Special Comment

Moody's Corporate Finance

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New Nuclear Generating Capacity:

Potential Credit Implications for U.S. Investor Owned Utilities

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Summary

The push to build new nuclear generating capacity in the U.S. carries a number of potential credit implications for U.S. investor-owned utilities, some positive and some negative. On the positive side, new nuclear generating capacity appears to be one of the most compelling solutions for base load supply needs in the presence of a more stringent environmental regime, especially with respect to new greenhouse gas emissions. New nuclear capacity will also provide long-term benefits with respect to fuel diversity, reducing the reliance on volatile natural gas commodities or purchased power costs. The longer the horizon a regulator utilizes in its assessment of a utility's request to build a new nuclear plant (and recover the investment), the more beneficial the nuclear impact to rates for end-use consumers.

Nuclear generating capacity, however, is not without its risks. The technology is very costly, potentially reaching over $7,000 per kilowatt (kw) of capacity – by some estimates almost twice as much as new, scrubbed coal-fired power plants and three times as much as new, combined cycle natural gas power plants. In addition, the complexity and long-term construction horizon associated with building a new nuclear plant expose a utility to "material adverse change" conditions related to political, regulatory, economic and commodity price environments, as well as technology developments associated with supply and demand alternatives. These long-term risks expose a utility to back-end regulatory disallowance risks or other potential market intervention or restructuring initiatives by elected officials.

Moody's Investors Service

New Nuclear Generating Capacity: Potential Credit Implications for U.S. Investor Owned Utilities

Moody's acknowledges that companies continue to prepare, develop and refine their approach to their respective regulatory authorities regarding the prudence of near-term investment decisions for a new nuclear plant and, ideally, recovery of those investments. Nevertheless, we remain concerned over the absence of details regarding key elements associated with the decision process to proceed with a project of this scale. Information is needed regarding the all-in construction costs and break-down of those costs; the construction timeline and schedule; the Engineering, Procurement and Construction (EPC) contractual arrangements and the allocation of fixed versus variable costs within those arrangements; the financing structure, expected sources of financing and pro-forma capitalization; and, the ultimate impact on consumer rates. This information will help with the assessment of the likelihood that regulators and elected officials will remain supportive of a project of this scale and scope over the next 10 – 15 years.

From a credit perspective, utilities that pursue the new nuclear generation option will be ascribed a higher relative business and operating risk profile, which may pressure credit ratings over the intermediate- to longer-term horizon. However, we also incorporate a view that utilities will ultimately revise their corporate finance policies to begin a process of materially strengthening the balance sheet and bolstering available liquidity capacity – on the front end of the construction cycle. In addition, we incorporate a view that regulators will remain generally supportive to the long-term financial health of the utilities they regulate and authorize reasonable recovery on investments and costs over a reasonable timeframe. As a result, we do not expect many near-term rating or rating outlook changes associated solely with the decision to pursue new nuclear generating capacity.

In this Special Comment, we attempt to frame the potential financial implications associated with building a new nuclear power plant for a typical investor-owned electric utility in the U.S. Our illustrative analysis uses the average financial profile of approximately 15 vertically integrated electric utilities that currently own and operate nuclear generation plants, which we refer to as "NukeCo." Key observations from our analysis include the following:

- Regardless of whether or not a utility attempts to build a new nuclear power plant, retail rates to end-use consumers are projected to double over the next 12 – 15 years.
- A utility that builds a new nuclear power plant may experience an approximately 25% - 30% deterioration in cash-flow-related credit metrics, effectively reducing the ratio of cash flow from operations as a percentage of debt from roughly 25% to the mid-teens range.
- The projected financial implications are based on a series of simplifying assumptions, several of which could be viewed as overly bullish and several of which could be viewed as overly bearish. In our opinion, none of the assumptions can be described as unrealistic. The assumptions should be characterized as preliminary.
- There are no specific assumptions regarding the implementation of proposed greenhouse gas emission regulations – a wild card that can have a material impact on the longer-term economic benefits of a new nuclear plant.

In our opinion, the results from this simplified (and illustrative) financial projection model could be viewed as a framework to establish the potential bounds within which a utility might target its prospective financial policies and help with benchmarking. In addition, these policies can help inform our rating committees regarding the appropriate rating horizon that we can incorporate into our credit analysis for specific companies. As additional details emerge and disclosures are made in Securities and Exchange Commission (SEC) and other regulatory filings, Moody's believes we will be in a better position to refine our own views regarding the potential risks that a utility is assuming over the near-, intermediate- and longer-term horizon, as well as other risk mitigants that can also be pursued that affect the overall credit quality of a utility.

Nuclear plant construction can pressure credit metrics

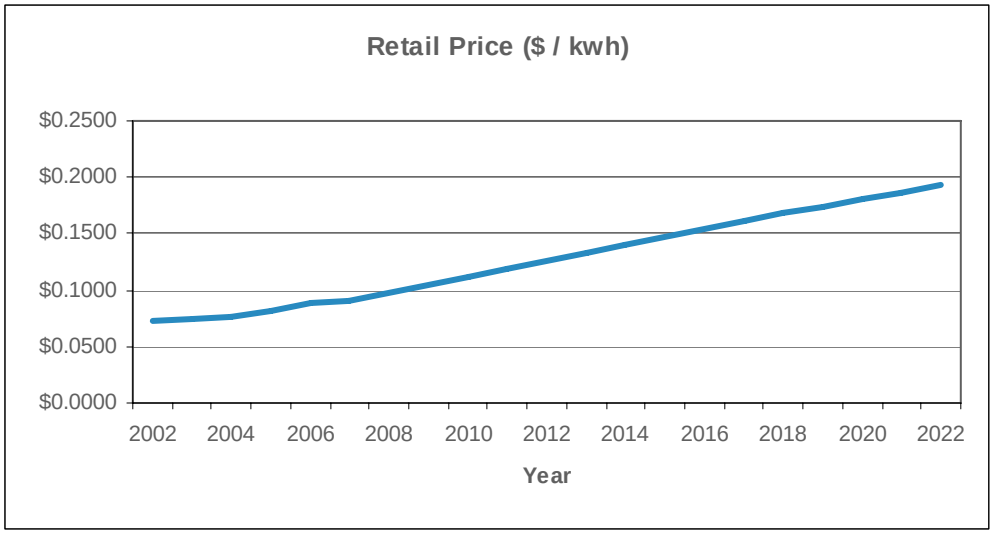
The sheer size, cost and complexity of new nuclear construction projects can increase the business and operating risk profile of a utility, potentially exposing it to downward rating pressure. In addition, the long-term nature of a nuclear construction program exposes a utility to risks surrounding the regulatory approvals necessary to recover the investment and changing market conditions, political agendas and technology developments (on both the supply and demand side).

