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UPFRONT

## Reading Up on Nuclear Energy

The debate over nuclear energy has gained new life thanks to concerns about climate change and the need to reduce our reliance on fossil fuels. We asked several experts on the topic to suggest resources for understanding -- and joining -- the debate.

-- *Michael Totty*

**PETER A. BRADFORD**, adjunct professor, Vermont Law School, and former member of the Nuclear Regulatory Commission:

- For an even-handed recent overview of most nuclear power issues, see "Nuclear Power Joint Fact-Finding," a June 2007 report by the Keystone Center, a non-profit organization that brought together a cross section of parties interested in nuclear energy – including environmentalists and consumer advocates, industry representatives and government officials – to create a base of agreed-upon knowledge about the costs, risks and benefits of nuclear power.  
[www.keystone.org/spp/documents/FinalReport\\_NJFF6\\_12\\_2007\(1\).pdf](http://www.keystone.org/spp/documents/FinalReport_NJFF6_12_2007(1).pdf)
- For a responsibly skeptical look at nuclear power's rapidly rising costs in comparison to available low carbon alternatives, see "The Nuclear Illusion" by Amory Lovins and Imram Sheikh in the November 2008 *Ambio*, the Journal of the Royal Swedish Academy of Sciences.  
[https://www.rmi.org/images/PDFs/Energy/E08-01\\_AmbioNuclIllusion.pdf](https://www.rmi.org/images/PDFs/Energy/E08-01_AmbioNuclIllusion.pdf)
- The Web site of the Nonproliferation Education Center, maintained by WSJ op-ed contributor Henry Sokolski, features an ongoing collection of thoughtful conservative pieces skeptical of nuclear power.  
<http://www.npec-web.org/>
- For an excellent short critique of reprocessing and the Bush Administration's Global Nuclear Energy Partnership, see Victor Gilinsky and Alison Macfarlane's Minority Opinion from the National Academy of Science's Review of DoE's Nuclear Research and Development Program, [http://books.nap.edu/openbook.php?record\\_id=11998&page=73](http://books.nap.edu/openbook.php?record_id=11998&page=73)
- For an even-handed look at how nuclear construction went astray in the U.S. in the 1970s, the best book remains "Light Water: How the Nuclear Dream Dissolved, Irvin C. Bupp and Jean-Claude Derian.
- Another good overview text is *Megawatts and Megatons*, Richard Garwin and Georges Charpak.

**MAX SCHULZ**, senior fellow, Center for Energy Policy and the Environment, Manhattan Institute

- William Tucker's *Terrestrial Energy: How Nuclear Power Will Lead the Green Revolution and End America's Energy Odyssey*, is not just a wonderful brief for how we can meet our energy and environmental challenges -- which it is -- but an overall excellent primer on basic energy topics. I don't subscribe to Mr. Tucker's fears about Peak Oil, nor do I think climate change is the problem he does, but the whole book is a fascinating journey through the energy economy, and gives a crystal clear picture of the relative differences (the advantages as well as the demerits) among all of the competing fuels and technologies that power our lives.
- *The Bottomless Well*, by Peter Huber and Mark Mills. Bill Gates said it was simply the best book he had read on the topic of energy. I am inclined to agree. It is filled with brilliant insights about the nature of our energy use and about the electrification of the economy. Like Tucker's more recent work, it clearly shows that the advantage of uranium over any other energy source lies in its ability to pack so much power into so little space. Messrs. Huber and Mills penned a piece on nuclear power for the Manhattan Institute's *City Journal* three years ago that encapsulates these views in one place.

[http://www.city-journal.org/html/15\\_1\\_nuclear\\_power.html](http://www.city-journal.org/html/15_1_nuclear_power.html).

**SHARON SQUASSONI**, senior associate, Carnegie Endowment for International Peace

- I found in my own research that to really understand nuclear energy, it was necessary to have a broader understanding of all the alternatives, and a basic understanding of energy and its uses. That's because consumers, utilities and governments are really making choices among their electricity-generation options. The best introduction to that is a National Research Council report "What You Need to Know About Energy."

[http://sites.nationalacademies.org/energy/Energy\\_043338](http://sites.nationalacademies.org/energy/Energy_043338)

**ROD ADAMS**, blogger, Atomic Insights Blog

- *Power to Save the World -- The Truth About Nuclear Energy* by Gwyneth Cravens (2007). *Power to Save* is a journey of discovery told by a former anti-nuclear power plant activist. Ms. Cravens fought against the Shoreham plant on Long Island, but later became friends with Rip Anderson, a nuclear scientist with a specialty of risk analysis. With Rip as her guide, Gwyneth Cravens embarks on a multi-year tour of nuclear facilities that include all stages of the nuclear fuel cycle. Intermixed with visits to facilities like uranium mines, power stations, used-fuel storage facilities and nuclear science laboratories are trips to competitive fossil fuel facilities. This book reads like a novel, but it is full of excellent, well-researched information.
- *Beyond Fossil Fools -- Roadmap to Energy Independence* by Joseph Shuster (2008). Joseph Shuster is a retired chemical engineer and entrepreneur who has spent several years researching all aspects of energy production. He provides a compelling case for considering nuclear power as a vital component in a necessary shift away from fossil-fuel consumption.

