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WEDNESDAY, APRIL 14, 2010

## Investment Bankers Versus Engineers as Decision Makers - Response to Jerry Taylor of Cato Institute

by Rod Adams

On April 9, 2010, Jerry Taylor of the Cato Institute paid me the compliment of responding to [a post that I labeled as a "smoking gun"](#). I gave the post that label since it provided an example of a man with evident ties to the fossil fuel industry working to discourage the use of nuclear energy. His post was published on [MasterResource: a free-market energy blog](#) under the title of *Atomic Dreams (Nuclear power not ready for prime U.S. time)* I promised a few days ago that I would produce a response, hoping to continue a dialog. I believe that it is important to understand why the two of us reach such different conclusions about energy.

Mr. Taylor's first point is a request for a concrete accounting of the regulations that drive up the cost of nuclear power plants. Because of the complexity of arguing a full economic analysis of the cost of delays, I will focus on the direct payments that applicants for a new nuclear power plant must make to the federal government. Surely Mr. Taylor will acknowledge that quarterly Nuclear Regulatory Commission invoices for regulatory "services" are real costs that are not imposed on competitive energy choices.

An applicant for a new nuclear power plant must agree to pay the full cost to the government for the license review process. The cost of professional staff time associated with the review of the application is [billed quarterly at the rate of \\$257 per hour](#). The fees are charged [whether or not the application is approved and are not refundable](#) if the applicant withdraws the application.

There is no estimate provided by the government for the amount of time that they intend to spend or the quantity of staff resources that they intend to apply. So far, there are no completed combined operating licenses, so there is no history on which to base an estimate for the total cost of that process. I have made a call to the NRC Public Affairs Office to find out if there is any publicly available accounting for the fees that current applicants have already paid.

The [design certification processes that were "completed"](#) for the ABWR, the System 80+, the AP600 and the AP1000 cost approximately \$60-100 million and took 4-8 years. (**Note:** The word "completed" is in quotes because recent developments have reopened the process for both the ABWR and the AP1000 and no applicant is currently referencing the System 80+ or the AP600.) The uncertain nature of the cost and the licensing review schedule is a large deterrent to any private investor. I can testify to that based on dozens of presentations to and reactions from venture capitalists and other potential investors in Adams Atomic Engines, Inc.

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ABOUT ME



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A vertical poster for a Platts event. The top part has the "platts" logo in white on a blue background. Below that, the text "Small Modular Reactors" is written in large, white, serif font. Underneath, the dates "June 28-29, 2010" and the location "Mandarin Oriental Hotel, Washington, DC" are listed in white. At the bottom, the website "www.events.platts.com" is provided.



Rod Adams  
**Atomicrod**

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4 hours ago

Atomic Insights - Investment bankers versus engineers as decision makers  
<http://bit.ly/9bHNvH> Response to Cato's Jerry Taylor #nuclear  
5 hours ago

Operators of licensed reactors pay an [annual license fee of \\$4.5 million for each operating unit](#). Though this fee is relatively small for a typical 1000 MWe nuclear unit that may produce several hundred million dollars worth of electricity each year, there is no current provision in the law for the fee to be adjusted based on the plant capacity. A 10 MWe Toshiba 4S, 25 MWe Hyperion Power Module, a 45 MWe NuScale, and a 125 MWe mPower would be subject to the same annual fee under current rules. (Disclosure: A 10 MWe Adams Engine™ would also be subject to the same "per reactor" fee, so I have a personal economic interest in working to change the rules.) Even at a capacity factor of 100%, a \$4.5 million annual fee would be a direct license fee cost of 2 cents per kilowatt hour for a 25 MWe atomic fission heated generator.

**Aside:** To be fair to the NRC, leaders have recognized that the current fee structure puts projects involving smaller unit sizes at a substantial economic disadvantage and they have [initiated efforts to gather information](#) that can support a rule making change. Based on demonstrated history, that effort might bear fruit sometime before I am eligible for social security. I submitted my [comments to the NRC request for information about 11 months ago](#), but I have not seen any recent information about the rule making efforts. **End Aside.**

Mr. Taylor also denies that he has a natural gas bias, but his discussion focuses on whether or not subsidies for natural gas result in lower prices for consumers. He makes a good case that the tax preferences and other subsidies for gas do little to increase gas production and generally result in wealth transfers of at least \$16.9 billion (totaling up the numbers in Mr. Taylor's subsidy section) from taxpayers to oil and gas producers. In making that case, Mr. Taylor does a great job of explaining why investors preferentially choose gas projects over nuclear projects. They result in a larger and more immediate cash return on investment. That does not mean that they are better long term sources of power or better investments for the customer, it means that the bankers using other people's money for the project can cash out early and get bigger bonuses.