Given these long-term risks, a utility's approach to its overall corporate finance policies becomes a critical factor in the overall credit profile assessment during the construction period. In general, Moody's incorporates a view that a utility company would prepare for the higher risk profile associated with construction by maintaining, or strengthening further, its strong balance sheet as well as maintaining robust levels of available liquidity capacity. This is a critical assumption since our preliminary analysis leads us to conclude that financial credit metrics will deteriorate meaningfully without the introduction of significant mitigating factors and/or other structural provisions.

Retail rates rising regardless of nuclear plans

Regardless of whether or not a utility decides to pursue a new nuclear plant as part of its long-term resource plans, retail electric rates to end-use consumers are projected to almost double over the next few years, due to rising fuel and purchased power costs, operating and maintenance costs and infrastructure investment needs. Based on our analysis, and assuming regulators continue to authorize recovery of prudently incurred costs and investments on a reasonably timely manner, we estimate that the retail price for electricity might increase between 6.5% - 7% per year over the next several years, from approximately 9.1 cents per kilowatt hour (kwh) to over 18 cents per kwh. At these prices, an average monthly bill would increase to approximately $270 from roughly $136 (assuming 1,500 kw's electricity usage per month).

Chart A: Actual and Projected Retail Prices ($ / kwh)



The proposed increases assume regulators will continue to support prudently incurred costs and investments into the utility's infrastructure, and that rate increases would target a 10% return on equity every year. These estimated retail price increases are derived from a simple projection model that is described in more detail in the sections that follow.

Introducing "NukeCo"

A simplified approach to assessing the financial implications associated with building a new nuclear plant

In an attempt to quantify the financial implications associated with building a new nuclear plant, Moody's analyzed a simple 15-year projection model for a hypothetical electric utility, which we will refer to as "NukeCo". This hypothetical electric utility's financial profile is derived from the average financial statements, reflecting Moody's standard GAAP financial statement adjustments, for a peer group of electric utilities that currently own and operate nuclear power plants. (The utilities that comprise NukeCo are included in Appendix A on page 17).

For the year ended 2007, NukeCo produced roughly $5.2 billion in revenue, generated approximately $1.1 billion in cash from operations and had over $9.9 billion of property, plant and equipment (net) and an asset base of approximately $14 billion. The six-year historical income statement, statement of cash flows and balance sheet for NukeCo follow:

Table 1: NukeCo – Simplified historical income statement

	Actual FM adjusted					
($ millions)	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Implied Volume	54,278	54,556	53,745	56,376	56,067	57,176
Average Retail Price ($ / kwh)	$0.0720	$0.0744	$0.0761	$0.0814	$0.0890	$0.0910
Total revenue	$3,908	$4,059	$4,090	$4,589	$4,990	$5,203
Fuel & purchased power	1,075	1,306	1,688	2,046	2,261	2,338
Gross margin	$2,833	$2,753	$2,402	$2,543	$2,729	$2,865
O&M	1,358	1,435	803	1,198	1,242	1,332
EBITDA	$1,475	$1,318	$1,599	$1,345	$1,487	$1,533
D&A	470	479	487	546	595	597
EBIT	$1,005	$839	$1,112	$799	$892	$936
Interest	236	227	195	195	222	234
EBT	$769	$612	$917	$604	$670	$702
Taxes	292	233	348	230	255	267
Net income	$477	$379	$569	$374	$415	$435
Other	10	26	(13)	(19)	12	(6)
Net income available to common	$487	$405	$556	$355	$427	$429
Dividends	$282	$319	$293	$229	$233	$260
Retained earnings	$205	$86	$263	$126	$194	$169

We assume that 100% of NukeCo's revenues are associated with retail electricity sales. The historical average retail price per kwh is supplied by the national retail price averages posted by the Energy Information Administration, where 2006 (the latest data available) was 8.9 cents. We assumed the average retail price for 2007 was 9.1 cents. We then divided the annual revenue by the historical average retail price to arrive at the implied historical volumes.

Table 2: NukeCo – Simplified historical balance sheet

	Actual FM adjusted					
($ millions)	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Current Assets	$1,394	$1,358	$1,356	$1,518	$1,440	$1,416
PP&E, net	7,246	7,883	7,939	8,389	9,228	9,928
Other Assets	1,555	2,006	2,314	2,401	2,597	2,684
Total Assets	$10,195	$11,247	$11,609	$12,308	$13,265	$14,028
Current Liabilities	$1,333	$1,192	$1,441	$1,601	$1,597	$1,501
Long-term debt	3,078	3,149	3,412	3,582	3,798	4,114
Other liabilities	2,999	3,941	3,549	3,719	4,041	4,292
Equity	2,785	2,965	3,207	3,406	3,829	4,121
	$10,195	$11,247	$11,609	$12,308	$13,265	$14,028

Table 3: NukeCo – Simplified historical statement of cash flows

	Actual FM adjusted					
($ millions)	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Net income	$487	$405	$556	$355	$427	$429
D&A	470	479	487	546	595	597
Other / deferred taxes	(189)	56	(109)	(15)	21	37
Cash flow from operations (CFO)	$768	$940	$934	$886	$1,043	$1,063
Capital expenditures	653	661	675	793	1,013	1,153
Dividends	282	319	293	229	233	260
Free cash flow	$(167)	$(40)	$(34)	$(136)	$(203)	$(350)

Table 4: NukeCo – Selected historical financial metrics

	Actual FM adjusted					
	2002	**2003**	**2004**	**2005**	**2006**	**2007**
Gross margin (%)	72%	68%	59%	55%	55%	55%
EBITDA margin	38%	32%	39%	29%	30%	29%
Dividend payout	58%	79%	53%	65%	55%	61%
CFO / revenue	19.7%	23.2%	22.8%	19.3%	20.9%	20.4%
CFO / total gross debt	25.0%	29.9%	27.4%	24.7%	27.5%	25.8%
NIATC / equity (ROE)	17.5%	13.7%	17.3%	10.4%	11.2%	10.4%
CFO - dividends / total gross debt	15.8%	19.7%	18.8%	18.3%	21.3%	19.5%
CFO + interest / interest	4.3	5.1	5.8	5.5	5.7	5.5
CFO - dividends / Cap. Ex.	74%	94%	95%	83%	80%	70%
Total gross debt / EBITDA	2.1	2.4	2.1	2.7	2.6	2.7
EBITDA / interest	6.3	5.8	8.2	6.9	6.7	6.6
Debt / equity	110.5%	106.2%	106.4%	105.2%	99.2%	99.8%
Cap Ex / D&A	139%	138%	139%	145%	170%	193%

NukeCo appears to be a strong A-rated electric utility, producing cash flow to adjusted total debt ratios of over 25% and interest coverage ratios over 5x on a consistent basis over the past several years. We assume that NukeCo's service territory is located in a state (or states) where the political and regulatory environment is viewed as being very supportive to overall long-term credit quality, much like the states in the greater southeastern region of the U.S. In addition, we assume the state regulatory authorities and legislators are favorably disposed to new nuclear generation, and that enabling legislation that encourages investment exists or will be enacted over the near term.

