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Rating Methodology: Global Regulated Electric Utilities

Summary

This rating methodology covers electric utility companies worldwide whose credit profile is significantly affected by the presence of regulation. In order for a company to be included within this classification, at least 40% of its business should derive from regulated electric activities. The methodology thus excludes all other electric and power companies operating in the unregulated market, such as generators or power retailers, and other regulated industries such as water and gas utilities.

Based upon this definition, Moody's rates over 100 companies that either are electric utilities or are the parent holding companies for subsidiaries that operate predominantly in the electric utility business. In addition, Moody's rates a large number of utility operating subsidiaries of the ultimate parent companies. Figure 1 offers a breakdown of the ultimate parent companies by geographic region and rating category as of 1 February 2005:

Figure 1 – Electric Utility Companies Covered By This Methodology - by Geographic Region and Rating Category

	Aaa	Aa	A	Baa	Ba	B	TOTAL
Asia/Pacific		2	8	6	1	1	18
Europe	1	7	16	9	1		34
Japan		3	6				9
Americas			10	30	10	5	55
Totals	**1**	**12**	**40**	**45**	**12**	**6**	**116**

Moody's concludes that – despite the considerable number of common characteristics shared by electric utilities on a worldwide basis – country-by-country regulatory differences and cultural and economic considerations make this a local industry seen globally rather than a truly global industry.

In general, regulated electric utilities offer lenders some of the lowest business risks seen amongst corporate entities. However, many of the companies in question may also be active in unregulated businesses, such as speculative trading with exposure to unhedged commodity prices, which can be highly risky and may lead to serious financial difficulties despite the presence of a regulator.

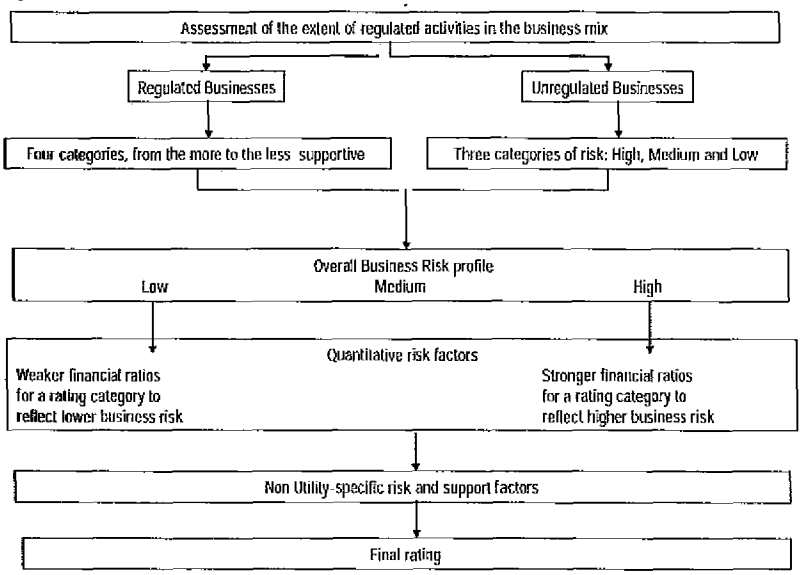
In addition, there is little consistency in the approach and application of regulatory frameworks around the world. Some are highly supportive of the "system" and those that operate within them, often offering implied sovereign support to ensure reliability of supply. Others are designed to protect the end-consumers from abuse of a monopoly supplier – a priority that may work to the detriment of companies operating in the system if they cannot meet regulators' expectations, or if the regulator fails to achieve the appropriate balance in the regulatory framework.

Under this rating methodology, Moody's:

1. Assesses the extent of a "regulated" company's exposure to its unregulated businesses. The strongest credit risk position is enjoyed by a company whose business is wholly regulated. Where non-utility activities are substantial, the main credit driver will be the assessment of these businesses.
2. Assesses the credit support that is gained from operating within a particular regulatory framework.
3. Considers the exact level of risk posed by the unregulated businesses to the overall credit.
4. Looks at six specific financial ratios which are considered the most useful when assessing an electric utility and the adjustments made to calculate these.
5. Considers more generic risk factors that are not specific to utility companies, e.g. the adequacy of liquidity arrangements, appetite for acquisitions.

Figure 2 depicts the broad methodology for regulated utilities:

Figure 2



Profile of Key Characteristics by Rating Category

Figure 3 below describes the key characteristics of regulated electric utilities falling within each rating category.

Figure 3

Rating Category	Ownership	Market and Regulatory Position	Non-Regulatory Risks
Aaa	Wholly owned by a Aaa-rated sovereign with unquestioned support if needed	Regulatory framework allows full cost recovery. No evidence of a regulator ever blocking regulated price rises. Large and well-protected service area. Support for the electric transmission system outweighs customer considerations. No or very limited competition. If owned by a Aaa-rated sovereign, the risk is deemed equivalent to that of the Aaa parent.	Zero or immaterial when considering revenue, earnings, cashflow and assets.
Aa	Wholly or majority owned by a Aaa or Aa rated sovereign or investor-owned with an effective monopoly and highly supportive regulation	Regulatory framework allows full cost recovery. No evidence of a regulator ever blocking regulated price rises. Large and well-protected service area. Support for the electric transmission system outweighs user considerations. No or very limited competition. Financially robust under all scenarios with unquestioned access to the financial markets and very strong liquidity. Many companies in this category are either sovereign-owned or are deemed to have certain support from the regulatory system or government in times of stress.	Non-electric utility businesses are predominantly low-risk businesses such as natural gas distribution

Figure 3

Rating Category	Ownership	Market and Regulatory Position	Non-Regulatory Risks
A	Wholly or partially owned by a Aa or A rated sovereign or rating is based on intrinsic strength without factoring in any uplift for sovereign ownership; or investor-owned with highly predictable and reliable regulation.	Medium to large-sized companies where the core operation is a stable, regulated electric utility business. Well-capitalized companies with moderately strong financials, that face more business risk and/or have weaker financial metrics than the issuers in the Aa category. If exposed to substantial competition, cost structure and rates are highly competitive for their region. Companies in this category often face greater competitive pressures than those in the Aa rating category. The regulatory environment has above-average stability and reliability. Recovery of costs under regulated rates is fairly predictable with automatic fuel and purchased power recovery provisions in some jurisdictions. Service territory has moderate to strong demographics. Customer base is predominantly commercial and residential, and issuer has only modest potential for harm from loss of important industrial customers. There may be some history of a lack of support by regulators on large spending decisions for the regulated business but any amounts disallowed have had only a modest impact on the issuer's creditworthiness.	Larger companies in this category may have substantial non-regulated businesses but the overall profile remains dominated by regulation. Smaller companies in this category are likely to have very limited unregulated activities.
Baa	Wholly or partially owned by a A or Baa rated sovereign or rating is based on intrinsic strength without factoring in any uplift for sovereign ownership; or investor-owned with highly predictable regulation that has modest potential for unexpected rate outcomes.	Medium-sized and smaller companies with average to below-average capitalization and cash flow coverages, that face more business risk and have weaker financial metrics than the issuers in the A category. Core operations are dominated by fairly stable integrated electric utility businesses. Issuers may be more exposed to competition, less competitive in costs and rates in their region, and may be at risk for the loss of large industrial customers. There may be substantial competition for wholesale customers and some competition for retail and small commercial customers. The regulatory environment has average to below-average stability and reliability. The regulatory environment may sometimes be challenging and politically charged. Recovery of costs under regulated rates is usually predictable with fuel and purchased power recovery provisions in some jurisdictions, but there is a greater tendency for regulatory surprises. There may be some history of regulators disallowing large spending decisions for the regulated business and disallowed amounts may have had a meaningful impact on the issuer's creditworthiness.	Issuers may have other utility and energy businesses, especially natural gas distribution. Unregulated non-utility businesses may be substantial in size relative to the regulated business, and unregulated businesses may have a higher risk profile than is the case for most issuers in the A category. Some issuers in this rating category have substantial investments in higher-risk unregulated businesses, including merchant power, energy trading, oil and gas production, real estate, telecom.
Ba	Most of the issuers that are rated Ba are holding companies for regulated utility subsidiaries that are rated in the Baa category. Excluding emerging markets, very few regulated utility operating companies have speculative grade senior ratings.	Medium-sized and smaller companies with below-average capitalization and cash flow coverages, that face more business risk and have weaker financial metrics than the issuers in the Baa category. Core operations may include fairly stable integrated electric utility businesses, but these are offset by substantial debt-financed investments in unregulated activities that are higher risk or have performed poorly. Liquidity is likely to be weak, especially at the parent holding company. Bank financing may be secured and the issuer may have limited headroom under its covenants. Some issuers in this rating category are substantially more exposed to competition, less competitive in costs and rates in their region, and may be at risk for the loss of large industrial customers. There may be substantial competition for all types of customers: wholesale, retail, and small commercial. Regulatory environment may be inconsistent, with surprisingly unfavorable rate decisions or regulatory unwillingness to make timely changes to address unexpected market volatility. Issuer has below-average relationship with regulators. There may be uncertainty of recovery for spikes in costs such as for fuel or purchased power.	Compared to those Baa issuers that also have substantial riskier unregulated investments, the investments are proportionately larger in relation to the regulated utility business and have performed more poorly. Issuers may have other utility and energy businesses, especially natural gas distribution. Unregulated businesses have a higher risk profile than is the case for most issuers in the Baa category. Issuers in this rating category usually have substantial investments in higher-risk unregulated businesses, including merchant power, energy trading, oil and gas production, real estate, telecom.
B	Some issuers in this rating category are majority owned by low-rated sovereign entities.	Medium-sized and smaller companies with well below-average capitalization and cash flow coverages, that face more business risk and have weaker financial metrics than the issuers in the Ba category. Core operations may include fairly stable integrated electric utility businesses in some cases, but these are outweighed by large highly risky unregulated activities that were debt-financed and have performed extremely poorly. Some issuers have very poor regulatory relationships. Regulators may have engaged in second-guessing of spending decisions and denied recovery of amounts that jeopardize the issuer's ability to fund its ongoing business activities. Liquidity is likely to be very weak, especially at the parent holding company. Bank financing may be secured and the issuer may have limited headroom under its covenants. There is a significant risk of detrimental sovereign actions such as: politically motivated interference in the ratemaking process, actions based on social/political needs rather than financial returns. There may be a history of using the utility as a government funding source. These issuers also face higher potential for disruption in power and financial markets. The financial profile of these issuers may be relatively strong but susceptible to rapid deterioration.	Unregulated businesses tend to be higher-risk activities, including merchant power and energy trading.

Stand-Alone Company Credit Risk Factors

QUALITATIVE FACTORS

General rating methodology

Moody's framework for rating regulated electric utilities is constructed around a number of credit risk factors rather than on any one particular metric such as a financial ratio.

The first step is to assess the extent of a "regulated" company's exposure to unregulated businesses. The strongest position is enjoyed by those companies operating in a wholly regulated business. However, the majority of the companies we consider in this sector have additional exposure to unregulated businesses, whether those are unregulated power generation or supply activities or non-electric unregulated businesses.

The second step in the methodology is to assess the credit support that is gained from operating within a particular regulatory framework. Moody's considers each regulatory system and assesses whether there is a high or low expectation of predictability in the system and whether operators can reasonably expect to recover their costs and investments through regulator-approved revenue increases.

The third step is to consider the exact level of risk posed by the unregulated business. Note that a relatively small, but high-risk, unregulated business has the capacity to cause a major credit deterioration for the entity as a whole.

This then leads to an overall assessment of the qualitative business risk of the company's activities.

Each of these steps is now considered in more detail.

Assessment of the extent of regulation around a business

Moody's classifies companies into four categories to determine how much their business risk is influenced by regulated activities.

