potential for *control* or *domination*” of a utilization facility by a foreign entity. The Commission reemphasized the need for the Staff to pursue a site-specific, case-by-case approach that relies on the totality of the facts. However, the Staff Requirements Memorandum lacked any instruction as to how to treat foreign *ownership* of nuclear facilities. While the lack of any directive in the Staff Requirements Memorandum left the status quo in place as to ownership (as advocated by the Staff), the absence of substantial discussion of foreign ownership in the memorandum was not an oversight. Instead, it belies that the Commission had multiple, conflicting opinions on this topic, and that this issue is far from settled.

A/T “NRC is relaxing the rules” – Status Quo has no clear guidance. It’s a confusing mess that will end up in Federal court someday, and even if they did relax the rules, the court could reverse it

Sachin Desai and Kathleen Schroeder 2016. (Desai - law clerk for the Atomic Safety & Licensing Board Panel at the U.S. Nuclear Regulatory Commission. Schroeder - attorney with the Department of Energy General Counsel’s Office for Civilian Nuclear Programs) ENERGY LAW JOURNAL, May 2016 <http://www.felj.org/sites/default/files/docs/elj371/21-85-134-Desai_FINAL.pdf>

Unfortunately, this Fresh Assessment has not provided the industry and the public clear guidance as to the permissibility of majority foreign indirect ownership of our nation’s nuclear plants. This is despite the Commissioners’ efforts to come to an agreement—Commissioner Svinicki stated, as to the issue of foreign ownership, no position garnered “majority support.” The Commission’s split decision nearly guarantees that this question will again come before them, and from there review may be sought in a Federal appellate court. The NRC’s approach to the FOCD provision leaves open the possibility that an appellate court will overturn the entire scheme on judicial review, in part due to the two concerns raised in sections A and B below. The Commission should act again before this happens.

A/T “SQ allows 99% foreign ownership” – There is no official rule allowing 99%, and contradicts other rules

Sachin Desai and Kathleen Schroeder 2016. ( Desai - law clerk for the Atomic Safety & Licensing Board Panel at the U.S. Nuclear Regulatory Commission. Schroeder - attorney with the Department of Energy General Counsel’s Office for Civilian Nuclear Programs ) ENERGY LAW JOURNAL, May 2016 <http://www.felj.org/sites/default/files/docs/elj371/21-85-134-Desai_FINAL.pdf>

Once the layers are peeled away, the result is that there is nothing currently in the official agency record that independently defends a percentage-based line-in-the-sand interpretation of the AEA’s FOCD provision other than the SRP. But the SRP itself is non-binding guidance, created by the Commission, and it appears more shaped by past circumstances than an independent statutory analysis of the AEA. Also, even if the SRP is an explicit Commission statement in favor of allowing 99% foreign indirect ownership, it is partly contradicted by Commissioner Baran’s opposing position, and past agency practice traditionally limiting ownership for foreign entities below 50%.

NRC status quo cannot move forward on a clear solution regarding foreign ownership

Sachin Desai and Kathleen Schroeder 2016. ( Desai - law clerk for the Atomic Safety & Licensing Board Panel at the U.S. Nuclear Regulatory Commission. Schroeder - attorney with the Department of Energy General Counsel’s Office for Civilian Nuclear Programs ) ENERGY LAW JOURNAL, May 2016 <http://www.felj.org/sites/default/files/docs/elj371/21-85-134-Desai_FINAL.pdf> (brackets added)

The Commission’s lack of ability to move forward on a solution regarding foreign ownership leaves the NRC Staff in a position to set the threshold for how much foreign ownership is permissible. Although the Staff has historically been very willing to work with the public and industry to come to a consensus conclusion, this appears be an area where intractable differences with industry will only grow. In Calvert Cliffs, we saw EDF willing to challenge the Staff’s position in front of a Licensing Board. Although the applicant lost in that case, applicants could be emboldened by their recent victory in South Texas. It is clear from South Texas that there is a different interpretation of the FOCD [foreign ownership, control, or domination] provision between the NRC Staff and the Commission and ASLBP [Atomic Safety & Licensing Board Panel]. Applicants may eventually move as far as to challenge the SRP itself when it is revised. Apart from industry, intervenor groups may be also eager after reading Commissioner Baran’s CVR statement to intervene in the other direction and argue that the AEA permits no more than 50%, or no more than 0%, foreign ownership of any type.

NRC’s Foreign Ownership Control or Domination (FOCD) policy is blocking investment in US nuclear energy

James Glasgow and Stephen Markus 2013 (attorneys with Pillsbury Winthrop Shaw Pittman LLP law firm) 25 July 2013 The NRC’s Foreign Ownership Policy: Charting a New Course for the 21st Century <https://www.pillsburylaw.com/siteFiles/Publications/AlertJuly2013EnergyTheNuclearRegulatoryCommissionsForeignOwnershipPolicy71213.pdf>

The NRC’s FOCD policy, though tied to a statutory mandate, has lost its moorings amid the 21st Century’s global nuclear landscape. Recent NRC decisions illustrate that the FOCD policy clashes with economic reality and has ultimately unhinged certain well-developed plans of foreign entities to acquire or construct nuclear power plants in the United States.

