US Power & Utilities
Energy Finance 2015
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Our Mission

To be the world’s most respected authority serving credit-sensitive markets
## Our Language

### MOODY’s

**Investment Grade**
- Aaa
- Aa1
- Aa2
- Aa3
- A1
- A2
- A3
- Baa1
- Baa2
- Baa3

**High Yield (aka “Junk”)**
- Ba1
- Ba2
- Ba3
- B1
- B2
- B3
- Caa1
- Caa2
- Caa3
- Ca
- C
- D

### S&P, Fitch, etal.

**Investment Grade**
- AAA
- AA+
- AA
- AA-
- A+
- A
- A-
- BBB+
- BBB
- BBB-

**High Yield (aka “Junk”)**
- BB+
- BB
- BB-
- B+
- B
- B-

**Distressed debt**
- CCC+
- CCC
- CCC-
- CC
- C
- D
## Transparent rating approach

### 13 sector specific global infrastructure methodologies

<table>
<thead>
<tr>
<th>Topic</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Risk in PFI/PPP/P3 Projects</td>
<td>15-Mar</td>
</tr>
<tr>
<td>Regulated Electric and Gas Networks</td>
<td>14-Nov</td>
</tr>
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<td>Unregulated Utilities and Power Companies</td>
<td>14-Oct</td>
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<td>Operational Airports outside of the United States</td>
<td>14-Jun</td>
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<td>Privately Managed Toll Roads</td>
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<td>14-Apr</td>
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<td>Regulated Electric and Gas Utilities</td>
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<td>13-May</td>
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<td>Power Generation Projects</td>
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<td>Natural Gas Pipelines</td>
<td>12-Nov</td>
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<td>Waste-to-Energy Projects</td>
<td>12-Apr</td>
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<td>Generic Project Finance Methodology</td>
<td>10-Dec</td>
</tr>
<tr>
<td>Global Regulated Water Utilities</td>
<td>9-Dec</td>
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### 7 methodologies dedicated to US Public Finance infrastructure

<table>
<thead>
<tr>
<th>Topic</th>
<th>Date</th>
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<tbody>
<tr>
<td>U.S. Electric Generation &amp; Transmission Cooperatives</td>
<td>Apr-13</td>
</tr>
<tr>
<td>Public Port Revenue Bonds</td>
<td>Dec-13</td>
</tr>
<tr>
<td>U.S. Municipal Joint Action Agencies</td>
<td>Oct-12</td>
</tr>
<tr>
<td>Government Owned Toll Roads</td>
<td>Oct-12</td>
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<tr>
<td>U.S. Public Power Electric Utilities with Generation Ownership Exposure</td>
<td>Nov-11</td>
</tr>
<tr>
<td>Airports with Unregulated Rate Setting</td>
<td>Jul-11</td>
</tr>
<tr>
<td>U.S. Public Power Electric Utilities</td>
<td>Apr-08</td>
</tr>
</tbody>
</table>
A Default & Recovery
Infrastructure Default and Recovery Study
1983-2014

In March 2015, Moody's published its last updated study of the historical performance of rated infrastructure debts over the period 1983-2014.

The study focuses on the comparison of corporate infrastructure (i.e., excluding municipal infrastructure) vs non-financial corporates.

Ratings distribution, Average 1983-2013

- Corporate Infrastructure Securities
- Non-Financial Corporate Issuers

This is Moody's third report on the historical default performance of Moody's-rated long-term infrastructure debts. The study covers the period 1983-2014 and examines rating trends from initial, cumulative default rates, recovery rates and rating accuracy measures of rated securities in the infrastructure sector. Moody's analyzed data (3.3 million of infrastructure securities, comprised of $2.6 trillion in assets and 3.1 million in transactions) and project finance entities and $9.0 trillion in infrastructure debt issued by U.S. companies. It found that:

- The average over the study period, the default rate of infrastructure securities is investment grade and is particularly low in the single-A single-investment-grade category.
- Moody's default rates on corporate infrastructure are comparable to those of non-infrastructure corporates.
- Moody's ratings have been generally more accurate in distinguishing defaulters from non-defaulter than Moody's NFR ratings. The study period, the typical corporate infrastructure default rates are lower than Moody's NFR ratings. This result was primarily driven by the better performance of non-infrastructure corporates, as the typical corporate default rates are lower than Moody's NFR ratings in both infrastructure and non-infrastructure corporates. A figure similar to that of the typical NFR rates.

