CREDIT OPINION
4 October 2018

Update

Rate this Research

RATINGS

Vattenfall AB

Domicile	Sweden
Long Term Rating	A3
Type	LT Issuer Rating
Outlook	Stable

Please see the ratings section at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

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Vattenfall AB

Update to reflect H1 2018 results

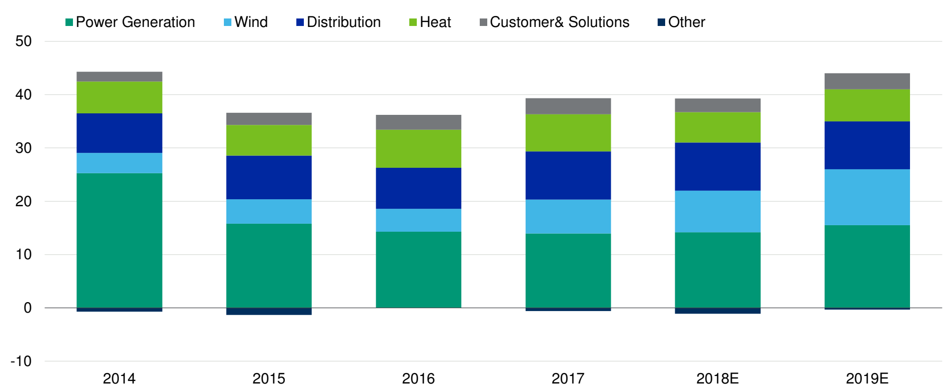
Summary

Vattenfall AB (Vattenfall)'s credit quality is supported by (1) the company's breadth and scale of operations; (2) its clean generation portfolio in the Nordics; (3) relatively stable and predictable cash flows generated by its electricity distribution and district heating activities; and (4) an increasing contribution from contracted renewables and the company's growing expertise in offshore wind development.

These factors are balanced by (1) Vattenfall's exposure to conventional power generation, which accounted for around 35% of underlying EBITDA in 2017; (2) the competitive environment in retail markets; (3) the expected cuts in allowed returns for the distributions networks; and (4) execution risk associated with Vattenfall's strategy to grow its renewable energy portfolio and adapt to the evolving industry of energy services.

From a financial risk perspective, we expect Vattenfall's ratios to weaken this year but improve from 2019 as the company's investments in renewables and distribution networks translate into growth in earnings, further supported by a stronger performance of the power generation segment on the back of increased power prices and lower nuclear and hydro taxes in Sweden.

Exhibit 1
Wind segment will drive increase in Vattenfall's earnings in 2019
Underlying EBITDA breakdown, in SEK billion



The estimates represent Moody's forward view; not the view of the issuer.
Source: Company's reports, Moody's Investors Service

Vattenfall's credit quality benefits from the presence of the Government of Sweden (Aaa stable) as the company's 100% shareholder and the potential for extraordinary support should it become necessary.

Credit strengths

» Predominantly clean generation mix in the Nordic region

» Increasing power prices and lower taxes support profitability of nuclear and hydro generation

» Solid earnings contribution from regulated and contracted businesses

» 100% state ownership supports credit quality

Credit challenges

» Material earnings contribution from merchant-based generation

» Large capital expenditure programme and execution risks associated with offshore wind development

» Increasingly competitive environment for new renewable assets and move towards merchant-based offshore wind projects

Rating outlook

The stable outlook reflects our expectation that (1) Vattenfall will be able to maintain financial metrics in line with the guidance for the current rating, which includes funds from operations (FFO)/net debt approaching 20% and retained cash flow (RCF)/net debt approaching 15%; and (2) the company will deliver on its strategy of shifting its business risk profile to lower risk activities.

Factors that could lead to an upgrade

Upward pressure on Vattenfall's ratings is unlikely in the medium term given the company's exposure to conventional generation and considering the execution risks associated with delivery of the company's strategy.

Factors that could lead to a downgrade

The ratings could be downgraded if (1) credit metrics appear unlikely to meet our guidance for the A3 rating; or (2) delivery of Vattenfall's strategy assuming an increase in regulated and contracted cash flows was challenged. This could be due to, for example, delays and/or cost overruns in offshore wind development. A change in the government support assumption could also result in a downgrade of Vattenfall's ratings.

Key indicators

Exhibit 2
Vattenfall AB

	3/31/2018(L)	12/31/2017	12/31/2016	12/31/2015	12/31/2014
(CFO Pre-W/C + Interest) / Interest	4.5x	4.6x	5.1x	5.7x	5.6x
(CFO Pre-W/C) / Net Debt	20.7%	20.9%	19.1%	22.6%	21.0%
RCF / Net Debt	19.8%	20.0%	18.1%	22.0%	20.7%

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
Source: Moody's Financial Metrics™.