This is a measure of the relative weight of regulated to unregulated business within a rated entity. Weighting is based on the element of earnings, cashflows and assets that fall within or outside a regulatory framework. In order to define the "unregulated business" percentage, Moody's takes the highest percentage out of the three measures respectively based on earnings, cashflows and assets. This then allows us to derive the regulated business percentage and to assign the entity to one of the four categories as below:

Category 1: A wholly regulated business

Category 2: 80-99% of the business is regulated

Category 3: 60-80% of the business is regulated

Category 4: 40-60% of the business is regulated

Assessment of the supportiveness of the regulatory framework

We also classify entities into the following four categories based on a comparative assessment of the predictability and stability of regulated cashflows for a company operating under a particular regulatory framework – or the Supportiveness of Regulatory Environment (SRE):

SRE 1: Regulatory framework is fully developed, has shown a long track record of being highly predictable and stable and there is a very high expectation of timely recovery of costs and investments.

SRE 2: Regulatory framework is fully developed, is predictable and stable and there is a high expectation of timely recovery of costs and investments.

SRE 3: Regulatory framework is well developed but there is a lower assurance of timely recovery of costs and investments; there may also be evidence of some inconsistency or unpredictability in the way that the regulatory framework has been applied.

SRE 4: Regulatory framework is still being developed, is unclear, is undergoing considerable change or has a history of being unpredictable.

Consideration is given to the substance of a regulatory ringfence including restrictions on dividends, restrictions on capex and investments, separate financings, separate legal structure, and limits on the ability of the regulated entity

to support its parent company. There is more credit uplift if these provisions are contained within a license or clear regulatory rules rather than in financing documents that can be renegotiated.

In general, Moody's sees regulatory frameworks as being fundamentally designed to achieve a balance between supply reliability and service, efficiency, prices, and financial returns to the utilities. All jurisdictions consider all of these factors, but there are regional differences in their application and degree of emphasis, as discussed below:

- Protecting the "system" to ensure a reliable supply. In such cases, the company receives considerable implied support from the government, which may be at the expense of the end-user. Japan is an example of a system that emphasizes these factors more heavily. Other examples would include systems where considerable infrastructure build-out is needed and incentives for investment outweigh the need to control customer prices. Italy and Spain are examples of jurisdictions that emphasize these factors more strongly.
- Protecting consumers from monopoly over-charging or from sudden large rate increases that could be imposed more gradually. When these concerns are more heavily weighted, companies are at financial risk if they cannot economically deliver a service at the regulated price. Some degree of financial deterioration of the utility may be accepted in the interests of protecting consumers from higher prices. California demonstrated a heavier weighting of these factors when wholesale market prices spiked in 2000-2001.
- Attempting to achieve a balance between satisfying the need of companies to be able to provide a return to their stakeholders and endeavoring to encourage efficiency and hold down prices. The regulatory systems of Australia and the UK are good examples of models that consistently stress these factors most heavily.

Examples of regulatory frameworks in each category:

SRE 1:	Australia, Canada, Iceland, Finland, Hong Kong, Japan, UK
SRE 2:	Austria, France, Germany, Italy, New Zealand, Portugal, Netherlands, Norway, Singapore, Spain, Sweden, U.S. states: Alabama, Delaware, District of Columbia, Florida, Georgia, Hawaii, Indiana, Iowa, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Mississipi, Nebraska, New York, North Carolina, Oklahoma, Oregon, Rhode Island, South Carolina, Tennessee, Utah, Virginia, Washington, Wisconsin
SRE 3:	Chile, Czech Republic, Estonia, Greece, Israel, Korea, Latvia, Malaysia, Taiwan, Thailand, U.S. states: Arizona, Arkansas, California, Colorado, Connecticut, Idaho, Illinois, Kansas, Louisiana, Maine, Michigan, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, North Dakota, Ohio, Pennsylvania, South Dakota, Texas, Vermont, West Virginia, Wyoming
SRE 4:	Brazil, Bulgaria, China, Colombia, India, Indonesia, Philippines, Romania, South Africa

Assessment of the risk of the unregulated businesses

A key component of Moody's ratings of electric utility companies is an individual assessment of the business risks as well as the financial risks for each company. The regulated activities of electric utility companies generally are more stable and carry lower risk than the business activities of most other corporate entities. As a result, utility companies are rated substantially higher than industrial companies that have a similar financial profile.

However, as noted above, many companies in the electric utility industry have a mix of regulated and unregulated businesses. These companies typically combine a low-risk electric utility business and what is in most cases a higher-risk unregulated business. The risk contribution from the unregulated businesses is determined by:

1) The relative proportion of the total company's business that comprises unregulated activities; and

2) The degree of risk of the particular unregulated activities.

Companies that have substantial unregulated activities that carry high or medium risk require stronger financial ratios to achieve a particular rating level than companies whose unregulated activities are small in size or are low in risk. Note that a company with a low-risk business profile will be rated more highly than a company that has the same financial profile but which has larger or higher-risk unregulated activities. The presence of a high proportion of risky non-regulated businesses could account for as much as a six rating notch differential over another company that was in a wholly regulated business.

Figure 4 shows a broad categorization of the relative riskiness of unregulated activities that are commonly part of the business of electric utility companies. These are grouped into broad categories of high, medium and low business risk. These classifications are general and do not fully capture individual company characteristics or differences in regional markets. For example, uncontracted wholesale power generation is likely to be riskier in the US, where the market is fragmented, than in Germany, where a smaller number of companies have relatively large market shares.

This categorization of the risks of unregulated businesses can be summarized as follows:

Category 1 – High

Category 2 – Medium

Category 3 – Low

Figure 4

High Business Risk
Merchant power generation that is located in highly competitive markets or merchant power generation that is high-cost and is not sold under long-term contract to a highly creditworthy counterparty.
Energy trading and marketing that is speculative or market-making in nature.
Investments in unregulated international power assets in unfamiliar markets.
Various investments outside the core area of industry expertise. Frequent areas for such diversified investment include: telecommunications; oil and gas exploration and production; and real estate development.
Medium Business Risk
Merchant power generation in markets in which competition is limited by the large market share of each participant, by geographic isolation, or by the utility's control of critical production and transmission infrastructure, or because the unregulated generation is relatively low-cost.
Affiliated energy generation and supply businesses that sell primarily under contract to the regulated utility or within the utility's core market area.
Energy trading and marketing that is strictly limited to trading around the utility's physical generation and transmission assets, with little or no market making trading.
Operation of coal mines or natural gas pipelines that are closely integrated with the utility's regulated generation business as the source of fuel for the regulated power plants.
Low Business Risk
Unregulated electricity generation that is wholly sold under long-term contract to highly creditworthy counterparties which assume all risk of fluctuation in the market prices of fuel and electricity.
Unregulated or lightly regulated electricity generation that is very well insulated from competition because of the utility's high market share or its ownership and tight control of the key infrastructure assets that are needed to generate or deliver electricity.
Selling and maintaining customer equipment that is related to the core utility business, or contractual arrangements to manage customers' fuel and electricity needs, under which the customer retains all risk of fluctuation in market prices.

High-Business-Risk Unregulated Activities

This higher business risk category includes merchant generation in highly competitive markets, energy trading and marketing that is speculative or market-making in nature, and unregulated electric generation investments in unfamiliar or poorly developed markets.

Merchant energy is considered to include unregulated power generation for which the output is not sold under long-term contract with a creditworthy counterparty. In the merchant model, power is sold into the competitive or merchant market, and cash flows are subject to market price volatility. The absence of contracts results in less predictable cash flows and higher business risk.

Energy marketing and trading is a related activity that often has a high level of risk associated with it. There can be substantial differences in the riskiness of energy trading and marketing, depending upon the strategy and size of this activity. Speculative trading activity has the potential to produce large swings in income or loss, has limited risk transparency, and may result in large swings in liquidity needs. Trading and marketing activities that are ancillary to a core utility business (trading around the physical assets) are considered to be much less risky than pure proprietary or speculative trading. However, all energy trading is viewed as having a higher business risk profile than regulated activities.

A number of other investments outside the core sector of industry expertise are likely to fall into the high business risk category. Such areas of diversification may include telecommunications, equity investments in leases, oil and gas exploration and production, miscellaneous manufacturing and real estate development.

Some companies have high-risk businesses that are sizeable in comparison to the more stable regulated business. These companies are expected to have financial ratios that are closer to those of an unregulated industrial company in the same rating category, in contrast to the financial ratios typical for a lower-risk regulated utility company. Companies with substantial high-risk activities will need lower leverage, and stronger cash flow coverage ratios to qualify for a particular rating category.

Medium-Business-Risk Unregulated Activities

Unregulated electricity generation may be medium-risk if competition is substantially limited by the structure of the market or by the generators' control over production and transmission infrastructure that is needed to reach customers, or if the unregulated generation has costs that are well below-average.

Also likely to fall into this category is unregulated generation that is largely sold back to the regulated utility without long-term contracts. This activity has a lower risk than merchant sales to third parties if the generating assets are advantageously located for the regulated utility. This is particularly likely when generating assets have been legally separated from the regulated utility. As part of the transition to deregulation, many utilities were required to disaggregate their generation, and these plants were often put into affiliated supply companies under a common parent holding company, but continue to sell a large portion of their output to the affiliated regulated utility.

Medium-risk unregulated generation is likely to have significant exposure to fluctuations in the price of fuel, or capital spending needs to maintain competitiveness or to meet environmental requirements.

Lower-Business-Risk Unregulated Activities

This category includes unregulated generation of electricity that is sold under long-term contract to highly creditworthy counterparties, with the purchaser bearing the risk of any change in the market price of fuel and wholesale power.

Unregulated electricity generation may also be low-risk if there is little competition due to the structure of the market or the generators' exclusive control over critical production and transmission infrastructure that is needed to reach customers.

Below-average costs are not necessarily sufficient for unregulated generation to be classified in the low-risk category. Without other mitigating factors being present, low-cost merchant generation is likely to be classified as medium-risk due to the potential for changes in relative cost competitiveness as market conditions change.

Conclusion on Qualitative factors

This analysis of qualitative factors – the split of regulated versus non regulated activities and the respective risk analysis of those businesses – allows us to determine how stable and predictable we feel the cashflows of the company should be. The lowest business risk will be a company with wholly regulated activities in a supportive regulatory framework. The highest business risk will be a company with a high degree of exposure to non-regulated businesses when those businesses are viewed to be relatively high-risk.

Companies with a lower business risk can have weaker financial metrics than one with higher business risk for the same rating category.

QUANTITATIVE FACTORS

Key ratios

Moody's uses financial ratio analysis as part of our quantitative analysis of all corporates, including electric utilities. Ratio analysis is a helpful way of comparing one company's performance to that of another and the performance in one year to that in another.

However, the importance of ratio analysis can be overstated. No two companies look exactly alike from a qualitative assessment standpoint and each company we rate is constantly changing. It is impossible to assign an accurate credit rating on the basis of financial ratio analysis alone, even less so on the basis of any one ratio. Therefore, Moody's does not have any specific "hurdle rate" to explain which ratio will make the difference between any two rating categories.

Nonetheless, we have identified six core ratios which we consider to be the most useful when looking at an electric utility company. These are supplemented by other ratios which are particularly useful for various local regulatory frameworks.

The six core ratios[1] are as follows:

Primary:

1. Retained Cashflow[2] / Adjusted gross debt[3]
2. FFO / Adjusted gross debt
3. FFO / Interest
4. Adjusted gross debt / Regulated Asset Value[4], or Capitalization

Secondary:

5. EBITDA Margin
6. Retained Cashflow / Capex

While other factors considered in this report may outweigh pure quantitative analysis, it is possible to provide broad guidance on the ratio ranges that may generally be seen at different rating levels.

In general, other factors – such as the degree of likely support from a sovereign – tend to outweigh financial ratios for companies operating in a very low business risk environment such as Japan or Finland. Similarly, considerations such as an undeveloped regulatory framework, potential political risk or relatively opaque corporate governance may outweigh financial ratios for companies operating in a high business risk environment. Our analysis also considers prospective future performance, which may differ from historic ratios.

