MOODY'S
INVESTORS SERVICE




US Power & Utilities
Energy Finance 2015

Table of Contents

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

Distressed debt

S&P, Fitch, etal.

Investment Grade

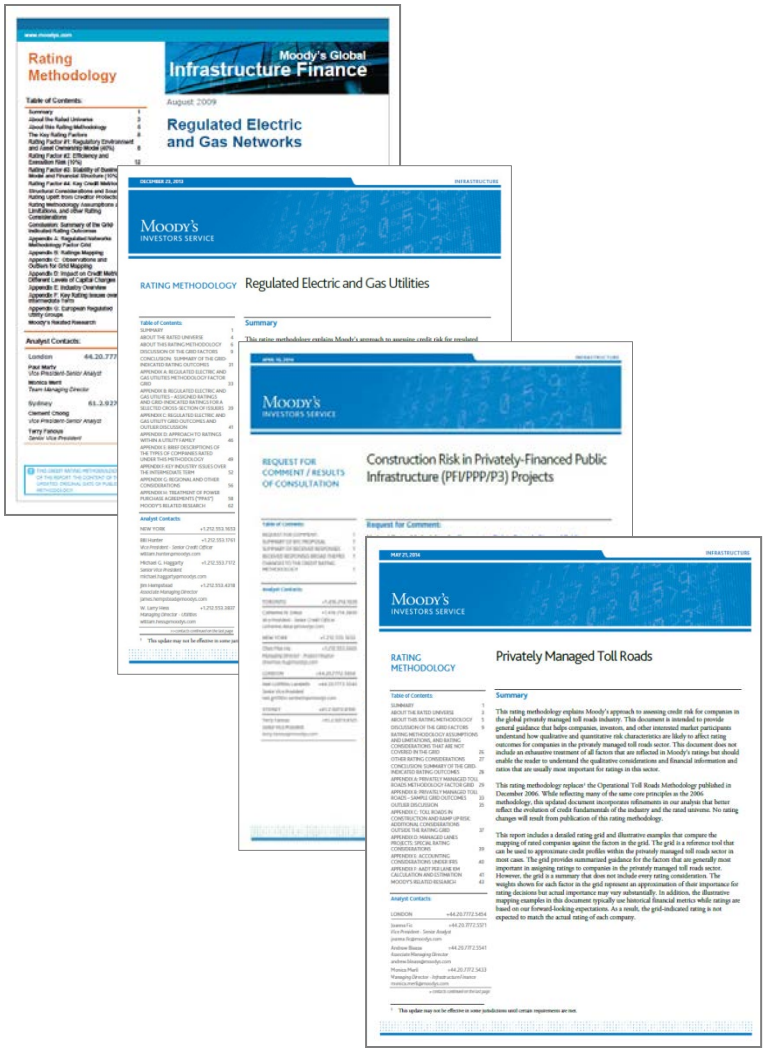
- AAA
- AA+
- AA
- AA-
- A+
- A
- A-
- BBB+
- BBB
- BBB-

High Yield (aka "Junk")

- BB+
- BB
- BB-
- B+
- B
- B-
- CCC+
- CCC
- CCC-
- CC
- C
- D

Distressed debt

Transparent rating approach



13 sector specific global infrastructure methodologies

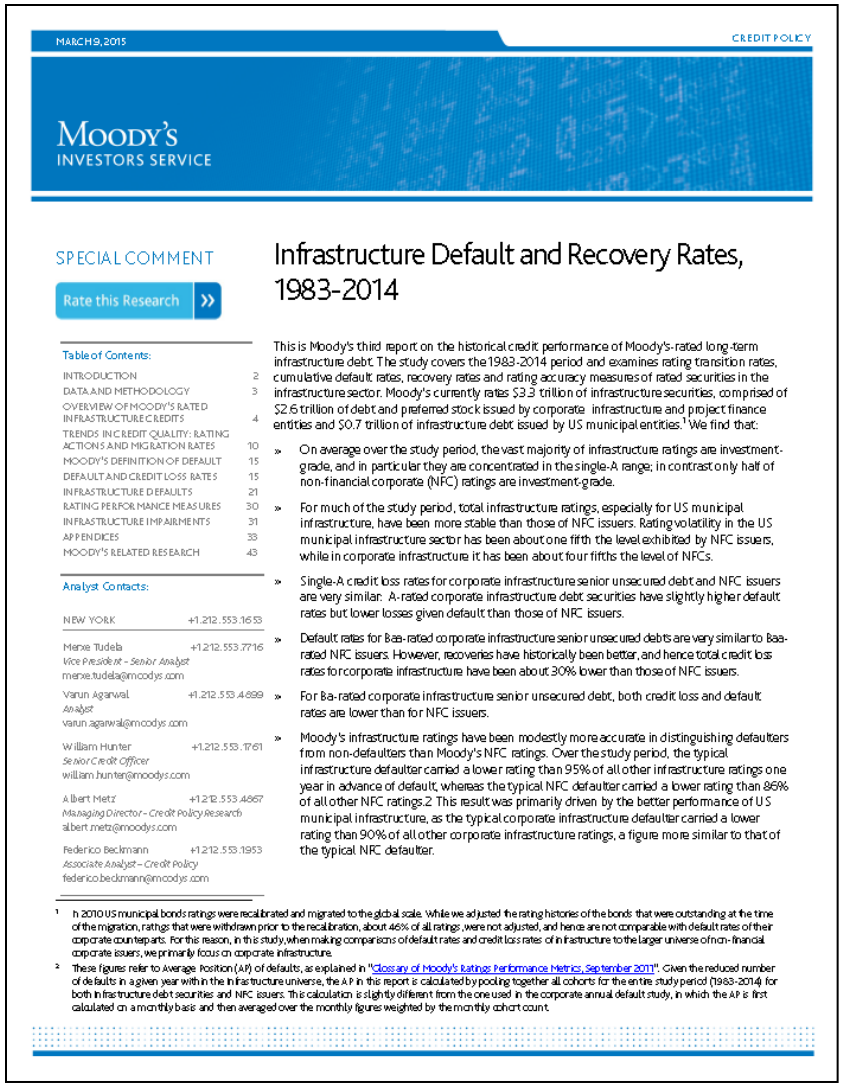
Operating Risk in PFI/PPP/P3 Projects	15-Mar
Regulated Electric and Gas Networks	14-Nov
Unregulated Utilities and Power Companies	14-Oct
Operational Airports outside of the United States	14-Jun
Privately Managed Toll Roads	14-May
Construction Risk in PFI/PPP/P3 Projects	14-Apr
Regulated Electric and Gas Utilities	13-Dec
Privately Managed Port Companies	13-May
Power Generation Projects	12-Dec
Natural Gas Pipelines	12-Nov
Waste-to-Energy Projects	12-Apr
Generic Project Finance Methodology	10-Dec
Global Regulated Water Utilities	9-Dec

7 methodologies dedicated to US Public Finance infrastructure

U.S. Electric Generation & Transmission Cooperatives	Apr-13
Public Port Revenue Bonds	Dec-13
U.S. Municipal Joint Action Agencies	Oct-12
Government Owned Toll Roads	Oct-12
U.S. Public Power Electric Utilities with Generation Ownership Exposure	Nov-11
Airports with Unregulated Rate Setting	Jul-11
U.S. Public Power Electric Utilities	Apr-08

A Default & Recovery

Infrastructure Default and Recovery Study



MARCH 9, 2015 CREDIT POLICY

MOODY'S INVESTORS SERVICE

SPECIAL COMMENT

Rate this Research

Infrastructure Default and Recovery Rates, 1983-2014

Table of Contents:

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This is Moody's third report on the historical credit performance of Moody's-rated long-term infrastructure debt. The study covers the 1983-2014 period and examines rating transition rates, cumulative default rates, recovery rates and rating accuracy measures of rated securities in the infrastructure sector. Moody's currently rates $3.3 trillion of infrastructure securities, comprised of $2.6 trillion of debt and preferred stock issued by corporate infrastructure and project finance entities and $0.7 trillion of infrastructure debt issued by US municipal entities.[1] We find that:

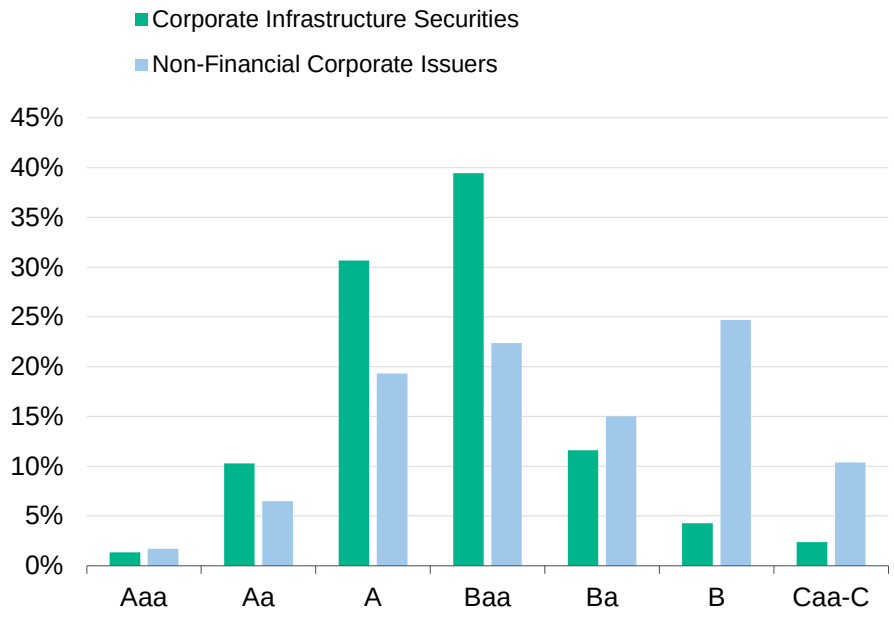
- On average over the study period, the vast majority of infrastructure ratings are investment-grade, and in particular they are concentrated in the single-A range; in contrast only half of non-financial corporate (NFC) ratings are investment-grade.
- For much of the study period, total infrastructure ratings, especially for US municipal infrastructure, have been more stable than those of NFC issuers. Rating volatility in the US municipal infrastructure sector has been about one fifth the level exhibited by NFC issuers, while in corporate infrastructure it has been about four fifths the level of NFCs.
- Single-A credit loss rates for corporate infrastructure senior unsecured debt and NFC issuers are very similar. A-rated corporate infrastructure debt securities have slightly higher default rates but lower losses given default than those of NFC issuers.
- Default rates for Baa-rated corporate infrastructure senior unsecured debts are very similar to Baa-rated NFC issuers. However, recoveries have historically been better, and hence total credit loss rates for corporate infrastructure have been about 30% lower than those of NFC issuers.
- For Ba-rated corporate infrastructure senior unsecured debt, both credit loss and default rates are lower than for NFC issuers.
- Moody's infrastructure ratings have been modestly more accurate in distinguishing defaulters from non-defaulters than Moody's NFC ratings. Over the study period, the typical infrastructure defaulter carried a lower rating than 95% of all other infrastructure ratings one year in advance of default, whereas the typical NFC defaulter carried a lower rating than 86% of all other NFC ratings.2 This result was primarily driven by the better performance of US municipal infrastructure, as the typical corporate infrastructure defaulter carried a lower rating than 90% of all other corporate infrastructure ratings, a figure more similar to that of the typical NFC defaulter.

