

Special Comment

Moody's Corporate Finance

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Analyst Contacts:

New York	1.212.553.1653
Jim Hempstead	1.212.553.4318
<i>Vice President / Senior Credit Officer</i>	
A.J. Sabatelle	1.212.553.8756
<i>Vice President / Senior Credit Officer</i>	
Mike Haggarty	1.212.553.7172
<i>Vice President / Senior Credit Officer</i>	
Kevin Rose	1.212.553.0389
<i>Vice President / Senior Analyst</i>	
Laura Schumacher	1.212.553.3853
<i>Vice President / Senior Analyst</i>	
Wesley Smyth	1.212.553.2733
<i>Vice President / Senior Accounting Specialist</i>	
W. Larry Hess	1.212.553.3837
<i>Managing Director</i>	

New Nuclear Generating Capacity:

Potential Credit Implications for U.S. Investor Owned Utilities

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.



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

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.