The Next Bubble: The Costs of Renewable Energy Apr 4, 2011

Mr. Lewis Matson; ...um, Science teacher
I teach Environmental Science at Waterville Valley Academy. I don't own a power company. I don't own any stock. My wife and I live in a rented house in Rumney, and own 8 acres in Thornton. My wife is a nurse.

-- Attachment: a paper which is a collection of links and articles of fair significance.

Bottom line: I do not want to pay higher rates for electricity with zero benefit to the environment. If the coal plant still has to run 24/7, we've accomplished nothing.

- Lewis Matson, M.Ed.
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The costs of renewables are being subsidized by....us. This we would gladly do if there was even some benefit to the environment, or even 'jobs'. At this point there isn't.
- Lewis Matson, Environmental Science, Waterville Valley Academy.

[I don't own any stock. I don't have a power company. I'm paid....pretty little as a Science teacher. If you're looking for an agenda, well, I really do want to put up solar panels. But it doesn't make sense, and it certainly makes less sense for you to pay for my solar panels. But the problem of the costs gets serious when expanded to the community level. It makes less sense for communities.]

1) State of Vermont, Dept of Public Service [no, say it ain't so]**, Dec 2009:**
"Certainly the population most directly affected by the Standard Offer is utility ratepayers who will pay a significant premium for a portion of their electricity for up to 25 years. ...Consumers may benefit and desire that their energy come from renewable power sources, but in the standard offer program the rate structure requires the payment of a price sufficient to support less competitive renewable sources. ....Put another way Vermont consumers are paying a higher price for a portion of their renewable energy with no discernable benefit."

http://publicservice.vermont.gov/planning/DPS%20White%20Paper%20Feed%20in%20Tariff.pdf

2) Massachusetts: Beacon Hill Institute at Suffolk University: "The High Cost of Green Energy Programs in Massachusetts"
"We find that that the major green energy mandates, programs and incentives will cost $490 million this year, more than $985 million in 2020 and more than $9.8 billion cumulatively over the next eleven years. By 2020, the total cost of these mandates, programs and incentives will amount to over 2.6 cents per kilowatt hour (kWh) of electricity. In 2020, that amounts to $159 per year for families consuming the state average for residential electricity, $1,503 per year for an average commercial business and $14,255 per year for an average industrial company. Over the eleven years, the average household ratepayers will incur $1,582 in higher electricity prices to fund these 11 mandates, programs and incentives, the average commercial ratepayer will spend $15,559 and the average industrial ratepayer $141,255. These figures do not include the cost incurred from the state's other 14 green energy mandates, programs and incentives."
http://www.windaction.org/documents/29724

3) European Union: Director-General for Energy and Transport, European Commission (2008). EU Energy in Figures 2007/2008. Section 2.5.6.
http://ec.europa.eu/dgs/energy_transport/figures/pocketbook/doc/2007/2007_energy_en.pdf

4) Spain: Alvarez, G. C. et al (2009). "Study of the effects on employment of public aid to renewable energy sources." Universidad Rey Juan Carlos:
http://www.juandemariana.org/pdf/090327-employment-public-aid-renewable.pdf

5) Australia: Lang, "Emission Cuts Realities", Jan 2010: [nuclear and combined combustion gas turbines as the only cost-effective solution]

http://bravenewclimate.com/2010/01/09/emission-cuts-realities/

6) Carnegie Mellon Univ.: "Generating Electricity from Renewables..."; May 2008

"The authors fear that pressing the introduction of renewables too aggressively would result in high cost, unreliable electricity, leading to a public backlash against these policies."
http://wpweb2.tepper.cmu.edu/ceic/pdfs_other/Generating_Electricity_from_Renewables.pdf

7) US Assoc for Energy Economics: Kent Hawkins, "Integrating Renewables: Have Policymakers Faced the Realities?"
"....very questionable industrial development in terms of net losses in jobs, higher electricity costs and its impact on industrial development in general, creation of a serious "bubble" potential, a jeopardized energy future, and diversion of resources into non-productive areas"
http://dialogue.usaee.org/index.php?option=com_content&view=article&id=95&Itemid=113

