

CREDIT OPINION

6 July 2023

Update



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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.

Contacts

Andrew Bleasie +331.5330.3372
Associate Managing Director
 andrew.bleasie@moodys.com

Vattenfall AB

Update to credit analysis

Summary

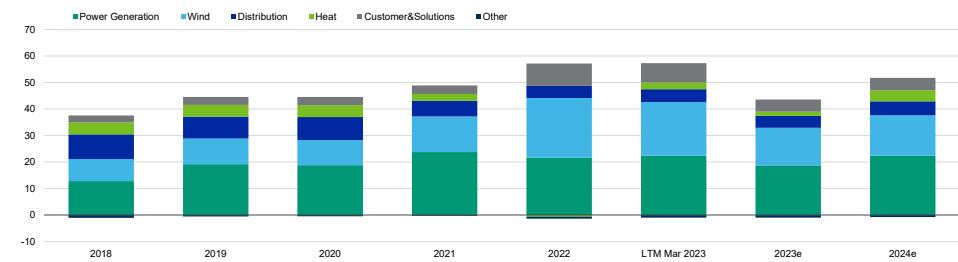
[Vattenfall AB](#)'s (Vattenfall) A3 senior unsecured rating is supported by the breadth and scale of the company's operations; its clean generation portfolio in the Nordics; a moderate contribution from regulated electricity distribution and district heating activities; an increasing contribution from contracted renewables; and its solid financial profile, with funds from operations (FFO)/net debt amounting to more than 50% (or around the high 30s in percentage terms excluding the temporary impact from positive margin calls on net debt).

These factors are balanced by Vattenfall's exposure to conventional power generation, which accounted for around 40% of its underlying EBITDA as of the 12 months that ended March 2023; the competition in retail markets; friction from cuts in allowed returns for the distribution networks; and execution risk associated with Vattenfall's strategy to grow its renewable energy portfolio and adapt to the evolving industry of energy services.

Exhibit 1

Earnings in power generation will decline in 2023 mainly on the back of negative impact from hedging

Underlying EBITDA breakdown



The estimates represent Moody's forward view, not the view of the issuer.

Sources: Company's reports and 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.

Credit strengths

- » Predominantly clean generation mix in the Nordic region
- » Solid earnings contribution from regulated and contracted businesses
- » 100% state ownership, which supports credit quality

Credit challenges

- » Significant earnings contribution from wholesale power markets
- » Large capital spending programme, which carries some execution risk
- » Competition for renewable assets and declining subsidies with a move to merchant-based projects

Rating outlook

The stable outlook reflects our expectation that Vattenfall will continue to meet our guidance for the current rating, which includes FFO/net debt above 25% and Retained Cash Flow (RCF)/net debt in the high teens in percentage terms.

Factors that could lead to an upgrade

An upgrade of Vattenfall's ratings is not currently expected given the current portion of regulated earnings, its financial targets and expected large capital spending.

Factors that could lead to a downgrade

The ratings could be downgraded if Vattenfall's credit metrics appeared unlikely to meet our guidance for the A3 rating or the share of higher-risk cash flow were to increase without a commensurate strengthening of the company's financial profile. A change in the government support assumption could also result in a downgrade of Vattenfall's ratings.

Key indicators

Exhibit 2

Vattenfall AB

	Dec-19	Dec-20	Dec-21	Dec-22	LTM Mar-23	2023 (E)	2024 (E)	2025 (E)
(CFO Pre-W/C + Interest) / Interest Expense	7.1x	8.4x	10.6x	5.4x	5.3x	3.2x	3.6x	4.0x
(CFO Pre-W/C) / Net Debt	24.7%	28.3%	169.4%	50.4%	37.4%	20.0%	25.9%	28.9%
RCF / Net Debt	21.6%	23.7%	147.1%	15.2%	13.5%	12.6%	18.1%	17.1%

All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.