Scenario Planning

Attempting to isolate the financial implications associated with building a new nuclear plant

By looking at NukeCo through the lens of three different scenarios, Moody's attempts to evaluate the potential financial implications associated with building a new nuclear plant. In the first scenario (scenario A), we assume NukeCo does not build a new nuclear plant, but it does continue to spend heavily on its other infrastructure requirements. We put this spending at approximately $25 billion over the next 15 years, which we will refer to as its "base-line" capital expenditures. In addition, NukeCo continues to experience rising operating costs (fuel, purchased power, and operation and maintenance) and finances its negative free cash flow with a combination of debt and equity. We then calculate the annual authorized rate increases necessary to cover these costs and investments so NukeCo maintains a 10% return on equity (ROE), every year, over the next 15 years.

In the remaining two scenarios (scenarios B and C), we keep all of the assumptions incorporated into scenario A, except NukeCo also decides to build a new nuclear generating facility at a total cost of roughly $7.5 billion. This $7.5 billion estimate is for illustrative purposes only and does not represent a $/kw capacity figure. Instead, the estimate represents the total spending over the next 15 years for the new nuclear plant. The major difference between these two scenarios is that in scenario B, we assume the annual rate increases calculated in scenario A (which results in a constant 10% ROE), remain the same – effectively modeling no incremental rate increases associated with the additional investment burdens of the new nuke plant. As a result, the ROEs in scenario B will deviate from the steady 10% that is calculated in scenario A. In contrast, we calculate the annual average rate increases necessary to maintain the 10% ROE in scenario C, the same assumption as in Scenario A. The scenarios are summarized in the table below:

Table 5: Scenario Planning Summary

Scenario	Description of Scenario
A	NukeCo does not build a new nuclear plant, but it still invests approximately $25 billion in "base-line" capital expenditures over the next 15 years. Projected average annual retail price increases ($ / kwh) are targeted to generate a 10% ROE, every year, over the 15-year projection horizon.
B	NukeCo will build a new nuclear plant at a total cost of approximately $7.5 billion, as well as invest approximately $25 billion in "base-line" capital expenditures. Average annual retail price increases do not change from those generated in Scenario A. The new nuclear plant comes on-line in 2018 with a 10% reduction in fuel costs beginning in 2019.
C	NukeCo will build a new nuclear plant at a total cost of approximately $7.5 billion as well as invest approximately $25 billion in "base-line" capital expenditures. Projected average annual retail price increases ($ / kwh) are targeted to generate a 10% ROE, every year, over the 15-year projection horizon. The new nuclear plant comes on-line in 2018 with a 10% reduction in fuel costs beginning in 2019.

Financial Projection Assumptions

Moody's acknowledges the limitations associated with a relatively simplistic projection model as well as the increasing variability associated with long-term planning horizons. Nevertheless, for illustrative purposes only, our attempt to quantify the financial implications associated with building a new nuclear power plant require us to make a series of simplifying assumptions.

In an effort to check for the reasonableness behind these assumptions, Moody's reviewed them with a number of utility management teams, industry consultants and other financial analysts. While there was little agreement over specific assumptions (such as the date a new nuclear plant will be in operation, the size of the reduction to fuel and purchased power, interest rates or the likely regulatory treatment regarding investments), taken as a whole, we believe our set of simplifying assumptions can generally be characterized as being "reasonable."

NukeCo's 2007 actual as adjusted financials (the average year-end financials for the utilities listed in Appendix A) is used as our starting point. The assumptions that impact the projected income statement include:

- Implied volumes grow 1% per year, every year, over the next 15 years.
- Fuel and purchased power expenses increase as follows:
  - 10% a year for the next three years (2008 – 2010)
  - 9% a year for the next two years (2011 – 2012)
  - 8% a year for the next two years (2013 – 2014)
  - 7% a year for the next two years (2015 – 2016)
  - 6% a year for the next two years (2017 – 2018)
  - 5% a year for the next four years (2019 – 2022)
- Operation & Maintenance (O&M) expenses increase 5% per year, every year, over the next 15 years.
- Depreciation & Amortization is equal to prior year's PP&E, net, plus current-year capital expenditure (divided by 2 assuming steady investment over the course of the year) divided by average life.
- Interest expense increases by any incremental debt at a 7% coupon.
- Effective tax rate is 38% on pre-tax earnings.

It should be noted that in scenarios B and C (the scenarios where NukeCo builds a new nuclear plant that comes on-line in 2018), we assume a 10% decrease in fuel and purchased power expenses for the following year (2019) and no increases thereafter.

The assumptions that impact the projected statement of cash flows include:

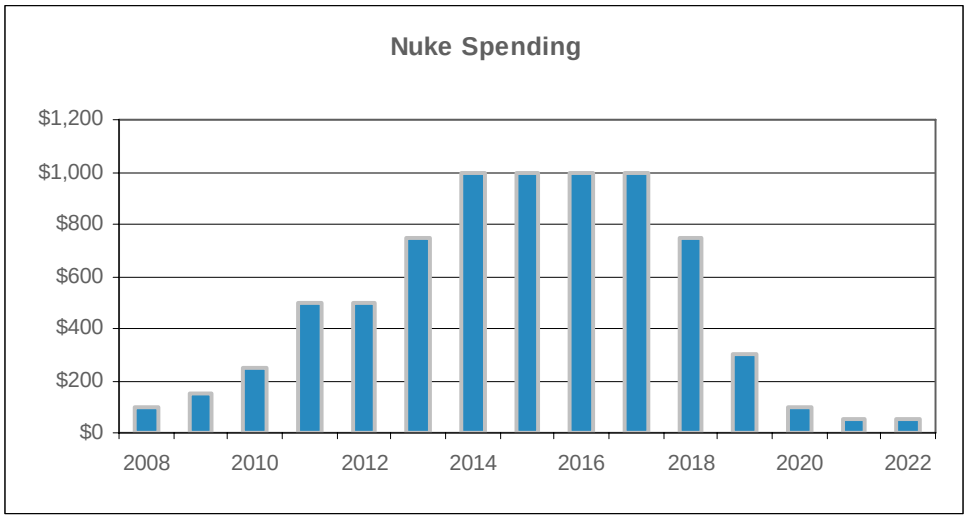
- Cash flow from operations equals 19% of revenue. Historically, this relationship has declined from 23% in 2003 and 2004 to 20% in 2007.
- Dividends are paid based on 70% of prior year's net income available to common shareholders. This results in a projected dividend payout ratio in the mid-60% range. The dividend payout ratio in 2007 was 61%.
- Negative free cash flow is financed 70% debt / 30% equity (which is incremental equity beyond retained earnings) and a 7% interest rate is applied to all incremental debt throughout the forecast period. In the event positive free cash flow is generated, the model will reduce debt and equity in the same 70% / 30% percentages.
- Base-line capital expenditures are assumed as follows:
  - 250% of annual prior year D&A for the first two years (2008 – 2009)
  - 225% of annual prior year D&A for the next two years (2010 – 2011)