Mr. Taylor also does not mention the vast amount of wealth that gets transferred from consumers to producers in those market situations where supply does not quite match demand, causing prices to spike. He does not acknowledge that natural gas producers have a strong economic incentive to do all they can to discourage the addition of low marginal cost nuclear generating capacity that can reduce the chances of the spike-causing market supply/demand imbalances. In just one year of excessive prices (2008), ExxonMobil captured enough free cash flow (nearly \$100 billion) from its oil and gas production operations to have purchased 5-10 large nuclear power plants, but they chose to spend it in ways that did not increase energy supply capacity.

I think Taylor also makes a strategic debating blunder if he wants to convince a majority of Americans to accept his "free-market" energy prescriptions. He asks us to trust "investment bankers" to watch over our money. At this juncture in our economic history, I wonder just how many Americans have warm and fuzzy feelings about the way that their money has been put to use in exporting jobs overseas, building white elephant office and apartment buildings, or [providing interest rate swaps to finance public sewer systems](#).

I remember a time in American history when people with steady jobs could obtain fixed rate, 30 year mortgages with reasonable interest rates of about 7-8% while at the same time they could save up for their down payments by putting regular deposits into a money market fund paying 5-6%. Local bankers had pleasant 9:30 am to 4:00 pm jobs with plenty of time for attendance at lunchtime Rotary Club meetings based on the difference in those two rates. These days, with Wall Street "investment bankers" rather than local bankers in

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RenewableEnergyWorld.com - great article about the challenges of monitoring wind turbine operating parameters  
<http://bit.ly/aa1WJO>  
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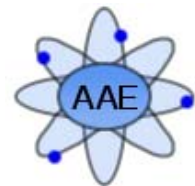
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4/14/2010

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charge, fixed rate mortgages are hard to find at any interest rate and my most recent monthly interest payment on a money market fund with a five digit balance was a whopping 15 cents!



Regular Atomic Insights readers will know that I have no love of subsidies or wish to allow accounting/legally trained bureaucrats to tip the scales of economic computations of cost versus rewards. I would dearly love to have a world where atomic fission could compete on a reasonably level playing field against any kind of combustion energy. Six orders of magnitude advantage in energy density and waste volume would overcome 150 years worth of infrastructure development in reasonably short order.

I love democracy and freedom and have no desire at all to live in Communist China, but I have to admire their logical decision making processes. The leaders in that nation generally respect mathematics and hard engineering. China is building nuclear plants as fast as it can for internal use; the currently announced plans will result in the completion of at least 70 units by 2020. Those units will be built with direct investment from the Chinese government, but that is no different from the direct investment that the Chinese government is making in securing other sources of reliable energy.

The engineers in charge of long term decision making in France, China, South Korea, and even Russia know that it is not money that makes the world go; it is reliable, physical power. For them, fission is a demonstrably superior source of that important measure of prosperity. If the United States is led by people who insist that natural gas extracted from tight shale formations is a better foundation on which to build our future economy because it is a better way for investment bankers and oil and gas companies to take money from the pockets of consumers, we deserve the resulting fate.

Perhaps Koch Industries funded libertarians who admire the investment decision making processes in the board rooms at Goldman Sachs and J. P. Morgan can accept that result. As a guy who has spent the past 33 years wearing a uniform either full or part time, manufacturing products in American factories, learning hard engineering skills, and defending freedom and equal opportunity, I cannot.

**Update:** (Posted April 14, 2010 at 05:46) Jerry Taylor has responded to the comments added to his initial Atomic Dreams post - "[Atomic Dreams: Response to Critics \(why not a market test for nuclear too?\)](#)". The new one is dated April 14, 2010, so it must have appeared in the past few hours, but it was not written in response to the above commentary.

Labels: [Cato Institute](#), [Jerry Taylor](#), [natural gas versus nuclear](#)

POSTED BY ROD ADAMS AT 3:25:00 AM



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