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Nuclear Power Needed to Minimize Lieberman–Warner's Economic Impact

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Anxiety over human-induced global warming is driving the debate over energy policy. The Lieberman–Warner climate change bill (S. 2191) is the political manifestation of this fear.

Many who support the broader agenda of reducing greenhouse gas emissions, such as carbon dioxide (CO_2), view Lieberman–Warner as a significant step forward and see the benefits of reducing carbon dioxide as outweighing the costs of the bill. Those who are more skeptical of global warming take an opposite view. A recent Heritage Foundation analysis, for example, estimates the costs to the U.S. economy at between $1.8 trillion and $4.8 trillion by 2030.[1]

While analyses differ, they have some common threads. For example, most show that Lieberman–Warner will have a significant negative economic impact. They also assume that some CO_2-free technologies will be brought online quicker than many believe is technologically or economically feasible. Finally, most rely on a broad expansion of nuclear power to mitigate the bill's negative economic consequences and to help achieve the CO_2 cap targets.

Although many supporters of Lieberman–Warner are quick to call attention to conclusions that show the least negative economic impact, they often fail to mention that the results depend on a massive expansion of nuclear power. For example, as noted by the Environmental Defense Fund, an Environmental Protection Agency (EPA) analysis concludes that economic growth would be minimally affected by Lieberman–Warner but makes no mention of the fact that this conclusion depends on a broad expansion of nuclear energy.[2]

It is not just that nuclear power is needed, but that a massive amount of nuclear power is needed in a relatively short period of time. The EPA analysis assumes a 150 percent increase in nuclear power by 2050.[3] While meeting this demand would require a substantial industrial effort, it is miniscule in comparison to an Energy Information Agency (EIA) analysis that suggests that the U.S. must increase its nuclear capacity by 268 gigawatts of new nuclear power by 2030.[4]

These numbers must be put into perspective. The U.S. has 104 operating reactors today with a capacity of approximately 100 gigawatts. New reactors would likely be larger, on average, than existing reactors. Assuming that the average new reactor will produce about 1.3 gigawatts of electric power, the EPA analysis would require nearly 50 new reactors, while the EIA's analysis would require approximately 200 over the next 25 years.

The reality is that the United States has not ordered a new reactor since the mid-1970s and it does not have the industrial infrastructure to build even one reactor today. Its industrial and intellectual base atrophied as the nuclear industry declined over the past three decades. Large forging production, heavy manufacturing, specialized piping, mining,

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fuel services, and skilled labor all must be reconstituted in massive quantities.

Global supply is no more promising, especially when one considers that the rest of the world is coming to similar conclusions about the emerging role of nuclear power in meeting CO_2 reductions. The global nuclear industrial base currently supports 33 reactors under construction (mostly in Asia and Russia) and the normal operation and maintenance of the world's existing 439 reactors (including those in the U.S.). Even under today's conditions, bottlenecks emerge within the global supply chain for items such as heavy forgings, piping, skilled labor, and manufacturing.

While building enough nuclear power plants to minimize the economic impacts of CO_2 caps may be desirable, the reality is that the global industrial base could not support such a project in the U.S., much less the rest of the world. Thus, the amount of nuclear power required to sustain the optimistic Lieberman–Warner economic projections is impossible to achieve within the timeframes that they would require. This is especially true as the U.S. has yet to resolve many issues that continue to face the nuclear industry. Using such optimistic nuclear projections to support an analysis with minimal economic consequences of S. 2191 is therefore completely unrealistic.

It is ironic that support for Lieberman–Warner that is based on such unrealistic scenarios is often coupled with strong antagonism toward nuclear power. Passive support is no better. Given the role of nuclear energy in minimizing the economic impacts of CO_2 reductions, those who support such cuts should actively support nuclear power.

Many politicians and organizations attempt to remain agnostic or tepid toward nuclear energy by arguing that nuclear power might have a role to play if certain conditions are met. They then ensure that their conditions are set in such a way as to be unattainable. To suggest that the nuclear industry must improve its safety record is an example of this. No one has ever died as a result of commercial nuclear power in the U.S. How does one improve on this? To argue that the waste problem must first be solved, but then to stand in the way of building Yucca Mountain or reprocessing nuclear fuel (both of which are safe methods of waste management), is equally dubious.

If one views atmospheric emissions as such a threat that CO_2 reductions should be made the central organizing tenet of America's economic and energy policy (and thus society), then the moral policy should be to achieve that objective in an economically rational way. The motives of anyone who denies society access to the technologies best capable of achieving its stated goals, either by explicit antagonism or through implicit passivity, must be questioned.

