State of Florida

Public Service Commission

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-M-E-M-O-R-A-N-D-U-M-

DATE: October 23, 2007

TO: Ann Cole, Commission Clerk, Office of Commission Clerk

FROM: Katherine Fleming, Senior Attorney, Office of the General Counsel

RE: Docket Number 070602-EI - PETITION FOR DETERMINATION OF NEED FOR EXPANSION OF TURKEY POINT AND ST. LUCIE NUCLEAR POWER PLANTS, FOR EXEMPTION FROM BID RULE 25-22.082, F.A.C., AND FOR COST RECOVERY THROUGH THE COMMISSION'S NUCLEAR POWER PLANT COST RECOVERY RULE, RULE 25-6.0423, F.A.C.;

DOCKET NO. 070626-EI – REVIEW OF FLORIDA POWER & LIGHT COMPANY'S SUNSHINE ENERGY PROGRAM.

DOCKET NO. 070650-EI – PETITION TO DETERMINE NEED FOR TURKEY POINT NUCLEAR UNITS 6 AND 7 ELECTRICAL POWER PLANT, BY FLORIDA POWER & LIGHT COMPANY.

Please place the attached document in the above-referenced docket files. Thank you.

KEF/tfw

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CLERK

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FPSC-COMMISSION CLERK

Michael Cooke

From: Bridget Groom
Sent: Monday, October 22, 2007 11:16 AM
To: Michael Cooke
Subject: FW: Moody's Special Comment - New Nukes
Attachments: 2007000000444067.pdf

Here is the email I received...

Bridget

From: Bill_Feaster@fpl.com [mailto:Bill_Feaster@fpl.com]
Sent: Thursday, October 11, 2007 4:08 PM
To: Bridget Groom
Cc: Lynne_Adams@fpl.com
Subject: Moody's Special Comment - New Nukes

Bridget,

Here is the Moody's report I mentioned, however my memory did not serve well in that the report only contains $ per kw information for fossil and nuclear technologies, not renewables (see table on page 11). For the life of me I can't recall where I might have seen dollar estimates for renewables. I'll keep looking.

Thanks, Bill.

(See attached file: 2007000000444067.pdf)

Special Comment

Moody's Corporate Finance

October 2007

New Nuclear Generation in the United States:

Keeping Options Open vs Addressing An Inevitable Necessity

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Analyst Contacts:

New York

Jim Hempstead 1.212.553.4318
Vice President / Senior Credit Officer
james.hempstead@moodys.com

W. Larry Hess 1.212.553.3837
Managing Director
william.hess@moodys.com

Michael Haggarty 1.212.553.7172
Vice President / Senior Credit Officer
michael.haggarty@moodys.com

Kevin Rose 1.212.553.0389
Vice President / Senior Analyst
kevin.rose@moodys.com

A.J. Sabatelle 1.201.915.8756
Vice President / Senior Credit Officer
angelo.sabatelle@moodys.com

Laura Schumacher 1.212.553.3853
Vice President / Senior Analyst
laura.schumacher@moodys.com

Summary

The US electric utility sector is in the early stages of a massive new construction period to address its future base-load capacity needs. Given the practical realities associated with electric supplies, environmental trends and national energy security, we believe the sector will focus a considerable amount of attention on building new nuclear generation.

According to the Nuclear Regulatory Commission (NRC), there are approximately 12 companies developing 17 Construction and Operating License (COL) applications for 31 new reactors. Other sources, such as the Nuclear Energy Institute (NEI), count approximately 17 companies developing 21 COL applications for up to 31 new reactors. While we do not incorporate a view that all 31 reactors will be built, we observe that many companies have already begun to pre-condition their selected sites, and several have entered into arrangements with vendors to procure long-lead time items. While these companies range the spectrum from vertically integrated regulated electric utilities to wholesale merchant energy suppliers, we believe the regulated utilities will be in a more advantageous position to commence construction over the intermediate-term horizon.

From a credit perspective, business and operating risk profiles will increase for companies that pursue new nuclear generation. This increase in risk is attributable to the size and complexity of the project, the long-term nature of the construction cycle, the uncertainties associated with all-in costs, regulatory oversight and the ultimate rate impact to end-use consumers and the ability for a utility to recover costs and earn an appropriate return. We observe that most of the risks that will be discussed in this report also apply to advanced coal-fired generation, which also include uncertainties associated with carbon capture and sequestration.

The increase in business and operating risks will be gradual as companies transition from the evaluation stage, to the permitting stage to meaningful construction. Moody's does not believe the sector will bring more than one or two new nuclear plants on line by 2015 – a date cited by a majority of the companies currently highlighting their nuclear ambitions. The complexity associated with the permitting process as well as the execution risks associated with construction projects of this nature should not be underestimated.

There are other equally important issues associated with nuclear generation that should not be underestimated, the most important of which include the political realities concerning global warming (regardless of whether or not it is scientifically a reality) and the longer-term issues surrounding national energy security. These issues – carbon controls and energy security – could further stimulate interest in new nuclear investment.

In addition, because companies that build new nuclear generation will increase their over-all business and operating risk profiles, there will be a need to establish financial policies over the near-term aimed at producing very strong financial credit ratios in order to maintain a given rating. While a constructive regulatory relationship will help mitigate near-term credit pressures, Moody's will remain concerned over the prospects of construction delays, cost over-runs, the implications for rate-shock and future disallowances. Moody's observes that given the long-term time horizon associated with construction projects of this nature, there can be no assurances that tomorrow's regulatory, political, or fuel environments will continue to be as supportive to nuclear power as they are currently.

In this Special Comment, we describe our views around the prospects for new nuclear generation and the likely implications for credit.

Rating Rationale

In general, Moody's maintains a relatively favorable bias towards nuclear generation. In our opinion, nuclear generation represents a critical component of the nation's electric supply base. Nuclear units tend to be well run, maintain very high average annual capacity factors; are extremely economic from a marginal cost perspective; and, they do not emit any of the air pollutants that are emerging as a major political issue.

From a credit perspective, Moody's believes that one of the biggest risks associated with nuclear generation is an unanticipated extended outage. While the ownership of nuclear generating facilities brings a higher level of complexity associated with operating and maintaining the units; ownership also comes with additional regulatory oversight, primarily with respect to the NRC, which we view as a credit positive. We also incorporate a view that most companies will fare reasonably well in taking appropriate measures to mitigate nuclear-related risks and the average credit rating for the regulated nuclear peer group is well positioned within the investment grade **Baa** rating category.

Amount of electricity generated by a 1,000-MWe reactor at 90% capacity factor in one year:

7.9 billion KWh—enough to supply electricity for 740,000 households.
If generated by other fuel sources, it would require:

- Oil: 13.7 million barrels – 1 barrel yields 576 KWh
- Coal: 3.4 million short tons – 1 ton yields 2,297 KWh
- Natural Gas: 65.8 billion cubic feet – 100 cubic feet yields 12 KWh

(based on average conversion rates from the Energy Information Administration)

Source: NEI

Extended Outages

While the high costs associated with the ownership and operation of nuclear plants are offset by the robust earnings and cash flow they generate, an extended outage can significantly stress an owner's liquidity and over-all financial profile. We believe the best way to mitigate this risk is through diversity, operational excellence and predictive maintenance practices. We note that the vast majority of nuclear operators continue to amass large portfolios of units in different transmission and geographical regions. From a downside scenario planning perspective, Moody's continues to assess outage risk in relation to the experience of First Energy during the Davis Besse outage, which lasted approximately 26 months (from February 2002 until March 2004).

Quantity and Quality of Skilled Labor

While the actual production of electricity does not differ between a nuclear, coal or gas-fired generating plant, there is greater complexity associated with nuclear generation, as evidenced by the more advanced degrees and skilled labor required to operate a nuclear plant. The nuclear labor force includes both degreed-engineers (to design, build, and operate the plant) as well as skilled craftsmen, both of which are in short supply. Separately, Moody's views the continuous training requirements for the nuclear labor force favorably. Most operators maintain regular training and simulation training exercises for employees and the NRC is constantly re-qualifying the employee base.