[1] In 2010 US municipal bonds ratings were recalibrated and migrated to the global scale. While we adjusted the rating histories of the bonds that were outstanding at the time of the migration, ratings that were withdrawn prior to the recalibration, about 46% of all ratings, were not adjusted, and hence are not comparable with default rates of their corporate counterparts. For this reason, in this study, when making comparisons of default rates and credit loss rates of infrastructure to the larger universe of non-financial corporate issuers, we primarily focus on corporate infrastructure.

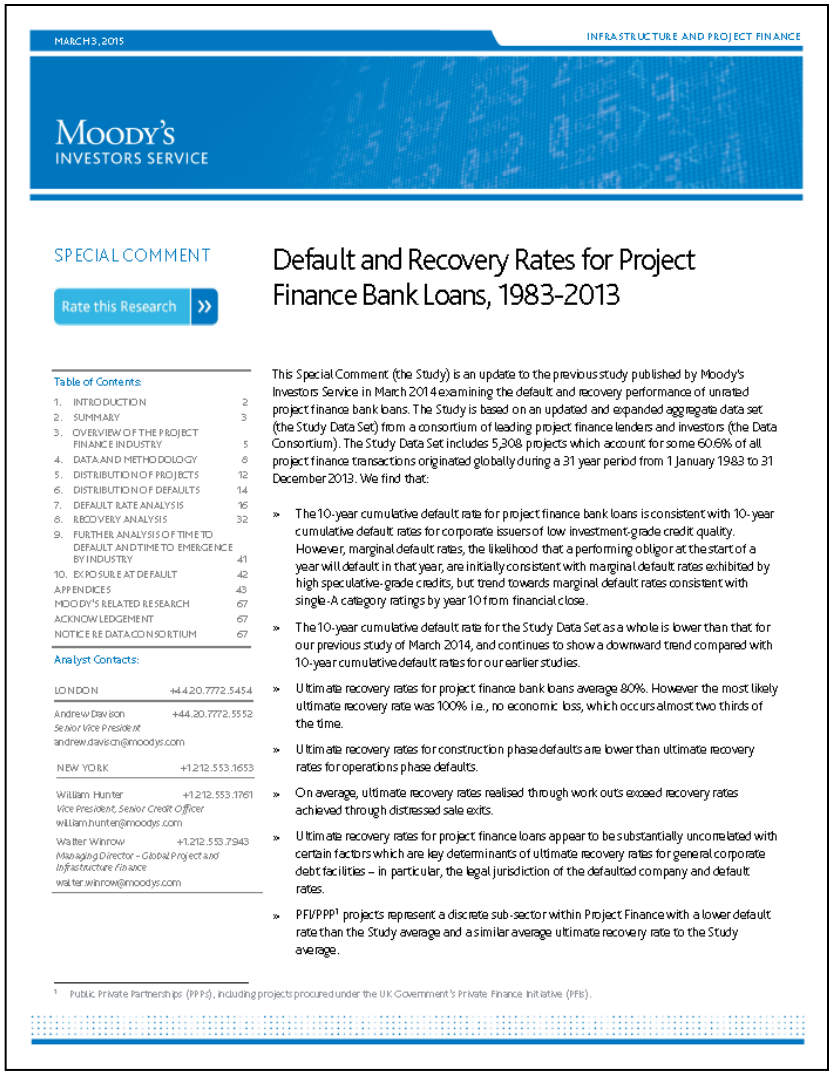
[2] These figures refer to Average Position (AP) of defaults, as explained in "Glossary of Moody's Ratings Performance Metrics, September 2011". Given the reduced number of defaults in a given year within the infrastructure universe, the AP in this report is calculated by pooling together all cohorts for the entire study period (1983-2014) for both infrastructure debt securities and NFC issuers. This calculation is slightly different from the one used in the corporate annual default study, in which the AP is first calculated on a monthly basis and then averaged over the monthly figures weighted by the monthly cohort count.

- 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



PF Bank Loan Default and Recovery Study



MARCH 3, 2015 INFRASTRUCTURE AND PROJECT FINANCE

MOODY'S INVESTORS SERVICE

SPECIAL COMMENT

Rate this Research

Default and Recovery Rates for Project Finance Bank Loans, 1983-2013

Table of Contents:

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This Special Comment (the Study) is an update to the previous study published by Moody's Investors Service in March 2014 examining the default and recovery performance of unrated project finance bank loans. The Study is based on an updated and expanded aggregate data set (the Study Data Set) from a consortium of leading project finance lenders and investors (the Data Consortium). The Study Data Set includes 5,308 projects which account for some 60.6% of all project finance transactions originated globally during a 31 year period from 1 January 1983 to 31 December 2013. We find that:

- The 10-year cumulative default rate for project finance bank loans is consistent with 10-year cumulative default rates for corporate issuers of low investment-grade credit quality. However, marginal default rates, the likelihood that a performing obligor at the start of a year will default in that year, are initially consistent with marginal default rates exhibited by high speculative-grade credits, but trend towards marginal default rates consistent with single-A category ratings by year 10 from financial close.
- The 10-year cumulative default rate for the Study Data Set as a whole is lower than that for our previous study of March 2014, and continues to show a downward trend compared with 10-year cumulative default rates for our earlier studies.
- Ultimate recovery rates for project finance bank loans average 80%. However the most likely ultimate recovery rate was 100% i.e., no economic loss, which occurs almost two thirds of the time.
- Ultimate recovery rates for construction phase defaults are lower than ultimate recovery rates for operations phase defaults.
- On average, ultimate recovery rates realised through work outs exceed recovery rates achieved through distressed sale exits.
- Ultimate recovery rates for project finance loans appear to be substantially uncorrelated with certain factors which are key determinants of ultimate recovery rates for general corporate debt facilities – in particular, the legal jurisdiction of the defaulted company and default rates.
- PFI/PPP[1] projects represent a discrete sub-sector within Project Finance with a lower default rate than the Study average and a similar average ultimate recovery rate to the Study average.

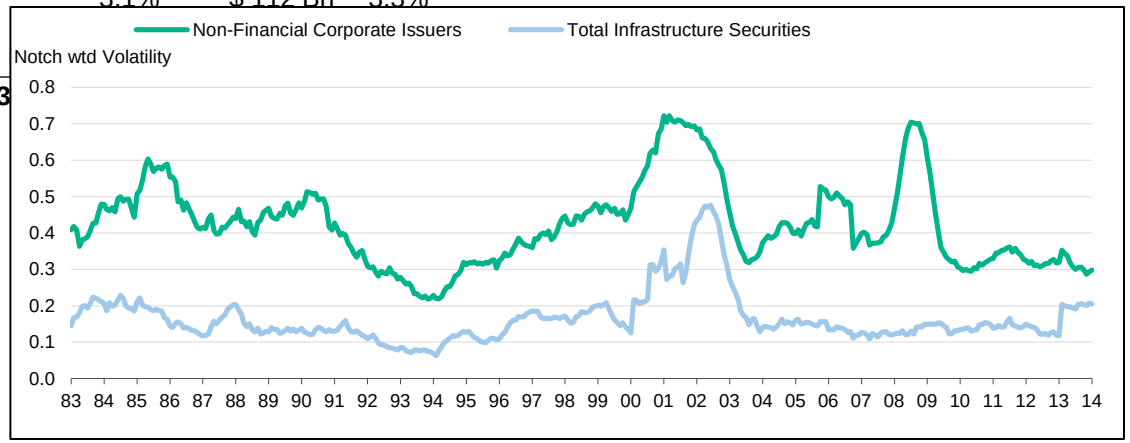
[1] Public Private Partnerships (PPPs), including projects procured under the UK Government's Private Finance Initiative (PFIs).

- 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 31years
- 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

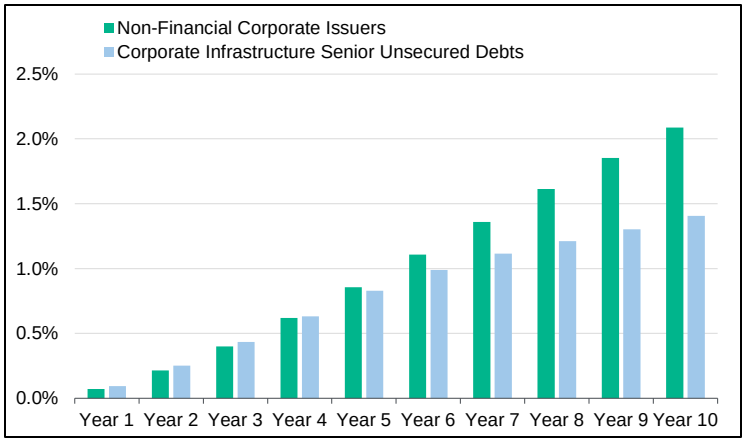
Total Infrastructure Securities	By Counts	%	By Volume	%
Regulated E&G Utilities and Networks	605	18.0%	$ 1,091 Bn	32.7%
Unregulated E&G Utilities and Power	130	3.9%	$ 564 Bn	16.9%
Water, Waste & Multi-Utilities	1,355	40.2%	$ 396 Bn	11.9%
Other Utilities	485	14.4%	$ 294 Bn	8.8%
Airports	187	5.6%	$ 165 Bn	4.9%
Roads	141	4.2%	$ 216 Bn	6.5%
Ports	50	1.5%	$ 38 Bn	1.1%
Other Transportation	203	6.0%	$ 418 Bn	12.5%
Energy Related Projects	106	3.1%	$ 112 Bn	3.3%
Other Infrastructure	106	3		

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

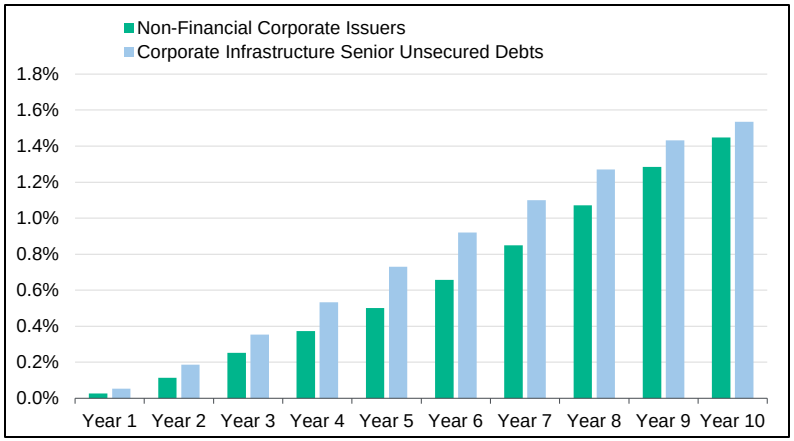


Infrastructure Default & Recovery Study

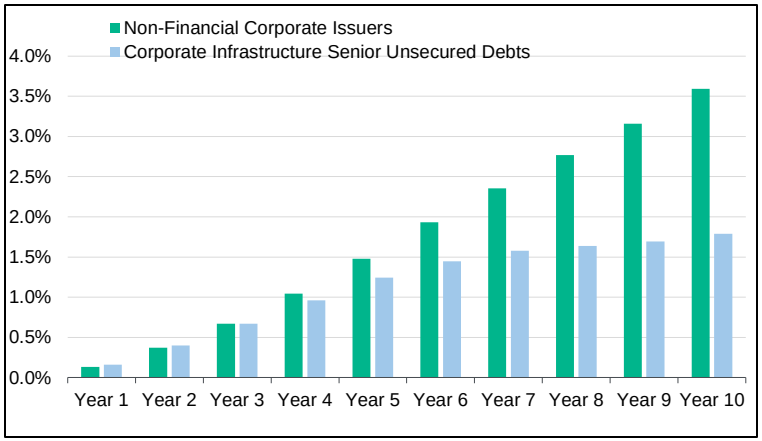
Investment-Grade Cumulative Default Rates