Anti-nuclear activists used the “foreign ownership” rule to block construction of a reactor in Maryland by EDF (the French national electric company)

Greenworld 2014 (anti-nuclear, anti-carbon environmental activist group) Will NRC allow more foreign ownership of U.S. reactors? Oct 2014 <https://safeenergy.org/2014/10/13/will-nrc-allow-more-foreign-ownership/>

This isn’t the place for the full story of what happened with that issue over the next several years, but in the end, Constellation Energy had jumped ship and EDF was left owning 100% of Calvert Cliffs-3. The NRC staff finally agreed with us intervenors that the project violated the Atomic Energy Act, and the Atomic Safety and Licensing Board ruled that the project could not proceed. EDF appealed to the NRC Commissioners who, in March 2013, upheld the ruling. It was the first time intervenors of any kind, much less pro se intervenors, had successfully used the NRC’s legal intervention process to block construction of a nuclear reactor.

A/T “The *South Texas* case allowed foreign ownership” – It was only 10% foreign-owned

Sachin Desai and Kathleen Schroeder 2016. ( Desai - law clerk for the Atomic Safety & Licensing Board Panel at the U.S. Nuclear Regulatory Commission. Schroeder - attorney with the Department of Energy General Counsel’s Office for Civilian Nuclear Programs ) ENERGY LAW JOURNAL, May 2016 <http://www.felj.org/sites/default/files/docs/elj371/21-85-134-Desai_FINAL.pdf>

The 2014 and 2015 *South Texas* decisions concerned the application by Nuclear Innovation North America (NINA) to build two new reactors near Bay City, Texas. Although NINA, a U.S. company, was the primary applicant and 90% holder of the project, at the time of the dispute the funding for the application going forward was being provided by Toshiba, which indirectly held the remaining 10% ownership interest.

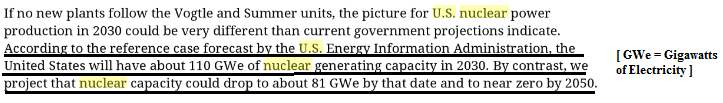
China is surging with nuclear power, while the US is backing away

Sachin Desai and Kathleen Schroeder 2016. ( Desai - law clerk for the Atomic Safety & Licensing Board Panel at the U.S. Nuclear Regulatory Commission. Schroeder - attorney with the Department of Energy General Counsel’s Office for Civilian Nuclear Programs ) ENERGY LAW JOURNAL, May 2016 <http://www.felj.org/sites/default/files/docs/elj371/21-85-134-Desai_FINAL.pdf>

While Western and Japanese companies are showing reluctance to invest in nuclear power, new players such as Russia and China are eager to pour their money into nuclear projects. This is in part because the U.S., European, and Japanese nuclear energy economies are stepping away from nuclear power while the developing world is surging ahead. Since 2010 the United States has retired or planned to retire at least six nuclear plants, with more to follow, and is building only a few new reactors to offset the losses.

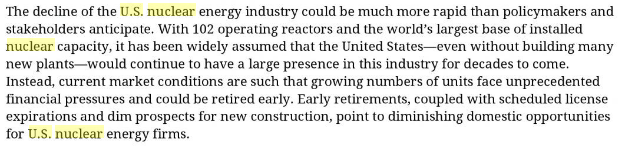
US Nuclear energy is declining in Status Quo: Could reach ZERO by 2050

Center for Strategic & International Studies Commission on Nuclear Energy Policy in the United States 2013. (committee of experts from business, industry and political roles; committee co-chaired by retired US Army General Brent Scowcroft, Mayo Shattuck (Chairman of the Board, Exelon) and Michael Wallace (Senior Adviser, Center for Strategic and International Studies) )“Restoring U.S. Leadership in Nuclear Energy: A National Security Imperative” June 2013 <https://books.google.com/books?id=dbwVAAAAQBAJ&pg=PA59&lpg=PA59&dq=allow+nuclear+investment+U.S.+%22atomic+energy+act%22&source=bl&ots=UgVvmTHfiF&sig=fkbXyhJQMRDFRJK3zt_a3cnEqHU&hl=en&sa=X&ved=0ahUKEwih48uZpN3NAhVB12MKHcfLCWg4ChDoAQgfMAI#v=onepage&q=allow%20nuclear%20investment%20U.S.%20%22atomic%20energy%20act%22&f=false>



US nuclear energy industry is in rapid decline. Plants are being retired faster than new ones being built

Center for Strategic & International Studies Commission on Nuclear Energy Policy in the United States 2013. (committee of experts from business, industry and political roles; committee co-chaired by retired US Army General Brent Scowcroft, Mayo Shattuck (Chairman of the Board, Exelon) and Michael Wallace (Senior Adviser, Center for Strategic and International Studies) )“Restoring U.S. Leadership in Nuclear Energy: A National Security Imperative” June 2013 <https://books.google.com/books?id=dbwVAAAAQBAJ&pg=PA59&lpg=PA59&dq=allow+nuclear+investment+U.S.+%22atomic+energy+act%22&source=bl&ots=UgVvmTHfiF&sig=fkbXyhJQMRDFRJK3zt_a3cnEqHU&hl=en&sa=X&ved=0ahUKEwih48uZpN3NAhVB12MKHcfLCWg4ChDoAQgfMAI#v=onepage&q=allow%20nuclear%20investment%20U.S.%20%22atomic%20energy%20act%22&f=false>