Environmental concerns are a political reality

The single greatest benefit that nuclear generation can offer over coal is the clean air effects associated with emissions. Whereas coal-fired facilities produce a significant amount of nitrogen oxide (NOx), sulfur dioxide (SO2), mercury and carbon emissions, nuclear facilities only produce steam as a by-product. On the other

hand, there is a trade off with respect to the fuel waste, which will be addressed later in this report. Coal-fired waste, namely ash, can be recycled into cement or used as landfill; nuclear waste, namely radio-active ceramic pellet assemblies need to be stored in a pool of water for at least 5 years before they are transferred into above ground dry storage (steel or concrete casks) for as long as 100 years and ultimately either recycled or entombed in an underground disposal facility for approximately 10,000 years. Taken as a whole, however, Moody's observes that there has been a subtle shift in the stance of several environmental groups as the carbon-free nature of nuclear generation is increasingly recognized as a societal benefit. However, we observe that environmental opposition remains a concern as their primary motivational agenda appears to be aimed at reduced consumption.

Nuclear is a Critical Component of National Supply Mix

In our opinion, nuclear generation is a critical component of the US energy supply mix. According to the Nuclear Energy Institute (NEI), there are 104 licensed nuclear generating stations in the US, which account for roughly 19.4% or 787.2 billion kilowatt-hours (bkWh) of the total electrical production in the US. These facilities typically operate around the clock, and are an integral component of the base-load supply needs of the country. As can be seen in the table below, the nuclear component of the total US electric supply base has been reasonably steady over the past several decades.o

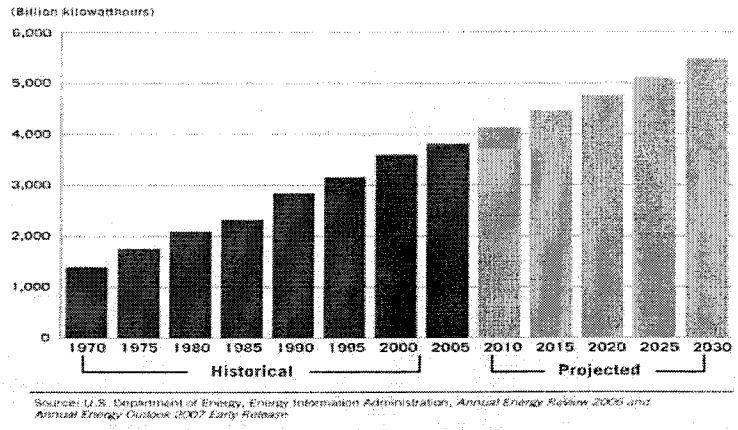
Year	Total Electricity Generation (MWh)	Nuclear Generation (MWh)	Nuclear Share (percent)	Capacity Factor (Percent)
1975	1,920,754,569	172,505,075	9.0	55.9
1985	2,473,002,122	383,690,727	15.5	58.0
1995	3,353,487,362	673,402,123	20.1	77.4
2005	4,055,422,744	781,986,365	19.3	89.3
2006*	4,052,967,852	787,218,636	19.4	89.8

**Preliminary*
Source: Global Energy Decisions / Energy Information Administration

Nuclear operators should continue to produce power at an average capacity factor of approximately 90%. We do not believe the US nuclear sector can achieve average capacity factors much higher than 90% on a sustainable basis or that the sector can meaningfully increase its electricity production from recent levels. This view is primarily based on our assumption that the vast majority of up-rates and performance improvements have been realized.

Supply / Demand fundamentals are favorable for new nuclear generation

According to the Energy Information Administration (EIA), there is a need for approximately 258 gigawatts of new electric generation capacity in the US by 2030 at a cost of approximately $412 billion (in 2005 dollars) for an average cost of approximately $1,600 per kw-capacity. This need for capacity is partly a function of organic demand growth and includes some expectations that older generation facilities will be retired and / or otherwise taken out of service. Existing nuclear units are, on average, approximately 20 years old and most of the base-load coal-fired fleet is approximately 35 years old. It is reasonable to assume that many of the oldest plants will eventually reach the end of their useful lives over the next ten to fifteen years, but many of the larger and older units continue to be refurbished to extend their life beyond the original design specifications. For example, there are two coal-fired facilities associated with the Ohio Valley Electric Corporation (OVEC) that are 1950's vintage plants that have recently been undergoing a massive refurbishment (and environmental upgrade) plan to extend their lives for another 20 years.

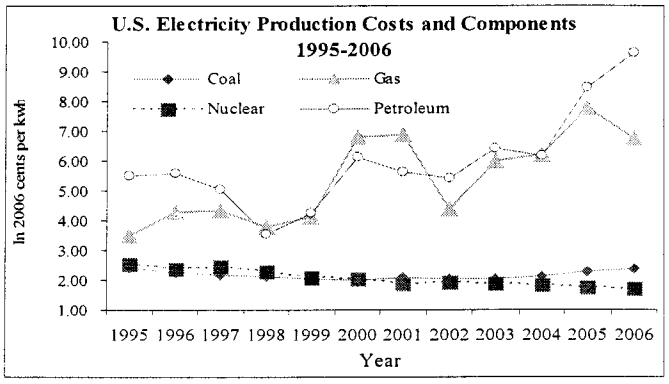


Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 2006* and *Annual Energy Outlook 2007 Early Release*

Assuming there is a real need to build new base-load generation, there are really only two fuel options that can readily meet that need: coal and nuclear. While we remain favorably biased to renewable sources of generation, such as wind, solar and bio-mass, ensuring reliability of power generation from renewable sources continues to be a matter of concern. Also, additions to hydro power generation appear to be limited by geographical considerations and environmental opposition.

Nuclear enjoys a very competitive operating cost structure

The existing nuclear generation fleet tends to be a very strong producer of earnings and cash flow. The average cost for fuel (including nuclear fuel) tends to hover around $5 - $6 per MWh (megawatt hour). Operating and maintenance costs tend to average around $12 - $13 per MWh and additional "to-go" costs (comprised of incremental capital costs, administrative and general costs, insurance costs and other fees) average around $5 - $6 per MWh, for a total dispatch cost of approximately $22 - $25 per MWh. Assuming the average wholesale price of power for the nation is approximately $50 - $55 MWh, these units tend to produce power with an approximately $25 - $30 MWh margin.



Source: Global Energy Decisions

Nuclear Fraternity Helps Ensure Safe, Reliable and Economical Operations

One of the more unique features of being a nuclear operator is that it provides access to the nuclear operator "fraternity" on both a national and international scale. For example, in the US, nuclear operators meet regularly and share an enormous amount of operational and safety-related data. This fraternity atmosphere is a large part of the success of the industry, and the industry recognizes that it is only as good as its weakest link. Through organizations such as the Institute of Nuclear Power Operations (INPO) and the World Association of Nuclear Operators (WANO), nuclear operators assess each other on both standards of excellence (operational) as well as standards of compliance (regulation). In our opinion, the nuclear fraternity has been an important component of the more recent operational successes experienced by these facilities.

Nuclear operating performance has been impressive

The nation's fleet of nuclear units has experienced a tremendous improvement from an operational perspective. As recently as the early 1980's, the US nuclear fleet was operating with average capacity factors in the mid to high 70% range, but has, over the past 20 – 25 years, dramatically improved the averages. From a credit perspective, Moody's incorporates a view that the 90% average capacity factor will be maintained over the near to intermediate term horizon, and that the current fleet is, essentially, maxed-out from an operating efficiency stand point. It bears noting that the original design specifications of the existing fleet incorporated a view that these plants would indeed operate at a 90% range capacity factor.

