

Special Comment



November 2008

Carbon Dioxide: Regulating Emissions Following a Long and Winding Road

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- New coal-fired electric generation development efforts are higher-risk investments subject to vigorous opposition through regulatory and legal jurisdictional venues – risks already incorporated into ratings and rating outlooks
- Long-running debate over carbon-dioxide emissions continues to be a major impediment for issuers seeking air quality permits – question is: as a pollutant under the Clean Air Act (CAA), is it subject to regulation and if so, how?
- Development efforts likely to be impacted in some form by a recent EPA Environmental Appeals Board (EAB) ruling associated with Deseret Power Electric Cooperative's air quality permit application – decision issued November 13, 2008
- Differentiation necessary between those plants with issued air permits (even if contested or appealed) and those that are still attempting to attain an air permit
- Implications of EAB's decision likely to have limited duration due to an expressed preference for national rulemaking endeavors – potential for Obama Administration to act quickly and decisively on this issue
- From a credit perspective, EAB's ruling initially viewed as neutral for coal-fired electric generation development efforts - increased level of uncertainty associated with EPA's reconsideration of regulating carbon-dioxide emissions not sufficient to impact ratings over near-term
- Substantial complexity of issues regarding legal interpretations and jurisdictional strategies will continue to challenge monitoring progress
- Issuers affected include all companies operating in the U.S. with coal-fired generation development plans, including investor-owned electric utilities, municipal utilities, G&T cooperatives and non-regulated wholesale merchant generators and specific generation projects



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New Coal-Fired Electric Generation Development Is High Risk

Issuers seeking to build new coal-fired electric generation capacity will significantly increase their over-all business and operating risk profile - in part due to the sheer size of the investment and exposure to cost escalation.

Risk mitigation varies with specific terms and conditions associated with each development project and by issuer-sponsor. The assurance behind recovering the costs of these investments varies between issuers – where municipal utilities are best positioned, followed by G&T cooperatives, regulated investor owned electric utilities in states with a supportive regulatory environment, merchant wholesale generators (where recovery is attained via the market) and finally, by specific power project financings .

All new coal-fired electric generating plants need to attain an air quality permit in order to commence commercial operations. The permitting process, which is typically conducted at individual state agency / authority levels, represents a primary avenue for environmental opposition groups (or other intervenors) to object to the plant. As a result, a material amount of regulatory and legal complexity is often introduced into development plans. In our opinion, these opposition groups are very sophisticated and well funded, and should not be dismissed as obstructionist.

In the U.S., a majority of states issue air quality permits through their own, individual, state agencies. The Environmental Protection Agency (EPA), a Federal organization, directly issues air quality permits for Indian reservations and several states, including: California, Massachusetts, Nevada and Washington. For those states that issue air quality permits through their own, individual agencies, they still overwhelmingly defer, in some form, to the guidance established by the EPA and every state's regulations tend to be at least as stringent as the EPA.

The risks and challenges for new coal-fired electric generation development plans have existed for many years, and are generally incorporated into our ratings and rating outlooks for specific issuers and / or projects, including investor-owned electric utilities, municipal utilities, G&T cooperatives and non-regulated wholesale merchant generators

Development Efforts Likely To Be Impacted In Some Form By Recent Deseret Power Electric Cooperative EPA Ruling

On November 13, 2008, the Environmental Appeals Board (EAB) of the Environmental Protection Agency (EPA) issued an order on the Deseret Power Electric Cooperative's air quality permit for a new waste-coal generating facility at an existing coal-fired generation plant, the Bonanza plant. Environmental groups as well as industry-advocates are claiming a victory associated with the EAB order and differ materially with respect to their respective interpretations of the order's implications.

The EAB is a division of the EPA. The three judges that serve on the EAB have extensive backgrounds in the environmental legal and scientific fields, and they are largely considered to be experts and are well regarded by all related constituents. The appeals process is a formal process governed by EPA regulations. The EAB's order is EPA's final decision on a dispute and is binding on the parties unless the decision is reversed by a federal court.