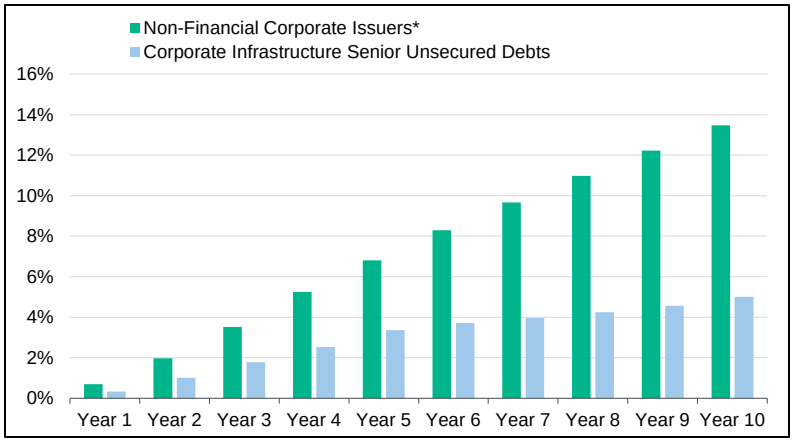
Single-A Cumulative Default Rates



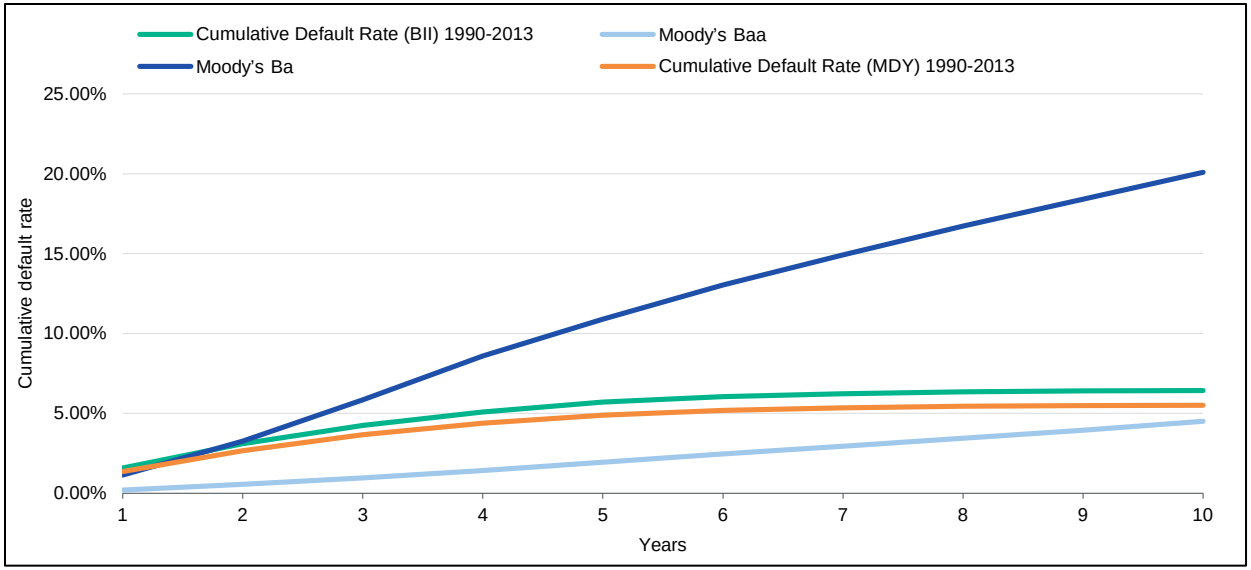
Baa Cumulative Default Rates



Ba Cumulative Default Rates



Project Finance Bank Loan Default & Recovery Study



B Industry Outlooks

Oil & Gas

2015 Oil and Gas Outlooks

Outlook Key: NEGATIVE | STABLE | POSITIVE

NEGATIVE

Exploration and Production

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

NEGATIVE

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

NEGATIVE

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

STABLE

Refining and Marketing

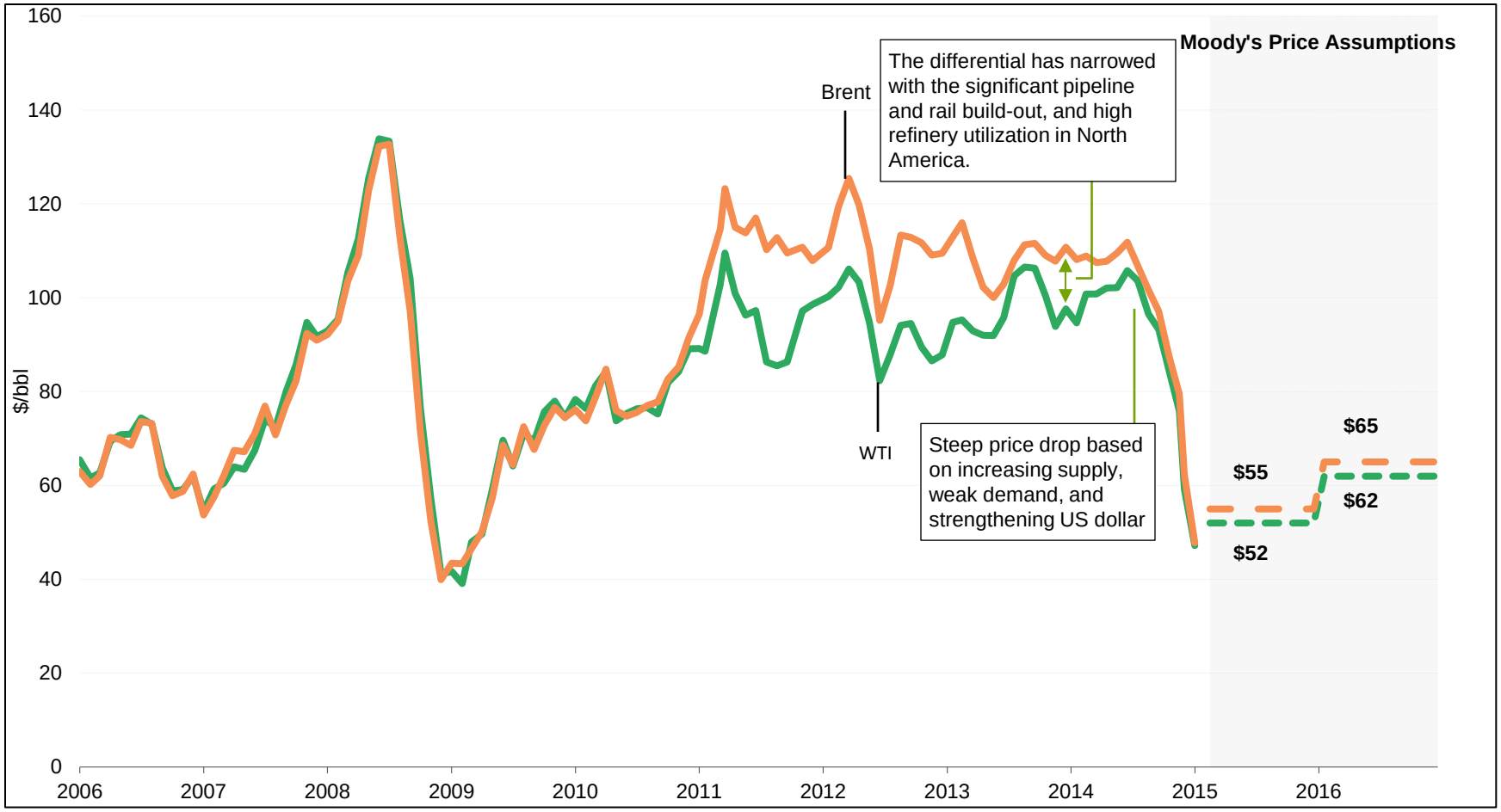
- EBITDA volatile and **flattening** close to zero growth
- Refined product demand growth slowing
- Capacity adds in Middle East through 2015 necessitates rationalization in Europe in order to balance markets