We believe these performance improvements can be attributed to the following:

- Outage management – The most significant factor contributing to the improved operating performance, in our opinion, is related to outage management. In the past, it was not unusual for an outage to last 90 – 100 days. Today, it would be unusual for an outage to last more than 30 days.
- Advancements with diagnostics – The analytical and diagnostic ability to monitor equipment and components has advanced tremendously over the past 10 years. These technologies provide an operator with an unprecedented ability to monitor system components. In addition, the industry maintains extensive industry wide data bases on equipment performance, which guides the scheduling of preventative and predictive maintenance. As a result, an operator can address potential issues before a component fails, thereby lowering the "mean time between failure" and improving operating performance.
- Risk Assessment Analytics – Similar to the diagnostic technology advancements noted above, these tools provide an operator with system performance probabilities that allow an operator to calculate when it is acceptable to conduct maintenance without taking a unit off-line and without compromising safety. This reduces the amount of maintenance work that must be performed during an outage, and thus reduces outage duration. An example would be repairing a feed water train.
- Personnel – There is now better management of facilities and skill sets of personnel enhanced through superior training and educational programs.

Nuclear Regulatory Commission Provides Additional Layer of Oversight

In general, Moody's views the oversight provided by the NRC as a credit positive as the NRC primarily regulates the safety of the operating fleet in the US; at the moment, approximately 100 plants.

One risk is that a fundamental problem or equipment failure at one plant could create significant stress for the entire industry, should the NRC decide that every operating license needs to be reassessed in some fashion. As a result, nuclear operators can only operate their plants with the blessing of the NRC, they are only as good as their weakest colleague. To mitigate this risk, the nuclear industry has engaged in a "best practices" effort for many years, and regularly cross-trains and shares operational and technical data. While this fraternity approach helps the over-all sector, Moody's can not ignore the potential for contagion risk. This risk was

recently exhibited with the Davis Besse reactor vessel head problem that occurred a few years ago; although we acknowledge that the industry addressed that issue in a timely manner without experiencing undue financial or operational stress at any other units.

Regulatory Approval Process Still a Constraint...

Although we acknowledge the NRC licensing process is more enhanced today than it was in the 1970's and 1980's, we still believe that the regulatory approval process associated with pursuing a new nuclear facility will emerge as a potential constraint. The combination of the construction and operating process appears to be biased towards risk mitigation, and therefore is viewed as a credit positive. However, this new regulatory process remains untested and therefore deserves careful attention.

...But NRC is Experienced

The NRC is very experienced with license approvals. We observe that over the past several years the NRC has been active with four broad categories of license review and approvals with respect to: License Renewals; Power Up-Rates; Early Site Permits and Fuel Facilities. However, we can not ignore the fact that there are many countries that are equally as active with pursuing new nuclear generation and that the regulatory approval process is either non-existent or substantially less burdensome.

First COL filing expected to be litigated

We believe the first COL filing will be litigated, which could create lengthy delays for the rest of the sector. We note that while many in the industry believe this risk has largely been removed from the regulatory filing process, many are also reluctant to move forward without US governmental guarantees or other backstops to protect them from lengthy litigation or extended regulatory delays. Moody's will carefully monitor the potential for litigation related to NRG Energy's recent COL filing.

Other Agencies Need to Provide Approvals

Separately, there are still important state regulators and local governmental agencies that need to be convinced that new nuclear generation is an appropriate alternative. These include numerous permits from state agencies (i.e., air and water permits and certificates of public convenience and necessity from state public regulatory authorities), the US Army Corps of Engineers and other local authorities (i.e., construction permits) before meaningful construction can commence.

The NRC Review Team

The NRC has significantly increased its labor force in anticipation of many new COL filings. As a result, there are now essentially two different divisions at the NRC: one team to monitor the existing fleet of operating units (Nuclear Reactor Regulation) and another to review the license filings and inspect the new sites (New Reactor Office). The New Reactor Office is comprised of technical experts that will be divided up according to the technology selected by the licensee, that is, GE, Westinghouse or Areva. The teams (by technology) will then be broken down into expertise on civil / structural engineering, piping, environmental impact, security, emergency plans etc. These sub-teams will share their assessments and evaluations between technologies.

The COL permit

The NRC is committing to complete its review of the applications within a 42 month period (30 months for the application review and 12 months for hearings). Moody's notes, however, that the NRC clock does not start ticking when the COL is first filed but starts when the filing is docketed by the regulator. As a result, some companies that make their COL filing may get the filing sent back if the NRC feels it is deficient in some respect.

Once the filing is docketed, the NRC's staff will divide the filing into teams. The teams are formed by technology and sub-teams will be formed to review the various components of the filing. Although Moody's believes that the first filing may become mired in contentious litigation, we also believe the NRC will strive to

meet its commitment to complete its review within the allotted 42 month timeframe and not be viewed as a major bottleneck organization. Instead, potential delays in the process may come from hearings before various licensing boards. We expect the industry and the NRC will gain from its experience with the first several COL filings and we expect the process to become shorter over time – especially with respect to the 12 months of hearings that are incorporated into the approval process.

Moody's believes there may be as many as three to five filings made in 2007. In our opinion, most of the filings will be pushed back into the late 2008 timeframe, due to the need to resolve several of the important open issues that will be highlighted in this report, the most important of which are the implications of investment recovery and the effect on consumer rates.

COL has a long-term shelf life

The COL permit does not have an "expiration date" for the construction portion. Once the COL is granted, a company can hold that license as long as no new significant information comes to light. Once a plant actually goes commercial, the operating license portion of the COL is good for 40 years, with the possibility of renewal for an additional 20 years. The Early Site Permit, which does not allow reactor-related construction, has a 20-year shelf life and can be renewed for an additional 20 years. This will provide a substantial amount of lead-time for companies to continue their evaluation and cost studies before commencing construction of a plant.

Nuclear New Build Economics

The prospects for building new nuclear generation in the US are very good. A significant number of large, well capitalized companies are publicly discussing their plans to build new nuclear generating facilities and a number of these companies are expected to make the necessary license filings with the NRC starting in October 2007.

Notwithstanding the favorable fundamentals associated with the need to add new nuclear generation into the nation's capacity supply, Moody's believes that many of the current expectations regarding new nuclear generation are overly ambitious. In fact, the timing associated with commencing construction and making the next nuclear unit commercially available could be well beyond 2015 and the costs associated with the next generation of nuclear build could be significantly higher than the approximately $3,500/kw estimates cited by many industry participants.

Short-Comings of Cost Estimates

All-in fact-based assessments require some basis for an overnight capital cost estimate, and the shortcomings of simply asserting that capital costs could be "significantly higher than $3,500/kw" should be supported by some analysis. That said, Moody's can not confirm (and all of our research supports our conclusion) definitive estimates for new nuclear costs at this time. Moody's can assert with confidence that there is considerable uncertainty with respect to the capital cost of new nuclear and coal-fired generating technologies, and that companies may decide not to proceed with financing and construction unless and until they have satisfied themselves (and, where necessary, their boards and regulators) that the investment is justified and that the plant can produce electricity and recover costs at a price that will not be overly burdensome to consumers.

Massive Construction Projects Are Complex

The over-all risks associated with building a new nuclear facility are essentially the same as the execution risks associated with most major construction projects, such as chemical plants or refineries. These construction projects are massive in scale and scope, require a tremendous amount of planning (and execution) and take years to complete. As a result, companies that pursue these kinds of projects take on a much higher level of business and operating risk, since there are no practical ways to mitigate away the gremlins that live in large, complex construction projects. There are ways to mitigate the risks associated with large construction projects, including highly skilled construction management, the terms and conditions of EPC contracts, completion of design work before construction starts, a disciplined licensing and permitting process completed before major capital outlays, liquidated damages provisions, etc.

We observe that the nuclear construction sector has made significant strides with modular construction design, which can meaningfully cut down on the construction schedule, particularly when coupled with the significant improvements in construction techniques since the last nuclear construction cycle in the 1970's and 1980's. As evidence, it has been reported that a recently completed nuclear facility in Japan was constructed in approximately 40 months (from first concrete pour to fuel load).