Source: Moody's Financial Metrics™

For definitions of Moody's most common ratio terms, please see the accompanying [User's Guide](#).

Profile

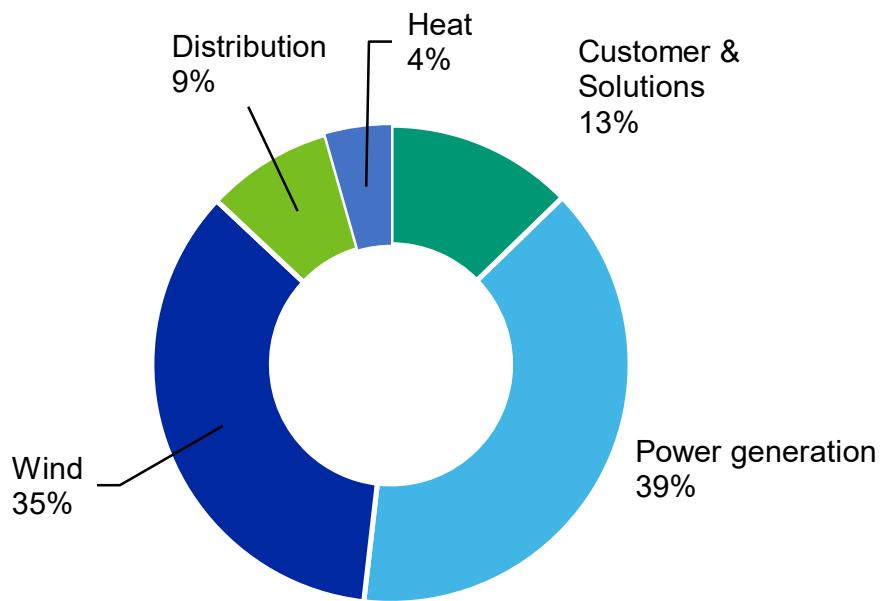
Vattenfall AB (Vattenfall) is a 100% Swedish state-owned company. With 29 gigawatts (GW) of installed capacity and 109 terawatt hours (TWh) of electricity output as of year-end 2022, Vattenfall is one of the biggest European energy groups. The company's generation portfolio primarily includes hydro (11.5 GW) and nuclear power (5.5 GW), with 8.5 GW of the hydro output and all of the nuclear output located in Sweden. In addition, Vattenfall has coal and gas operations in Germany and the Netherlands. The company also has a growing portfolio of wind assets (3.8 GW) and 9.4 GW in installed capacity in heat in Germany, Sweden and the Netherlands. In addition to dealing in power and heat generation, Vattenfall owns Sweden's largest electricity distribution network. The company's retail base includes around 7.5 million electricity and 2.3 million gas customers.

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

Exhibit 3

Vattenfall has a diversified business mix

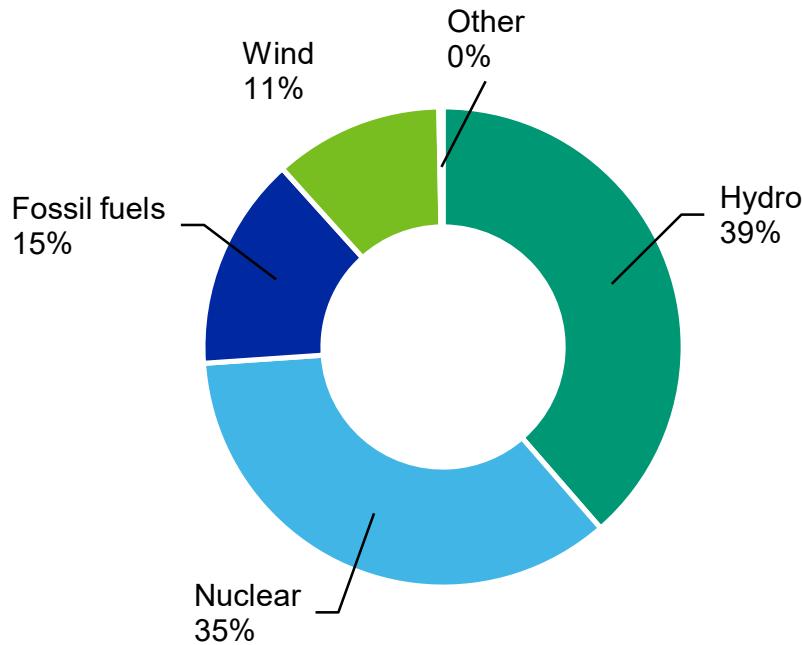
Underlying EBITDA breakdown, for the 12 months that ended March 2023