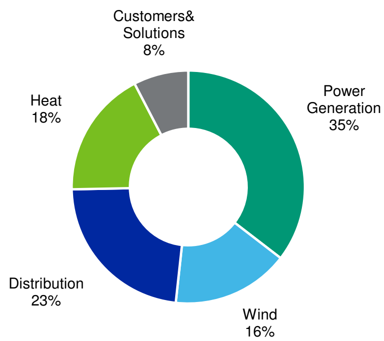
Note: For definitions of Moody's most common ratio terms please see the accompanying User's Guide.

Profile

Vattenfall AB is a 100% Swedish state-owned company. With 31 gigawatts (GW) in installed capacity and 127 terawatt hours (TWh) in electricity output, Vattenfall is one of the biggest European energy groups. The company's generation portfolio primarily includes hydro (8.7 GW) and nuclear power (7.2 GW) in the Nordic region, as well as coal and gas in Germany and the Netherlands. Vattenfall has also an increasing portfolio of wind assets and 11 GW in installed capacity in heat, mainly in Germany, Sweden and the Netherlands. In addition to power and heat generation, Vattenfall owns Sweden's largest electricity distribution network and the electricity distribution grid in Berlin. The company's retail base includes around 6.4 million of electricity customers and 2.3 million of gas customers.

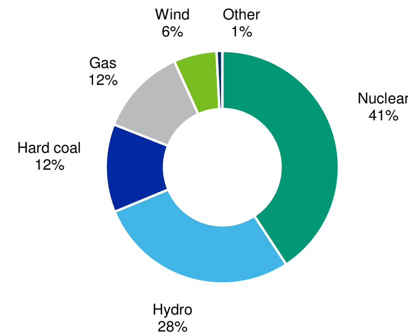
Vattenfall derives majority of its earnings in Sweden (62% of underlying operating profit), Germany (32%) and Netherlands (4%).

Exhibit 3
Vattenfall has a diversified business mix
Underlying EBITDA breakdown, in 2017



Note: Total underlying EBITDA of SEK38.7 billion.
Source: Company, Moody's Investors Service

Exhibit 4
Nuclear and hydro account for the bulk of generation
Breakdown of output, in 2017



Note: Total output of 127 TWh.
Source: Company, Moody's Investors Service

Detailed credit considerations

Strategic focus on shift toward clean energy

Vattenfall's strategy is to drive a transition into a fossil-free society, supported by growth in renewables and maintenance of hydro and nuclear power as baseload capacity. This includes investments in both central and decentralised solutions.

In line with this strategy, the company plans investments of SEK46 billion in 2018-19. Around half of this amount – some SEK22 billion – is earmarked for growth capital expenditure (capex), primarily on expansion in onshore and offshore wind (SEK13 billion). Other growth projects include expansion of networks and development of decentralised solutions, such as solar and e-mobility. Maintenance capex is mainly related to investments into distribution networks and modernisation of the heat portfolio, coupled with safety investments in the Swedish nuclear and hydro power plants.

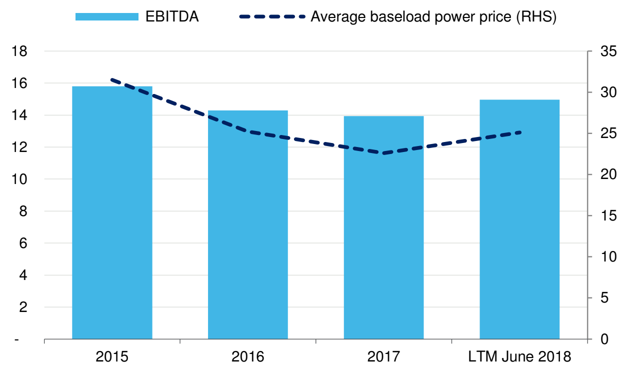
As a result, we expect Vattenfall's business mix to continue to shift. The share of the power generation segment will, however, continue to vary depending on the evolution of power prices and performance of other segments. We currently expect that Vattenfall will derive some 58-60% of its earnings from regulated, quasi-regulated and contracted cash flows in 2018-19.

Vattenfall has not provided a target for capex over the medium term. However, given the company's pipeline of offshore wind projects – including the Hollandse Kust Zuid 1 and 2, with commissioning expected beyond 2019 – and focus on efficiency and smart grid solutions, we expect the majority of investments to continue to be directed into growing wind capacity and regulated networks.

Profitability of generation supported by recovery in power prices and cuts in Swedish taxes

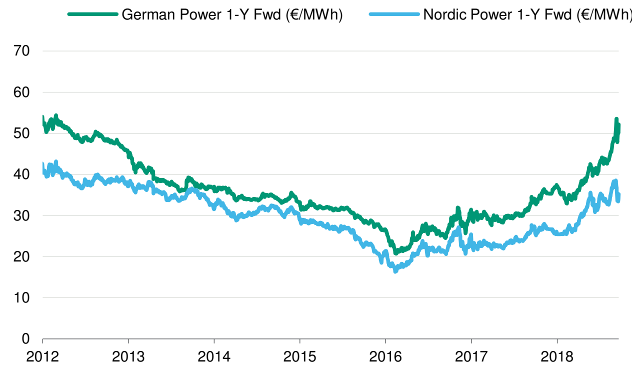
With close to 70% of 2017 output represented by nuclear and hydro, Vattenfall's generation fleet is predominantly fixed-cost in nature, making the company particularly exposed to prevailing wholesale power prices.