Increased Risks Associated with Escalation Assumptions

Dramatic increases in commodity prices over the recent past, exacerbated by a skilled labor shortage, have led to significant increases in the over-all cost estimates for major construction projects around the world. In the case of new nuclear, the very detailed specifications for forgings and other critical components for the construction process can add a new element of complexity and uncertainty. As noted previously, labor is in short supply and commodity costs have been extremely volatile. Most importantly, the commodities and world wide supply chain network associated with new nuclear projects are also being called upon to build other generation facilities, including coal as well as nuclear, nationally and internationally. Nuclear operators are also competing with major oil, petrochemical and steel companies for access to these resources, and thus represent a challenge to all major construction projects.

Significant Bottlenecks to Construction Add to Execution Risk

There are significant bottlenecks to construction that have not yet been resolved. In our opinion, there are five key bottlenecks that should not be assumed away from a planning perspective. Moody's notes that some of these constraints are widely recognized and being factored into some of the planning and construction schedules. In the case of nuclear engineers, for example, enrollment in nuclear engineering programs at many universities have been increasing across the country over the last several years, which suggests that the market is responding to perceived increased demand.

- Ultra Heavy / Ultra Large Forgings - There are numerous long-lead time items that need to be ordered (or reserved) now in order to meet a construction timetable for any project of this magnitude. These items include the ultra-heavy steel forgings required for a generating station (regardless of whether its coal or nuke) and include the reactor vessel, the steam generator shell and the bottom head (which is welded to the shell). At the moment, the only ultra heavy forgery in the world is located in Japan, at a Japan Steel Works facility. There may also be capacity developing in France (Creusot Forge) and possibly South Korea, but we have not independently verified those claims. Moody's observes that each generating facility may require a number of ultra heavy forgings, in some cases between 6 and 12 forgings per plant; and that Japan Steel Works can only produce a limited number of forgings of this size per year. As a result, it is questionable whether the 2015 timeframe is realistic, since Japan Steel Works is also taking orders from other industry sectors (like petrochemicals) and other countries that have already committed to building new nuclear plants (China, India and several countries in Europe).
- Large Manufactured Components – these items include the steam turbines and reactor pressure vessels.
- Engineering Resources – this is part of the skilled labor shortage issue noted previously. Nuclear engineers are required for the detailed design work for a new nuclear facility.
- Logistics – As with any major construction project, there are massive logistical issues that need to be managed, including the procurement of cranes and ships (to transport the ultra heavy forgings). Properly managing the logistical aspects of a major construction project will be critical to delivering a plant on time and within budget.
- Site Labor – Another component to the skilled labor shortage issue. Site labor includes the construction force, welders and other trained professionals. Moody's observes that if the federal government is proactive with carbon emission legislation and the desire to build new nuclear units becomes more compelling over the near to intermediate-term horizon, this issue could become a major obstacle for the industry.

Costs Associated with New Nuclear Build are Early Best Estimates

Throughout our due diligence process, Moody's has not been able to make a finite determination of the range for the all-in cost associated with new nuclear. As a result, we believe the ultimate costs associated with building new nuclear generation do not exist today – and that the current cost estimates represent best estimates, which are subject to change.

There is empirical data that suggests a possible range for new nuclear plant costs based on experience overseas, but firm cost estimates are not available at this time in the US (including both new nuclear and new coal technologies). We believe that in order to support corporate decisions on whether or not to proceed with new nuclear projects, the industry will work with all possible speed to complete the detailed design and engineering work that will permit firm cost estimates based on a substantially complete design and that many regulatory authorities may require this information as part of their approval process. Therefore, it is reasonable to assume that companies will not move forward with new nuclear construction projects until and unless they have a high degree of confidence in the capital cost, a solid EPC wrap, and with construction and other risks adequately hedged or otherwise mitigated. Similar uncertainty attends virtually all other base load generating technologies, although the sources of the uncertainty may vary from technology to technology.

Many companies planning to build new nuclear generation freely acknowledge considerable uncertainty regarding new nuclear plant costs. More firm cost estimates will not be available until the vendors / suppliers have secured their own cost estimates, which will require a detailed review of the world wide supply network, the availability of commodities and labor supplies.

There are some figures available in the marketplace that claim new nuclear generation can be procured at approximately $2,500/kw - $3,500/kw, but it remains unclear as to what was included in the estimate, and more importantly, what was left out. This concept, creating an "apples-to-apples" cost comparison, could become an important determinant for various state regulatory authorities as they attempt to assess the ultimate impact on rates for end-use consumers.

Potential Owner's Costs Associated with New Nuclear Units:

Transmission upgrades / refurbishments

Access to transmission right-of-ways (ROW's)

Site Specific Costs

- Security
- Cooling Towers
- Roads / Other infrastructure
- Underground utilities

Administrative

- Dormitories
- Training Facilities
- General Administrative Buildings

From a credit perspective, Moody's is indifferent as to what the "overnight" cost of the actual nuclear generating plant might be – as overnight costs often exclude owner's costs and price escalation. Instead, we are concerned with the total all-in costs of the nuclear generating facility. An analogy would be the purchase price of a house (the over-night cost), which excludes the costs of appliances, furnishings, and landscaping (the all-in cost). Capitalized interest, other owner's costs (which include site preparation, administrative buildings and other administrative costs) and transmission upgrades / refurbishments could add several hundred more dollars per kw-capacity.

The potential costs associated with transmission upgrades / refurbishments appears to be getting very little attention at this time – possibly due to Federal Energy Regulatory Commission (FERC) rules and regulations which make management teams leery of engaging in public discourse too early.

Moody's believes the all-in cost of a nuclear generating facility could come in at between $5,000 - $6,000/kw. While we acknowledge that our estimate is only marginally better than a guess; it is a more conservative estimate than current market estimates and represent a substantial premium to the current estimates for new IGCC coal-fired generation. For example, AEP's filing in West Virginia for an IGCC plant is estimated to cost approximately $3,500 kw capacity. As noted previously with respect to these estimates, it is unclear as to whether or not capitalized financing costs and other owner's costs are included in the estimate.

Estimated Valuations for Generation

	$ / kw capacity	
	Low	**High**
Nuclear		
Existing fleet	$2,700	$3,500
New build - market estimates	$3,000	$4,000
New build - Moody's estimates	**$5,000**	**$6,000**
Coal		
Existing fleet	$1,700	$2,200
New build - Traditional	$2,500	$2,900
New build - IGCC	$3,300	$3,700
Natural Gas		
Combined Cycle (non-city)	$700	$900
Peakers	$600	$800

State regulatory arrangements

Moody's observes that many state legislatures and regulatory authorities continue to work in a constructive manner with their electric utilities to address the need for new base load plant. In addition, many states appear to be favorably disposed to new nuclear generation – especially if it can be located within their state.

We believe the first new nuclear unit is likely to become commercially available in the southeast region. In our opinion, the states in the southeast (Florida, Virginia, North Carolina, South Carolina, Georgia) have been most supportive of designing cost recovery mechanisms that encourage new nuclear investment, and this supportiveness may also be a function of the limited renewable resources available in the southeastern region.

The implications for end-use rate payers / customers

From a credit perspective, Moody's remains concerned about the prospects of steadily rising rates for end use customers, regardless of whether new nuclear generation is built or not. It is clear to us, however, that the need to recover the construction costs associated with a new nuclear unit (or coal-fired unit) over the construction period could help to mitigate rate shock that would otherwise occur when the plant is finally brought on-line. These plants are likely to add approximately $5 to $10 billion to rate base, in some cases

doubling the existing rate base, and there will be a need to recover both the operating expenses as well as the high capital costs through new base rates. Eventually, end use customers may find it very difficult to balance their family budgets if the average electric bill continues to go up by roughly 10% a year over the next 5 years, which could raise the level of potential regulatory / political intervention risk.

Who Will Build the Next New Nuclear Facility?

The majority of the companies looking at building new nuclear generation are regulated utilities such as Duke Energy, Dominion, Entergy and Southern Company. There are several merchant energy companies looking at new nuclear as well, such as Constellation Energy, Public Service Enterprise, Exelon and NRG Energy, but the majority of merchants appear to be waiting for the second wave.