Financial ratios are more useful for companies operating in a low business risk environment where there is a high degree of regulated activities and a supportive regulatory system. This might include the UK, US transmission and distribution utilities (T&Ds), Canada or many European countries. Medium-business-risk operating environments would include US integrated utilities.

As noted above, this is a local industry found globally rather than one where companies compete with each other outside their own local area. While companies in, say, Japan or in the US or in Germany, all tend to have similar profitability dynamics, there is little global similarity. Hence, measures of profitability are helpful in rank-ordering companies within their own local regulatory operating environment, but not helpful as a global indicator of ratings.

Measures of interest cover, cashflow to debt and balance sheet measures tend to be more consistent across the whole universe of global regulated electric utility companies.

As a guide, the following primary ratios, as set out in Figure 5, might be expected for a utility company without factoring in any uplift for possible sovereign support.

Figure 5

	Aa	Aa	A	A	Baa	Baa	Ba	Ba
Business risk	**Medium**	**Low**	**Medium**	**Low**	**Medium**	**Low**	**Medium**	**Low**
FFO int. cov. (X)	>6	>5	3.5-6.0	3.0-5.7	2.7-5.0	2-4.0	<2.5	<2
FFO/Debt (%)	>30	>22	22-30	12-22	13-25	5-13	<13	<5
RCF/Debt (%)	>25	>20	13-25	9-20	8-20	3-10	<10	<3
Debt/Capital (%)	<40	<50	40-60	50-75	50-70	60-75	>60	>70

Other utility-specific issues relevant to quantitative analysis

Power Purchase Agreements ("PPAs")

Although many utilities own and operate power stations, some have entered into PPAs to source electricity from third parties to satisfy retail demand. The motivation for these PPAs may be one or more of the following: to outsource operating risks to parties more skilled in power station operation, to provide certainty of supply, to reduce balance sheet debt or to fix the cost of power. While Moody's regards these risk reduction measures positively, some aspects of PPAs may negatively affect the credit of utilities.

1. *Please see Appendix 2 for definitions.*
2. *Retained Cashflow (RCF) is FFO less dividends*
3. *Moody's concentrates on gross debt but will also consider net debt ratios if the cash is clearly being held for future debt maturities or for reasons such as hedging. A good example of this would be a company that has hedged the exchange risk of an oversees investment with the local currency debt despite having surplus cash at the parent level. In such cases, the net ratio will take predominance over the gross ratio.*
4. *The Regulated Asset Value (RAV) or Regulated Asset Base (RAB)*

Under most PPAs, a utility is obliged to pay a capacity charge to the power station owner (which may be another utility or an Independent Power Producer – IPP); this charge covers the portion of the IPP's fixed costs in relation to the power available to the utility. These fixed payments cover debt service and are made irrespective of whether the utility requires the IPP to generate. When the utility requires generation, a further energy charge, to cover the variable costs of the IPP, will also be paid by the utility. Some other arrangements are characterized as tolling agreements, or long-term supply contracts, but most have similar features to PPAs and are thus analyzed by Moody's as PPAs.

Factors determining the treatment of PPAs

PPAs have a wide variety of financial and regulatory characteristics and are thus each particular circumstance may be treated differently by Moody's. The most conservative treatment would be to treat the PPA as a debt obligation of the utility as, by paying the capacity charge, the utility is effectively providing the funds to service the debt associated with the power station. At the other end of the continuum, the financial obligations of the utility could also be regarded as an ongoing operating cost, with no long-term capital component recognized. Factors which determine where on the continuum Moody's treats a particular PPA are as follows:

- Risk management: An overarching principle is that PPAs have been used by utilities as a risk management tool and Moody's recognizes that this is the fundamental reason for their existence. Thus, Moody's will not automatically penalize utilities for entering into contracts for the purpose of reducing risk associated with power price and availability. Rather, we will look at the aggregate commercial position, evaluating the risk to a utility's purchase and supply obligations. In addition, PPAs are similar to other long-term supply contracts used by other industries and their treatment should not therefore be fundamentally different from that of other contracts of a similar nature.
- Pass-through capability: Some utilities have the ability to pass through the cost of purchasing power under PPAs to their customers. As a result, the utility takes no risk that the cost of power is greater than the retail price it will receive. Accordingly Moody's regards these PPA obligations as operating costs with no long-term debt-like attributes. PPAs with no pass-through ability have a greater risk profile for utilities. In some markets, the ability to pass through costs of a PPA is enshrined in the regulatory framework, and in others can be dictated by market dynamics. As a market becomes more competitive, the ability to pass through costs may decrease and, as circumstances change, Moody's treatment of PPA obligations will alter accordingly.
- Price considerations: The price of power paid by a utility under a PPA can be substantially below the current spot price of electricity. This will motivate the utility to purchase power from the IPP even if it does not require it for its own customers, and to sell excess electricity in the spot market. This can be a significant source of cash flow for some utilities. On the other hand, utilities that are compelled to pay capacity payments to IPPs when they have no demand for the power or when the spot price is lower than the PPA price will suffer a financial burden. Moody's will particularly focus on PPAs that have mark-to-market losses that may have a material impact on the utility's cash flow.
- Excess Reserve Capacity: In some jurisdictions there is substantial reserve capacity and thus a significant probability that the electricity available to a utility under PPAs will not be required by the market. This increases the risk to the utility that capacity payments will need to be made when there is no demand for the power. For example, Tenaga, the major Malaysian utility, purchases a large proportion of its power requirement from IPPs under PPAs. PPA payment totalled 42.5% of its operating costs in FY2004. In a high reserve margin environment existing in Malaysia, capacity payment under these PPAs are a significant burden on Tenaga, and some account must be made for these payments in its financial metrics.
- Risk-sharing: Utilities that own plant bear the associated operational, fuel procurement and other risks. These must be balanced against the financial and liquidity risk of contracting for the purchase of power under a PPA. Moody's will examine on a case-by case basis which of these two sets of risk poses greatest concern from a ratings standpoint.
- Default provisions: In most cases, a default under a PPA will not cross-default to the senior facilities of the utility and thus it is inappropriate to add the debt amount of the PPA to senior debt of the entity. The PPA obligations are not senior obligations of the utility as they do not behave in the same way as senior debt. However, it may be appropriate in some circumstances to add the PPA obligation to Moody's adjusted debt, in the same way as other off-balance sheet items.[5]

5. *See "The Analysis of Off-Balance Sheet Exposures – A Global Perspective", Rating Methodology, July 2004.*

Each of these factors will be weighed by Moody's analysts and a decision made as to the importance of the PPA to the risk analysis of the utility.

Methods of accounting for PPAs in our analysis

According to the weighting and importance of the PPA to each utility and the level of disclosure, Moody's may analytically assess the total obligations for the utility using one of the methods discussed below.

Operating Cost: If a utility enters into a PPA for the purpose of providing an assured supply and there is reasonable assurance that regulators will allow the costs to be recovered in regulated rates, Moody's may view the PPA as being most akin to an operating cost. In this circumstance, there most likely will be no imputed adjustment to the obligations of the utility.

Annual Obligation x 8: In some situations, the PPA obligation may be estimated by multiplying the annual payments by a factor of eight. This method is sometimes used in the capitalization of operating leases.[6] This method may be used as an approximation where the analyst determines that the obligation is significant but cannot be quantified otherwise due to limited information.

Net Present Value: Where the analyst has sufficient information, Moody's may add the NPV of the stream of PPA payments to the adjusted obligations of the utility. The discount rate used will be the cost of capital of the utility.

Debt Look-Through: In some circumstances, where the debt incurred by the IPP is directly related to the off-taking utility, there may be reason to allocate the entire debt (or a proportional part related to share of power dedicated to the utility) of the IPP to that of the utility.

Mark-to-Market: In situations in which Moody's believes that the PPA prices exceed the spot price and thus a liability is arising for the utility, Moody's may use a net mark-to-market method, in which the NPV of the net cost to the utility will be added to its total obligations.

Consolidation: In some instances where the IPP is wholly dedicated to the utility, it may be appropriate to consolidate the debt and cash flows of the IPP with that of the utility. Again, if the utility purchases only a portion of the power from the IPP, then that proportion of debt might be consolidated with the utility.

In some circumstances, Moody's will adopt more than one method to estimate the potential obligations imposed by the PPA. This approach recognizes the subjective nature of analyzing agreements that can extend over a long period of time and can have a different credit impact when regulatory or market conditions change. In all methods the Moody's analyst will account for the revenue from the sale of power bought from the IPP. We will focus on the term to maturity of the PPA obligation, the ability to pass through costs and curtail payments, and the materiality of the PPA obligation to the overall cash flows of the utility in assessing the affect of the PPA on the credit of the utility.

Nuclear liabilities

In several integrated European companies, nuclear power generation form a significant component of their power generation activities. These activities will usually be unregulated but comprise an important element of the analysis of these companies. The analysis is complicated by the lack of consistency in treating nuclear related items in different countries.

In general, nuclear waste management obligations are factored into debt using Moody's methodology for unfunded pensions. This recognizes the uncertainty of final amounts and timing in assessing the likely call on future cash flows. The methodology simulates a pre-funding of the obligation, taking into account access to the equity market and management's probable funding strategy. The existing debt-to-equity mix is generally used as a starting point.

For ratio analysis purposes, Moody's excludes reprocessing provisions from its calculation of total nuclear liability provisions if such provision is expected to remain a permanent component of the nuclear liabilities that will continually be replenished as fuel is used in the production process in line with the expectation that nuclear power will remain an important component of the company's generation portfolio for the foreseeable future.

For nuclear provisions that are recorded and funded on balance sheet, Moody's does consider the impact of their inclusion on adjusted debt ratio. However, we do recognize that their inclusion does understate the company's degree of financial flexibility for meeting financial debt obligations given the long duration of those provisions. This

6. *For further discussion of the methodology of rating lease obligations see "Off-Balance Sheet Leases: Capitalization and Ratings Implications – Out of Sight But Not Out of Mind", October 1999.*

is because the cash outflows for these liabilities will not occur for a number of years and will then extend out in a form similar to operating expenses over a further extended period of time. This is taken into account by looking at both gross and net debt ratios.

U.S. Securitization

Beginning in the late 1990s, legislatively approved stranded cost securitization has become an increasingly used financing technique among investor-owned electric utilities. In its simplest form, a stranded cost securitization isolates a dedicated stream of cash flow into a separate special purpose entity (SPE) and uses that stream of cash flow to provide annual debt service for the securitized debt instrument.

Moody's generally treats securitization debt of industrial and financial issuers as being on-credit debt. The debt that is being securitized usually carries a rating that is higher than that of the issuing entity, and the assets that are being sold to the separate SPE are often of better quality than the assets that remain with the issuer.

Stranded cost securitization differs somewhat from other generic securitizations because the asset being sold is often of poor quality prior to the passage of legislation and the completion of a securitization. In most cases, the asset represents stranded costs that would have been written off by the utility in the absence of legislation allowing for recovery through a surcharge on regulated customers.

Instead, the state regulator – and sometimes the state legislature – establishes the authority for a surcharge on customers' bills, and authorizes the sale of securitized debt. The utility then sells the right to collect a dedicated stream of future cash flows from its regulated customer base that is sufficient to provide debt service on the securitized piece of debt. The issuing utility is typically required to use the proceeds of the debt offering to retire both debt and equity in a manner intended to maintain a predetermined capital structure. The securitization generally has language that enables the tariff to be unilaterally raised in the event that future sales turn out to be lower than originally planned.

Generally speaking, Moody's views stranded cost securitization as being credit-neutral to credit-positive since it typically addresses a major credit overhang, some form of potential stranded costs, and legislatively requires the utilities to use the proceeds for debt and equity reduction in a manner that targets a relatively conservative capital structure.