A/T “Renewable energy helps environment better than nuclear” – Not a viable large-scale substitute for nuclear

Dr. Mark Berkman and Dr Dean Murphy 2015 (Berkman – PhD in public policy analysis. Murphy - Ph.D. in Industrial Engineering and Engineering Management) Sept 2015 Michigan Nuclear Power Plants' Contribution to the State Economy” Sept 2015 <http://www.nuclearmatters.com/resources/reports-studies/value-of-nuclear-michigan>

The absence of Michigan’s nuclear plants would also result in much higher carbon dioxide (CO2) emissions and greater emissions of criteria pollutants, such as nitrogen oxides (NOX) and sulfur dioxide (SO2). These impacts are not limited to Michigan, first because much of the alternative fossil-fired generation would occur outside Michigan, and second because air pollution impacts can cross state borders – they are often regional in the case of criteria pollutants, and global in the case of carbon. Large-scale renewable energy probably would not substitute significantly for nuclear; intermittent renewable generation is not a direct substitute for the baseload profile of nuclear.

SOLVENCY / ADVOCACY

Solvency: China is the only country that can actually launch a real nuclear revival   
Inherency: US can’t do it

NATURE 2016 (international weekly journal of science) 4 May 2016 “The nuclear option” <http://www.nature.com/news/the-nuclear-option-1.19844>

If there’s one country that could disprove the old joke among engineers about nuclear power — that nothing can compete with a paper reactor — it may be China. Nuclear power is enjoying a theoretical renaissance in the United States, with researchers advancing a new generation of inherently safe designs and with start-up companies attracting venture capital. But so far, only China has shown the kind of long-term, strategic thinking that would be required to launch a real nuclear revival.

Britain advocates the plan: They’ve invited China to invest in nuclear energy in the UK

Sachin Desai and Kathleen Schroeder 2016. ( Desai - law clerk for the Atomic Safety & Licensing Board Panel at the U.S. Nuclear Regulatory Commission. Schroeder - attorney with the Department of Energy General Counsel’s Office for Civilian Nuclear Programs ) ENERGY LAW JOURNAL, May 2016 <http://www.felj.org/sites/default/files/docs/elj371/21-85-134-Desai_FINAL.pdf>

The potential scale of foreign ownership in the construction and operation of new reactors, which has generally been the domain of domestic companies and investors, could grow exponentially. The United Kingdom (UK) serves as an example. In a speech by Amber Rudd in November of 2015, the UK Secretary of State for Energy and Climate Change explained that the current UK government will heavily focus on nuclear power along with natural gas development in the future. To accomplish this, in September Secretary Rudd urged China to help be an on-the-ground-floor investor in this new initiative.

Worked in Britain: When they opened up foreign investment, China became the primary investor in new nuclear plants

Sachin Desai and Kathleen Schroeder 2016. ( Desai - law clerk for the Atomic Safety & Licensing Board Panel at the U.S. Nuclear Regulatory Commission. Schroeder - attorney with the Department of Energy General Counsel’s Office for Civilian Nuclear Programs ) ENERGY LAW JOURNAL, May 2016 <http://www.felj.org/sites/default/files/docs/elj371/21-85-134-Desai_FINAL.pdf>

However, probably the most notable and radical foreign ownership policy is that of the UK, which in October 2013 expanded its policy to allow 100% foreign ownership of nuclear projects by foreign-owned companies. Since this time, China has emerged as the primary investor in new nuclear projects in Britain. Despite concerns as to whether China’s nuclear plants adhere to the highest safety standards, trade unions have generally been supportive of the development. Given continued international growth in this sector, however, and the fact that the United States has more nuclear plants than any other country, the international community may look at what the United States is doing when determining if and how to liberalize their investment regimes in nuclear power.

Nuclear investment rule change in the UK provides success model for working in the US

James Glasgow and Stephen Markus 2013 (attorneys with Pillsbury Winthrop Shaw Pittman LLP law firm) 25 July 2013 The NRC’s Foreign Ownership Policy: Charting a New Course for the 21st Century <https://www.pillsburylaw.com/siteFiles/Publications/AlertJuly2013EnergyTheNuclearRegulatoryCommissionsForeignOwnershipPolicy71213.pdf> (brackets in original)

In 2000 and 2001, several U.S. Senators proposed bills to amend the AEA to eliminate the FOCD restriction. In introducing S. 2016, Senator Pete Domenici described the FOCD restriction as “a significant obstacle to foreign investment or participation in the U.S. nuclear power industry and its restructuring” and asserted that “[n]o valid reasons exist to prohibit investors from countries such as the United Kingdom from participating in the ownership of nuclear plants in this country.” Despite garnering some support in Congress, these bills never progressed beyond committee consideration.