New Nuclear Plants Under Consideration[1]

Company	Site	Design	Number of Reactors	Date for Filing COL[2] Application
Alternate Energy Holdings	Bruneau, ID	TBD	TBD	TBD
Amarillo Power	Amarillo, TX vicinity	EPR	1	FY[3] 2008
Ameren UE	Callaway, MO	EPR	1	FY 2008
Detroit Edison	Fermi, MI	TBD	TBD	FY 2009
Dominion[4]	North Anna, VA	ESBWR	1	FY 2008
Duke Energy	William States Lee Cherokee County, SC	AP1000	2	FY 2008
Entergy	River Bend, LA	ESBWR	1	FY 2008
Entergy (NuStart Energy[5])	Grand Gulf, MS	ESBWR	1	FY 2008
Exelon	Clinton, IL	TBD	TBD	TBD
Exelon	Texas	TBD	1	FY 2009
Florida Power & Light	TBD	TBD	TBD	FY 2009
NRG Energy/STPNOC	Bay City, TX	ABWR	2	FY 2008
PPL	Susquehanna, Pa	TBD	1	TBD
Progress Energy	Harris, NC;	AP1000	2	FY 2008
Progress Energy	Levy Co., FL	AP1000	2	FY 2008
South Carolina Electric & Gas	Jenkinsville, SC	AP1000	2	FY 2008
Southern Company	Vogtle, GA	AP1000	2	FY 2008
TVA (NuStart Energy[5])	Bellefonte, AL	AP1000	2	FY 2008
TXU	Comanche Peak, TX	APWR	2	FY 2008
UniStar Nuclear[6]	Calvert Cliffs, MD plus 2 additional sites	EPR	3	First Submittal - FY 2008

[1] *This compendium is based on public announcements as of July 2007.*

[2] *Construction/Operating License*

[3] *Fiscal Year*

[4] *This consortium includes Dominion, General Electric, Bechtel.*

[5] *NuStart Energy includes Constellation, Duke, EDF International North America, Entergy, Exelon, FPL Group, General Electric, Progress, SCANA, Southern, Tennessee Valley Authority, Westinghouse.*

[6] *UniStar Nuclear is a joint venture of Constellation Energy and Areva.*

SOURCE: NEI

In our opinion, it makes more sense for regulated utilities to pursue new nuclear generation in the first wave of applications. This is largely premised on the traditional Integrated Resource Plans (IRP) that many utilities file (and review) with their respective state regulators. As a result, value can be ascribed to fuel diversity and environmental benefits that may not be as transparent in a merchant market. More importantly, the risks associated with construction can be mitigated through creative cost recovery designs that would not be available to a merchant operator. However, merchant companies may be able to achieve a lower risk profile (but usually not approaching a regulated utility) by using project finance structures, supported by Federal guarantees of the debt, vendor financing and, in some cases, guarantees from foreign export credit agencies, and/or robust off-take agreements. Some utilities may also seek many of these kinds of financing provisions.

From a credit perspective, there are still significant regulatory risks associated with building a nuclear plant in rate base. These risks will become exacerbated if there are lengthy construction delays or cost escalation. In addition, there are no accurate methods to assess what the political, environmental and fuel-commodity environments will look like in five to seven years time. If, at the end of construction, fuel is cheap, environmental concerns have abated and the political mood becomes contentious (for example, over the steady rate increases experienced over the previous five to seven years), utilities could be at risk with their regulatory / political constituents. Moody's is unable to assess the magnitude of this risk at this time, but we will continue to recognize its potential existence into our longer-term assessments. In addition, we also recognize that these factors may break in favor of nuclear development which can further stimulate new build.

Two Critical Near-Term Decision Points

There are two critical near-term decision points that companies need to make after they have decided that pursuing new nuclear generation is an option / alternative that they wish to explore: selecting an appropriate site and selecting a technology. Once these two decisions have been made, a company can commence developing its COL application for the NRC.

Site selection

The location of a site for a new nuclear facility will be one of the most important near-term decisions that a company has to make before committing to a major construction project (and the filing of its COL). In our opinion, the selection of a site where an existing nuclear facility is already operating (a brown field site) will be a lower risk decision than a pure green-field site.

Brown field sites, in general, have a clear advantage over green field sites due to their existing infrastructure which includes water supplies, transmission connections and administrative facilities. The current nuclear operators also have emergency and security plans in place and a local population more receptive to an additional unit at a pre-existing facility.

Brown field site advantages:

During the last nuclear construction cycle, in the 1970's and 1980's, many companies applied for construction permits to build multiple generating units at a given site. However, because of the events that unfolded during this period, namely Three Mile Island, inflation and regulatory reviews and disallowances, a number of the second or third units were never built. As a result, for those companies looking to build new nuclear units in the next construction cycle, there could be many advantages associated with the next new plant being sited at an existing facility. These sites, commonly referred to as "brown-field" sites, could provide an operator with the following benefits:

- An existing comfort level with the local community
- An existing transmission infrastructure with access to ROW's
- An existing supply of water / water rights
- Existing security and emergency management plans
- Existing on-site spent-fuel storage facilities
- The availability of historical environmental data
- An existing labor force

Technology Selection

The selection of a technology is also a major decision. At this time, only GE's Advanced Boiling Water Reactor (ABWR) and Westinghouse's AP1000 technology have been fully certified as a nuclear plant by the NRC. NRG plans to use the ABWR technology. However, the certification does not apply to GE's most advanced next generation passive design technology. We observe that GE is still working through data discovery with the NRC on its newer ESBWR technology. Areva's current design has not yet been certified either. Westinghouse's AP1000 technology has been certified by the NRC from a design perspective, but it still needs to fully certify its total plant design. While the technologies still need certification work, most utility and merchant generation companies are willing to pursue their strategies of filing COLs' under the assumption that the selected technology will be certified within their over-all construction timeframes.

As an aside, Moody's observes that the GE's ESBWR and Westinghouse's AP1000 designs are passive in nature from a safety perspective (ie, relying on gravity) as opposed to Areva (ie., relying on redundancy). As a result, it is our understanding that the GE and Westinghouse designs will require a smaller footprint for the facility and use less cement, steel and other commodities to build.

Design	Supplier	*Background and Current Status*
Advanced Boiling Water Reactor	General Electric	This large (1,350 MW) boiling water reactor is an evolutionary improvement on the boiling water reactors that make up approximately one-third of the U.S. nuclear power plant fleet. The first models of this design were deployed commercially by Tokyo Electric Power Co. at its Kashiwazaki-Kariwa generating station in Japan. TEPCO and other Japanese utilities continue to build ABWRs. This design was certified by the NRC in 1997.
AP1000	Westinghouse	The AP1000 is a 1,150-MW reactor, the first approved by the NRC to employ so-called "passive" safety features. The passive designs substitute natural forces like gravity to deliver cooling water to the reactor. The improved design eliminates a number of the pumps, valves, piping and other components that increase the complexity and the capital cost of today's nuclear plants. The AP1000 received its final design approval from the NRC in late 2004, and the final certification rule became effective in January 2006.
ESBWR	General Electric	The ESBWR is GE's new 1,500-MW design incorporating "passive" safety features. By simplifying the design of the ESBWR compared to the ABWR, GE expects to reduce the capital cost of the plant by approximately 20 percent. GE filed its application for design certification with the NRC in August 2005. The application has been accepted and the Final Design Approval (FDA) is scheduled for late 2008, with certification to follow in 2009.
EPR	Areva (in the U.S. market: UniStar, a joint venture of Areva and Constellation)	The EPR is a large (1,600 MW) design developed by Areva, the reactor supplier formed by Framatome (France) and Siemens (Germany). Areva has formed a joint venture with Constellation Energy Group called UniStar Nuclear to deploy the EPR technology in the United States. The first EPR is now being built in Finland, and it will be the next generation of nuclear plants built in France by Electricité de France. The EPR is an advanced light water reactor. The EPR design includes additional safety features not in today's light water reactors, including four safety trains instead of two, bunkered safety systems, double containments, and additional severe accident management features. Areva plans to make a design certification submittal to the NRC for the EPR in 2007.
ESBWR	General Electric	The ESBWR is GE's new 1,500-MW design incorporating "passive" safety features. By simplifying the design of the ESBWR compared to the ABWR, GE expects to reduce the capital cost of the plant by approximately 20 percent. GE filed its application for design certification with the NRC in August 2005. The application has been accepted and the Final Design Approval (FDA) is scheduled for late 2008, with certification to follow in 2009.