For the most part, the securitization tariff is separate from the "general tariff" charged to customers and any increase in the size of the securitization tariff is not at the expense of the general tariff. However, in two states, Illinois and Michigan, the utilities operate under a rate freeze, which precludes them from raising rates until the termination of their respective rate freeze. As such, any increase in the securitization tariff is at the expense of revenues and cash flow that would be available to service debt of the remaining creditors of the utility.

Along the same lines, Moody's notes that the size of the securitization tariff relative to the total tariff is an important element in evaluating the credit implications of a securitization because it can impact the future ability of a utility to obtain subsequent rate relief for other costs of service. In effect, customers do not discriminate between the securitization tariff and the general tariff when paying their bills. Consequently, to the extent that the securitization tariff needs to be increased, the financial flexibility and associated credit quality of the utility may be compromised, particularly if the securitization tariff is large relative to the general tariff and if the increase is taken from the cash flow of the utility. As a consequence, Moody's considers the impact that a securitization may have on the ability of the utility to raise rates in the future.

In calculating balance sheet leverage, Moody's treats the securitized bonds as being fully non-recourse to the utility even though accounting guidelines require the debt to appear on the utility's balance sheet. Consistent with this view, all balance sheet capitalization metrics exclude the securitized debt from the capital structure given the legal separateness that exists between the debt of the utility and the debt of the SPE, and the fact that regulators set future rates based upon a capital structure that does not include the securitization debt.

However, in looking at cash flow coverages, Moody's analysis stresses ratios that include the securitized debt in the company's total debt as being the most consistent with the analysis of comparable companies. This recognizes that regulatory approval for recovery of stranded costs and securitization are not always inextricably linked. Many utilities have approval for recovery of stranded costs but do not execute a securitization financing. Regulatory approval of stranded costs can be a credit transforming event when there is substantial doubt about recovery. However, the subsequent completion of a securitization financing does not change the amounts that are expected to be recovered. A securitization transaction does make it extremely unlikely that regulators can later disavow an agreement to allow recovery, and regulatory approval is often packaged together with a securitization with the view that ratepayers will benefit from low borrowing costs.

While our standard credit ratios for funds from operations to total debt and funds from operations interest coverage include the securitization debt, Moody's also looks at these two metrics without the securitization debt, to ensure that the benefits of securitization are not ignored. In making this adjustment, funds from operations is adjusted downward by the amount of principal amortization that is annually paid to the SPE in support of the securitization. Consistent with that adjustment, Moody's excludes the principal amount of securitization debt in the denominator in calculating a company's Adjusted FFO/Adjusted Total Debt and excludes the portion of a company's interest costs relating to the securitized debt when calculating a company's Adjusted FFO/Adjusted Interest. The analytical benefit of making this adjustment helps to determine the amount of residual cash flow (cash flow after satisfying securitization debt service) that is available to service the debt of general creditors.

The recent bankruptcy of Pacific Gas and Electric Company (PG&E) fortifies the strength of the legal separation among cash flows available to the SPE and cash flows available to the utility. Throughout the bankruptcy, funds dedicated to the securitization debt were collected by the utility and transferred on a daily basis to the trustee for the SPE creditors and PG&E's general creditors and the bankruptcy judge never challenged the continued transfer of such funds to the SPE. For this reason, the securitization debt of PG&E remained rated Aaa while the company operated in bankruptcy for more than three years.

ADDITIONAL RISK CONSIDERATIONS

Analysis of Multiple Legal Entities within a Single Issuer Family

Utility companies may have multiple legal entities within a single consolidated organization. This is the prevalent legal structure in the US, even for small utilities. The multiple-entity legal structure is also common in Canada and the UK and is employed by a number of the larger international utilities in other countries. In the US, most utility families have an unregulated holding company. The holding company will have one or more regulated operating subsidiaries, and may have one or more unregulated subsidiaries. Most utility families in the US issue debt at multiple legal entities within the organizational family.

In the case of multiple legal entities within a single issuer family, our approach is to assess each issuer on a stand-alone basis as well as evaluating the creditworthiness of the consolidated entity. We then assess the degree of legal and regulatory insulation that exists between the lower-risk regulated entities and the higher-risk unregulated entities.

The degree of notching (i.e. the rating differential) between entities in a single family of companies depends upon the degree of insulation that exists between regulated and unregulated entities. If the regulatory framework or regulatory practice establishes that there is substantial ring-fencing type insulation for the regulated entity, there may be three or more notches of rating differential between the regulated and the unregulated entities. If there is little or no ring-fencing, there will usually be only a one- or two-notch differential between the unregulated entity (in most cases a holding company) and the regulated entity (in most cases an operating company).

Regulatory ring-fencing for utilities may include minimum equity requirements, limitations on the movement of funds from regulated entities to unregulated entities, and prohibitions against credit support by regulated entities for unregulated entities. This may exist by statute, but most typically takes the form of rules that are established by the regulator. In the United States, where these provisions are most common, the rules may differ for individual utilities in the same state.

Many regulators restrict the ability of utilities to extend intercompany loans, guarantees, or to make payments to unregulated affiliates and parent holding companies. For example, utilities in the state of Wisconsin may only pay dividends to their unregulated holding company (the ultimate parent company in these organizations) in excess of an amount established in each rate case if common equity falls below an authorized level.

Regulators also often have wide discretion to impose new restrictions on regulated entities when the utility appears to be threatened by weakness of its unregulated affiliates. For example, the state regulatory commission in Oregon established tight limitations on any movement of funds by Portland General to its parent company when the parent company filed for bankruptcy protection. These ring-fencing protections were a key reason that Portland General did not default or experience substantial financial distress while its parent was in bankruptcy.

Where regulated utility entities are not well insulated from unregulated affiliates, the ratings of these entities will be notched fairly closely, generally within one or two notches. This will be the case even when one entity has substantially stronger financial ratios than its affiliate, if there is little or no restriction upon movement of funds between the two entities, or if there is a substantial operational interdependence. For example, where the regulated utility is highly dependent upon contractual purchases of power from its unregulated generating affiliate, the ratings of

these two entities will likely be one or two notches apart even if their individual financial profiles would suggest different ratings on a stand-alone basis.

Where regulated utility entities are strongly insulated from unregulated affiliates through prohibitions on loans and credit support, where there are strong regulatory limitations on dividends, and where there is little or no operational interrelationship between regulated and unregulated affiliates, the ratings will be driven more by the stand-alone credit quality of each entity, and may be three or more notches apart.

Non-specific utility risk factors

The majority of the risks considered in this rating methodology are specific to utilities. However, lenders to utilities are also exposed to many of the risks that are common to all industrial companies. These are not covered in detail here as a full analysis can be found in the relevant Moody's research. However, it should be noted that such factors may potentially outweigh the utility-specific considerations covered in depth in this report.

For example, a company that currently shows very strong financial ratios and operates in a supportive regulatory framework could still have a relatively low rating if it had very weak liquidity arrangements or high "event risk" such as if it were pursuing an acquisition policy that was very likely to result in a change in the company's business risk policy going forward.

The generic industrial company risks to which a utility may also be exposed include the following:[7]

- An assessment of the adequacy of the company's liquidity arrangements[8]
- An assessment of the quality of its corporate governance arrangements[9]
- An assessment of the quality of its management – their experience, appetite for risk and ability to fulfill the company's stated strategy
- An assessment of event risk and the probability that this could lead to a change in the company's financial position, business risk profile or its regulatory and political operating environment[10]
- Exposure to off-balance sheet risks[11]
- The potential support of or interference by a sovereign or sub-sovereign entity[12]

Regional Considerations

RATING DIVERGENCE LIMITED AMONG JAPANESE UTILITIES

Japanese electric utilities are rated in a relatively narrow range from Aa3 to A1. This reflects Moody's view that the conservative and predictable regulatory regime, and the individual companies' solidly established franchises in their operating regions, will not lead to major differences in credit risks among the rated utilities. Their financial profiles are more or less comparable, and they have simple corporate structures and limited business diversification exposures.

Moody's rates the three utilities that cover Japan's three largest economic areas at Aa3 (Chubu Electric Power, Kansai Electric Power, and Tokyo Electric Power), and six other utilities at A1 (Chugoku Electric Power, Hokkaido Electric Power, Hokuriku Electric Power, Kyushu Electric Power, Shikoku Electric Power, and Tohoku Electric Power).

Japan's regulator makes the maintenance of supply security its primary policy objective, followed in priority by environmental protection and, finally, allowing market mechanisms to work. This approach preserves utilities' integrated operations and makes them responsible for final supply to users in the liberalized market.

The government is gradually deregulating the industry and expanding the liberalized market. This market, which was partially introduced in 2000, was expanded from about 26% of the total to about 40% in April 2004, and will be

7. *See, for example, "Industrial Company Rating Methodology", July 1998*
8. *See, for example, "Moody's Liquidity Risk Assessments – Q&A", March 2002, "Moody's Analysis of US Corporate Rating Triggers Heightens the Need for Increased Disclosure" and "Rating Triggers in Europe: Limited Awareness but Widely Used Among Corporate Issuers", September 2002*
9. *See, for example, "U.S. and Canadian Corporate Governance Assessment", August 2003 and "Moody's Findings on Corporate Governance in the United States and Canada: August 2003 - September 2004", October 2004*
10. *See, for example, "Event Risk's Four Horsemen of the Apocalypse: Decapitalization, Cash-financed M&A, Litigation, and Accounting Irregularities", November 2000 and "Event Risk For European Corporates 2003 -- Still A Credit Risk, Still Part Of Our Analysis", February 2003*
11. *See, for example, "The Analysis Of Off-Balance Sheet Exposures: a Global Perspective", July 2004*
12. *Note: Moody's paper "The Incorporation of Joint-Default Analysis into Moody's Corporate, Financial and Government Rating Methodologies" February 2005 which may effect the ratings of, for example, a municipality supported by a regional or national government.*

further expanded to about 63% in April 2005. However, the pace of deregulation has been set as moderate so that the regulator can monitor the risks and the effects on the power companies, especially in the context of supply security.

The Japanese utilities hold strongly established franchises in their operating regions, maintaining dominant market shares despite the market for large customers being deregulated. Some utilities still hold 100% shares.

Direct competition among integrated utilities has been very limited. This is mainly because: (1) each integrated operator holds a solid franchise in its operating region due to effective regional monopolies; (2) the companies display similar cost positions, and achievement of any meaningful differentiation in pricing is difficult; (3) the utilities are fully aware that an aggressive challenge by one utility in another's franchise would trigger industry-wide competition, which would, in turn, significantly weaken the industry's overall profitability; and (4) all the utilities exhibit similarly leveraged balance sheet positions and place priority on debt reduction, having completed most of their major investments.

In addition, the ability of power producers and suppliers (PPSs) to take utilities' shares has been restrained by limitations on: (1) their ability to purchase power from, for example, captive power plants; (2) their opportunities to build competitive plants on their own; and (3) their marketing abilities.

Although PPSs have been gaining minor shares in some utilities' franchise areas, and some are constructing their own power plants, their aggregate share is expected to remain insignificant over the intermediate term, due to power companies' rate strategies aimed at protecting their franchises and PPSs' ongoing limited access to power sources.

As such, although the rates are to be further lowered through the ongoing deregulation process, we expect the utilities' franchises to remain solid and stable over the intermediate term.

Government energy policy has made nuclear generation a core power source, while leaving actual implementation of the policy – construction and operation of nuclear power plants – to privately owned and managed utilities. Thus, these companies play an important role in the nation's energy policy, although the government remains the main driver by establishing and maintaining their nuclear power operation systems.

The government is now reviewing the economic feasibility of the nuclear fuel cycle, the allocation of back-end costs, and power utilities' reserves for back-end costs. While the outcome of the review could affect utilities' investment, cost, and balance sheet positions to some extent, we do not expect any significant changes in their policy role, business risks or cost competitiveness.

EUROPE

EU policy is the driver for regulatory development in Europe

The EU Electricity Directive of 1999, subsequently amended by the EU Energy Council in 2002, set the roadmap towards full supply liberalization in the European Union as well as addressing issues such as non-discriminatory access to the transmission grid and the granting of new generation licenses. The current aim is to have full liberalization within the EU by 2007.