1. A 2015 U.S. municipal default study examined the role of credit rating in the global market. It was released in the report entitled "Learning by Observing Failure: 1983-2014-Moody's Default and Recovery Study."

2. Moody's credit rating performance is better than Moody's NFR ratings. The study period, the typical corporate infrastructure default rates are lower than Moody's NFR ratings.


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Moody's credit rating performance is better than Moody's NFR ratings. The study period, the typical corporate infrastructure default rates are lower than Moody's NFR ratings.
Moody’s latest study of the historical performance of unrated project finance bank loans was published in March 2014 (the Study)

» Now includes 5,308 projects representing 60.6% of all project finance transactions worldwide over 31 years

Key findings include

» New insight into default experience 2013-12

» Marginal default rates trend towards levels consistent with single-A ratings by year 10 from financial close

» Average ultimate recovery rates are high

» Ultimate recovery rates appear to be substantially independent of economic cycle

» Projects face significant incremental risk during the construction phase

» Average ultimate recovery rates for OECD/non-OECD projects are similar

The updated study provides strategic insight into the behaviour of project finance debt
## Infrastructure Default & Recovery Study

### Total Infrastructure Securities by Counts, %, By Volume, %

<table>
<thead>
<tr>
<th>Category</th>
<th>Counts</th>
<th>%</th>
<th>By Volume</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulated E&amp;G Utilities and Networks</td>
<td>605</td>
<td>18.0%</td>
<td>$1,091 Bn</td>
<td>32.7%</td>
</tr>
<tr>
<td>Unregulated E&amp;G Utilities and Power</td>
<td>130</td>
<td>3.9%</td>
<td>$564 Bn</td>
<td>16.9%</td>
</tr>
<tr>
<td>Water, Waste &amp; Multi-Utilities</td>
<td>1,355</td>
<td>40.2%</td>
<td>$396 Bn</td>
<td>11.9%</td>
</tr>
<tr>
<td>Other Utilities</td>
<td>485</td>
<td>14.4%</td>
<td>$294 Bn</td>
<td>8.8%</td>
</tr>
<tr>
<td>Airports</td>
<td>187</td>
<td>5.6%</td>
<td>$165 Bn</td>
<td>4.9%</td>
</tr>
<tr>
<td>Roads</td>
<td>141</td>
<td>4.2%</td>
<td>$216 Bn</td>
<td>6.5%</td>
</tr>
<tr>
<td>Ports</td>
<td>50</td>
<td>1.5%</td>
<td>$38 Bn</td>
<td>1.1%</td>
</tr>
<tr>
<td>Other Transportation</td>
<td>203</td>
<td>6.0%</td>
<td>$418 Bn</td>
<td>12.5%</td>
</tr>
<tr>
<td>Energy Related Projects</td>
<td>106</td>
<td>3.1%</td>
<td>$112 Bn</td>
<td>3.3%</td>
</tr>
<tr>
<td>Other Infrastructure</td>
<td>106</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

### Rating Volatility for Total Infrastructure Securities and Non-Financial Corporate Issuers

- **Non-Financial Corporate Issuers**
- **Total Infrastructure Securities**

![Graph showing Notch wtd Volatility](image)
Investment-Grade Cumulative Default Rates

Single-A Cumulative Default Rates

Baa Cumulative Default Rates

Ba Cumulative Default Rates
Project Finance Bank Loan Default & Recovery Study

![Graph showing cumulative default rates over years]

- Cumulative Default Rate (BII) 1990-2013
- Moody's Baa
- Moody's Ba
- Cumulative Default Rate (MDY) 1990-2013
Industry Outlooks
Oil & Gas
2015 Oil and Gas Outlooks

Outlook Key:  
- **NEGATIVE**
- **STABLE**
- **POSITIVE**

**Exploration and Production**
- EBITDA to **decline** by 10%-15%
- Lower oil price environment
- Production increases and cost reductions will not offset lost revenues

**Drilling and Oilfield Services**
- EBITDA to **decline** by 25%-30%
- Low oil prices will drive down OFS activities both onshore and offshore
- Rig count will drop more quickly onshore than offshore, but overcapacity will put heavy pressure on offshore rig dayrates

**Integrated Oil and Gas**
- EBITDA to **decline** more than 20% in 2015
- Negative FCF across group
- Major projects ramp up 2015-2016
- Downstream profitability modestly improved

**Refining and Marketing**
- EBITDA volatile and **flattening** close to zero growth
- Refined product demand growth slowing
- Capacity adds in Middle East through 2015 necessitates rationalization in Europe in order to balance markets

**Midstream and MLPs**
- EBITDA **growth** slowing to up 5%-7%
- Weak commodity prices are pressuring gathering and processing volumes and margins
- Contribution from new assets placed in service provides earnings momentum, but capex is flattening
2015 Oil Prices

The differential has narrowed with the significant pipeline and rail build-out, and high refinery utilization in North America.