China has a growing and competitive nuclear energy export industry. Already installing in several countries

Jost Wubbeke and Guan Ting 2016 (*Wübbeke is head of the economy and technology program at the Mercator Institute for China Studies (MERICS) in Berlin. Ting is a visiting academic fellow at MERICS*) THE DIPLOMAT 11 Feb 2016 “China's Nuclear Industry Goes Global” <http://thediplomat.com/2016/02/chinas-nuclear-industry-goes-global/> (brackets added)

China’s third largest nuclear enterprise, the State Power Investment Cooperation (SPIC), is in negotiations with the Turkish government about the construction of two CAP1400 reactors. CNNC’s [China National Nuclear Corporation] most advanced projects are in Pakistan, with two Chinese small-sized reactors already in operation and two more under construction. In August 2015, the first Chinese overseas construction project for Hualong-1 started in Karachi. How can China enter a market dominated by others for decades? Chinese firms offer a complete package including state of the art technology, financing, and construction services. With 30 nuclear plants in operation and 21 under construction at home, China has gathered plenty of knowledge about how to build and run a plant. In addition, the government supports the oversea projects with generous concessional loans (see table).

Chinese reactors are at the forefront of nuclear power technology and have the fastest in the world build time

Ian Armstrong 2016 (Supervisor and Researcher at Wikistrat, the world’s first crowdsourced geopolitical consultancy. He previously assisted in research at Temple University, the University of Pennsylvania, Scottish Parliament, and Hudson Institute's Center for Political-Military Analysis, where he has focused on non-proliferation and international energy ) “Forecasting China’s nuclear industry growth in 2016” 15 Feb 2016 <http://globalriskinsights.com/2016/02/forecasting-chinas-nuclear-industry-growth-in-2016/>

While investors can expect the Chinese nuclear industry to oversee impressive growth domestically, Beijing’s emerging strategy for exporting its nuclear technologies presents an equally powerful driver of development. Now equipped with two reactor designs at the forefront of nuclear power technology, and being widely recognized as the fastest constructor of reactors in the world, China’s major nuclear power companies can also be expected to benefit from the securement of bilateral contracts.

A/T “Nuc. is too expensive / not competitive” – China solves: Mass production / economies of scale

Keith Johnson 2015 (journalist) FOREIGN POLICY 23 Mar 2015 “[Nuclear Renaissance, Redux](https://foreignpolicy.com/2015/03/23/nuclear-renaissance-redux-china-japan-reactors-fukushima/)” <https://foreignpolicy.com/2015/03/23/nuclear-renaissance-redux-china-japan-reactors-fukushima/> (brackets added)

At the same time, many power markets fail to reward nuclear energy for the two big contributions it does make: a steady source of baseload generation and a lack of carbon emissions. That’s why nuclear proponents itch for a price tag on carbon emissions, so that nuclear-generated electricity will be better able to compete with dirtier sources of power, such as coal and gas. China may be able to show one way out of that dilemma. Many power plants built in the past, such as those in the United States, were essentially one-of-a-kind designs. But China is building scores of identical power plants, meaning it could finally capture the kind of cost efficiencies that come with mass production. “If you have some kind of unified command and control of the nuclear sector, you can make one type of power plant over and over again and get these economies of scale,” [OECD Nuclear Energy Agency economist Geoffrey] Rothwell said.

A/T “Natural gas replaces nuclear” – Economic & environmental problems with becoming too reliant on natural gas

Union of Concerned Scientists 2015. “The Natural Gas Gamble: A Risky Bet on America's Clean Energy Future” March 2015 <http://www.ucsusa.org/clean-energy/coal-and-other-fossil-fuels/natural-gas-gamble-risky-bet-on-clean-energy-future>

The U.S. electricity sector is in the midst of a major change. As power producers retire aging coal plants, they are turning to natural gas to generate electricity at an unprecedented rate. While this rapid shift is providing important near-term environmental and economic benefits, strong evidence suggests that becoming too reliant on natural gas poses numerous and complex risks, including persistent price volatility and rising global warming emissions.

A/T “Nuclear is too expensive, companies won’t invest” – New reactor designs are cheaper, companies will invest

Umar Irfan 2015 (journalist) “Can the next generation of reactors spur a nuclear renaissance?” 1 July 2015 <http://www.eenews.net/stories/1060021132>

Small modular reactors (SMRs) are yet another third-generation approach to nuclear power. The idea is to refine existing reactor designs and build them on smaller scales, thereby reducing the upfront costs of building a nuclear power plant and shrinking the time needed to build it. "Instead of a huge 1,200-megawatt reactor, they are providing a smaller 300-MW reactor," explained Samuel Brinton, a clean energy fellow at Third Way, a think tank. The smaller size also makes it easier to match new construction to demand projections, allaying concerns for investors. Third Way recently issued a report that found that the private sector is showing interest in nuclear power, with $1.3 billion in investments. Much of this is focused on approaches even further down the road, toward fourth-generation reactors.