Total underlying EBITDA of SEK56.3 billion.

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

Exhibit 4

Nuclear and hydro account for the bulk of generation
Breakdown of output, for the 12 months that ended March 2023

Total output of 106.2 TWh.

Sources: Company's reports and Moody's Investors Service

Detailed credit considerations

Strategic shift towards clean energy

Vattenfall's strategy is to shift towards an increasingly fossil-free model by driving growth in renewables while maintaining hydro and nuclear power as baseload capacity. This includes investments in both centralised and decentralised solutions.

In line with this strategy, the company has planned investments of SEK77 billion in 2023-24. Around SEK50 billion of this amount is earmarked for growth capital spending, primarily for expansion in onshore and offshore wind (SEK38 billion). Other growth projects include development of electricity grids and district heating networks to connect new customers and areas. Maintenance capital spending is mainly related to investments in distribution networks and modernisation of the heat portfolio, coupled with safety investments in the Swedish nuclear and hydropower plants.

Vattenfall has not provided a target for capital spending over the medium term. However, given the company's pipeline of offshore and onshore wind projects, and focus on efficiency and smart grid solutions, we expect most investments to continue to be directed into renewables and grids.

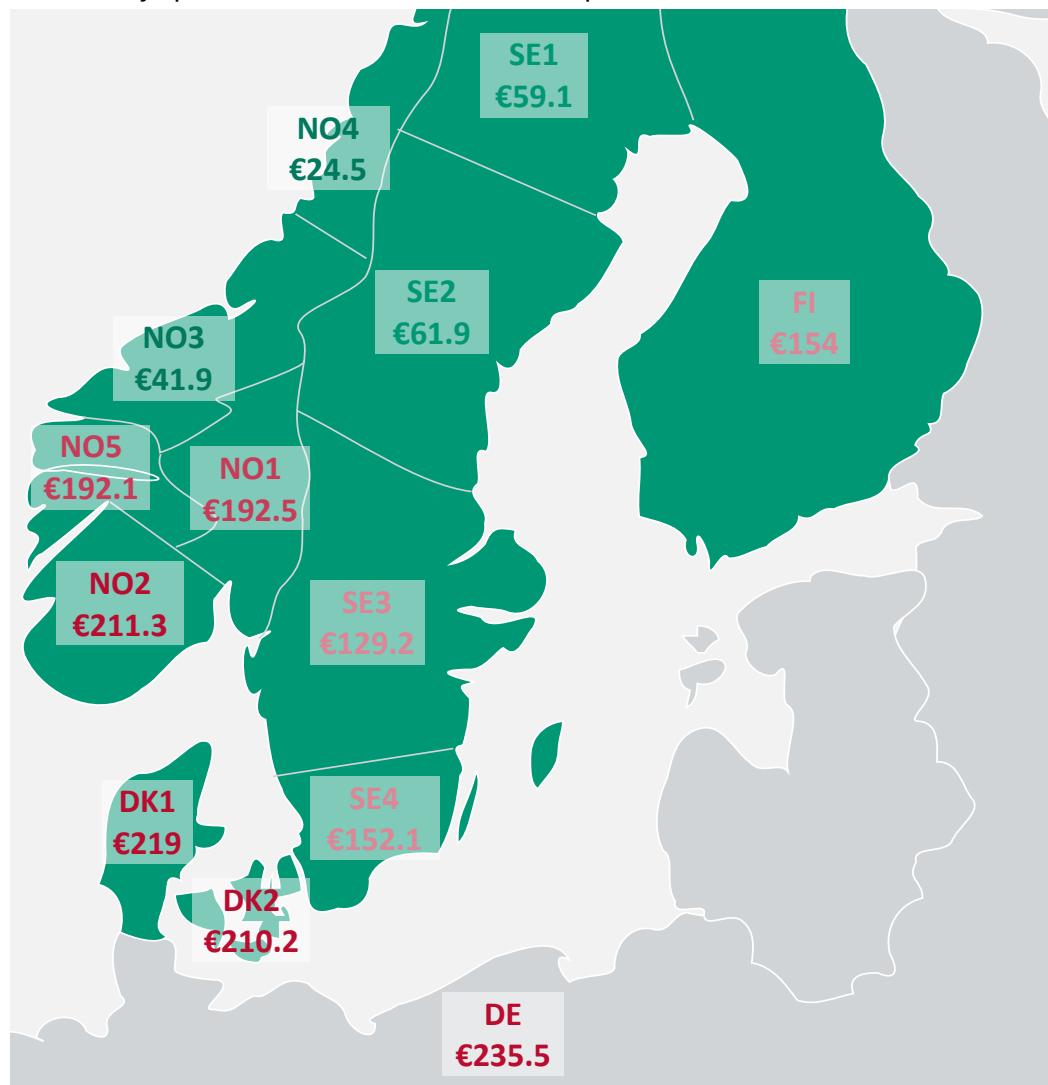
Lower achieved prices and reduced capacity will hurt EBITDA in power generation

