BEFORE THE
STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

In the Matter of

NEW YORK AMERICAN WATER COMPANY, INC.

Case 16-W-0259

September 2016

Prepared Exhibits of:

Hasan Ahmed
Senior Utility Financial Analyst

Office of Accounting, Audits and Finance
State of New York
Department of Public Service
Three Empire State Plaza
Albany, New York 12223-1350

Case 16-W-0259 **List of Exhibits** **Hasan Ahmed**

CASE 16-W-0259
New York American Water Company, Inc.
WATER RATES

STAFF OF THE DEPARTMENT OF PUBLIC SERVICE
INTERROGATORY / DOCUMENT REQUEST

Request No.: DPS-264
Requested By: Hasan Ahmed
Date of Request: July 18, 2016
Reply Date:
Witness: Mr. Paul R. Moul
Subject: Leverage Adjustment of 0.94%

Reference page 28, lines 18 to 21 of Mr. Moul's direct testimony in which he states "The 0.94% adjustment is merely a convenient way to compare the 9.89% return computed directly with the Modigliani & Miller formulas to the 8.95% return generated by the DCF model ….based on a market value capital structure."

1) Identify exactly where one could find leverage adjustment in the research work of Modigliani and Miller.

2) Provide a copy of Modigliani & Miller's research work that shows the formulas used by Mr. Moul to determine the 9.89% ROE.

Response:

1) The leverage adjustment as applied by Mr. Moul is not shown in the two articles by Modigliani and Miller. Rather these articles were included as references for the concept that leverage affects returns.

2) Pages 415 through 420 from the book Regulatory Finance: Utilities' Cost of Capital by Roger A. Morin discusses those formulas. A copy is attached. Mr. Moul modified the formula for the presence of preferred stock in the capital structure of the proxy group, so as not to ignore all forms of leverage.

Name of Respondent: Paul R. Moul **Date: August 3, 2016**

SUMMARY OF COST OF EQUITY

	Average
Proxy Group DCF ROE	8.28%
Traditional CAPM ROE	8.75%
Zero Beta CAPM ROE	9.30%
Generic (Average) CAPM ROE	9.03%
2/3 DCF & 1/3 CAPM Weighting	8.53%
ROE of Proxy Group	8.55%

Universe of Electric and Water Utilities

	Company	CIQ ID	Moody's Rating	S&P Rating	2015 % of Utility Reg. Rev.	Dividend Paying?	Not in M&A Activity?	Regulated by State Commission	Proxy Group
1	ALLETE, Inc.	IQ289272	A3	BBB+	67%	Yes	Yes	Yes	
2	Alliant Energy Corp.	IQ312949	Baa1	A-	99%	Yes	Yes	Yes	selected
3	Ameren Corp.	IQ373264	Baa1	BBB+	98%	Yes	Yes	Yes	selected
4	American Electric Power Co. Inc.	IQ135470	Baa1	BBB	82%	Yes	Yes	Yes	selected
5	Avista Corp.	NYSE:AVA	Baa1	BBB	95%	Yes	Yes	Yes	selected
6	Black Hills Corp.	IQ255902	Baa1	BBB	93%	Yes	Yes	Yes	selected
7	CenterPoint Energy Inc.	IQ279513	Baa1	A-	98%	Yes	Yes	Yes	selected
8	Cleco Corp.	IQ259829	Baa3	BBB-	94%	Yes	No	Yes	
9	CMS Energy Corp.	IQ257682	Baa2	BBB+	95%	Yes	Yes	Yes	selected
10	Consolidated Edison Inc.	IQ263295	A3	A-	89%	Yes	Yes	Yes	selected
11	Dominion Resources, Inc.	IQ267105	Baa2	BBB+	65%	Yes	Yes	Yes	
12	DTE Energy Co.	IQ266598	A3	BBB+	60%	Yes	Yes	Yes	
13	Duke Energy Corp.	IQ267850	Baa1	A-	93%	Yes	No	Yes	
14	Edison International	IQ301891	A3	BBB+	100%	Yes	Yes	Yes	selected
15	El Paso Electric Co.	IQ268503	Baa1	BBB	88%	Yes	Yes	Yes	selected
16	Empire District Electric Co.	IQ269306	Baa1	BBB	99%	Yes	No	Yes	
17	Entergy Corp.	IQ269764	Baa3	BBB+	82%	Yes	Yes	Yes	selected
18	Eversource Energy	IQ292525	Baa1	A	99%	Yes	Yes	Yes	selected
19	Exelon Corp.	IQ296181	Baa2	BBB	38%	Yes	Yes	Yes	
20	First Energy Corp.	IQ293515	Baa3	BBB-	73%	Yes	Yes	Yes	selected
21	Great Plains Energy Inc.	IQ282981	Baa2	BBB+	100%	Yes	No	Yes	
22	Hawaiian Electric Industries Inc.	IQ277854	WR	BBB-	90%	Yes	No	Yes	
23	IDACORP Inc.	IQ280458	Baa1	BBB	91%	Yes	Yes	Yes	selected
24	ITC Holdings Corp.	IQ6565801	Baa2	A-	100%	Yes	Yes	No	
25	MGE Energy, Inc.	MGEE	NR	NR	99%	Yes	Yes	Yes	selected
26	NextEra Energy, Inc.	IQ270586	Baa1	A-	67%	Yes	Yes	Yes	
27	Northwestern Corporation	IQ184841	A3	BBB	100%	Yes	Yes	Yes	selected
28	OGE Energy Corp.	IQ293569	A3	A-	100%	Yes	Yes	Yes	selected
29	Otter Tail Corp.	IQ294269	Baa2	BBB	51%	Yes	Yes	Yes	
30	PG&E Corp.	NYSE:PCG	Baa1	BBB+	100%	Yes	Yes	Yes	selected
31	Pinnacle West Capital Corp.	IQ296957	A3	A-	100%	Yes	Yes	Yes	selected
32	PNM Resources Inc.	IQ298441	Baa3	BBB+	100%	Yes	Yes	Yes	selected
33	Portland General Electric Co.	IQ297526	A3	BBB	93%	Yes	Yes	Yes	selected
34	PPL Corp.	IQ185508	Baa2	A-	100%	Yes	Yes	Yes	selected
35	Public Service Enterprise Group Inc.	IQ298482	(P)Baa2	BBB+	62%	Yes	Yes	Yes	
36	SCANA Corp.	IQ188244	Baa3	BBB+	74%	Yes	Yes	Yes	selected
37	Sempra Energy	IQ120622	Baa1	BBB+	88%	Yes	Yes	Yes	selected
38	Southern Co. (The)	IQ120623	Baa2	A-	88%	Yes	No	Yes	
39	TECO Energy Inc.	IQ306596	(P)Baa2	BBB+	100%	Yes	No	Yes	
40	Unitil Corp. (UTL)	NYSE:UTL	NR	BBB+	99%	Yes	Yes	Yes	
41	Vectren Corp.	IQ411206	NR	A-	60%	Yes	Yes	Yes	
42	WEC Energy Group	IQ315117	A3	A-	99%	Yes	Yes	Yes	selected
43	Westar Energy Inc.	IQ283024	Baa1	BBB+	83%	Yes	No	Yes	
44	Xcel Energy Inc.	IQ527542	A3	A-	99%	Yes	Yes	Yes	selected
45	American States Water	AWR	WR	A+	79%	Yes	Yes	Yes	selected
46	American Water	AWK	A3	A	87%	Yes	Yes	Yes	selected
47	Aqua America	WTR	WR	NR	96%	Yes	Yes	Yes	selected
48	Artesion Res Corp	ARTNA	NR	NR	88%	No	Yes	Yes	
49	California Water	CWT	NR	A+	97%	Yes	Yes	Yes	selected
50	Connecticut Water	CTWS	NR	A	99%	Yes	Yes	Yes	selected
51	Consolidated Water Co.	CWCO	NR	NR	96%	Yes	Yes	No	
52	Middlesex Water	MSEX	NR	A	88%	Yes	Yes	Yes	selected
53	SJW Corp.	SJW	NR	A	96%	Yes	Yes	Yes	selected
54	York Water	YORW	NR	A-	92%	Yes	Yes	Yes	selected

Total Selected **34**

Comment

Unitil Corp. (UTL)	Limited coverage by Value Line
Hawaiian Electric Industries	To be Acquired by NextEra
Cleco	To be Acquired by Investment Mngt. Company
UIL Holdings	To be Acquired by Iberdola
Teco Energy	Accepted Takeover offer from AGL Resources, announced July 2015
Southern Co.	Southern to Acquire AGL Resources, announced August 2015
Duke Energy	To Acquire Piedmont Natural Gas
Empire District Electric Co.	To be Acquired by Algonquin Power & Utilities Corp. Announced Feb 2016

PROXY GROUP STATISTICS

	Ticker	Ratings Moody's	Ratings S&P	2015 % Utility Revenue	2015 Equity Ratio 10K	S&P Business Profile	Numerical Business Risk Weighting	S&P Financial Profile	Numerical Financial Risk Weighting	Business Category
Alliant Energy Corp	LNT	Baa1	A-	99%	47.99%	Excellent	1	Significant	4	Electric & Gas Combo
Ameren Corp.	AEE	Baa1	BBB+	98%	49.11%	Excellent	1	Significant	4	Electric & Gas Combo
American Electric Power Co. Inc.	AEP	Baa1	BBB	82%	47.74%	Strong	2	Significant	4	Electric
Avista Corp.	AVA	Baa1	BBB	95%	49.52%	Strong	2	Significant	4	Electric & Gas Combo
Black Hills Corp	BKH	Baa1	BBB	93%	43.26%	Excellent	1	Significant	4	Electric & Gas Combo
Centerpoint Energy Inc.	CNP	Baa1	A-	98%	28.29%	Excellent	1	Significant	4	Electric & Gas Combo
CMS Energy Corp	CMS	Baa2	BBB+	95%	30.06%	Excellent	1	Aggressive	5	Electric & Gas Combo
Consolidated Edison Inc.	ED	A3	A-	89%	49.92%	Excellent	1	Significant	4	Electric
Edison International	EIX	A3	BBB+	100%	46.11%	Excellent	1	Significant	4	Electric & Gas Combo
El Paso Electric Co.	EE	Baa1	BBB	88%	47.26%	Strong	2	Significant	4	Electric
Entergy Corporation	ETR	Baa3	BBB+	82%	39.69%	Strong	2	Significant	4	Electric
Eversource Energy	ES	Baa1	A	99%	52.97%	Excellent	1	Significant	4	Electric & Gas Combo
First Energy Corp	FE	Baa3	BBB-	73%	38.05%	Strong	2	Significant	4	Electric
IDACORP Inc.	IDA	Baa1	BBB	91%	54.32%	Excellent	1	Aggressive	5	Electric & Gas Combo
MGE Energy, Inc.	MGEE	A1	AA-	99%	63.53%	Excellent	1	Intermediate	3	Electric & Gas Combo
Northwestern Corp	NYSE:NWE	A3	BBB	100%	47.31%	Strong	2	Significant	4	Electric & Gas Combo
OGE Energy Corp.	OGE	A3	A-	100%	54.69%	Strong	2	Intermediate	3	Electric & Gas Combo
PG&E Corp.	PCG	Baa1	BBB+	100%	50.20%	Excellent	1	Significant	4	Electric & Gas Combo
Pinnacle West Capital Corp.	PNW	A3	A-	100%	53.22%	Excellent	1	Intermediate	3	Electric & Gas Combo
PNM Resources Inc.	PNM	Baa3	BBB+	100%	43.08%	Excellent	1	Aggressive	5	Electric & Gas Combo
Portland General Electric Co.	POR	A3	BBB	93%	50.61%	Strong	2	Significant	4	Electric & Gas Combo
PPL Corp	PPL	Baa2	A-	100%	34.06%	Excellent	1	Significant	4	Electric
SCANA Corp.	SCG	Baa3	BBB+	74%	46.83%	Excellent	1	Significant	4	Electric
Sempra Energy	SRE	Baa1	BBB+	88%	44.36%	Strong	2	Significant	4	Electric & Gas Combo
WEC Energy Group	WEC	A3	A-	99%	48.33%	Excellent	1	Significant	4	Electric & Gas Combo
Xcel Energy Inc.	XEL	A3	A-	99%	44.64%	Excellent	1	Significant	4	Electric & Gas Combo
American States Water Co.	AWR	WR	A+	79%	58.85%	Excellent	1	Intermediate	3	Water
American Water Works Co. ,Inc.	AWK	A3	A	87%	46.00%	Excellent	1	Intermediate	3	Water
Aqua America	WTR	WR	A+	96%	49.24%	Excellent	1	Intermediate	3	Water
California Water	CWT	NR	A+	97%	55.31%	Excellent	1	Intermediate	3	Water
Connecticut Water	CTWS	NR	A	99%	55.27%	Excellent	1	Intermediate	3	Water
Middlesex Water Co.	MSEX	NR	A	88%	58.87%	Excellent	1	Intermediate	3	Water
SJW Corp.	SJW	NR	A	96%	49.97%	Excellent	1	Intermediate	3	Water
Median		Baa1	A-	**96.00%**	**48.33%**	Excellent	1	Significant	4	
Average of Proxy Group		Baa1	A-	**93.20%**	**47.84%**	Close to Excellent	1.3	Close to Significant	3.8	

Sources

Latest Credit Ratings from Standard & Poor's & Moody's Credit Reports
% Utility Revenue from 2015 Annual reports(10K)
2015 Equity Ratios from CapitalIQ, a business sunit of Standard and Poor's
Business & Financial Profiles From Standard & Poor's Latest Credit Reports

Staff Proxy Group
3 Month Average Price Data

Company	Three-month Price	Apr-16 High	Apr-16 Low	May-16 High	May-16 Low	Jun-16 High	Jun-16 Low
Alliant Energy Corp	$37.36	37.59	34.08	37.21	35.09	40.24	36.92
Ameren Corp.	$49.28	51.06	46.29	49.74	46.30	53.59	48.69
American Electric Power Co. Inc.	$65.22	67.19	61.42	65.97	62.61	70.10	64.04
Avista Corp.	$40.94	41.37	38.48	42.17	38.83	44.81	40.00
Black Hills Corp	$60.00	60.93	56.16	62.26	57.10	63.53	60.02
Centerpoint Energy Inc.	$22.07	21.51	20.46	22.73	21.25	24.11	22.35
CMS Energy Corp	$41.86	42.87	38.92	42.19	39.85	45.86	41.49
Consolidated Edison Inc.	$74.74	77.23	70.73	76.76	70.31	80.44	72.94
Edison International	$71.71	72.41	67.71	73.25	68.47	77.71	70.72
El Paso Electric	$45.19	46.63	43.68	46.79	42.42	47.27	44.37
Entergy Corporation	$76.80	80.06	73.25	77.90	72.67	81.36	75.56
Eversource Energy	$56.76	59.09	54.51	58.26	53.90	59.95	54.86
First Energy Corp	$33.51	36.32	31.68	34.19	31.37	34.92	32.60
IDACORP Inc.	$73.99	74.99	70.40	74.47	69.83	81.36	72.91
MGE Energy, Inc.	$51.55	52.66	47.90	52.73	49.42	56.54	50.05
Northwestern Corp	$59.00	62.51	55.91	59.44	55.34	63.30	57.52
OGE Energy Corp.	$29.96	29.62	27.27	31.07	28.97	32.75	30.09
PG&E Corp.	$59.47	60.09	56.48	60.18	56.39	63.95	59.76
Pinnacle West Capital Corp.	$74.16	75.81	70.23	74.65	70.11	81.08	73.07
PNM Resources Inc.	$32.92	33.93	30.62	33.49	31.20	35.46	32.79
Portland General Electric Co.	$40.71	40.03	37.77	41.94	39.47	44.12	40.96
PPL Corp	$37.81	38.30	36.14	39.08	37.10	39.92	36.33
SCANA Corp.	$70.03	71.27	66.02	71.22	66.58	75.67	69.40
Sempra Energy	$105.85	106.05	100.40	107.28	101.17	114.03	106.16
WEC Energy Group	$59.74	60.32	55.46	60.51	57.25	65.30	59.62
Xcel Energy Inc.	$41.32	42.04	38.43	41.98	39.69	44.78	40.99
American States Water Co.	$40.64	42.24	38.41	42.98	37.28	43.83	39.08
American Water Works Co. ,Inc.	$74.44	72.88	68.09	75.25	71.93	84.54	73.95
Aqua America	$32.39	32.36	30.31	32.93	30.83	35.66	32.26
California Water	$29.18	28.46	26.22	29.24	27.05	34.95	29.14
Connecticut Water	$48.43	47.40	43.16	49.98	45.68	56.27	48.07
Middlesex Water Co.	$36.83	36.89	30.50	38.68	33.95	44.11	36.85
SJW Corp.	$35.00	37.86	31.38	35.48	31.82	39.38	34.08

Data Source

Capital IQ
A Standard & Poor's Business

STAFF DCF APPROACH - GENERIC FINANCE METHOD

Company	Beta	Price	EPS 2019-21	DPS 2016	DPS 2017	DPS 2019-21	BPS 2016	BPS 2017	BPS 2019-21	# of Shares 2016	# of Shares 2019-21	DPS Growth 2019-21
Alliant Energy Corp	0.75	$37.36	2.45	1.18	1.25	1.50	18.05	18.75	20.00	230.00	230.00	6.27%
Ameren Corp.	0.75	$49.28	3.25	1.72	1.78	2.05	29.45	30.45	33.75	242.63	242.63	4.82%
American Electric Power Co. Inc.	0.70	$65.22	4.25	2.27	2.39	2.75	37.90	39.45	44.00	493.00	500.00	4.79%
Avista Corp.	0.75	$40.94	2.50	1.37	1.42	1.60	25.40	26.05	28.50	64.00	66.00	4.06%
Black Hills Corp.	0.90	$60.00	4.00	1.68	1.84	2.20	30.55	32.65	39.25	53.00	61.00	6.14%
CenterPoint Energy Inc.	0.85	$22.07	1.40	1.03	1.07	1.19	8.20	8.40	9.25	431.00	435.00	3.61%
CMS Energy Corp	0.70	$41.86	2.50	1.24	1.32	1.60	15.05	16.05	19.25	280.00	288.00	6.62%
Consolidated Edison Inc.	0.55	$74.74	4.25	2.68	2.76	3.00	46.65	48.05	52.25	305.20	310.00	2.82%
Edison International	0.70	$71.71	5.00	1.96	2.10	2.60	36.70	38.60	45.00	325.81	325.81	7.38%
El Paso Electric Co.	0.75	$45.19	2.50	1.23	1.23	1.50	25.90	26.80	29.50	40.55	41.00	6.84%
Entergy Corporation	0.70	$76.80	6.75	3.42	3.52	4.00	53.60	55.75	63.50	178.40	178.40	4.35%
Eversource Energy	0.75	$56.76	3.75	1.78	1.90	2.20	33.85	35.05	39.50	317.19	317.19	5.01%
First Energy Corp	0.70	$33.51	3.25	1.44	1.44	1.60	30.50	31.95	36.75	427.00	439.00	3.57%
IDACORP Inc.	0.80	$73.99	4.50	2.08	2.24	2.70	42.65	44.45	49.75	50.40	50.60	6.42%
MGE Energy, Inc.	0.70	$49.29	3.25	1.20	1.25	1.40	21.15	22.15	25.00	35.00	36.00	3.85%
Northwestern Corp	0.70	$59.00	4.00	2.00	2.08	2.32	34.05	35.25	39.50	48.50	49.50	3.71%
OGE Energy Corp.	0.95	$29.96	2.25	1.16	1.28	1.65	17.25	17.85	19.75	199.70	201.50	8.83%
PG&E Corp.	0.70	$59.47	4.50	1.82	1.90	2.35	35.70	37.75	44.25	505.00	525.00	7.34%
Pinnacle West Capital Corp.	0.75	$74.16	4.75	2.56	2.68	3.10	42.70	44.25	48.75	111.50	113.50	4.97%
PNM Resources Inc.	0.80	$32.92	2.35	0.88	0.96	1.30	22.70	23.60	25.50	80.00	80.00	10.63%
Portland General Electric Co.	0.80	$40.71	2.75	1.26	1.34	1.60	26.35	27.45	31.00	89.00	89.80	6.09%
PPL Corp.	0.70	$37.81	3.00	1.52	1.58	1.76	15.60	16.60	20.25	676.00	691.00	3.66%
SCANA Corp.	0.70	$70.03	4.75	2.30	2.42	2.60	39.70	41.75	47.50	143.00	150.00	2.42%
Sempra Energy	0.85	$105.85	8.25	3.02	3.24	3.90	49.30	51.35	61.25	250.50	258.50	6.38%
WEC Energy Group	0.65	$59.74	3.50	1.98	2.08	2.40	28.30	29.35	32.75	315.70	315.70	4.89%
Xcel Energy Inc.	0.65	$41.32	2.75	1.36	1.44	1.70	21.70	22.55	25.50	508.00	508.00	5.69%
American States Water Co.	0.75	$40.64	2.25	0.92	0.97	1.25	13.55	14.10	16.50	36.50	37.00	8.82%
American Water Works Co. ,Inc.	0.70	$74.44	3.75	1.45	1.57	2.05	29.05	30.95	34.65	179.00	187.50	9.30%
Aqua America	0.75	$29.18	1.75	0.74	0.80	1.05	10.90	11.70	13.10	177.00	177.00	9.49%
California Water	0.75	$29.18	1.60	0.69	0.71	0.99	13.55	14.25	16.00	48.00	50.00	11.72%
Connecticut Water	0.60	$48.43	2.35	1.09	1.30	1.35	21.15	21.75	22.90	11.35	12.00	1.27%
Middlesex Water Co.	0.70	$36.83	1.40	0.81	0.84	0.91	13.25	13.95	15.60	16.25	17.00	2.70%
SJW Corp.	0.75	$35.00	2.00	0.82	0.85	1.05	19.00	19.75	22.40	20.50	23.00	7.30%
Median Beta	***0.75***											
Average	***0.74***										Average	**5.81%**
Data Source	Latest Value Line Investment Survey											

STAFF DCF APPROACH - GENERIC FINANCE METHOD

Company	Retention Rate 2020	Return on Equity 2020	B x R	Increase in Shares	MBR 2016	MBR-1 V Factor	(Accretion /dilutive) Growth S x V	Sustainable Growth	Long-Form ROE	
Alliant Energy Corp	38.78%	12.38%	4.80%	0.00%	2.07	1.07	0.00%	4.80%	8.19%	1
Ameren Corp.	36.92%	9.79%	3.62%	0.00%	1.67	0.67	0.00%	3.62%	7.28%	2
American Electric Power Co. Inc.	35.29%	9.83%	3.47%	0.35%	1.72	0.72	0.25%	3.73%	7.42%	3
Avista Corp.	36.00%	8.90%	3.21%	0.77%	1.61	0.61	0.47%	3.68%	7.11%	4
Black Hills Corp	45.00%	10.50%	4.73%	3.58%	1.96	0.96	3.45%	8.17%	10.95%	5
CenterPoint Energy Inc.	15.00%	15.38%	2.31%	0.23%	2.69	1.69	0.39%	2.70%	7.60%	6
CMS Energy Corp	36.00%	13.38%	4.82%	0.71%	2.78	1.78	1.26%	6.08%	9.17%	7
Consolidated Edison Inc.	29.41%	8.25%	2.43%	0.39%	1.60	0.60	0.24%	2.66%	6.32%	8
Edison International	48.00%	11.40%	5.47%	0.00%	1.95	0.95	0.00%	5.47%	8.46%	9
El Passo Electric	40.00%	8.61%	3.44%	0.28%	1.74	0.74	0.21%	3.65%	6.55%	10
Entergy Corporation	40.74%	10.86%	4.42%	0.00%	1.43	0.43	0.00%	4.42%	8.90%	11
Eversource Energy	41.33%	9.68%	4.00%	0.00%	1.68	0.68	0.00%	4.00%	7.37%	12
First Energy Corp	50.77%	9.05%	4.59%	0.70%	1.10	0.10	0.07%	4.66%	8.75%	13
IDACORP Inc.	40.00%	9.22%	3.69%	0.10%	1.73	0.73	0.07%	3.76%	6.94%	14
MGE Energy, Inc.	56.92%	13.26%	7.55%	0.71%	2.33	1.33	0.94%	8.49%	10.60%	15
Northwestern Corp	42.00%	10.32%	4.33%	0.51%	1.73	0.73	0.37%	4.71%	8.06%	16
OGE Energy Corp.	26.67%	11.58%	3.09%	0.22%	1.74	0.74	0.17%	3.25%	8.10%	17
PG&E Corp.	47.78%	10.44%	4.99%	0.98%	1.67	0.67	0.65%	5.64%	8.88%	18
Pinnacle West Capital Corp.	34.74%	9.90%	3.44%	0.45%	1.74	0.74	0.33%	3.77%	7.43%	19
PNM Resources Inc.	44.68%	9.33%	4.17%	0.00%	1.45	0.45	0.00%	4.17%	7.55%	20
Portland General Electric Co.	41.82%	9.05%	3.78%	0.22%	1.55	0.55	0.12%	3.91%	7.32%	21
PPL Corp.	41.33%	15.31%	6.33%	0.55%	2.42	1.42	0.78%	7.11%	10.80%	22
SCANA Corp.	45.26%	10.22%	4.62%	1.20%	1.76	0.76	0.92%	5.54%	8.63%	23
Sempra Energy	52.73%	13.87%	7.31%	0.79%	2.15	1.15	0.91%	8.22%	11.01%	24
WEC Enegy Inc.	31.43%	10.88%	3.42%	0.00%	2.11	1.11	0.00%	3.42%	6.98%	25
Xcel Energy Inc.	38.18%	11.01%	4.20%	0.00%	1.90	0.90	0.00%	4.20%	7.75%	26
American States Water Co.	44.44%	13.99%	6.22%	0.34%	3.00	2.00	0.68%	6.90%	9.23%	27
American Water Works Co. ,Inc.	45.33%	11.03%	5.00%	1.17%	2.56	1.56	1.82%	6.82%	8.94%	28
Aqua Water	40.00%	13.61%	5.44%	0.00%	2.68	1.68	0.00%	5.44%	8.39%	29
California Water	38.13%	10.19%	3.89%	1.03%	2.15	1.15	1.18%	5.07%	7.82%	30
Connecticut Water	42.55%	10.35%	4.40%	1.40%	2.29	1.29	1.81%	6.21%	8.38%	31
Middlesex Water Co.	35.00%	9.14%	3.20%	1.13%	2.78	1.78	2.02%	5.22%	7.20%	32
SJW Corp.	47.50%	9.12%	4.33%	2.92%	1.84	0.84	2.46%	6.79%	9.07%	33
Average	***40.30%***	***10.90%***	***4.39%***	***0.63%***	***198.81%***	***98.81%***	***0.65%***	***5.04%***	***8.28%***	
Median	***40.74%***	***10.35%***	***4.33%***	***0.39%***	***184.21%***	***84.21%***	***0.33%***	***4.71%***	***8.10%***	

Quantitative Profiles

A PM's guide to stock picking

Bank of America Merrill Lynch

11 February 2016

Equity & Quant Strategy
United States

Quality led amid market rout; Momentum fared well

The market sell-off and spiking volatility in January had investors retreating from risk assets in search of safety. As a result, all of our return-based quality factors (High ROE, High ROC and High ROA) outperformed the index with -5.6% to -2.5% returns, making Quality (-4.3%) the best performing factor group. Quality continues to be one of our preferred themes for this year, as a hedge against rising volatility amid lower liquidity. Technical / Momentum factors held up reasonably well, with Price to 200-Day Moving Average (-3.3%) finishing among the top five factors. But unlike last year where Momentum stocks were correlated with growth stocks, Momentum's recent outperformance has been aided by its increasing exposure to Quality.