On the other hand, if CO_2 reduction is truly the objective, then maximizing America's nuclear resources as quickly as possible should be a top priority. While doing so would still not likely allow the U.S. to meet the levels of nuclear power described in either the EIA or the EPA analyses, it could at least minimize the economic impact of Lieberman–Warner. But doing so will require long-term, sustained, bipartisan support for nuclear energy. Without this support, the billions of dollars of private capital needed to expand America's nuclear capacity will simply not be invested. Without this investment, even the rosiest Lieberman–Warner economic projections lose what little credibility they had at the outset.

1. William W. Beach, David W. Kreutzer, Ph.D., Ben Lieberman, and Nicolas D. Loris, "The Economic Costs of the Lieberman–Warner Climate Change Legislation," Heritage Foundation *Center for Data Analysis Report* No. CDA08-02, May 12, 2008, at *http://www.heritage.org/Research/EnergyandEnvironment/cda08-02.cfm.*
2. Environmental Defense Fund, "EPA Analysis Forecasts Robust Economic Growth With Change Law," press release, March 14, 2008, at *http://www.edf.org/pressrelease.cfm?contentID=7738.*
3. United States Environmental Protection Agency, *EPA Analysis of the Lieberman–Warner Climate Change Security Act of 2008*, March 14, 2008, at *http://www.epa.gov/climatechange/downloads/s2191_EPA_Analysis.pdf* (May 22, 2008).
4. United States Department of Energy, Office of Integrated Analysis and Forecasting, *Energy Market and Economic Impacts of S.2191, the Lieberman–Warner Climate Security Act of* 2007, April 2008, at *http://www.eia.doe.gov/oiaf/servicerpt/s2191/pdf/sroiaf(2008)01.pdf* (May 22, 2008).

Top 10 List for a Sustained Reemergence of Nuclear Power. The massive increases in nuclear power over the next 25 years on the scale described in some S. 2191 analyses might be unrealistic, but the right policies could at least move the nation in the right direction. Although the Energy Policy Acts (EPACTs) of 1992 and 2005 provide some reform and incentives to boost the nuclear industry, they do not provide the systemic overhaul that would be necessary to meet the demands required to satisfy Lieberman–Warner. Existing legislation assures that the U.S. will build six to 10 reactors, which does almost nothing to mitigate the consequences of CO_2 caps.

If CO_2 reductions are the goal, then the U.S. needs a sustainable nuclear energy industry that can be successful without government intervention. To assure that it is prepared to meet demand for nuclear energy beyond constructing the plants supported by EPACT 2005, the U.S. must:

1. **Let the market work.** The United States does not need the government to dictate how it produces energy. The federal government is making the same mistakes that it has made in the past. It is responding to volatility in the energy industry by consolidating power over its operations through mandates, tax policy, and other control mechanisms. Federal intervention has caused much of the volatility that consumers currently face. The vehicle and appliance efficiency standards, renewable portfolio standards, and increased ethanol mandate put in place by the Energy Independence and Security Act last December are recent examples. Instead of telling consumers and producers how to generate energy and what sorts of energy to consume, the federal government should step aside and allow energy producers to get to the business of meeting America's energy demands.
2. **Limit government support to that provided by EPACT 2005.** EPACT 2005 provides loan guarantees, production tax credits, and risk insurance to the first few nuclear reactors built. Given that the greatest risk to the nuclear industry is government itself, the burden of proof remains with the federal government to demonstrate that it will allow the nuclear industry to mature. Its support through EPACT 2005 should be adequate to achieve this goal so long as it is combined with commitments by Congress and future Administrations to assure political and regulatory stability for the nuclear industry.
3. **Hold accountable those leading the charge to cap CO_2.** It is morally indefensible to put stringent caps on CO_2 and then obstruct the only technology available to meet the mandates affordably. Yet that is exactly what many supporters of a CO_2 cap are doing when they do not advocate for nuclear power. While wind, solar, and other renewable energies may contribute to CO_2-free energy production, none can provide the vast amounts of electricity that is required to meet America's growing demand. Supporting nuclear power does not mean simply acknowledging that it has a role to play or that it could be part of the mix, as many CO_2 cap supporters sometimes halfheartedly admit when faced with the facts. It means supporting the policies that are required to allow a massive expansion of nuclear power in this country. It means supporting regulatory relief, opening Yucca Mountain, recycling nuclear fuel, moving nuclear fuel around the country and the world, and explicitly acknowledging the critical role that nuclear power will play in meeting CO_2 mandates and committing to long-term political support.
4. **Put industry in control of fuel cycle management.** The Energy Policy Act of 1982 created a framework for managing used nuclear fuel. The federal government took responsibility for managing the fuel, and nuclear energy producers were supposed to pay for the service through a fee. While the federal government has been very successful in collecting the fee, it has completely failed in collecting the waste. Indeed, it has not assumed formal responsibility for one atom of fuel, despite being legally obliged to do so beginning in 1998. If nuclear power is going to have a sustainable rebirth in the U.S., the nuclear waste problem must be fixed, but the federal government has proven incapable of providing that service. The nuclear industry should establish responsibility for spent fuel management. The federal government would still have roles to play in terms of providing oversight and taking title of the waste once the geologic repository is decommissioned, but what happens to the fuel between the time it leaves the