POSITIVE

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

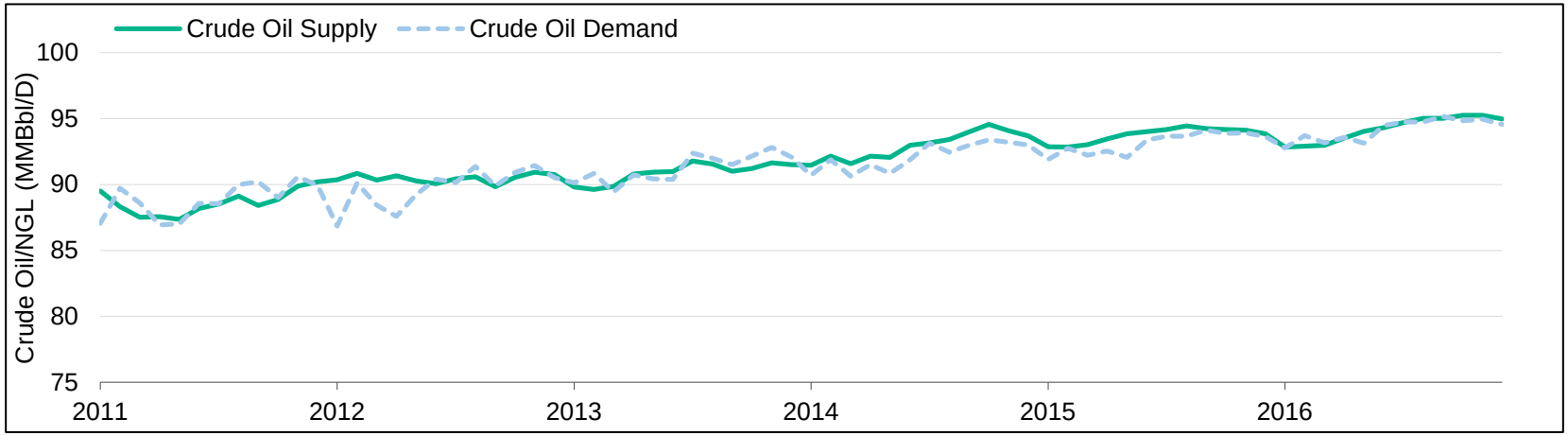


Source: US Energy Information Administration; monthly average prices

2015 Oil Prices – Key Issues

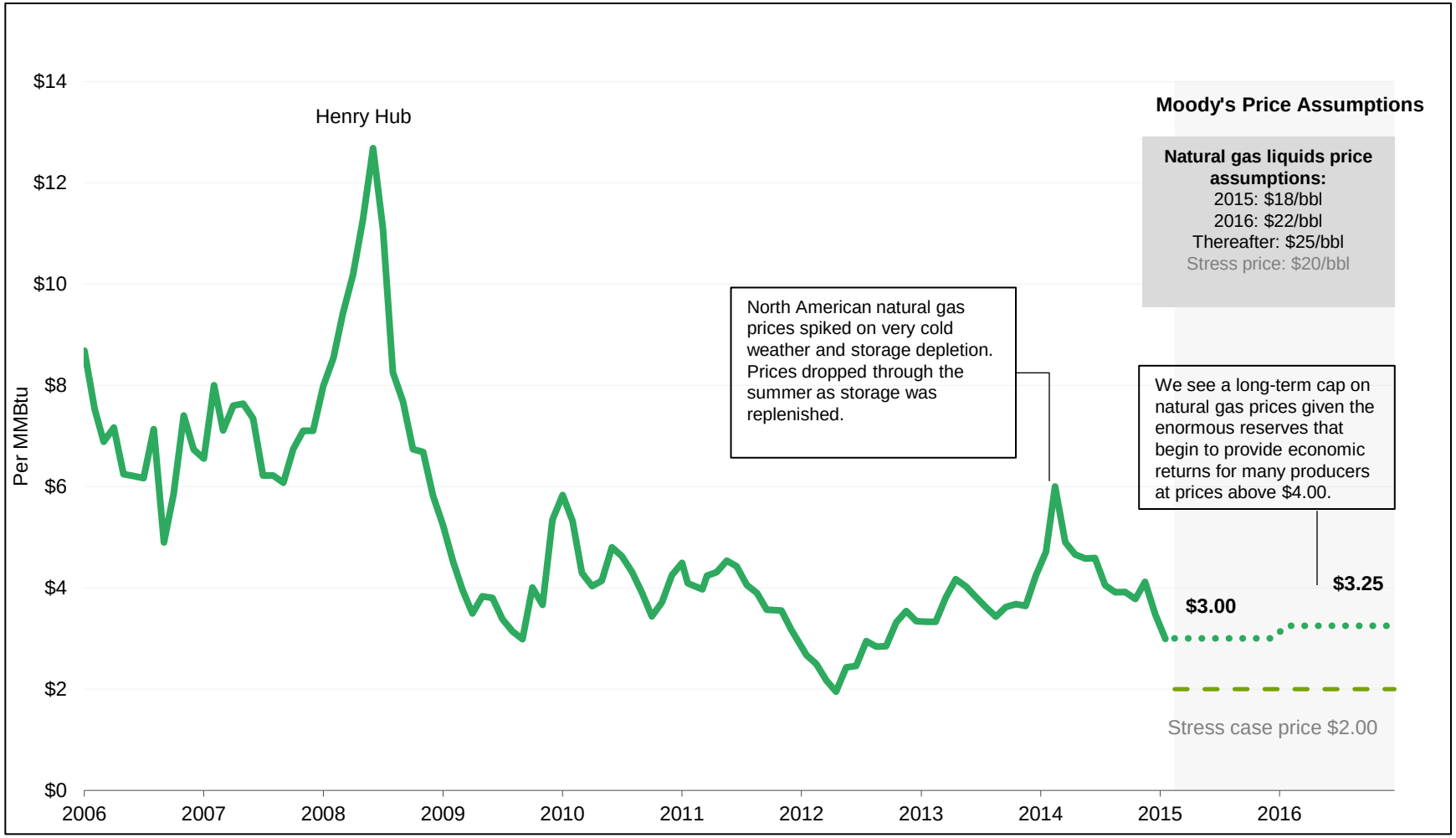
- Supply up, demand tepid, prices down
  - Increasing supply in North America, Libya and Nigeria
  - Saudi Arabia now competing for market share; no longer acting as OPEC's – and the world's – principal relief valve for crude production
  - Middle East tensions and Ukraine have muted impact on oil prices 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

2015 Natural Gas Prices



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.

NEGATIVE ← STABLE → POSITIVE

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

STABLE

Coal's share of US electricity generation between 38%-40%

US coal inventories at utilities between 165mm tons - 185 mm tons

US met coal benchmark prices between $150/mt - $175/mt

What could change outlook to positive

Coal's share of US electricity generation more than 41%

US coal inventories at utilities less than 165mm tons

US met coal benchmark prices higher than $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

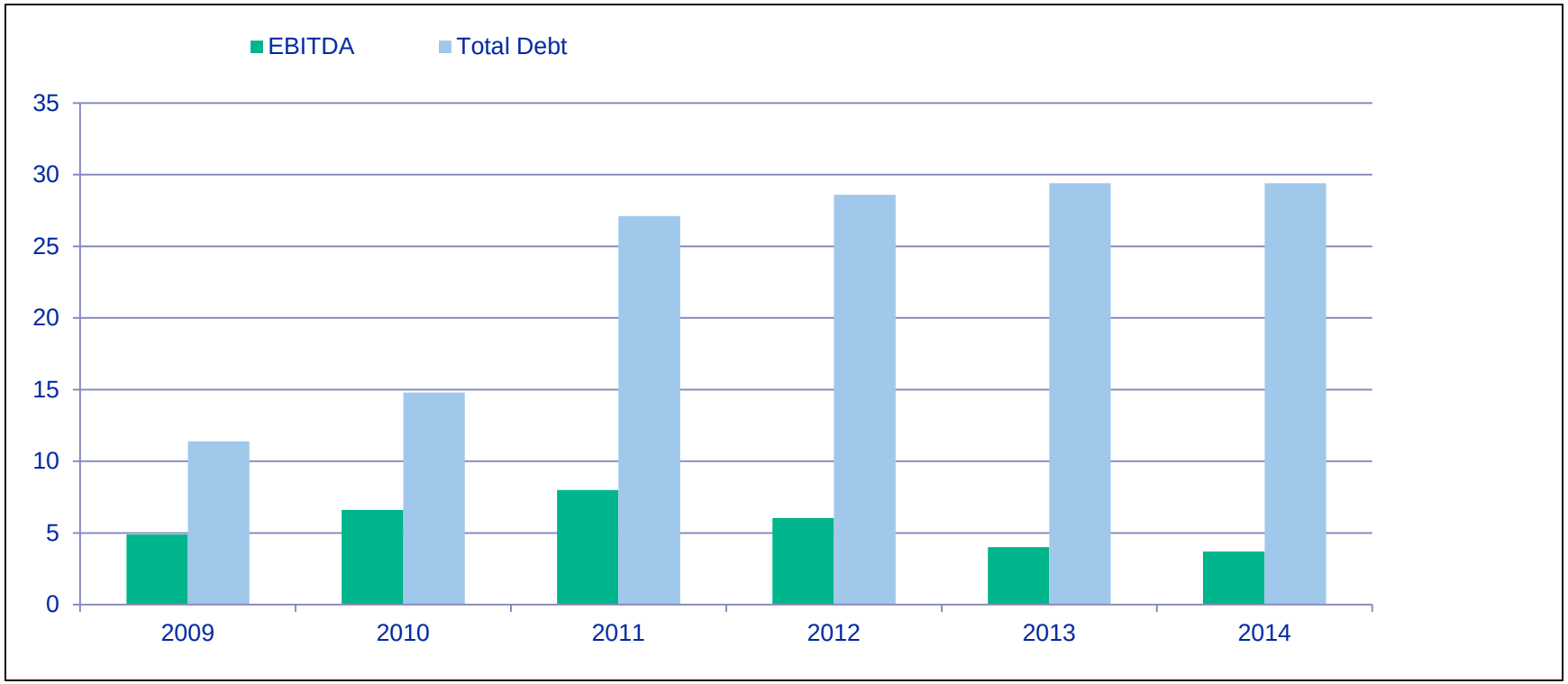
- Natural gas prices below or around $3.00 MMBtu will likely drive some coal-to-gas switching
- Declining oil production and corresponding decline in natural gas production will eventually prop up prices, but will take several months to occur
- Coal inventories remain at the lowest levels since 2006
- 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 – Credit Metrics Trends

US Coal Industry's EBITDA and Total Debt

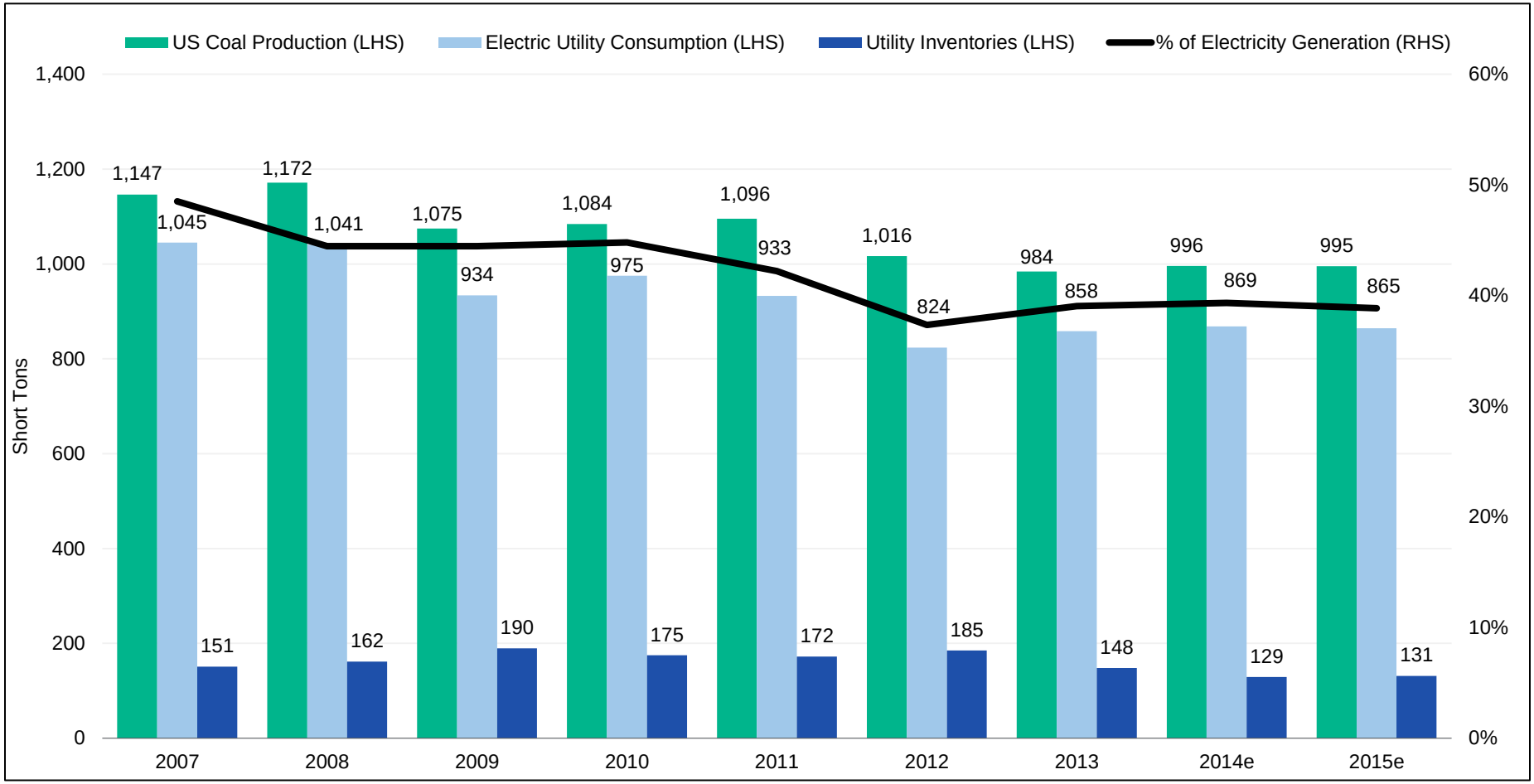


(1) Note: Data reflects Moody's standard adjustments
(2) Source: Company Filings
(3) 2014 data based off of Moody's estimates

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

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

NEGATIVE ← STABLE → POSITIVE

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.