Positioning continues to matter

The most resilient factor last month was Institutional Neglect (-2.0%) – the companies with lowest proportion of shares held by institutional owners. As indiscriminate selling accelerated in January, lesser owned stocks likely experienced less selling pressure than their more crowded peers. This was consistent with last month's 5.1ppt underperformance of the 10 most overweight stocks in fund holdings (-8.4%) relative to the 10 most underweight names (-3.2%).

Dividend Yield supported by falling interest rates

The 35bp fall in 10-yr Treasury yields in January lent support to dividend paying stocks last month. High Dividend Yield (-2.4%) posted the second-best performance overall and the best return within the Cash Deployment group, while Share Repurchase (-7.1%) and High Dividend Growth (-7.8%) finished among the laggards.

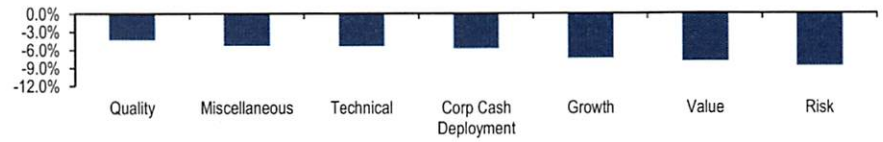
Together at last – both Growth and Value lagged

After a year when Growth outperformed Value by a wide margin, these groups have had similarly weak performance so far in 2016. The Growth factors declined 7.4% last month, with all of the growth factors lagging the index and High Projected 5-yr Growth (-9.0%) finishing among five weakest factors. The Value group of factors were down by an average of -7.9%, as all of the value factors, except for DDM Valuation (-3.2%), underperformed, with High Forward EPS Yield (-12.5%) and Low Price/Book (-10.7%) declining the most.

Worst January on the record for High Beta stocks

High Beta (-12.6%) had the worst January in our history of Beta performance since '87. Other risk factors fared better, but still fell short of the index performance, with declines of roughly 7%. Small Size (-6.7%), also a high risk segment of the market, lagged the market amid increasing risk aversion and tightening financial conditions. Companies with the highest foreign sales exposure suffered an 8.0% decline due to increasing fears of a global growth slowdown.

Chart 1: Style performance in January



Source: BofA Merrill Lynch US Equity and US Quant Strategy

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Top 5 screens in January	Perf.
Institutional Neglect	-2.0%
Dividend Yield (Total Return)	-2.4%
ROE (5-Yr Avg. Adj. by Debt)	-2.5%
DDM Valuation	-3.2%
Rel. Strength (Price/200d MA)	-3.3%
S&P 500 (Equal weighted)	**-5.7%**

Bottom 5 screens in January	Perf.
High Beta	-12.6%
Forward Earnings Yield	-12.5%
Low Price to Book Value	-10.7%
High Projected 5-Yr Growth	-9.0%
Low PE to GROWTH	-8.7%
S&P 500 (Equal weighted)	**-5.7%**

Disclaimer: The valuations and screens contained herein are useful in assessing comparative valuations and comparative earnings prospects and are not intended to recommend transactions relating to any specific security. These indicators should be used in investment decisions only with other factors including financial risk, investment risk, management strategies and operating and financial outlooks.

BofAML Universe Sector/Industry Factor Evaluation (cont'd)

												Valuation Analysis				Expectation Analysis		
	# of Comp	% Univ BOFAML	Impl. Return	Reqd Return	DDM Alpha	Eqty. Duration	BofAML Adj ßeta	P/E Ratio	Price/ Book	Yield	Surprise	Earnings (Decile) Risk	Torp	Disp	Est. Rev.	PR 5yr Growth	EPS Growth 2016E	2017E
Duration																		
8.53 To 24.83	147	12.61	14.9	12.3	2.6	21.5	1.10	12.5	2.24	2.7	4	5	6	6	5	20.3	7	11
24.85 To 28.83	147	18.66	11.8	11.1	0.7	27.3	0.98	13.6	3.30	2.5	5	5	5	5	5	11.4	6	12
28.92 To 32.85	148	16.60	10.7	10.6	0.1	30.7	0.93	15.4	2.37	2.6	6	5	6	3	5	9.2	8	11
32.87 To 37.52	147	17.17	10.0	10.3	-0.3	35.2	0.90	16	2.70	2.0	6	3	5	3	5	7.7	7	10
37.52 To 79.73	147	12.85	9.5	10.7	-1.2	40.8	0.94	21.9	4.43	0.9	6	4	5	4	5	10.7	11	16
Uncoded	509	22.12		11.9			1.06	18.4	1.90	2.7	5	6	5	6	6	8.8	5	nm
Growth Sectors																		
Growth	458	32.18	11.8	11.7	0.1	31.9	1.04	18.8	3.24	1.2	5	4	6	5	4	15.4	10	16
Growth Cyclical	308	20.81	11.6	12.2	-0.6	29.6	1.09	14.1	2.51	2.3	6	5	5	5	6	10.0	5	13
Growth Defensive	126	11.46	10.4	9.8	0.6	31.4	0.85	16.5	2.84	3.2	6	5	5	4	6	9.7	7	12
Cyclical	219	15.10	12.0	13.0	-1	29.1	1.17	12.5	1.69	2.4	5	5	6	5	6	11.0	7	10
Defensive	134	20.45	10.1	8.9	1.2	32.7	0.76	16.7	2.48	3.4	5	5	4	4	5	5.4	4	15
EPS Surprise																		
Most Optimistic	210	18.47	12.2	11.3	0.9	29.4	1.01	15.8	2.35	2.3	2	5	6	5	5	14.2	14	13
Optimistic	210	17.40	11.9	11.4	0.5	28.7	1.01	15	2.42	2.6	4	5	5	5	5	10.5	8	12
Neutral	211	18.28	10.9	11.1	-0.2	33.2	0.98	17.9	3.33	1.5	6	4	6	4	5	12.2	11	13
Less Optimistic	209	23.79	11.0	11.2	-0.2	30.7	0.99	14.2	2.57	2.5	7	5	5	4	5	9.0	3	12
Not Optimistic	210	13.60	10.4	10.4	0	33.1	0.91	16.4	2.41	2.8	10	5	5	4	5	9.6	2	17
Uncoded	195	8.47	9.5	11.7	-2.2	39.5	1.04	18.7	2.20	1.9		5	5	5	5	9.0	1	16
Quality Rank																		
A+	25	8.37	10.7	9.8	0.9	32.3	0.85	16	4.25	2.4	6	2	5	3	5	9.0	4	8
A	47	11.50	10.1	9.9	0.2	33.1	0.86	19.7	3.73	2.7	6	3	4	3	6	7.1	2	16
A-	71	16.48	11.3	10.9	0.4	30.8	0.96	17.1	3.22	2.0	6	3	6	4	5	10.9	7	14
B+	190	25.66	11.1	11.0	0.1	30.6	0.97	13.5	2.61	2.4	6	5	6	4	5	9.1	6	11
B	186	12.09	11.3	11.5	-0.2	30.9	1.02	16.5	2.00	2.6	5	7	5	5	6	7.6	5	16
B-	148	6.29	12.0	14.6	-2.6	30.1	1.33	12.9	1.27	2.0	6	8	6	5	6	11.5	1	16
C & D	62	2.67	14.5	12.7	1.8	29.0	1.15	55	5.42	0.1	4	10	7	8	4	36.7	318	58
Not Rated	516	16.96	12.1	11.8	0.3	30.6	1.05	15.8	2.13	2.3	5	6	6	5	5	15.5	14	14
B+ or Better	333	62.00	10.9	10.6	0.3	31.3	0.93	15.6	3.09	2.4	6	4	5	4	5	9.2	5	12
B or Worse	912	38.00	12.0	12.2	-0.2	30.5	1.10	16.2	1.95	2.2	5	7	6	6	5	13.7	10	16
BofAML Universe	**1245**	**100.00**	**11.3**	**11.2**	**0.1**	**31.1**	**0.99**	**16**	**2.54**	**2.3**						**10.7**	**7**	**14**
S&P 500	**504**	**93.41**	**11.3**	**11.0**	**0.3**	**31.0**	**0.98**	**15.8**	**2.58**	**2.2**						**10.1**	**6**	**13**

Source: BofA Merrill Lynch US Equity and US Quant Strategy

Quantitative Profiles

A PM's guide to stock picking

Bank of America Merrill Lynch

09 March 2016

From quality to trash in February

Relatively benign factor returns in February obscure big intra-month swings (Chart 1). Most factor groups saw big declines (6% to 10%) before recovering to neutral / positive territory by the end of February. Risk and Value factors generally posted the strongest gains since the market trough. For the full month of February, Cash Deployment factors led, with Share Repurchase (+3.9%) and High Dividend Yield (+3.7%) the winners and High Dividend Growth the laggard. In the year to date, Quality factors remain in the lead (-1.9%) and Risk factors are the biggest laggards (-8.8%,) but have dramatically reversed in March, with Risk staging the best returns of all factor groups so far in March.

Momentum breakdown heralds a regime change

Momentum finished last in February, dragged down by its exposure to high growth names that led for most of last year. Notably, Projected 5-yr Growth (unch.) lagged, and the "FANG" (Facebook, Amazon, Netflix and Alphabet [Google]) stocks suffered a similar fate, underperforming the market for most of 2016, regardless of market direction.

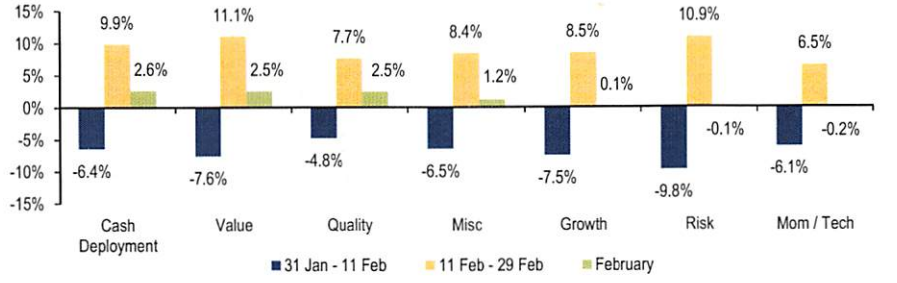
Valuation starting to matter

After multiple years of lackluster returns, Value factors bounced back in February and are slightly ahead for the year as expected. But leverage matters, in that enterprise value (EV)-based valuation signals like High FCF/EV and Low EV/EBITDA turned in better performance than equity based signals like P/E or Price to Book.

Small Size bounce, Institutional Neglect still working

Small companies gained 3.0% last month, pushing Small Size ahead for the year, but this positive trend is unlikely to persist, in our view. Foreign-exposed names (+1.9%) also rallied, possibly driven by a reversal in the dollar. Institutional Neglect (+1.5%) remained a powerful factor as the active community continues to de-risk, and we saw similar trends in our fund holdings work –the contrarian strategy of buying the 10 most underweighted stocks by actively managed funds and selling the 10 most overweighted names returned about 2% in February, clocking in 7% returns YTD.

Chart 1: Factor Group Performance in February



Source: BofA Merrill Lynch US Equity and US Quant Strategy

BofA Merrill Lynch is currently acting as financial advisor to Deutsche Boerse AG in connection with its proposed transaction with London Stock Exchange Group Plc (the "Proposed Transaction"), which was announced on 23 February 2016. On 1 March 2016, Intercontinental Exchange Inc announced that it was considering making an offer for London Stock Exchange Group Plc. The Proposed Transaction is subject to approval by shareholders of Deutsche Boerse AG and London Stock Exchange Group Plc. This research report is not intended to (1) provide voting advice, (2) serve as an endorsement of the Proposed Transaction, or (3) result in the procurement, withholding or revocation of a proxy.

BofA Merrill Lynch is connected to Anheuser-Busch InBev SA/NV with its proposed acquisition of SABMiller Plc, which was announced on 16 September 2015. The proposed transaction is subject to approval by shareholders of Anheuser-Busch InBev SA/NV and SABMiller Plc. This deal will be subject to the UK Takeover Panel code. This research report is not intended to (1) provide voting advice, (2) serve as an endorsement of the proposed transaction, or (3) result in the procurement, withholding or revocation of a proxy.

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Refer to Important disclosures on page 64 to 65.

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Top 5 screens in Feb.	Perf.
Low Price to Cash Flow	4.4%
High Free Cash Flow to EV	4.1%
Share Repurchase	3.9%
Dividend Yield (Total Return)	3.7%
Low EV/EBITDA	3.7%
S&P 500 (Equal weighted)	**1.0%**

Bottom 5 screens in Feb.	Perf.
High EPS Estimate Dispersion	-1.9%
Short Interest	-1.6%
Price Ret. (11m since 1yr ago)	-1.4%
Price Returns (12-m plus 1-m)	-1.0%
Low Price to Book Value	-0.9%
S&P 500 (Equal weighted)	**1.0%**

Disclaimer: The valuations and screens contained herein are useful in assessing comparative valuations and comparative earnings prospects and are not intended to recommend transactions relating to any specific security. These indicators should be used in investment decisions only with other factors including financial risk, investment risk, management strategies and operating and financial outlooks.

BofAML Universe Sector/Industry Factor Evaluation (cont'd)

			Valuation Analysis									Expectation Analysis						
												Earnings (Decile)				PR 5yr	EPS Growth	
	# of Comp	% Univ BOFAML	Impl. Return	Reqd Return	DDM Alpha	Eqty. Duration	BofAML Adj ßeta	P/E Ratio	Price/ Book	Yield	Surprise	Risk	Torp	Disp	Est. Rev.	Growth	2016E	2017E
Duration																		
7.74 To 24.61	150	14.24	14.9	12.2	2.7	21.2	1.07	13.3	2.08	2.7	4	5	6	6	6	20.5	5	16
24.67 To 28.85	151	21.35	11.8	11.2	0.6	27.2	0.97	13.8	3.36	2.6	5	5	5	4	5	11.3	7	12
28.86 To 32.67	151	16.34	10.6	11.2	-0.6	31.0	0.97	15.5	2.37	2.5	6	4	5	3	5	8.7	6	11
32.73 To 37.44	151	19.00	10.2	10.5	-0.3	35.1	0.90	17.4	3.01	1.7	7	3	5	3	4	9.4	8	11
37.45 To 79.45	150	8.85	9.4	11.1	-1.7	41.7	0.96	21	4.22	0.8	6	4	5	4	5	10.1	6	13
Uncoded	486	20.21		11.9			1.04	18	1.90	2.7	5	6	5	6	6	9.3	6	nm
Growth Sectors																		
Growth	456	32.64	11.9	12.0	-0.1	31.3	1.05	18.5	3.23	1.2	6	4	6	5	4	15.0	10	17
Growth Cyclical	305	20.42	11.6	12.5	-0.9	29.6	1.09	14.3	2.55	2.3	6	5	5	4	5	11.3	4	12
Growth Defensive	125	11.85	10.6	9.7	0.9	30.9	0.83	16.5	2.82	3.1	6	4	5	4	5	8.7	8	9
Cyclical	218	14.91	12.1	13.3	-1.2	28.9	1.17	12.6	1.69	2.4	5	5	5	5	6	10.5	5	11
Defensive	135	20.18	10.7	9.0	1.7	30.6	0.76	16.6	2.49	3.4	5	5	4	4	5	7.6	4	14
EPS Surprise																		
Most Optimistic	208	18.38	12.6	11.0	1.6	28.2	0.95	18.1	2.38	2.3	1	6	5	6	6	15.2	8	20
Optimistic	208	17.12	12.0	12.4	-0.4	28.4	1.09	13.4	2.16	2.7	4	4	5	4	5	11.7	11	11
Neutral	210	16.10	11.4	11.9	-0.5	30.2	1.04	14.3	2.22	2.1	6	5	5	5	5	9.9	8	12
Less Optimistic	209	21.56	11.0	10.8	0.2	31.3	0.93	15.5	3.40	2.4	7	4	5	4	5	10.0	4	13
Not Optimistic	208	17.92	10.6	10.6	0	33.3	0.91	17.7	3.11	2.1	10	4	5	4	4	10.6	3	11
Uncoded	196	8.92	11.0	11.9	-0.9	34.7	1.04	18.4	2.16	1.9		5	5	4	5	10.0	-1	12
Quality Rank																		
A+	21	5.88	11.2	10.7	0.5	30.9	0.92	15.8	4.76	2.3	6	2	5	3	4	11.1	4	10
A	44	12.07	9.9	9.4	0.5	33.7	0.80	18.4	4.31	2.6	7	3	4	3	5	7.0	3	9
A-	72	18.17	11.7	10.9	0.8	29.0	0.94	16.7	3.27	2.1	6	3	5	4	4	12.2	5	14
B+	190	24.89	11.2	11.4	-0.2	30.2	0.99	13.9	2.56	2.5	6	5	5	4	5	8.3	4	11
B	184	12.55	11.4	11.5	-0.1	30.8	1.00	14.5	2.08	2.7	5	7	5	5	5	8.7	7	11
B-	162	8.06	13.0	14.2	-1.2	29.1	1.26	18.2	1.53	1.6	4	8	6	7	7	16.0	-1	26
C & D	64	1.28	10.2	14.7	-4.5	41.4	1.31	85	3.31	0.1	7	9	6	8	5	22.7	249	134
Not Rated	502	17.11	12.4	11.9	0.5	29.3	1.04	15.9	2.07	2.2	5	6	6	5	5	17.1	14	16
B+ or Better	327	61.00	11.1	10.8	0.3	30.5	0.93	15.6	3.16	2.4	6	4	5	4	5	9.5	4	11
B or Worse	912	39.00	12.1	12.3	-0.2	30.1	1.08	16.3	1.95	2.1	5	7	6	5	5	14.3	9	17
BofAML Universe	**1239**	**100.00**	**11.5**	**11.4**	**0.1**	**30.4**	**0.99**	**16.2**	**2.55**	**2.3**						**11.2**	**6**	**13**
S&P 500	**504**	**92.89**	**11.5**	**11.2**	**0.3**	**30.1**	**0.98**	**15.9**	**2.60**	**2.2**						**10.3**	**5**	**13**

Source: BofA Merrill Lynch US Equity and US Quant Strategy

Quantitative Profiles

A PM's guide to stock picking

Bank of America Merrill Lynch

13 April 2016

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2015's winners are 2016's losers - no more growth or mo'

Amid one of the biggest intra-quarter market reversals in history, 1Q16 was a tough quarter for stock-pickers. Few styles or attributes worked in both halves (pre- and post-2/11), but Momentum stocks—the best performers in 2015—consistently lagged. This group ended 1Q in the red (-0.3%), with longer-term momentum factors some of the biggest laggards. We have been cautious on momentum stocks, given their stretched valuations, crowded positioning and market volatility. Growth stocks—2015's other best-performing group—also lagged in 1Q (-1.1%), with High L-T Growth stocks faring worst.

Cheap stocks are starting to outperform

Value factors, which lagged both last year and in the first half of 1Q, recovered during the market bounce (+21% vs. +15% for the equal-weighted benchmark), gaining 2.8% for the quarter. Cash-flow based valuation factors in general turned in the best performance, led by Low Price to Cash Flow (+6.7%). But performance varied across the Value category, as low Forward EPS Yield was the worst-performing factor overall (-2.8%), likely owing to its high exposure to Financials (-5.6% in 1Q). We continue to favor Value over Growth in 2016, with a preference for Free Cash Flow to Enterprise Value. As capital is repriced, companies generating cash should outperform cash users (growth stocks).

Dividend yield led all

Dividend Yield (+12.1%) was 1Q's best performing factor amid the decline in rates, leading in both halves. Other cash return factors were mixed –Share Repurchase lagged in March but led in 1Q, while Dividend Growth lagged both in March and in 1Q.

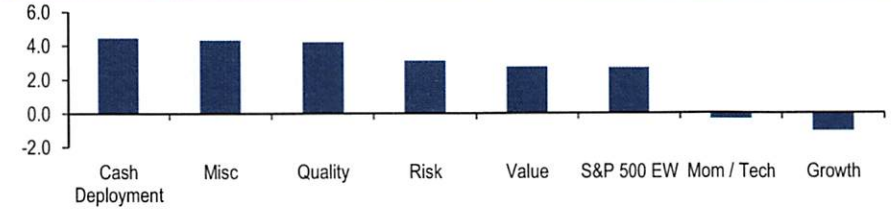
Stick with Quality

Though Quality lagged during March's risk-rally, it outperformed in 1Q. All of the return-based quality factors we track led the benchmark in 1Q, with gains of 2.8% to 5.5%. We continue to like Quality both this year and for the long-term, as it remains cheap, underowned, fundamentally attractive, and a hedge against volatility and downturns.

More reversals in April

While the S&P 500 is little-changed month-to-date, some of 1Q's winners – Quality and Value – have lagged in April, while Growth—1Q's worst-performing group—has led. Risk factors (led by High Estimate Dispersion) and smaller stocks—two of the best-performing groups last month—have continued to lead in April. Momentum has performed in-line with index, though a few long-term momentum factors have started to work again this month.

Chart 1: Factor Group Performance in 1Q16



Top 5 screens in 1Q.	Perf.
Dividend Yield (Total Return)	12.1
Small Size	10.2
Low Price	8.3
Low Price to Cash Flow	6.7
Institutional Neglect	6.0
S&P 500 (Equal weighted)	**2.7%**

Bottom 5 screens in 1Q.	Perf.
Forward Earnings Yield	-2.8
High Beta	-2.5
Upward Estimate Revisions	-1.9
High Projected 5-Yr Growth	-1.9
Price Ret. (11m since 1yr ago)	-1.7
S&P 500 (Equal weighted)	**2.7%**

Disclaimer: The valuations and screens contained herein are useful in assessing comparative valuations and comparative earnings prospects and are not intended to recommend transactions relating to any specific security. These indicators should be used in investment decisions only with other factors including financial risk, investment risk, management strategies and operating and financial outlooks.

Source: BofA Merrill Lynch US Equity and US Quant Strategy

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Refer to Important disclosures on page 64 to 65.