Exhibit 5
Vattenfall's earnings are sensitive to changes in power prices
Underlying EBITDA in SEK billion, power price in €/MWh



Source: Company's reports, Moody's Investors Service

Exhibit 6
Power prices have continued a strong rally since early 2018
1-year forward, in €/MWh



Source: FactSet, Moody's Investors Service

Nordic power prices are fundamentally a function of European continental power prices (primarily Germany where we expect coal will continue to set the price most of the time over the next few years - see In Germany, national policies will continue to challenge conventional generators, published in July 2018), adjusted for prevailing hydrological conditions and transmission capacity. This reflects the fact that Nordic hydro is priced at the marginal production cost found via interconnectors. (See In the Nordics, decarbonisation targets boost demand but extend capacity surplus, published in July 2018).

Power prices have continued a strong rally since the beginning of this year on the back of higher commodity and carbon prices. Extremely dry and warm early summer weather also contributed to rising electricity prices in the Nordic countries as a result of lower water flows. Baseload power prices in Germany are in excess of €50/MWh, while power prices in the Nordic region are at some €34/MWh.

The improvement in power prices, if sustained, will benefit Vattenfall's power generation earnings, although the impact will be limited by hedges. As of end-June 2018, Vattenfall had hedged 75% and 64% of its Nordic output at €27/MWh in 2018 and 2019 respectively. The company has also hedged 30% of its 2020 output at €30/MWh.

Taking into account Vattenfall's generation portfolio in the Nordic region, we estimate that a €1/MWh increase in wholesale power prices will boost operating profits by around SEK900 million on an unhedged basis. While the impact of higher power prices on Vattenfall will be gradual, earnings of this division will be supported by the cuts in nuclear and hydro taxes in Sweden, as well as cost cutting initiatives.

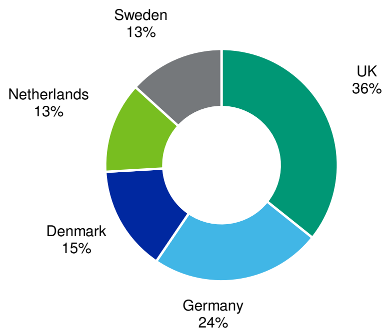
Nuclear and hydro taxes in Sweden

In 2016, the Swedish government decided to phase out the nuclear capacity tax and cut hydro real estate taxes in order to support the country's path to free-carbon generation and promote low carbon investments. Nuclear capacity tax of SEK70/MWh was cut by 90% from 1 July 2017 and abolished from 1 January 2018, resulting in annual savings to Vattenfall of around SEK3 billion a year. The cuts to hydro real estate tax, which amounted to SEK85/MWh, are gradually implemented over the 2017-20 period (a tax rate will decline from 2.8% to 0.5% over the period). We estimate the annual savings to Vattenfall at SEK2 billion.

Renewables growth will boost long-term contracted cash flows, but strategy carries some execution risk

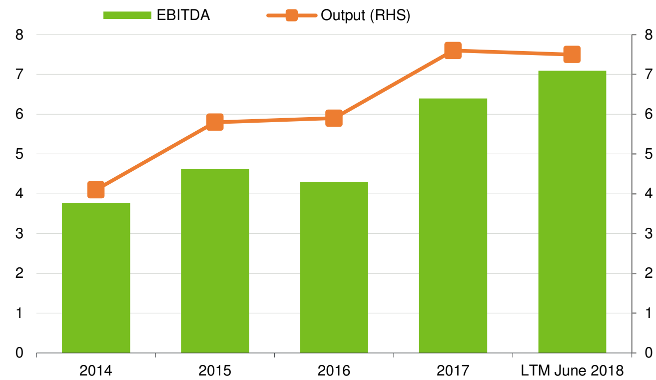
Vattenfall's installed capacity in renewables, excluding hydro, amounts to around 2.8 GW, of which 1.6 GW is offshore wind. The company's portfolio of renewables is spread over five European countries (Denmark, Sweden, Germany, UK and the Netherlands), with the UK accounting for around a third of the installed capacity.

Exhibit 7
Vattenfall has a diversified portfolio of renewables
Breakdown of installed capacity, as of end-June 2018



Total capacity of 2.8 GW.
Source: Company's reports, Moody's Investors Service

Exhibit 8
Wind earnings have increased on the back of higher output
EBITDA in SEK billion, output in TWh



Underlying EBITDA as reported.
Source: Company's reports, Moody's Investors Service

The renewable assets benefit from support schemes, which provide a degree of earnings stability and insulate Vattenfall from wholesale power price volatility. The company's merchant power price exposure in renewables is mainly related to wind farms, for which the subsidy period has expired, the Swedish wind farms under the certificate scheme and the UK wind farm projects under the renewable obligation certificates (ROC) scheme. Over 70% of Vattenfall's revenues is, however, generated from the sale of power based on fixed tariffs, with a remaining subsidy-based contract life of around 10 years. The long-term contracted cash flows under supportive and well-established regulatory regimes underpin Vattenfall's credit quality.