- 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

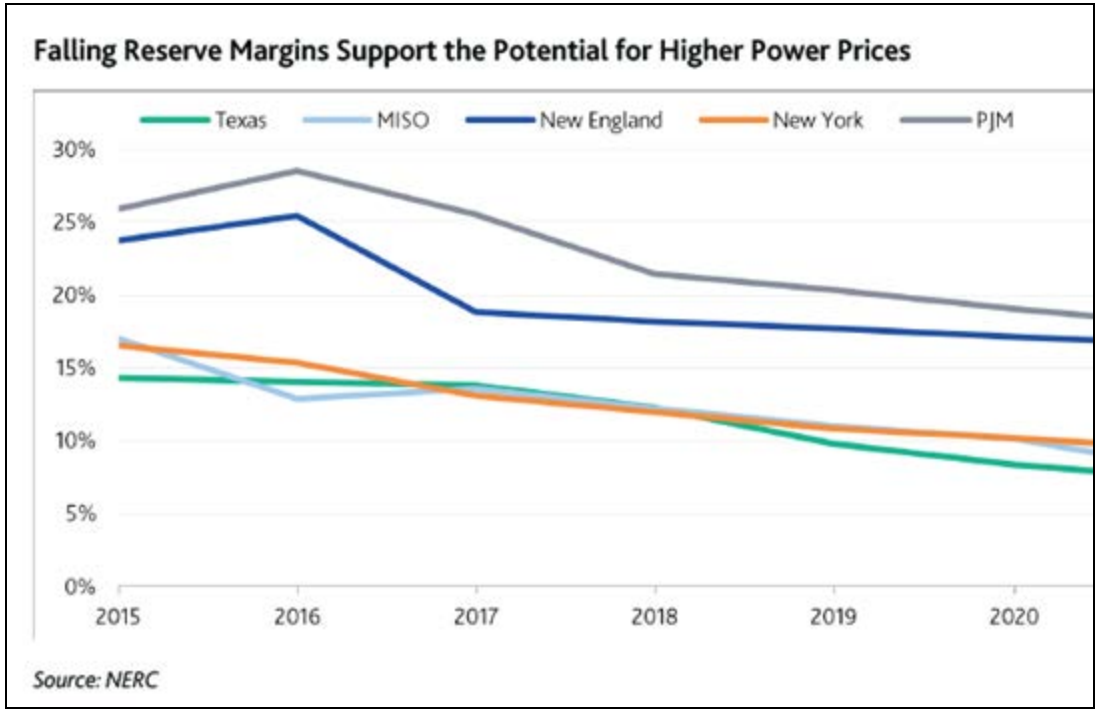
What Could Change Outlook to Positive

- 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

Lastest capacity prices	Delivery period	$/MW-day
New England	June 2017 - May 2018	230
NY Lower Hudson	Nov 2014 - April 2015	194
Upstate NY	Nov 2014 - April 2015	95
PJM	June 2017 - May 2018	120
MISO	June 2014 - May 2015	17
Texas	Real time	0



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

NEGATIVE ← **STABLE** → **POSITIVE**

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%

- 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.

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

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

EXHIBIT 1

Most Utilities' Stability and Predictability Score Is A across All Sub-sectors

Vertically Integrated Utilities - Average Factor 1B Score

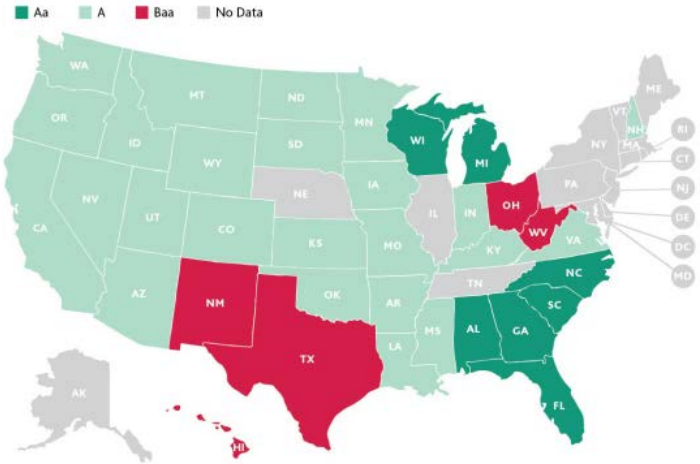
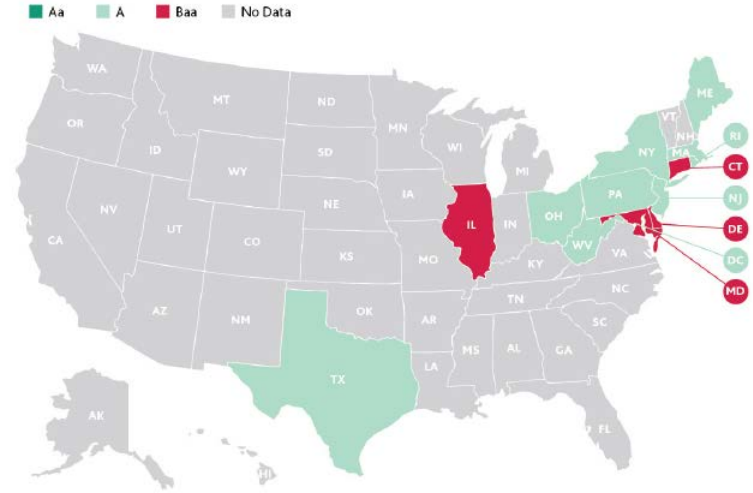


EXHIBIT 2

Transmission and Distribution Utilities - Average Factor 1B Score



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

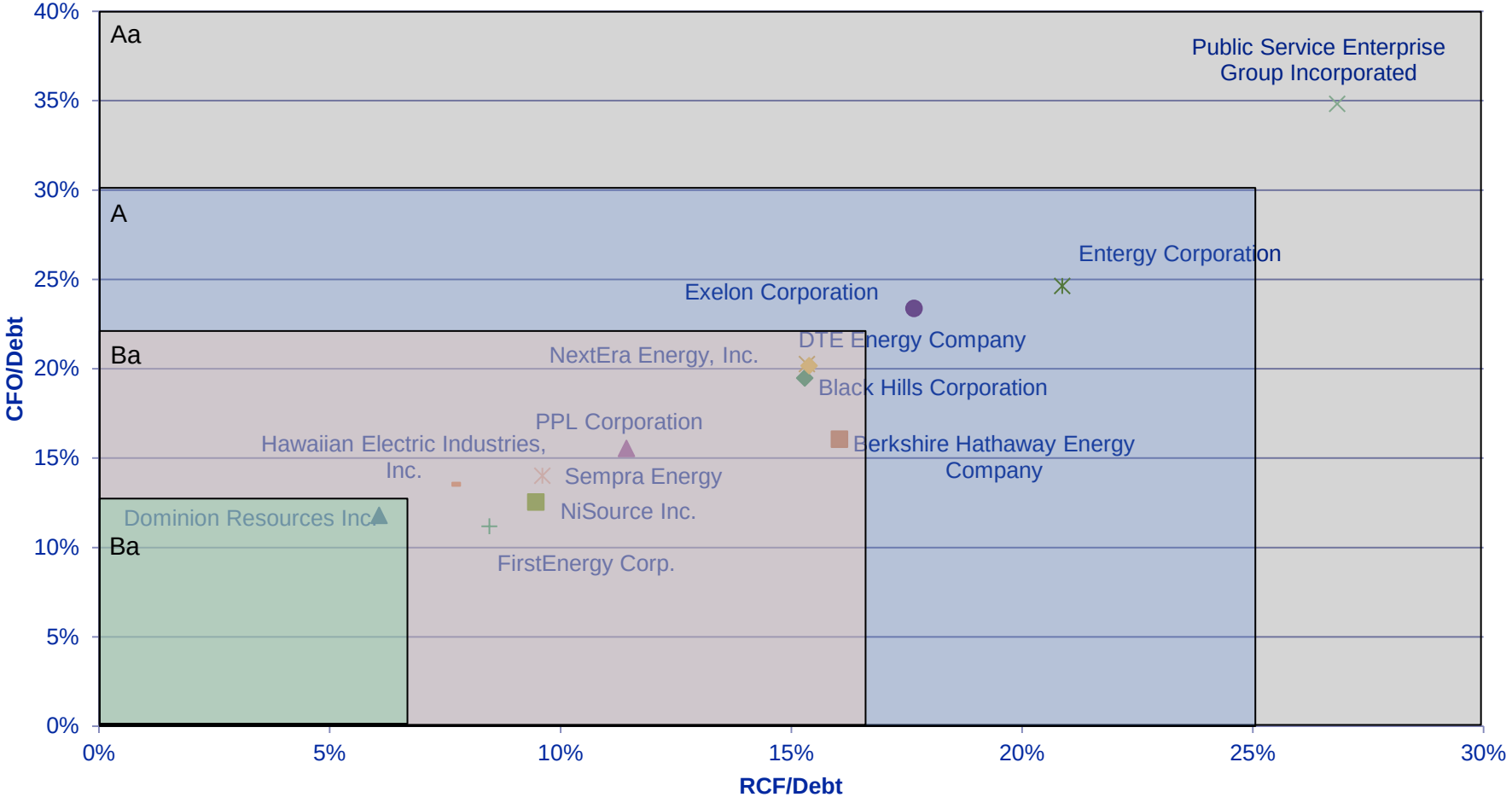
- Request for Comment feedback was supportive of our point of view
- On November 8, 2013, we placed 174 issuers on review for possible upgrade as a result of our evolving views on US utility regulation
- In January and February 2014, after conclusion of this review, 147 of these issuers were upgraded, 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