Despite EU policy, there is a regulatory patchwork across Europe

Despite the EU directive, there is some flexibility in its implementation, leading to different regulatory models. The process has in most cases led to the establishment of an independent regulator, although the degree of independence from government influence varies significantly. In some countries, such as Spain and Greece, the government maintains control for final setting of tariffs and the regulator acts in an advisory capacity, whilst at the other end of the spectrum are those countries where there is a fully independent regulator, such as in the UK.

Having achieved full supply liberalization, the regulator can focus on regulating the monopoly wires activities – transmission and distribution. The UK has adopted an ex-ante approach, with a tight regulatory framework for wires activities. "Ex-ante" means setting the tariffs in advance, normally for a 3-5 year period, and the regulator allows the company to recover operating and capital expenditures as well as a return on capital. Normally the regulator will benchmark companies against their peers and will allow certain revenues (a revenue or price cap), often adjusted for inflation and an efficiency incentive, depending on how efficient the company is perceived to be.

By contrast, Sweden and Finland initially adopted a much lighter "ex-post" system, which allows companies to set their own prices to achieve a reasonable return on a cost-plus basis, with an arbitration mechanism to allow for complaints and remedies. Despite this looser regime, prices in these markets have been some of the lowest in Europe, benefiting no doubt from the overall greater price transparency from a fully liberalized market. However, under

further direction from the EU, Finland and Sweden (and Denmark) are now moving towards an ex-ante regime and this we would expect to become the norm in Europe.

Germany has yet to establish an independent regulator – although it is now moving in this direction – with network tariffs being set within the context of a voluntary agreement between utilities. Access tariffs are set on a negotiated basis, but in practice the German market is difficult and expensive for new entrants to access.

In Moody's view, power shortages in 2003 have led to an easing in regulatory pressure as security of supply displaces cost as a key aim

Regulators initially introduced quite harsh efficiency incentives or tariff caps, with tariffs reduced in real terms as companies have become more efficient. However, recent tariff pressure has been upward, e.g. Spanish tariffs fell in real terms between 1996 and 2002 but the current tariff framework now allows for gradual increases. This can be explained by greater concern over security of supply, with Europe having experiencing blackouts during 2003. Moody's believes that regulators wish to ensure that an incentive to invest remains, particularly as some aged thermo capacity and a number of nuclear plants are earmarked for decommissioning in the next few years.

In Central and Eastern European countries, regulation is following in a similar direction but at a slower pace

Central and Eastern European countries and the Baltic states are following EU directives, but are at an earlier stage of regulatory evolution. Whilst most have put in place at least the first Energy Law, implementation is often at an early stage under an extended implementation timetable or relatively new and untested. Many of these countries have now established an independent regulator although there is still a state-owned incumbent with a dominant or monopoly position.

These countries typically face privatization, structural separation (generation, transmission, distribution and supply), tariff increases and issues concerning cross-subsidization – with accession states such as Romania and Bulgaria aiming to have completed the process by 2007. Electricity market development is often linked to the economic and structural development of the country in which they operate. Indeed, the requirements of the IMF or World Bank may allow for only a gradual increase in tariffs (Romania and Bulgaria).

From a credit perspective, whilst the timely recovery of all costs may be delayed or constrained, the impact of such can be mitigated by the dominant market position of these key utilities and/or their strategic importance to the State and the role they play in the development of the economy.

Rating the UK regulated transmission and distribution companies

The UK electricity system is divided into a number of monopoly areas for the high-voltage transmission and lower-voltage local distribution of electricity. There is one monopoly transmission area and 12 Distribution Network Operators (DNOs) covering England and Wales. Two additional companies have the monopoly rights to transmission and distribution in distinct areas within Scotland. As these businesses are monopolies they are subject to price control regulation primarily aimed at protecting the consumer's interests.

All of these businesses are regulated by the Office of Gas and Electricity Markets (OFGEM). OFGEM itself is an independent body governed by an authority made up of independent, non-executive Directors and an Executive team. OFGEM is not part of the UK government but its duties and powers were established by Acts of Parliament and they must have regard to guidance from the government on issues such as protecting the environment.

The revenue that a monopoly business can earn on its regulated business is restricted by an RPI-X price control formula that is reviewed every five years. The formula is designed to allow a company to increase prices to reflect inflation while encouraging efficiency through a "-X" from the RPI. In addition, at the start of each regulatory period, prices are raised or reduced by a one-off price adjustment known as the P_0 adjustment. In order to calculate the "X" and the "P_0" for each company, OFGEM considers the Regulatory Asset Base of each company and sets a formula to provide a fair rate of return on those assets, typically around 6-7%. The next regulatory period for the transmission companies starts in 2007 and for distribution companies in 2005.

The practical regulation system involves a very detailed analysis of each company's regulated asset base and operating and capital expenditures. The output is a very detailed and highly predictable cashflow forecast for the next regulatory period. If the companies can improve efficiency, then they can retain most of the benefit. However, if they lose efficiency or the regulatory outcome proves unachievable, then this is a risk for the stakeholders in that company.

For Moody's, the ratings of these businesses depend upon two key factors:

1. The projected financial position of the company once the final regulatory outcome is known. This is measured by a number of financial ratios including FFO interest cover and Debt/Regulated Asset Value.
2. The additional burdens placed on the regulated entity's cash flows by its parent, mainly in the form of additional parental debt which needs to be serviced by dividends from the regulated operating company.
3. DNO-specific issues such as unfunded pension deficits unrelated to the distribution business, debt maturity profile and debt capital structure considerations.

According to OFGEM, after these adjustments, the intention is that all companies will earn the same baselines return of 6.6% on a pre-tax, real basis if they perform in line with the regulator's projections. The main issues are expected to be the need to increase capex to replace network assets and improve network performance, to put a greater emphasis on quality of service, and to respond to the growth in sources of renewable energy. These final determinations for the 2005-2010 price control period will become effective in April 2005.

The main rating implication from these proposals is likely to fall on companies whose overall financial profile is burdened by the need to pay large dividends to service and repay debt at holding company levels. While this can lead to a significant cash drain, the debt at the holding companies is outside the regulatory ringfence and is not protected by the OFGEM framework. One such holding company, Avon Energy Partners, has already defaulted on its debt obligations, while the operating company Midlands Electricity had no financial difficulties, thus illustrating that lending to such holding companies is significantly more risky than lending to the regulated entity itself.

When looking at the financial ratios for regulated UK DNOs, there are a number of important considerations to bear in mind:

1. The Regulated Asset Value (RAV) is an important reference point as allowable revenues and allowable capital expenditures both feed from or into this. Hence, the Debt/RAV ratio is one of the more critical financial ratios to consider.
2. OFGEM's scope of regulation is limited to the regulated entity, while Moody's rating of the DNO also factors in debt which must be serviced by cash flows from the DNO. This means that an RCF number (cashflow after dividends) is an important one for a DNO. It also means that ratios factoring in any "Holdco" debt tend to outweigh pure "stand-alone" DNO ratios. In practice, there are no remaining stand-alone DNOs.
3. Some DNOs retain cash to meet future debt maturities and where this is the case, the emphasis falls on net rather than gross debt numbers.

As a guideline and ignoring other considerations, the following ratios might be expected for UK DNOs at various rating levels, without factoring the need to support other group debt (if there is such debt, stronger ratios would be needed for the same rating level):

Figure 6

DNO	RCF/Net debt	Net debt/RAV	FFO interest cover
Aa	>17%	<45%	>4.5X
A	7 - 18%	40 - 68%	2.8 - 5.0X

AUSTRALIAN T&D RATINGS ARE HIGHER THAN UK RATINGS FOR COMPARABLE ENTITIES

Differences in regulatory philosophy between Australia and the UK mean that Moody's on average rates Australian electricity transmission and distribution (T&D) companies one notch above the ratings of their UK peers, even though both parties may have approximately the same level of debt coverage measures.

Furthermore, the impact of the regulatory differences is such that when Australian and UK companies share the same rating level, the Australian companies conversely exhibit weaker debt coverage measures. Moody's believes that the financial profiles of Australian T&D companies are sustainable within their present ratings, given their benign regulatory environments.

Moody's compared – on a senior unsecured basis – Baa-rated T&D companies in Australia and those in the UK. The projected average financial ratios for Australian T&D companies over the next few years are as follows:

Figure 7 – Average Financial Ratios for Baa Credits

Debt-to-Regulated-Asset-Base	103%
RCF-to-Debt	4%
FFO-to-Interest	2.3 times

The UK T&D companies – on the other hand – have higher financial ratio hurdles at the Baa rating range. For instance, UK Baa-rated T&D companies are expected to have Debt-to-RAB ratio in the range of 60-90%, RCF-to-Debt 10-15%, and FFO-to-Interest of above 2.8 times.

On one level, the Australian and UK regulatory regimes are close matches. For example, regulators in both countries have adopted similar frameworks for determining revenues and returns. However, on a practical level, regulators in Australia have assumed a more benign stance on requirements for revenues and returns.

Moody's believes that this situation reflects the Australian regulators' approach in the following areas: (1) more generous cost allowances for maintaining minimum levels of service and system reliability for T&D assets; (2) appropriate levels of return for regulated T&D companies; (3) regulators' willingness to allow the retention of efficiency out-performances; and (4) greater certainty in regulatory outcomes at the next resets.

A comparison of recent tariff resets in both countries supports the conclusion that the Australian environment is more benign, a situation which Moody's believes will prevail over the medium term. Consequently, we do not expect an aggressive tariff decision at the next reset, scheduled for 2006 for electricity distributors in the state of Victoria.

In the UK, electricity distributors are undergoing a tariff reset for the five-year period commencing April 2005. The expected outcome for this reset is still evolving. However, the UK electricity distributors' cash flows could come under some pressure as the regulator restricts the ability of distributors to carry through to the next regulatory period the efficiency savings achieved. At the same time, distributors are expected to face higher cash commitments as a consequence of increased tax obligations and capital expenditure requirements to support various policy initiatives. As a result, UK T&D companies would need a more prudent set of financial policies to preserve their credit profiles.

While there is relative certainty in the Australian regulatory environment over the next reset period, it is more difficult to predict with confidence developments in regulatory thinking over the longer term. Consequently, Australian T&D companies must adopt prudent financial policies in readiness for a possible evolution in regulatory thinking at the end of the next regulatory period in 2010.

In this regard, companies that persist with highly leveraged capital structures on a Debt-to-RAB basis – that is, a ratio of over 100% – and exhibit no ability or commitment to de-leverage over the longer term may be more exposed to severe regulatory outcomes.

The ability of a company to de-leverage is indicated by the extent of free cash flow generation – relative to debt levels – after servicing all operational, debt, and dividend obligations.

UNITED STATES

The US electric utilities are characterized by a substantial diversity in both their business models and their regulatory risk. Business models vary from the lowest-risk companies that have purely regulated activities and which operate in states that have supportive regulation, to the highest-risk companies that have substantial unregulated activities and which operate in states that have less supportive or less predictable regulation.

Moody's views the business risk of US utilities as being higher in most cases than that of utilities in some other developed countries, including Japan, Australia, and the United Kingdom. This difference in risk reflects the following factors:

1. State regulation is seen as less predictable than national regulation. State regulation is the primary form of regulation in the US. Compared to national regulators, state regulators represent a smaller economic region. As a result, Moody's believes that state regulators may be more likely to be responsive to the objections of local customers and politicians when a utility seeks a large rate increase to address a large increase in costs or capital expenditures. As noted in the default section in Appendix 3, failure to obtain timely rate increases was a key factor in four recent defaults by US utilities. In addition, various parties may seek to intervene in in U.S. state regulatory proceedings, which can cause delay and increased uncertainty.