Although renewable subsidies provide lower risk cash flows than merchant generation, wind farms are subject to output variability dependent on wind conditions. Moreover, we consider that offshore wind development carries material execution risks. This is only somewhat mitigated by Vattenfall's growing experience and track record of project delivery.

Vattenfall's pipeline includes 6 GW of wind projects in development and around 500 MW in large scale solar. The company's medium-term capex will be mainly related to the three offshore wind farms in Denmark, which will result in a meaningful step up in capacity and associated earnings once commissioned.

Exhibit 9
Offshore wind accounts for the bulk of Vattenfall's investments in renewables
Major projects, as of end-June 2018

	Horns Rev 3	Near Shore	Kriegers Flak	Hollandse Kust Zuid 1&2
Type	Offshore	Offshore	Offshore	Offshore
Country	Denmark	Denmark	Denmark	Netherlands
Capacity	407 MW	344 MW	605 MW	700 MW
Completion	2019e	2020e	2021e	2022e
Subsidy regime	Feed-in-tariff	Feed-in-tariff	Feed-in-tariff	Merchant
Subsidy level	€103.1/MWh	DKK475/MWh	€49.9/MWh	-
End of subsidy period	2031e	2031e	2032e	-

Note: The end of subsidy period for Danish offshore wind projects depends on the number of hours.
Source: Company and other, Moody's Investors Service

Merchant-based offshore wind projects bring additional risks

In May 2018, Vattenfall was awarded the contract to build two 350 MW offshore wind farms in the Netherlands. The Hollandse Kust Zuid 1 and 2 project with a total capacity of 700 MW is expected to be commissioned in 2022. This will be the first subsidy-free project to reach operations.

While economies of scale and technological progress have driven a significant reduction in costs, we view merchant-based offshore wind projects as significantly higher risk than other types of generation. This is because of their exposure to both output and power price volatility. While Vattenfall may be able to mitigate some of the risks via power purchase agreements (PPAs), these may not offer protection equivalent to that of a fixed-tariff subsidy regime and will leave the company exposed to a counterparty risk.

Moderate contribution from networks, lower returns will drive reduction in earnings

In 2017, some 23% of Vattenfall's underlying EBITDA was derived from the regulated electricity distribution networks in Sweden and Germany (Berlin). With EBITDA of SEK7.4 billion, Swedish grids accounted for some 80% of the total earnings of this division.

Vattenfall is the largest electricity distribution network owner and operator in Sweden, where electricity network tariffs are determined in the form of a revenue cap. The level of remuneration for the current regulatory period spanning 2016-19 was subject to an appeal by both the Swedish Energy Markets Inspectorate (Ei) and the network operators. As a result of the appeal process, the weighted average cost of capital (WACC) was set at 5.85%. In August 2018, the Swedish government announced draft regulation for distribution networks for the 2020-23 period. Based on the preliminary calculations the allowed return will be reduced to approximately 3%, which - if approved - and coupled with adjustment for over-recoveries would drive a meaningful reduction in Vattenfall's earnings.

In Germany, the incentive-based regulation continues to evolve but the regulatory regime is gaining more track record in its operation. For the third regulatory period starting in 2019 the German regulator lowered the equity return to 6.91% (or 5.12% for pre-2006 assets) from 9.05% (or 7.14% for assets built before 2006) in the current period. The level of allowed returns was appealed by the network operators, with the regional court in Düsseldorf ruling in favour of the companies in April 2018. This decision was, however, appealed by BNetzA in May 2018. Whilst the ongoing appeal process could result in a review of the equity returns, any impact may be offset by tighter overall efficiency targets for the sector, which are yet to be published later this year.

Investments aimed to meet growing demands on the grid from increasing renewables generation, smart metering and digitalization will support growth in the asset base. This will not be, however, sufficient to offset the negative impact from the cut in allowed returns. The extent of the decline will depend on the final regulatory determination and the outcome of court rulings. We further caution that the Berlin concession is pending a court case regarding the tender process. While a termination of the concession could result in compensation, this presents a further risk to the company's earnings over the medium term.

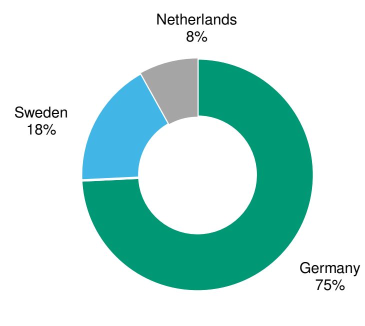
Heat activities add to diversification

Vattenfall is one of Europe's largest producers and distributors of heat, supplying electricity and heat to growing metropolitan areas in Northwest Europe, including Berlin, Hamburg, Amsterdam and Uppsala. The German market accounts for the majority of Vattenfall's heat sales - 14 TWh out of 18.9 TWh in total in 2017.