With around 73% of 2022 output emanating from nuclear and hydro production, Vattenfall's generation fleet is predominantly fixed cost in nature, making the company particularly exposed to prevailing wholesale power prices. Vattenfall could not reap the full benefits of the increase in power prices in 2022. Unlike most other European countries, Sweden and Norway have several electricity price zones. In Sweden, the liquidity is not deep enough to hedge electricity output in specific price zones. Instead, a hedge would have to be put in place against the system price. As of 31 December 2021, Vattenfall had hedged 72% of its Nordic output for 2022 at an average price of €29/MWh. During 2022, Nordic spot power prices averaged €136/MWh — an increase of 118% from that in 2021.

Despite this, Vattenfall's achieved prices in 2022 fell by 13% and only reached €27/MWh. This is mainly because roughly 54% of its installed capacity in Sweden is located in the north (price area SE1 and SE2). Transmission bottlenecks and high reservoir levels led to substantially lower pricing in these price areas. Consequently, Vattenfall ended up paying a margin in between the hedge price and the system price and was unable to capture higher electricity prices for volumes generated in the north of Sweden.

Exhibit 5

2022 saw major price differences in between the Swedish price zones

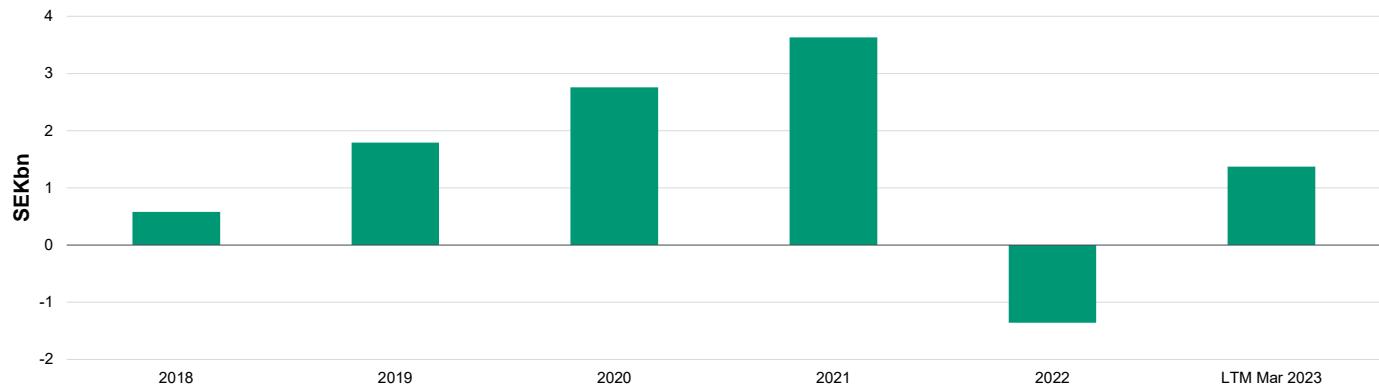


