MOODY'S
INVESTORS SERVICE

Announcement: **Moody's says Japanese nuclear problems create contagion risk for US nuclear generation operators**

Global Credit Research - 14 Mar 2011

New York, March 14, 2011 -- Moody's Investors Service said the recent nuclear incidents in Japan, specifically with respect to the Fukushima-Daiichi and Fukushima-Daini nuclear power generating stations, will be viewed as a material credit negative for the US nuclear generation industry but are not sufficient enough to result in a change to individual issuer ratings or rating outlooks at this time.

For now, we assume near-term operating costs for US nuclear generation facilities are likely to rise, and the magnitude of the increase could be affected by the unfolding events in Japan.

"The nuclear generating sector operates within a global and national fraternity" said Jim Hempstead, Senior Vice President "so contagion risk factors, especially with respect to safety, are high."

Increased political and regulatory intervention can fuel uncertainties complicating long term investment decisions. US owners of un-regulated nuclear generation, typically un-regulated power companies operating in competitive markets, will be more negatively impacted than regulated utilities. Regulated utilities typically operate with a greater assurance of cost recovery whereas un-regulated power companies can only rely on market prices. Some un-regulated power companies that operate nuclear power plants are capitalized with higher levels of debt and with two being rated in the non-investment grade rating categories (NRG Energy: Ba3 Corporate Family Rating / negative outlook and Energy Future Holdings Corp: Caa2 Corporate family rating / negative outlook).

Exelon Generation (A3 senior unsecured / stable), a subsidiary of Exelon Corporation (Baa1 senior unsecured / stable), is the most exposed of all US issuers as more than 90% of its electricity production comes from 17 nuclear generating stations.

Many US nuclear operating plants are approximately the same age as the plants at Fukushima and their overall reactor and safety designs are similar. US-based reactors tend to have a higher overall capacity factor than their Japanese counter-parts, largely due to a regulatory operating difference. In Japan, regulations require more frequent and lengthy scheduled outages of nuclear plants. As a result, we estimate the Japanese nuclear generating fleet tends to exhibit a lower average capacity factor (roughly 70%) than the US (roughly 90%).

"Our concern is related to rising risks associated with potentially more stringent safety, evacuation and emergency response measures and the prospect for renewed public, political and environmental opposition" added Hempstead.

Despite these developments, Moody's continues to view the regulatory oversight empowered to the U.S. Nuclear Regulatory Commission (NRC) which exists across both regulated and un-regulated operators as a net credit positive. In addition to NRC oversight, we also note nuclear's competitive marginal cost characteristics, low carbon emission footprint and aggregate long-term safety record. Regulated utilities that own and operate nuclear generation in the U.S. also tend to be larger in size and often exhibit stronger financial credit metrics than their non-nuclear peers.

While no individual issuer rating actions are being contemplated at this time, the events in Japan serve as a reminder of several major credit weaknesses for the nuclear sector. These credit weaknesses include radioactive by-products, which are extremely dangerous to the environment, population safety and sovereign security.

Events in Japan will also likely add to existing opposition to the relicensing of some nuclear generating facilities. Moody's believes issuers that recently filed for a 20-year operating license extension with the NRC are likely to receive additional scrutiny during their license approval process. Plants with existing operating challenges or those that are located near metropolitan areas or near earthquake faults may find it more challenging and expensive to attain a license extension. See list of plants at the end of this report that have filed for a license renewal.

The NRC's combined construction and operating license (COL) process currently associated with new nuclear generating facilities could also be affected, in our opinion. It is conceivable the NRC may decide to more carefully evaluate next generation reactor designs and their safety and emergency response capabilities, especially in light of their passive safety designs or increased political influences.

We currently see only two new nuclear generating facilities as potentially being exposed, both of which reside in the regulated utility framework. These include the Vogtle station in Georgia, owned by: Southern Company (Baa1 senior unsecured / stable) and its subsidiary, Georgia Power Company (A3 senior unsecured / stable); Oglethorpe Power (Baa2 Long Term Issuer Rating / stable); and the Municipal Electric Authority of Georgia (MEAG: A1 Long Term Issuer Rating / stable). We note the Vogtle project is to date, the first, and only one, of the new nuclear projects to sign a conditional term sheet with the US Department of Energy for conditional loan guarantees.

The other new nuclear generating facility is the VC Summer station in South Carolina, owned by: SCANA Corporation (Baa2 senior unsecured / negative) and its subsidiary, South Carolina Electric and Gas (Baa1 Long Term Issuer Rating / negative) and the South Carolina Public Service Authority (Santee Cooper: Aa2 revenue backed / stable).

Both of these new plants are in the early stages of construction; both chose sites located at existing operating sites, and both expect to receive their NRC COL approval by mid-to-late year 2011. More importantly, both plants are pursuing construction of the AP 1000 (Westinghouse) reactor design, which uses passive safety systems, including the safety systems related to cooling water. Although a passive cooling water safety system might not have failed due to a power interruption, the potential duration of the emergency might raise concerns.