- 200% of annual prior year D&A for the next two years (2012 – 2013)
- 175% of annual prior year D&A for the next five years (2014 – 2018)
- 150% of annual prior year D&A for the final four years (2019 – 2022)

The base-line capital expenditures are meant to cover all other utility investment needs (environmental, transmission, distribution and other generation needs not associated with the new nuclear plant). Our base-line capital expenditures will trail off after a few years, but we do not assume that they will decline under the nuclear new build scenarios (scenarios B and C). As a simplifying assumption, Moody's incorporates a view that all capital expenditures are immediately placed in rate base and begin depreciating. Essentially, we're assuming that regulators will be providing real-time recovery of all expenditures on an annual basis.

In scenarios B and C, NukeCo will spend a total of $7.5 billion on a new nuclear facility that will come on-line in 2018 and begin producing power in 2019. We assume that the nuclear expenditures ramp up over the next few years and peak during the 2014 – 2017 time frame (at $1.0 billion per year) before declining in 2018 and 2019. We also assume there will be some additional, albeit modest, expenditure requirements in the 2020 – 2022 timeframe associated with various "shakedown" investments. If we assume NukeCo is building a 1,200 MW new nuclear plant, the $7.5 billion spending estimate would approximate roughly $6,250 / kw capacity.

Chart B: NukeCo Estimated Nuclear Expenditures by year



The assumptions that impact the projected balance sheet include:

- Current assets, other assets and current liabilities remain flat at 2007 actual (as adjusted) levels.
- Property, plant and equipment (PP&E, net) equals prior year PP&E, net, plus current year capital expenditures less current year depreciation.
- Total debt equals prior year total debt plus 70% of negative free cash flow. In years where there is positive free cash flow, debt will be reduced by 70% of the positive figure. Free cash flow equals CFO less dividends less capital expenditures.
- Equity equals prior year equity plus 30% of negative free cash flow plus current year retained earnings. In years where there is positive free cash flow, equity will be reduced by 30% of the positive figure.

Initial Observations

Over the next few years, there is only a modest deviation for NukeCo between the three different scenarios. This is largely due to the slow ramp-up in nuclear spending. In all three scenarios, NukeCo initially maintains a cash flow from operations to debt ratio of over 20% and an interest coverage ratio of roughly 5x. The actual financial implications associated with building a new nuclear plant do not begin to have an effect until the 5 – 10 year horizon, when spending ramps up to roughly $1.0 billion per year for several years.

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Table 6: Scenario A – NukeCo does not build a new nuclear power plant; NukeCo spends approximately $25 billion in "base-line" capital expenditures over the next 15 years; annual rate increases target a 10% ROE

	Scenario A				
($ millions)	1-year 2008	3-years 2010	5-years 2012	10-years 2017	15-years 2022
Revenue	$5,596	$6,567	$7,557	$10,145	$12,804
Fuel and Purchased Power	2,572	3,112	3,697	5,234	6,743
Gross margin	$3,024	$3,455	$3,860	$4,911	$6,061
EBITDA	$1,625	$1,913	$2,160	$2,742	$3,292
CFO	$1,063	$1,248	$1,436	$1,928	$2,433
Capital expenditures	1,493	1,520	1,530	1,737	1,879
Dividends	300	342	392	510	627
Free Cash Flow	$(730)	$(614)	$(486)	$(319)	$(73)
Debt	$4,625	$5,573	$6,371	$7,601	$8,036
Equity	$4,488	$5,258	$5,990	$7,675	$9,266
CFO / debt	23%	22%	23%	25%	30%
Debt / EBITDA	2.8	2.9	2.9	2.8	2.4
CFO + interest / interest	4.9	4.7	4.7	5.0	5.8
Debt / equity	103%	106%	106%	99%	87%
Dividend payout	67%	64%	66%	67%	69%
ROE	10%	10%	10%	10%	10%