Steep price drop based on increasing supply, weak demand, and strengthening US dollar.

Source: US Energy Information Administration; monthly average prices
Supply up, demand tepid, prices down
- Increasing supply in North America, Libya and Nigeria
- Saudi Arabia now competing for market share; no longer acting as OPEC’s – and the world’s – principal relief valve for crude production
- Middle East tensions and Ukraine have muted impact on oil prices for now
- Our long term price assumption of $75/bbl WTI supports development of most North American oil plays

Risks for 2015
- Sharp decline in Chinese growth
- Significant lifting of economic sanctions on Iran

Global Oil Profile

Source: US Energy Information Administration
North American natural gas prices spiked on very cold weather and storage depletion. Prices dropped through the summer as storage was replenished.

We see a long-term cap on natural gas prices given the enormous reserves that begin to provide economic returns for many producers at prices above $4.00.

Source: US Energy Information Administration; monthly average prices
2015 Natural Gas Prices – Key Issues

- North American natural gas prices declined in 2014
  - Summer weather proved unusually mild, reducing demand for natural gas
  - High storage levels ahead of the winter withdrawal season
  - Abundant supplies and economic returns at about $4.00/MMBtu creates effective price cap

- Prices may see some demand benefits, but no game changers for 2015
  - Long-term coal-to-gas switching for power generators, but near-term opportunities are limited at current gas prices
  - Industrial demand is improving
  - Industry’s committed contract capacity to expand gas exports to Mexico
  - Commercial transportation, drilling rigs and other users of gasoline/diesel starting to convert to natural gas
  - North American liquefied natural gas exports will develop slowly

- Natural gas liquids (NGL) prices have weakened further in line with crude prices
  - NGL pricing has once again recalibrated to crude; weak natural gas prices continue to pressure ethane
  - Ethane prices will stay particularly weak in 2015, with continued high levels of ethane rejection
  - Rapidly increasing supply will keep weighing on NGL prices, and producers will need enhanced export capability
North American Coal
2015 North American Coal Outlook – Stable

Key credit issues

- Industry fundamentals weakly positioned, thermal coal demand facing a slow, long-term secular decline and metallurgical (met) coal prices poised for a slow recovery on supply reductions.
- Environmental regulations will pressure domestic coal consumption for the foreseeable future as new capacity investment is directed towards natural gas and renewables.

What could change outlook to negative

- Coal's share of US electricity generation less than 38%
- US coal inventories at utilities more than 185mm tons
- US met coal benchmark prices lower than $150/mt

What could change outlook to positive

- Coal's share of US electricity generation more than 41%
- US coal inventories at utilities between 165mm tons - 185 mm tons
- US met coal benchmark prices between $150/mt - $175/mt
North American Coal Industry Faces Increasing Risks to the Downside

- The outlook for the North American coal industry remains stable, but is facing increasing risks to the downside
- The US and Canadian metallurgical coal producers are predominantly challenged by the weak met coal markets
- The US thermal coal industry is challenged by the weak natural gas prices and MATS implementation in the short term, and faces a long term secular decline
- We will likely revise our outlook change triggers to be predominantly based on anticipated change in the sector’s combined EBITDA
Met Markets Unlikely to Recover in the Next 12 Months

- High quality met coal benchmark for Q1 2015 settled at $117 per tonne, with recovery unlikely over the next 12 months
- Chinese steel consumption is growing at a very slow rate, with incremental met coal demand met by domestic suppliers
- Australia’s exports keep increasing, with roughly 2% increase expected over the next 12 months
  » 30 million tonne project pipeline expected to come online in 2016-18.
- Suppliers, mostly in the US, in 2014 announced over 25 million tonnes in supply cuts (on top of 40 million tonnes in previous two years)
- Further cuts are likely needed to bring markets into balance
- Much of global production uneconomic at benchmark of $120/tonne HCC
US Thermal Coal is Stable with Risks to the Downside