Source: NEI

International Markets Appear More Active

While the US continues to evaluate and assess the longer-term benefits and risks associated with building new nuclear generating facilities, in many other parts of the world, companies and / or governments are much more active with their nuclear new build plans. This is most obvious in Asia, where China is pursuing four new nuclear units (Westinghouse technology), and where Japan and Taiwan have also been active. China, in particular, may be interested in building over a dozen new nuclear plants over the near to intermediate term horizon and may use multiple technology designs (as opposed to the US's strategy of using a "standardized" design). In Europe, there has been activity in France, Finland and several Eastern European countries (Romania, Bulgaria and Russia).

In addition, Moody's observes that there are several Middle-Eastern countries that would like to build new nuclear facilities. For many of these countries, nuclear facilities are viewed as a great source of energy for water desalination, and they clearly have the capital to make the necessary investments. From a construction and operating risk perspective, these countries face the same set of issues that would be faced in the US, including the need to procure long lead time items over the very near-term horizon.

Nuclear Units under Construction Worldwide

Country	Total MWe
Argentina (1)	692
Bulgaria (2)	1,906
China (5)	3,220
China, Taiwan (2)	2,600
Finland (1)	1,600
India (6)	2,910
Iran (1)	915
Japan (1)	866
Pakistan (1)	300
Russia (7)	4,585
South Korea (2)	1,920
Ukraine (2)	1,900
Total (31)	**23,414**

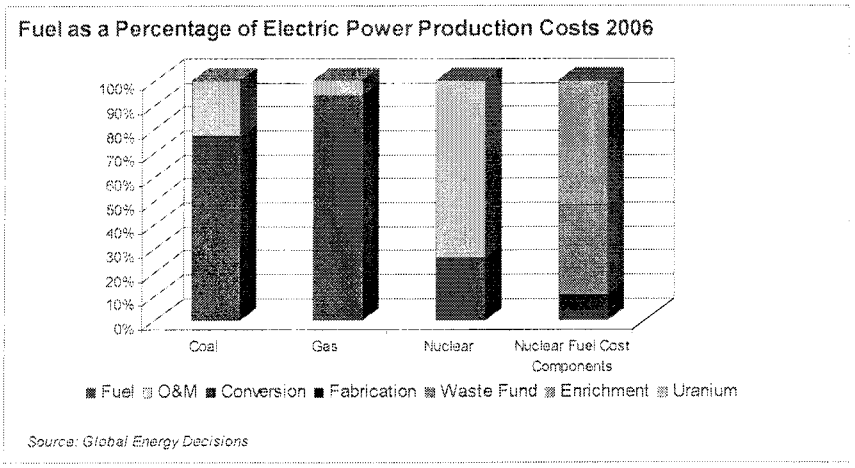
Source: International Atomic Energy Agency PRIS database

Fuel Fundamentals

Uranium is the primary fuel source for nuclear generation. It is located primarily in Canada, Australia, Africa, Russia and some of the Central Asian Republics that were formerly part of the Soviet Union. It is our understanding that the fuel conversion cycle has four primary components:

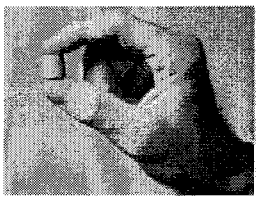
- Mining – uranium is contained in rock, which needs to be mined primarily in underground mines.
- Milling – the uranium ore (U235) is separated from the rock at a mill, similar to how copper and iron are milled, resulting in a powder, which is commonly referred to as "yellowcake".
- Conversion – the yellowcake is converted into a gas (uranium hexafluoride, or UF6).
- Fabrication – the uranium hexafluoride gas is a feedstock for an enrichment plant, where the uranium is enriched 3% - 5% and converted onto solid ceramic pellets. The enrichment process is a critical component of the nuclear fuel cycle. Many companies (including two in the US), and governments, are either building new enrichment capacity or are actively looking at ways to enhance enrichment capacity, but it may be several years before additional capacity becomes available (i.e., 2012).
- The pellets are assembled into tubes and the tubes are bundled into assemblies and shipped to the nuclear generating facility.

Once the fuel assemblies arrive at the nuclear plant, they are put into the reactor. During a refueling, operators will typically withdraw the oldest one-third of the fuel assemblies and rearrange the remainder and blended with the new assemblies. This is not unlike rearranging batteries in a large flashlight. Approximately 90% of the energy remains in fuel rods that are removed from the fuel assemblies and classified as "spent" fuel.



Source: Global Energy Decisions

On September 11th, 2007, Duke Energy held an analyst meeting in New York where they presented the picture below. It was stated that the ceramic pellet has an equivalent amount of energy as one ton of coal.



Source: Duke Energy

Storage and Disposal

The storage and ultimate disposal of spent nuclear fuel continues to represent a major issue in the United States. There is roughly 50,000 metric tons of spent nuclear fuel in the US, but the industry does not view the issue as a critical path item. At the moment, spent fuel is primarily stored in large pools of water, usually for at least 5 years, then placed into dry cement or steel casks and stored on site. While this creates some local issues and emergency planning obstacles, Moody's incorporates a view that most sites are well equipped to manage the safe storage of spent nuclear fuel.

Some countries recycle their spent nuclear fuel, including France, Japan, Russia and the United Kingdom. Other countries bury their spent nuclear fuel, such as Sweden and Finland. Regardless of which path the US decides to pursue, it appears that many within the industry are confident that a solution can be found. Currently, the industry is working with the Global Nuclear Energy Partnership (GNEP) to design solutions for the 50,000 metric tons that exists throughout the country.

Federal Initiatives

One of the biggest near-term challenges associated with new nuclear generation construction in the US involves financing, including whether or not the Federal government will provide loan guarantees and / or otherwise encourage investment, much of which was encompassed in the Energy Policy Act (EPA) of 2005. Several large companies – both regulated as well as merchant have very clearly stated that they would not pursue their new nuclear plans if the Federal government did not provide an appropriate investment stimulus and investment protection. Moody's observes that the EPA provided four key incentives for the nuclear industry:

- Extension of Price-Anderson Act by 20 years
- Risk insurance / Stand-by support for risks beyond the control of management (delays due to licensing or litigation) of approximately $2.0 billion in total – up to $500 million for the first 2 new plants and up to $250 million for the next 4 plants.
- Production Tax Credits (PTC's) – in the amount of 1.8 cents per kwh for the first 6GW's of new nuclear capacity. However, in order to be eligible, an operator must submit the COL application and start construction by specific dates (end of 2008 and beginning of 2014, respectively).
- Loan Guarantees – Federal loan guarantees are authorized but the current rulemaking associated with how big of a guarantee and how much of a guarantee is still under debate. In addition, the calculation regarding how the government's subsidy costs has not yet been determined. This appears to be a particularly important issue for the merchant operators.

While it is understandable why the Federal loan guarantees are of particular interest to the merchant companies given the high level of risks associated with nuclear construction, it is debatable whether the Federal government should be involved in enhancing the profitability of the merchant market by socializing the up-front costs. However, the merchant generator would be responsible for paying the cost for the loan guarantee – the formula for which has not yet been determined. Moody's notes that some of the regulated electric utilities may also seek these Federal guarantees to help them facilitate their construction needs.