BofAML Universe Sector/Industry Factor Evaluation (cont'd)

					Valuation Analysis						Expectation Analysis							
											Earnings (Decile)				PR 5yr	EPS Growth	
	# of Comp	% Univ BOFAML	Impl. Return	Reqd Return	DDM Alpha	Eqty. Duration	BofAML Adj ßeta	P/E Ratio	Price/ Book	Yield	Surprise	Risk	Torp	Disp	Est. Rev.	Growth	2016E	2017E
Duration																		
6.41 To 25.65	151	12.16	14.7	12.0	2.7	21.9	1.09	13.4	2.19	2.5	5	5	6	6	5	20.4	5	13
25.66 To 30.11	152	22.57	11.5	10.9	0.6	28.3	0.98	14.7	3.69	2.4	5	5	5	4	5	11.2	5	12
30.11 To 34.32	152	18.19	10.3	10.5	-0.2	32.7	0.94	16.3	2.64	2.4	6	4	5	3	5	8.3	7	10
34.33 To 38.66	152	16.09	10.0	9.8	0.2	36.2	0.86	19.7	3.72	1.5	7	3	5	4	4	9.9	10	11
38.66 To 80.50	151	10.10	9.1	11.4	-2.3	42.9	1.03	20	2.60	1.1	5	5	5	4	5	8.4	2	19
Uncoded	475	20.89		11.6			1.05	19.7	2.12	2.5	5	6	5	6	6	10.0	10	nm
Growth Sectors																		
Growth	452	31.70	11.7	11.5	0.2	32.1	1.04	19.3	3.43	1.2	6	4	6	5	4	14.9	12	17
Growth Cyclical	305	21.15	11.3	12.0	-0.7	30.8	1.09	15.5	2.78	2.1	6	5	5	5	5	11.9	6	12
Growth Defensive	124	11.52	10.3	9.6	0.7	32.2	0.85	17.6	3.00	3.0	6	5	5	4	5	9.3	9	9
Cyclical	219	15.29	11.6	12.8	-1.2	30.5	1.18	13.8	1.83	2.2	5	5	5	5	6	10.0	2	13
Defensive	133	20.35	10.0	8.7	1.3	33.3	0.76	17.3	2.64	3.3	5	5	4	4	5	6.1	3	15
EPS Surprise																		
Most Optimistic	208	18.86	11.7	10.5	1.2	31.5	0.94	20.5	2.67	2.2	1	6	5	6	6	12.7	10	23
Optimistic	209	15.05	11.3	11.9	-0.6	30.7	1.08	14.6	2.44	2.5	4	4	5	4	5	11.8	9	12
Neutral	208	23.13	11.1	11.0	0.1	30.9	0.99	14.8	3.23	2.2	6	5	5	4	5	9.7	6	11
Less Optimistic	209	17.03	10.8	11.1	-0.3	32.6	1.00	16.6	2.36	2.2	7	5	5	4	5	11.3	8	13
Not Optimistic	208	17.77	10.7	10.4	0.3	33.4	0.93	17.8	3.17	2.0	9	3	5	4	4	10.9	2	11
Uncoded	191	8.15	10.9	11.8	-0.9	34.6	1.07	20.3	2.33	1.8		5	6	5	6	9.2	3	12
Quality Rank																		
A+	20	5.73	11.0	10.3	0.7	31.9	0.91	16.7	5.08	2.1	6	2	5	3	5	10.9	4	10
A	45	11.65	9.8	9.3	0.5	34.6	0.81	19.3	4.68	2.4	6	3	4	2	5	7.5	4	9
A-	72	17.95	11.3	10.5	0.8	30.7	0.94	17.7	3.46	2.0	6	3	5	4	4	10.3	4	14
B+	190	25.55	10.8	11.0	-0.2	31.9	0.99	14.7	2.72	2.3	6	5	5	4	5	8.5	4	12
B	182	12.91	11.0	11.1	-0.1	32.0	1.00	15.7	2.24	2.5	5	7	5	5	5	8.9	10	11
B-	161	8.20	12.3	13.6	-1.3	31.0	1.25	19.7	1.63	1.5	4	8	6	7	7	14.7	-4	25
C & D	67	1.41	9.8	13.9	-4.1	43.3	1.28	109	3.51	0.1	7	8	6	7	5	22.4	130	271
Not Rated	496	16.62	12.2	11.5	0.7	30.1	1.04	16.7	2.25	2.2	5	6	6	5	5	17.4	14	15
B+ or Better	327	60.87	10.8	10.5	0.3	32.1	0.94	16.5	3.35	2.2	6	4	5	4	5	9.1	4	12
B or Worse	906	39.13	11.7	11.9	-0.2	31.3	1.08	17.4	2.10	2.1	5	7	6	5	5	14.2	11	16
BofAML Universe	**1233**	**100.00**	**11.1**	**11.0**	**0.1**	**31.8**	**0.99**	**17.4**	**2.72**	**2.2**						**10.9**	**7**	**14**
S&P 500	**504**	**93.22**	**11.1**	**10.9**	**0.2**	**31.6**	**0.98**	**17.1**	**2.75**	**2.1**						**9.9**	**5**	**13**

Source: BofA Merrill Lynch US Equity and US Quant Strategy

INPUTS AND CALCULATIONS FOR STAFF CAPM

Merrill Lynch Cost of Market[1]

	Implied	Required
Apr-16	11.10%	10.90%
May-16	11.00%	10.90%
Jun-16	11.00%	10.80%

Merrill Lynch Cost of Market 10.95%

Treasury Rates[2]

	10 year	30 year
Apr-16	1.81%	2.62%
May-16	1.81%	2.63%
Jun-16	1.64%	2.45%

Risk-Free Rate (4/16-6/16) 2.16%

Market Risk Premium (4/16-6/16) 8.79%

Proxy Group Beta 0.75

Traditional CAPM Calculation
Risk Free Rate + (Beta * (Market Return - Risk Free Rate)

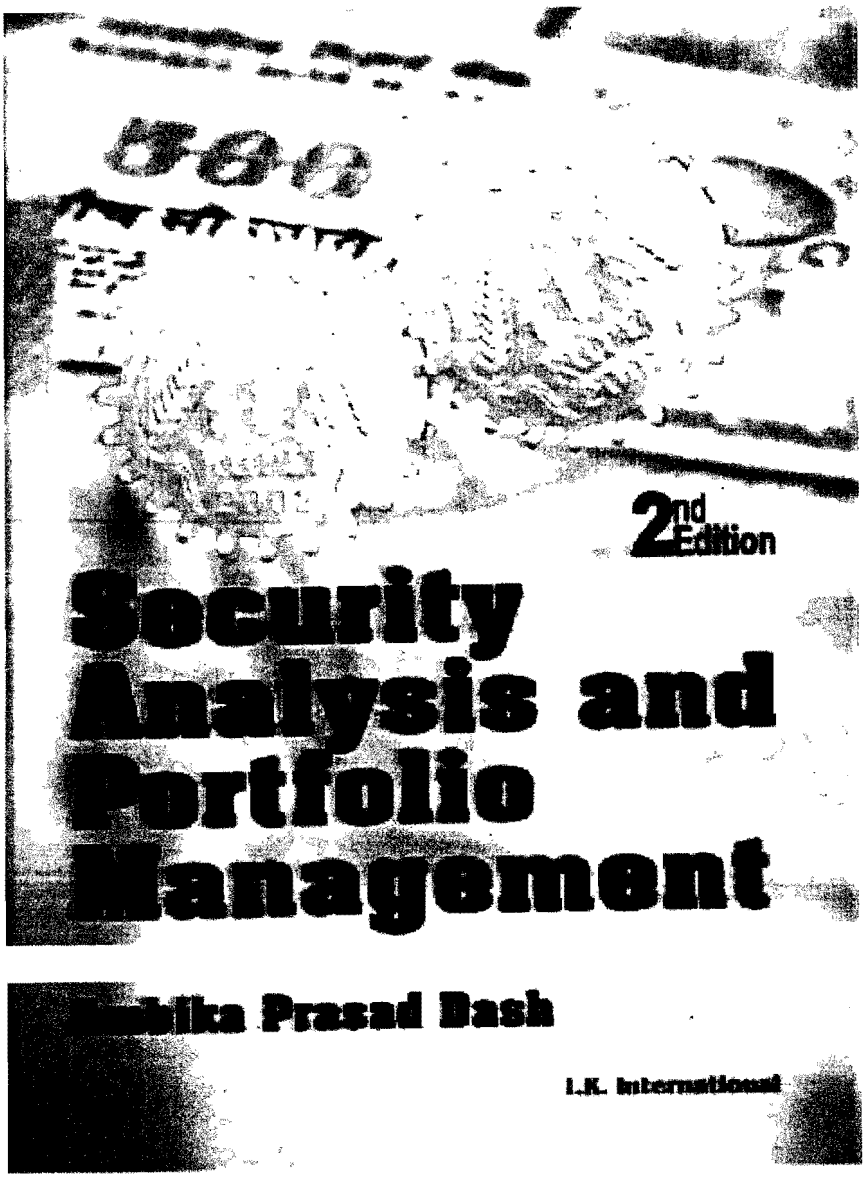
Traditional CAPM ROE 8.75%

Zero Beta CAPM Calculation
Risk Free Rate + (0.75*Beta * (Market Return - Risk Free Rate))+(0.25*(Market Return - Risk Free Rate))

Zero Beta CAPM ROE 9.30%

Merrill Lynch cost of market figure is average of Implied and Required Returns for the 3 months ending June 2016 (Apr-May-Jun 2016 Editions)

Federal Reserve Statistical Release, FRB: Federal Reserve Statistical Release H.15 - Historical Data
Website : 'http://federalreserve.gov/releases/h15/


2nd Edition
Security Analysis and Portfolio Management
Prasad Bash
I.K. International

THE MARKET PORTFOLIO

An investor might choose to invest a proportion of his or her wealth in a portfolio of risky assets with the remainder in cash—earning interest at the risk free rate (or indeed may borrow money to fund his or her purchase of risky assets in which case there is a negative cash weighting). Here, the ratio of risky assets to risk free asset determines overall return—this relationship is clearly linear. It is thus possible to achieve a particular return in one of two ways:

1. By investing all of one's wealth in a risky portfolio,
2. By investing a proportion in a risky portfolio and the remainder in cash (either borrowed or invested).

For a given level of return, however, only one of these portfolios will be optimal (in the sense of lowest risk). Since the risk free asset is, by definition, uncorrelated with any other asset, option 2) will generally have the lower variance and hence be the more efficient of the two.

This relationship also holds for portfolios along the efficient frontier: a higher return portfolio plus cash is more efficient than a lower return portfolio alone for that lower level of return. For a given risk free rate, there is only one optimal portfolio which can be combined with cash to achieve the lowest level of risk for any possible return. This is the market portfolio.

ASSUMPTIONS OF CAPM

- All investors have rational expectations.
- There are no arbitrage opportunities.
- Returns are normally distributed.
- Fixed quantity of assets.
- Perfectly efficient capital markets.
- Separation of financial and production sectors.
- Thus, production plans are fixed.
- Risk-free rates exist with limitless borrowing capacity and universal access.
- The Risk-free borrowing and lending rates are equal.
- No inflation and no change in the level of interest rate exists.
- Perfect information, hence all investors have the same expectations about security returns for any given time period.

from the mean) occur in the market more frequently than the normal distribution assumption would expect.

- The model assumes that the variance of returns is an adequate measurement of risk. This might be justified under the assumption of normally distributed returns, but for general return distributions other risk measures (like coherent risk measures) will likely reflect the investors' preferences more adequately.
- The model does not appear to adequately explain the variation in stock returns. Empirical studies show that low beta stocks may offer higher returns than the model would predict. Some data to this effect was presented as early as a 1969 conference in Buffalo, New York in a paper by Farhan Mukadam, Fischer Black, Michael Jensen, and Myron Scholes. Either that fact is itself rational (which saves the efficient markets hypothesis EMH but makes CAPM wrong), or it is irrational (which saves CAPM, but makes EMH wrong – indeed, this possibility makes volatility arbitrage a strategy for reliably beating the market).
- The model assumes that given a certain expected return investors will prefer lower risk (lower variance) to higher risk and conversely given a certain level of risk will prefer higher returns to lower ones. It does not allow for investors who will accept lower returns for higher risk. Casino gamblers clearly pay for risk, and it is possible that some stock traders will pay for risk as well.
- The model assumes that all investors have access to the same information and agree about the risk and expected return of all assets. (Homogeneous expectations assumption)
- The model assumes that there are no taxes or transaction costs, although this assumption may be relaxed with more complicated versions of the model.

- The market portfolio consists of all assets in all markets, where each asset is weighted by its market capitalization. This assumes no preference between markets and assets for individual investors, and that investors choose assets solely as a function of their risk-return profile. It also assumes that all assets are infinitely divisible as to the amount which may be held or transacted.
- The market portfolio should in theory include all types of assets that are held by anyone as an investment (including works of art, real estate, human capital...) In practice, such a market portfolio is unobservable and people usually substitute a stock index as a proxy for the true market portfolio. Unfortunately, it has been shown that this substitution is not innocuous and can lead to false inferences as to the validity of the CAPM, and it has been said that due to the unobservability of the true market portfolio, the CAPM might not be empirically testable. This was presented in greater depth in a paper by Richard Roll in 1977, and is generally referred to as Roll's Critique. Theories such as the Arbitrage Pricing Theory (APT) have since been formulated to circumvent this problem.

Annual Yield and Spread Data Compated with Average Authorized ROEs

	Year	Aa	A	Baa	20 Yr T	RRA Elec	A vs. Baa	A vs. 20T	Baa vs 20T	RRA vs. A	RRA vs. 20T
1	1996	7.57	7.75	8.17	6.83	11.40	0.42	0.92	1.34	3.65	4.57
2	1997	7.54	7.60	7.96	6.69	11.33	0.36	0.91	1.27	3.73	4.64
3	1998	6.91	7.04	7.26	5.72	11.77	0.22	1.32	1.54	4.73	6.05
4	1999	7.51	7.63	7.88	6.20	10.72	0.26	1.43	1.68	3.09	4.52
5	2000	8.06	8.25	8.36	6.23	11.58	0.11	2.02	2.13	3.33	5.35
6	2001	7.58	7.76	8.02	5.63	11.07	0.26	2.13	2.39	3.31	5.44
7	2002	7.19	7.37	8.02	5.43	11.21	0.65	1.94	2.59	3.84	5.78
8	2003	6.39	6.58	6.84	4.96	10.96	0.26	1.62	1.88	4.38	6.00
9	2004	6.04	6.16	6.39	5.04	10.81	0.23	1.12	1.35	4.65	5.77
10	2005	5.44	5.64	5.92	4.64	10.51	0.28	1.00	1.28	4.87	5.87
11	2006	5.84	6.07	6.32	5.00	10.32	0.25	1.07	1.32	4.25	5.32
12	2007	5.94	6.07	6.32	4.91	10.30	0.25	1.16	1.41	4.23	5.39
13	2008	6.18	6.52	7.21	4.36	10.41	0.69	2.16	2.85	3.89	6.05
14	2009	5.75	6.04	7.05	4.11	10.52	1.01	1.93	2.94	4.48	6.41
15	2010	5.23	5.46	5.96	4.03	10.37	0.50	1.43	1.93	4.91	6.34
16	2011	4.79	5.05	5.57	3.62	10.29	0.52	1.43	1.95	5.24	6.67
17	2012	3.83	4.13	4.86	2.54	10.17	0.73	1.59	2.32	6.04	7.63
18	2013	4.24	4.47	4.98	3.12	10.03	0.50	1.35	1.86	5.56	6.91
19	2014	4.19	4.28	4.80	3.07	9.91	0.52	1.21	1.73	5.63	6.84
20	2015	4.00	4.13	5.04	2.55	9.85	0.91	1.58	2.49	5.72	7.30
	Jun-16	3.56	3.78	4.47	2.02			**1.76**	**2.45**		
	20 Year Avg	**6.01**	**6.20**	**6.65**	**4.73**	**10.68**	**0.45**	**1.47**	**1.91**	**4.48**	**5.94**
	15 Year Avg	**5.51**	**5.72**	**6.22**	**4.20**	**10.45**	**0.50**	**1.52**	**2.02**	**4.73**	**6.25**
	10 Year Avg	**5.00**	**5.22**	**5.81**	**3.73**	**10.22**	**0.59**	**1.49**	**2.08**	**4.99**	**6.49**
	5 Year Avg	**4.21**	**4.41**	**5.05**	**2.98**	**10.05**	**0.64**	**1.43**	**2.07**	**5.64**	**7.07**

Implied RRA Using Curr Baa and 20yr avg spread	**8.39**
Implied RRA Using Curr 20yr Treas and 10yr avg spread	**8.51**

Summary of Spread Analysis	**In Percentage**	**Basis Points**
20-Yr Treasury	2.02	
June A-Rated Utility Debt	3.78	
My Recommended ROE	8.55	
Electric ROE (20 Yr-RRA)	10.68	
20 Year avg of A-Rated Utility Debt	6.20	
June 20-Yr Treasury/June A-Rated Debt	1.76	176
Staff ROE/June A-Rated Debt	4.77	477
Staff ROE/June 20-Yr Treasury	6.53	653
Electric ROE (20 Yr-annual average) /vs June A-Rated Debt	4.48	448

Consolidated Edison

More Equity Please?

Mgmt issues conservative 2016 guidance below Street

On Feb. 19 ED launched 2016E adj EPS guidance of $3.85-4.05, slightly down YoY from the robust $4.08 in 2015A. Even reflecting the impact of bonus depreciation, we see 2016 guidance as conservative with our own revised EPS of $4.00 reflecting an 8.9% earned ROE at CECoNY. Mgmt. states its new guidance range largely reflects the company earnings it 9.0% authorized ROE at CECoNY. We note the company has of late been able to earn its ROE suggesting a bias towards the upper half of the 2016 range, if not higher. For example, FY15 adj EPS of $4.08 was well above the initial $3.80-$4.00 guidance provided in Feb 2015, albeit aided by $0.08 from the Solutions (retail) sub. as well as +$0.03 in EPS from Steam (recall gas & electric are decoupled).

Equity needs are still real despite bonus depreciation offset; capex peaks in '16

Mgmt expects to need $280-$300Mn equity in 2016 ($200Mn plus DRIP and LT plans at ~$80-100 Mn). We are particularly surprised by the needs despite the tax benefits afforded by bonus depreciation. The need coincides with a 2016E $4.15Bn capex plan, meaningfully higher than recent years as investments outside the utility ramp including ~$1Bn in renewables (with cash ITCs reducing cash needs). We also suspect equity will be used to stabilize the equity ratios as mgmt is presently at 48.9% and is authorized to earn on up to a 50% level. A key regulatory question remains how non-utility segment debt will be imputed into the capital structures of the regulated subsidiaries (management indicated it was approaching the limit – details here).

Seeking the next round of capex in AMI and more; but will it be allowed?

We see mgmt as busily adding *other* investment opportunities to its core utility efforts, recently adding a stake in the MVP pipeline, a further TX solar project for $375 Mn, and approval of a $1.3 Bn smart meter AMI program from the NYPSC (this capex remains reflected already in mgmt's forward looking estimates).

Valuation: Lift PT to $62; Maintain Sell. Defensive ute at a price; risk is rate case

We have rolled our valuation to 2018E where we continue to use a P/E-based approach with a 5% discount due primarily to the below-average EPS growth and continuing uncertainty around potential penalties for the Harlem explosion. PT change is driven by increase in peer multiple (+$6) offset by lower ests. (-$1) and 2018E roll-forward (-$2).

Equities

Americas
Electric Utilities

12-month rating	**Sell**
12m price target	**US$62.00**
	Prior: US$59.00
Price	**US$71.05**

RIC: ED.N **BBG:** ED US

Trading data and key metrics

52-wk range	US$73.61-57.21
Market cap.	US$20.9bn
Shares o/s	294m (COM)
Free float	100%
Avg. daily volume ('000)	724
Avg. daily value (m)	US$48.3
Common s/h equity (12/16E)	US$13.8bn
P/BV (12/16E)	1.5x
Net debt / EBITDA (12/16E)	4.0x

EPS (UBS, diluted) (US$)

	12/16E			
	From	To	% ch	Cons.
Q1E	-	1.27	-	1.28
Q2E	-	0.76	-	0.72
Q3E	-	1.39	-	1.53
Q4E	-	0.58	-	0.58
12/16E	4.02	4.00	-1	4.06
12/17E	4.14	4.07	-2	4.17
12/18E	4.30	4.19	-3	4.32

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Highlights (US$m)	12/13	12/14	12/15	12/16E	12/17E	12/18E	12/19E	12/20E
Revenues	12,354	12,919	12,554	11,883	11,992	12,107	12,372	12,617
EBIT (UBS)	2,244	2,188	2,427	2,467	2,513	2,616	2,738	2,842
Net earnings (UBS)	1,115	1,051	1,193	1,190	1,223	1,266	1,344	1,408
EPS (UBS, diluted) (US$)	3.79	3.57	4.05	4.00	4.07	4.19	4.43	4.62
DPS (US$)	2.46	2.52	2.60	2.62	2.64	2.66	2.68	2.70
Net (debt) / cash	(11,751)	(12,292)	(13,330)	(14,837)	(15,620)	(16,367)	(15,800)	(15,037)

Profitability/valuation	12/13	12/14	12/15	12/16E	12/17E	12/18E	12/19E	12/20E
EBIT margin %	18.2	16.9	19.3	20.8	21.0	21.6	22.1	22.5
ROIC (EBIT) %	8.6	8.2	8.6	8.4	8.0	8.0	8.2	8.5
EV/EBITDA (core) x	9.5	9.5	9.5	9.9	9.6	9.1	8.7	8.4
P/E (UBS, diluted) x	15.3	16.1	15.6	17.8	17.5	17.0	16.0	15.4
Equity FCF (UBS) yield %	1.3	3.3	3.8	(0.7)	(0.2)	0.5	7.4	8.3
Net dividend yield %	4.3	4.4	4.1	3.7	3.7	3.7	3.8	3.8

Source: Company accounts, Thomson Reuters, UBS estimates. UBS adjusted EPS is stated before goodwill-related charges and other adjustments for abnormal and economic items at the analysts' judgement. Valuations: based on an average share price that year, (E): based on a share price of US$71.05 on 19 Feb 2016 11:12 EST

Other Recent ConEd Notes

1/26/2016: What Lies Behind the Defensive Veneer
10/9/15: Fitting Renewables Into the Mix
8/13/15: A 'Green' Lining in the Clouds
5/05/15 Consolidating Edison
2/24/2015: ROE Risk Remains in Focus

What do we think of shares?

Following the recent macro-driven rally in the utilities sector, we see ConEd as epitomizing the 'defensive play' with outperformance despite concerns over reduced EPS as a result of the bonus depreciation and wider rate case execution risk. While we appreciate successes in recent years in expanding non-utility investments, we see limits. Furthermore local constituents do not appear receptive to ED accelerating utility spending despite the benefits of bonus depreciation – suggesting more limited capex upside in its traditional areas of growth. Rather revisions remain dependent on success in several competitive arenas including two key transmission RFPs (one North-South in NY as well as one East-West). We continue to track reforms in New York but remain sanguine on REV proceedings given the protracted period elapsed already with limited spend materializing; more to the point ED appears challenged to capitalize from the bulk of renewable-related spending. Delineation of capex associated with creating the envisioned 'Distribution Platform' vision for the state remains among the single largest ratebase opportunities beyond the contemplated AMI deployment filing already before the Public Service Commission (PSC) (budgeted at $1.3Bn—and included in the latest forecast). Lastly, we see risk to pushing forward on meaningful further non-utility investments – at least for the time being – as policies are expected to be reviewed by the NY PSC Staff around utility debt imputation in the capital structure. All around, spend is already reflected with downside risk presented by ROE risk. We believe the current meaningful premium to peers (8%) appears unsustainable in a less defensive environment.

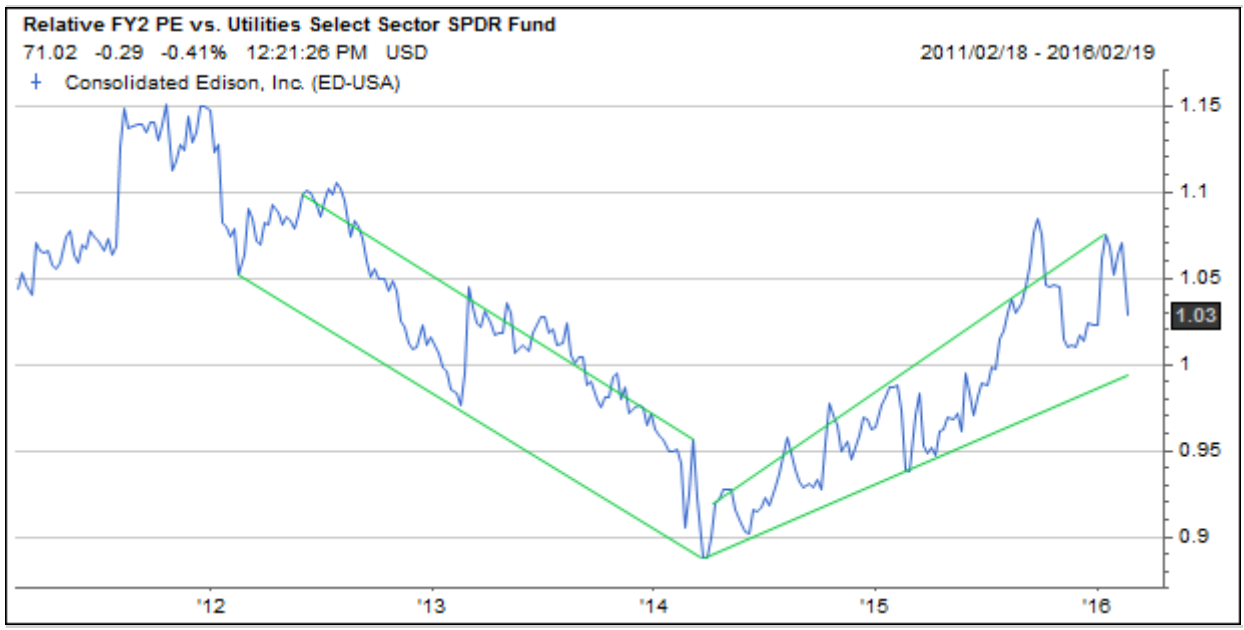
How should shares react to 4Q?

We would expect the weaker 2016 guidance to drive a degree of near-term underperformance in shares. We see the higher capex as tough to interpret given the limited EPS attributable to its non-regulated investments, principally solar.

How has ED traded historically?

To provide context for investors keen to understand ED's defensive characteristics we illustrate its historic premium vs. XLU peers, seeing shares coming back to multi-year highs. The question is can it breakout above this level on a sustainable basis; we suspect not, but see capex variables as the principle driver of whether it can continue its recent outperformance. Further, we see ROE as a key risk of reset downwards in 2016, potentially masking its true premium to peers.

Figure 1: ED Trading Back to Historic Premiums vs. XLU Peers



Source: FactSet

Retail Divestment: Still Waiting

While ED management was successful in selling down the first small PA utility, Pike for $16Mn, the wider question of a sale of the retail business remains pending. While a sale price is unclear, we note the outsized EPS in 2015 could help boost a sale price. We note recent transactions remains in the ~5x EBITDA range, dilutive to ED assuming continued positive EPS; that said, the limited contribution and volatility introduced into its earnings profile does not fit with the contracted and consistent EPS desired by ConEd investors. We see a sale as readily achievable amidst a perceived ramping in wholesale retail activities by a range of parties with lower wholesale power prices and reduced liquidity impeding prospects to hedge wholesale power.