Chart C: Scenario A selected financial metrics

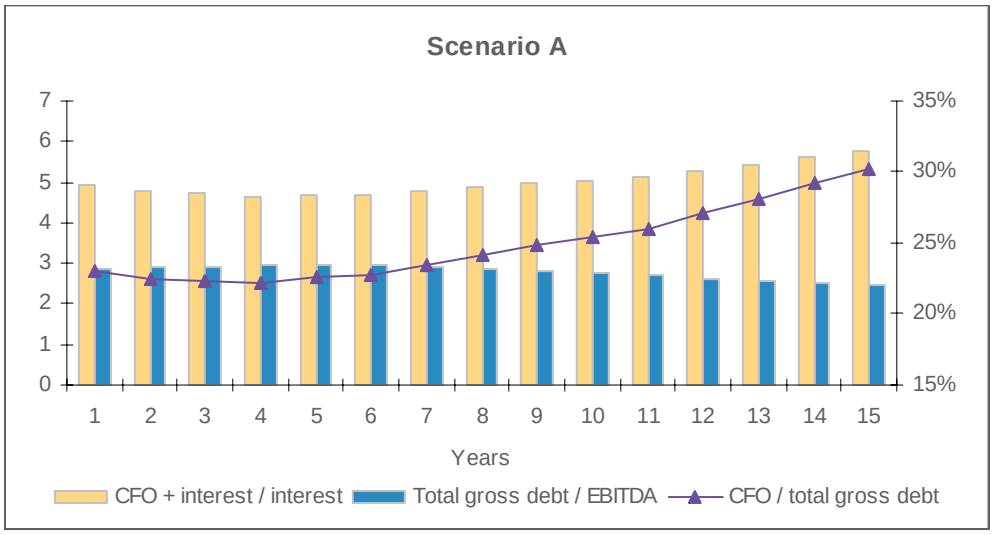

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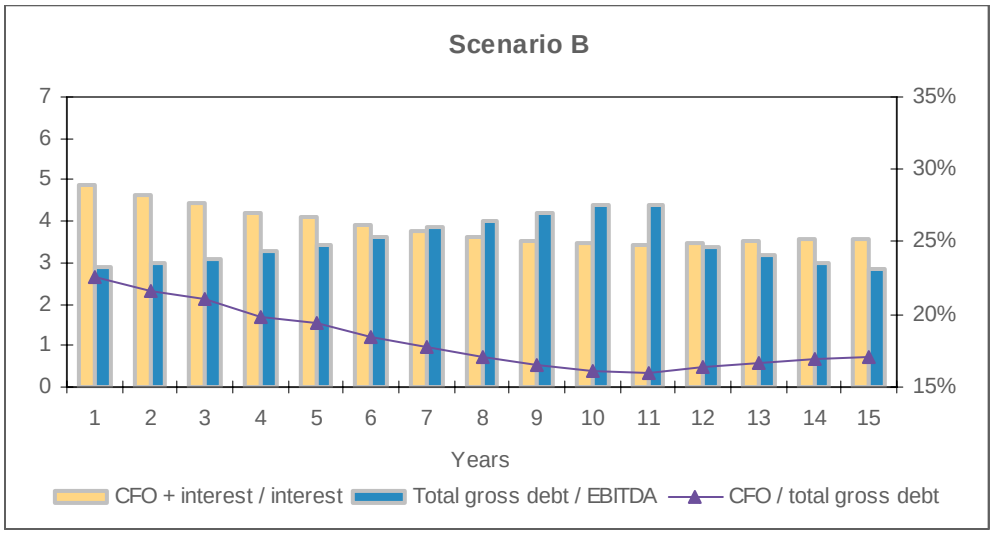
Table 7: Scenario B - NukeCo builds a new nuclear power plant for $7.5 billion; NukeCo spends approximately $25 billion in "base-line" capital expenditures over the next 15 years; annual rate increases remain steady from Scenario A

($ millions)	Scenario B				
	1-year	3-years	5-years	10-years	15-years
	2008	2010	2012	2017	2022
Revenue	$5,596	$6,567	$7,557	$10,145	$12,804
Fuel and Purchased Power	2,572	3,112	3,697	5,234	4,993
Gross margin	$3,024	$3,455	$3,860	$4,911	$7,812
EBITDA	$1,625	$1,913	$2,160	$2,742	$5,042
CFO	$1,063	$1,248	$1,436	$1,928	$2,433
Capital expenditures	1,593	1,775	2,053	2,897	2,139
Dividends	300	336	365	359	1,010
Free Cash Flow	$(830)	$(863)	$(983)	$(1,328)	$(717)
Debt	$4,695	$5,921	$7,417	$11,980	$14,288
Equity	$4,515	$5,385	$6,358	$9,072	$12,626
CFO / debt	23%	21%	19%	16%	17%
Debt / EBITDA	2.9	3.1	3.4	4.4	2.8
CFO + interest / interest	4.9	4.5	4.1	3.5	3.6
Debt / equity	104%	110%	117%	132%	113%
Dividend payout	67%	66%	69%	72%	61%
ROE	10%	10%	8%	5%	13%

Chart D: Scenario B selected financial metrics



We observe that the positive implications of having a new nuclear plant become apparent in the 2019 - 2022 projection years, when fuel and purchased power expenses decline by 10% and then remain flat at 2018 projected levels. In scenario B, where we maintained annual rate increases consistent with scenario A (no build), NukeCo's year 2022 projected ROE is roughly 13% due to its reduced operating costs. In scenario C, where annual rate increases target a steady 10% ROE, NukeCo will experience a rate decrease and subsequently smaller rate increases in the outer years reflecting its smaller revenue requirements.

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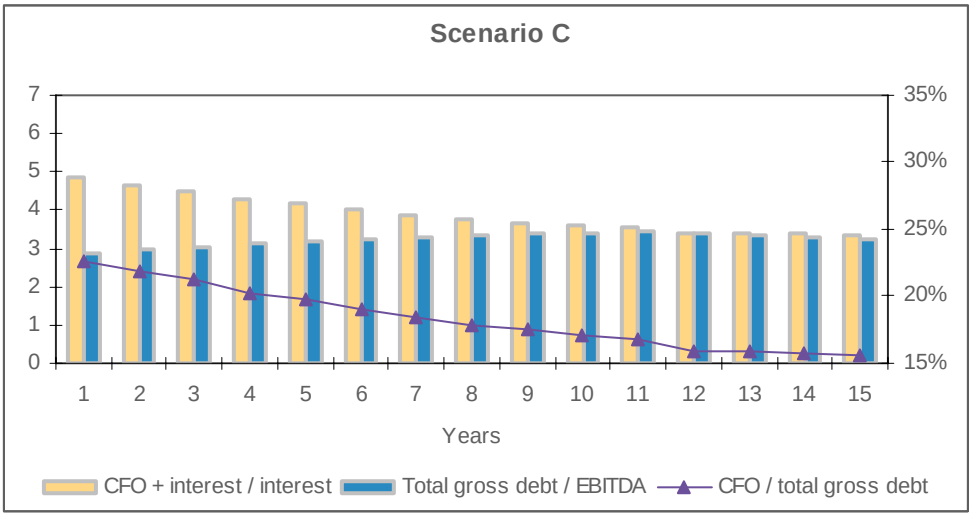
Table 8: Scenario C - NukeCo builds a new nuclear power plant for $7.5 billion; NukeCo spends approximately $25 billion in "base-line" capital expenditures over the next 15 years; annual rate increases target a 10% ROE

($ millions)	Scenario C 1-year 2008	3-years 2010	5-years 2012	10-years 2017	15-years 2022
Revenue	$5,599	$6,615	$7,738	$10,993	$12,351
Fuel and Purchased Power	2,572	3,112	3,697	5,234	4,993
Gross margin	$3,027	$3,503	$4,041	$5,759	$7,358
EBITDA	$1,629	$1,961	$2,341	$3,590	$4,589
CFO	$1,064	$1,257	$1,470	$2,089	$2,347
Capital expenditures	1,593	1,775	2,053	2,897	2,139
Dividends	300	348	419	653	887
Free Cash Flow	$(829)	$(866)	$(1,002)	$(1,462)	$(680)
Debt	$4,694	$5,920	$7,428	$12,255	$14,980
Equity	$4,517	$5,420	$6,512	$10,128	$13,331
CFO / debt	23%	21%	20%	17%	16%
Debt / EBITDA	2.9	3.0	3.2	3.4	3.3
CFO + interest / interest	4.9	4.5	4.2	3.6	3.4
Debt / equity	104%	109%	114%	121%	112%
Dividend payout	67%	64%	65%	64%	67%
ROE	10%	10%	10%	10%	10%

Chart E: Scenario C selected financial metrics



The cash flow to debt ratios for all three scenarios are shown in the following graph. Scenario A shows a trend that is roughly consistent with most projection models, where a "hockey stick" assumption is forecasted over a long-term horizon, all other assumptions being equal. However, the model shows a material degradation to the CFO / debt ratios for both of the new build nuclear scenarios (scenarios B and C). Moody's observes that a similar trend exists with all of our key cash-flow-related credit metrics and is a primary rationale behind our concerns regarding long-term credit quality.