Moody's observes that the EAB did not agree with the Sierra Club, the primary environmental opposition group that brought forward the appeal, which was asserting that the Clean Air Act (CAA) clearly specifies the regulation of carbon-dioxide emissions through a best available control technology (BACT) review. The EAB also disagreed with the EPA's assertion that there was no authority to regulate carbon-dioxide emissions based on the historical record. In summary, the EAB order sent the permit application back to the EPA to reconsider its refusal to impose carbon dioxide BACT emission limits.

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In our opinion, one of the more important elements associated with the EAB's decision was their clearly stated preference that the EPA avoid attempting to resolve the issue of what BACT exists but instead solve the matter in a broad, national rulemaking context.

Credit Implications Initially Viewed As Neutral

From a credit perspective, Moody's is initially viewing the EAB's decision as neutral to credit quality. The order is part of a continued long and winding movement towards some form of Federal regulation. Although the permitting process associated with attaining an air quality permit has experienced an increase in uncertainty levels, we do not view the increase in uncertainty as sufficient enough, at this time, to impact our over-all risk assessment for these types of projects. We continue to incorporate a view that the development and construction plans of new coal-fired electric generation facilities are a complex endeavor, subject to a material amount of sophisticated legal, regulatory, technical and scientific opposition, and that the "back-end" emission requirements for a plant, which include carbon-dioxide emissions, are a critical (and costly) aspect for the engineering designs. In our opinion, the EAB's decision in Deseret is additional evidence of these types of risks.

Nevertheless, on a prospective basis, we believe issuers will need to be somewhat more cautious with respect to their coal-fired development plans, at least until more clarity emerges with respect to potential carbon-dioxide emission limits under the new Obama Administration. In our opinion, this could take a while, possibly several years, thereby leading to delays - generally a credit negative.

A Bird in the Hand is Worth Two in the Bush

We are incorporating a view that for those issuers that are still in the process of attaining a permit, a substantial delay could materialize, in part due to the EPA's potential reassessment of BACT mitigation requirements and in part due to the prospect for new national rulemaking initiatives. We believe near-term progress on these matters is likely to be suspended, pending the new Obama Administration's appointments and the establishment of new policy goals.

Moody's does see some risks associated with those plants that have an issued permit (which is still being appealed / contested) and are currently under construction. We observe that since all states essentially follow the EPA's guidance on these CAA pollutant / emission matters, and every state typically imposes regulations at least as stringent as the EPA, that delays may materialize over the near-term.

Emission control technologies associated with a coal plant represent some of the most critical aspects of a plant's operations, including: capacity factors, mean-time between failure, economics and valuation. We believe it may be challenging for an issuer or developer to pursue the construction of a plant without having some view as to what type (and magnitude) carbon-dioxide emission regulations look like. It is our understanding that the lost plant efficiency caused by the installation of carbon-BACT technologies – the majority of which are still in the early phases of development – could be as much as 25% - 35% of a plant's generation capacity. For comparison purposes, this relates to roughly 5% for various SOX and NOx technologies.

What BACT means in relation to carbon regulation

Under the Clean Air Act, power plants in the U.S. are required to have a prevention of significant deterioration (of air quality)(PSD) permit to operate, which includes the use of best available control technology (BACT) to limit the emissions of various pollutants. The Clean Air Act statute defines BACT as meaning "an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Clean Air Act which would be emitted from any proposed major stationary source or major modification which the Administrator (EPA), on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable...".

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Significant debate over the past several years has taken place over whether carbon is considered a pollutant that Congress intended the EPA to regulate. If the EPA reconsiders its position and decides it has the authority to regulate carbon, then power plants would have to meet a BACT standard for carbon.