- Natural gas prices below or around $3.00 MMBtu will likely drive some coal-to-gas switching
- Declining oil production and corresponding decline in natural gas production will eventually prop up prices, but will take several months to occur
- Coal inventories remain at the lowest levels since 2006
- EIA projects coal consumption and production to remain relatively steady, but MATS implementation and low natural gas prices present risks to the downside
- Average realized coal prices will be relatively flat in 2015 based on contracted positions, but could come under pressure beyond that point if low nat gas prices persist
- Exports continue declining due to the weak seaborne prices
US Thermal Coal Faces Long-term Secular Decline

- Natural gas and renewables will capture longer-term growth in electric generation.
- Powder River Basin will continue to be volatile, with medium-term growth capped by port constraints.
- Illinois Basin will continue to take market share from Central Appalachia.
- EPA’s proposed carbon rule, as drafted, could reduce coal consumption by 20% over the next decade.
- LNG exports or technological developments could change the landscape.
US Coal Industry’s EBITDA and Total Debt

(1) Note: Data reflects Moody's standard adjustments
(2) Source: Company Filings
(3) 2014 data based off of Moody’s estimates
Coal Supply and Demand Trends
US Coal Production, Consumption, Inventories, and Share of Electricity Generation
2007-2015e

Sources: Energy Information Association (EIA); EIA estimates as of January 7, 2015

Moody's Investors Service
Unregulated Power
2015 US Unregulated Power Industry Outlook – Stable

Key Credit Themes

- After years of decline, natural gas prices for 2016 delivery have stabilized between $3.50/MMBtu and $4.50/MMBtu, though it has recently displayed high volatility
- Along with stable price range for natural gas, tighter reserve margins would bolster the potential for higher power prices
- Environmentally friendly policies and renewable energy dim the prospects of a robust recovery

What Could Change Outlook to Negative

- Reserve margins exceed 20% across several regions; or
- Natural gas prices fall below $3.50/MMBtu for a sustained period.

What Could Change Outlook to Positive

- Stable gas prices, declining reserve margins underpin our stable outlook
- Natural gas prices are at levels that make it hard for most coal and nuclear plants to generate significant free cash flow
- For 2015, we expect that EBITDA for independent merchants would fall 15% year over year, reversing some of the extraordinary gains tied to the unusually cold winter in early 2014
- Market design reforms in New England and PJM could bolster capacity prices in next auction

- We could change our outlook to positive if reserve margins fall below 14% across several regions; or
- Natural gas prices rise above $5.50/MMBtu for a sustained period.
Capacity Markets

- Improving Capacity Market Outlook
  - Plant retirements, market design reforms
  - Reserve Margins Falling

<table>
<thead>
<tr>
<th>Latest capacity prices</th>
<th>Delivery period</th>
<th>$/MW-day</th>
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</thead>
<tbody>
<tr>
<td>New England</td>
<td>June 2017 - May 2018</td>
<td>230</td>
</tr>
<tr>
<td>NY Lower Hudson</td>
<td>Nov 2014 - April 2015</td>
<td>194</td>
</tr>
<tr>
<td>Upstate NY</td>
<td>Nov 2014 - April 2015</td>
<td>95</td>
</tr>
<tr>
<td>PJM</td>
<td>June 2017 - May 2018</td>
<td>120</td>
</tr>
<tr>
<td>MISO</td>
<td>June 2014 - May 2015</td>
<td>17</td>
</tr>
<tr>
<td>Texas</td>
<td>Real time</td>
<td>0</td>
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</table>

Source: NERC
Regulated Utilities
2015 US Regulated Utilities Industry Outlook – Stable

Key Credit Themes

➢ Consistent regulatory support for cost-recovery, key driver of our stable outlook
➢ Capital spending will decline in 2015, keeping key ratios fairly steady
➢ We expect the ratio of CFO to debt to decline two percentage points year over year to around 19%, on average, for the industry

What Could Change Outlook to Negative

➢ A more contentious regulatory environment that resulted in a material deterioration in cash flow;
➢ Ratio of CFO to debt fell below 15%

What Could Change Outlook to Positive

➢ The ratio of CFO to debt rose toward 25% on a sustainable basis, which could happen if return on equity rises, volume growth increases materially or if utilities delever significantly

➢ Regulatory support drives our stable outlook
➢ Regulatory support will continue to help utilities recover costs and maintain stable cash flow, even with competition from distributed generation or energy-efficiency efforts that keep overall demand growth low.
➢ Capital spending among large utilities will decline by about 10% over the next two years because investment to comply with environmental requirements related to Mercury and Air Toxics Standards have largely been made.
US Regulated Utilities: Stable Outlook

