



## A useful series on energy, and a Wish

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As I mentioned in my last post, this is the time for Seasonal travel, and so, for the first time it finds us, transiently, in Western Massachusetts. Picking up the local paper [The Sunday Republican](#) I discovered tht they are in the midst of a series on Energy in the 21st Century. The series began with an article on [solar power](#), which was followed by one on [nuclear power](#) and then by one on [the use of coal](#). The latest, which first caught my attention, is on power from water. There will be two more in the series, one next week on biofuels, and then one the following week on wind.

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The articles bring a local business view to discussions on how to cope with the changing climate and the increase in the price of oil. The solar article, for example, quotes a local business owner who has invested in solar panels

The dark side of power from the sun is that it is costly. Despite decades of research to lower its price, each kilowatt-hour costs roughly two to three times as much as the same amount of electricity produced from fossil fuels in much of the country.

Even with about half the \$140,000 cost of Lessels' rooftop panels paid for by state and federal grants and tax deductions, he believes it will still take him eight to 10 years to earn back their cost through lower electric bills.

The article notes also that the DoE Solar America Initiative have the goal of closing the price gap between solar and grid power by 2015, although they quote a Vice President of [SunPower Corp](#) as anticipating that the gap may be closed by 2012. The path is anticipated to be:

About 15 percent of the cost reduction for them will come from normal improvements in cell efficiency through basic research. Another 20 percent will from lower costs for silicon, achieved through long-term supply contracts and an easing of the current global shortage of silicon. Another chunk will come from lower costs due to the production of a greater numbers of panels, so-called economies of scale. But at least half the cost reduction will come from improving the efficiency of the delivery of solar panels from the factory to customers, the process that includes transportation, sales and installation.

It should be noted, however, that part of the gap closure is anticipated to also come from a significant increase in grid power costs.

The nuclear energy study highlighted the discord between those who favor nuclear power and those opposed, noting that there are now rising arguments for power, being made by earlier opponents, and quoting James Lovelock:

He said in a published essay that greater use of it could help prevent the worst consequences of global warming brought on by the burning of fossil fuels, including "intolerable and lethal heatwaves and sea levels rising to drown every coastal city of the world."

He wrote, "I wholly support the 'green' wish to see all energy eventually come from renewable sources, but I do not think that we have the time to wait until this happens. Nuclear is the only practical energy source that we could apply in time to offset the threat from accumulating greenhouse gases."

And on the other hand, there are some still opposed

To say that it does not contribute to global warming "is like saying cigarettes have no calories," said Janet S. Domenitz, executive director of the Massachusetts Public Interest Research Group.

The next article similarly looks at environmental concerns and offsets the optimistic claims for cleaner coal with a recognition of the current problems that the fuel source has created

Coal has long been a four-letter word for environmentalists, though. While it accounts for about half of the electricity produced in this country, coal-fired power plants also account for more than a third of the U.S. releases of carbon dioxide into the atmosphere from all human sources, including cars and trucks.

In addition, the plants produce sulfur dioxide gas that becomes an ingredient of acid rain, which has spoiled lakes and ponds throughout New England. And they produce airborne mercury, which can make fish inedible. It points out, however, that companies are moving to remediate concerns

In 2006, FirstLight Power Resources Inc. bought the Holyoke plant as well as hydropower stations at Turners Falls and Northfield from Northeast Utilities. In September, the company announced a \$57 million project to reduce pollution at Mount Tom Station. Over the next 20 months or so, modern pollution control equipment will be added that is expected to reduce mercury, sulfur dioxide, hydrochloric acid and hydrogen fluoride pollution by 95 percent.

Similar results are reported for the two IGCC plants operating in the US, though they are not yet sequestering the carbon dioxide, a technology which is also reviewed in the article, and where there is an optimistic projection for the future

David O. Dapice, an associate professor of economics at Tufts University who has studied the economics of these new coal-burning technologies, said that the cost to

sequester carbon dioxide currently is estimated at about \$100 to \$300 per ton but research at the Department of Energy and elsewhere could reduce this by 90 percent in less than a decade.

The articles seem to take no sides in debating some of the issues that confront the need to find alternate sources for oil, and, as I have tried to capture, have some illustrations of some of the issues that must yet be addressed.

I started reading the series because of one of the comments in the article on hydropower. The articles mention the opposition that has arisen to many of the sources proposed, and local hydropower is no exception. The Holyoke dam has been generating power from the Connecticut River since 1884, and there were a number of such plants around the state. However some of these are no longer used, and so there is an environmental move to have them removed.

In all of New England, there are perhaps 500 megawatts of power left to be coaxed from good hydroelectric sites, primarily abandoned or unused dams, on rivers and streams (the equivalent power of one large coal-fired power plant).

And that's assuming environmentalists will not fight the effort, according to Peter B. Clark, president of Swift River Hydro in Hamilton. In fact, the campaign now among environmentalists is to remove unused dams, he said. . . . There may be 30 or 40 towns that have old dams that no one knows what to do with.

The article ends with a discussion of tidal power.

The debate between those espousing local environmental concerns and those that face the reality that today's population needs significant sources of power is likely to get stronger in the New Year, as the supply problems that we have discussed here get more obvious. Over the past couple of years local papers have started to pick up on this concern, since it is the local communities that are starting to bear the brunt of higher costs. And the discussions such as those in this series, are noting that not all people can be satisfied.

The concerns are not new, I was reading today "[Defining Women's Scientific Enterprise: Mt. Holyoke Faculty and the Rise of American Science](#)" by Miriam Levin and was struck by two quotes, one by the founder of Mount Holyoke College, Mary Lyon.

Enthusiasm for nature had a special status in the salvation experience primarily because it was the context in which Mary Lyon remembered she had come to feel redeemed. Her story of standing on the summit of a hill in Buckland, Massachusetts, on a beautiful Sabbath afternoon in the spring of 1816, was well known within the Mount Holyoke community and revered as a kind of myth about the founder. There, transfixed by the glorious, light-filled landscape, she was filled with a sense of compassion for "a perishing world" and a desire to work to save it.

The second was by Edward Hancock, who became president of Amherst College in 1845.

As a contrast, Hitchcock connected the newly prosperous middle-class desire for showy finery to their enthusiasm for diverting the Niagara River from its natural bed. These were understandably people "whose attitude towards the land is wholly utilitarian and

exploitive." Both represented the corruption of God's natural law.

Those of us who have read, and then enjoyed the movie versions of "Lord of the Rings" can see the concern for the land and its inhabitants that Tolkein expressed, where the industrial users, the miners and forgers of metal, were represented as the evil ones.

It is a conundrum that we must learn to address, that of properly providing for the needs of the people, while concurrently protecting the environment to the extent that we can. To resolve the issues requires communication, and effective communication requires knowledge. And that is why we are here. As we come to the end of a highly productive and informative year that the many contributors to this site have helped happen, let me again gratefully thank you all., but most particularly to Prof G, and Super G, without whom we would not be here, and to Leanan, who continues to be an inspiration (perhaps next year I'll essay a card).

I wish you all Success and Prosperity in the New Year, and may you all have enjoyed a happy and restful Holiday Season.



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