Shareholder Proposal: Report on Financial Risks of Continued Reliance on Coal

UTILITIES ARE EXPOSED TO SIGNIFICANT FINANCIAL AND REGULATORY RISK FROM RELIANCE ON COAL

Investors with holdings in coal-fired electric utilities face significant financial risks.

1. Costs of environmental compliance. Enforcement of existing environmental regulations and proposed new regulations over the useful life of coal plants will impose significant, unpredictable, individual and cumulative capital and operating costs on these plants.
2. Increasing price and price-volatility of coal. The changing nature of domestic coal markets and the prospect of future increases in the price of coal makes its instability a novel part of the energy calculus in the United States.
3. Construction and cost-recovery. For new plants, construction costs have risen exponentially and utilities can no longer guarantee that these expenditures will be recovered via rates or electricity sales.

Industry analysts are warning investors to the financial risks of reliance on coal.

- The Brattle group estimates that 50-66 GW's would be retired if the Environmental Protection Agency (EPA) imposes a scrubber mandate and provides clear economic standards that demonstrate where merchant plants and younger, large plants can be retired.[1]
- Bernstein Research found that the gross margin of merchant coal plants "has fallen by over three quarters since 2008, from $20 billion to $5 billion" and forward price curves "suggest that in 2011 aggregate unregulated gross margin will erode further, dropping by a fifth from $5 billion to $4 billion. This dramatic erosion in gross margin reflects the collapse in the price of natural gas […] aggravated by continued upward pressure on the price of Appalachian coal."[2]
- An MJ Bradley report contains a listing of 40 plant closing announcements (of which seven plants were above 250 MW and two were less than 40 years old) demonstrating that utilities have concluded this type of plant is not worth investing in.[3]

Since 2005, plans for over 136 new coal plants were canceled. In these decisions, energy stakeholders – utility executives, public utility commissions, investment bankers, and politicians – disinvested $189 billion from coal projects.

Since 2009, over 14 GW of retirements of existing coal plants were announced and more are anticipated.

The utilities that received this resolution have not sufficiently disclosed information about the extent of their exposure to the aforementioned risks, their plans to reduce the risks of reliance on coal, or how they will manage these risks over the useful life of their existing coal plants.

1. REGULATORY AND OPERATIONAL RISKS RELATED TO CONTINUED RELIANCE ON COAL

Although many regulations have been "on the books" for decades, we are seeing ever greater enforcement of these regulations in recent years due to litigation challenging the EPA as well as utility companies. Coal-burning utilities are being increasingly required to comply with the Clean Air Act, Clean Water Act, and other environmental laws.

Air: Pollutants from coal-fired plants have been linked to human mortality and morbidity from stroke, cancers, cardiovascular and respiratory diseases,[4] as well as causing deforestation and acidification of surface waters when precipitated in 'acid rain.' Mercury, a powerful neurotoxin, is linked to birth defects.

- The Electric Power Research Institute (an industry sponsored organization) estimates that installation of one SO_2 scrubber on a 500 MW plant in the mid-west would cost about $420/kW, or $210 million.[5]
- Bernstein Research estimates that the cost of compliance with new environmental regulations for mercury alone could cause the retirement of 61 GW or over 20% of U.S. coal-fired generation capacity.[6]

Water: Cooling water is required for thermo-electric power generation and coal plants are responsible for approximately 143 billion gallons of freshwater withdrawals each day - more than 40% of all such withdrawals in the United States.[7]

- New York and California have taken the lead in promulgating rules requiring installation of cooling towers that can cost over $1 billion per plant but "would cut the water intake by about 97 percent and eliminate the threat to the marine organisms."[8]

Waste: Coal Combustion Waste is the second largest waste stream in the United States.[9] The toxins in coal ash have been linked to cancer, neurological damage, reproductive failure, organ failure, and other serious health problems as well as widespread damage to ecosystems.[10]

- Adopting a hazardous waste designation for coal ash (Subtitle C) will have upfront costs for the utilities but, according to EPA's Regulatory Impact Analysis (RIA) of the proposed rules, but the regulation would save an estimated $5.3 to $16.7 billion in avoided future coal combustion residues impoundment catastrophic failure cleanup costs, in addition to avoiding significant additional costs related to litigation, contamination of surface water, and human health risks.[11]

Cumulative Regulatory Risk: The cumulative risk posed by enforcement of existing and the ratification of new regulations of air, water, and waste, will increase the cost of producing coal and the resulting price of coal, and make the costs of burning, cooling, and managing the waste from coal-burning facilities uneconomical.