Heat sales account for over 40% of this segment's revenue. The remainder is generated from sales of electricity from condensing plants and as a by-product from Vattenfall's CHP plants as well as subsidies.

Exhibit 10

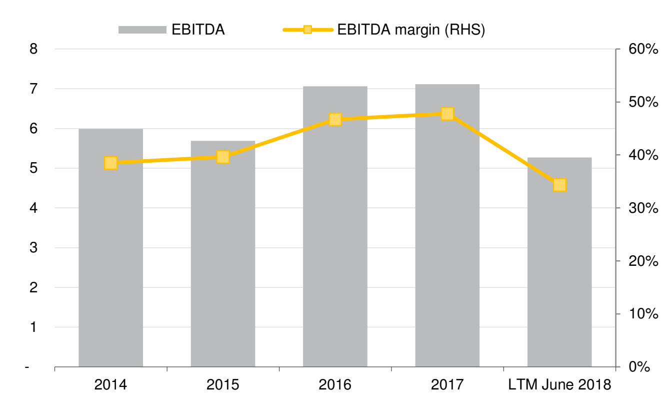
Heat activities are mainly located in Germany
Production of heat, in 2017



Total production of 19.7 TWh.
Source: Company's reports, Moody's Investors Service

Exhibit 11

Heat earnings are subject to pressure from higher commodity costs
EBITDA in SEK billion



Underlying EBITDA as reported.
Source: Company's reports, Moody's Investors Service

District heating is not a regulated monopoly business but has high barriers to entry and/or is subject to long-term heat contracts. In Germany, a typical length of the contract is 10 years. This compares with 15-30 year concessions in the Netherlands. In contrast, in Sweden, contracts are short-term, but the company benefits from a strong market position with very low churn rates (less than 1%).

While contracted nature of heat activities provides some stability to cash flows, EBITDA of this division is subject to changes in volumes dependent on weather and cost of fuel and certificates. Recent increase in commodity prices has had a negative effect on margins for coal and gas-fired power plants. While Vattenfall seeks to adapt its portfolio with the phase-out of fossil fuels and plant conversions to CHP plants, we expect the profitability of this division to be challenged in the medium term.

Retail segment provides a strong platform for development of energy solutions

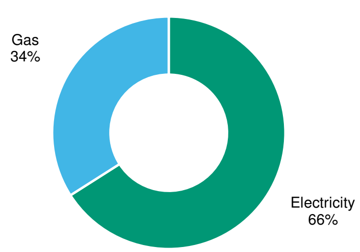
In 2017, the Customers & Solutions segment contributed 8% of Vattenfall's underlying EBITDA. It includes supply of electricity and gas to residential, commercial and industrial customers. The company's customer base amounts to 8.7 million customers, with operations in the Nordic countries, Netherlands, Germany, UK and France.

Vattenfall's EBITDA margin in this segment amounted to around 4.2-4.4% in 2016-17. While this presented a significant increase on the 2015 level, the improvement in profitability was primarily due to a reallocation of contracts with resellers (B2B) from this division to the Power Generation segment. Other factors include reduction in administrative and sales costs.

The company's sales increased significantly in H1 2018 on the back of higher wholesale prices, higher sales in France and Germany, and expansion in the UK. Vattenfall has been also actively securing contracts for the supply of renewable electricity (e.g. to a growing number of data centers in the Nordic countries), electric vehicles (EV) charging solutions and other products (e.g. solar panels). Positive sales and margin developments were partly offset by higher operating expenses.

Exhibit 12

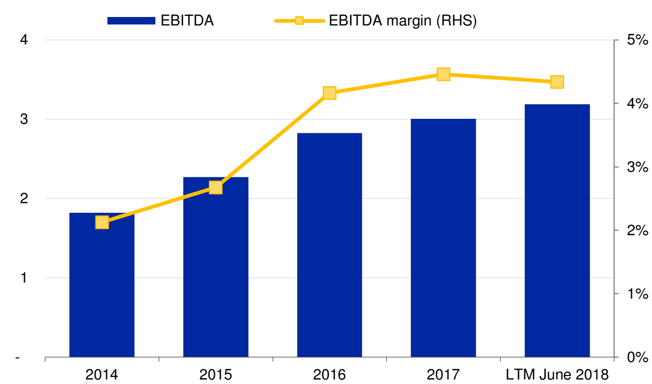
Electricity accounts for the bulk of Vattenfall's sales
Sales volumes in 2017



Total sales of 166 TWh.
Source: Company's reports, Moody's Investors Service

Exhibit 13

EBITDA margins are coming under pressure
EBITDA in SEK billion



Underlying EBITDA as reported.
Source: Company's reports, Moody's Investors Service

We expect markets to remain competitive. While development of new customer solutions could support the longer term growth, there is uncertainty regarding the conversion into earnings over the near term, with a potential for higher costs, which will pressure margins.