2. A large fragmented market structure results in stronger competition in unregulated wholesale power markets. The US electric utility industry is fragmented in comparison to Japan and major countries in Europe. Although the US represents over one fourth of global electricity consumption, none of the US utilities ranks in the top ten in terms of revenues among global utility companies. As portions of the market have become deregulated, US utilities are more vulnerable to changes in wholesale power costs because their market share and market power is more limited than those of comparable utilities in most other countries. Regulators have strived to limit market power to protect consumers, resulting in longstanding legal and regulatory impediments to industry mergers and consolidation.
3. More volatile fuel and wholesale power markets. Natural gas prices are completely unregulated in the US, which can result in rapid and wide swings in prices. There is a large unregulated power market in the US, which responds quickly to changes in fuel costs and passes these changes through to wholesale power prices. This combination of factors can result in more rapid and wider swings in prices than in more controlled markets.
4. Low likelihood of extraordinary political action to support a failing company. Utilities provide an essential service, so financial distress has a high political profile. Governments in the US have broadly demonstrated a reluctance to intervene on behalf of troubled investor-owned utilities when this could be viewed as providing economic assistance to private shareholders. This approach is in sharp contrast to the large US municipal utility sector, in which supportive government action is far more likely. Governments in many other countries (for example, Japan or Canada) are perceived as being more likely to work with regulators and financial institutions to support electric utilities as highly visible entities that provide a critical service.
5. Holding company structures limit regulatory oversight. State regulators only have authority over the regulated operating utility. The vast majority of companies have established unregulated holding companies that have the ability to engage in higher-risk unregulated businesses in the hopes of earning shareholder returns that are higher than the returns provided for the regulated business.
6. Overlapping or unclear regulatory juridiction. The electric utilities industry in the US is characterized by regulation at both the federal and state levels. Traditionally, the federal government has regulated the interstate and wholesale transmission of electricity, while distribution and retail services to consumers have been regulated by the states. Each state exhibits its own unique regulatory characteristics which set the parameters and define the environment in which a particular utility operates. In some instances the jurisdictions can overlap, such as in the case of mergers and transactions with affiliates.

Federal Energy Regulatory Commission (FERC)

The key federal regulatory agency governing utilities in the US is the Federal Energy Regulatory Commission (FERC), an independent agency that regulates the interstate transmission of natural gas, oil, and electricity, as well as natural gas and hydroelectric power projects. In the electric market, the FERC's responsibilities include the approval of rates for the wholesale sale of electricity and transmission on an interstate basis for utilities, power marketers, power pools, power exchanges, and independent system operators. The FERC sets the price for those utility transmission systems that fall within its jurisdiction, although many portions of utility transmission systems fall under the jurisdiction of the state regulatory agencies.

In recent years, FERC has issued several orders aimed at opening the transmission lines of utilities in the US. In 1996, FERC Order 888 provided rules for open access of transmission lines to all suppliers and for competition in the wholesale market and set standards for regional transmission organizations (RTOs). In 1999, FERC Order 2000 encouraged utilities with transmission assets to voluntarily transfer control of their transmission systems to these RTOs, which could either be non-profit independent system operators (ISOs) or for-profit transmission companies. Although some utilities have transferred their transmission assets into RTOs, others have thus far resisted attempts to place their transmission assets under outside control.

Public Utility Holding Company Act (PUHCA)

The most significant piece of legislation governing public utility holding companies at the federal level is the Public Utility Holding Company Act, more commonly known as PUHCA. The Act was passed in 1935 to regulate interstate utility holding companies in response to the financial collapse of a number of such holding companies following the stock market crash of 1929. When utilities in different states combine or merge under a holding company, the new

entity becomes registered under PUHCA, which provides for SEC regulation of their financing activities, including the sale and purchase of securities and assets. PUHCA gives the SEC the power to exercise broad oversight over business combinations that result in functional or geographic diversification of utilities.

Historically, the SEC has severely restricted the types of business activities in which registered holding companies may engage. The National Energy Policy Act of 1992 (NEPA) eased some of the regulatory restrictions imposed by PUHCA by allowing registered holding companies to establish non-utility generating subsidiaries and to purchase foreign utilities without seeking prior SEC approval. However, registered holding companies are still prohibited from owning both electric and gas operations or possessing unregulated businesses without SEC approval. Although there have been a number of attempts over the last few years to repeal PUHCA, most recently as part of comprehensive energy legislation considered but not passed in 2003, it remains a key federal regulatory constraint and limitation for those holding companies registered under PUHCA.

State Regulatory Commissions

The most important regulatory factor affecting the sale of electricity by utilities at the retail level are state agencies generally known as Public Utility Commissions or Public Service Commissions. These commissions comprise elected or appointed officials in each state who determine, among other things, whether utility expenditures are reasonable and how they should be passed on to consumers through their electric rates. They also regulate each utility's rates of return and monitor the quality and reliability of a utility's electric service. The state-level factors that Moody's takes into consideration when evaluating the credit quality of utilities include the following:

- **Status of Deregulation/Retail Access**

Since industry restructuring began in the mid-1990s, states have taken a variety of approaches to the question of whether they should deregulate their electricity markets. Some states have passed comprehensive deregulation legislation and completely restructured. Some have avoided it entirely, while others have introduced some elements of deregulation into their markets. Over the last several years, 18 states have undertaken some form of deregulation or retail open access, while 32 others have elected not to deregulate after studying and debating restructuring initiatives (see Figure 8 for details).

- **Ring-Fencing Provisions**

State commissions sometimes attempt to insulate and protect regulated operating utilities from the often riskier activities of their parent companies or unregulated subsidiaries. Some so-called "ring-fencing" provisions that have been adopted at the state level include: dividend limitations, minimum equity requirements, limits on unregulated activities, credit rating requirements, the maintenance of collateral, limitations on intercompany transactions, and restrictions on asset sales.

- **Transition Periods and Rate Caps**

Some utilities are subject to price limitations or rate freezes which were put in place as states implemented transition plans to deregulate their electric markets. These rates were often thought to be adequate to permit the utilities to both recover stranded costs and earn an adequate rate of return until a fully competitive environment developed. Many of these transition periods and associated rate caps are now ending without a fully competitive market having developed, and the likelihood that these transition periods will be extended is an important credit consideration.

- **Cost Recovery Provisions**

States have various policies with respect to fuel and wholesale power cost recovery, and the recent volatility in commodity prices have made these provisions important elements of a utility's cost management capability. Such provisions make it possible for utilities to quickly adjust rates in the event of an unexpected hike in fuel costs. Although the number of states permitting such recovery has declined, particularly in those that have transitioned to a competitive market, they remain critical risk mitigants to those utilities still operating in regulated environments.

- **Incentive- or Performance-Based Rates (Earnings Sharing)**

Utilities in the US have traditionally operated under "cost of service"-based rates under which revenues were set to permit the utility to cover its costs and provide for an acceptable rate of return. However, a number of state regulatory commissions have implemented incentive- or performance-based rates which give utilities incentives to operate better and more efficiently. Often, these incentives take the form of an earnings sharing mechanism, allowing a utility to keep some of the profits earned above a predetermined range, while returning any excess to ratepayers.

Figure 8 – Regulatory Characteristics of States in The U.S.

State	Deregulation	Rate Cap	Cost Recovery	Earnings Sharing
Alabama			X	X
Alaska	N/A	N/A	N/A	N/A
Arizona	X	X	X	
Arkansas			X	
California	X		X	X
Colorado			X	X
Connecticut	X	X	X	X
Delaware	X	X	X	
DC	X	X		
Florida			X	X
Georgia			X	X
Hawaii			X	
Idaho			X	
Illinois	X	X	X	X
Indiana			X	X
Iowa			X	
Kansas			X	
Kentucky			X	
Louisiana			X	
Maine	X		X	
Maryland	X	X		
Massachusetts	X		X	X
Michigan	X	X	X	
Minnesota			X	
Mississippi			X	X
Missouri				X
Montana				
Nebraska	N/A	N/A	N/A	N/A
Nevada			X	
New Hampshire	X	X	X	
New Jersey	X		X	
New Mexico		X		
New York	X		X	X
North Carolina			X	
North Dakota			X	X
Ohio	X	X		
Oklahoma			X	
Oregon			X	
Pennsylvania	X	X		
Rhode Island	X		X	
South Carolina			X	
South Dakota			X	
Tennessee			X	
Texas	X		X	
Utah				
Vermont				
Virginia	X	X		
Washington			X	
West Virginia			X	
Wisconsin			X	X
Wyoming			X	

Source: Moody's, Regulatory Research Associates.

APPENDICES

Appendix 1 – Three Year Average Ratios and Current Ratings

Company name	Country	Rating	Revenues $bn equiv	EBITA margin %	FFO interest times coverage	FFO/TD %	RCF/TD %	RCF/ Capex %	TD/ Capitalization %
EUROPE									
Landsvirkjun	Iceland	Aaa	0.2	28.2	2.7	6.7	6.4	67.7	68.2
EVN	Austria	Aa3	1.1	11.9	10.3	30.0	26.2	111.8	43.6
Fingrid	Finland	Aa3	0.3	33.9	2.6	8.1	7.5	165.2	78.4
Electricite de France	France	Aa3	45.4	13.4	4.3	20.1	16.9	93.6	64.2
E.on	Germany	Aa3	41.1	12.1	4.7	13.7	9.6	76.2	37.4
Terna	Italy	Aa3	1.2	50.8	3.8	17.7	15.7	43.9	50.0
Statnett	Norway	Aa3	0.5	30.8	3.1	15.6	9.7	92.3	57.6
Scottish & Southern Energy	UK	Aa3	7.2	15.4	8.5	38.6	20.7	94.9	45.3
			hi	50.8	10.3	38.6	26.2	165.2	78.4
			avg	24.1	5.3	20.6	15.2	96.9	53.8
			med	15.4	4.3	17.7	15.7	93.6	50.0
			low	11.9	2.6	8.1	7.5	43.9	37.4
Verbund	Austria	A1	2.3	21.9	2.1	8.7	7.6	311.4	74.4
RWE	Germany	A1	42.0	11.5	3.6	15.8	13.6	58.3	40.3
ENEL	Italy	A1	38.1	15.1	5.0	21.9	14.7	69.1	53.3
			hi	21.9	5.0	21.9	14.7	311.4	74.4
			avg	16.2	3.6	15.5	12.0	146.3	56.0
			med	15.1	3.6	15.8	13.6	69.1	53.3
			low	11.5	2.1	8.7	7.6	58.3	40.3
Suez	France	A2	45.2	9.3	2.3	12.0	7.8	42.0	68.8
EWE	Germany	A2	2.9	7.3	22.4	77.5	69.4	100.8	42.9
Essent	Netherlands	A2	8.8	10.4	5.6	28.4	25.5	152.5	61.3
Nuon	Netherlands	A2	4.7	9.4	7.0	28.6	25.2	93.9	40.8
Red Electrica de Espana	Spain	A2	0.5	36.6	8.2	25.2	18.1	37.0	56.9
Iberdrola	Spain	A2	7.0	18.7	3.3	14.4	9.9	72.3	57.9
National Grid Company	UK	A2	2.5	0.4	4.0	0.2	0.1	1.2	0.6
United Utilities Electricity	UK	A2	0.5	53.6	4.5	22.2	14.4	75.8	52.4
			hi	53.6	22.4	77.5	69.4	152.5	68.8
			avg	18.2	7.2	26.1	21.3	71.9	47.7
			med	9.9	5.0	23.7	16.3	74.0	54.6
			low	0.4	2.3	0.2	0.1	1.2	0.6
Eesti Energia	Estonia	A3	0.3	12.6	10.9	49.6	49.6	71.2	23.3
Energie Baden-Wuerttemberg (EnBW)	Germany	A3	9.7	6.9	2.3	5.8	3.6	21.9	80.3
Electricidade de Portugal	Portugal	A3	8.7	11.8	3.6	10.8	7.3	65.2	58.3
Endesa	Spain	A3	21.0	19.4	3.3	12.7	9.2	-971.8	66.6
Vattenfall	Sweden	A3	13.6	16.5	4.0	15.6	14.0	84.1	53.9
			hi	19.4	10.9	49.6	49.6	84.1	80.3
			avg	13.4	4.8	18.9	16.7	-145.9	56.5
			med	12.6	3.6	12.7	9.2	65.2	58.3
			low	6.9	2.3	5.8	3.6	-971.8	23.3