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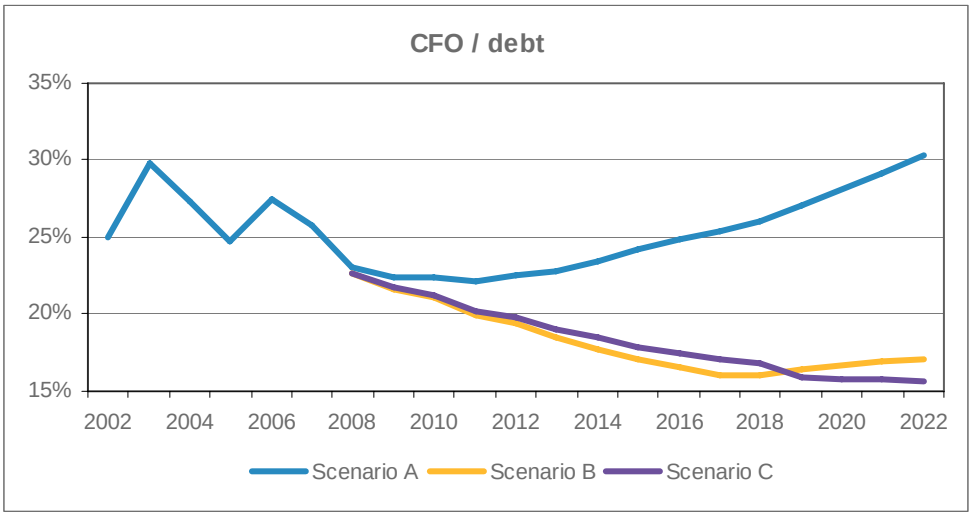
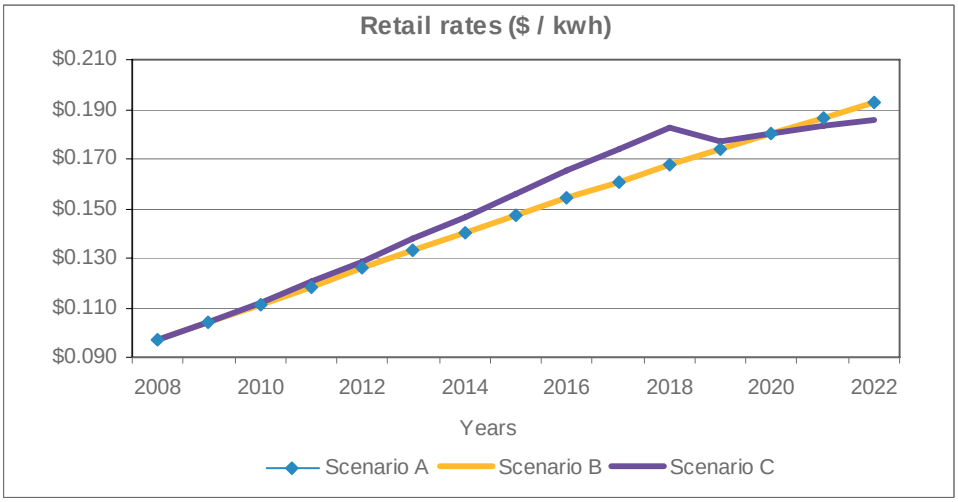
Chart F: Illustrative projected CFO / debt ratio



From a credit perspective, this reduction in CFO / debt credit metrics highlights the issue associated with our ratings horizon, namely, how many projected years can Moody's incorporate into our ratings and rating outlook? In general, part of the answer will reside in how well a particular utility is positioned within its given rating category, how much "cushion" it might have with respect to its key financial credit metrics and the continued support of regulators. It seems unlikely that NukeCo, which appears to be reasonably well positioned within the single-A ratings category, would experience negative rating actions over the near term. Nevertheless, should NukeCo's cash-flow-related metrics fall into the mid-teens range over the next 5 – 10 years, the utility may be better positioned in the Baa-rating category until more clarity becomes available regarding the eventual recovery of CFO / Debt, all else being equal.

From a retail rate ($ / kwh) perspective, Moody's observes that the rate increases do not differ materially between the various scenarios. This is largely explained by our simplifying assumption that capital expenditures are immediately placed into rate base and commence depreciation, essentially smoothing out the potential for rate shock, and reflecting regulators authorizing enough rate relief to maintain a 10% annual ROE. Because NukeCo is already investing roughly $25 billion into its infrastructure (the "base-line" capital expenditures) over the next 15 years, the incremental expenditures associated with a new nuclear plant do not materially change the rates.

Chart G: Illustrative projected retail rates ($ / kwh)



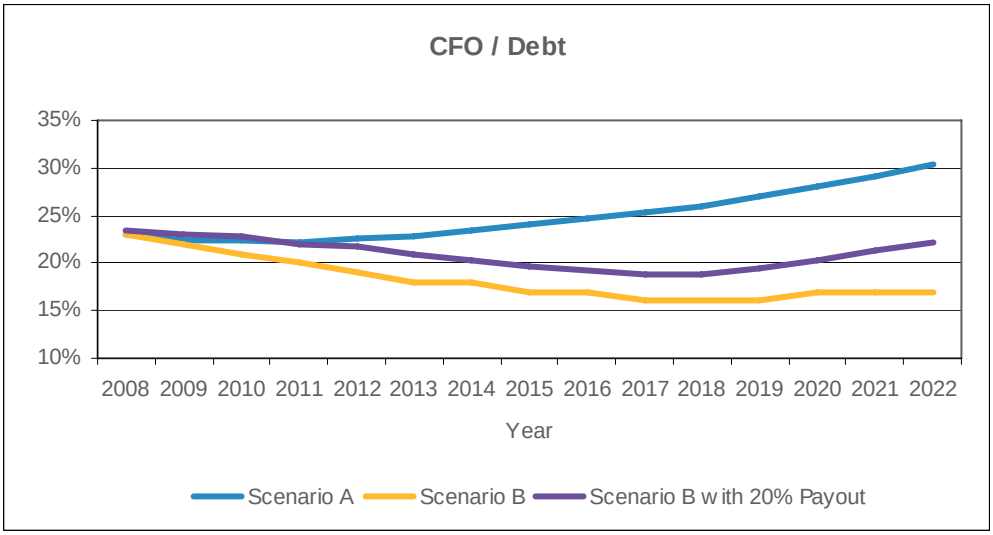
Financial Mitigation

Moody's notes that NukeCo has many corporate finance alternatives at its disposal to address the potential deterioration to its financial profile in the illustrative scenarios presented above, including:

- Revisiting its (upstream) dividend policy
- Curtailing "base-line" capital expenditures during the nuclear construction phase
- Pursuing federal loan guarantees to lower the all-in cost of financing and other federal and/ or state subsidies
- Seeking equity owners / partners to reduce the exposure to the new nuclear plant

All of these potential mitigants could result in stronger cash flow to debt ratios and interest coverage metrics. By way of example, we reduced the dividend payout assumption in Scenario B to 20% (from 70%) of prior year's net income. As a result, the CFO / debt metrics improve by an average of 16% annually over the course of the projection horizon, as noted in the chart below:

Chart H: Illustrative projected CFO / debt with reduced payout ratio



Most of the utilities currently contemplating new nuclear generation are basing their decisions, in part, on the availability of federal government subsidies and / or other federal incentives. In our opinion, pursuing these subsidies will provide a utility with a certain amount of regulatory "cover" as evidence that all potential alternatives to minimize costs were investigated. However, we do not believe federal loan guarantees should be a primary factor behind the decision to build a new nuclear plant. In our opinion, it remains unclear as to the form and substance of potential federal loan guarantees and the program remains subject to a material amount of political influence, potentially creating further delays in the process.

Many utilities are also contemplating special purpose financing vehicles and other advanced project finance structuring techniques. These financing arrangements, while admittedly still in the early stages of evaluation, may result in a material increase in the complexity of a utility's overall capital structure, a potential credit negative. In our opinion, the ability to structure a special purpose / project financing vehicle to mitigate the nuclear construction risks to the sponsoring utility and achieve off balance sheet and / or "off-credit" treatment is highly unlikely at this time. That being said, Moody's remains open to the possibility, and we acknowledge that the details behind these structures have not been finalized. Nevertheless, concluding "off-credit" treatment will be difficult if the following fact patterns exist:

- The sponsoring utility needs the generation supply as part of its long-term resource plans;
- The utility will be purchasing the output of the facility to serve its load;

- The utility uses existing utility property for the plant site;
- The utility seeks regulatory authorization to adjust its rates to reflect the increased costs of the project;
- Management and the board of directors dedicate a material amount of their time and attention to the project.

Economics of alternative energy sources

Nuclear power does not exist in a vacuum. It is one of several sources of electric power, and competes with other fossil-fueled generation (such as coal), other renewables (such as wind and solar) and other demand-side technologies (designed to reduce volume). In choosing to build a nuclear plant, a utility is making a long-term bet on a technology that has locked in a design (currently being reviewed by the Nuclear Regulatory Commission) and where construction costs are rising rapidly (primarily associated with labor and commodities). As a result, market and technology risks might emerge that position a new nuclear plant as uneconomic over the course of construction. These developments, in turn, could put a significant amount of pressure on legislators and regulators to protect rate-payers from incorporating the full cost of a new nuclear plant into rates at the expense of a less costly alternative, even if the alternative is developed (or materializes) in the future.

For illustrative purposes only, Moody's made several simplifying assumptions regarding the all-in costs associated with several competing generation alternatives. In the table below, we assume each technology builds a 1,000 MW plant, and we incorporate the capital cost, capitalization, depreciation lives and fixed and variable expense assumptions and solve for the average revenue per MW-hour, targeting a 10% ROE (for each technology).

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Table 9: Illustrative Economic Comparison
Revenues ($ / MWh) targets 10% ROE

	Natural Gas	Scrubbed Coal	Wind	Solar	Nuclear
Size (MW's)	1,000	1,000	1,000	1,000	1,000
Capital cost ($/kw)	$1,500	$4,000	$2,000	$3,000	$7,500
Capital cost ($)	$1,500,000	$4,000,000	$2,000,000	$3,000,000	$7,500,000
Debt	60%	70%	80%	60%	70%
Interest rate	7%	7%	7%	7%	7%
Equity	40%	30%	20%	40%	30%
Depreciation (years)	30	40	20	20	50
Fuel ($/MWh)	$56.00	$30.00	$-	$-	$5.00
Variable O&M ($/MWh)	$5.00	$7.00	$7.00	$7.00	$10.00
Fixed O&M ($/kw-year)	$25.00	$35.00	$35.00	$35.00	$250.00
Capacity factor	45.0%	80.0%	30.0%	20.0%	90.0%
Volume (MWh's)	3,942,000	7,008,000	2,628,000	1,752,000	7,884,000
Market price ($/MWh)	$120.56	$111.85	$125.54	$294.98	$150.83
Revenue ($ millions)	$475	$784	$330	$517	$1,255
Less: Fuel	221	210	-	-	42
Less: VOM	20	49	18	12	83
Less: FOM	25	35	35	35	250
EBITDA	$210	$490	$277	$470	$880
Less: D&A	50	100	100	150	150
EBIT	$160	$390	$177	$320	$730
Less: interest	63	196	112	126	368
EBT	$97	$194	$65	$194	$363
Less: Taxes at 38%	$37	74	25	74	138
Net income	$60	$120	$40	$120	$225
After-tax ROE	10%	10%	10%	10%	10%
CFO (net inc. + deprc.)	$110	$220	$140	$270	$375
CFO / debt	12%	8%	9%	15%	7%
CFO / equity	18%	18%	35%	23%	17%
CFO + interest / interest	2.7	2.1	2.3	3.1	2.0
Environmental:					
NOX	Some	Substantial	None	None	None
SOX	Some	Substantial	None	None	None
CO2	Some	Substantial	None	None	None
Mercury	None	Substantial	None	None	None
Uranium waste	None	None	None	None	Substantial

From a back-end regulatory disallowance risk perspective, our concerns reside in the fact that nuclear generation has a fixed design where construction costs are rising rapidly, while other renewable technologies are still experiencing significant advancements in terms of energy conversion efficiency and cost reductions.

By way of example, based on the simple economic comparison noted above, if solar technology advanced to where the capital costs are reduced to $1,500 from $3,000 per kw and where the capacity factors improved to 40% from 20%, the price per MWh to achieve a 10% ROE would fall to approximately $76.99, a reduction of roughly 75% and almost half the cost of new nuclear.

Similarly, if we assume the capacity factor for solar remains constant at 20% and the price per MWh equals the price of nuclear (in this case, approximately $150 per MWh), the price per capacity would have to fall to $1,400 per kw in order to arrive at a 10% ROE, a reduction of roughly 55%. It is uncertain as to whether cost reductions of this magnitude are realistic or attainable.