Moody's would view Federal loan guarantees positively from a construction perspective, but we observe that these guarantees, by themselves, will not be enough to completely mitigate the increased business and operating risk profile of a company seeking to build new nuclear generation. These guarantees are currently proposed to be made available to a specific number of companies considering new nuclear generation on a first-come-first-serve basis. From a potential off-balance sheet credit perspective, we question how serious a problem will need to be before a company decides to abandon its project and how these Federal guarantees will be structured from a risk sharing perspective. Notwithstanding these issues, we believe Federal loan guarantees could be very helpful in keeping the all-in costs down for a new nuclear project, which should help end-use consumers with rate shock.

Moody's also observes that the Federal loan guarantees are intended (according to the statute) to offset the technical, financial and market risks associated with building new, cleaner energy production facilities, including new nuclear power plants). The theory is that once the capital markets become more familiar with new nuclear construction, the market will be able to assess and price risk accordingly. Moody's does not fully subscribe to this philosophy. First, we believe the capital markets are capable of assessing the risk of new nuclear construction. To the extent that the capital markets price nuclear construction risk at extremely high levels, companies might consider injecting a larger component of equity into the project or find partners to share the risk. Secondly, there are several regulated utilities that are not basing their plans on the availability of these guarantees. Instead, the decision to pursue new nuclear generation was a result of their long-term resource plans, and in some cases, was made well before the Energy Policy Act even contemplated authorizing Federal guarantees.

September 25, 2007 - **Department of Energy Releases Conditional Agreement for New Nuclear Power Plants** - *Marks initial step for sponsors of new nuclear plants to qualify for up to $2 billion in federal risk insurance*

WASHINGTON, DC– The U.S. Department of Energy (DOE) Secretary Samuel W. Bodman today released a **Conditional Agreement** for companies building new nuclear power plants in the United States to qualify for a portion of $2 billion in federal risk insurance. Risk insurance covers costs associated with certain regulatory or litigation-related delays - which are no fault of the company - that stall the start-up of these plants. Authorized by the Energy Policy Act of 2005 (EPAct), risk insurance provides incentive and stability in spurring construction of new nuclear power plants and meeting our energy needs in a clean, safe, economical manner. Secretary Bodman made today's announcement while in Chicago speaking to the World Association of Nuclear Operators and United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry.

"To meet the world's growing demand for electricity and confront climate change, safe and emissions-free nuclear energy must play an integral role in our energy mix," Secretary Bodman said. "Conditional Agreements pave the way for risk insurance contracts that will provide the first project sponsors constructing new nuclear power plants with assistance if they face delays in expanding the use of nuclear energy across the nation."

Providing risk insurance is part of President Bush's bold energy agenda and allows the first of several sponsors of new nuclear power plants to be backed by the U.S. government should a sponsor undergo lengthy and unnecessary delays preventing operation.

EPAct authorizes DOE to enter into contracts with the first six sponsors that begin construction of new nuclear facilities and meet all other contractual conditions to provide risk insurance for certain regulatory and litigation delays in the full power operation of their facility. Up to $500 million in coverage is available for the initial two plants for which construction is started and up to $250 million is available for the next four plants. The Conditional Agreement, the first step in the process toward a risk insurance contract, is available to sponsors of advanced nuclear facilities once its application for a Construction and Operating License (COL) is docketed by the Nuclear Regulatory Commission (NRC). Companies can enter into a Conditional Agreement with DOE, however, only the first six that are issued a COL and begin construction are eligible for the risk insurance contract with DOE.

The Conditional Agreement announced today details the rights and responsibilities of potential sponsors to become eligible for risk insurance contracts. Events that would be covered by the risk insurance contract include delays associated with the NRC's reviews of inspections, tests, analyses and acceptance criteria, as well as certain delays associated with a pre-operational hearing or litigation in federal, state or tribal courts. Insurance coverage is not available for normal business risks such as employment strikes and weather delays. In August 2006, DOE issued a final rule that outlines a two-step process to apply for risk insurance coverage, which requires entering into a Conditional Agreement first and, if eligible, then a risk insurance contract.

Today's announcement closely follows previous progress through the Department's Nuclear Power 2010 program, which is a joint government/industry cost-shared effort to identify sites for new nuclear power plants, develop and bring to market advanced nuclear plant technologies, evaluate the business case for building new nuclear power

plants, and demonstrate untested regulatory processes. In March of this year the first two Early Site Permits were issued by the NRC. These permits were funded through a 50-50 cost share by DOE and industry. Through the Nuclear Power 2010 program, DOE is partnering with industry to promote the expansion of nuclear power in the United States and work toward the submission of COL applications for new nuclear plants to the NRC.

Financial Metrics / Valuation

The key financial credit metrics for the power sector are strong given the average Baa-rating. These metrics, which include cash flow to adjusted total debt ratios in the mid to high-teen's are expected to remain in this range over the near to intermediate term horizon, and is incorporated into our stable rating outlook for the industry.

Prospectively, there is a concern developing over the industry's current expectations for significantly increased capital investment and how the financing of that investment will be executed (primarily with debt). With respect to new nuclear generation, Moody's incorporates a view that companies will approach the financing plans associated with new nuclear generation as conservatively as they are approaching the site and technology assessments. Specifically, we believe new nuclear facilities that are included in a utility's rate base are likely to be financed on an approximately 50% debt / 50% equity basis – reasonably consistent with its existing rate base.

To the extent that a company develops a financing plan that overly relies on debt financing, which effectively reduces the consolidated key financial credit ratio's, regardless of the regulatory support associated with current cost recovery mechanisms, there is a reasonably high likelihood that credit ratings will also decline.

It has been noted in this report that the companies that are actively considering new nuclear generation have been evaluating the option for several years. While we acknowledge that it will be several more years to finalize all of the necessary regulatory approvals to commence and complete construction, in order to maintain current ratings, these companies may decide to commence an ***aggressive balance sheet strengthening program*** going into the construction period. The most effective method to protect current credit ratings for a company entering into a nuclear construction phase is the issuance of common equity at the front end of the construction cycle or, at a minimum, limiting the amount of shareholder dividends or other shareholder return alternatives. Given the numerous regulatory overhang and construction execution risks identified in this report, Moody's will be less inclined to hold a given rating over the course of a long-term construction cycle (such as that associated with a new nuclear generation facility) if a company as been active with aggressive shareholder return strategies.

The importance of partnerships

Many companies claim that the Federal loan guarantees are necessary because the companies, by themselves, are not large enough to handle the construction of a multi-billion project on a stand-alone basis. This raises a very obvious question: Why not pursue a program with multiple partners to share the risk? From a credit perspective, if a board feels that their company is too small to handle a project like a new nuclear facility, Moody's would be very concerned if the company attempted to pursue the program without adequately allocating risk within the constraints of their balance sheet.

Is there a role for Securitization Bonds?

Given some of the industry's desire for Federal loan guarantees, the need to spread risk and the size of many of the companies considering building new nuclear generation, securitization might represent a reasonable alternative to assist with the financing of the next new nuclear facilities. We observe that securitization has been successfully used within the sector to finance conservation investments, environmental mandates, stranded costs and storm recoveries. A product structured for nuclear generation could emerge as another viable financing tool.