Risk related to German nuclear obligations significantly reduced; outcome of arbitration uncertain

Following the payment of around SEK17.2 billion, of which SEK4.7 billion related to the risk premium required for the externalisation of the liabilities, on 3 July 2017, risks related to Vattenfall's nuclear obligations in Germany have been significantly reduced. The company's obligations are now mainly related to dismantling of the plants and packaging of the low- and medium-level waste before it is handed over to interim and final storage.

We note that Vattenfall is pursuing a case at the Washington-based International Centre for Settlement of Investment Disputes (ICSID) concerning the financial losses caused by the early withdrawal of the operational permits for its German nuclear power plants - a decision made by the German government in the aftermath of the Fukushima disaster in Japan in 2011. The German Federal

Constitutional Court ruling from December 2016 also stated that a foreign and state-owned company had rights to compensation in relation to the thirteenth amendment to the Nuclear Energy Act. The company's ICSID claim amounts to €4.4 billion (excluding interest), although there is uncertainty regarding the timing of the decision and any potential benefit to Vattenfall.

Financial ratios are weakly positioned against our guidance but expected to improve over the medium term

Vattenfall's reported EBITDA fell 3.6% to SEK17.8 billion in H1 2018. The decline in earnings was mainly driven by lower margins in the heat segment, partly offset by better results from the power generation segment as a result of lower taxes, higher power prices and increased hydro power generation. Despite weaker operating results, Vattenfall's leverage ratio remained broadly flat compared with the end of 2017, given a modest decline in net debt.

Notwithstanding the above, we estimate that Vattenfall's financial ratios in 2018 will be weakly positioned against our guidance for the current rating, which includes FFO/net debt of approaching 20% and RCF/net debt approaching 15%. We expect the company's credit metrics to improve starting from next year as investments in renewables and higher power prices translate into growth in earnings.

We note that our current ratio guidance is consistent with a risk profile where the contribution from merchant generation does not materially exceed about a third of EBITDA. Should this business activity represent a higher contribution to earnings, due to, for example, materially higher power prices, or weaker performance of other segments, then the guidance would likely be higher, reflecting the more volatile profile of these cash flows.

Vattenfall's financial targets include FFO/adjusted net debt (as defined by management) of 22-27% and dividend policy, which assumes a pay-out ratio of 40-70% of the consolidated net income

Government ownership is supportive of credit quality

Vattenfall is 100% owned by the government of Sweden (Aaa stable). Whilst we recognise the strategic importance of the company within Sweden, we also acknowledge the state's determinedly non-interventionist stance. We believe that the authorities would hesitate to intervene (such as through a direct capital injection) except in the most extreme circumstances, i.e. where there is a threat to key strategic Swedish assets such as key nuclear and hydrological generating assets, and its network infrastructure.

Moderate risk from decarbonisation of the power sector

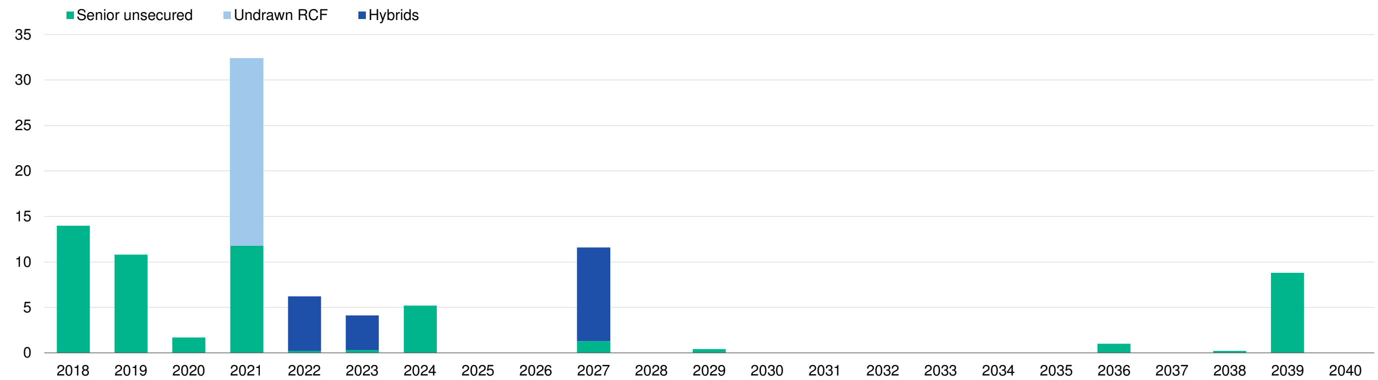
The EU has committed to reduce greenhouse gas emissions by 40% from 1990 levels and to increase the contribution of renewables to energy demand to 27% by 2030. These targets, agreed in 2014, formed the basis of the EU's Nationally Determined Contributions incorporated into the Paris Agreement, and are designed to significantly decarbonise the region's economies. We believe that unregulated utilities, which account for 40% of EU carbon emissions, will need to deliver a significant share of the reductions, and that this will create a variety of risks and opportunities for individual utilities.