AP1000 reactors are new Generation III+ design, approved by the NRC, made in China, and cost-competitive

World Nuclear Association 2016 (trade association for the nuclear energy industry) “Advanced Nuclear Power Reactors” <http://www.world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-power-reactors/advanced-nuclear-power-reactors.aspx>

The 1100 MWe-class Westinghouse [AP1000](http://www.ap1000.westinghousenuclear.com/), scaled-up from the AP600, received final design certification from the NRC in December 2005 – the first Generation III+ type to do so. It represented the culmination of a 1300 man-year and $440 million design and testing program. In May 2007 Westinghouse applied for UK generic design assessment (pre-licensing approval) based on the NRC design certification, and expressing its policy of global standardisation. The application was supported by European utilities. Overnight capital costs were projected to be very competitive with older designs, and modular design is expected to reduce construction time eventually to 36 months. The AP1000 generating costs are also expected to be very competitive and it has a 60-year operating life. It is being built in China (four units under construction, with many more to follow) and in the USA (four units at two sites).

China wants to export

World Nuclear Association 2016 (trade association for the nuclear energy industry) updated June 2016 “Nuclear Power in China” <http://www.world-nuclear.org/information-library/country-profiles/countries-a-f/china-nuclear-power.aspx>

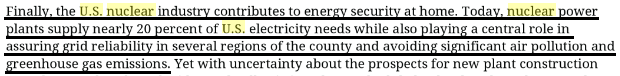
The State Nuclear Power Technology Corporation (SNPTC) has made the Westinghouse AP1000 the main basis of technology development in the immediate future, particularly evident in the local development of CAP1400 based on it. This has led to a determined policy of exporting nuclear technology, based on China’s development of the CAP1400 reactor with Chinese intellectual property rights and backed by full fuel cycle capability. In 2015 the Hualong One reactor became the main export product. The policy is being pursued at a high level politically, as one of 16 key national science & technology projects, utilising China's economic and diplomatic influence, and led by the initiative of CGN commercially, with SNPTC and more recently CNNC in support.

ADVANTAGES

Carbon Emissions

Nuclear energy is key to US energy security and avoids significant air pollution

Center for Strategic & International Studies Commission on Nuclear Energy Policy in the United States 2013. (committee of experts from business, industry and political roles; committee co-chaired by retired US Army General Brent Scowcroft, Mayo Shattuck (Chairman of the Board, Exelon) and Michael Wallace (Senior Adviser, Center for Strategic and International Studies) )“Restoring U.S. Leadership in Nuclear Energy: A National Security Imperative” June 2013 <https://books.google.com/books?id=dbwVAAAAQBAJ&pg=PA59&lpg=PA59&dq=allow+nuclear+investment+U.S.+%22atomic+energy+act%22&source=bl&ots=UgVvmTHfiF&sig=fkbXyhJQMRDFRJK3zt_a3cnEqHU&hl=en&sa=X&ved=0ahUKEwih48uZpN3NAhVB12MKHcfLCWg4ChDoAQgfMAI#v=onepage&q=allow%20nuclear%20investment%20U.S.%20%22atomic%20energy%20act%22&f=false>



Unless we enact a carbon tax, the best hope for reducing emissions is Chinese nuclear

NATURE 2016 (international weekly journal of science) 4 May 2016 “The nuclear option” <http://www.nature.com/news/the-nuclear-option-1.19844>

The US Department of Energy is funding nuclear-energy research, with the support of lawmakers on both sides of the aisle in Congress. But what nuclear power really needs is a comprehensive climate policy that puts a price on carbon emissions and rewards all low-carbon energies. Short of that, the nuclear industry’s best hope may be China.

Renewable energy will not replace nuclear: Natural gas and coal would

Dr. Mark Berkman and Dr Dean Murphy 2015 (Berkman – PhD in public policy analysis. Murphy - Ph.D. in Industrial Engineering and Engineering Management) Sept 2015 Michigan Nuclear Power Plants' Contribution to the State Economy” Sept 2015 <http://www.nuclearmatters.com/resources/reports-studies/value-of-nuclear-michigan>

As shown in Figure 3, without Michigan’s nuclear power plants, electricity demand would be met mostly by increased reliance on existing natural gas and coal-fired generation. The share of Michigan generation from natural gas-fired plants would increase from 22% to 32%, and the share from coal-fired plants would increase from 37% to 56%. Large-scale renewable energy probably would not be significantly different; intermittent renewable generation alone is not a direct substitute for the baseload profile of nuclear, and at current capital and fuel prices (absent other policy changes), natural gas generation is generally more cost-effective.

Nuclear energy avoids millions of tons of emissions

Dr. Mark Berkman and Dr Dean Murphy 2015 (Berkman – PhD in public policy analysis. Murphy - Ph.D. in Industrial Engineering and Engineering Management) Sept 2015 Michigan Nuclear Power Plants' Contribution to the State Economy” Sept 2015 <http://www.nuclearmatters.com/resources/reports-studies/value-of-nuclear-michigan>

Michigan’s nuclear power plants prevent substantial emissions of CO2, SO2, and NOX compared to the alternative of natural gas and coal-fired generation. Average annual CO2 emissions would be about 25 million tons greater absent the generation from Michigan nuclear plants.