- Bernstein Research estimates that, even without the cost of GHG controls, new regulations could cause retirement of coal plants that generate as much as 452 million MWh, or 24% of U.S. coal-fired generation.[12]

2. RISKS RELATED TO COAL PRICE AND AVAILABILITY

Increasing prices and price volatility put low-cost electricity and the long-term competitiveness of coal-based projects into question. Upward pressure on the price of coal and resulting increases in the cost of electricity from coal-burning utilities will continue due to significant changes in the production and distribution of coal and the growing competitiveness of alternative resources.

In 2010, the price of coal from each of the major US production regions increased significantly, putting utilities with substantial percentages of generation based on coal at risk as price increases are projected to continue.[13]

Coal-Producing Region[14]	December 2009	December 2010	% Increase
Powder River Basin (PRB)	$ 8.40	$13.40	59.5%
Central Appalachian (CAPP)	$54.15	$71.15	31.0%
Illinois Basin	$40.00	$47.25	18.0%
Northern Appalachian (NAPP)	$51.60	$69.50	34.6%

Increasing price and price-volatility of coal:

- Peabody, the largest coal producer in the US, predicts that as a function of the reduction of CAPP coal, the price of PRB coal could increase upward of 293% from 2007 prices in the next 5 years.[15]
- A recent analysis by the Texas Independent Supply Operator, ERCOT, has set 20-year PRB prices for Texas between $75-$100 per ton, thereby predicting an annual price increase of 8-12%.[16]
- Doyle trading consultants find that, "due to the global and domestic supply, demand and volatility drivers, we believe that price volatility will continue to increase. In other words, regardless in which direction they may ultimately trend, the price swings will be more erratic and of greater magnitude."[17]

Increasing cost of producing coal:

- Massey Energy reported that its average cost per ton of coal rose from $34.00 to $50.48 from 2005 to 2009 - an increase of 48%.[18]
- Operating costs in the PRB have doubled since 2003.[19]
- The cost of production required to meet Arch Coal projections for mining in the PRB exceed the market price of PRB coal by $2.65 - $5.45 per ton. This would require a price for coal that is 20% to 40% higher than the market can sustain.[20]

Diminished reserves:

In 2008, the U.S. Geological Survey (USGS) determined that the methods traditionally used to determine the size, quality and economic utility of existing coal reserves are not reliable.[21]

- The USGS found that total US recoverable resources were only 47% of previous estimates.[22]

In the face of increasing price and price volatility of coal, the price of natural gas is low and expected to stay as such.

- Brattle Group projects natural gas prices through 2020 to remain, on average, at $6.50/mmbtu and to rise by 1% or less through 2035.[23]

3. RISKS RELATED TO CONSTRUCTION AND COST RECOVERY

Costs for both construction of new coal-fired plants and upgrades to existing plants are increasing exponentially. For example, in 2002 a 600 MW plant cost $1500/kW to build ($900 million) but by 2009 that same plant design cost $3500/kW or $2.1 billion.

Given the risks of construction cost-overruns, coupled with market constraints and public utility commission resistance on power prices, new coal-fired facilities and investments in existing facilities present financial risk to utilities.

- Cost of upgrades to maintain operations are increasing, and implementing certain maintenance upgrades trigger plants needing to invest in environmental upgrades as well
- Cost of upgrades to meet environmental regulations. On a 300MW plant, estimated costs for a SO2 scrubber is $100-120MM; SCR is $50-60MM; ACI and Baghouse approximately $30MM; and a Cooling Tower $60-90MM.[24]
- Moody's also considers regulatory risk to have a significant impact on the ratings of utilities. "Given the magnitude of these potential nondiscretionary environmental-related costs and the fact that electricity prices are rising throughout the country, electric utilities could face a daunting challenge in obtaining timely recovery of these costs through their respective rate-setting authorities ... Such a scenario could cause negative rating actions within the sector."[25]

CONCLUSION:

The risks to investors with holdings in coal-dependent utilities are significant. These utilities face material risks associated with their continued business model given the changing regulatory landscape and increasing environmental compliance costs, volatility in the price of coal, growing competitiveness of alternative fuel sources, and increasing construction costs for coal plants and emissions controls . Given this context and the aging fleet of coal-fired facilities, utilities are confronted with the difficult decision of whether to retire, retrofit, or replace their coal plants with cleaner generation.

The cancellation of 139 of the 151 proposed new coal plants since 2005, the announced retirement of over 14 GW existing coal plants since 2009, and the projected retirement of 24% of the existing coal fleet because continued operations will be uneconomical are clear indicators that continued reliance on coal presents high risks for utilities.

Despite the unprecedented level of risk facing coal-dependent utilities, companies have not been forthcoming with information about the extent of their exposure to the risks discussed herein, their plans to reduce the risks of continued reliance on coal, or how they intend to manage these risks over the remaining useful life of their existing plants.