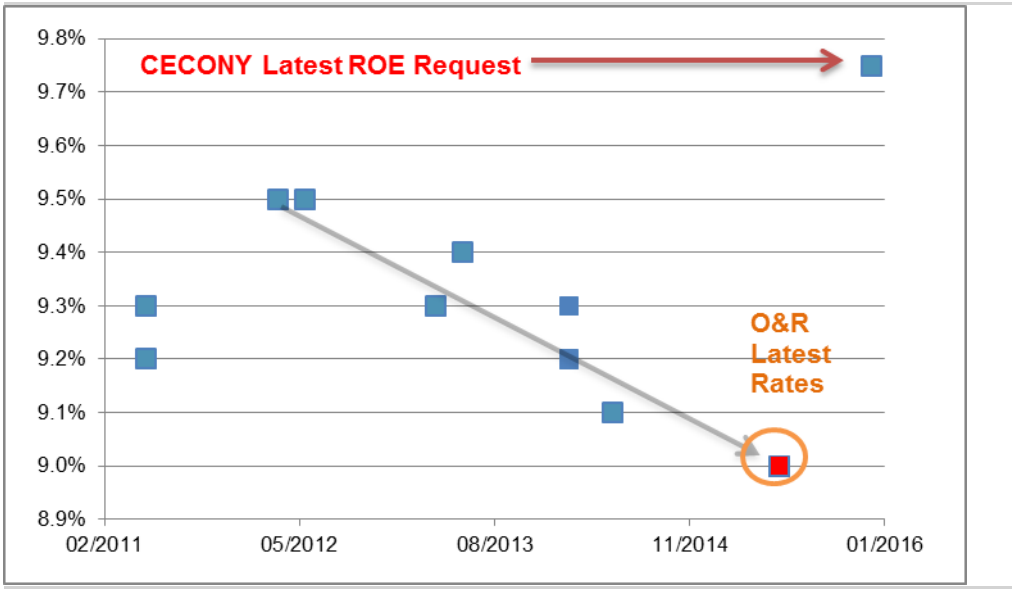
A number of competitive generators have discussed a desire to increase their retail presence to better hedge their volume following reduced liquidity in the commodity markets.

What about the ROE Prospects?

We include ConEd's latest ROE request in its filed rate case relative to recent NY rate case ROE outcome. We emphasize keeping its authorized ROE at 9% would appear a *good* outcome given the wider pressures using the formulaic approach employed by the NY PSC amidst recent low interest rates and high utility valuations; the methodology grabs both metrics, suggesting a mid-to-low 8% ROE.

Further details on our estimate of the NY PSC ROE mark-to-market analysis are available from our January report *What Lies Behind the Defensive Veneer*

Figure 2: Where will the ROE land? We see risk to the downside



Source: Company Filings and SNL Energy

What do we see in terms of ROE?

We include our latest expectations for earned ROEs by segment below vs historical levels as well as projected ratebase. We note the earned 9.6% ROE in 2015 reflects the maximum CECoNY can earn, with incremental EPS above this level accruing back to customers via a refund. The question remains to what extent the same factors enabling CECoNY to earn 60bp above 9% will recur in 2016 projections, given continued benefits of cost cuts. 2016 was seemingly aided by reduced O&M on the electric side with fewer summer outages due to cooler weather on average. That said, 2017 should recapture much of these savings back into customer rates.

Figure 3: ED Projected Earned ROEs for CECoNY

Regulated Metrics	CECoNY Historical and Projected ROEs						
	2011A	2012A	2013A	2014E	2015E	2016E	2017E
Estimated Rate Base (period end)	20,260	20,624	21,143	22,400	23,600	25,000	25,750
Estimated Rate Base Growth	3.91%	1.80%	2.52%	5.95%	5.36%	5.93%	3.00%
Estimated Rate Base (average)	19,879	20,442	20,884	22,355	23,000	24,300	25,375
Equity Percentage	52.0%	54.0%	50.5%	50.9%	50.9%	50.9%	50.9%
Allowed Equity Ratio			48.0%	48.0%	48.0%	48.0%	48.0%
Effective Equity Ratio				50.0%	50.0%	50.0%	50.0%
ROE Earned - Regulated Basis	9.70%	10.18%	9.34%	9.10%	9.60%	8.82%	8.79%
Electric				9.20%	9.80%		
Gas				7.50%	8.20%		
ROE Earned - SEC Basis	9.80%	9.81%	9.61%				
Authorized ROE	10.00%	10.00%	10.00%	9.22%	9.22%	9.00%	9.00%
Model Earned ROE (Avg. GAAP Equity)	9.57%	9.76%	9.51%	9.55%	9.45%	9.03%	9.09%
						-0.5%	-0.5%
ROE Variances							
Regulated v SEC Basis	-0.10%	0.37%	-0.27%				
SEC v Allowed Basis	-0.20%	-0.19%	-0.39%				

Source: Company Filings and UBS Estimates

Ratebase Summary

We include a summary of estimate ratebase arising out of CECONY's latest pre-rate case filing. We note the ratebase reflects just a 4% increase from 9/30 2015 through 2017, largely to reflect the impact of bonus depreciation.

Following the initial pre-filing in late January, there have been few developments in the case; resolution remains expected for year-end 2016.

Figure 4: CECoNY Average Ratebase Analysis

CECoNY Average Ratebase Analysis				
	9/30/2015	2017	Increase $	Increase %
Electric	17,544	18,880	1,335	3.0%
Gas	3,873	4,820	947	9.1%
Steam	1,540	1,618	78	2.0%
Total	22,957	25,318	2,360	4.0%
Pre-Rate Case UBSe	*25,991*			
Estimated EPS Impact at 9% ROE				-$0.10

Source: Company Filings, SNL Energy, and UBS Estimates

Shifting Down Estimates

We are tweaking down our estimates a touch further to reflect modestly more equity than we had anticipated (~$290 Mn in 2016E), greater than previously estimated impact of bonus depreciation, and the latest capex budget, much of which we had visibility into already. In connection with bonus depreciation we have lowered our earned ROE assumptions by 10bp in 2016E-2018E from our prior view. As mentioned, following its recent string of strong ROE performance we view our estimates as on the conservative side. We also note that ED expects to issue $1.0-$1.5Bn of long-term utility debt and secured project debt at renewables to meet its significant capex needs ($4.15Bn) and debt retirements ($740Mn with $650Mn at CECoNY) in 2016.

Utility debt maturing in 2016:
$400Mn CECoNY at 5.5% (Sept)
$75Mn O&R at 5.45% (Oct)
$250Mn CECoNY at 5.3% (Dec)

Figure 5: EPS Estimates

Consolidated Edison EPS Ests.	2014	2015	2016E	2017E	2018E
Consolidated Edison of New York	**$3.61**	**$3.77**	**$3.60**	**$3.71**	**$3.87**
CECONY ROE (UBSe)	*9.1%*	*9.6%*	*8.8%*	*8.8%*	*9.0%*
Orange & Rockland (O&R)	**$0.20**	**$0.15**	**$0.22**	**$0.22**	**$0.22**
Competitive Businesses:					
Con Ed Solutions (Retail)	**($0.00)**	**$0.07**	**$0.02**	**$0.01**	**$0.00**
Con Ed Energy (Wholesale)	**$0.05**	**$0.03**	**$0.02**	**$0.00**	**$0.00**
Con Ed Development (Solar)	**$0.05**	**$0.12**	**$0.16**	**$0.19**	**$0.22**
Parent and Other	**($0.02)**	**($0.08)**	**($0.03)**	**($0.06)**	**($0.13)**
Consolidated (diluted shares)	**$3.89**	**$4.06**	**$4.00**	**$4.07**	**$4.19**
% Growth		*4%*	*-2%*	*2%*	*3%*
Prior estimates		$3.98	$4.02	$4.14	$4.30
Guidance		**$3.90-$4.05**	**$3.85-$4.05**		
Consensus	$3.89	$4.01	$4.05	$4.17	$4.33

Source: Company Filings, FactSet, and UBS Estimates

Valuation: Adjusting Price Target to $62/sh from $59

We continue to value ConEd on a forward-P/E basis and we are rolling forward to 2018E from 2017E. Below are factors impacting our change in valuation:

- -~2% Reduction in EPS estimates: **-$1/sh**
- Rolling valuation year to 2018E from 2017E: **-$2/sh**
- ~1.5x Increase in the regulated utilities peer multiple: **+$6/sh**

Figure 6: Updated Consolidated Edison Valuation

Consolidated Edison Valuation			
Regulated 2018 P/E Multiple		*15.5x*	
	Downside	Base Case	Upside
2018 EPS	$4.10	$4.19	$4.28
x P/E Multiple	15.5x	15.5x	15.5x
Discount	-10%	-5%	5%
Valuation	**$57.00**	**$62.00**	**$70.00**
Assumed CECONY ROE	8.8%	9.0%	9.2%

Source: Company Filings, FactSet, and UBS Estimates

What were earned ROEs?

We show by segment the earned ROEs for 2015, earning above CECONY's 9.0% authorized ROE for the segments.

Figure 7: 2015 ROEs

Segment	ROE	Equity
CECONY		
Elec	9.8%	
Gas	8.2%	
Steam	10.2%	
Overall	**9.6%**	**48.9%**
O&R		
Elec	9.6%	
Gas	2.9%	
Rockland	9.8%	
Overall	**7.8%**	**50.1%**

Source: Company Filings

Capital Spending Comparison

We include the latest and previous forecasts below. The transmission below is principally the MVP gas pipeline investment, whereas the competitive businesses are principally the solar investments. Recall mgmt amortizes ITC over a period of time rather than recognizing the benefits all in the year when the asset begins commercial operations (more conservative approach).

Figure 8: 2015 10K ConEd Capex Disclosures

Capital Expenditures	2013	2014	2015	2016	2017	2018
ConEd NY	$2,135	**$2,132**	$2,435	$2,865	$2,999	$2,991
O&R	135	142	160	188	185	184
Total Regulated	**2,270**	**2,274**	**2,595**	**3,053**	**3,184**	**3,175**
Coned Transmission				115	171	179
Competitive Businesses	378	447	823	985	360	360
ConEd Total Capex	**$2,648**	**$2,721**	**$3,418**	**$4,153**	**$3,715**	**$3,714**

Source: Company Filings

The latest forecast is significantly higher than the prior forecast, particularly at the utility. We remind investors that the EPS uplift from the solar projects appears to be minimal according to management's guidance due to the spreading of ITCs mentioned above.

Figure 9: 2014 10K ConEd Capex Disclosures

Capital Expenditures	2013	2014	2015	2016	2017	2018
ConEd NY	$2,135	**$2,132**	$2,375	$2,661	$2,694	$1,750
O&R	135	142	162	182	177	150
Total Regulated	**2,270**	**2,274**	**2,537**	**2,843**	**2,871**	**1,900**
Competitive Businesses	378	447	835	985	374	374
ConEd Total Capex	**$2,648**	**$2,721**	**$3,372**	**$3,828**	**$3,245**	**$2,274**

Source: Company Filings

Forecast returns

Forecast price appreciation	-12.7%
Forecast dividend yield	3.7%
Forecast stock return	-9.0%
Market return assumption	5.7%
Forecast excess return	-14.7%

Valuation Method and Risk Statement

Risks for Consolidated Edison (ED) include but are not limited to: (1) potential inability to deliver on its capital expenditure program; (2) unfavorable commodity movements; (3) adverse political/legal/regulatory actions; (4) decline in the demand for new wind and solar projects; (5) unfavorable weather and natural resources yield [sun radiance and wind generation]; (6) operational and construction risk; (7) inability to access the capital markets on attractive terms; (9) inability to re-contract assets after contract expiration; (10) declines in customer demand and population; (11) failure to close pending or prospective M&A transactions; (12) natural disasters; (13) losses at the retail marketing segment; (15) change in macroeconomics; and (16) other unforeseen changes.
Valuation is based on a forward P/E methodology.

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Neutral	FSR is between -6% and 6% of the MRA.	39%	28%
Sell	FSR is > 6% below the MRA.	12%	22%
Short-Term Rating	**Definition**	**Coverage[3]**	**IB Services[4]**
Buy	Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%
Sell	Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%

Source: UBS. Rating allocations are as of 31 December 2015.
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UBS Securities LLC: Julien Dumoulin-Smith; Michael Weinstein; Paul Zimbardo.

Company Disclosures

Company Name	Reuters	12-month rating	Short-term rating	Price	Price date
Consolidated Edison[2, 4, 5, 6, 16]	ED.N	Sell	N/A	US$71.31	18 Feb 2016

Source: UBS. All prices as of local market close.
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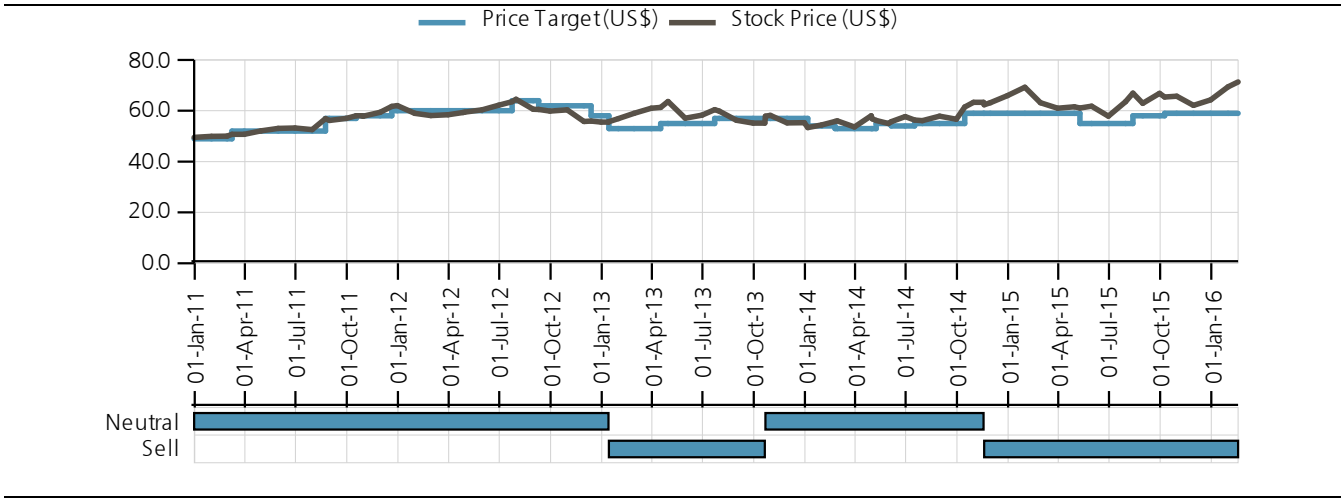
Consolidated Edison (US$)



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MOODY'S INVESTORS SERVICE

RATING METHODOLOGY

Regulated Water Utilities

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Summary

This rating methodology explains Moody's approach to assessing credit risk for rated issuers in the regulated water utilities sector, globally. This document provides general guidance that helps companies, investors, and other interested market participants understand how qualitative and quantitative risk characteristics are likely to affect rating outcomes for regulated water utilities. This document does not include an exhaustive treatment of all factors that are reflected in Moody's ratings but should enable the reader to understand the qualitative considerations and financial information and ratios that are usually most important for ratings in this sector.

This rating methodology replaces[1] the Global Regulated Water Utilities Methodology published in December 2009. While reflecting many of the same core principles as the 2009 methodology, this updated document provides a more transparent presentation of the rating considerations that are usually most important for companies in this sector and incorporates refinements in our analysis that better reflect credit fundamentals of the industry. No rating changes will result from publication of this rating methodology.

This report includes a detailed rating grid and illustrative examples that compare the mapping of publicly rated companies against the factors in the grid. The grid is a reference tool that can be used to approximate credit profiles within the regulated water sector in most cases. The grid provides summarised guidance for the factors that are generally most important in assigning ratings to companies in the regulated water utilities industry. However, the grid is a summary that does not include every rating consideration. The weights shown for each factor in the grid represent an approximation of their importance for rating decisions but actual importance may vary substantially. In addition, the illustrative mapping examples in this document use historical results while ratings are based on our forward-looking expectations. As a result, the grid-indicated rating is not expected to match the actual rating of each company.

[1] This update may not be effective for some regulatory jurisdictions until certain requirements are met, such as local language translation.

The grid contains four factors that are important in our assessments for ratings of regulated water utilities:

1. Business Profile

2. Financial Policy

3. Leverage and Coverage

The scoring for factors 1-3 results in a preliminary grid-indicated outcome. In addition, we apply the following factor 4, which can result in upward notching for issuers that benefit from structural enhancements in their corporate structure, their regulatory licence or their financing arrangements – this has mainly been relevant for highly-leveraged financing structures that apply to an entire corporate group and for project financings.

4. Uplift for Structural Considerations

Some of these factors also encompass a number of sub-factors. Since an issuer's scoring on a particular grid factor or sub-factor often will not match its overall rating, in Appendix B we include a discussion of some of the grid "outliers" – companies whose grid-indicated rating for a specific sub-factor differs significantly from the actual rating – in order to provide additional insights.

This rating methodology is not intended to be an exhaustive discussion of all factors that our analysts consider in assigning ratings in this sector. We note that our analysis for ratings in this sector covers factors that are common across all industries such as ownership, management, liquidity, corporate legal structure, governance and country related risks which are not explained in detail in this document, as well as other factors that can be meaningful on a company-specific basis. Our ratings consider these and other qualitative considerations that do not lend themselves to a transparent presentation in a grid format. The grid used for this methodology reflects a decision to favour a relatively simple and transparent presentation rather than a more complex grid that would map grid-indicated ratings more closely to actual ratings.

Highlights of this report include:

» An overview of the rated universe

» A summary of the rating methodology

» A description of factors that drive rating quality

» Comments on the rating methodology assumptions and limitations, including a discussion of rating considerations that are not included in the grid

The Appendices show (1) the full rating grid (Appendix A); (2) tables that illustrate the application of the grid to a sample of covered issuers, with explanatory comments on some of the more significant differences between the grid-implied rating for each sub-factor and our actual rating (Appendix B);[2] and (3) a more

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moodys.com for the most updated credit rating action information and rating history.

[2] In general, the rating utilised for comparison to the grid-implied rating is the Corporate Family Rating (CFR) for speculative-grade issuers and the senior unsecured rating for investment-grade issuers. For issuers that benefit from rating uplift from parental support, government ownership or other institutional support, we consider the underlying credit strength or baseline credit assessment for comparison to the grid-indicated rating. For an explanation of baseline credit assessment please refer to Moody's Rating Methodology entitled "Government-Related Issuers". Individual debt instrument ratings also factor in decisions on notching for seniority level and collateral. The documents that provide broad guidance for such notching decisions are the rating methodology on loss given default for speculative grade non-financial companies and the methodology for aligning corporate instrument ratings based on differences in security and priority of claim. These two cross-sector methodologies can be found here.

detailed description of the water and wastewater industry, including different operational models, and certain regional differences (Appendix C).

This methodology describes the analytical framework used in determining credit ratings. In some instances our analysis is also guided by additional publications that describe our approach for analytical considerations that are not specific to any single sector. Examples of such considerations include but are not limited to: the assignment of short-term ratings, the relative ranking of different classes of debt and hybrid securities, how sovereign credit quality affects non-sovereign issuers, and the assessment of credit support from other entities. Documents that describe our approach to such cross-sector methodological considerations can be found here.

About the Rated Universe

This methodology is applicable to regulated utilities whose principal line of business is the provision of water and/or wastewater (also referred to as sanitation or sewerage) services. Many companies provide services along the entire value chain of the process, from resources/collection, transport, via distribution through to supplying the end consumer. However, the methodology also applies to pure wholesalers, or single asset providers (e.g., water desalination plants, water reservoirs, or sewage interceptor tunnels), where revenues are earned under a regulated licensing, concession or similar arrangement. Services may be provided under contract or concession agreements or direct licensing arrangements with the relevant governmental authority, and the assets may be owned outright by the issuer or operated under the terms of a concession or licence.

Companies rated under this methodology are primarily rate-regulated monopolies or, where companies are not outright monopolies, their ability to freely set tariffs is typically restricted through government policy or other regulations.

Independently-regulated water utilities are in the minority in the broader universe of global water utilities. Given the public importance of water supply and the health risks related to its service provision, most water services globally are provided by government entities that are not subject to independent regulation for the rates or tariffs they charge. Even where privatised, the sector maintains strong links to national, regional or local government bodies that ensure compliance with environmental and health and safety standards.

This methodology is applicable to regulated water utilities that are investor-owned (i.e. private sector) and to those owned by a regional or national government, provided they have an operating and financial profile that is distinct from that of the government administration (they may also be distinct legal entities), with revenues linked to a regulated (or in some cases, self-regulating) tariff-setting model. This methodology is not applicable to water and sanitary sewer utilities that operate as departments, boards, or independent authorities of US states or local governments, which are typically financed with tax-exempt revenue bonds and are covered under the US Municipal Utility Revenue Debt methodology.

There are a variety of business models in the water sector, with varying degrees of private sector involvement. In the rated universe, companies have also adopted a range of different funding models. This methodology encompasses different types of financing for water utilities, including typical corporate funding with limited financial covenants, as well as more highly-structured arrangements with credit enhancing features. The most complex corporate financing structures currently in use were developed in the United Kingdom (UK), where a number of water companies have overlaid structural enhancements on typical long-dated capital market funding, often incorporating comprehensive inter-creditor arrangements with certain project finance-type features. Some single asset financing structures are also rated under this

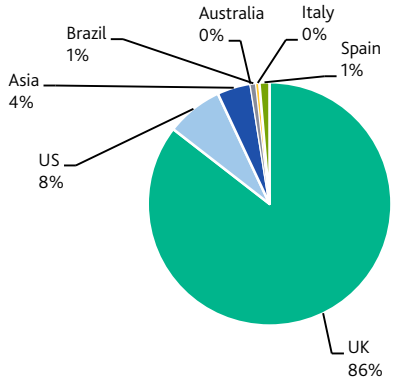
methodology, but privately financed, public infrastructure projects that receive specific availability-based payments sufficient to service their debt from government procurement agencies are rated under Moody's rating methodologies for PPP and PFI transactions: Operational Privately Financed Public Infrastructure (PFI/PPP/P3) Projects and Construction Risk in Privately Financed Public Infrastructure (PFI/PPP/P3) Projects.

Moody's currently rates 33 regulated water utility families, including multi-utilities in France and Italy, whose core business includes regulated water operations.

Publicly-rated regulated water utilities (including their fully-guaranteed finance subsidiaries) currently account for more than US$55 billion of total rated debt (this figure excludes the issuances of multi-utilities). UK issuers represent the vast majority of rated debt in the sector (see Exhibit 1).

EXHIBIT 1

Geographical distribution of rated debt within the regulated water sector (excluding multi-utilities)



Source: Moody's

Utilities rated under this methodology include those in Exhibit 2.

EXHIBIT 2

Regulated water utilities rated under this rating methodology include the following:

Issuer/Family	Issuer or Senior Unsecured Rating / BCA where applicable	Outlook	Jurisdiction
ACEA S.p.A.*	Baa2	Stable	Italy
Acquedotto Pugliese S.p.A.	Baa3/ba1	Stable	Italy
Affinity Water Limited	Baa1 (CFR)	Stable	United Kingdom
Aigues de Barcelona	Baa1	Stable	Spain
Aguas de Valencia S.A.	Baa3	Stable	Spain
American Water Works Company, Inc.	A3	Stable	Unites States
Anglian Water Services Ltd.	Baa1 (CFR)	Stable	United Kingdom
Anglian Water (Osprey) Financing plc	Ba3**	Stable	United Kingdom
Aquarion Company	Baa3	Stable	United States
Aquarion Water Company of Connecticut	Baa1	Stable	United States
Bristol Water plc	Baa1	Stable	United Kingdom

EXHIBIT 2

Regulated water utilities rated under this rating methodology include the following:

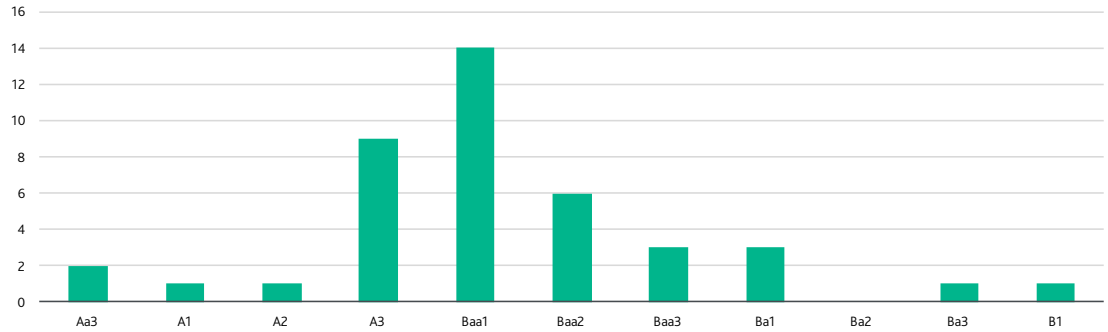
Issuer/Family	Issuer or Senior Unsecured Rating / BCA where applicable	Outlook	Jurisdiction
Canal de Isabel II Gestion, S.A.	Baa2/baa2	Positive	Spain
Companhia de San Bas do Estado de Sao Paulo	Ba1/ba2	Negative	Brazil
Companhia de Saneamento de Minas Gerais	Ba1/ba2	Under Review-Down	Brazil
Companhia de Saneamento do Parana – SANEPAR	Ba1/ba2	Under Review-Down	Brazil
Dee Valley Water PLC	Baa1 (CFR)	Stable	United Kingdom
Dwr Cymru Cyfyngedig	A3 (CFR)	Positive	United Kingdom
Golden State Water Company	A2	Stable	United States
Hera S.p.A.*	Baa1/baa1	Stable	Italy
Hunter Water Corporation	A1/baa2	Stable	Australia
Korea Water Resources Corporation	Aa3/baa2	Positive	South Korea
New Jersey-American Water Company, Inc.	A3	Stable	United States
Northumbrian Water Ltd.	Baa1	Stable	United Kingdom
Pennsylvania-American Water Company	A3	Stable	United States
Portsmouth Water Limited	Baa1 (CFR)	Stable	United Kingdom
Severn Trent Water Limited	A3	Negative	United Kingdom
Severn Trent plc	Baa1	Negative	United Kingdom
South East Water Limited	Baa2	Stable	United Kingdom
South Staffordshire Water Plc	Baa2	Stable	United Kingdom
Southern Water Services Limited	Baa2 (CFR)	Stable	United Kingdom
Suez Environnement Company*	A3	Stable	France
Sutton and East Surrey Water plc	Baa1	Stable	United Kingdom
Sydney Water Corporation	Aa3/baa1	Stable	Australia
Thames Water Utilities Ltd.	Baa1 (CFR)	Stable	United Kingdom
Thames Water (Kemble) Finance PLC	B1**	Stable	United Kingdom
United Utilities Water Limited	A3	Stable	United Kingdom
United Utilities PLC	Baa1	Stable	United Kingdom
Veolia Environnement S.A.*	Baa1	Stable	France
Wessex Water Services Limited	A3	Stable	United Kingdom
Yorkshire Water Services Limited	Baa2 (CFR)	Stable	United Kingdom

Note: * Multi-utilities with significant operations in the water/wastewater sector. ** Debt ratings reflect deeply subordinated position of the rated instrument in the group structure and cash waterfall.