Emissions avoided by nuclear energy have big economic impacts [card context is referring only to Michigan – rest of the country would be even more]

Dr. Mark Berkman and Dr Dean Murphy 2015 (Berkman – PhD in public policy analysis. Murphy - Ph.D. in Industrial Engineering and Engineering Management) Sept 2015 Michigan Nuclear Power Plants' Contribution to the State Economy” Sept 2015 <http://www.nuclearmatters.com/resources/reports-studies/value-of-nuclear-michigan>

The social cost of these emissions can be estimated using the federal government’s social cost of CO2 emissions ($43.31/ton) and the National Academy of Science’s externality estimates for SO2, NOX, PM-2.5, and PM-10. Evaluated at these rates as shown in Table 10, the avoided social cost of CO2 is $1,085 million, and the avoided costs of SO2 and NOX are $365 million and $60 million, respectively. The avoided costs of particulate matter emissions are approximately $30 million. These costs reflect environmental and human health damages and are independent of and in addition to the direct and secondary economic impacts addressed elsewhere in this report. They also reflect costs incurred by society, not directly by the economy; the subsequent economic implications of these social costs are not reflected in the economic results above.

Safety

China, among other countries, is cooperating with the US on standards for Generation IV reactors

World Nuclear Association 2016 (trade association for the nuclear energy industry) “Advanced Nuclear Power Reactors” <http://www.world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-power-reactors/advanced-nuclear-power-reactors.aspx>

The US Nuclear Regulatory Commission (NRC) has proposed a three-stage process culminating in international design certification for new reactor types, notably Generation IV types. Twelve countries are involved so far: Canada, China, Finland, France, India (from 2012), Japan, Korea, Russia, South Africa, Sweden (from 2013), UK, USA, and others which have or are likely to have firm commitments to building new nuclear plants may be admitted – the UAE is an associate member.

Economic Benefits

New nuclear plant construction creates lots of jobs

Nuclear Energy Institute 2014 (nuclear energy industry trade association) “Nuclear Energy’s Economic Benefits — Current and Future” Apr 2014 <http://www.nei.org/CorporateSite/media/filefolder/Policy/Papers/jobs.pdf?ext=.pdf>

A new nuclear plant represents an investment of $6-8 billion (depending on plant size), including interest during construction. New plant construction creates demand for skilled labor such as welders, pipefitters, masons, carpenters, millwrights, sheet metal workers, electricians, ironworkers, heavy equipment operators and insulators, as well as engineers, project managers and construction supervisors.

Quantification of how many jobs are created at each nuclear plant

Nuclear Energy Institute 2014 (nuclear energy industry trade association) “Nuclear Energy’s Economic Benefits — Current and Future” Apr 2014 <http://www.nei.org/CorporateSite/media/filefolder/Policy/Papers/jobs.pdf?ext=.pdf>

The average direct employment for a nuclear plant is 530. About 60 percent of these jobs (319) are filled by workers who reside in the county. Typically, 95 percent of the direct jobs at the plant (505) reside within the state. The employment multiplier shows how many jobs are created in a geographic area from each direct job. The model shows that the local economy produces an additional 66 indirect and induced jobs for every 100 direct jobs at the nuclear facility. The employment multiplier for the state is 2.36 and for the nation, 8.26. Thus, for every 100 direct jobs at a nuclear plant, another 726 indirect and induced jobs are created throughout the country.

A/T “No US economic benefit because it’s from China” – US companies get contracts to supply the ongoing lifecycle of nuclear plants

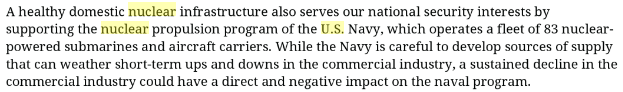
Nuclear Energy Institute 2014 (nuclear energy industry trade association) “Nuclear Energy’s Economic Benefits — Current and Future” Apr 2014 <http://www.nei.org/CorporateSite/media/filefolder/Policy/Papers/jobs.pdf?ext=.pdf>

America’s 100 nuclear reactors generate substantial domestic economic value in electricity sales — $40-$50 billion each year. From this revenue, nuclear companies procure over $14 billion each year in materials, fuel and services from domestic suppliers. Nuclear procurement takes place in all 50 states (31 states have nuclear power plants). The average procurement per state each year is over $270 million. Materials, fuel and services are procured from over 22,500 different vendors across the country. U.S. suppliers provide a full range of products and services for the complete lifecycle of nuclear facilities.

National Security

Healthy domestic nuclear infrastructure is needed to support US Navy nuclear requirements

Center for Strategic & International Studies Commission on Nuclear Energy Policy in the United States 2013. (committee of experts from business, industry and political roles; committee co-chaired by retired US Army General Brent Scowcroft, Mayo Shattuck (Chairman of the Board, Exelon) and Michael Wallace (Senior Adviser, Center for Strategic and International Studies) )“Restoring U.S. Leadership in Nuclear Energy: A National Security Imperative” June 2013 <https://books.google.com/books?id=dbwVAAAAQBAJ&pg=PA59&lpg=PA59&dq=allow+nuclear+investment+U.S.+%22atomic+energy+act%22&source=bl&ots=UgVvmTHfiF&sig=fkbXyhJQMRDFRJK3zt_a3cnEqHU&hl=en&sa=X&ved=0ahUKEwih48uZpN3NAhVB12MKHcfLCWg4ChDoAQgfMAI#v=onepage&q=allow%20nuclear%20investment%20U.S.%20%22atomic%20energy%20act%22&f=false>