Average day-ahead price between 1-Jan-2022 and 31-Dec-2022

Source: Nordpool, Moody's Investors Service

Hedging operations both for the company's wind and power generation are captured within the power generation segment. As a consequence, Vattenfall's trading operations can be somewhat volatile and have an impact on its EBITDA and cash flow. In 2022, the power generation segment displayed a decline of 9% in its underlying EBITDA. This can partly be ascribed to Vattenfall's trading activities, which recorded a loss of €1.4 billion in 2022.

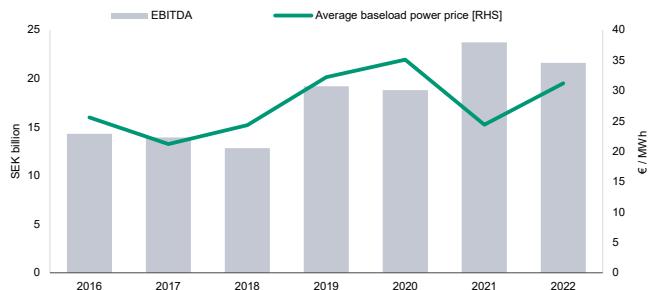
Exhibit 6

Trading activities are volatile**EBIT contribution of realised trading activities**

Source: Vattenfall annual reports and Q1 2023 interim report

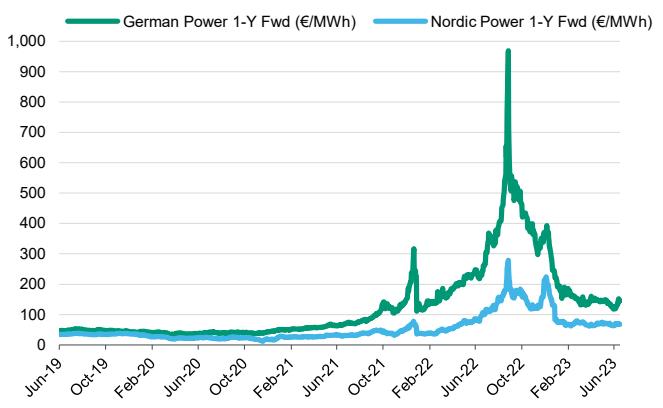
During the first quarter of 2023, spot power prices in the Nordics were down by 23% on average. This trend has continued into the second quarter. As of the end of June 2023, future prices were hovering around €70/MWh, a decrease of almost 25% from a year earlier. Furthermore, the gap with German forward prices has decreased further. Generally, power prices in the Nordic markets are fundamentally a function of power prices in Continental Europe, primarily in Germany. As of the end of June 2023, current forward prices in Germany are at around €145/MWh, more than double the power prices in the Nordics.