reactor and the time it is permanently disposed should be in the hands of industry.

5. **Open America's doors to legal immigration of skilled labor.** While the nation debates the problem of illegal immigration, it too quickly ignores the benefits of legal immigration of skilled workers. These are the exact types of people the U.S. will need to build a 21st century energy infrastructure. One way to achieve this is to expand the H1-B visa program, which brings highly skilled and educated workers into the U.S.[5]
6. **Remove commodity tariffs.** Lifting tariffs on products like steel and cement would help to reduce construction costs. The U.S. would have the added benefit of gaining access to the resources needed to build the energy plants, of whatever source, to meet its energy demands.
7. **Liberalize the global commercial nuclear market.** Unfortunately, international commercial nuclear markets are some of the world's most regulated and tightly controlled. The U.S. must gain access to the potential boom in global nuclear business to rebuild its own nuclear industry and have access to the goods and services that are required to meet energy demands.
8. **Increase supply.** The United States needs to increase energy supplies. Like other energy sources, nuclear power needs fuel. While uranium and uranium services are largely in balance with demand today, the sort of growth envisioned by some of the Lieberman–Warner analyses could throw that supply and demand out of balance. One way to assure that the U.S. has access to the supplies of uranium that it needs is to begin expanding domestic uranium mining.[6]
9. **Take the lead in developing a new international framework for managing the global growth of nuclear power.** Because the United States has largely allowed its commercial nuclear industry to atrophy over the past three decades, it has little to offer on today's international market. However, it does have the power and prestige necessary to take the lead in developing a new framework to manage the growth of nuclear power around the world. If it does not undertake this role, other nations like Russia will. Indeed, the Russians are already establishing agreements to facilitate nuclear cooperation. These agreements will likely not embody American principles like free trade and transparency or adequately elevate non-proliferation objectives. That is precisely why the United States must lead the effort.
10. **Reengage Nevada on Yucca Mountain.** Yucca Mountain should not be viewed as America's nuclear waste dump. It should be viewed as a spent fuel repository that could coexist with other nuclear fuel management services. An expansion of nuclear power will require more than just a place to store waste. It will require interim storage facilities, recycling facilities, research and development complexes, and other capabilities. There is no reason that these facilities could not be located with Yucca in Nevada. Indeed, spent fuel should be viewed as an asset rather than as a liability.

Conclusion. Commitment to cutting CO_2 should be equaled by commitment to nuclear energy. To deny the United States access to nuclear technology while mandating CO_2 caps is hypocritical and indefensible.

The United States will need substantially more nuclear power to survive the Lieberman–Warner bill economically. While the Energy Policy Act of 2005 may have a near-term role in reestablishing nuclear power in the U.S, it does not bring about the fundamental changes that will be required to establish a sustainable, market-based nuclear industry. If the nation is committed to reducing CO_2, then it must also be committed to the long-term success of nuclear power.

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5. James Sherk and Guinevere Nell, "More H-1B Visas, More American Jobs, A Better Economy," Heritage Foundation *Center for Data Analysis Report* No. CDA08-01, April 30, 2008, at *http://www.heritage.org/Research/Labor/cda08-01.cfm.*
6. Jack Spencer and Nick Loris, "Uranium Mining Is Important for Securing America's Energy Future," Heritage Foundation *WebMemo* No. 1866, March 25, 2008, at *http://www.heritage.org/Research/EnergyandEnvironment/wm1866.cfm.*