DISAD RESPONSES

Nuclear Regulatory Commission (NRC) is well-experienced at managing foreign nuclear technology transfer issues

Sachin Desai and Kathleen Schroeder 2016. ( Desai - law clerk for the Atomic Safety & Licensing Board Panel at the U.S. Nuclear Regulatory Commission. Schroeder - attorney with the Department of Energy General Counsel’s Office for Civilian Nuclear Programs ) ENERGY LAW JOURNAL, May 2016 <http://www.felj.org/sites/default/files/docs/elj371/21-85-134-Desai_FINAL.pdf>

The NRC is well-experienced generally in dealing with technology transfer between the United States and foreign nations. Title V of the AEA also sets out that:   
The Commission is authorized to cooperate with any nation or group of nations by distributing special nuclear material and to distribute such special nuclear material, pursuant to the terms of an agreement for cooperation to which such nation or group of nations is a party and which is made in accordance with section 2153 of this title.  
Section 2153 of 42 U.S.C., commonly referred to as AEA section 123, establishes the conditions for civilian nuclear cooperation between the United States and foreign partners (section 123 agreements). The United States has twenty-one nuclear cooperation agreements in force with eighteen countries, the International Atomic Energy Agency, the European Atomic Energy Community, and Taiwan.102 The participation of foreign companies in nuclear enrichment and transfer of nuclear materials provide examples where the United States has balanced its national security interests with its interest in global economic cooperation.

China has strong safeguards and a sound record on security of nuclear materials

Fissile Materials Working Group with the Bulletin of the Atomic Scientists 2011. “Chinese nuclear security practices” 22 July 2011 <http://thebulletin.org/chinese-nuclear-security-practices>

Accountability, physical protection, and export controls are the key safeguards in preventing nuclear material from falling into the wrong hands or falling prey to sabotage. China has joined almost all international nuclear treaties, and its own laws and regulations have been enacted with the full consideration of the International Atomic Energy Agency's (IAEA) security standards. Such legislation ensures complete coverage of nuclear materials throughout its entire life cycle -- including possession, storage, transportation, transfer, and export control. In all intergovernmental cooperative agreements on civilian nuclear energy signed between China and other countries, the physical protection of nuclear materials and facilities is one of the prerequisites for export. So far, China has built a comprehensive regulatory system and has maintained a sound record on nuclear security.

Chinese government takes nuclear security very seriously

Fissile Materials Working Group with the Bulletin of the Atomic Scientists 2011. “Chinese nuclear security practices” 22 July 2011 <http://thebulletin.org/chinese-nuclear-security-practices>

As a country with one of the world's most ambitious nuclear power plans, China's nuclear safety and security is of crucial importance and may have great implications on the global nuclear renaissance. The Chinese government fully recognizes the significance of its nuclear power development and has taken tremendous efforts to strengthen security -- especially after the Washington Nuclear Security Summit and the recent Fukushima nuclear incident.

China has very high incentive to guarantee the safety of its exported reactors

Jost Wubbeke and Guan Ting 2016 (*Wübbeke is head of the economy and technology program at the Mercator Institute for China Studies (MERICS) in Berlin. Ting is a visiting academic fellow at MERICS*) THE DIPLOMAT 11 Feb 2016 “China's Nuclear Industry Goes Global” <http://thediplomat.com/2016/02/chinas-nuclear-industry-goes-global/>

Thirty years from now, we will possibly see dozens of reactors outside of China built by Chinese companies and possibly even using Chinese designs. It is therefore of the highest interest for both China and its foreign customers to make sure that the technology is safe. The experiences with the demonstration projects of Hualong-1 in Fujian and Guangxi may decide China’s success in the global market.

Chinese reactors have no IPR theft and proven technology

Julian Turner 2016 (journalist) 1 Apr 2016 “Made in China: exporting Chinese nuclear technology to the UK” <http://www.power-technology.com/features/featuremade-in-china-exporting-chinese-nuclear-technology-to-the-uk-4809255/>

China's new nuclear export programme is based around the CAP1400 reactor, an enlarged version of the AP1000 pressurised water reactor developed from the Westinghouse original by State Nuclear Power Technology Corporation (SNPTC), with consulting input from the US energy giant. Crucially, SNPTC has intellectual property rights over the design, paving the way for exports abroad.

No national security / political risk: China needs a good image and support of the public

Julian Turner 2016 (journalist) 1 Apr 2016 “Made in China: exporting Chinese nuclear technology to the UK” <http://www.power-technology.com/features/featuremade-in-china-exporting-chinese-nuclear-technology-to-the-uk-4809255/>

Opponents have also raised security concerns about allowing China a central role in Britain's nuclear future and that the Chinese Government may be in a position to leverage its role as a key provider of nuclear energy to the UK to exert undue political influence, something Zheng Dongshan refutes. "Absolutely not, because, as an enterprise, we are delivering clean electricity to consumers," he told the BBC. "We must build -up our reputation, we need a good image here and we need the support of the UK public."