We believe that Vattenfall is moderately well-positioned to face carbon transition risks compared to peers given fairly low-carbon intensity of its fleet (158 g/kWh in 2017), as well as the growing contribution of renewables and regulated activities to its earnings. This is mitigated by its large exposure to large-scale, centralized generation.

Liquidity

As of end-June 2018, Vattenfall’s liquidity position was supported by (1) SEK35 billion of cash and short term investments, and (2) a committed Revolving Credit Facility (RCF) of €2 billion (SEK20 billion). The RCF, which is fully undrawn, expires in December 2021.

Exhibit 14
Vattenfall has a fairly well-spread debt maturity profile
as of end-June 2018, in SEK billion



Note: Maturity of hybrids shown at call dates.
Source: Company, Moody's Investors Service

Structural considerations

Vattenfall's capital structure includes a mix of senior unsecured bonds, bank debt and hybrid securities.

As of end-June 2018, Vattenfall had four hybrids outstanding: €1 billion due March 2077, SEK3 billion due March 2077, SEK3 billion due March 2077 and $400 million due November 2078.

The Baa2 long-term rating on the hybrid securities is two notches below the senior unsecured rating, which reflects the features of the hybrids that receive basket 'C' treatment, i.e. we treat them as 50% debt and 50% equity for financial leverage calculations.

Rating methodology and scorecard factors

Vattenfall is rated in accordance with the rating methodology for Unregulated Utilities and Unregulated Power Companies, published in May 2017.

Given the 100% ownership by the Swedish government (Aaa stable), Vattenfall is considered a Government-Related Issuer (GRI) under Moody's methodology for Government-Related Issuers, published in June 2018. Accordingly, and based on our estimate of moderate support in case of financial distress, the A3 rating factors in one notch of uplift from the company's BCA of baa1.

Exhibit 15

Rating Factors

Vattenfall AB

Unregulated Utilities and Unregulated Power Companies Industry Grid [1][2]	Current LTM 6/30/2018		Moody's 12-18 Month Forward View As of October 2018 [3]	
Factor 1 : Scale (10%)	**Measure**	**Score**	**Measure**	**Score**
a) Scale (USD Billion)	A	A	A	A
Factor 2 : Business Profile (40%)				
a) Market Diversification	Baa	Baa	Baa	Baa
b) Hedging and Integration Impact on Cash Flow Predictability	Baa	Baa	Baa	Baa
c) Market Framework & Positioning	Ba	Ba	Ba	Ba
d) Capital Requirements and Operational Performance	Baa	Baa	Baa	Baa
e) Business Mix Impact on Cash Flow Predictability	Aa	Aa	Aa	Aa
Factor 3 : Financial Policy (10%)				
a) Financial Policy	Baa	Baa	Baa	Baa
Factor 4 : Leverage and Coverage (40%)				
a) (CFO Pre-W/C + Interest) / Interest (3 Year Avg)	5.0x	Baa	4x-6x	Baa
b) (CFO Pre-W/C) / Net Debt (3 Year Avg)	21.1%	Baa	17%-21%	Ba
c) RCF / Net Debt (3 Year Avg)	19.4%	Baa	14%-18%	Baa
Rating:				
a) Indicated Rating from Grid		Baa1		Baa2
b) Actual Baseline Credit Assessment (BCA)		baa1		

Government-Related Issuer	**Factor**
a) Baseline Credit Assessment	baa1
b) Government Local Currency Rating	Aaa, stable
c) Default Dependence	Moderate
d) Support	Moderate
e) Final Rating Outcome	A3

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
[2] As of 6/30/2018(L); Source: Moody's Financial Metrics™
[3] This represents Moody's forward view; not the view of the issuer; and unless noted in the text, does not incorporate significant acquisitions and divestitures
Source: Moody's Investors Service

Appendix.