<u>The case against Wind Turbines:</u>

1) Texas energy dept., ERCOT, manages a large wind farm built under George Bush (governor). Texas has the largest wind generation capability in the nation. The intermittent power from the wind farm causes the coal plants to cycle on and off to meet demand
-- General Electric (2008). Executive Summary: Analysis of Wind Generation Impact on ERCOT Ancillary Services Requirements.
http://www.uwig.org/AttchA-ERCOT_A-S_Study_Exec_Sum.pdf

..."the impact of wind is cumulative: the more wind that comes on the system, without corresponding additions of other generation forms, the more wind-induced coal cycling happens." (Figure VI-7)

-- Bentek Energy - How Less Became More:
http://www.bentekenergy.com/documents/bentek_how_less_became_more_100420-319.pdf
-- Hawkins K. and Hertzmark D. (2010). "Big Wind: How Many Households Served, What Emissions Reduction? (Part 2).
http://www.masterresource.org/2010/01/how-many-households-can-a-large-wind-project-serve-lessons-from-texas-and-the-uk-part-2-of-2/

2) Oregon: same problem: this link from Bonneville Power Authority shows real-time data:

http://transmission.bpa.gov/business/operations/Wind/baltwg.aspx

"To prevent brownouts or overloads on the grid, BPA must schedule energy production in advance. However, the ability to predict when and how hard the wind will blow is extremely limited (usually a two- or three-day window) and often inaccurate. Because wind power is so unpredictable, every megawatt must be backed up by an equal amount of reliable energy sources in reserve to replace the energy lost when the wind dies down. This means BPA must have a "balancing" reserve equal to or greater than the wind power capacity utilized at any given time. In the Pacific Northwest the backup source traditionally has been federally owned hydroelectric dams, which are shut on and off to respond to fluctuations in wind energy. According to BPA, the ability of the federal hydro system to

serve as a balancing reserve maxes out between 3,000 and 3,500 MW of installed wind generation. This means that BPA can only back up roughly half of the projected increase in wind power."

-- Cascade Policy Institute ["free market public policy research center"]:
http://cascadepolicy.org/news/2010/02/17/increased-costs-are-blowin%E2%80%99-in-the-wind/

3) Denmark. Center for Politiske Studier, Sep 2009:
"Denmark generates the equivalent of about 19% of its electricity demand with wind turbines .....Being highly intermittent, wind power has recently (2006) met as little as 5% of Denmark's annual electricity consumption.... In the absence of large-scale electricity storage, any modern electricity system must continuously balance electricity supply and demand, because even small variations in system voltage and frequency can cause damage to modern electronic equipment and other electrical equipment. Wind power is stochastic, especially in the very short term (e.g., over any given hour, 30 minute, or 15 minute period). This has created a completely new challenge that transmission system operators (TSOs) all over the World are only now learning how to handle. Some draw from Denmark's experience. But Denmark's special circumstances make its experience of limited transferability elsewhere. Denmark manages to keep the electricity systems balanced due to having the benefit of its particular neighbors and their electricity mix. Norway and Sweden provide Denmark, Germany and Netherlands access to significant amounts of fast, short term balancing reserve, via interconnectors. They effectively act as Denmark's 'electricity storage batteries'."
-- http://www.windaction.org/documents/23098

-- BBC on Denmark:
http://news.bbc.co.uk/2/hi/uk_news/wales/8423450.stm
-- UK Energy Research Centre: Sharman, H. (2005). "Planning for Intermittency: The Importance of Evidence from Germany and Denmark". UK ERC Workshop – Imperial College.
http://www.ukerc.ac.uk/Downloads/PDF/05/050705TPASharmanpres.pdf

4) Finland: Holttinen, Hannele. VTT Technical Research Centre of Finland.
"The impacts of hourly variations of large scale wind power production in the Nordic countries on the system regulation needs."
http://lipas.uwasa.fi/itt/teti/sahko/NEPF/vasa_nordiskvind.ppt