Moody's believes such a BACT standard will be difficult to implement because there is no commercially acceptable carbon capture control technology available to retrofit existing power plants nor for installation on the newer advanced plants that are under permit challenges. While there are several carbon control demonstration projects currently being developed (the first major demonstration project is expected to be operational in 2012) in the U.S., none have yet proven to be commercially viable to be a BACT.

It should also be noted that besides the limited potential to date of carbon control technology, a carbon delivery system and storage locations have yet to be identified.

Complications Associated With Regulating Carbon-Dioxide Under Provisions Of The Clean Air Act

One of the more notable aspects of the EAB's Deseret ruling was its expressed preference that regulating carbon-dioxide emissions under the CAA needs to be addressed in "an action of nationwide scope" thereby opening the door for the Obama Administration to implement national rulemaking standards.

Moody's notes that the national rulemaking process has already commenced, when the EPA issued an Advanced Notice of Rulemaking (ANOPR) associated with whether carbon-dioxide emission should be regulated under the CAA. Comments are due on Friday, November 28, 2008.

Moody's incorporates a view that the new Obama Administration is likely to take on a more activist role with respect to regulating carbon-dioxide emissions and may avail itself of the opportunity to pursue an "endangerment finding" which claims that carbon-dioxide endangers the public health and welfare.

Nevertheless, regulating carbon-dioxide emissions under the provisions of the CAA may prove to be a complex endeavor and the unintended economic consequences could occur. For example, it is our understanding that regulating carbon-dioxide emissions under the provisions of the CAA would also impact numerous industries and sectors, including refineries, chemicals and transportation. In addition, sectors that have previously not considered carbon-dioxide emission limitations such as: apartment buildings, shopping complexes, hospitals, educational facilities and churches may also be affected.

It remains uncertain at this time whether the U.S. Congress will establish this issue as a priority in 2009 given current economic conditions. However, environmental opposition groups have asserted they will continue to proceed along the regulatory route to intensify the legal pressure to stop new coal-fired generation.

Issues Are Extremely Complex

Moody's observes that the issues regarding carbon-dioxide emission regulations exhibit a substantial amount of complexity. Extremely technical legal interpretations are fundamental to the established record, sophisticated jurisdictional strategies are constantly being deployed and advanced scientific-based research is often referenced. Many of these issues are beyond the normal scope of our fundamental analysis, which creates additional challenges when incorporating these issues into our ratings and rating outlooks.

With respect to these complex issues, Moody's strives to understand the over-all implications associated with the issuers to arrive at a common perspective which will be incorporated into our analysis of credit quality. This process is aimed at providing our rating committees with an informed view on this issue, which affects a number of sectors, including public finance, corporate finance and specific project financing structures.

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Selected Plants Under Construction With An Air Permit

State	Name of Plant	MW Capacity	Primary Utility / Sponsor	Sr. Unsec. Rating
AR	Arkansas - Hempstead (Turk)	600	Southwestern Electric Power Company	Baa1
CO	Colorado - Comanche	750	Public Service Company of Colorado	Baa1
IL	Illinois - Springfield	200	City Water, Light and Power (CWLP)	Aa3
IL	Illinois - Prairie State/Peabody	1,582	Six Midwest municipal joint power agencies	na
IN	Indiana - Duke Energy/Vectren	630	Duke Energy	Baa2
KY	Kentucky - Trimble	750	Louisville Gas and Electric Company	A2
KY	Kentucky - Spurlock	268	East Kentucky Power Cooperative	na
LA	Louisiana - Little Gypsy refit	530	Entergy Louisiana	Baa2
LA	Louisiana - Rodemacher Power Station	660	Cleco Power	Baa1
MO	Missouri - Springfield	330	City Utilities of Springfield	Aa3
MO	Missouri - Iatan (Kansas City Power & Light)	850	Kansas City Power & Light	A3
NC	North Carolina - Cliffside	800	Duke Energy Carolinas	A3
NE	Nebraska City II	663	Omaha Public Power District	Aa1
NE	Nebraska - Whelan Energy Center II	220	Public Power Generation Agency	A2
OH	Ohio - Lima Energy IGCC Station	600	Lima Energy Company	na
PA	Pennsylvania - River Hill Power	290	River Hill Power Company	na
TX	Texas- TXU Sandow 5	600	Energy Future Holdings	B2
TX	Texas - Spruce	750	City Public Service of San Antonio	Aa1
TX	Texas- NuCoastal	303	NuCoastal Corp	na
TX	Texas - Sandy Creek	900	Dynegy/Brazos Electric Cooperative, Inc./Lower Colorado River Authority	B1/na/A1
VA	Virginia- Dominion	585	Virginia Electric and Power Company	Baa1
WI	Wisconsin - Oak Creek	1,200	Wisconsin Energy Corp	A3
WV	West Virginia- Longview	695	GenPower	na
WY	Wyoming - Dry Fork Station	385	Basin Electric Power Cooperative	A2