A/T “China gets our technology somehow” – 1) They’re selling to us, not us to them. 2) Non-unique, we’re already cooperating on nuclear technology with China

NATURE 2016 (international weekly journal of science) 4 May 2016 “The nuclear option” <http://www.nature.com/news/the-nuclear-option-1.19844>

The Chinese Academy of Sciences is also working with the US Department of Energy on molten-salt reactors, which were originally developed and tested at Oak Ridge National Laboratory in Tennessee in the 1960s. Researchers at the Massachusetts Institute of Technology in Cambridge are pursuing a partnership to advance an entirely new design that includes elements of both molten-salt and pebble-bed reactors. And the relative newcomer TerraPower, which is based in Bellevue, Washington, and funded by Microsoft co-founder Bill Gates and others, has signed a memorandum of understanding with the China National Nuclear Corporation (CNNC) to pursue the company’s ‘travelling wave reactor’, which is designed to minimize the need for uranium enrichment.

A/T “Nuclear is risky” – Not-using nuclear is risky too. On balance, the risks favor using nuclear, as long as we keep working on safety improvements

James M. Acton 2011 (co-director of  the Nuclear Policy Program and senior associate at the Carnegie Endowment for International Peace; physicist by training; member of the [Nuclear Security Working Group](http://nuclearsecurityworkinggroup.org/); a former member of the International Panel on Fissile Materials) 14 Mar 2011 “Reduce Risk of Nuclear Energy” <http://carnegieendowment.org/2011/03/14/reduce-risk-of-nuclear-energy-pub-43052>

Nevertheless, the case for nuclear power remains strong. All forms of energy generation carry risks. Fossil fuels, which (for the time being at least) are nuclear energy's principal rival, carry the risk of catastrophic climate change. And as we're seeing in Japan, we haven't eliminated all the dangers associated with nuclear power, even though accidents are few and far between. Good public policy involves balancing these risks. Persuading the public to accept the risks of nuclear energy will, however, not be easy. To do so, the nuclear industry will have to resist a strong temptation to argue that the accident in Japan was simply an extraordinarily improbable confluence of events and that everything is just fine. Instead, it must recognize and correct the deficiencies of its current approach to safety.

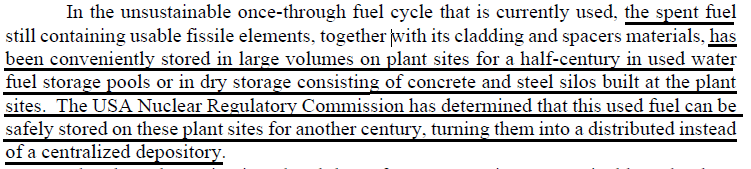
A/T “Nuclear waste disposal issues” – Nuclear waste disposal is much safer than risks of other forms of energy

Dr. Bernard Cohen 2002 (professor of physics at Univ of Pittsburgh. Ethical note about the date: the article is undated but references material published in 2002 and none later) “Nuclear Power” <http://www.hoover.org/sites/default/files/uploads/documents/0817939326_143.pdf>

The technically trivial problem of radioactive waste disposal was elevated to an “unsolved problem,” and it remained unsolved because of their efforts to block action. The solution, recognized and approved repeatedly by National Academy of Sciences committees for fifty years, is to convert the material into a rocklike form and place it in the natural habitat of rocks, deep underground. We know all about how rocks behave, and using this knowledge it is straightforward to show that the health effects of the buried waste will be negligible in comparison with those of burning coal or other fossil fuels to generate the equivalent electricity, even if these effects of nuclear waste are added up over millions of years. In fact, there are several types of waste from coal burning, air pollution, carcinogenic chemicals released into the ground, and naturally radioactive precursors of radon, each of which will cause at least a thousand times as many fatalities as the buried nuclear waste.

A/T “Nuclear waste disposal” – Not a problem, it can be stored safely on site

Dr. Magdi Ragheb 2015 (PhD; professor in Nuclear, Plasma and Radiological Engineering, Univ of Illinois) RESTARTING THE STALLED USA NUCLEAR RENAISSANCE <http://mragheb.com/NPRE%20402%20ME%20405%20Nuclear%20Power%20Engineering/Restarting%20the%20USA%20Stalled%20Nuclear%20Renaissance.pdf>



1. Center for Strategic & International Studies Commission on Nuclear Energy Policy in the United States 2013. (committee of experts from business, industry and political roles; committee co-chaired by retired US Army General Brent Scowcroft, Mayo Shattuck (Chairman of the Board, Exelon) and Michael Wallace (Senior Adviser, Center for Strategic and International Studies) )“Restoring U.S. Leadership in Nuclear Energy: A National Security Imperative” June 2013 (brackets added) https://books.google.com/books?id=dbwVAAAAQBAJ&pg=PA59&lpg=PA59&dq=allow+nuclear+investment+U.S.+%22atomic+energy+act%22&source=bl&ots=UgVvmTHfiF&sig=fkbXyhJQMRDFRJK3zt\_a3cnEqHU&hl=en&sa=X&ved=0ahUKEwih48uZpN3NAhVB12MKHcfLCWg4ChDoAQgfMAI#v=onepage&q=allow%20nuclear%20investment%20U.S.%20%22atomic%20energy%20act%22&f=false [↑](#footnote-ref-1)