Source: Moody's

The rating distribution in this sector ranges from Aa3 to B1, and is summarised in Exhibit 3. The average sector rating is Baa1.

EXHIBIT 3
Summary of ratings in the regulated water utilities sector



Note: Ratings represent issuer ratings (including corporate family ratings for highly-leveraged companies in the UK) or senior unsecured ratings
Source: Moody's

About this Rating Methodology

This report explains the rating methodology for regulated water utilities in seven sections, which are summarised as follows:

1. Identification and Discussion of the Grid Factors

The grid in this rating methodology is comprised of four rating factors. The first three grid factors are comprised of sub-factors that provide further detail. The fourth factor is used to make notching adjustments for structural enhancements where they are incorporated either in the company's corporate structure, its regulatory licence or its financing arrangements.

EXHIBIT 4
Rating Grid for Regulated Water Utilities

Rating Factors	Factor Weighting	Sub-Factors	Sub-Factor Weighting
BUSINESS PROFILE	50%	Stability and Predictability of Regulatory Environment	15%
		Asset Ownership Model	5%
		Cost and Investment Recovery (Ability & Timeliness)	15%
		Revenue Risk	5%
		Scale and Complexity of Capital Programme & Asset Condition Risk	10%
FINANCIAL POLICY	10%	Financial Policy	10%
LEVERAGE AND COVERAGE	40%	Adjusted Interest Coverage OR FFO Interest Coverage	12.5%
		Net Debt / Regulated Asset Base OR Debt/Capitalisation	10%
		FFO / Net Debt	12.5%
		RCF / Net Debt	5%
Total	100%	Total	100%
UPLIFT FOR STRUCTURAL CONSIDERATIONS		Up to 3 notches	

2. Measurement or Estimation of Factors in the Grid

We explain our general approach for scoring each grid factor and show the weights used in the grid. We also provide a rationale for why each of these grid components is meaningful as a credit indicator. The information used in assessing the sub-factors is generally found in or calculated from information in company financial statements, derived from other observations or estimated by Moody's analysts.

Our ratings are forward-looking and reflect our expectations for future financial and operating performance. However, historical results are helpful in understanding patterns and trends in a company's performance as well as for peer comparisons. We utilise an average of historical data over the last three years in this document to illustrate the application of the rating grid. However, the factors in the grid can be assessed using various time periods. For example, rating committees may find it analytically useful to examine both historic and expected future performance for periods of one year, several years or more.

All of the quantitative credit metrics incorporate Moody's standard adjustments to the income statement, cash flow statement and balance sheet amounts for restructuring, impairment, off-balance sheet accounts, receivable securitisation programmes, under-funded pension obligations, and recurring operating leases. Moody's may also make other analytical adjustments that are specific to a particular company.

For definitions of Moody's most common ratio terms, please see 'Moody's Basic Definitions for Credit Statistics, User's Guide'. For a description of Moody's standard adjustments, please see 'Financial Statement Adjustments in the Analysis of Non-Financial Corporations'. These documents can be found on the methodologies page at www.moodys.com.

3. Mapping Grid Factors to the Rating Categories

After estimating or calculating each sub-factor, the outcomes for each of the sub-factors are mapped to a broad Moody's rating category (Aaa, Aa, A, Baa, Ba, B, Caa, or Ca).

4. Mapping Issuers to the Grid and Discussion of Grid Outliers

In Appendix B, we provide a table showing grid-indicated ratings for each sub-factor and factor for a representative sample of companies. We highlight companies whose grid-indicated performance on a specific sub-factor is two or more broad rating categories higher or lower than its actual rating and discuss some general reasons for such positive and negative outliers for a particular sub-factor.

5. Assumptions and Limitations and Rating Considerations Not Included in the Grid

This section discusses limitations in the use of the grid to map against actual ratings, some of the additional factors that are not included in the grid but can be important in determining ratings, and limitations and assumptions that pertain to the overall rating methodology.

6. Determining the Overall Grid-Indicated Rating

To determine the overall grid-indicated rating, we convert each of the sub-factor scores into a numeric value based upon the scale below.

Aaa	Aa	A	Baa	Ba	B	Caa
1	3	6	9	12	15	18

A further weighting is applied by rating category as shown in the table below.

Aaa	Aa	A	Baa	Ba	B	Caa
1	1	1	1.15	2	3	5

We weight lower rating scores more heavily than higher scores for two reasons. In the first instance, we need to adjust for those situations where an issuer exhibits weak characteristics across the first two factors, which are not typically encountered within the rated universe and which would require more demanding thresholds for the credit metrics. Secondly, we recognise that a serious weakness in one area often cannot be completely offset by a strength in another area and that the lack of flexibility normally associated with high degrees of leverage can heighten risk.

The actual weighting applied to each sub-factor is the product of that sub-factor's standard weighting and its over-weighting, divided by the sum of these products for all the sub-factors (an adjustment that brings the sum of all the sub-factor weightings back to 100%).

The numerical score for each sub-factor is multiplied by the adjusted weight for that sub-factor with the results then summed to produce a composite weighted-factor score. The composite weighted-factor score is then mapped back to an alphanumeric rating based on the ranges in the table below.

Indicated Rating	Overall Score
Aaa	$x < 1.50$
Aa1	$1.50 \le x < 2.50$
Aa2	$2.50 \le x < 3.50$
Aa3	$3.50 \le x < 4.50$
A1	$4.50 \le x < 5.50$
A2	$5.50 \le x < 6.50$
A3	$6.50 \le x < 7.50$
Baa1	$7.50 \le x < 8.50$
Baa2	$8.50 \le x < 9.50$
Baa3	$9.50 \le x < 10.50$
Ba1	$10.50 \le x < 11.50$
Ba2	$11.50 \le x < 12.50$
Ba3	$12.50 \le x < 13.50$
B1	$13.50 \le x < 14.50$
B2	$14.50 \le x < 15.50$
B3	$15.50 \le x < 16.50$
Caa1	$16.50 \le x < 17.50$
Caa2	$17.50 \le x < 18.50$
Caa3	$18.50 \le x < 19.50$

For example, an issuer with a composite weighted factor score of 11.7 would have a Ba2 preliminary grid-indicated rating.

Finally, we consider whether the grid-indicated rating should be adjusted to incorporate uplift from structural enhancements that may be included in the company's financial arrangements. The effectiveness of any such enhancements is graded to determine the appropriate uplift, as described in the section "Structural Considerations and Sources of Rating Uplift from Creditor Protection" below. This allows us to

apply the methodology to regulated water utilities that have adopted certain credit-enhancing structural features typical of highly-geared financing structures.

We used the above described procedure with all four factors to derive the grid indicated ratings shown in the illustrative examples in Appendix B.

7. Appendices

The Appendices provide illustrative examples of grid-indicated ratings based on historical financial information, and also provide additional commentary and insights on different operating models within the industry.

Discussion of the Grid Factors

The grid for regulated water utilities focuses on four broad factors:

1. Business Profile
2. Financial Policy
3. Leverage and Coverage
4. Uplift for Structural Considerations

Factor 1: Business Profile

WHY IT MATTERS

Regulated water utilities typically provide monopoly-type, relatively price-inelastic services that are viewed as a true necessity and are generally highly regulated. The combination of essentiality of service and regulatory frameworks that are typically well established lend themselves to high levels of business visibility and revenue stability for most issuers. As a result, regulated water utilities are likely to have a longer-term strategic and financial horizon than most other corporate sectors. Accordingly, assessing the historical and expected stability of the regulated water utility's business and cash flow generation is a critical component of our analysis. Generally speaking, revenues and cash flows are a function of tariff levels and tariff-setting mechanisms as well as volumes sold. Tariffs are embedded in the broader framework of the applicable regulatory environment and/or a utility's concession agreement or lease contract. As such, the characteristics and transparency of the concession(s) and regulations under which the utility operates, the track record of the regulatory regime in setting tariffs and applying regulations consistently are key elements in assessing the overall stability of a water utility's business profile. We also assess the execution risk associated with a water utility's investment programme and the asset quality of a regulated water utility, which can have a material influence on its ability to provide services that meet regulatory expectations and on its future financial position.

HOW WE ASSESS IT FOR THE GRID

In assessing a water utility's regulatory environment and business model we look at five sub-factors:

» Stability & Predictability of Regulatory Environment

» Asset Ownership Model

» Cost and Investment Recovery (Sufficiency & Timeliness)

» Revenue Risk

» Scale and Complexity of the Capital Programme & Asset Condition Risk

Stability & Predictability of Regulatory Environment

This sub-factor assesses the regulatory and/or concession framework under which the water utility operates.

The provision of water and wastewater services is generally a monopoly or quasi-monopoly regulated on a national or regional basis. Where water services are provided by a private sector company, the monopoly service responsibilities are typically performed under a concession agreement or license. Often the enabling legislation/legal framework sets out common terms and conditions for concessions and lays out the framework under which tariff decisions are made, but there may be meaningful variations in the granularity and transparency of the framework. The stability and predictability of such regulatory regime or concession framework is a key determinant in assessing a water utility's business risk profile, reflected in the grid weighting of 15%.

Issuers operating under regulatory regimes that have a very long track record of clearly defined risk allocation principles, which have been consistently applied and transparently disclosed to the public receive the highest scores under this sub-factor. Issuers operating in a jurisdiction that has not implemented a defined regulatory framework and/or is extremely unpredictable or politically driven receive the lowest scores under this sub-factor. For instance the regulator or government may have a track record of making unilateral changes to the terms and conditions of concessions in water (or similar infrastructure sectors that are relevant precedents) to the detriment of the concession-holder without providing compensation.[3] Concerns about the independence of the regulatory authorities and the risk of politically-motivated intervention in the regulatory process generally also result in a lower score.

In considering whether a regulatory framework is independent and developed, we also take into account the strength of the rule of law within the jurisdiction in which the relevant utility operates, and whether an independent judiciary exists that allows for legal rights (and especially concession rights) to be enforceable in practice. For a water company that is located in a country with generally poor institutional strength, our scoring of the regulatory framework typically reflects that weakness.

Where companies operate in multiple jurisdictions or under regulatory or concession models with differing characteristics, the score for this sub-factor will reflect our assessment of the blended profile of these regulatory frameworks.

[3] Where regulatory or legislative changes do occur, water utilities can still be scored high on this sub-factor if the changes are sufficiently consulted upon, supportive of companies' credit quality and have involved the affected companies within the process. In contrast, water utilities will be scored low on this factor if changes to the regulatory framework have been implemented without consultation, are unclear, or are detrimental to credit quality.

In general, most tariff formulas seek to achieve a balance between reliability and quality of service standards, provide incentives for operational efficiency, protect consumers from monopoly-overcharging and meet certain social objectives, while allowing an adequate return for companies to be able to attract the debt and equity capital required to finance their investments.

In jurisdictions with separate regional regulation, e.g., in the US or Spain, we typically assess each state or region individually to consider the various factors that affect the utilities' profitability, including the type of fixed- versus variable-rate design allowed, historically-authorised tariff decisions, and the existence of mechanisms that permit recovery of operating and capital costs outside of a general tariff setting process. Furthermore, we take into account contractual obligations that restrict a water utility's ability to submit a tariff reset for approval within a defined period of time.

The ability of a water utility to recover its costs will also depend on its performance against regulatory cost allowances and efficiency targets. Companies that have a track record of significant overspending or are unlikely to meet target allowances may score lower. We also consider whether the tariffs can actually be afforded by the users of the water and wastewater services. This could be measured for example through the level of unpaid bills. If the level of unpaid bills is high or increasing materially we would normally score a water utility's ability to recover its costs lower than the theoretical tariff formula may imply.

Revenue Risk

Under this sub-factor we assess the potential volatility of revenues generated by a regulated water utility, including considerations such as a company's exposure to fluctuations in the volume of water used. Volume of usage may be affected by scarcity of supply or decreases in demand. Some utilities are exposed to greater differences in weather patterns from year to year. Others have a more concentrated customer structure or reliance on a particular customer to generate a large proportion of revenues. If this customer chooses a different service provider or closes its operations, a significant portion of revenues could be lost. Similarly, a higher exposure to industrial customers or a tariff plan that assumes increasing revenues will be generated from new customers may have a negative impact on revenues in a recession scenario.

When scoring this sub-factor we also consider whether a regulatory regime provides mechanisms whereby companies may be allowed to adjust tariffs within a regulatory period or at the next price review to reflect a divergence between collected and allowed revenues caused by fluctuating volumes.

Issuers that have no exposure to volume or customer concentration risk and are thus effectively immune from revenue volatility risks typically score Aaa. Water companies that are not immune but benefit from regulatory safeguards that allow them to adjust tariffs to recover lost revenue under a tested and transparent procedure typically score a bit lower but still at the high end of the grid. Water utilities that are subject to greater revenue risks from changes in volume (from droughts, recession, or a material reliance on new customer connections, etc) that are not offset by increases in tariffs, or where the tariff re-set is delayed or uncertain, typically score at the lower end of the grid.

Scale and Complexity of the Capital Programme & Asset Condition Risk

Our assessment of a company's risk exposure captures (1) the general operational risk of dealing with an extensive capex programme and management's ability to deliver without significant delays or cost overruns; (2) the technological challenges of very complex investment projects; and (3) the financing risk that a significant capex programme may pose, if it cannot be funded out of operating cash flows.

In general, most tariff formulas seek to achieve a balance between reliability and quality of service standards, provide incentives for operational efficiency, protect consumers from monopoly-overcharging and meet certain social objectives, while allowing an adequate return for companies to be able to attract the debt and equity capital required to finance their investments.

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Our assessment of a company's risk exposure captures (1) the general operational risk of dealing with an extensive capex programme and management's ability to deliver without significant delays or cost overruns; (2) the technological challenges of very complex investment projects; and (3) the financing risk that a significant capex programme may pose, if it cannot be funded out of operating cash flows.

To some extent, the size of a water utility's capital expenditure plans can be representative of the complexity of the programme. Thus, we consider the size of the annual capital expenditure plan[5] as a percentage of Regulated Asset Base (RAB – where applicable, it is typically obtained from regulatory filings) or the Fixed Assets (tangible and intangible)[6] as reported in a company's financial statements. However, this percentage may not directly correlate to risk in all scenarios, and replacement programmes that are large in scope may nevertheless present only limited execution risk. For example, a large capital expenditure programme could reflect a significant number of individual projects where overall execution risk is reduced through diversification, the repetitive nature of the programme, or the ability to reduce/modify the plan in light of changing circumstances. The experience of the utility in taking on expansion projects and delivering them within budget is also a relevant consideration in assessing the level of risk.

Capex programmes that are very large relative to existing asses base have a greater potential to create significant tariff increases for the end-consumer or disallowance or delay of cost and investment recovery by a regulator seeking to avoid such increases. For example, the asset value of companies that have been privatised may not reflect the actual replacement costs of such assets (essentially a form of subsidy to consumers to keep tariffs low). These companies may be required to undertake very large capital investment programmes to maintain and upgrade their infrastructure compared with a relatively small regulatory asset base, with the attendant execution and cost recovery risks. Expansionary programmes may not deliver expected revenue increases if new demand does not materialise, and even when the utility can adjust tariffs in light of lower-than-expected volumes, customer dissatisfaction and regulatory pressures may result.

Some regulatory frameworks or concession regimes may incentivise investment, either generally or for a particular project, in a manner that limits a company's exposure to capex-related risks, such as cost overruns. When this dynamic reduces the issuers risk in the capex programme, it is considered in our scoring of this sub- factor. Some incentive programmes simply provide capital that reduces the regulatory asset base (essentially a subsidy for consumers) without reducing the water utility's exposure to construction risks.

When scoring this factor, we also take into account the underlying asset condition and the related risk of potential asset failure. A functioning asset base is paramount for the water and wastewater utilities to comply with their regulatory duties and ensure stability of future cash flow generation. Deferred maintenance and under-investment may lead to the need for rapidly increasing capex in future years.

Issuers with large, modern asset bases requiring a limited amount of simple maintenance (with capital expenditure representing a low percentage of fixed assets) will likely have very high scores for this sub-factor. In contrast, water utilities that are engaging in highly complex, concentrated programs (and where annual capex represents a high percentage of fixed assets) will likely have very low scores for this factor. Furthermore, if a water utility has a history of serious asset failures or exhibits a significant deterioration in asset performance, it will typically have a score of Ba or lower under this sub-factor, depending on the severity of failures.

[5] Capital expenditure is considered before any government grants, construction subsidies or developers' contributions, to assess the full scale of the investment programme and potential execution risk.

[6] We include intangible assets in the denominator as companies may report their concession assets as intangibles. However, we do not include Goodwill as part of Fixed Assets.

Factor 3: Leverage and Coverage

WHY IT MATTERS

In the first two rating factors we assess the credit strengths and weaknesses afforded by the water utility's fundamental business and its financial policies. However, a company's ultimate credit profile must also incorporate its financial metrics, as a water utility that is substantially weaker than its peers in terms of cash flow generated or debt relative to the value of its asset base will generally have a higher probability of default.

When examining credit metrics, there is no single measure that can predict the likelihood of default. We utilise metrics that measure both the absolute capacity of the issuer to service its debt and the size of its debt burden relative to those of its peers. Leverage ratios aim to capture different measures of how easily an issuer can repay its debt; coverage ratios focus more on the ability to service the debt prior to repayment but may also take into account the necessary maintenance investments that are needed to ensure that the future cash flow generation is not impaired.

HOW WE ASSESS IT FOR THE GRID

We use four financial metrics in the grid when examining a water utility's leverage and coverage.

» Adjusted Interest Coverage Ratio OR FFO Interest Coverage

» Net Debt to Regulated Asset Base (RAB)[7] OR Debt to Capitalisation

» Funds from Operation (FFO) to Net Debt

» Retained Cash Flow (RCF) to Net Debt

Adjusted Interest Coverage Ratio OR FFO Interest Coverage

The Adjusted Interest Coverage Ratio is our preferred metric for water utilities where allowed revenues/tariffs are determined using a 'building block' or equivalent approach and where the components of allowed revenues/tariffs are consistently available from an independent source – in many cases, publications from the regulatory authority itself. Typical components of the revenue building block include: (1) the amount of expenditure recovered on an annual basis and not capitalised into the RAB; (2) the depreciation of the RAB as well as a depreciation or maintenance allowance for assets that may not be fully factored in the RAB; and (3) the return allowed over the invested capital, typically calculated or estimated by applying an industry- or company-specific rate of return on the RAB. The building block generally also includes several other elements, such as taxes and levies, and adjustments for past over or under-recoveries.

The Adjusted Interest Coverage Ratio aims to measure the amount of "headroom" afforded by the company's cash flows in servicing its debt burden after taking into account the cost of maintaining a stable asset base. It thus recognises that the regulatory revenue allowances for a water utility include significant amounts that customers are required to pay to enable the utility to maintain and replenish its assets, both those that are included in the RAB and those that may be operated by the utility but not financed by its investors (e.g. assets built with public grants or assets that were privatised at a value below their replacement cost). As a result the utility's revenues (and thus FFO) can be boosted by significant amounts

[7] The Regulatory Asset Base (RAB) or equivalent regulatory term (e.g. RAV, Rate Base) is the monetary value attributed in the tariff setting regulatory model to the capital invested by the water utility, on which the regulator calculates an allowed return.

Factor 1: Business Profile (50%)

The following tables show the grid-scoring categories for each Business Profile sub-factor and the weighting thereof.

Sub-Factor	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Stability and Predictability of Regulatory Environment	15%	Regulation is and expected to remain independent, well established (>15 years of being predictable and stable) and transparent. Well-established, published regulatory principles clearly define risk allocation between companies and customers and are consistently applied, with public or shared financial model.	Regulation is independent, reasonably well established (>10 years of being predictable and stable) and transparent. Well-established, published regulatory principles clearly define risk allocation between companies and customers and are generally consistently applied. Regulatory or concession framework has in recent years been (and is expected to remain) highly predictable, stable and supportive of utilities.	Regulation is generally independent and developed (e.g. published regulatory principles of risk allocation between companies and customers, based on established precedents in the same jurisdiction), and has above average predictability and reliability, although regulatory or concession regime may be sometimes less supportive of utilities.	Regulatory framework is well developed, with evidence of some inconsistency or unpredictability in the framework's application. OR Regulatory framework is relatively new and untested, but regulatory principles are based on established precedents and jurisdiction has history of independent and transparent regulation for other utility services. Regulatory environment or concession framework may sometimes be challenging or politically charged.	Regulatory or concession framework is defined but there is a high degree of inconsistency or unpredictability in its application. Tariff setting may be subject to negotiation and political interference; there has been a history of difficult or less supportive regulatory decisions; however, there are some precedents in the relevant jurisdiction of predictable regulation for other utility services.	Regulatory or concession framework is unclear, untested or undergoing significant change, with a history of political interference. Utility regulatory body lacks a consistent track record and is or is expected to be unsupportive, uncertain or highly unpredictable.	Regulatory or concession framework is not defined, or is expected to be extremely unsupportive, unpredictable or politically driven.

Sub-Factor	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Asset Ownership Model	5%	All key water and/or sewerage assets held outright in perpetuity.	All key water and/or sewerage assets held outright subject to a licence that can be terminated only for material underperformance, failure to meet certain financial parameters or insolvency OR held under long-term concession with clearly defined right to timely recovery of residual asset value at termination/end of concession underpinned by highly rated entity; clear track record of consistently applying concession termination / recovery regime.	All key water and/or sewerage assets held under long-term concession with clearly defined right to recover value of residual assets at termination/end of concession underpinned by highly rated entity but with undefined timeframe OR held/operated under medium-/ long-term operating leases or mgmt contract with very substantial portfolio diversification, very established market position and very high renewal rate (>95%).	All key water and/or sewerage assets held under long-term concession with entitlement to recover value of residual assets at termination/end of concession but procedures untested/undefined OR held/operated under medium-/ long-term operating leases or mgmt contract with substantial portfolio diversification, established market position and high renewal rate (>90%). Expropriation possible in case of insolvency or material failure to comply with licence conditions, but with full compensation for asset value.	All key water and/or sewerage assets held under concession with recovery of residual asset value at termination/end of concession subject to negotiation OR held/operated under short-term operating leases or mgmt contract with good degree of portfolio diversification and renewal rate (>80%). Expropriation possible, with some uncertainty in the prospect of full compensation.	All key water and/or sewerage assets held under concession with no recovery of residual asset value at termination/end of concession OR held/operated under short-term operating leases or mgmt contract (limited portfolio diversification). Expropriation likely, with material uncertainty in the prospect of full compensation.	Issuer is in default under its licence, concession or lease/contract, likely to lead to termination. Expropriation highly likely, with little or no prospect of compensation.

Sub-Factor	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Cost and Investment Recovery (Sufficiency & Timeliness)	15%	No regulatory or contractual impediment to adjust tariffs (no approval or reviews required).	Tariff formula allows for timely recovery of operating expenditure including depreciation and a fair return on all investment. Depreciation allowance fairly reflects asset consumption. All capital expenditure is included in asset base as incurred or fully covered by specific riders/surcharges prior to the next rate case. Minimal challenges by regulators to companies' cost assumptions.	Tariff formula allows for recovery of operating expenditure including depreciation based on allowances set at frequent price reviews (e.g., 5-yearly intervals or shorter) and a fair return on all efficient investment: Depreciation allowance fairly reflects asset consumption; Capital expenditure is included in asset base as incurred or partially covered by specific riders/surcharges prior to the next rate case; Opex and capex can be subject to efficiency tests; Limited instances of regulatory challenges; limited delays to rate or tariff increases or cost recovery Performance is likely to be in line with regulatory expectations.	Tariff formula allows for recovery of operating expenditure including depreciation and return on investment but subject to retrospective regulatory approval or infrequent price reviews (e.g., > 5-yearly intervals): Some instances of revenue back-loading (e.g. depreciation allowance set below asset consumption or operating expenditure is capitalised) OR Rate/tariff reviews and cost recovery outcomes are usually predictable, although application of tariff formula may be unclear; potentially greater tendency for regulatory intervention and/or to disallow or delay costs Performance may be below regulatory expectations.	Tariff formula does not take into account all cost components and depreciation may be set below asset consumption. Revenues allow coverage of operating expenditures; however, investment is not clearly or fairly remunerated OR Rate/tariff reviews are inconsistent, with some history of unwillingness to make timely rate changes OR Operational underperformance likely to significantly impact the returns achieved by the business.	Highly uncertain rate reviews and cost recovery outcomes; regulators may materially delay or deny tariff increases based on more arbitrary questioning of the utility's costs or financing arrangements. Revenues only cover cash operating expenditures OR Tariff formula does not take into account material cost and investment recovery components:	Revenues only partially cover cash operating costs.