Exhibit 7

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

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

Exhibit 8

Power prices have declined materially since August 2022**One-year forward, in €/MWh**

Sources: FactSet and Moody's Investors Service

In Q1 2023, Vattenfall's underlying EBITDA in the power segment increased by 18% to SEK5.1 billion. The increase was mainly driven by higher realised trading result and higher achieved prices in the Nordics, partly offset by lower generation in nuclear power. During the first quarter, Vattenfall was able to capture higher electricity prices for the volumes it had hedged. For example, during Q1 2023, Vattenfall's achieved prices were €40/MWh, up from €20/MWh during the year-earlier period. Hedging ratios for 2023 and 2024 are 56% and 42%, with fixed prices of €30/MWh and €45/MWh, respectively. The hedge ratios are lower than what they used to be in the past and also reflects a change in the company's hedging policies.

In addition to pricing, hydrological conditions will continue to drive the performance of this division. In nuclear, the Ringhals 2 plant was already decommissioned as of year-end 2019 and Ringhals 1 moved off the grid as of year-end 2020 — reducing nuclear output by around 879 MWh. Vattenfall is exploring the potential for further build-out of nuclear capacity. While this could potentially add

additional layers of risk to the credit profile of Vattenfall — depending on how construction agreements are structured and financed — we believe a final investment decision on new nuclear capacity would still be some years away.

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

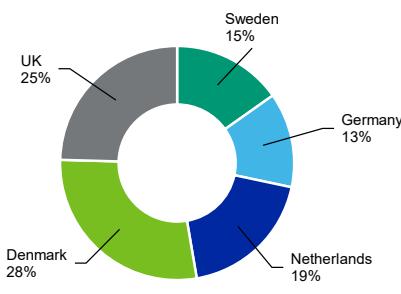
Vattenfall's installed renewables capacity, excluding hydro, is around 4.9 GW, of which 3.0 GW is offshore wind and 1.9 GW is onshore wind. The renewables portfolio is spread over five European countries (Denmark, Sweden, Germany, the UK and the Netherlands), with the UK accounting for around 25% of the installed capacity. Vattenfall is increasingly focused on wind and is expanding — on a selective basis — into new markets. For example, in 2022, it was awarded a 15-year Contract for Difference for Norfolk Boreas (1,800 MW), where onshore construction is set to begin in 2023.

Vattenfall's 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 is mainly related to wind farms for which the subsidy period has expired, and to Swedish wind farms operating under the certificate scheme and UK wind farm projects operating under the renewable obligation certificates scheme. The long-term contracted cash flow under supportive and well-established regulatory regimes underpins Vattenfall's credit quality. However, Vattenfall in certain jurisdiction has two-sided support schemes. Under such schemes, the company is allowed to keep profit earned above the strike price. When the power prices eventually move below the strike price, the differential will be credited against prior profit before the contracts for difference mechanism offers downside protection again. Given the very high power prices that some wind farms have benefited from during 2022, certain support schemes are unlikely to ever provide significant downside protection again.

Vattenfall has also shown that it in certain circumstances could be seeking merchant exposure. The 1.5 GW Hollandse Kust Zuid wind farm, which is likely to become operational later in 2023 (the last wind turbine was installed on 19 June 2023), will not benefit from subsidies and thereby increase Vattenfall's exposure to merchant generation. Vattenfall has mitigated parts of the merchant exposure following a 49.5% sale of the project to BASF. Further downside protection is provided via power purchase agreement contracts that the company has entered into.

Exhibit 9

Vattenfall has a diversified portfolio of renewables Breakdown of installed capacity, as of the end of March 2023

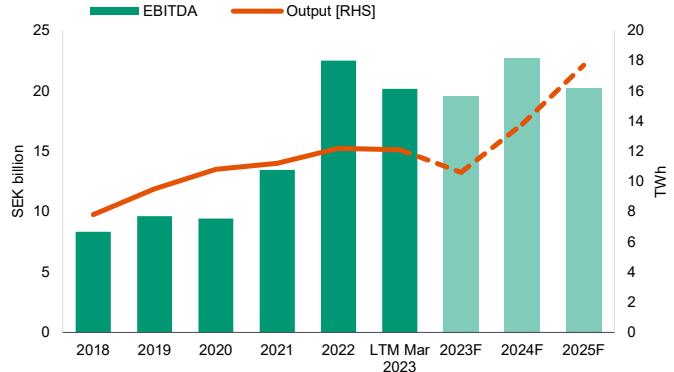


Total capacity of 4.9 GW.