Selected Plants Seeking Air Permit

State	Name of Plant	MW Capacity	Primary Utility / Sponsor	Sr. Unsec. Rating
AR	Arkansas: Plum Point	1,330	LS Power/Plumpoint Energy Associates	na
GA	Georgia - Washington County Power Station	850	Power4Georgians (Ten Georgia electric cooperatives)	na
IA	Iowa - LS Power Elk Run Energy Station	750	LS Power	na
KS	Kansas - Holcomb	700	Sunflower Electric Power Corp. / Tri-State G&T Assoc., Inc.	Na / Baa2
KY	Kentucky- Smith	278	East Kentucky Power Cooperative	na
LA	Louisiana - Big Cajun II Unit 4	705	NRG Energy	Ba3
MI	Michigan - Midland power plant	750	Mid-Michigan Energy (by Dynegy and LS Power)	B1/na
MI	Michigan - Consumers Energy Plant	930	Consumers Energy	Baa2
MN	Minnesota - Mesaba Energy Project (IGCC)	603	Excelsior Energy	na
MT	Montana - Highwood	250	Southern Montana Electric Generation & Transmission Cooperative's (SME)	na
OH	American Municipal Power Generating Station	1,000	American Municipal Power-Ohio Inc.	A1
OK	Oklahoma - AES Shady Point II	630	AES Corporation	B1
SC	Pee Dee I	660	South Carolina Public Service Authority (Santee Cooper)	Aa2
TX	Texas- Coletto Creek Expansion	650	International Power/South Texas Electric Cooperative	Ba2/na
UT	Intermountain Power Unit 3	900	Utah Association of Municipal Power Systems	A2
WV	West Virginia - Mountaineer IGCC	629	Appalachian Power	Baa2

SOURCE: Sierra Club, Moody's, industry report, company reports

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Moody's Related Research

Special Comments:

- U.S. Investor-Owned Electric Utilities: Somewhat Insulated But Not Immune from Credit Market Stress, Economic Weakness, October 2008 (111891)
- The EU Climate Change Strategy: Putting Emission-Reduction Targets Into Perspective, May 2008 (108846)
- New Generating Capacity in a Carbon Constrained Environment, March 2008 (107453)
- The Cost of Climate Change, February 2008 (107643)
- Credit Challenges Ahead for Public Power: Difficult Decisions on New Generating Capacity, November 2007 (105997)
- New Nuclear Generation In the U.S: Keeping Options Open Vs Addressing an Inevitable Necessity, October 2007 (104977)
- Storm Clouds Gathering on the Horizon for the North American Electric Utility Sector, August 2007 (103941)
- Environmental Regulations Increase Capital Cost for Public Power Electric Utilities, June 2007 (103616)
- Regulation of Greenhouse Gases, Substantial Credit Challenges Likely Ahead for Public Power, June 2007 (103356)
- Regulatory Pressure Increases in US. Electric Utilities, March 2007 (102322)

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

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Report Number: 112822

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