Sub-Factor	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Revenue Risk	5%	No exposure to volume or customer concentration risk.	Minimal exposure to volume risk and timely recovery mechanism in place. AND Very limited customer concentration of volumes and revenues and to a customer/industry viewed as stable.	Some exposure to volume risk; recovery mechanism in place with some delay until next regulatory price review; generally limited revenue volatility expected. May have small concentration of volumes and revenues to a particular customer/industry viewed as stable.	Moderate exposure to volume risk but recovery mechanism in place, with some delay until next regulatory price review; moderate revenue volatility expected. May have a moderate concentration of volumes and revenues to a particular customer/industry.	More material exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels; recovery mechanism, may not follow regular intervals. OR Significant concentration of volumes and revenues to a particular customer/industry.	High exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels with recovery mechanism unclear or subject to very long delays. OR Very high concentration of volumes and revenues to one particular customer/industry.	Very high exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels with no meaningful recovery mechanism in place. OR Very high concentration of volumes and revenues to a particular customer/industry viewed as vulnerable.
Scale and Complexity of Capital Programme & Asset Condition Risk	10%	Capex programme is very limited in scale, with only minimum maintenance requirements (typically, total annual capex ≤ 4% of total fixed assets or regulated asset base). AND No asset condition risk (e.g. full and immediate cost pass-through).	Capex programme is limited in scale, with small maintenance or enhancement requirements (typically, total annual capex 4-6% of total fixed assets or regulated asset base). AND Well-developed asset base under tight regulatory supervision; asset performance is generally stable or improving.	Modest capex programme, including standard maintenance and enhancement expenditures (typically, total annual capex 6-8% of total fixed assets or regulated asset base). Well-developed asset base and no history of serious asset failure; asset performance is generally stable or improving.	Capex programme of manageable scale, including straight-forward maintenance and enhancement expenditure (typically, total annual capex 8-12% of total fixed assets or regulated asset base). Company has a reasonably developed asset base; may have some precedents of serious asset failures but asset performance is now and is expected to remain broadly stable.	Large capex programme (typically, total annual capex 12%-20% of total fixed assets or regulated asset base) or challenging in scope (small number of large and complex projects may account for majority of capital programme). OR Asset base not fully developed; or average asset performance is gradually deteriorating or there is some concern about asset condition.	Very large capex programme (typically, total annual capex 20-30% of total fixed assets or regulated asset base) or highly complex (one large and complex project may account for majority of capital programme). OR Performance of most assets is materially deteriorating, with serious assets failures likely or ongoing, or asset development is seriously below required target.	Extremely large capex programme (typically, total annual capex > 30% of total fixed assets or regulated asset base) or technically highly complex (includes one or more large projects of extreme technical complexity). OR Rapidly deteriorating asset performance or condition could put issuer at risk of termination of licence, concession or lease/contract.

Factor 2: Financial Policy

WHY IT MATTERS

Management and shareholder tolerance for financial risk is an important rating factor as it directly affects debt levels, credit quality and risk in the capital structure (e.g., refinancing risk, counterparty risk or exposure to interest rates or foreign exchange movements).

The generally stable and predictable cash flows of a regulated water utility create significant capacity to incur debt financing and potentially to invest in related businesses. While debt financing may be considered essential to the efficient capital structure of a water utility, a desire to enhance shareholder returns may lead to the pursuit of higher leverage, which increases credit risk. The way in which a water utility's owner uses its debt capacity, therefore, is a key rating consideration.

In this factor we assess the likelihood that financial policy decisions, in their totality, could add uncertainty to future cash flow levels and divert resources away from creditors. In this regard, management's track record and their public commitment to maintaining the issuer's credit quality are key considerations.

HOW WE ASSESS IT FOR THE GRID

We consider the company's approach to financing its activities, in particular the balance it strikes in apportioning risk between shareholders and creditors. We assess both the company's historical track record and its stated objectives with respect to leverage and financing decisions, as well as the investment return requirements of its owners. The behaviour of owners can be a key differentiating credit consideration – where owners' objectives are short-term, opaque or where there is a lack of track record, the regulated water utility will likely be scored lower in this factor than if its shareholders have more long-term return requirements and may be willing to forego near-term distributions to maintain financial flexibility.

Issuers are likely to have a high score on this factor if they have an extended track record of low levels of leverage plus a public commitment to maintaining high levels of credit quality. A water utility that has demonstrated a commitment to maintaining an average level of leverage for the industry (e.g. to a level implied within the regulator's allowed rate return) is likely to be scored in the middle of the range. However, scores of Baa and above would generally only apply where there are no (or only very limited) concerns regarding owners' behaviour – this would be the case, for example, for listed companies, government majority owned companies or those owned by industrial shareholders. Issuers with consistently higher levels of leverage or those with a less transparent financial policy would likely score Ba or lower on this factor.

This factor is scored separately from a notching factor for specific structural enhancements that provide additional creditor protection (Factor 4). However, where they exist, such enhancements will be considered to the extent they define or clarify the issuer's overall financial policy.

Factor 2 – Financial Policy (10%)

Rating Factor	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Financial Policy	10%	Long track record and expected maintenance of extremely conservative financial policy; very stable metrics; low debt levels for the industry; AND Public commitment to the highest credit quality over the long-term.	Long track record and expected maintenance of a conservative financial policy; stable metrics; lower than average debt levels for the industry; AND Public commitment to a very high credit quality over the long-term.	Extended track record and expected maintenance of a conservative financial policy; moderate debt leverage and a balance between shareholders and creditors; Not likely to increase shareholder distributions and/or make acquisitions which could lead to a weaker credit profile; Solid commitment to high credit quality.	Track record and expected maintenance of a conservative financial policy; an average level of debt for the industry and a balance between shareholders and creditors; Some risk that shareholder distributions and/or acquisitions could lead to a weaker credit profile; Solid commitment to targeted metrics.	Track record or expectation of maintenance of a financial policy that is likely to favour shareholders over creditors; higher than average, but not excessive, level of leverage; Owners are likely to focus on extracting distributions and acquisitions but not at the expense of financial stability.	Track record of aggressive financial policies or expected to have a financial policy that favours shareholders through high levels of leverage with only a modest cushion for creditors; OR High financial risk resulting from shareholder distributions or acquisitions.	Expected to have a financial policy unfavourable to creditors with a track record of or expected policy of maintaining excessively high debt leverage; OR Elevated risk of debt restructuring.

Factor 3: Leverage and Coverage

WHY IT MATTERS

In the first two rating factors we assess the credit strengths and weaknesses afforded by the water utility's fundamental business and its financial policies. However, a company's ultimate credit profile must also incorporate its financial metrics, as a water utility that is substantially weaker than its peers in terms of cash flow generated or debt relative to the value of its asset base will generally have a higher probability of default.

When examining credit metrics, there is no single measure that can predict the likelihood of default. We utilise metrics that measure both the absolute capacity of the issuer to service its debt and the size of its debt burden relative to those of its peers. Leverage ratios aim to capture different measures of how easily an issuer can repay its debt; coverage ratios focus more on the ability to service the debt prior to repayment but may also take into account the necessary maintenance investments that are needed to ensure that the future cash flow generation is not impaired.

HOW WE ASSESS IT FOR THE GRID

We use four financial metrics in the grid when examining a water utility's leverage and coverage.

» Adjusted Interest Coverage Ratio OR FFO Interest Coverage

» Net Debt to Regulated Asset Base (RAB)[7] OR Debt to Capitalisation

» Funds from Operation (FFO) to Net Debt

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The Adjusted Interest Coverage Ratio is our preferred metric for water utilities where allowed revenues/tariffs are determined using a 'building block' or equivalent approach and where the components of allowed revenues/tariffs are consistently available from an independent source – in many cases, publications from the regulatory authority itself. Typical components of the revenue building block include: (1) the amount of expenditure recovered on an annual basis and not capitalised into the RAB; (2) the depreciation of the RAB as well as a depreciation or maintenance allowance for assets that may not be fully factored in the RAB; and (3) the return allowed over the invested capital, typically calculated or estimated by applying an industry- or company-specific rate of return on the RAB. The building block generally also includes several other elements, such as taxes and levies, and adjustments for past over or under-recoveries.

The Adjusted Interest Coverage Ratio aims to measure the amount of "headroom" afforded by the company's cash flows in servicing its debt burden after taking into account the cost of maintaining a stable asset base. It thus recognises that the regulatory revenue allowances for a water utility include significant amounts that customers are required to pay to enable the utility to maintain and replenish its assets, both those that are included in the RAB and those that may be operated by the utility but not financed by its investors (e.g. assets built with public grants or assets that were privatised at a value below their replacement cost). As a result the utility's revenues (and thus FFO) can be boosted by significant amounts

[7] The Regulatory Asset Base (RAB) or equivalent regulatory term (e.g. RAV, Rate Base) is the monetary value attributed in the tariff setting regulatory model to the capital invested by the water utility, on which the regulator calculates an allowed return.

that are simply funding required expenditure, which is reported in company's financial statements not as operating expenditure but as capital expenditure.

Where this regulatory dynamic applies, an EBITDA- or FFO-based interest coverage may limit the comparability of companies' interest coverage.[8] Given the amounts of embedded subsidies often inherent in a private water utility model, the amounts of expenditure that the utility needs to manage to provide its services can be very significant in relation to the capital provided by its investors compared to other industries. This results in a high level of operational leverage, which is disguised by the accounting reporting of expenditure and has the illusive effect of boosting FFO and EBITDA-based metrics.[9]

The formula for the Adjusted Interest Coverage ratio is a variation on the typical FFO Interest Coverage ratio. In calculating the Adjusted Interest Coverage, the standard FFO Interest Coverage is adjusted for (1) the Capital Charges, i.e. expenditures recovered in revenues that are not accounted for as operating expenses and are not treated as additional invested capital incrementing the RAB; and (2) Inflation Accretion, a non-cash interest expense.

It is calculated or estimated as follows:

$$\frac{\text{FFO} + (\text{Interest Expense} - \text{Inflation Accretion}^{10}) - \text{Capital Charges}}{(\text{Interest Expense} - \text{Inflation Accretion})}$$

Inflation Accretion typically arises when the regulatory authority sets tariffs for the water utility in real terms, using a real rate of return, and then allows the utility to adjust tariffs annually by an inflation index. In this type of regulatory model, such as used in the UK, the utility's RAB is also revalued annually by inflation. Hence, inflation-linked debt aligns the debt service requirements with the utility's future cash flows, because the utility only pays a real rate of interest on the outstanding principal, which is adjusted annually by an inflation index. With positive inflation, the debt grows annually at the rate of inflation and this non-cash increment, which we define as Inflation Accretion, is typically reported as part of the Interest Expense in the company's income statement. The related increase in debt is captured by the leverage ratio below.

The Capital Charges represent the portion of revenues (and thus FFO) that is needed to replenish the regulated asset base. The maintenance of a stable asset base ensures that the earned return does not fall due to a decline in the asset base. Regulators – or issuers as part of their business plan submissions to the regulator during the price review process – may decide to allow more revenues today to the detriment of a slower growing asset base and, consequently lower revenues in the future, or vice versa. The Capital Charges in the Adjusted Interest Coverage Ratio incorporate these timing differences or other similar adjustments, e.g., regulatory revenue profiling to smooth the impact of tariff increases on customer bills.

In jurisdictions where regulatory revenues/tariffs are not determined with a 'building block approach' or where the regulatory information needed to calculate Capital Charges may not be consistently available, we use the FFO Interest Coverage, calculated (or for forward periods estimated) as (FFO + Interest Expense) / Interest Expense.

8 For further details, please see Moody's Special Comment: "UK Water Sector: Key Ratios Used by Moody's in Assessing Companies' Credit Strength", March 2006.

9 This is recognised in slightly more demanding ratio guidance.

10 For the numerator, Interest net of Inflation Accretion is added back to the extent it was deducted in calculating FFO, i.e. FFO would be after Interest Expense, net of Inflation Accretion.

Net Debt to Regulated Asset Base OR Debt to Capitalisation

As explained above, regulated water utilities service their debt principally through the return they earn on the capital invested for the provision of the regulated services. Hence, we seek to measure leverage as the relationship between their debt and their invested capital.

For the utilities regulated under a RAB-based model where the RAB accurately represents the invested capital on which the water utility will earn a return over time, we measure leverage as Net Debt to RAB.

For water utilities that (1) are regulated under tariff models without a RAB; (2) are regulated under a RAB-based model but where the RAB may not accurately represent the invested capital on which the water utility will earn a return over time (e.g. because of ex-post rate-setting); or (3) where the RAB may not be consistently available, we use Debt to Capitalisation as a measure of balance sheet leverage.

FFO to Net Debt

This ratio is a measure of dynamic leverage. As discussed above, this measure does not take into account the capital expenditures needed to maintain the asset base when comparing cash flows to a company's stock of debt. However, it allows a wider comparison across industries on a global basis and can be a useful indicator of a company's ability to generate cash flows over a period of time.

The numerator for this ratio is FFO. We use net debt owing to the sector's propensity to pre-fund its significant capital investments, which can result in substantial cash amounts held on balance sheet. The use of net debt also recognises the requirements under certain financing structures to maintain liquidity and debt service reserves. Where the debt position of a company may be overstated or understated by the debt figures as reported in the financial statements, we typically make non-standard adjustments for certain derivative transactions subject to the relevant hedge accounting rules for US-GAAP and IFRS accounting.

RCF to Net Debt

This ratio is also an indicator for financial leverage. However, in contrast to FFO to Net Debt, it considers the strength of a water utility's cash flow after dividend payments are made. Dividend obligations can be substantial, quasi-permanent outflows that affect the ability of a water utility to cover its debt obligations, and this ratio can also provide insight into its financial policies. The higher the level of retained cash flow relative to a water utility's debt, the more cash it has to support its capital expenditure programme. The numerator of this ratio is FFO minus dividends, and the denominator is net debt.

Factor 3 – Leverage and Coverage (40%)

The following tables show the grid-scoring categories for each Leverage and Coverage sub-factor and the weighting thereof.

Rating Factor	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Adjusted Interest Coverage Ratio (1)	12.5%	≥8x	4.5-8x	2.5-4.5x	1.5-2.5x	1.2-1.5x	1-1.2x	<1x
		OR	OR	OR	OR	OR	OR	OR
OR		≥10x	7-10x	4.5-7x	2.5-4.5x	1.8-2.5x	1.5-1.8x	<1.5x
FFO Interest Coverage (2)								
Net Debt / Regulated Asset Base (3)	10%	<25%	25-40%	40-55%	55-70%	70-85%	85-100%	≥100%
OR								
Debt / Capitalisation								
FFO / Net Debt	12.5%	≥40%	25-40%	15-25%	10-15%	6-10%	4-6%	<4%
RCF / Net Debt	5%	≥30%	20-30%	10-20%	6-10%	4-6%	2-4%	<2%

Notes:

(1) The Adjusted Interest Coverage Ratio is our preferred metric for water utilities where allowed revenues/tariffs are determined using a 'building block' or equivalent approach and where the components of allowed revenues/tariffs are consistently available and can be verified by from an independent source – in many cases, publications from the regulatory authority itself. For the numerator, Interest net of Inflation Accretion is added back to the extent it was deducted in calculating FFO. Capital Charges represent expenditures recovered in revenues that are not accounted for as operating expenses and are not treated as additional invested capital incrementing the RAB, including regulatory revenue profiling to smooth the impact of tariff increases on customer bills.

(2) In jurisdictions where regulatory revenues/tariffs are not determined with a 'building block approach' or where the regulatory information needed to calculate Capital Charges may not be consistently available, we use the FFO Interest Coverage, calculated (or for forward periods estimated) as (FFO + Interest Expense) / Interest Expense.

(3) For the utilities regulated under a RAB-based model where the RAB accurately represents the invested capital on which the water utility will earn a return over time, we measure leverage as Net Debt to RAB. For water utilities that (1) are regulated under tariff models without a RAB; (2) are regulated under a RAB-based model but where the RAB may not accurately represent the invested capital on which the water utility will earn a return over time (e.g. because of ex-post rate-setting); or (3) where RAB may not be consistently available, we use Debt to Capitalisation.

Factor 4: Structural Considerations and Sources of Rating Uplift From Creditor Protection

WHY IT MATTERS

Regulated water utilities are financed under different financing structures. Companies may have entered into complex financing structures that provide additional creditor protection to maintain credit quality while increasing gearing. Such arrangements have been most common in the UK. A transition from a publicly listed model to private ownership by infrastructure, pension and other specialist funds has led to the adoption of financing structures that incorporate structural enhancements similar to those used in project finance transactions in various infrastructure sectors.

We believe that structural enhancements may provide valuable protection to financial creditors in the regulated water utilities sector, and this can result in rating uplift. Such enhancements may be incorporated into the terms and conditions of financing agreements pertaining to essentially all of a utility's securities holders, or they may be a feature within the utility's regulatory licence, and include requirements such as maintaining a certain credit rating and demonstrating sufficient operating and financial resources (as is the case in the UK).

HOW WE ASSESS IT FOR THE GRID

Our determination of the degree of ratings uplift for a regulated water utility provided by debt structural features and/or regulatory provisions that insulate a utility's credit profile from its parent/owners is based primarily on an assessment of the following:

A. Factors that reduce risks that can lead to default, and

B. Factors that give creditors either the right, or ability to influence the taking of corrective action - to stop or reverse credit deterioration.

In order for structural features to provide ratings uplift they typically must benefit all debt creditors, although individual creditors may be subject to different payment priorities.

A. Factors that reduce risks that can lead to default

1. **Restriction on business activities.** Prohibiting an issuer from engaging in new activities or making acquisitions is seen as credit positive because it eliminates the business risk associated with corporate activity and ensures that all critical functionality is subject to the debt structural features.
2. **Restriction on raising additional debt.** Restricting additional indebtedness reduces the risk that a higher debt level can cause a payment default.
3. **Distribution lock-up tests.** Prohibiting distributions to shareholders in a distressed scenario preserves cash within the business, thus reducing the risk of default.
4. **Limits on debt structure.** Requiring the issuer to remove or mitigate certain financial risks, such as interest rate, currency or refinancing risk. The latter can range from restrictions on debt maturity concentration to the implementation of a fully amortizing debt structure, which in itself can achieve a full notch of ratings uplift. Covenants can also restrict the issuer's use of derivative products, thus reducing the likelihood of additional and/or sizeable claims on the business.
5. **Reserves to cover large future or unforeseen costs.** Dedicated timing reserves for large-cost items, e.g., one-off capital expenditure.

B. Factors that give creditors either the right, or ability, to influence the taking of corrective action – to stop or reverse credit deterioration

An important element of leveraged infrastructure debt structures has been the ability of debt creditors to force owners to reduce debt ahead of the point where equity value is lost and debt is impaired, and to take action to repay debt through the enforcement of security if this is not achieved. The debt event of default tests and the consequences of these are key elements of this protection. To provide effective protection to creditors, these features need to work within the context of the business being financed, in most cases to allow the operating businesses to continue as a going concern and to allow debt service to be paid though available liquidity facilities while action is being taken.

The elements of debt structural features that provide control rights are assessed in the following areas:

1. **Effectiveness of control rights.** The degree to which the exercise of control rights may be impeded (e.g., local jurisdiction laws or certain regulatory restrictions). We assess the proposed terms and conditions in conjunction with legal guidance to ascertain whether the proposed control rights are likely to operate as intended.
2. **Length of the control period.** The length of time debt creditors have to exercise control rights before the issuer loses the right to generate cash flow from the assets (e.g., before an insolvency process or before a concession/regulatory licence is terminated).
3. **Dedicated liquidity support.** Dedicated liquidity support facilities to cover ongoing debt service while control rights are exercised. To be considered valuable, such dedicated liquidity would need to be available for use in circumstances where control rights are exercised.

In almost all cases, to be effective and/or to assure the structure has integrity, debt structural features need to include the following elements:

1. The entity subject to the financing and the restrictions would be separated from the wider ownership group and any wider business group. The separation is achieved through legal means related to the creation of the issuer and/or restrictions in the financial structure.
2. All debt creditors must be subject to common terms that ensure that individual creditors or creditors cannot take unilateral action to destabilize the financing.
3. Creditor step-in rights should be specifically permitted under the concession, regulatory licence or legal framework, as well as the finance documents. Note that we give value to security arrangements only as one element, albeit usually a critical element, of a wider package of features designed to improve creditors' ability to detect early potential problems and rectify them if possible (in the first instance by retaining cash surpluses within the company). Further, if remedial action is not possible or fails, the security arrangements are used to maximize recovery prospects.

Structural features that provide a meaningful level of creditor protection would provide a notching uplift to the composite score generated from the grid factors, a final step to arrive at the grid-indicated rating.

When assessing rating uplift we consider the package as a whole (i.e. elements of both A. and B. above) in order to gauge the overall effectiveness. For example, independent validation of compliance with financial ratio covenants may be an important consideration in assessing the ongoing effectiveness of such covenants.

Security is sometimes not allowed or is not enforceable on certain assets, the title of which may be retained by the state or other granting authority, or where the company is restricted from giving security over its assets by a pre-existing statute.

Structural enhancements that we view as very comprehensive and effective can deliver an uplift of up to three notches within the grid. However, across the rated universe, the current typical uplift is in the range of zero to two notches. Due to the broad spectrum of possible financing structures (which can contain a variety of elements in an array of potential combinations), these enhancements are scored in increments of half-a-notch. While debt structural features could in theory be stronger than those we have encountered, more restrictive terms and conditions would constrain management abilities to pursue strategies and policies and may not be suited to certain types of businesses, so they have typically fallen within a moderately narrow range.

Ratings fully incorporate our view of the actual structural or contractual features in a particular transaction. In rare cases contractual features may provide greater uplift to the issuer's credit quality that what is reflected in the scorecard.

Assumptions and Limitations, and Rating Considerations That Are Not Covered in the Grid

The grid in this rating methodology represents a decision to favour simplicity that enhances transparency and to avoid greater complexity that would enable the grid to map more closely to actual ratings. Accordingly, the four rating factors in the grid do not constitute an exhaustive treatment of all of the considerations that are important for ratings of companies in the regulated water utilities sector. In addition, our ratings incorporate expectations for future performance, while the financial information that is used to illustrate the mapping in the grid in this document is mainly historical. In some cases, our expectations for future performance may be informed by confidential information that we cannot disclose. In other cases, we estimate future results based upon past performance, industry trends, competitor actions or other factors. In either case, predicting the future is subject to the risk of substantial inaccuracy.

Assumptions that may cause our forward-looking expectations to be incorrect include unanticipated changes in any of the following factors: the macroeconomic environment and general financial market conditions, industry competition, disruptive technology, regulatory and legal actions.

Key rating assumptions that apply in this sector include our view that sovereign credit risk is strongly correlated with that of other domestic issuers, that legal priority of claim affects average recovery on different classes of debt sufficiently to generally warrant differences in ratings for different debt classes of the same issuer, and the assumption that access to liquidity is a strong driver of credit risk.

In choosing metrics for this rating methodology grid, we did not explicitly include certain important factors that are common to all companies in any industry such as the quality and experience of management, assessments of corporate governance and the quality of financial reporting and information disclosure. Therefore ranking these factors by rating category in a grid would in some cases suggest too much precision in the relative ranking of particular issuers against all other issuers that are rated in various industry sectors.

Ratings may include additional factors that are difficult to quantify or that have a meaningful effect in differentiating credit quality only in some cases, but not all. Such factors include financial controls, exposure to uncertain licensing regimes and possible government interference in some countries. Regulatory, litigation, liquidity, technology and reputational risk as well as changes to consumer and business spending patterns, competitor strategies and macroeconomic trends also affect ratings. While these are important

considerations, it is not possible to precisely express these in the rating methodology grid without making the grid excessively complex and significantly less transparent. Ratings may also reflect circumstances in which the weighting of a particular factor will be substantially different from the weighting suggested by the grid.

This variation in weighting rating considerations can also apply to factors that we choose not to represent in the grid. For example, liquidity is a consideration frequently critical to ratings and which may not, in other circumstances, have a substantial impact in discriminating between two issuers with a similar credit profile. As an example of the limitations, ratings can be heavily affected by extremely weak liquidity that magnifies default risk. However, two identical companies might be rated the same if their only differentiating feature is that one has a good liquidity position while the other has an extremely good liquidity position, unless they are low-rated companies for which liquidity can be a substantial differentiator for relative default risk.

Other Rating Considerations

Ratings consider a number of additional considerations. These include but are not limited to: our assessment of the impact of non-core businesses, the quality of management, corporate governance, financial controls, parental support, liquidity management and event risk.

Impact of Non-Core Businesses / Multi-Utilities

This methodology grid is applied to the assessment of issuers whose primary activity is the ownership and operation of regulated water and wastewater assets. Where the company has or will seek to diversify its operations towards other business types, we consider the impact of such diversification on credit quality. In particular, the ownership of material businesses with higher credit risk than regulated water and wastewater services would likely result in an actual rating that is lower than the grid-indicated rating.

In some cases, it is generally useful to apply this methodology to the monopoly-based water and wastewater business of multi-utilities, but a multi-utility's overall credit quality will reflect a combination of risk factors related to the combined group's activities, which may include regulated electric and gas networks, environmental services, etc. This is the case, for example, for issuers such as Veolia Environnement S.A, Suez Environnement Company, ACEA S.p.A., and Hera S.p.A. , where substantial non-water utility businesses have a meaningful impact on the credit profile and ratings.

Liquidity and Access to Capital Markets

Liquidity analysis is a key element in the financial analysis of water utilities, and it encompasses a company's ability to generate cash from internal sources as well as the availability of external sources of financing to supplement these internal sources. Liquidity and access to financing are of particular importance in this sector. Some water and wastewater assets can often have a very long useful life, even in excess of 50 years, as well as high price tags. Furthermore, the sector has historically experienced prolonged periods of negative free cash flow, such that a portion of capital expenditure must be debt financed. Dividends also represent a quasi-permanent outlay, as companies will only rarely cut their dividend. Liquidity is also important to meet maturing obligations, which often occur in large chunks.

Our assessment of liquidity for regulated water utilities typically involves an analysis of total sources and uses of cash over the next 12 months or more. Using our financial projections and our analysis of its available sources of liquidity (including an assessment of the quality and reliability of alternate liquidity such as committed credit facilities), we evaluate how its projected sources of cash (cash from operations, cash on hand and existing committed multi-year credit facilities) compare to its projected uses (including all or most capital expenditures, dividends, maturities of short and long-term debt, our projection of potential liquidity calls on financial hedges, and important issuer-specific items such as special tax payments). We assume no

access to capital markets or additional liquidity sources, no renewal of existing credit facilities, and no cut to dividends. We examine a company's liquidity profile under this scenario, its ability to make adjustments to improve its liquidity position, and any dependence on liquidity sources with lower quality and reliability.

Management Strategy

The quality of management is an important factor supporting a company's credit strength. Assessing the execution of business plans over time can be helpful in assessing management's business strategies, policies, and philosophies and evaluates management performance relative to performance of competitors and our projections. A record of consistency provides Moody's with insight into management's likely future performance in stressed situations and can be an indicator of management's tendency to depart significantly from its stated plans and guidelines.