Appendix 1 – Three Year Average Ratios and Current Ratings

Company name	Country	Rating	Revenues $bn equiv	EBITA margin %	FFO interest times coverage	FFO/TD %	RCF/TD %	RCF/ Capex %	TD/ Capitalization %
CEZ	Czech Republic	Baa1	2.2	18.7	8.4	50.0	45.6	145.7	21.8
Public Power Corp (PPC)	Greece	Baa1	3.5	19.6	4.9	15.8	14.4	101.6	69.3
Latvenergo	Latvia	Baa1	0.3	11.8	14.6	63.2	59.0	63.0	25.3
Eskom	South Africa	Baa1/A3	3.5	37.3	3.4	24.2	23.8	202.7	53.2
Scottish Power plc	UK	Baa1	9.3	19.5	3.8	16.2	8.7	30.6	56.6
		hi		37.3	14.6	63.2	59.0	202.7	69.3
		avg		21.4	7.0	33.9	30.3	108.7	45.2
		med		19.5	4.9	24.2	23.8	101.6	53.2
		low		11.8	3.4	15.8	8.7	30.6	21.8
Israel Electric Corporation (IEC)	Israel	Baa2	2.6	17.3	2.2	7.5	7.4	65.1	69.9
Union Fenosa	Spain	Baa2	5.6	15.7	2.1	4.4	2.3	54.8	65.1
WPD Holdings UK	UK	Baa3	0.5	47.7	2.4	9.1	6.7	50.0	68.3
CE Electric	UK	Baa3	1.1	36.8	2.6	10.5	8.1	-1.1	75.0
		hi		47.7	2.6	10.5	8.1	65.1	75.0
		avg		29.4	2.3	7.9	6.1	42.2	69.6
		med		27.0	2.3	8.3	7.1	52.4	69.1
		low		15.7	2.1	4.4	2.3	-1.1	65.1
Transelectrica	Romania	Ba3	0.2	-1.4	7.3	77.1	76.4	122.6	10.1
		hi		-1.4	7.3	77.1	76.4	122.6	10.1
		avg		-1.4	7.3	77.1	76.4	122.6	10.1
		med		-1.4	7.3	77.1	76.4	122.6	10.1
		low		-1.4	7.3	77.1	76.4	122.6	10.1
ASIA/PACIFIC									
Singapore Power	Singapore	Aa1	2.6	26.0	7.0	32.0	-8.0	-362.0	48.0
SP PowerAssets		Aa1	0.4	44.0	6.0	8.0	8.0	625.0	61.0
		hi		44.0	7.0	32.0	8.0	625.0	61.0
		avg		35.0	6.5	20.0	0.0	131.5	54.5
		med		35.0	6.5	20.0	0.0	131.5	54.5
		low		26.0	6.0	8.0	-8.0	-362.0	48.0
CLP Holdings		A1	3.4	35.0	14.0	22.0	49.0	94.0	20.0
		hi		35.0	14.0	22.0	49.0	94.0	20.0
		avg		35.0	14.0	22.0	49.0	94.0	20.0
		med		35.0	14.0	22.0	49.0	94.0	20.0
		low		35.0	14.0	22.0	49.0	94.0	20.0
Australian Gas Light Company	Australia	A2	3.8	13.0	4.1	23.0	14.0	96.0	49.0
		hi		13.0	4.1	23.0	14.0	96.0	49.0
		avg		13.0	4.1	23.0	14.0	96.0	49.0
		med		13.0	4.1	23.0	14.0	96.0	49.0
		low		13.0	4.1	23.0	14.0	96.0	49.0

Appendix 1 – Three Year Average Ratios and Current Ratings

Company name	Country	Rating	Revenues $bn equiv	EBITA margin %	FFO interest times coverage	FFO/TD %	RCF/TD %	RCF/ Capex %	TD/ Capitalization %
KEPCO		A3	18.0	24.0	6.0	33.0	31.0	112.0	40.0
Citipower		A3	0.5	39.0	3.0	10.0	7.0	132.0	88.0
ETSA		A3	0.7	42.0	2.0	4.0	-2.0	69.0	64.0
Powercor		A3	0.6	42.0	4.0	12.0	12.0	111.0	51.0
SPI Powernet		A3	0.3	62.0	2.0	10.0	10.0	258.0	71.0
TXU Australia		A3		24.0	3.0	10.0	8.0	171.0	57.0
			hi	62.0	6.0	33.0	31.0	258.0	88.0
			avg	38.8	3.3	13.2	11.0	142.2	61.8
			med	40.5	3.0	10.0	9.0	122.0	60.5
			low	24.0	2.0	4.0	-2.0	69.0	40.0
United Energy		Baa1	0.4	32.0	3.0	13.0	7.0	71.0	60.0
Vector		Baa1	0.5	39.0	3.0	8.0	5.0	117.0	67.0
Electranet		Baa1	0.1	46.0	2.0	3.0	3.0	151.0	74.0
Gasnet		Baa1	0.1	61.0	2.0	6.0	4.0	687.0	68.0
			hi	61.0	3.0	13.0	7.0	687.0	74.0
			avg	44.5	2.5	7.5	4.8	256.5	67.3
			med	42.5	2.5	7.0	4.5	134.0	67.5
			low	32.0	2.0	3.0	3.0	71.0	60.0
Tenaga		Baa2	4.1	18.0	3.0	11.0	10.0	82.0	61.0
			hi	18.0	3.0	11.0	10.0	82.0	61.0
			avg	18.0	3.0	11.0	10.0	82.0	61.0
			med	18.0	3.0	11.0	10.0	82.0	61.0
			low	18.0	3.0	11.0	10.0	82.0	61.0
National Thermal Power Corporation		Baa3	4.1	20.5	5.5	31.2	25.7	93.8	29.1
			hi	20.5	5.5	31.2	25.7	93.8	29.1
			avg	20.5	5.5	31.2	25.7	93.8	29.1
			med	20.5	5.5	31.2	25.7	93.8	29.1
			low	20.5	5.5	31.2	25.7	93.8	29.1
Tata Power		Ba1	1.1	17.9	3.6	28.6	25.1	133.3	42.7
			hi	17.9	3.6	28.6	25.1	133.3	42.7
			avg	17.9	3.6	28.6	25.1	133.3	42.7
			med	17.9	3.6	28.6	25.1	133.3	42.7
			low	17.9	3.6	28.6	25.1	133.3	42.7
National Power Corporation		B1	2.1	29.7	2.1	3.6	1.9	129.0	94.5
			hi	29.7	2.1	3.6	1.9	129.0	94.5
			avg	29.7	2.1	3.6	1.9	129.0	94.5
			med	29.7	2.1	3.6	1.9	129.0	94.5
			low	29.7	2.1	3.6	1.9	129.0	94.5

Appendix 1 – Three Year Average Ratios and Current Ratings

Company name	Country	Rating	Revenues $bn equiv	EBITA margin %	FFO interest times coverage	FFO/TD %	RCF/TD %	RCF/ Capex %	TD/ Capitalization %
AMERICAS									
WPS Resources Corp	USA	A1	2.4	9.1	4.1	18.4	11.9	51.1	51.7
			hi	9.1	4.1	18.4	11.9	51.1	51.7
			avg	9.1	4.1	18.4	11.9	51.1	51.7
			med	9.1	4.1	18.4	11.9	51.1	51.7
			low	9.1	4.1	18.4	11.9	51.1	51.7
Consolidated Edison Inc	USA	A2	9.2	16.7	4.1	20.3	14.0	80.3	45.3
FPL Group, Inc.	USA	A2	8.7	17.0	6.0	29.0	23.0	57.0	47.0
Hydro One, Inc	CAN	A2	3.3	25.1	3.0	13.0	9.3	83.3	60.3
NSTAR	USA	A2	2.9	16.0	3.5	16.7	12.8	127.0	52.7
Otter Tail Corporation	USA	A2	0.7	13.3	4.3	17.6	11.9	84.9	53.0
			hi	25.1	6.0	29.0	23.0	127.0	60.3
			avg	17.6	4.2	19.3	14.2	86.5	51.7
			med	16.7	4.1	17.6	12.8	83.3	52.7
			low	13.3	3.0	13.0	9.3	57.0	45.3
Ameren Corporation	USA	A3	4.1	24.3	5.0	19.5	11.1	51.2	44.0
Scana Corporation	USA	A3	3.3	18.3	3.1	13.2	9.7	99.3	54.3
Southern Company (The)	USA	A3	10.7	24.3	4.7	19.7	12.3	67.0	50.0
Wisconsin Energy Corp	USA	A3	3.9	18.1	3.8	15.3	13.1	124.1	60.1
			hi	24.3	5.0	19.7	13.1	124.1	60.1
			avg	21.3	4.2	16.9	11.6	85.4	52.1
			med	21.3	4.2	17.4	11.7	83.2	52.2
			low	18.1	3.1	13.2	9.7	51.2	44.0
Constellation Energy	USA	Baa1	6.1	18.7	3.7	16.3	14.0	135.0	52.0
Dominion Resources	USA	Baa1	11.0	23.0	3.3	14.4	10.3	45.7	54.3
Duke Energy Corp	USA	Baa1	18.7	15.0	3.4	17.3	12.7	166.0	49.3
OGE Energy Corp.	USA	Baa1	3.3	9.2	3.9	16.5	11.4	117.6	53.0
Sempra Energy	USA	Baa1	7.2	15.1	4.0	18.6	18.1	76.3	56.3
Xcel Energy Inc.	USA	Baa1	7.9	15.8	4.6	18.8	14.0	114.3	61.6
			hi	23.0	4.6	18.8	18.1	166.0	61.6
			avg	16.1	3.8	17.0	13.4	109.1	54.4
			med	15.4	3.8	16.9	13.3	116.0	53.7
			low	9.2	3.3	14.4	10.3	45.7	49.3