5 Year Average Metrics

Regulated Nuke Parent Company	Unsecured / Issuer Rating	FFO / Int (x)	FFO / Debt	RCF / Debt	RCF / Capex	Debt / Cap
FFO = CFO-W/C						
RCF = CFO-W/C-Dividends						
FPL Group, Inc.	A2	5.2	22.7%	17.4%	107.4%	46.5%
SCANA Corporation	A3	4.0	17.7%	13.2%	94.9%	52.9%
Southern Company	A3	5.2	21.2%	14.4%	87.1%	49.4%
Ameren Corporation	Baa2	4.9	21.5%	13.7%	92.2%	44.6%
American Electric Power Company	Baa2	3.8	16.3%	12.2%	89.5%	55.3%
Dominion Resources Inc.	Baa2	4.0	17.5%	12.8%	74.5%	53.5%
DTE Energy Company	Baa2	3.5	14.9%	11.2%	105.9%	60.7%
Duke Energy Corporation	Baa2	4.1	19.9%	10.0%	65.8%	41.3%
Progress Energy, Inc.	Baa2	3.6	15.5%	10.3%	89.2%	57.5%
Entergy Corporation	Baa3	5.0	24.3%	20.3%	120.0%	44.1%
PG&E Corporation	Baa3	3.7	29.1%	27.7%	126.8%	54.3%
Pinnacle West Capital Corporation	Baa3	4.2	18.4%	14.4%	81.2%	50.5%
	Average	**4.3**	**19.9%**	**14.8%**	**94.5%**	**50.9%**

Non-Regulated Nuke Parent Company	Unsecured / Issuer Rating	FFO / Int (x)	FFO / Debt	RCF / Debt	RCF / Capex	Debt / Cap
FPL Group, Inc.	A2	5.2	22.7%	17.4%	107.4%	46.5%
Constellation Energy Group, Inc.	Baa1	4.3	19.6%	16.4%	126.3%	51.8%
Exelon Corporation	Baa1	5.2	25.1%	20.1%	159.0%	57.0%
Dominion Resources Inc.	Baa2	4.0	17.5%	12.8%	74.5%	53.5%
PPL Corporation	Baa2	3.6	15.9%	12.4%	125.2%	59.7%
Public Service Enterprise Group	Baa2	2.9	13.0%	9.2%	109.7%	60.6%
Entergy Corporation	Baa3	5.0	24.3%	20.3%	120.0%	44.1%
FirstEnergy Corp.	Baa3	3.6	16.0%	12.5%	144.4%	57.7%
TXU Corp.	Ba1	4.0	18.2%	15.1%	173.6%	71.4%
NRG Energy, Inc.	B1	1.7	5.9%	5.8%	203.1%	70.2%
	Average	**3.9**	**17.8%**	**14.2%**	**134.3%**	**57.2%**

Non-Nuclear Regulated Parent Company	Unsecured / Issuer Rating	FFO / Int (x)	FFO / Debt	RCF / Debt	RCF / Capex	Debt / Cap
OGE Energy Corp.	Baa1	4.9	25.0%	18.5%	109.7%	46.3%
IDACORP, Inc.	Baa2	4.4	19.1%	14.3%	102.9%	43.8%
Cleco Corporation	Baa3	4.7	22.1%	16.4%	149.0%	47.6%
Allegheny Energy, Inc.	Ba1	2.3	10.0%	9.5%	128.6%	67.3%
Puget Energy, Inc.	Ba1	3.3	16.0%	12.8%	93.8%	53.0%
TECO Energy, Inc.	Ba1	2.4	8.8%	4.6%	34.7%	70.4%
Sierra Pacific Resources	B1	2.0	7.8%	7.6%	50.7%	66.0%
	Average	**3.4**	**15.6%**	**12.0%**	**95.6%**	**56.3%**

Regulated Nuke Utility Company	Unsecured /Issuer Rating	FFO / Int (x)	FFO / Debt	RCF / Debt	RCF / Capex	Debt / Cap
Florida Power & Light Company	A1	9.5	43.4%	28.4%	74.6%	32.5%
Alabama Power Company	A2	5.6	23.5%	13.9%	84.6%	44.4%
Georgia Power Company	A2	5.6	23.0%	12.6%	77.6%	42.5%
South Carolina Electric & Gas Co	A2	4.4	21.5%	14.9%	84.3%	44.6%
Duke Energy Carolinas, LLC	A3	6.1	22.6%	14.8%	97.3%	47.6%
Progress Energy Carolinas, Inc.	A3	6.0	28.4%	17.0%	99.0%	48.3%
Progress Energy Florida, Inc.	A3	6.0	24.6%	17.1%	75.5%	48.5%
Southern California Edison	A3	7.0	41.2%	33.9%	159.4%	46.9%
Detroit Edison Company	Baa1	4.3	18.6%	13.3%	102.6%	57.8%
Pacific Gas & Electric Company	Baa1	3.8	28.7%	26.9%	114.5%	49.9%
Virginia Electric and Power	Baa1	5.0	21.8%	13.9%	92.4%	46.2%
Arizona Public Service Company	Baa2	4.2	18.4%	13.5%	82.3%	49.6%
	Average	**5.6**	**26.3%**	**18.4%**	**95.3%**	**46.6%**

Merchant Nuke Generator	Unsecured /Issuer Rating	FFO / Int (x)	FFO / Debt	RCF / Debt	RCF / Capex	Debt / Cap
Exelon Generation Company, LLC	A3	11.4	53.1%	38.8%	134.1%	50.8%
PSEG Power L.L.C.	Baa1	4.3	18.7%	18.7%	129.5%	60.4%
PPL Energy Supply, LLC	Baa2	4.6	19.0%	6.2%	50.8%	51.3%
Texas Competitive Electric Hlds.	Baa2	5.9	40.1%	22.6%	244.0%	40.7%
NRG Energy, Inc.	B1	1.7	5.9%	5.8%	203.1%	70.2%
	Average	**5.6**	**27.4%**	**18.4%**	**152.3%**	**54.7%**

Cross Industry	Unsecured / Issuer Rating	FFO / Int (x)	FFO / Debt	RCF / Debt	RCF / Capex	Debt / Cap
Exxon Mobil Corporation	Aaa	17.1	98.8%	80.1%	209.8%	19.8%
BP plc	Aa1	19.1	76.8%	57.7%	148.7%	27.4%
Royal Dutch Shell Plc	Aa1	18.1	104.4%	77.2%	135.5%	23.4%
Chevron Corporation	(P)Aa2	14.4	62.2%	49.7%	149.3%	27.7%
European Aeronautic Defence	A1	5.1	38.7%	32.9%	92.9%	28.5%
Nucor Corporation	A1	42.6	149.7%	116.3%	356.4%	20.3%
Boeing Company (The)	A2	7.7	39.8%	32.6%	432.0%	112.8%
E.I. du Pont de Nemours	A2	7.6	33.0%	22.4%	190.8%	61.8%
Praxair, Inc.	A2	7.5	33.2%	28.4%	154.2%	52.0%
Dow Chemical Company (The)	A3	5.0	23.1%	15.9%	160.1%	62.6%
Weyerhaeuser Company	Baa2	3.5	17.9%	14.2%	189.9%	49.6%
International Paper Company	Baa3	3.5	15.9%	12.5%	145.5%	60.6%
United States Steel Corporation	Baa3	6.3	46.2%	43.7%	165.0%	61.1%
Temple-Inland Inc.	Ba1	5.4	25.8%	22.3%	250.0%	58.1%
	Average	**11.6**	**54.7%**	**43.3%**	**198.6%**	**47.6%**

Moody's Related Research

Special Comments:

- Storm Clouds Gathering on the Horizon for the North American Electric Utility Sector, August 2007 (103941)
- Credit Risks and Benefits of Public Power Utility Participation in Nuclear Power Generation, June 2007(103522)
- Moody's Comments on the Credit Implications Associated with North American Utility Consolidation, December 2006 (101392)
- Moody's Comments on the Back to Basics Strategy for the North American Electric Utility Sector, November 2006 (100660)
- U.S. Nuclear Assets Remain Attractive Acquisition Targets; With Potentially Favorable Credit Implications for Efficient Operators, September 2004 (89008)
- Nuclear Power Trends in the United States, February 2004 (81342)
- Standardized Designs for Nuclear Plants Beneficial for U.S. Power Industry But Waster Disposal Is an Unresolved problem, December 2003 (80790)
- Nuclear Update: A Buyer's market for nuclear Plants, June 1999 (39917)
- Moody's Assesses Nuclear Power Risk in a More Competitive Market, April 1997(20929)

Rating Methodology

- Rating Methodology: Global Regulated Electric Utilities, March 2005 (91730)

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Author(s)	Associate Analyst	Editor	Production Associates
Jim Hempstead	Indu Sambandam, CFA	Scott Stearns	Sarah Warburton
	Ryan Wobbrock		Tara Cheparev

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