Additionally, Moody's believes that the events in Japan may add another layer of uncertainty for the development plans of NRG Energy's (NRG: Ba3 Corporate Family Rating / negative) South Texas Project 3 & 4 (STP 3&4). Specifically, the Toyko Electric Power Company (TEPCO: Aa2 Long Term Issuer Rating / on review for possible downgrade), the owner of Fukushima-Daiichi and Fukushima Daini nuclear power stations, has plans to make up to an 18% investment in STP 3&4. But in light of recent events and the capital needs now unfolding at TEPCO, we would not be surprised if TEPCO's efforts to invest internationally were scaled back materially. Abandoning the new project at STP would likely be viewed as a credit positive for NRG. San Antonio CPS (Aa1 senior secured / stable) is the other owner of the STP proposed expansion project.

From a credit perspective, we see a material increase in near-term uncertainties for the nuclear industry, a credit negative. Moreover, if the environment in Japan deteriorates further, or if other older nuclear facilities experience major operating problems, our financial metric thresholds to maintain a given rating could be revisited and increased.

"We have been ascribing a materially higher business and operating risk factor to issuers pursuing new nuclear generation since 2007" said Hempstead "and we assume these issuers will maintain enough financial strength to weather these kinds of event risks."

Moody's acknowledges the current level of uncertainty in Japan and the fact that the government, utilities and first responders remain in a high state of emergency. Nevertheless, in a separate action, we placed the ratings of Tokyo Electric Power Company (TEPCO) on review for a possible ratings downgrade.

In the list that follows, we note the operating reactor; whether it operates within a regulated or un-regulated market structure; the general location of the facility; the approximate date that the license renewal application was filed with the NRC; the parent company of the operator and its rating and rating outlook. The data was sourced by the Nuclear Energy Institute's (NEI) website. The NEI is a nuclear industry lobby group.

The reactors include:

• Pilgrim (un-regulated), Plymouth, MA, January 2006 (Entergy: Baa3 senior unsecured / stable);

• Vermont Yankee (un-regulated), Vernon, VT, January 2006 (Entergy);

• Indian Point 2 & 3 (un-regulated) , New York City, NY, April 2007 (Entergy);

• Prairie Island 1 & 2 (regulated), Welch, MN, April 2008 (Xcel Energy : Baa1 senior unsecured / stable);

• Palo Verde 1, 2 & 3 (regulated), Phoenix, AZ, December 2008 (Pinnacle West: Baa3 senior unsecured / stable);

• Crystal River 3 (regulated), Crystal River, FL, December 2008 (Progress Energy, currently involved in a merger with Duke Energy: Baa2 senior unsecured / stable);

• Salem 1 & 2 (un-regulated), Hancock's Bridge, NJ, August 2009 (Public Service Enterprise: Baa2 senior unsecured / stable);

• Hope Creek (un-regulated), Hancock's Bridge, NJ, August 2009 (PSEG);

• Diablo Canyon (regulated), Avila Beach, CA, November 2009 (PG&E: Baa1 senior unsecured / stable);

• Columbia Generating Station 2 (regulated), Richland, WA, January 2010 (Energy Northwest: Aaa Long Term Issuer Rating / negative);

• Seabrook (un-regulated), Seabrook, NH, June 2010 (NextEra);

• Davis-Besse (un-regulated), Oak Harbor, OH, August 2010 (FirstEnergy: Baa3 senior unsecured / stable);

• South Texas Project 1 & 2 (quasi-regulated), Bay City, TX, October 2010 (STP Nuclear Operating Company: San Antonio CPS Aa1 senior secured / stable; City of Austin, Texas electric: A1 senior secured / stable and NRG Energy: Ba3 Corporate Family Rating / negative).

The NEI website also notes several reactors that are expected to apply for a 20-year license renewal over the near-term horizon. These reactors are also likely to be exposed to more stringent operating regulations, potentially accompanied by higher costs.

The reactors include:

• Limerick 1 & 2 (un-regulated), June 2011 (Exelon);

• Grand Gulf (regulated), Port Gibson, MS, July 2011 (Entergy);

• Callaway (regulated), Fulton, MO, October-December 2011 (Ameren: Baa3 senior unsecured / stable);

• Waterford 3 (regulated), Taft, Louisiana, January 2013 (Entergy);

• Sequoyah 1 & 2 (regulated), April-June 2013 (Tennessee Valley Authority: Aaa Long Term Issuer Rating / stable);

• Byron 1 & 2 (un-regulated), April-June 2013 (Exelon);

• Braidwood 1 & 2 (un-regulated), April-June 2013 (Exelon);

• Perry (un-regulated), Perry, OH, December 2014 (FirstEnergy);

• River Bend (regulated), St. Francisville, LA, January 2015 (Entergy);

• And several other unidentified plants owned by Exelon and Strategic Teaming and Resource Sharing (un-rated).

New York
James Hempstead
Senior Vice President
Infrastructure Finance Group
Moody's Investors Service
JOURNALISTS: 212-553-0376
SUBSCRIBERS: 212-553-1653

New York

William L. Hess
MD - Utilities
Infrastructure Finance Group
Moody's Investors Service
JOURNALISTS: 212-553-0376
SUBSCRIBERS: 212-553-1653

Moody's Investors Service
250 Greenwich Street
New York, NY 10007
U.S.A.
JOURNALISTS: 212-553-0376
SUBSCRIBERS: 212-553-1653