Exhibit 16

Peer comparison

	Vattenfall AB A3 Stable			Fortum Oyj Baa2 Negative			EnBW Energie Baden-Wuerttemberg AG A3 Stable			E.ON SE Baa2 Stable			Statkraft AS Baa1 Stable		
(in USD millions)	FYE Dec-2015	FYE Dec-2016	FYE Dec-2017	FYE Dec-2015	FYE Dec-2016	FYE Dec-2017	FYE Dec-2015	FYE Dec-2016	FYE Dec-2017	FYE Dec-2015	FYE Dec-2016	FYE Dec-2017	FYE Dec-2015	FYE Dec-2016	FYE Dec-2017
Revenue	17,034	16,282	15,859	3,840	4,019	5,107	23,501	21,430	24,828	47,360	42,237	42,895	6,411	5,887	7,572
EBITDA	3,976	3,103	4,179	1,256	1,056	1,464	2,904	150	4,624	6,843	3,003	10,371	884	1,737	2,619
Total Debt	20,093	18,699	18,706	7,663	6,645	7,387	21,314	24,388	22,279	39,070	41,690	32,500	5,289	4,955	5,219
Net Debt	15,161	14,214	15,757	-1,247	1,209	2,707	7,478	11,146	10,956	27,193	30,057	25,142	4,211	4,050	3,377
(CFO Pre-W/C + Int.) / Int.	5.7x	5.1x	4.6x	5.1x	5.3x	5.9x	4.9x	3.3x	5.4x	4.3x	3.3x	4.4x	4.9x	5.5x	6.2x
FFO / Net Debt	22.6%	19.1%	20.9%	-90.8%	70.7%	40.9%	38.6%	16.3%	34.4%	23.8%	13.1%	31.8%	17.9%	19.9%	26.8%
RCF / Net Debt	22.0%	18.1%	20.0%	9.8%	-14.6%	-2.5%	33.9%	13.6%	33.0%	20.6%	9.3%	29.2%	4.1%	19.3%	15.7%
Net Debt / EBITDA	3.8x	4.9x	3.6x	-1.0x	1.2x	1.7x	2.6x	78.0x	2.2x	4.0x	10.0x	2.4x	5.2x	2.4x	1.3x

All figures & ratios calculated using Moody's estimates & standard adjustments. FYE = Financial Year-End. LTM = Last Twelve Months. RUR* = Ratings under Review, where UPG = for upgrade and DNG = for downgrade.
Source: Moody's Financial Metrics™.

Exhibit 17

Moody's adjusted debt breakdown
Vattenfall AB

(in SEK Million)	FYE Dec-13	FYE Dec-14	FYE Dec-15	FYE Dec-16	FYE Dec-17
As Reported Debt	**126,488**	**125,928**	**110,585**	**96,667**	**87,154**
Pensions	31,233	42,342	37,152	40,644	41,962
Operating Leases	7,080	6,522	5,604	4,212	6,198
Hybrid Securities	-6,626	-7,039	-9,273	-9,582	-9,559
Non-Standard Adjustments	14,971	23,520	25,329	37,935	27,404
Moody's-Adjusted Debt	**173,146**	**191,273**	**169,397**	**169,876**	**153,159**

All figures are calculated using Moody's estimates and standard adjustments.
Source: Moody's Financial Metrics™

Exhibit 18

Selected Historic Adjusted Financial Data

Vattenfall AB

SEK Mililon	2013	2014	2015	2016	2017
INCOME STATEMENT					
Revenue	172,253	165,945	143,576	139,208	135,295
EBITDA	42,557	45,339	33,513	26,532	35,656
EBIT	23,447	25,034	18,119	12,462	19,471
Interest Expense	7,724	6,738	6,163	6,025	7,562
Net Income	10,482	14,687	-2,323	-18,149	8,021
BALANCE SHEET					
Total Debt	173,146	191,273	169,397	169,876	153,159
Cash & Cash Equivalents	25,576	42,018	41,577	40,751	24,148
Net Debt	147,570	149,255	127,820	129,125	129,011
Total Liabilities	358,224	375,089	350,470	335,536	325,737
Net PP&E	274,992	276,812	249,432	220,974	233,039
Total Assets	490,379	502,715	467,186	413,098	413,813
CASH FLOW					
Funds from Operations (FFO)	30,394	31,320	28,916	24,679	26,974
Cash Flow from Operations (CFO)	37,875	40,375	41,422	31,446	26,497
Cash Dividends - Common	-7,205	-469	-819	-1,368	-1,177
Retained Cash Flow (RCF)	23,189	30,852	28,097	23,311	25,797
Capital Expenditure	-27,402	-29,109	-28,995	-23,659	-20,513
Free Cash Flow (FCF)	3,268	10,798	11,608	6,419	4,807
FFO / Net Debt	20.6%	21.0%	22.6%	19.1%	20.9%
RCF / Net Debt	15.7%	20.7%	22.0%	18.1%	20.0%
FCF / Net Debt	2.2%	7.2%	9.1%	5.0%	3.7%
PROFITABILITY					
EBIT Margin %	14%	15%	13%	9%	14%
EBITDA Margin %	25%	27%	23%	19%	26%
INTEREST COVERAGE					
FFO Interest Coverage	4.9x	5.6x	5.7x	5.1x	4.6x
LEVERAGE					
Debt / EBITDA	4.1x	4.2x	5.1x	6.4x	4.3x
Net Debt / EBITDA	3.5x	3.3x	3.8x	4.9x	3.6x
Net Debt / Fixed Assets	54%	54%	51%	58%	55%
Debt / Book Capitalization	50%	53%	53%	61%	56%

All figures and ratios are calculated using Moody's estimates and standard adjustments. Periods are Financial Year-End unless indicated. LTM = Last Twelve Months.
Source: Moody's Financial Metrics™.

Ratings

Exhibit 19

Category	Moody's Rating
VATTENFALL AB	
Outlook	Stable
Issuer Rating	A3
Senior Unsecured	A3
Jr Subordinate	Baa2
Commercial Paper	P-2

Source: Moody's Investors Service

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