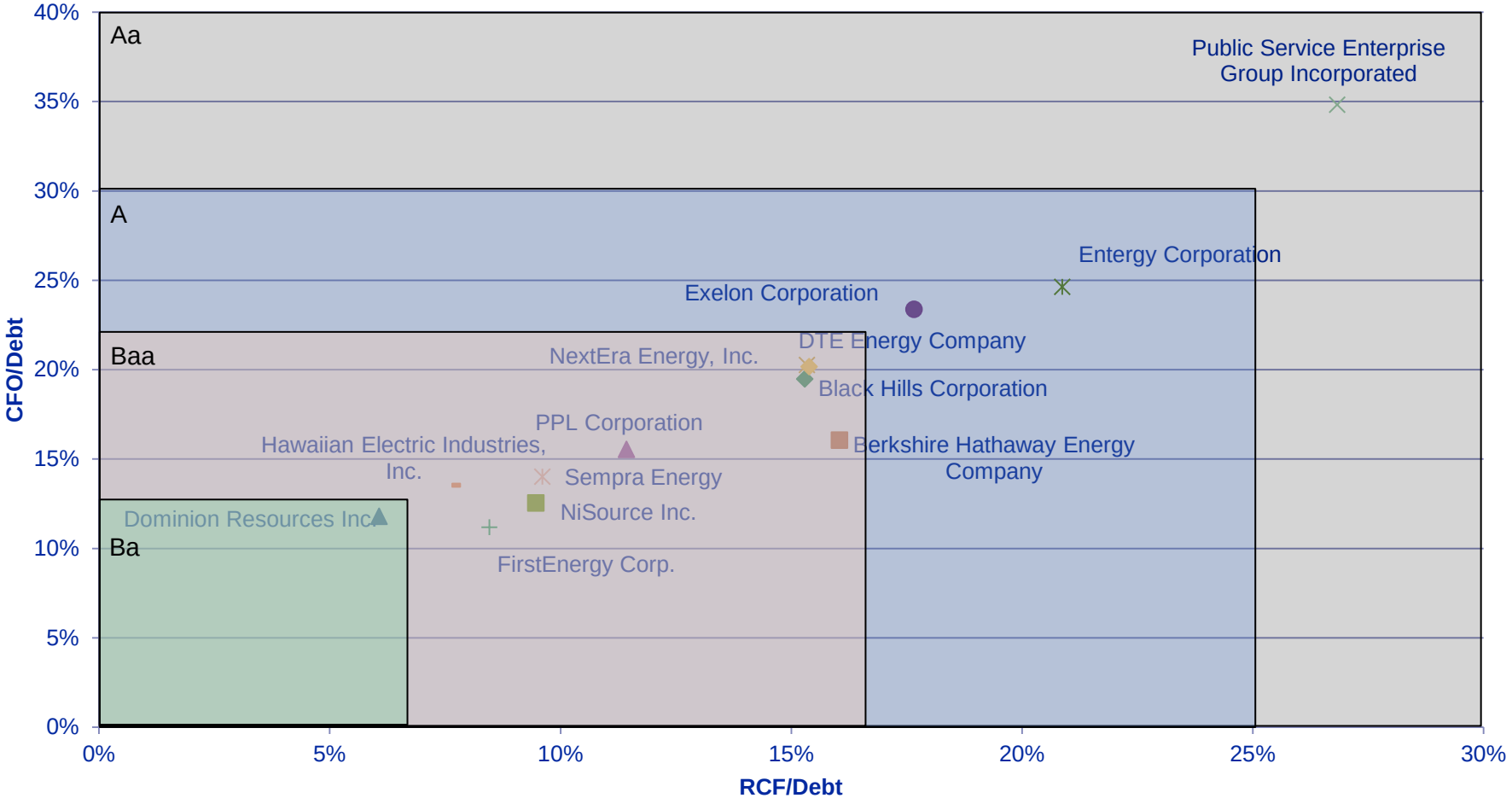
C Financial Profile

Diversified Holding Companies



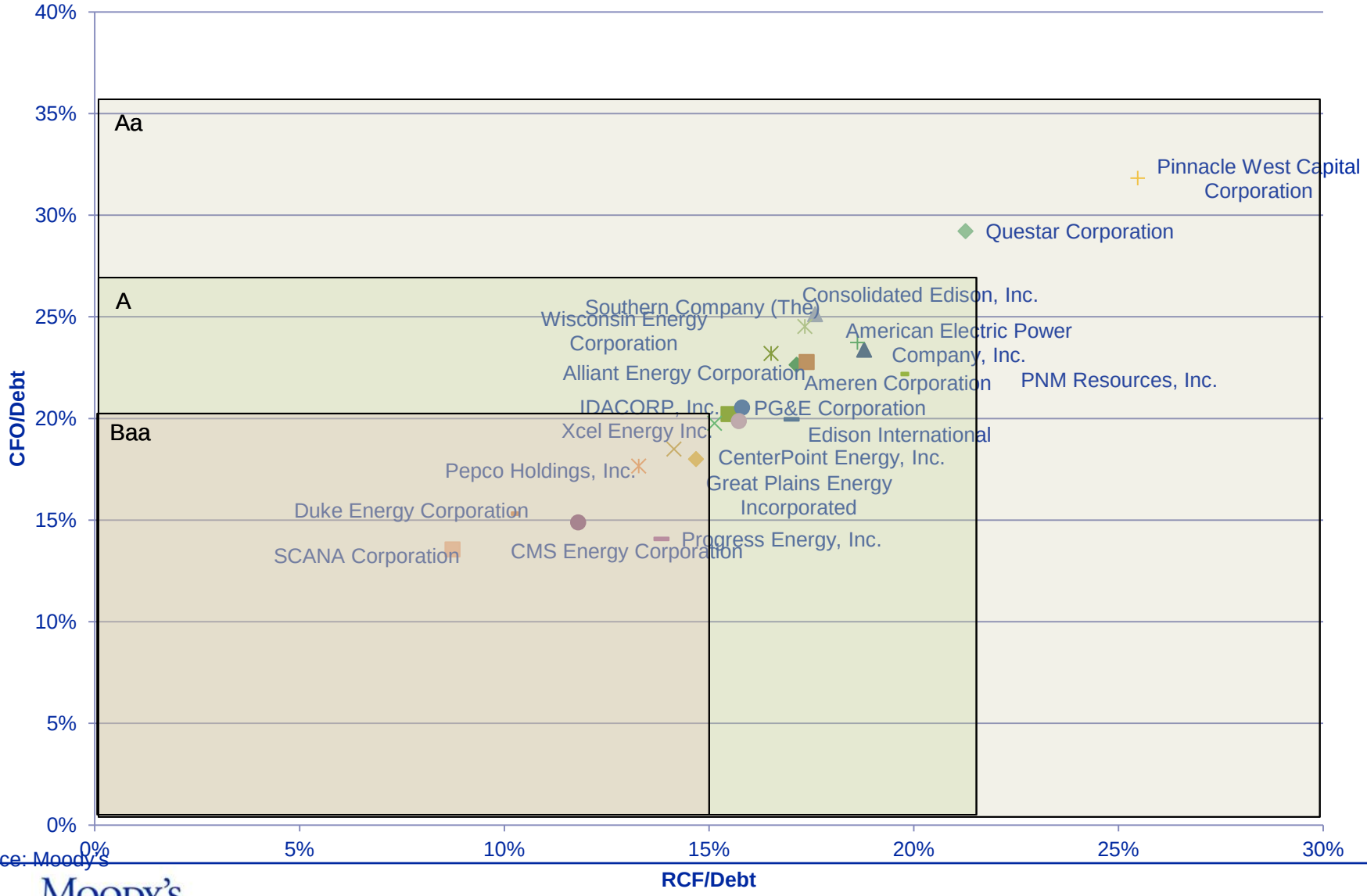
Source: Moody's

Diversified Holding Companies



Source: Moody's

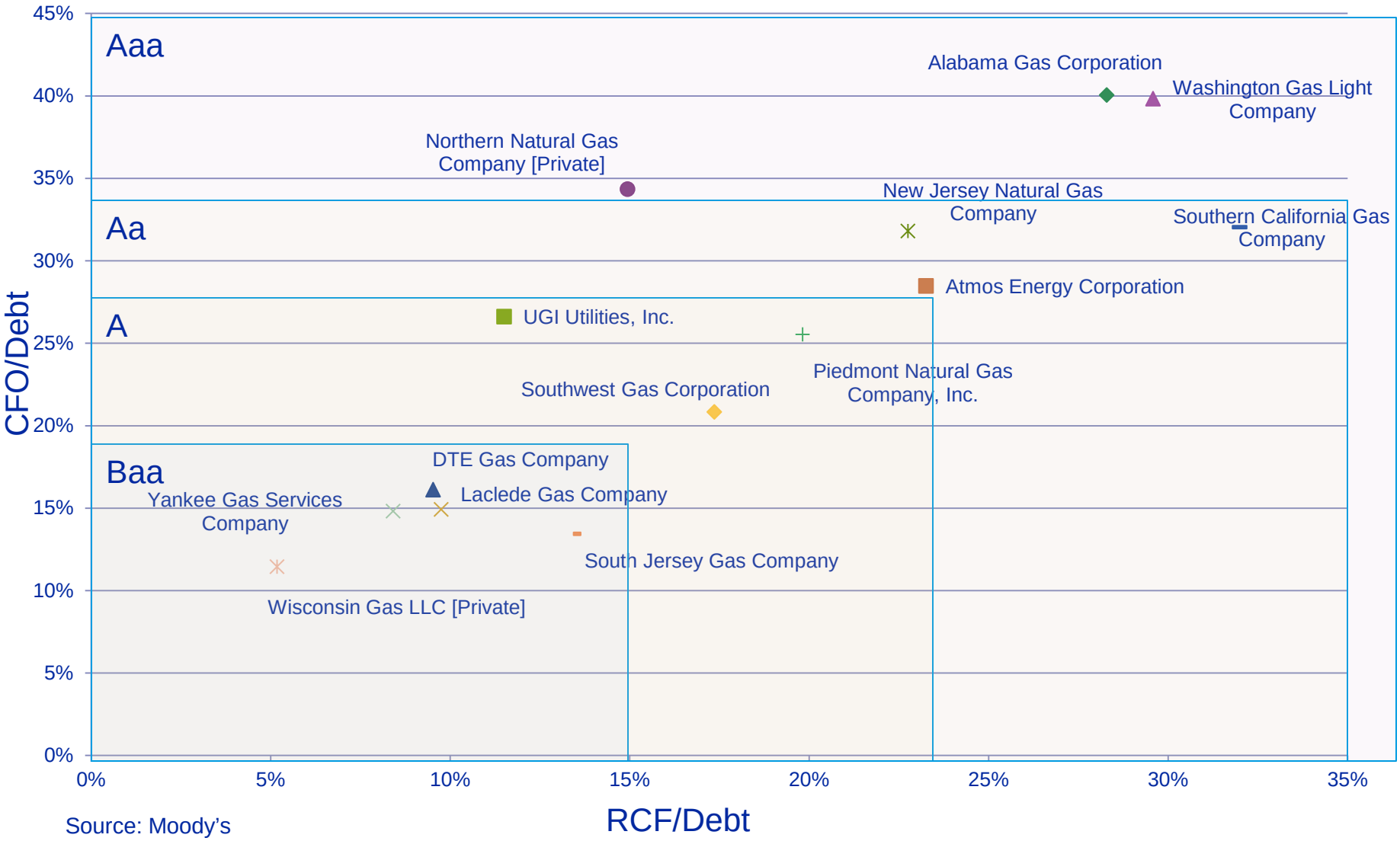
Primarily Regulated Holding Companies



Source: Moody's

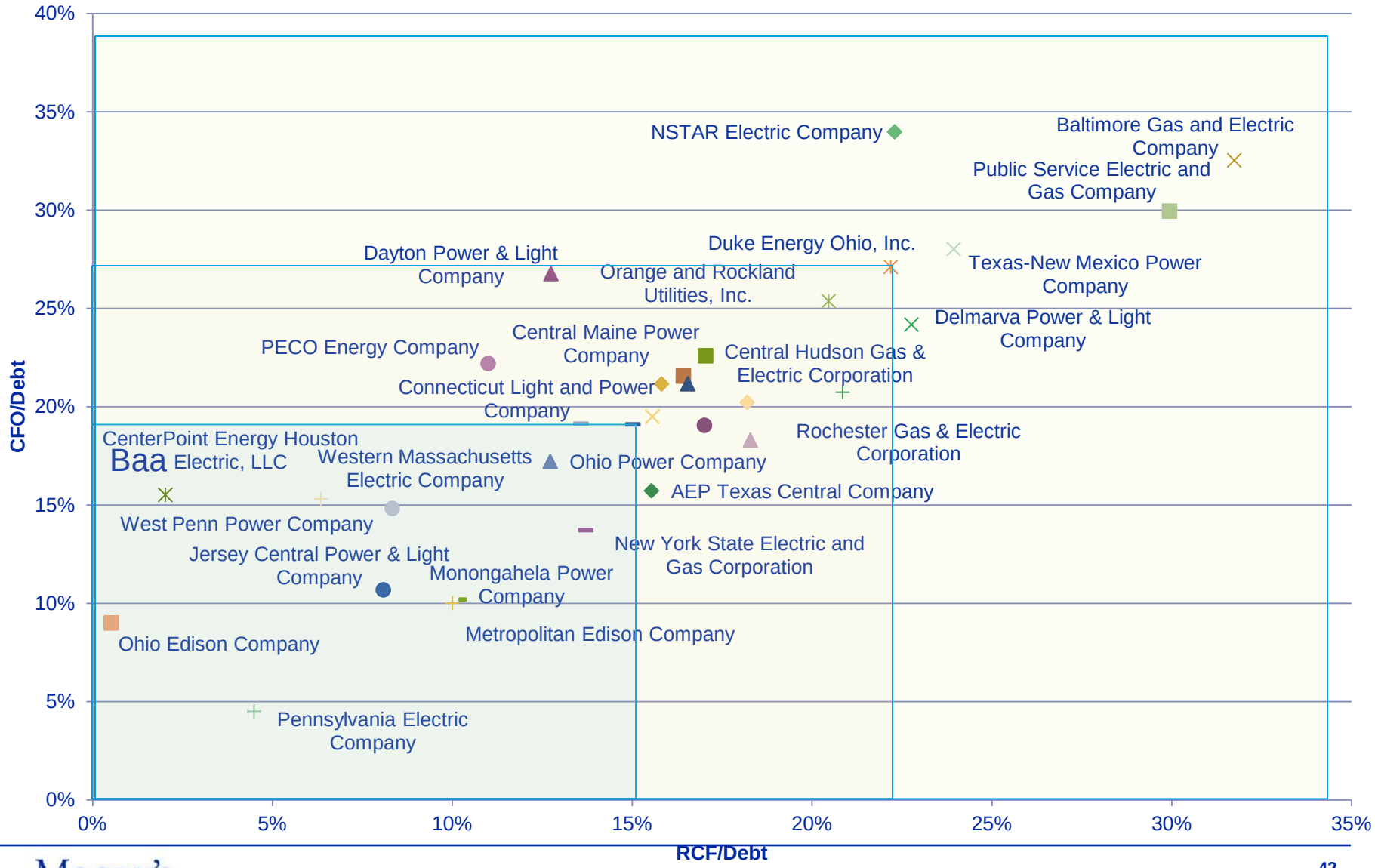
MOODY'S INVESTORS SERVICE