Size

The size and scale of a regulated water utility has generally not been a major determinant of its credit strength in the same way that it has been for most other industrial sectors. However, size can still be a very important factor in our assessment of certain risks that impact ratings, including event risk, construction risk and access to external funding. While the grid incorporates some of the execution risk around large or complex projects into the Scale and Complexity of Capital Programme & Asset Condition Risk sub-factor, for some issuers these considerations may be sufficiently important that the rating reflects a greater weight for these risks.

Interaction of Ratings with Government Policies and Sovereign Ratings

Compared with most industrial sectors, regulated water utilities are more likely to be impacted by government actions. Credit impacts can occur directly through regulation, and indirectly through environmental and tax policies. While Factor 1 – Business Profile captures many of these risks, for some issuers a greater weighting may be appropriate in assessing the rating. As purely domestic enterprises (in most cases), water utilities are typically subject to the same macro-economic trends as the sovereign in the country or countries in which they operate. For instance, the ratings of Aigues de Barcelona and Canal de Isabel II Gestion, S.A. are currently constrained by the credit quality of Spain (Baa2 positive).

Ownership

Ownership (by a government or other entity) can also provide ratings lift for a particular water utility if it is owned by a highly rated owner(s) and of strategic importance to those owners. In our analysis of parental support, we consider whether the parent has the financial capacity and strategic incentives to provide support in times of stress or financial need, or has already done so in the past. Conversely, if the parent puts a high dividend burden on the issuer which in turn reduces its flexibility, the ratings would typically reflect this risk.

Corporate Governance

Among the areas of focus in corporate governance are audit committee financial expertise, the incentives created by executive compensation packages, related party transactions, interactions with outside auditors, and ownership structure.

Financial Controls

We rely on the accuracy of audited financial statements to assign and monitor ratings in this sector. The quality of financial statements may be influenced by internal controls, including centralised operations and the proper tone at the top and consistency in accounting policies and procedures. Auditors comments in financial reports and unusual financial statement restatements or delays in regulatory filings may indicate weaknesses in internal controls.

Event Risk

We also recognize the possibility that an unexpected event could cause a sudden and sharp decline in an issuer's fundamental creditworthiness. Typical special events include mergers and acquisitions, asset sales, spin-offs, capital restructuring programs, litigation and shareholder distributions.

Structural Subordination

A utility company can finance itself in many different ways but it may involve a regulated operating company (OpCo) and a holding company (HoldCo) structure with debt located at different levels. Given that creditors of the HoldCo usually have a secondary claim on the group's cash flows and assets after OpCo creditors, this leads to structural subordination. Our ratings of HoldCo debt are usually notched downwards from our assessment of group credit quality (which ignores priority of claim). In addition, our analysis takes into account a number of other factors including, *inter alia*, the following:

» Regulatory or other barriers to cash movement from OpCos to HoldCos

» Specific ring-fencing provisions or financial covenants at the OpCo level

» HoldCo exposure to subsidiaries with high business risk or volatile cash flows

» Strained liquidity at the HoldCo level

Low Inflation & Deflation / High Inflation

In a number of regulatory models, including the UK and Australia, tariffs are designed in real terms (as opposed to nominal terms), where allowed revenues are computed in a fixed price base and subsequently inflated by a retail/consumer or other price index. Some of the stated purpose of indexation are to allocate the cost of the service across different generations of customers and to provide utilities some protection against cost inflation. However, water utilities governed by this type of regulatory model generally need to raise a material, if not predominant portion of their debt on a conventional basis (i.e. debt instruments whose coupon is based on nominal interest rates, which include an assumption of long-term inflation rates within the interest cost). This may cause a timing mismatch of cash flows and debt service, as well as a potentially higher reliance on continued market access to raise debt. Furthermore, subject to a company's dividend policy and tendency to maintain leverage (measured in relation to the regulated asset base) at constant levels close to the guidelines supporting their rating category, lower-than-expected inflation or deflation could lead certain companies to breach such parameters. In such cases, affected utilities have typically taken corrective actions (e.g. in the form of temporary reduction in shareholder distributions) to ensure that such breaches, if any, are of a temporary nature only. In the absence of such actions, ratings pressure may result.

Other regulatory models, including the US, typically set rates in nominal terms based on actual capital costs at the time of rate-setting. Although the framework may have some forward-looking cost components, they are rarely linked to inflation. In such regulatory models, high inflation represents the greater risk, since tariff-setting typically lags well behind incurred expenditures in a rapidly rising cost environment. When deflation or inflation is severe, actual ratings may vary more materially from grid-indicated ratings, especially those based on historical metrics.

Droughts and Potable Water Shortages

Periodic droughts can seriously reduce water available to utilities, and natural and man-made disasters can contaminate or otherwise reduce potable water supplies. Depending on the regulatory framework, there is some regional variation in utilities' cash flow impacts during periods of droughts and water rationing, or stemming from flooding or other disasters that interrupt service. Water shortages have the potential to increase customer dissatisfaction with service and damage regulatory relationships. Droughts may be a

catalyst for large increases in capital spending, to secure water supplies or reduce leakage in the system. Particularly in regulatory frameworks where the utility retains exposure to volumetric changes in usage, severe or long-lasting droughts may impact revenues and cash flows in a manner that causes actual ratings to vary more materially from grid-indicated ratings, especially those based on historical metrics.

Conclusion: Summary of the Grid-Indicated Rating Outcomes

For the 26 regulated water utilities scored in detail under the methodology (see Appendix B), the methodology grid-indicated ratings map to current assigned ratings (or BCAs where relevant) as follows:

» 6 companies map to their assigned rating (or BCA where relevant)

» 15 companies have grid-indicated ratings that are within one alpha-numeric notches of their assigned ratings (or BCAs where relevant)

» 5 companies have grid-indicated ratings that are within two alpha-numeric notches of their assigned ratings (or BCAs where relevant)

Appendix A – Regulated Water Utilities Rating Grid

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor 1 – Business Profile								
Stability and Predictability of Regulatory Environment	15%	Regulation is and expected to remain independent, well established (>15 years of being predictable and stable) and transparent. Well-established, published regulatory principles clearly define risk allocation between companies and customers and are consistently applied, with public or shared financial model.	Regulation is independent, reasonably well established (>10 years of being predictable and stable) and transparent. Well-established, published regulatory principles clearly define risk allocation between companies and customers and are generally consistently applied. Regulatory or concession framework has in recent years been (and is expected to remain) highly predictable, stable and supportive of utilities.	Regulation is generally independent and developed (e.g. published regulatory principles of risk allocation between companies and customers, based on established precedents in the same jurisdiction), and has above average predictability and reliability, although regulatory or concession regime may be sometimes less supportive of utilities.	Regulatory framework is well developed, with evidence of some inconsistency or unpredictability in the framework's application. OR Regulatory framework is relatively new and untested, but regulatory principles are based on established precedents and jurisdiction has history of independent and transparent regulation for other utility services. Regulatory environment or concession framework may sometimes be challenging or politically charged.	Regulatory or concession framework is defined but there is a high degree of inconsistency or unpredictability in its application. Tariff setting may be subject to negotiation and political interference; there has been a history of difficult or less supportive regulatory decisions; however, there are some precedents in the relevant jurisdiction of predictable regulation for other utility services.	Regulatory or concession framework is unclear, untested or undergoing significant change, with a history of political interference. Utility regulatory body lacks a consistent track record and is or is expected to be unsupportive, uncertain or highly unpredictable.	Regulatory or concession framework is not defined, or is expected to be extremely unsupportive, unpredictable or politically driven.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Asset Ownership Model	5%	All key water and/or sewerage assets held outright in perpetuity.	All key water and/or sewerage assets held outright subject to a licence that can be terminated only for material underperformance, failure to meet certain financial parameters or insolvency OR held under long-term concession with clearly defined right to timely recovery of residual asset value at termination/end of concession underpinned by highly rated entity; clear track record of consistently applying concession termination / recovery regime.	All key water and/or sewerage assets held under long-term concession with clearly defined right to recover value of residual assets at termination/end of concession underpinned by highly rated entity but with undefined timeframe OR held/operated under medium-/ long-term operating leases or mgmt contract with very substantial portfolio diversification, very established market position and very high renewal rate (>95%).	All key water and/or sewerage assets held under long-term concession with entitlement to recover value of residual assets at termination/end of concession but procedures untested/undefined OR held/operated under medium-/ long-term operating leases or mgmt contract with substantial portfolio diversification, established market position and high renewal rate (>90%). Expropriation possible in case of insolvency or material failure to comply with licence conditions, but with full compensation for asset value.	All key water and/or sewerage assets held under concession with recovery of residual asset value at termination/end of concession subject to negotiation OR held/operated under short-term operating leases or mgmt contract with good degree of portfolio diversification and renewal rate (>80%). Expropriation possible, with some uncertainty in the prospect of full compensation.	All key water and/or sewerage assets held under concession with no recovery of residual asset value at termination/end of concession OR held/operated under short-term operating leases or mgmt contract (limited portfolio diversification). Expropriation likely, with material uncertainty in the prospect of full compensation.	Issuer is in default under its licence, concession or lease/contract, likely to lead to termination. Expropriation highly likely, with little or no prospect of compensation.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Cost and Investment Recovery (Sufficiency & Timeliness)	15%	No regulatory or contractual impediment to adjust tariffs (no approval or reviews required).	Tariff formula allows for timely recovery of operating expenditure including depreciation and a fair return on all investment. Depreciation allowance fairly reflects asset consumption. All capital expenditure is included in asset base as incurred or fully covered by specific riders/surcharges prior to the next rate case. Minimal challenges by regulators to companies' cost assumptions.	Tariff formula allows for recovery of operating expenditure including depreciation based on allowances set at frequent price reviews (e.g., 5-yearly intervals or shorter) and a fair return on all efficient investment: Depreciation allowance fairly reflects asset consumption; Capital expenditure is included in asset base as incurred or partially covered by specific riders/surcharges prior to the next rate case; Opex and capex can be subject to efficiency tests; Limited instances of regulatory challenges; limited delays to rate or tariff increases or cost recovery Performance is likely to be in line with regulatory expectations.	Tariff formula allows for recovery of operating expenditure including depreciation and return on investment but subject to retrospective regulatory approval or infrequent price reviews (e.g., > 5-yearly intervals): Some instances of revenue back-loading (e.g. depreciation allowance set below asset consumption or operating expenditure is capitalised) OR Rate/tariff reviews and cost recovery outcomes are usually predictable, although application of tariff formula may be unclear; potentially greater tendency for regulatory intervention and/or to disallow or delay costs Performance may be below regulatory expectations.	Tariff formula does not take into account all cost components and depreciation may be set below asset consumption. Revenues allow coverage of operating expenditures; however, investment is not clearly or fairly remunerated OR Rate/tariff reviews are inconsistent, with some history of unwillingness to make timely rate changes OR Operational underperformance likely to significantly impact the returns achieved by the business.	Highly uncertain rate reviews and cost recovery outcomes; regulators may materially delay or deny tariff increases based on more arbitrary questioning of the utility's costs or financing arrangements. Revenues only cover cash operating expenditures OR Tariff formula does not take into account material cost and investment recovery components:	Revenues only partially cover cash operating costs.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Revenue Risk	5%	No exposure to volume or customer concentration risk.	Minimal exposure to volume risk and timely recovery mechanism in place. AND Very limited customer concentration of volumes and revenues and to a customer/industry viewed as stable.	Some exposure to volume risk; recovery mechanism in place with some delay until next regulatory price review; generally limited revenue volatility expected. May have small concentration of volumes and revenues to a particular customer/industry viewed as stable.	Moderate exposure to volume risk but recovery mechanism in place, with some delay until next regulatory price review; moderate revenue volatility expected. May have a moderate concentration of volumes and revenues to a particular customer/industry.	More material exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels; recovery mechanism, may not follow regular intervals. OR Significant concentration of volumes and revenues to a particular customer/industry.	High exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels with recovery mechanism unclear or subject to very long delays. OR Very high concentration of volumes and revenues to one particular customer/industry.	Very high exposure to risk of volumes decreasing or not meeting growth targets embedded in tariff levels with no meaningful recovery mechanism in place. OR Very high concentration of volumes and revenues to a particular customer/industry viewed as vulnerable.
Scale and Complexity of Capital Programme & Asset Condition Risk	10%	Capex programme is very limited in scale, with only minimum maintenance requirements (typically, total annual capex ≤ 4% of total fixed assets or regulated asset base). AND No asset condition risk (e.g. full and immediate cost pass-through).	Capex programme is limited in scale, with small maintenance or enhancement requirements (typically, total annual capex 4-6% of total fixed assets or regulated asset base). AND Well-developed asset base under tight regulatory supervision; asset performance is generally stable or improving.	Modest capex programme, including standard maintenance and enhancement expenditures (typically, total annual capex 6-8% of total fixed assets or regulated asset base). Well-developed asset base and no history of serious asset failure; asset performance is generally stable or improving.	Capex programme of manageable scale, including straight-forward maintenance and enhancement expenditure (typically, total annual capex 8-12% of total fixed assets or regulated asset base). Company has a reasonably developed asset base; may have some precedents of serious asset failures but asset performance is now and is expected to remain broadly stable.	Large capex programme (typically, total annual capex 12%-20% of total fixed assets or regulated asset base) or challenging in scope (small number of large and complex projects may account for majority of capital programme). OR Asset base not fully developed; or average asset performance is gradually deteriorating or there is some concern about asset condition.	Very large capex programme (typically, total annual capex 20-30% of total fixed assets or regulated asset base) or highly complex (one large and complex project may account for majority of capital programme). OR Performance of most assets is materially deteriorating, with serious assets failures likely or ongoing, or asset development is seriously below required target.	Extremely large capex programme (typically, total annual capex > 30% of total fixed assets or regulated asset base) or technically highly complex (includes one or more large projects of extreme technical complexity). OR Rapidly deteriorating asset performance or condition could put issuer at risk of termination of licence, concession or lease/contract.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor 2 – Financial Policy								
Financial Policy	10%	Long track record and expected maintenance of extremely conservative financial policy; very stable metrics; low debt levels for the industry; AND Public commitment to the highest credit quality over the long-term.	Long track record and expected maintenance of a conservative financial policy; stable metrics; lower than average debt levels for the industry; AND Public commitment to a very high credit quality over the long-term.	Extended track record and expected maintenance of a conservative financial policy; moderate debt leverage and a balance between shareholders and creditors; Not likely to increase shareholder distributions and/or make acquisitions which could lead to a weaker credit profile; Solid commitment to high credit quality.	Track record and expected maintenance of a conservative financial policy; an average level of debt for the industry and a balance between shareholders and creditors; Some risk that shareholder distributions and/or acquisitions could lead to a weaker credit profile; Solid commitment to targeted metrics.	Track record or expectation of maintenance of a financial policy that is likely to favour shareholders over creditors; higher than average, but not excessive, level of leverage; Owners are likely to focus on extracting distributions and acquisitions but not at the expense of financial stability.	Track record of aggressive financial policies or expected to have a financial policy that favours shareholders through high levels of leverage with only a modest cushion for creditors; OR High financial risk resulting from shareholder distributions or acquisitions.	Expected to have a financial policy unfavourable to creditors with a track record of or expected policy of maintaining excessively high debt leverage; OR Elevated risk of debt restructuring.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor 3 – Leverage and Coverage								
Adjusted Interest Coverage Ratio (1)	12.5%	≥8x	4.5-8x	2.5-4.5x	1.5-2.5x	1.2-1.5x	1.0-1.2x	<1.0x
		OR	OR	OR	OR	OR	OR	OR
OR								
FFO Interest Coverage (2)		≥10x	7-10x	4.5-7x	2.5-4.5x	1.8-2.5x	1.5-1.8x	<1.5x
Net Debt / Regulated Asset Base (3)	10%	<25%	25-40%	40-55%	55-70%	70-85%	85-100%	≥100%
OR								
Debt / Capitalisation								
FFO / Net Debt	12.5%	≥40%	25-40%	15-25%	10-15%	6-10%	4-6%	<4%
RCF / Net Debt	5%	≥30%	20-30%	10-20%	6-10%	4-6%	2-4%	<2%

Notes:

(1) The Adjusted Interest Coverage Ratio is our preferred metric for water utilities where allowed revenues/tariffs are determined using a 'building block' or equivalent approach and where the components of allowed revenues/tariffs are consistently available and can be verified by from an independent source – in many cases, publications from the regulatory authority itself. For the numerator, Interest net of Inflation Accretion is added back to the extent it was deducted in calculating FFO. Capital Charges represent expenditures recovered in revenues that are not accounted for as operating expenses and are not treated as additional invested capital incrementing the RAB, including regulatory revenue profiling to smooth the impact of tariff increases on customer bills.

(2) In jurisdictions where regulatory revenues/tariffs are not determined with a 'building block approach' or where the regulatory information needed to calculate Capital Charges may not be consistently available, we use the FFO Interest Coverage, calculated (or for forward periods estimated) as (FFO + Interest Expense) / Interest Expense.

(3) For the utilities regulated under a RAB-based model where the RAB accurately represents the invested capital on which the water utility will earn a return over time, we measure leverage as Net Debt to RAB. For water utilities that (1) are regulated under tariff models without a RAB; (2) are regulated under a RAB-based model but where the RAB may not accurately represent the invested capital on which the water utility will earn a return over time (e.g. because of ex-post rate-setting); or (3) where RAB may not be consistently available, we use Debt to Capitalisation.

Preliminary Grid-Indicated Rating (Factors 1-3)

Factor 4 – Structural Considerations and Sources of Rating Uplift From Creditor Protection

Rating uplift of up to 3 notches provided by structural features to grid-indicated outcome from Factors 1-3 above

Grid-Indicated Rating

Appendix B – Indicated Rating and Results of Mapping

In the table below, we identify positive or negative "outliers" for a given sub-factor, defined as issuers whose grid sub-factor score is at least two broad rating categories higher or lower than a company's rating (e.g. a B-rated company whose rating on a specific sub-factor is in the Baa-rating category is flagged as a positive outlier for that sub-factor). Green is used to denote a positive outlier, whose grid-indicated performance for a sub-factor is two or more broad rating categories higher than Moody's rating. Red is used to denote a negative outlier, whose grid-indicated performance for a sub-factor is two or more broad rating categories lower than Moody's rating.

Company	Moody's Rating / bca / Consolidated Corporate Credit Profile	Outlook	Grid Indicated Rating	Stability and Predictability of Regulatory Environment	Asset Ownership Model	Cost and Investment Recovery (Sufficiency & Timeliness)	Revenue Risk	Scale and Complexity of Capital Programme & Asset Condition Risk	Financial Policy	Adjusted Interest Coverage Ratio OR FFO Interest Coverage	Net Debt / Regulated Asset Base OR Debt / Capitalisation	FFO / Net Debt	RCF / Net Debt	Structural Considerations & Rating Uplift
Acquedotto Pugliese S.p.A.	ba1	Stable	Baa2	Baa	Ba	Baa	Aa	B	A	Aa	Baa	Aa	Aaa	0
Affinity Water Limited	Baa1	Stable	A3	Aaa	Aa	A	A	Ba	Ba	Baa	Ba	A	Baa	1.5
American Water Works Company, Inc.	A3	Stable	A3	Aa	Aa	Baa	Baa	Baa	Baa	Baa	A	A	A	0
Anglian Water Services Ltd.	Baa1	Stable	A3	Aaa	Aa	A	A	A	Ba	Baa	Ba	Ba	Ba	1.5
Aquarion Company	Baa3	Stable	Baa2	Aa	Aa	Baa	Baa	Baa	Baa	Baa	Baa	Ba	Baa	0
Bristol Water plc	Baa1	Stable	A2	Aaa	Aa	A	Baa	Ba	Ba	Baa	Baa	A	A	1.5
Companhia de San Bas do Estado de Sao Paulo	ba2	Negative	Ba1	Ba	Ba	Ba	B	Ba	Baa	Baa	A	A	A	0
Companhia de Saneamento de Minas Gerais	ba2	Under Review - Down	Ba1	B	Ba	Ba	Baa	Ba	Baa	A	A	Aa	Aa	0
Companhia de Saneamento do Parana - SANEPAR	ba2	Under Review - Down	Ba1	B	Ba	B	Baa	Baa	Baa	Aa	Aa	Aaa	Aaa	0
Dee Valley Water PLC	Baa1	Stable	A2	Aaa	Aa	A	Baa	Ba	Ba	Baa	Baa	A	A	1.5
Dwr Cymru Cyfyngedig	A3	Positive	A2	Aaa	Aa	A	A	A	Baa	Baa	Baa	Baa	A	0.5
Golden State Water Company	A2	Stable	A1	Aa	Aa	A	A	Baa	A	A	Aa	Aa	Aa	0

Company	Moody's Rating / bca / Consolidated Corporate Credit Profile	Outlook	Grid Indicated Rating	Stability and Predictability of Regulatory Environment	Asset Ownership Model	Cost and Investment Recovery (Sufficiency & Timeliness)	Revenue Risk	Scale and Complexity of Capital Programme & Asset Condition Risk	Financial Policy	Adjusted Interest Coverage Ratio OR FFO Interest Coverage	Net Debt / Regulated Asset Base OR Debt / Capitalisation	FFO / Net Debt	RCF / Net Debt	Structural Considerations & Rating Uplift
Hunter Water Corporation	baa2	Stable	Baa3	Aa	Aa	A	A	Aa	Baa	Ba	A	B	B	0
Korea Water Resources Corporation	baa2	Positive	Baa3	A	A	Ba	Baa	Ba	Ba	Baa	A	Ba	Baa	0
Northumbrian Water Ltd.	Baa1	Stable	Baa1	Aaa	Aa	A	A	Baa	Ba	Baa	Baa	Baa	Ba	0.5
Portsmouth Water Limited	Baa1	Stable	A3	Aaa	Aa	A	A	Baa	Ba	Baa	Ba	Baa	A	1.5
Severn Trent Water Limited	A3	Negative	A3	Aaa	Aa	A	A	A	Baa	Baa	Baa	Baa	Baa	0
South East Water Limited	Baa2	Stable	A3	Aaa	Aa	A	A	Baa	Ba	Baa	Ba	Baa	Baa	1.0
South Staffordshire Water Plc	Baa2	Stable	A3	Aaa	Aa	A	A	Ba	Ba	Baa	Baa	A	A	1.0
Southern Water Services Limited	Baa2	Stable	Baa1	Aaa	Aa	A	A	Baa	B	Ba	Ba	Baa	A	1.5
Sutton and East Surrey Water plc	Baa1	Stable	A3	Aaa	Aa	A	A	Ba	Ba	Baa	Ba	A	A	1.5
Sydney Water Corporation	baa1	Stable	Baa1	Aa	Aa	A	A	Aa	Baa	Ba	A	Ba	Ba	0
Thames Water Utilities Ltd.	Baa1	Stable	Baa1	Aaa	Aa	A	A	Ba	Ba	Baa	Ba	Ba	Baa	1.5
United Utilities Water Limited	A3	Stable	A2	Aaa	Aa	A	A	Baa	Baa	Baa	Baa	Baa	A	0.5
Wessex Water Services Limited	A3	Stable	A3	Aaa	Aa	A	A	Baa	Baa	A	Ba	Baa	Baa	0.5
Yorkshire Water Services Limited	Baa2	Stable	Baa1	Aaa	Aa	A	A	A	B	Ba	Ba	Ba	Baa	1.5

Outlier Discussion:

Acquedotto Pugliese S.p.A's ba1 bca, which compares to a grid-indicated rating of Baa2, is currently constrained by the uncertainties on future investment financing associated with the limited residual life of its concession and by its operational performance levels, which are weaker than its industry peers and show some sign of macroeconomic pressure on working capital. It is also a positive outlier for Revenue Risk, Financial Policy and several Leverage and Coverage Ratios, as these strengths are not sufficient to offset an untested concession renewal environment and operational underperformance.

For Bristol Water plc and Dee Valley Water plc, due to the small size of the company combined with very large investment requirements, Scale and Complexity of Capital Programme & Asset Condition Risk currently take on a greater than standard weight in the actual Baa1 ratings, which compare to A2 grid-indicated ratings.

For South Staffordshire Water plc., additional holding company debt in combination with permitted leverage at the utility currently constrains the ratings at Baa2, compared to grid-indicated ratings of A3.

The illustrative scoring shown above reflects 3-year average historical financial metrics for the latest available annual account in 2015. For the majority of issuers, primarily in the UK and the US, historical metrics tend to benefit from higher allowed revenues, either through regulatory return assumptions that companies were able to outperform in a low interest rate environment or additional bonus depreciation allowances. We expect a deterioration in the projected financial metrics resulting from reduced regulatory returns that will lead to grid-indicated ratings mapping closer to assigned ratings for the affected issuers.

Stability and Predictability of Regulatory Environment and Asset Ownership Model

Water utilities in the UK benefit from a very stable and predictable regulatory and asset ownership framework that has been tested through many tariff cycles, including the most recent price determination published in 2014. This stability is offsetting relatively high financial leverage. The same dynamic exists for the Australian utilities, Hunter Water Corporation and Sydney Water Corporation.

Scale and Complexity of Capital Programme & Asset Condition Risk

Hunter Water Corporation and Sydney Water Corporation are positive outliers, but the small risk associated with maintaining their systems is offset by low allowed returns that affect the Leverage and Coverage ratios.

Financial Policy

Southern Water Services Limited and Yorkshire Water Services Limited are negative outliers, primarily due to risks in their derivatives portfolios that are sensitive to interest rate movements. These risks are partially offset by strong Business Profiles, as reflected in strong scores in those sub-factors.

Leverage and Coverage

The Brazilian water companies, Companhia de San Bas do Estado de Sao Paulo, Companhia de Saneamento de Minas Gerais and Companhia de Saneamento do Parana – SANEPAR, are positive outliers in certain Leverage and Coverage ratios. Prolonged drought conditions in the country have affected water volumes and revenues, and financial metrics on a forward-looking basis are expected to underperform the three year historical averages.

Structural Considerations and Rating Uplift for Creditor Protections

Certain issuers currently receive additional rating uplift either from creditor protections embedded in these companies' licence conditions that create greater credit insulation from their corporate parents (up to 0.5 notches) and/or through creditor benefits embedded within their financing structures (1.0-1.5 notches).