- Two blogs: Energy from Thorium (<http://thoriumenergy.blogspot.com/>) is a deep and rich blog with a huge library of material from national laboratories. Kirk Sorensen and Charles Barton both contribute detailed articles about nuclear power research, nuclear technology developments and nuclear-related politics. A main theme is the idea that thorium has been overlooked as a potential source of fuel for nuclear power plants.

Idaho Samizdat (<http://djysrv.blogspot.com/>). This blog is produced by a 20-year veteran of the nuclear industry. Dan Yurman also writes for Fuel Cycle Weekly, a uranium industry subscription publication. He is tuned into what is happening in the industry around the world and he has a great understanding of the technology. He writes well and provides lots of links to other sources of information in all of his posts.

- NEI Nuclear Notes (<http://neinuclearnotes.blogspot.com/>) is produced by members of the Nuclear Energy Institute. This blog is much better than most of the publications of industry trade groups that I have read. It was started by a communications specialist who had already developed several successful blogs on his own, so he understood some of the tenets of community building, link sharing, and discussions far better than most. The comments are moderated, but with a gentle hand that just keeps the level of discussion professional. There is no apparent effort to restrict commentary from people with contradictory points of view as long as it is not abusive or in the category of personal attack. NEI Nuclear Notes is the first stop on the Web for many in the nuclear blogging community and it has always made an effort to find and point to new blogs or existing blogs that are talking about nuclear power.

**KRISTINE L. SVINICKI**, Commissioner, U.S. Nuclear Regulatory Commission

- I would recommend two books which document the history of nuclear regulation up to 1971. They are Controlling the Atom by George T. Mazuzan and J. Samuel Walker, which traces the beginnings of nuclear regulation from 1946 through 1962; and Containing the Atom by J. Samuel Walker that covers regulation in a changing environment from 1963 to 1971.

- These two volumes are essential reading for anyone who wants to understand more fully the issues related to nuclear safety and security regulation dating from the earliest days of the U.S. nuclear power program. Don't be put off by the titles, or the fact that these books were written by the NRC historian, which might have you thinking this is material only a safety regulator could love. Walker places policy and technology in a living context of the people involved and the atmosphere of the times, weaving a narrative that is tight and eminently readable. As a currently serving NRC Commissioner considering these issues in the framework of day-to-day safety regulation, I believe the parallels between the push and pull of the early days of nuclear energy, and the unfolding "nuclear renaissance" that many herald, are positively striking. If past is truly prologue, these volumes are well worth a close look by those with a serious interest in how we got here.

**HARVEY WASSERMAN**, author of Solartopia! Our Green-Powered Earth, A.D. 2030.

- Arjun Makhijani's Carbon Free, Nuclear Free provides the technical groundwork for a world that has transcended fossil and radioactive fuels. It combines the vision of a Solartopian planet with the statistical realities of how we can expect to get there.

**MARK FLANAGAN**, writer at the Nuclear Energy Institute and its blog, NEI  
Nuclear Notes

- One of the things that marked nuclear energy in the last several years is its gradual detachment from ideology. Where once it was a sure money-maker for anti-nuclear groups wanting to kill it or an example of an industry denied its full radiant blossoming by overregulation, it has moved steadily beyond simplistic formulation as it has become better understood. Here are a couple of readable, not too technical books that make the case:
  - "The Power to Save the World, The Truth About Nuclear Energy" by Gwyneth Cravens. Former skeptic Gwyneth Cravens did what anyone should do: shake her preconceptions loose and dare to be surprised. Led by Dr. "Rip" Anderson from New Mexico's Sandia National Laboratory, Ms. Cravens tours nuclear plants and other facilities and interviews experts along the way. Many myths and fears fall away and she becomes convinced that nuclear energy can help save the world. A terrific read: a simple yet detailed explanation on how nuclear energy works.
  - "Nuclear Power: Villain or Victim?" by Dr. Max W. Carbon, Emeritus Professor of Nuclear Engineering, University of Wisconsin-Madison. Published in 1997 and revised in 2006, Dr. Carbon (and is that a great name for this subject or what?) provides a great book to follow up Cravens', as he dives into great detail about health effects, radiation, security, waste management and cost, clearing away the underbrush of misconception as he goes. Dr. Carbon provides a virtual guidebook to nuclear energy: it provides us with clean air, conserves resources, saves lives, improves the economy and supplies an "almost-unlimited" amount of power. What more could you want to know?

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