Appendix 1 – Three Year Average Ratios and Current Ratings

Company name	Country	Rating	Revenues $bn equiv	EBITA margin %	FFO interest times coverage	FFO/TD %	RCF/TD %	RCF/ Capex %	TD/ Capitalization %
Cinergy Corp	USA	Baa2	4.1	22.3	4.2	14.4	9.5	55.8	56.3
DTE Energy Company	USA	Baa2	6.5	24.0	2.8	11.0	7.5	NM	58.0
Emera Inc.	CAN	Baa2	1.0	27.8	2.7	10.5	7.0	151.7	64.9
Empire District Electric Company	USA	Baa2	0.3	21.0	3.0	15.0	8.0	51.0	51.0
Energy East Corporation	USA	Baa2	4.1	16.0	2.6	11.1	8.3	127.0	58.0
Exelon Corp	USA	Baa2	15.2	25.8	4.4	24.7	14.0	86.1	39.9
Great Plains Energy Inc.	USA	Baa2	1.8	16.9	4.3	17.4	11.9	139.1	56.6
IDACORP, Inc.	USA	Baa2	1.0	14.3	4.3	19.7	14.0	98.7	44.0
Northeast Utilities	USA	Baa2	5.7	18.1	2.9	11.0	9.6	124.7	42.9
Pepco Holdings, Inc.	USA	Baa2	5.8	12.5	3.3	10.8	8.4	136.2	56.5
Pinnacle West Capital Corp.	USA	Baa2	2.6	21.7	4.8	18.8	15.3	81.2	50.8
Progress Energy	USA	Baa2	8.3	15.1	3.4	14.4	10.1	68.6	59.1
Public Service Enterprise Group Inc.	USA	Baa2	8.7	23.7	2.4	10.0	6.3	52.7	59.0
			hi	27.8	4.8	24.7	15.3	151.7	64.9
			avg	19.9	3.5	14.5	10.0	97.7	53.6
			med	21.0	3.3	14.4	9.5	92.4	56.5
			low	12.5	2.4	10.0	6.3	51.0	39.9
American Electric Power Co	USA	Baa3	13.5	19.6	3.4	13.2	9.0	208.0	58.5
Cleco Corp	USA	Baa3	0.8	22.0	3.4	16.0	12.0	132.3	57.0
Duquesne Light Holdings	USA	Baa3	1.0	16.9	3.9	18.9	13.4	428.4	54.4
Edison International	USA	(P)Baa3	11.6	33.6	3.0	17.7	17.6	NM	59.8
Entergy Corporation	USA	Baa3	9.0	19.0	4.1	21.1	18.0	100.4	41.3
FirstEnergy Corp.	USA	Baa3	10.8	18.1	3.0	10.9	8.3	108.6	60.1
MidAmerican Energy Holding Co.	USA	Baa3	5.1	25.1	2.2	8.6	8.6	128.4	75.7
PG&E Corporation	USA	Baa3	10.4	28.7	2.9	14.4	14.3	142.4	76.4
PNM Resources, Inc.	USA	Baa3	1.6	11.4	4.4	17.4	14.8	83.0	52.5
PPL Corporation *	USA	Baa3	5.4	21.6	2.5	13.6	11.1	104.5	67.1
UIL Holdings Corporation	USA	Baa3	1.0	12.3	4.0	16.0	10.3	100.7	50.3
			hi	33.6	4.4	21.1	18.0	428.4	76.4
			avg	20.8	3.3	15.3	12.5	153.7	59.4
			med	19.6	3.4	16.0	12.0	118.5	58.5
			low	11.4	2.2	8.6	8.3	83.0	41.3
Avista Corp	USA	Ba1	1.2	15.7	2.3	10.0	8.7	128.0	54.3
Empresa Nacional de Electricidad S.A.	Chile	Ba1	1.5	35.3	2.1	8.2	6.3	217.7	56.0
Enersis S.A.	Chile	Ba1	4.0	17.7	2.3	11.5	9.3	207.0	76.0
Puget Energy, Inc.	USA	Ba1	2.6	15.0	2.8	13.3	10.0	94.7	56.3
TXU Corp	USA	Ba1	10.3	17.0	2.9	13.0	10.0	160.3	62.0
Westar Energy	USA	Ba1	1.4	26.2	2.1	8.9	7.0	93.1	60.7
			hi	35.3	2.9	13.3	10.0	217.7	76.0
			avg	21.1	2.4	10.8	8.5	150.1	60.9
			med	17.3	2.3	10.8	9.0	144.2	58.5
			low	15.0	2.1	8.2	6.3	93.1	54.3

* *Rating on guaranteed debt issued by PPL Capital*

Appendix 1 – Three Year Average Ratios and Current Ratings

Company name	Country	Rating	Revenues $bn equiv	EBITA margin %	FFO interest times coverage	FFO/TD %	RCF/TD %	RCF/ Capex %	TD/ Capitalization %
Centerpoint Energy, Inc.	USA	Ba2	9.4	17.0	2.4	9.7	7.0	90.0	65.0
DPL Inc.	USA	Ba2	1.2	35.8	2.6	12.6	8.1	107.2	67.0
TECO Energy	USA	Ba2	2.6	8.8	2.7	11.0	5.6	24.3	59.4
			hi	35.8	2.7	12.6	8.1	107.2	67.0
			avg	20.5	2.6	11.1	6.9	73.8	63.8
			med	17.0	2.6	11.0	7.0	90.0	65.0
			low	8.8	2.4	9.7	5.6	24.3	59.4
COELCE	Brazil	Ba3	0.3	22.3	6.3	43.5	28.9	113.3	35.8
			hi	22.3	6.3	43.5	28.9	113.3	35.8
			avg	22.3	6.3	43.5	28.9	113.3	35.8
			med	22.3	6.3	43.5	28.9	113.3	35.8
			low	22.3	6.3	43.5	28.9	113.3	35.8
Allegheny Energy Inc.	USA	B1	2.2	2.4	1.9	6.2	4.1	40.6	62.0
CEMIG	Brazil	B1	1.8	16.8	2.4	15.7	11.8	66.7	43.9
CMS Energy Company	USA	B1	7.4	6.5	1.8	5.2	5.2	-46.8	84.0
			hi	16.8	2.4	15.7	11.8	66.7	84.0
			avg	8.6	2.0	9.0	7.0	20.2	63.3
			med	6.5	1.9	5.2	5.2	40.6	62.0
			low	2.4	1.8	5.2	4.1	-46.8	43.9
Sierra Pacific Resources	USA	B2	3.5	5.2	-0.1	-6.3	-7.0	NM	64.7
			hi	5.2	-0.1	-6.3	-7.0	NM	64.7
			avg	5.2	-0.1	-6.3	-7.0	NM	64.7
			med	5.2	-0.1	-6.3	-7.0	NM	64.7
			low	5.2	-0.1	-6.3	-7.0	NM	64.7
EDELNOR	Chile	B3	0.1	6.0	1.8	3.0	3.0	343.6	49.1
			hi	6.0	1.8	3.0	3.0	343.6	49.1
			avg	6.0	1.8	3.0	3.0	343.6	49.1
			med	6.0	1.8	3.0	3.0	343.6	49.1
			low	6.0	1.8	3.0	3.0	343.6	49.1

Note: The listed U.S. issuers are all holding company parent entities. Almost all have regulated operating utility subsidiaries that have higher ratings.

Appendix 1 – Three Year Average Ratios and Current Ratings

Company name	Country	Rating	Revenues $bn equiv	EBITA margin %	FFO interest times coverage	FFO/TD %	RCF/TD %	RCF/ Capex %	TD/ Capitalization %
JAPAN									
Tokyo Electric Power Company, Inc.	Japan	Aa3	46.6	13.1	6.0	15.8	12.3	150.3	92.7
Chubu Electric Power Company, Inc.	Japan	Aa3	20.2	14.5	5.4	17.4	13.5	153.9	81.7
Kansai Electric Power Co., Inc.	Japan	Aa3	24.4	13.5	7.1	19.3	15.4	156.7	77.9
			hi	14.5	7.1	19.3	15.4	156.7	92.7
			avg	13.7	6.2	17.5	13.8	153.7	84.1
			med	13.5	6.0	17.4	13.5	153.9	81.7
			low	13.1	5.4	15.8	12.3	150.3	77.9
Hokuriku Electric Power Co., Inc.	Japan	A1	4.3	15.2	4.8	15.1	13.0	128.1	85.5
Chugoku Electric Power Co., Inc.	Japan	A1	9.3	12.9	5.5	15.9	11.6	167.3	80.7
Tohoku Electric Power Company, Inc.	Japan	A1	15.0	13.1	5.4	18.2	14.0	142.3	80.6
Shikoku Electric Power Company, Inc.	Japan	A1	5.4	13.3	6.6	21.0	17.4	199.7	76.0
Kyushu Electric Power Company, Inc.	Japan	A1	13.4	13.7	6.0	18.2	16.2	154.8	81.6
Hokkaido Electric Power Co., Inc.	Japan	A1	5.0	15.5	5.9	20.3	16.3	137.0	72.1
			hi	15.5	6.6	21.0	17.4	199.7	85.5
			avg	13.9	5.7	18.1	14.7	154.9	79.4
			med	13.5	5.7	18.2	15.1	148.5	80.7
			low	12.9	4.8	15.1	11.6	128.1	72.1

Appendix 2 – Definition of Ratios

FFO Interest cover

(Cash Flow from Operations – Changes in Working Capital + Interest Expense) / (Interest Expense + Capitalized Interest Expense)

FFO / Adjusted gross debt

(Cash Flow from Operations – Changes in Working Capital) / (Total debt + operating lease adjustment + under-funded pension liabilities + basket-adjusted hybrids + securitizations + guarantees + other debt-like items)

Retained Cash Flow / Adjusted gross debt

(Cash Flow from Operations – Changes in Working Capital – Common and Preferred Dividends) / (Total debt + operating lease adjustment + under-funded pension liabilities + basket-adjusted hybrids + securitizations + guarantees + other debt-like items)

Adjusted gross debt / Regulated Asset Value or Capitalization

(Total debt + operating lease adjustment + under-funded pension liabilities + basket-adjusted hybrids + securitizations + guarantees + other debt-like items) / RAV or (Shareholders' equity + minority interest + deferred taxes + goodwill write-off reserve + Total debt + operating lease adjustment + under-funded pension liabilities + basket-adjusted hybrids + securitizations + guarantees + other debt-like items)

EBITA / Sales (margin)

(Net operating income + Equity Earnings of Affiliates + Income from Financial Asset Investments + Goodwill amortization + Interest Component of Operating Lease (1/3 of Rent) + Interest Income – Other expense) / Total revenues

Retained Cash Flow / Capex

(Cash Flow from Operations – Changes in Working Capital – Common and Preferred Dividends) / (Capex + Acquisitions – Divestitures)

Appendix 3 – Description of Utilities Bond Default History

Electric utilities have historically enjoyed a relatively strong credit quality thanks to their stable and predictable cash flows and the tendency of regulators to be supportive when a utility experiences financial stress. Over the past 70 years (since the Great Depression), only five rated investor-owned utilities have experienced bond defaults in highly developed countries; these were all US-domiciled issuers:

1988 Public Service Company of New Hampshire (bankruptcy)

1992 El Paso Electric (bankruptcy)

2001 Pacific Gas & Electric Company (bankruptcy)

2001 Southern California Edison Company (payment default)

2003 Northwestern Corporation (bankruptcy)

Two principal factors contributed to these defaults. In four of the five defaults, a state regulatory commission failed to provide sufficient and timely rate relief for recovery of costs or capital investment in utility plant. This reflected regulatory commission concerns about the impact of large rate increases on customers, as well as debate about the appropriateness of the regulatory relief being sought by the utility. In two of these four cases, transition towards deregulation of the electricity market was a key contributing factor in that it exposed the utilities to dramatic increases in wholesale market prices for purchased power. These two California utilities also lacked long-term contracts such as PPAs, leaving them highly exposed to sharp spikes in market prices. In the remaining case, the default resulted from a failed diversification into unregulated businesses that were totally unrelated to the basic utility business.

These defaults resulted in an average recovery for bondholders that is well above the average for corporate bonds. Holders of secured debt recovered 100% of principal and interest in all five cases. In the case of Pacific Gas & Electric and Southern California Edison Company, 100% of all debt holder claims were ultimately paid.

Figure 9 below lists each of the five bond defaults within the sector and categorizes the reasons for the defaults as the "Principal Factor" or a "Contributing Factor".

Figure 9 – Bond Defaults of US Investor-Owned Utilities: Principal and Contributing Factors

Issuer	Regulators/ Legislators Failed to Respond on a Timely Basis	Transition from a Regulated Environment to a Unregulated Marketplace	Poor-Performing Unregulated Investments
Public Service Company of New Hampshire	Principal Factor		
El Paso Electric Company	Principal Factor		Contributing Factor
Pacific Gas and Electric Company	Principal Factor	Principal Factor	
Southern California Edison Company	Principal Factor	Principal Factor	
Northwestern Corporation			Principal Factor

LESSONS FROM THE ELECTRIC UTILITY INDUSTRY'S DEFAULT HISTORY

Among rated utilities in developed countries, only US utilities have experienced defaults in the last 70 years. In addition to the five US defaulting utilities, several US utilities have narrowly avoided default. In 2002, Allegheny Energy and Centerpoint Energy each experienced a serious liquidity crisis and only avoided defaulting on debt payments due to last-minute agreements with bank lenders that allowed all payments to be made on a timely basis. The greater historic tendency for US companies to default is consistent with Moody's view that regulatory risk is greater in the US than in a number of other highly developed countries.

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