[1] Brattle Group typically represents independently owned utilities. In essence this paper supports the broader industry position that regulatory enforcement by EPA should be delayed until the utilities can comply.
[2] Bernstein Research, *Bernstein Commodities & Power: No Light for Dark Spreads: How Ruinous Economics of Coal-Fired Power Plants Affect the Markets for Coal and Gas,* 18 February 2011, p. 1.
[3] M.J. Bradley & Associates, LLC and Analysis Group, "Ensuring A Clean, Modern Electric Generation Fleet while Maintaining Electric Reliability," August 2010, Appendix B, Recent Coal Plant Retirement Announcements.
[4] National Research Council, *The Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use*, The National Academies Press (2009), pp. 37, 62-73.
[5] H. Wynne, F. D. Broquin, and S. Singh, *U.S. Utilities: A Visit to Washington Finds Utility Lobbyists & Environmentalists Agreeing on the Grim Outlook for Coal*, Bernstein Research, 9 March 2010, p. 2. See also: Rockefeller Family Fund, *An Assessment of the Repowering Potential of Existing U.S. Coal Fired Electric Generating Units,* April, 2010.
[6] H. Wynne, F. D. Broquin, and S. Singh, *U.S. Utilities: A Visit to Washington Finds Utility Lobbyists & Environmentalists Agreeing on the Grim Outlook for Coal*, Bernstein Research, 9 March 2010, p. 2.
[7] Union of Concerned Scientists, "Clean Energy," last revised 5 October 2010, available at: http://www.ucsusa.org/clean_energy/technology_and_impacts/energy_technologies/water-energy-electricity-overview.html.
[8] M. L. Wald, "Nuclear Plant's Use of River Water Prompts $1.1 Billion Debate With State," *The New York Times*, 23 August 2010, available at: http://www.nytimes.com/2010/08/23/science/earth/23cooling.html.
[9] D. Hopey, "39 groups protesting coal ash rule change," *Pittsburgh Post-Gazette,* 23 December 2008, available at: http://www.post-gazette.com/pg/08358/937012-113.stm.
[10] U.S. EPA, "Steam Electric Power Generating Point Source Category: Final Detailed Study Report," October 2009, p. 6-2, 6-3.
[11] US EPA Office of Resource Conservation & Recovery, "Regulatory Impact Analysis For EPA's Proposed RCRA Regulation Of Coal Combustion Residues (CCR) Generated by the Electric Utility Industry," 30 April 2010, Summary Exhibit 2.
[12] H. Wynne, F. D. Broquin, and S. Singh, *U.S. Utilities: A Visit to Washington Finds Utility Lobbyists & Environmentalists Agreeing on the Grim Outlook for Coal*, Bernstein Research, 9 March 2010, p. 2.
[13] Cite articles on coal and nat gas prices
[14] Energy Information Administration, *Average Coal Commodity Weekly Spot Prices, for weeks of December 17, 2009 and 2010*.
[15] Christina A. Morrow, Vice President, Investor Relations, *Jefferies 6th Annual Global Industrial A&D Conference,* August 10, 2010, p. 23.
[16] K. Hansen, *Future Scenario Development for the ERCOT Long Term Study, 17* August 2010, p. 8.
[17] Doyle Trading Consultants, LLC., and Hill and Associates, *The Coal Trading Handbook, 2007 Edition,* March 2007, p. 21-1.
[18] Massey Energy, *2009 Annual Report, Financial Highlights,* p.1.
[19] J. Tomich, *Coal companies follow the trail west. St. Louis Dispatch*, 26 December 2010.
[20] John Drexel, Senior Vice President and CFO, *Raymond James Coal Investors Conference,* Arch Coal, Inc. New York City, November 10, 2009. According to the USGS costs of production curve, the price would be $14.00 per ton (using 2007 dollars). In 2007 the market price of PRB coal ranged from $8.55 to $11.35.
[21] United States Geological Society, *Assessment of Coal Geology, Resources and Reserves in the Gillette Coalfield, Powder River Basin, Wyoming,* Open-File Report: 2008-102, p. 31, http://pubs.usgs,gov/of/2008/1202/.
[22] USGS, *Op Cit,* p. 31.
[23] Brattle Group, 8 December 2010, Slides 24, 42, and 45. The analysis covers eight regions across the US using current base prices between $4.0 and $6.0 / mmbtu.
[24] M. Celebi, F. Graves, G. Bathla, and L. Bressan, "Potential Coal Plant Retirements Under Emerging Environmental Regulations," The Brattle Group, 8 December 2010, Slide 18, available at: http://www.brattle.com/_documents/UploadLibrary/Upload898.pdf.
[25] Moody's Investor Service, *The Cost of Climate Change,* Corporate Finance – Special Comment, February 2008.