Climate change economics a potential positive "wild card"

The credit implications associated with pending climate change legislation are beyond the scope of this Special Comment. Nevertheless, Moody's observes that nuclear power appears to represent the most compelling large-scale base load and emissions-friendly supply alternative. We acknowledge that the illustrative scenarios discussed in this report do not incorporate the potential economics associated with carbon / greenhouse gas emission regulations, a material simplifying assumption but one that could have a significant positive impact on the economic prospects for new nuclear generation. In our opinion, if federal and state governments are serious about reducing carbon emissions, new nuclear power will be part of the solution.

Appendix

Nuclear Utilities Well Positioned Within Rating Category

Moody's selected two peer groups of vertically integrated electric utilities: those with nuclear generation supplies (Nuclear utilities) and those without nuclear generation supplies (Non-nuclear utilities). A list of the companies included in these peer groups is provided in the table below.

Selected Vertically Integrated Electric Utilities

Nuclear utilities	Sr. Unsec.		Non-Nuclear utilities	Sr. Unsec.
Company Name	**Rating**		**Company Name**	**Rating**
Alabama Power Company	A2		Appalachian Power Company	Baa2
Arizona Public Service Company	Baa2		Central Illinois Light Company	Ba1*
Detroit Edison Company (The)	Baa1*		Cleco Power LLC	Baa1
Duke Energy Carolinas, LLC	A3		Dayton Power & Light Company	A3*
Entergy Arkansas, Inc.	Baa2*		Duke Energy Indiana, Inc.	Baa1
Entergy Louisiana, LLC	Baa2		Duke Energy Ohio, Inc.	Baa1
Florida Power & Light Company	A1*		Green Mountain Power Corporation	A3**
Georgia Power Company	A2		Hawaiian Electric Company, Inc.	Baa1*
Kansas City Power & Light Company	A3		Idaho Power Company	Baa1
Northern States Power Company (MN)	A3		Indianapolis Power & Light Company	Baa2
Northern States Power Company (WI)	A3		Kansas Gas & Electric Co.	Baa2**
Ohio Power Company	A3		Kentucky Power Company	Baa2
Pacific Gas & Electric Company	A3		Kentucky Utilities Co.	A2*
Progress Energy Carolinas, Inc.	A3		Louisville Gas & Electric Company	A2*
Progress Energy Florida, Inc.	A3		Madison Gas and Electric Company	Aa3
South Carolina Electric & Gas Company	A3*		Mississippi Power Company	A1
Southern California Edison Company	A3		Monongahela Power Company	Baa3
Virginia Electric and Power Company	Baa1		Nevada Power Company	Ba3*
			Oklahoma Gas & Electric Company	A2
			PacifiCorp	Baa1
			Portland General Electric Company	Baa2
			Public Service Company of Colorado	Baa1
			Public Service Company of NH	Baa2
			Public Service Company of Oklahoma	Baa1
			Puget Sound Energy, Inc.	Baa3
			Sierra Pacific Power Company	Ba3*
			Southwestern Electric Power Company	Baa1
			Southwestern Public Service Company	Baa1
			Tampa Electric Company	Baa2
			Wisconsin Power and Light Company	A2
			Wisconsin Public Service Corporation	A1

**Long-Term Issuer Rating*

*** First Mortgage Bond Rating*

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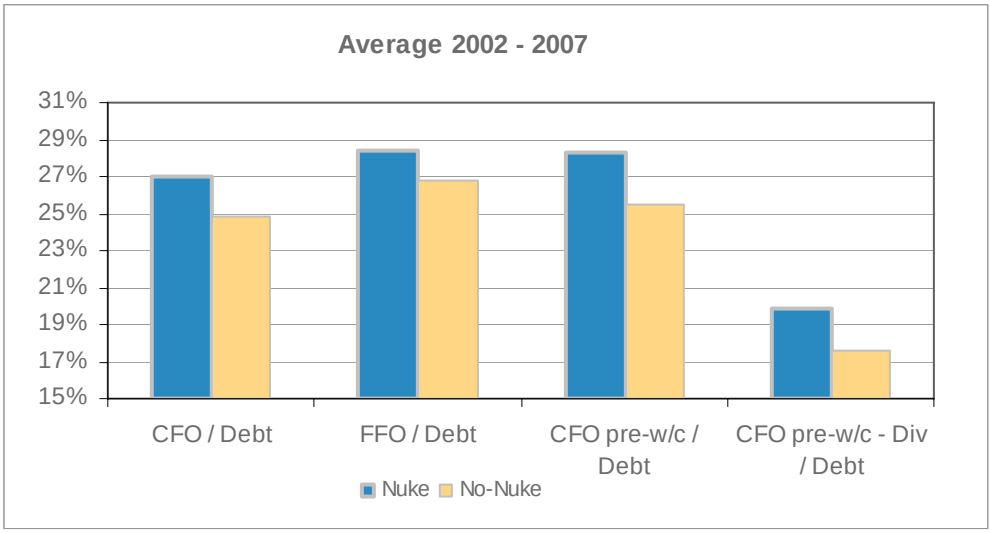
Moody's observes that, on average, the nuclear utilities tend to be significantly larger than their non-nuclear peers, based on revenues, cash flow and assets. In addition, over the past six years (2002 – 2007), the nuclear utility peer group has produced, on average, slightly stronger credit metrics than the non-nuclear peer group.

Chart I: Average Financial Credit Metrics (2002 – 2007)



Moody's Related Research

Industry Outlooks:

- North American Natural Gas Transmission and Distribution: Six Month Update, March 2008 (xxxxx)
- U.S. Electric Utility Sector, January 2008 (107004)
- U.S. Electric Utilities, December 2006 (101304)
- U.S. Coal Industry, October 2007 (105372)

Special Comments:

- EU Climate Change Strategy, May 2008 (108846)
- Decommissioning and Waste Costs for New Generation of Nuclear Power Structures, May 2008 (109086)
- Moody's Analytical Adjustments for Nuclear Energy Liabilities in EMEA, December 2007 (106604_
- Credit Challenges Ahead For Public Power: Difficult Decisions on New Generation Capacity, November 2007 (105997)
- New Nuclear Generation in the United States: 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 Costs for Public Power Electric Utilities, June 2007 (103616)
- Regulation Of Greenhouse Gases: Substantial Credit Challenges Likely Ahead For U.S. Public Power Electric Utilities, June 2007 (103356)
- Regulatory Pressures Increase For U.S. Electric Utilities, March 2007 (102322)
- Moody's Comments on the Back to Basics Strategy for the North American Electric Utility Sector, November 2006 (100600)

Rating Methodologies:

- North American Diversified Natural Gas Transmission And Distribution Companies, March 2007 (102513)
- North American Natural Gas Pipelines, December 2006 (101229)
- North American Regulated Gas Distribution Industry (Local Distribution Companies), October 2006 (99282)
- U.S. Electric Generation & Transmission Cooperatives, May 2006 (97324)
- Global Regulated Electric Utilities, March 2005 (91730)

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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