Local Distribution Companies



Source: Moody's

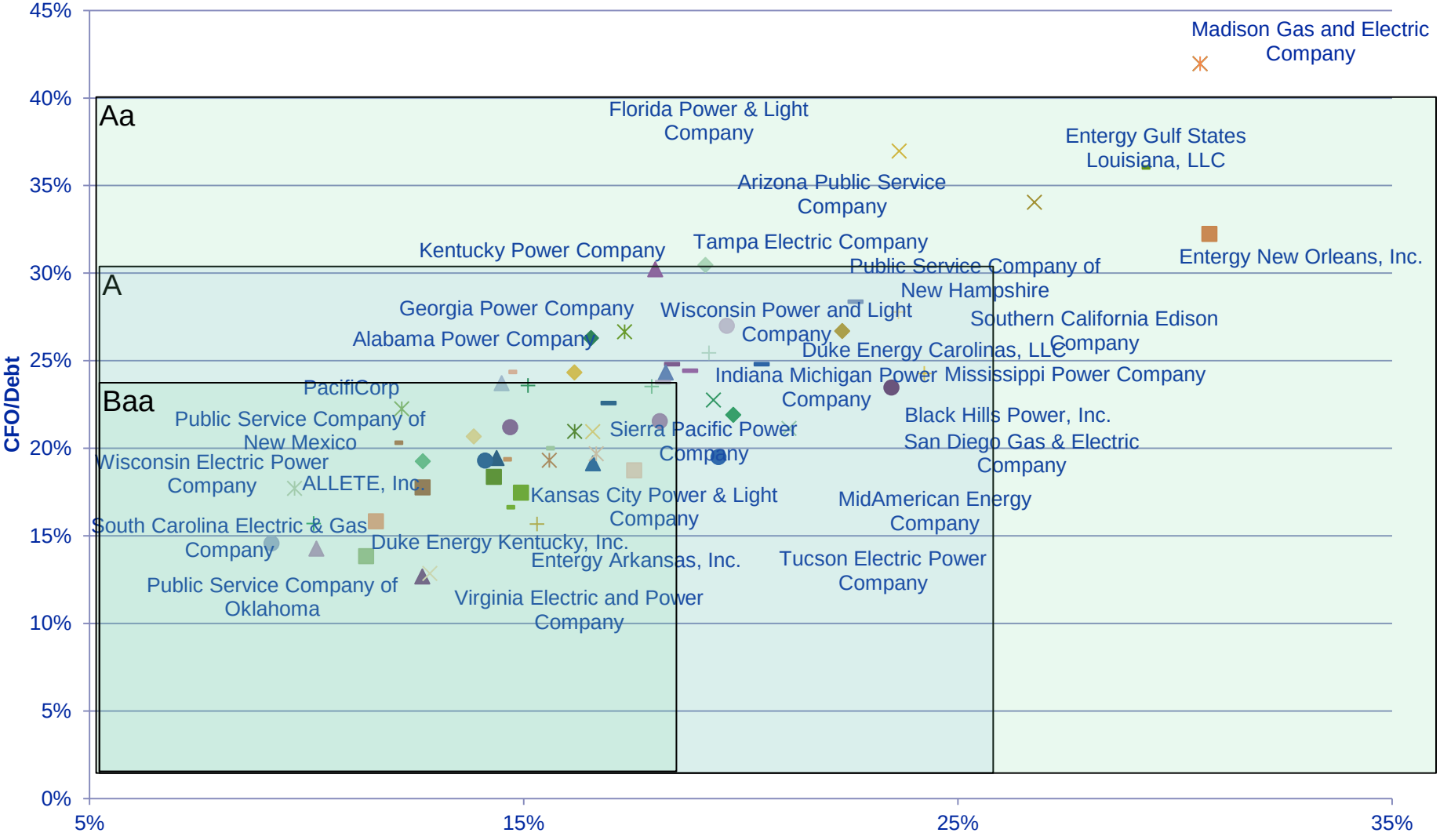
Transmission & Distribution Companies



MOODY'S INVESTORS SERVICE

Source: Moody's

Vertically Integrated Companies



Source: Moody's

D

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

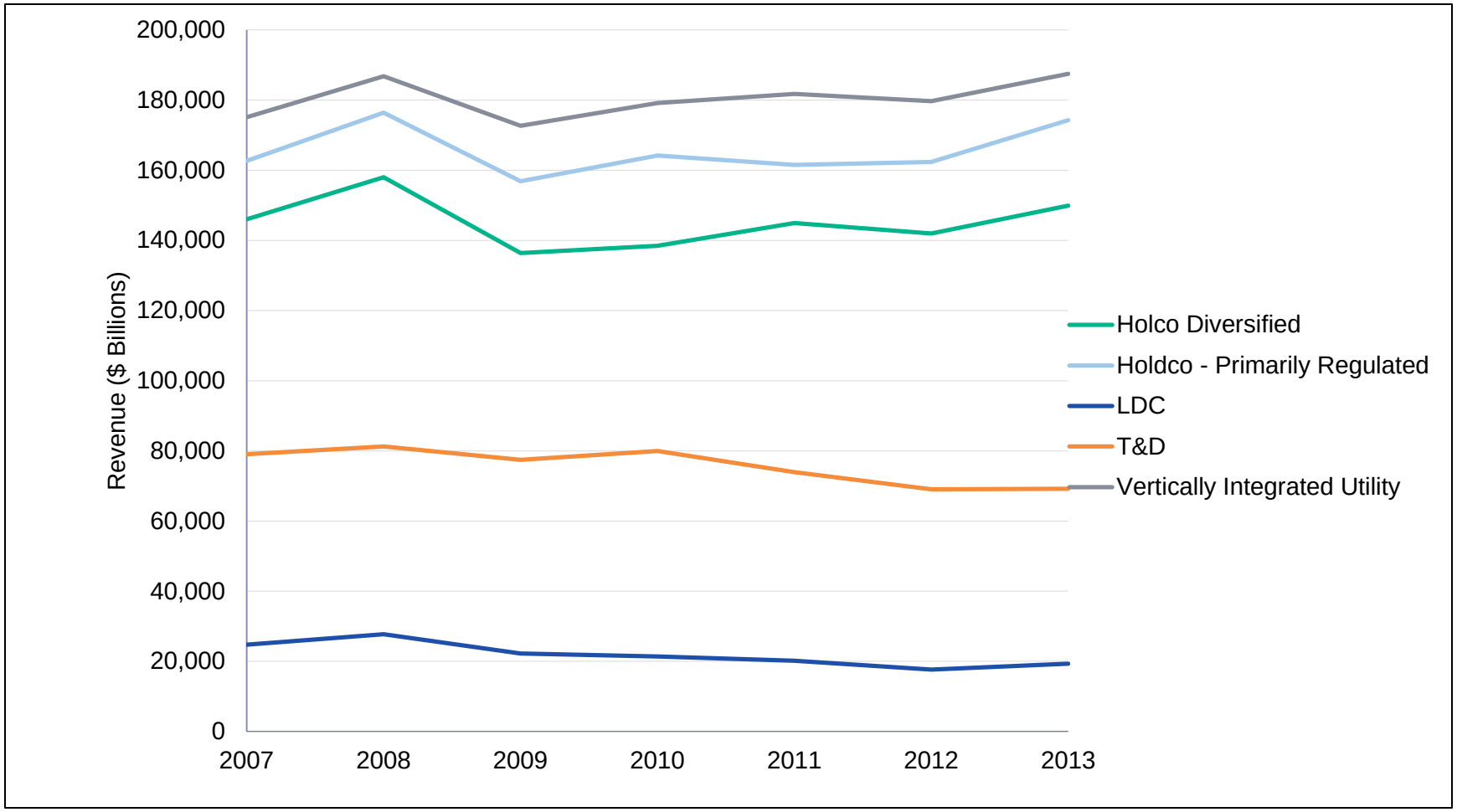
G. Generation Supply and Renewable Energy