Appendix C – Industry Overview

Generally, regulated water utilities exhibit significantly lower business risk than many other rated corporate sectors, and one of the lowest business risk profiles even among infrastructure issuers.

Under developed regulatory frameworks, the very low business risk primarily reflects:

» Monopoly-type activities, most commonly supported by long-term licence or concession agreements.

» Characteristically strong visibility in revenues and profit generation, due to (1) importance of water and wastewater services provided, which results in overall low demand volatility and general resilience to economic fluctuations; and (2) clear and predictable mechanisms for tariff increases (embedded in the regulatory framework or concession regime), which will sustain revenues over the long term.

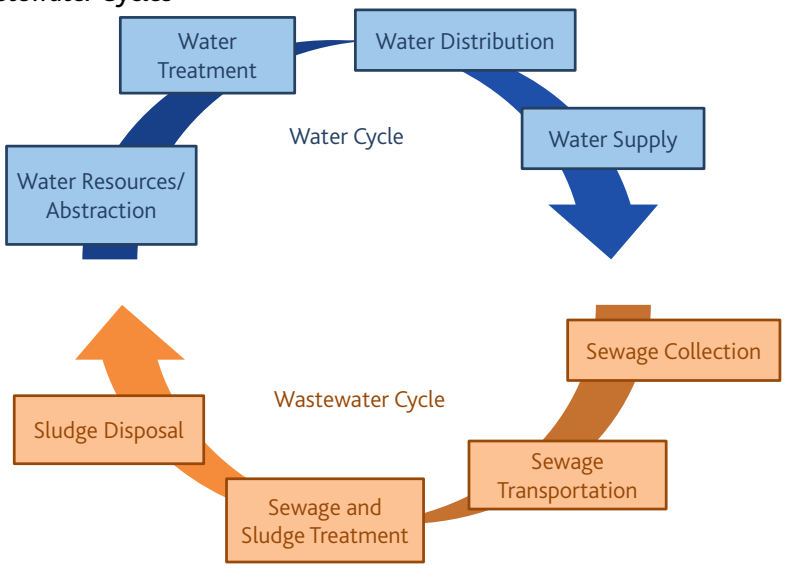
» Strong regulatory supervision due to the critical element of health and environmental implications of the water and wastewater services.

The stable and sustainable levels of cash flows afforded by these characteristics can also translate into a significant capacity to sustain high debt levels over the long term. This is of particular importance as the sector as a whole has massive infrastructure funding needs to enhance existing facilities to improve health and environmental standards. Due to the significant investment requirements issuers will need constant access to external funding as the vast amount of investments cannot be solely covered from internal cash flow generation. Although customer bills continue to rise to cover the additional capital costs of financing the water and wastewater infrastructure (partly offset by efficiency savings in the operations), the industry also remains heavily subsidised in many jurisdictions.

Levels and forms of subsidies differ from jurisdiction to jurisdiction. Most countries provide some form of cross subsidisation between customers through the application of average tariffs across any given water supply area compared to the actual cost of delivery to each respective customer. Furthermore, there are a number of explicit or implicit measures by which governments provide subsidies, such as reduced trade taxes for utilities, or income support and/or targeted assistance for customers in need. Subsidies can also be built directly into the tariff system. For example, when the UK water companies (in England and Wales) were privatised, the value of the regulated asset base was set at the amount achieved through privatisation. The privatisation value, however, was significantly lower than the replacement cost of the regulated assets, as it reflected the historically low charges paid by customers for water and wastewater services. Given that the companies need to incur large amounts of maintenance capex, which has to be spent at the replacement value, water tariffs include a maintenance capex allowance to reflect such higher replacement values, but the return that companies earn is based on the lower regulated asset base. This ensured that customer prices did not rise as much as would otherwise have been the case.

Exhibit 5 illustrated the entire value chain of services in the water and wastewater cycle:

EXHIBIT 5
Water and Wastewater Cycles



Source: Moody's

The combination of water abstraction and treatment is also referred to as bulk supply or upstream wholesale activities. The vertical integration of the water supply chain can stop at this point. This is the case in a number of EU countries, where one large utility may be responsible for the upstream water activities, whilst a number of smaller – usually municipal-owned – suppliers undertake the distribution to the end-consumer. Most of the water utilities rated by Moody's are integrated providers of water and/or wastewater services along the entire value chain, which in addition to the bulk supply also includes the distribution and sale to customers. Among the Moody's rated universe, we only have one rated water wholesaler: Korea Water Resources Group.

Different business models have been adopted globally in managing the water and wastewater activities. In many countries around the world, the supply of water and treatment of wastewater are public services and the legal responsibility of municipalities. In these cases the legal ownership of the assets also lies with the municipalities. However, there exist a variety of operational models that are derived from this set-up.

First, the water and wastewater infrastructure assets can be operated under direct management by the municipality itself. In these cases, the water and wastewater services would be part of the general regional or local administration (such instances are not covered under this rating methodology). Second, the management of the water and wastewater infrastructure can be delegated to another entity. Such entity can be – and in many instances is – partly or wholly owned by the regional or local government that retains the legal responsibility for the provision of water and wastewater services. Third, water services may be completely privatised along the entire value chain of water and/or wastewater provision, which has occurred in relatively few countries. The UK (more specifically England and Wales) is the most notable example of a country that has transferred the responsibility of water and wastewater services entirely to the private sector, albeit under stringent regulatory oversight.

With respect to delegated management, a variety of different forms of contracts, concessions or licence arrangements exists, which can be summarised into the following main business models:

Management Contract: This is usually a short-term (3-5 years) arrangement for the management of operational facilities. The assets remain in the public sector, usually with the relevant municipality, which

also collects the user charges from the customers. The managing entity is remunerated by the municipality through payment of a management fee. Depending on the contract, it may include a number of performance targets against which the managing entity will be measured. Capital expenditure requirements and their funding remain principally the responsibility of the relevant municipality.

Lease Contract: A lease contract is similar to a management contract in that the asset ownership remains with the municipality. However, the relevant service undertaker responsible for the operation of the assets collects the user charges directly from the end customers, and may also be responsible for funding investments in the assets over the life of the contract. Lease contracts commonly apply over periods of 8-15 years.

Concession Contract: This is one of the most wide-ranging options in transferring responsibility for the assets to the relevant service undertaker. Concession arrangements usually cover a period of 25-30 years and transfer the economic benefits and costs of asset ownership to the service undertaker for the time of the concession. The service undertaker therefore also takes responsibility for capital investments and funding requirements. The terms of the concession are negotiated on a bilateral basis, but may be based on a general legislative and/or regulatory framework applied throughout a jurisdiction. Given the length of the contract, a concession also generally includes tariff reviews at specified intervals. Examples of this model include water and wastewater operation in France, Italy, Spain and Brazil.

Licence: The licence approach is usually very similar to a long-term concession. However, the terms of the licence are usually set in law and are commonly applied to all licensed undertakers. Licences may have maturities similar to long-term concession or run in perpetuity, with an option to terminate the licence for severe performance failures. For example, licences apply for water companies operating in England and Wales; for these companies the licences include a condition that allows licence termination subject to a 25 year notice period.

Furthermore, for single asset transactions or projects, a number of specific arrangements can be applied, such as Design, Build, Operate (DBO); Build, Own, Operate (BOO); or Build, Operate, Transfer (BOT). These contractual arrangements are generally used in cases of large investment requirements for a specific asset, which can be transferred to the private sector, for example through project finance arrangements. Such contracts are commonly restricted to one particular asset, such as the construction and operation of a treatment work, and can have similar terms as concessions.

Generally, all contracts and concessions are initially put out to competitive tender, and will usually require re-tendering at their expiry.

Regional Profiles

United Kingdom

Moody's currently rates nine of the ten water and sewerage companies (WaSCs) operating in England and Wales as well as seven of the eight water only companies (WoCs). The WoCs are generally smaller in size and provide only water services within the overall franchise area of the larger WaSCs, which also undertake sewerage services.

The average rating of the UK water sector based on the credit quality of the relevant corporate family is currently around A3-Baa1, with most of the debt rated at A3. This reflects certain regulatory constraints that have tended to restrict the ability of companies to position themselves lower in the rating scale, but also the industry's fundamental characteristics.

Over the last two decades, leverage among the UK rated water utilities has increased significantly. This development largely reflects a combination of shareholders' desire to maximise returns, regulatory constraints that restrict the ability of operating companies to position themselves lower in the rating scale and the way industry has been regulated. As low-risk but highly capital intensive businesses, water companies have sought to optimise their capital structures by balancing the attractions of high leverage in benign debt markets with the need to preserve solid investment-grade ratings to retain good access to the range of debt funding available to infrastructure issuers. As part of this development, regulated water companies that have been acquired have generally been leveraged materially to re-finance acquisition debt. This trend increases event risk for lower-leveraged entities to follow suit, including in other countries.

Overall, Moody's currently regards the regulatory risk profile of the UK regulated water utilities as one of the lowest globally. The framework is transparent and well-established, leading to a high predictability of cash flows for the sector. This has allowed UK water companies to sustain a relatively high level of leverage and maintain an investment-grade profile.

The UK water sector has recently completed the regulatory review process to determine prices for the five-year period 2015-20. The final price determination, published in December 2014, includes challenging assumptions for the UK water companies, including a significant reduction in the allowed return. Whilst the price review has been overall neutral for credit ratings in the sector in light of lower financing costs, we expect that shareholder returns will decline and that dividend policies will reflect the realities of both the new price limits and the size of each company's capital investment programme. Should dividend policies of individual companies become out of sync with earnings, downward rating pressure may result.

Over the long term, the UK water sector faces challenges from the proposed introduction of competition to certain elements of the value chain. Competition for retail water supply to business customers will commence in April 2017. Whilst this part of the business is relatively small and competition in this area is unlikely to result in negative credit implication, government plans to introduce household retail competition and proposals for developing upstream markets, both from 2020, may prove more disruptive for the sector's long term credit quality.

Rest of Western Europe

Water services in the rest of Western Europe remain largely in public hands. In particular, the water and wastewater infrastructure usually remains in the ownership of local or regional governments. The assets and/or their operations could be transferred to a government-related corporate entity. However, very few of these entities have accessed the debt capital markets to date.

In a number of cases, local or regional governments have outsourced the operations of their water and wastewater infrastructure to the private sector, mainly through short-term management contracts, e.g. in France.

United States

The US water industry is highly fragmented, mostly comprised of small municipal water and waste water systems that suffer from underinvestment. Investor-owned utilities are a small minority of companies in the sector. Tariff-setting regulation primarily takes place at the state level, and the regulatory environment can vary meaningfully from state to state. Generally, however, US state regulators have been more interventionist than their UK counterparts in terms of requiring an actual capital structure that matches the regulatory construct (which can act as a limitation on distributions) as well as limitations on loans to and transactions with affiliates, which has led to a greater degree of credit insulation between operating companies and their parents. US water utilities are also subject to federal and state laws and regulations that govern water quality and environmental considerations such as wastewater discharge.

Brazil

Brazilian water utilities are currently challenged by the lack of a consolidated regulatory framework to ensure stable and predictable levels of income and cash flows supportive of their capital-intensive activities. Water and wastewater services in Brazil are subject to several laws at federal, state and municipal levels. In general, they operate pursuant to long-term concession agreements with the various municipalities in their region of service, and the municipalities retain ownership of the underlying concession assets. Concession contracts often lack provisions for tariff adjustments, so rates are set by the state government, leaving ample room for politically driven decisions. The concession contracts often have written provision clauses that entitle the company to the recovery of the assets' residual value at termination; however, because the municipalities lack sufficient financial resources to fund investments or to reimburse past investments themselves, concessions tend to be renewed upon maturity rather than being terminated.

Korea

Korea's water utility sector is tightly controlled by the Korean government (Aa3 positive). The government's policies and regulations towards the country's water utility sector have material impact on the rated water utility's market position and operating performance. The market structure of the county's water utility sector has been very stable, because of the government's policy to ensure stable water supply. However, stability and predictability of the company's cash flows from operations have generally been weak. Tariff adjustments are subject to the government's final approval, and the government has a weak track record in the consistency of tariff decisions and in providing reasonable rates of return. Nevertheless, the government has shown very high willingness to provide on-going financial support that has benefited the credit quality of the rated water utility.

Australia

Australia's water utilities are GRIs owned by state governments, and the high likelihood of support from the states has been a material driver of their ratings. Operations and management of the water and waste water services are outsourced by the states to the water utilities under license agreements. Due to the ownership structure, the water utilities typically have very strong liquidity and funding profiles, because all funding is sourced entirely from state treasury corporations. This arrangement has ensured that the water utilities have ongoing access to liquidity and long-term capital. To-date, the water utilities have disclosed no plans to seek external funding. Water utilities in Australia are regulated by state-based regulators, with regulatory regimes which are considered to be stable and mature. Regulatory frameworks - based on the "building-block" approach - are well established and increasingly transparent, which has provided stability and predictability of revenue outcomes for the water utilities.

Moody's Related Research

The credit ratings assigned in this sector are primarily determined by this credit rating methodology. Certain broad methodological considerations (described in one or more secondary or cross-sector credit rating methodologies) may also be relevant to the determination of credit ratings of issuers and instruments in this sector. Potentially related secondary and cross-sector credit rating methodologies can be found here.

For data summarizing the historical robustness and predictive power of credit ratings assigned using this credit rating methodology, see link.

Please refer to Moody's Rating Symbols & Definitions, which is available here, for further information.

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

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ABANDON ALL *HOPE*? FERC'S EVOLVING STANDARDS FOR IDENTIFYING COMPARABLE FIRMS AND ESTIMATING THE RATE OF RETURN

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Synopsis: The "comparative risk" standard established by *Hope Natural Gas* is a basic tenet of estimating regulated rates of return.[1] *Hope* remains the *sine qua non* for determining whether regulated rates of return set by the Federal Energy Regulatory Commission (FERC) and by state utility regulators are just and reasonable. In the last few years, however, the FERC's approach to setting regulated rates of return has evolved, and this evolution has raised new methodological and legal issues. This article examines how the FERC's approach to setting the rate of return for regulated electric companies and natural gas pipelines has changed over time, most recently including the changes arising out of its *Atlantic Path 15, Williston Basin,* and *Kern River* decisions. In this article, we evaluate approaches to determining comparable risk and the limitations of those approaches. We discuss controversies that have arisen in setting the rate of return within what regulators typically refer to as the "zone of reasonableness," and we explore how those controversies are embedded in the overarching meaning of "comparable risk." We also introduce a statistically robust approach that can avoid the more arbitrary aspects of establishing proxy groups. We conclude with recommendations as to how the FERC and other state and federal regulators can lessen these ongoing controversies while ensuring that allowed rates of return are truly "just and reasonable."

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1. Fed. Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591 (1944) [hereinafter *Hope*].

I. INTRODUCTION

Under the long-established but unwritten "regulatory compact,"[2] a regulated firm agrees that the prices it charges will be set by regulators, and regulators agree that the prices they set will allow the firm to recoup its operating costs plus a reasonable profit. For a regulated firm, "reasonable profit" is defined as the rate of return that is sufficient to attract the capital the firm needs to continue to meet its obligations. Regulators rely on the regulated firm's overall cost of capital to estimate such a rate of return.[3]

There are two main components to any firm's overall cost of capital: the cost of debt and the cost of equity. The cost of debt generally can be directly measured, but the cost of equity cannot. As a consequence, determining an appropriate return on equity and an overall fair allowed rate of return for a regulated firm is one of the oldest issues in rate regulation.

Beginning in the 1890s, state regulators relied on the "fair value" of a regulated firm's assets to determine the rate of return. This approach culminated in the U.S. Supreme Court decision in *Smyth v. Ames*,[4] and came to be known as the "Fair Value" Doctrine. The Fair Value Doctrine did not last long; it collapsed under its inherent circularity—the value of a regulated firm was whatever regulators said it was.[5] A decade later, in *Consolidated Gas*,[6] the Court began to discuss the relationship between risk and return directly; it reasoned that a fair rate of return encompassed a return on invested capital and a return for risk.[7]

By 1923, in its *Bluefield* decision,[8] the Court had begun to zero in on the idea of comparable risk, stating as follows:

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2. The origin of the "regulatory compact" is arguably the concept of regulating firms in the "public interest." For a discussion of the origins and key legal cases, CHARLES F. PHILLIPS, JR., THE REGULATION OF PUBLIC UTILITIES, 89-118 (Public Utilities Reports, Inc. 1988).

3. A regulated firm's overall rate of return, usually called its "weighted average cost of capital," is based on its embedded cost of debt, its allowed return on equity, and the fractions of debt and equity relative to the firm's total capitalization. For a brief discussion, JONATHAN A. LESSER & LEONARDO R. GIACCHINO, FUNDAMENTALS OF ENERGY REGULATION, 110-11 (Public Utilities Reports, Inc. 2007).

4. 169 U.S. 466 (1898).

5. One definition of the "value" of a firm is the present discounted value of its future net earnings stream (i.e., dividends plus stock price appreciation). This is similar in concept to "enterprise value," which reflects the current value of a firm's equity, less existing obligations, plus any cash on hand. For any regulated firm, one can always estimate future earnings—as long as that valuation does not form the basis for setting the rates from which the regulated firm ultimately derives its earnings. The reason is that, when future earnings depend on a ratemaking formula that references the value of the firm's capital, one has created a circular process: one cannot determine value based on prices that are determined based on value in the first place.

6. Willcox v. Consol. Gas Co., 212 U.S. 19 (1909).

7. *Id.*

8. Bluefield Waterworks & Improvement Co. v. Pub. Serv. Comm'n, 262 U.S. 679 (1923) [hereinafter *Bluefield*].

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time . . . *in other business undertakings which are attended by corresponding risks, and* uncertainties;. . . . The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate . . . to maintain and support its credit and enable it to raise money necessary for the proper discharge of its public duties.[9]

Two decades later, the principle of basing a regulated utility's return on the financial risks of other comparable firms was firmly established in the Court's 1944 *Hope* decision, in which the Court stated as follows:

"[T]he return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital."[10]

For the last seven decades, the quoted language from *Hope*, along with the comparable risk standard (once called "comparative" risk) has been the *sine qua non* for determining whether regulated rates of return set by federal regulators, such as the FERC, and state utility regulators are just and reasonable. Yet, the ways that regulators determine which firms have comparable risk remain quite arbitrary. Perhaps this is inevitable. Every firm is unique, and, therefore, it is impossible to say that any two firms face identical financial and business risks.

Since 2000, financial risk in regulated electric utilities, transmission owners, and generators has been affected by volatile fuel markets and regulatory uncertainty that has affected the industry as it has evolved. For example, the restructuring efforts of the 1990s continue in some segments of the industry (such as transmission markets), while a move towards re-regulation appears to be underway in the generation market.

The task of establishing separate rates of return for transmission, generation, and distribution functions has also been complicated by restructuring, generation mandates for renewable resources, new FERC incentives for transmission investment,[11] and the risks associated with looming greenhouse gas regulations. These changes, along with the upheaval in global financial markets, have made it more difficult to identify risk-comparable firms that can be used to determine "zones of reasonableness" within which allowed returns can be set. As a result, the criteria traditionally used by the FERC and state utility regulators to establish risk comparability may no longer be relevant or adequate. Consequentially, allowed rates of return may be straying ever further away from satisfying the Court's mandate that returns must be sufficient to maintain financial integrity and attract capital.[12]

This article first examines how the FERC's policy toward defining comparable risk for the firms it regulates has changed over time. As we discuss, the general approach taken by the FERC in defining comparability has not been consistent. It is reasonable to expect that the major factors influencing the financial risks faced by regulated firms might change over time, but, even given this inevitability, the FERC's approach to defining comparability has proven to

9. *Id.* at 692-93 (emphasis added).

10. *Hope*, *supra* note 1, at 603.

11. *Promoting Transmission Investment through Pricing Reform*, 116 F.E.R.C. ¶ 61,057 (2006).

12. *Hope*, *supra* note 1.

be unnecessarily arbitrary. In a 1987 Notice of Proposed Rulemaking (NOPR), the Federal Communications Commission (FCC) recognized that the common "screening" approach used to determine groups of risk-comparable firms (the approach most used today by both the FERC and state utility regulators) fails to allow for any substitution across various risk measures.[13] To avoid the weaknesses of the direct screening approach, the FCC NOPR recommended using a statistical technique called cluster analysis to identify firms of comparable risk. Oddly, the FCC ultimately did not adopt the approach, although it has been used since in several instances in both telecommunication and electric rate cases. In this article, we review this technique and demonstrate several examples of its application. Although cluster analysis is not a panacea for selecting risk-comparable firm—that process will always include some degree of subjectivity—we believe cluster analysis aids in the selection of the *most* comparable firms and, thus, better serves the Court's requirements set out in *Bluefield* and *Hope*.

II. THE FERC'S EVOLVING APPROACH TO COMPARABILITY

The *Bluefield* and *Hope* decisions require all state and federal regulators to ensure that the companies they regulate earn rates of return sufficient to continue their operations and attract capital, while at the same time guaranteeing that the rate is just and reasonable to ratepayers.[14] Typically, rate of return is determined on a case-by-case basis through administrative procedures.[15] In these "rate cases," regulators rely on evidence presented by various parties to determine the allowed return on equity (ROE) as well as an appropriate capital structure.[16]

Economists define the required rate of return on a particular investment as the return that investors forego by making that investment instead of an alternative investment of equal risk. This is known as the opportunity cost of capital. Although the cost of debt is easily observable, the required return on equity is not. Moreover, in many cases, regulated firms are not publicly traded, either because they are privately held or are subsidiaries of parent companies which may or may not be publicly traded. Thus, in setting an allowed rate of return on invested capital that meets the requirements established by the *Bluefield* and *Hope* decisions, regulators like the FERC must: (1) identify risk-comparable firms, (2) determine an appropriate capital structure for the regulated firm, and (3) apply one or more analytical methodologies to estimate an appropriate allowed ROE.[17] This article focuses on step (1)–identifying risk-comparable firms. The group of risk-comparable firms (the "proxy group") forms the basis from which the FERC determines an allowed return for the firm

13. Refinement of Procedures and Methodologies for Represcribing Interstate Rates of Return for AT&T Communications and Local Exchange Carriers, 2 F.C.C.R. 6491 (proposed Oct. 8 1987).

14. *Hope*, *supra* note 1; *Bluefield*, *supra* note 8.

15. *Hope*, *supra* note 1.

16. *Hope*, *supra* note 1; *Bluefield*, *supra* note 8.

17. A discussion of the methods used by regulators and analysts to estimate ROE and determine optimal capital structure is beyond the scope of this article, as is a discussion of optimal capital structure. For a brief introduction to the most common methods used, LESSER & GIACCHINO, *supra* note 3, at 114-18. For a more detailed discussion, ROGER A. MORIN, NEW REGULATORY FINANCE ch. 4-6 (Public Utilities Reports, Inc. 2006). For an introduction to capital structure issues, RICHARD A. BREALEY & STEWART C. MYERS, PRINCIPLES OF CORPORATE FINANCE 453-465 (Academic Internet Publishers, Inc. 2006).

under investigation. This section describes how the FERC has historically defined comparable risk and, when used, how the FERC's various definitions of comparable risk were translated into screening parameters for establishing proxy groups.

A. Early Regulation and the Absence of Proxy Groups

The FERC's approach for determining allowed rates of return has changed repeatedly over time. Prior to passage of the Energy Policy Act of 1992,[18] the primary regulatory focus of the FERC was setting allowed rates of return for interstate natural gas and oil pipelines. The Energy Policy Act of 1992 created a broad class of exempt wholesale generators, established open access to high-voltage transmission systems, and set in motion the restructuring of the electric industry.[19] After 1992, the FERC's approach to rate regulation necessarily began to change.

At first, the FERC did not even require the use of proxy groups to determine comparable risk. It instead focused on a single company or, where the regulated entity was a subsidiary, the return of the parent company. Until the early 1990s, many of the FERC's determinations of allowed returns focused on the relative risk of a wholly owned subsidiary relative to its parent.[20] For example, in *Williston Basin* the FERC relied on a stand-alone DCF analysis of the company's parent, MDU Resources, Inc., and then adjusted the resulting value downwards based on Staff's analysis using the Capital Asset Pricing Model.[21]

When proxy groups were used, they were broadly defined and were employed more as guidelines, rather than as a means to determine zones of reasonableness for a given regulated entity's allowed return. For example, in *Tennessee Pipeline* the FERC relied on a hodgepodge of recommendations, none of which was based on a well-defined proxy group.[22] In that case, the company's witnesses presented a risk-premium analysis tied to (1) the pipeline's parent company, Tenneco; (2) "the earned returns of the top 25% of unregulated industrial companies"; and (3) a stand-alone discounted cash flow (DCF) study applied to Tenneco itself.[23] Oddly enough, in its decision the FERC stressed the importance of determining the company's risk relative to its parent Tenneco, stating as follows:

> Having concluded that Tennessee is lower risk than Tenneco and so has a lower cost of equity, we must determine how much lower Tennessee's cost of equity is than Tenneco's. Unfortunately the record evidence concerning the degree (as distinguished from direction) of the difference in their risks and costs of equity is

18. Energy Policy Act of 1992, Pub. L. No. 102-486, 106 Stat. 2776 (1992).

19. 106 Stat. 2776, 2905.

20. *See, e.g., Arkansas Louisiana Gas Company,* 10 F.E.R.C. ¶ 61,027 (1980); *Tennessee Gas Pipeline Company,* 25 F.E.R.C. ¶ 61,020 (1983); *Consolidated Gas Supply Corporation,* 24 F.E.R.C. ¶ 61,046 (1983); *Williston Basin Interstate Pipeline Company*, 50 F.E.R.C. ¶ 61,284 (1990).

21. *Id.*

22. *Tennessee Gas Pipeline Company*, 25 F.E.R.C. ¶ 61,020 (1983).

23. *Id.* at 61,091-92. For a discussion of the use of the DCF methodology, Win Whittaker, *The Discounted Cash Flow Methodology: Its Use in Estimating a Utility's Cost of Equity*, 12 ENERGY L.J. 265-290 (1991).