5) Germany: German Energy Agency (dena – Deutsche Energie-Agentur) (2005). "Planning of the Grid Integration of Wind Energy in Germany Onshore and Offshore up to the Year 2020" (dena Grid study).
http://www.dena.de/fileadmin/user_upload/Download/Dokumente/Projekte/ESD/netzstudie1/dena-grid_study_summary.pdf

6) British Columbia: University of Victoria (BC), Department of Economics (2005). Utility-scale Wind Power: Impacts of Increased Penetration.
http://www.windaction.org/documents/5887

7) Cornell University: "Effect of Wind Intermittency on the Electric Grid: Mitigating the Risk of Energy Deficits": Sam O. George, H. Bola George, Scott V. Nguyen
"Successful implementation of California's Renewable Portfolio Standard (RPS) mandating 33 percent renewable energy generation by 2020 requires inclusion of a robust strategy to mitigate increased risk of energy deficits (blackouts) due to short time-scale (sub 1 hour) intermittencies in renewable energy sources."

http://arxiv.org/abs/1002.2243

8) Dr. John Etherington - former co-editor of the Journal of Ecology -
-- Book title: Wind Farm Scam -- "wind farm technology is a wholly counter-productive and undesirable response to the problems of climate change and electricity generation."
[1st two printings sold out in two weeks]

9) Glenn Schleede, consulting practice, Energy Market and Policy Analysis**:**
"...the smart money people "mine" Washington and state capitals for tax breaks, subsidies, and credit programs and, of course, they hire lobbyists. A prime example of "mining in Washington" was T. Boone Pickens announcement that he was going to make a 25% return by building a $10 billion "wind farm" — which current tax breaks will permit him to do. Mr. Pickens has advertised both his planned "wind farm" and then his grand "energy plan" to make money by pursuing wealth via government subsidies. Others (e.g., GE, FPL, Goldman-Sachs) follow the same strategy but "fly under the radar" while they capture tax breaks and subsidies."

-- http://www.masterresource.org/2010/03/a-solution-to-the-energy-problem/

-- True Cost of Electricity from Wind:
http://www.windaction.org/documents/25496 (Feb 2010)

-- "The True Cost of Electricity from Wind is always Underestimated and its Value is always Overestimated." Science and Public Policy Institute.
http://scienceandpublicpolicy.org/images/stories/papers/reprint/High_Cost_and_Low_Value_of_Electricity_from_Wind.pdf

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The case against Solar Power:

1) Lawrence Berkeley National Laboratory: "Tracking the Sun: The Installed Cost of Photovoltaics", Dec 2010:

"The capacity-weighted average installed cost of systems completed in 2009 – in terms of real 2009 dollars per installed watt (DC-STC) and prior to receipt of any direct financial incentives or tax credits – was $7.5/Watt ..."

2) Dept of Energy: Energy Information Administration: "Levelized Cost of New Generation Resources":

http://www.eia.doe.gov/oiaf/aeo/electricity_generation.html

"A related factor is the ***capacity value***, which depends on both the existing capacity mix and load characteristics in a region. Since load must be balanced on a continuous basis, units whose output can be varied to follow demand generally have more value to a system than less flexible units or those whose operation is tied to the availability of an intermittent resource"

[....that would be The Sun, or The Wind. damn it.]

3) .... numbers: Wikipedia: Cost of Electricity by Source

Finally: Harper's Magazine, Feb 2008: Eric Janszen: "The next Bubble: Priming the markets for tomorrow's big crash."

"There are a number of plausible candidates for the next bubble, but only a few meet all the criteria. Health care must expand to meet the needs of the aging baby boomers, but there is as yet no enabling government legislation to make way for a health-care bubble; the same holds true of the pharmaceutical industry, which could hyperinflate only if the Food and Drug Administration was gutted of its power. A second technology boom—under the rubric "Web 2.0"—is based on improvements to existing technology rather than any new discovery. The capital-intensive biotechnology industry will not inflate, as it requires too much specialized intelligence.

"There is one industry that fits the bill: *alternative energy.....*"

http://www.harpers.org/archive/2008/02/0081908

If you would like to participate in the bubble:

Database of State Incentives for Renewables: US DOE:

http://www.dsireusa.org/