H. YieldCos and Financial Engineering

I. Merger and De-mergers

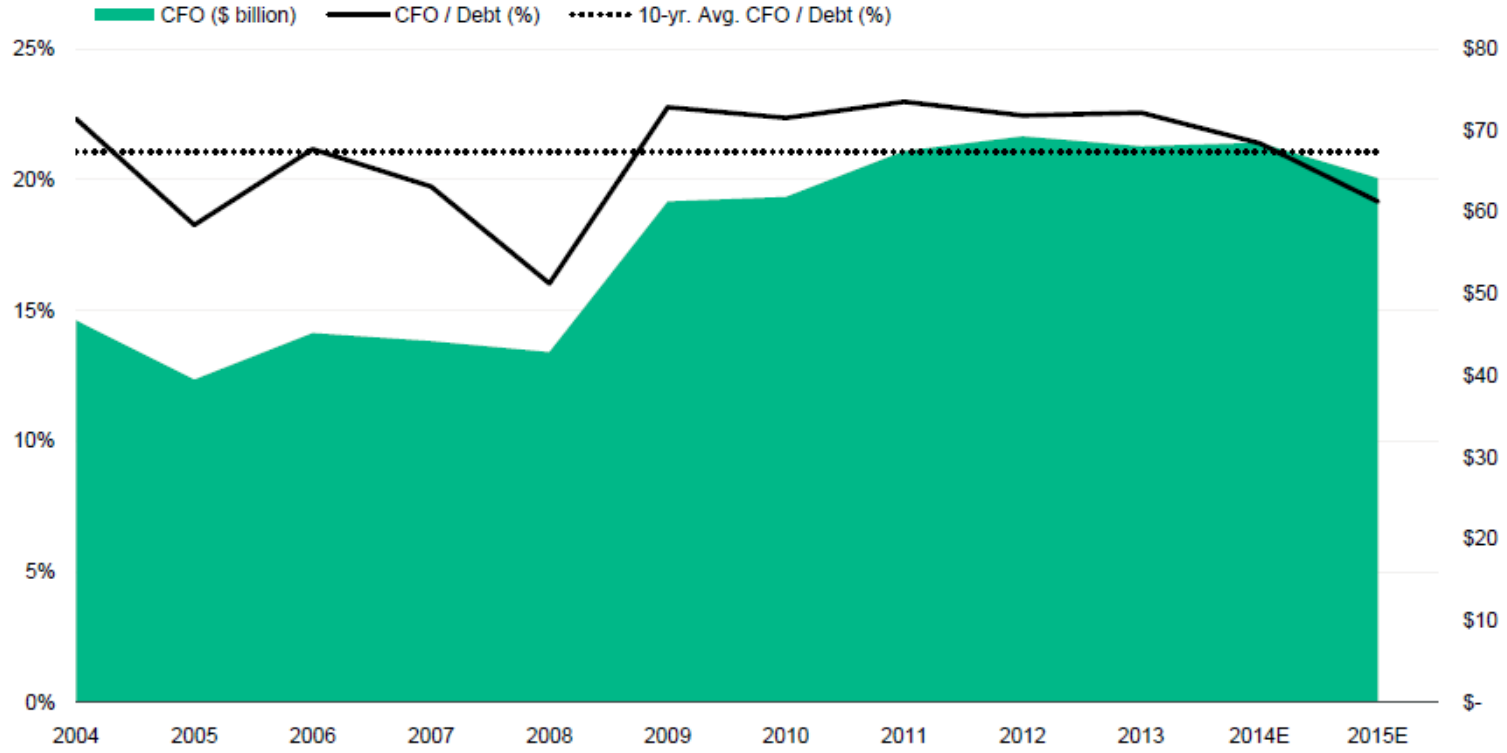
J. Infrastructure Security

Aggregate Revenue by Sub-Sector from 2007-2013



Cash Flow Stability

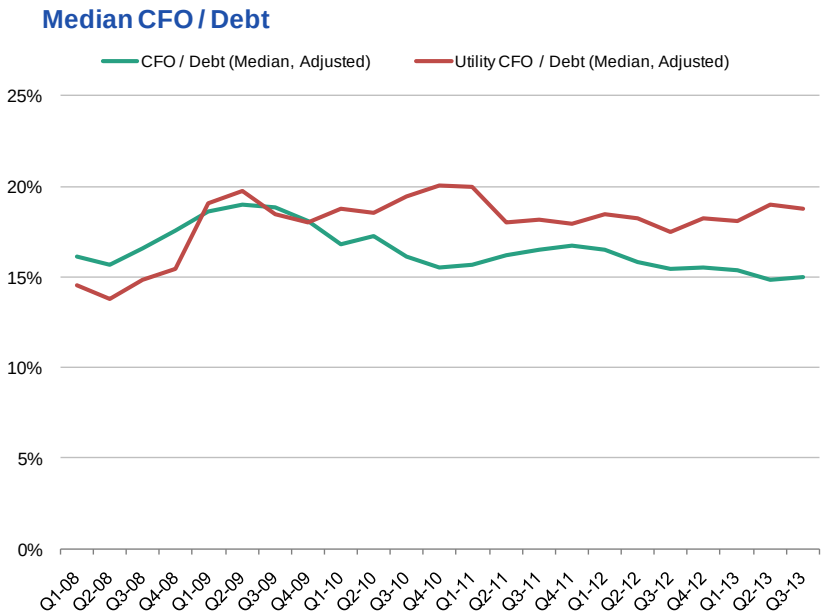
Ratio of cash flow to debt in 2015 will hover below the 10-year average

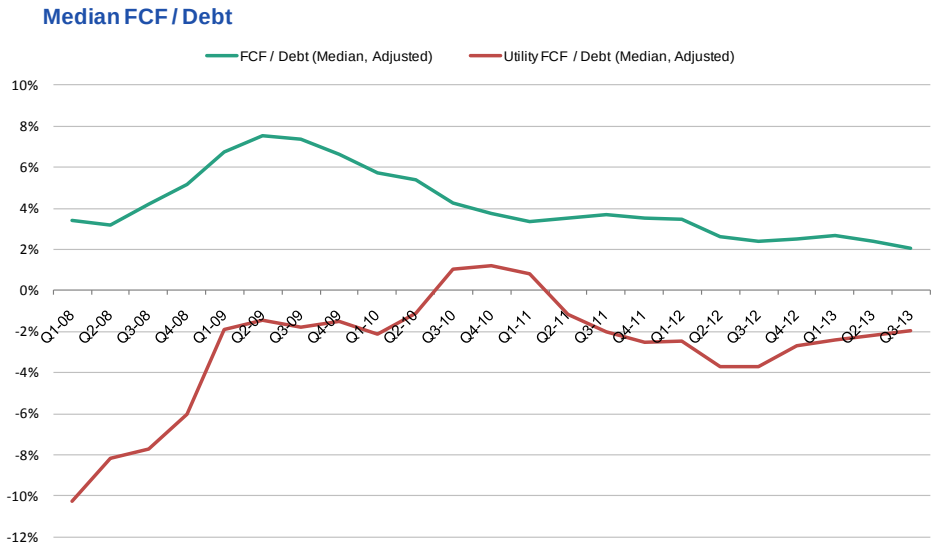


Sources: Company financials and Moody's Investors Service

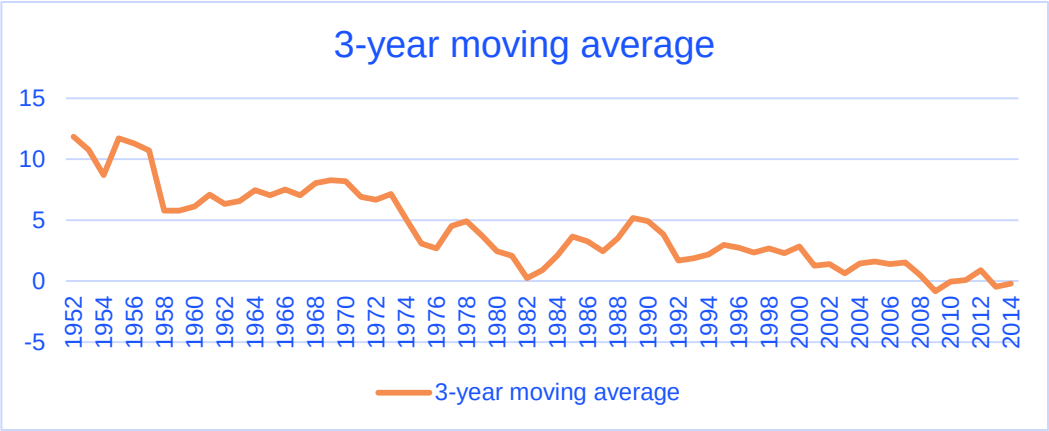
Comparison to Corporate (not updated)

(Median metrics for approx 1980 issuers within CFG Americas)



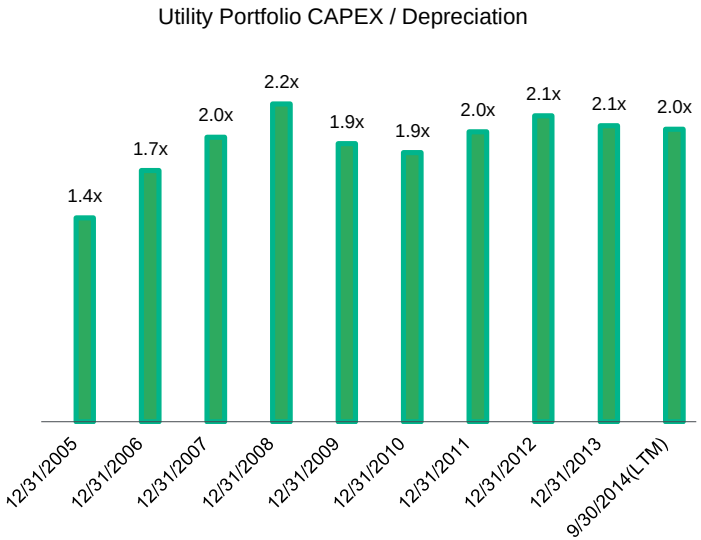


Volume and CapEx

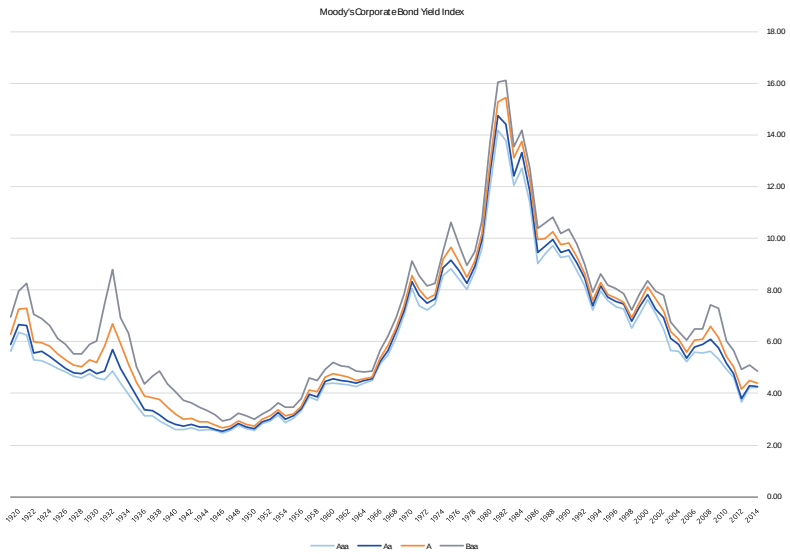


Volume growth is slowing – we think it might turn negative over next 5 – 10 years...

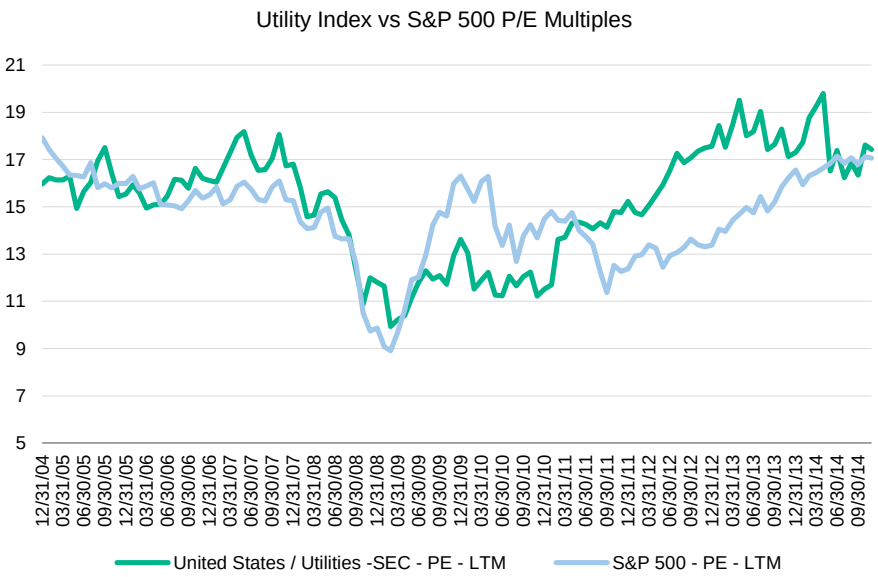
...but business model still calls for asset growth



Unfettered Access to Capital Markets



Borrowing costs remain low...



High P/E multiples suggest its a good for equity...