- Regulatory support remains strong
  - ROE pressure somewhat mitigated by improved recovery mechanisms
  - Trackers reduce regulatory lag and enhance ability to earn allowed ROE

- Execution strategy over intermediate-term
  - Industry capital expenditures for 2015 environmental compliance (MATS, RPS) are winding down
  - Shifting towards transmission and distribution system investment

- Industry financial coverage metrics expected to decline
  - Bonus depreciation has boosted metrics by ~ 200 – 300 bps over past 2-3 years
  - Expiration will reduce cash flow coverage of debt and interest
  - Use of net operating loss (NOL) carry forwards and declining capital expenditures profiles are likely to mitigate magnitude of decline

- Lack of organic growth will drive financial engineering
  - M&A transactions at historically high multiples
  - Resurgence of Master Limited Partnership (MLP) structures and “YieldCos”

- Advances in renewable and distributed generation pose rate design risks
  - Stakeholder cooperation will be necessary to maintain long-term financial health of the industry
Regulatory Environment

- Broad regulatory support will persist, providing timely recovery of costs and investments
- Greater use of trackers and riders allows for faster, and more certain, cost recovery
- However, some states are seen as less supportive than average: Connecticut, Missouri, West Virginia

Source: Moody’s
Overall US Regulatory Environment Has Become More Credit Supportive

- Increased prevalence of riders, trackers, and other automatic cost recovery mechanisms, significantly improving cost recovery

- Material reduction of time between when a utility incurs and recovers costs, otherwise known as “regulatory lag”

- Sustained low gas prices help to foster a collaborative relationship between utilities, regulators and customers

- Although allowed ROE’s are in decline, they remain at favorable levels compared to average 30 year treasury rates and utility WACC

- Most utilities have experienced fair and balanced rate case outcomes in recent years, with many agreeing to rate settlements

- Request for Comment published September 23, 2013: Our revised view of US utility regulation is expected to lead to a one notch upgrade of most US regulated utilities, with some exceptions
Utilities Placed on Review and Subsequently Upgraded

- Request for Comment feedback was supportive of our point of view
- On November 8, 2013, we placed 174 issuers on review for possible upgrade as a result of our evolving views on US utility regulation
- In January and February 2014, after conclusion of this review, 147 of these issuers were upgraded, most by one notch
- Group consisted of 57 vertically integrated utilities, 21 T&D utilities, 30 LDCs, and one transmission company
- 34 parent companies were also upgraded, typically when one or more of their major utility subsidiaries were also upgraded
- All debt classes of a utility’s capital structure were upgraded by the same number of notches, maintaining the two notch differential between secured and unsecured debt
Exceptions to Upgrades Based on Several Factors

- Utilities that are part of corporate families that have significant unregulated or other higher risk operations as part of their business
- Other corporate family considerations, such as a highly levered holding company, a complex corporate structure, or exposure to contagion risk
- Utilities engaged in substantial construction programs for new generation plants or are in the midst of other major capital projects
- Material cost recovery risks or challenges related to significant capital investments
- Utilities subject to concentration and/or event risk that are exposed to sudden changes in credit profile
- Utilities under potential downward rating pressure, particularly where this is reflected in a review for downgrade or a negative rating outlook
Financial Profile
Diversified Holding Companies

Source: Moody's
Diversified Holding Companies

Source: Moody's
Local Distribution Companies

Source: Moody's
Vertically Integrated Companies

Source: Moody's
Credit Trends
2015 Top Credit Themes for US Utility and Power Companies

A. Regulatory Environment
B. Natural Gas & Power Merchants
C. Capacity Markets
D. New Environmental Mandates
E. Distributed Generation
F. Electricity Demand
G. Generation Supply and Renewable Energy
H. YieldCos and Financial Engineering
I. Merger and De-mergers
J. Infrastructure Security
Aggregate Revenue by Sub-Sector from 2007-2013
Cash Flow Stability

Ratio of cash flow to debt in 2015 will hover below the 10-year average

Sources: Company financials and Moody’s Investors Service
Comparison to Corporate (not updated)

(Median metrics for approx 1980 issuers within CFG Americas)
Volume and CapEx

Volume growth is slowing – we think it might turn negative over next 5 – 10 years...

...but business model still calls for asset growth
Unfettered Access to Capital Markets

Borrowing costs remain low...

High P/E multiples suggest it's a good for equity...
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