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

Exhibit 10

Wind earnings have increased on the back of higher prices and capacity additions EBITDA in SEK billion, output in TWh



Underlying EBITDA as reported.

Sources: Company's reports and Moody's Investors Service

Overall, Vattenfall has a good operational track record in its renewables portfolio. However, construction of offshore wind farms is relatively risky compared with other well-established renewables technologies.

Vattenfall has a pipeline amounting to more than 7.5 GW in construction and under development, and most of it is in wind projects. In view of the pipeline of upcoming tenders, we expect the company to further increase its exposure to renewables in the coming years.

Vattenfall has around 2.2 GW of wind projects in construction. In addition to Hollandse Kust Zuid, which accounts for almost half of the assets under construction, other key projects include the Danish offshore wind farm Vesterhav (344 MW) and the UK onshore wind farm South Kyle (240 MW), both of which will be commissioned in 2023, and an onshore wind project in the Netherlands (77 MW).

Wind projects under development mainly comprise the 3.6 GW of projects off the coast of Norfolk in the UK. Norfolk Vanguard and Norfolk Boreas, each of which is projected to have a total capacity of 1,800 MW, will benefit from contracts for difference schemes and were initially projected to be commissioned by 2027 and 2028, respectively.

Wind generated about SEK22.5 billion in EBITDA in 2022, an increase of 67% compared with 2021. The better operating results were mainly driven by higher power prices, and the addition of new capacity. This was further benefitted from higher average wind speeds. Continued investment and commissioning of new projects will support further growth in this segment over the next two years.

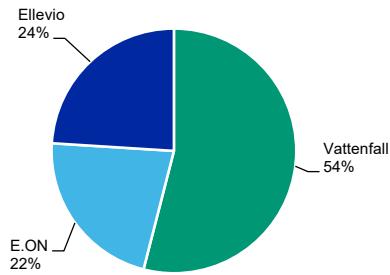
Network earnings will now stabilize

Vattenfall has more than 139,000 km of electricity grids. In 2022, the regulated electricity distribution networks in Sweden generated about 8% of Vattenfall's underlying EBITDA. While the underlying EBITDA declined by 22% from that in 2021, the decline was mainly because of the company's sale of Stromnetz Berlin on 1 July 2021, which hurt its underlying operating profit by around SEK700 million. Underlying operations were also hurt by higher operating expenses, mainly because of growth activities, and higher costs for the transmission network.

Vattenfall's regulated asset base (RAB) in Sweden was around SEK68 billion in 2022. The regulated distribution grid in the country is divided between regional and local markets. Whereas the regional market is heavily concentrated, the local market is fragmented and has more than 170 different market participants (although the three large market participants still control more than 50% of the market). Because of the energy transition, future market growth will essentially occur in the regional market.

Exhibit 11

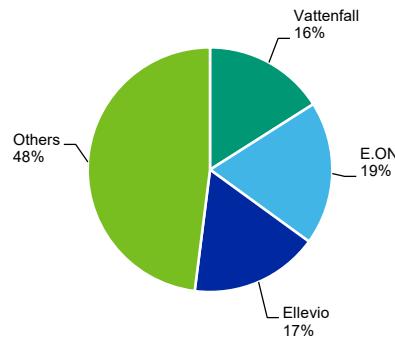
Vattenfall has a high market share of regional grids in Sweden
Regional market shares



Market shares based on volume transited excluding grid losses.
Source: Vattenfall Corporate Factbook (March 2023)

Exhibit 12

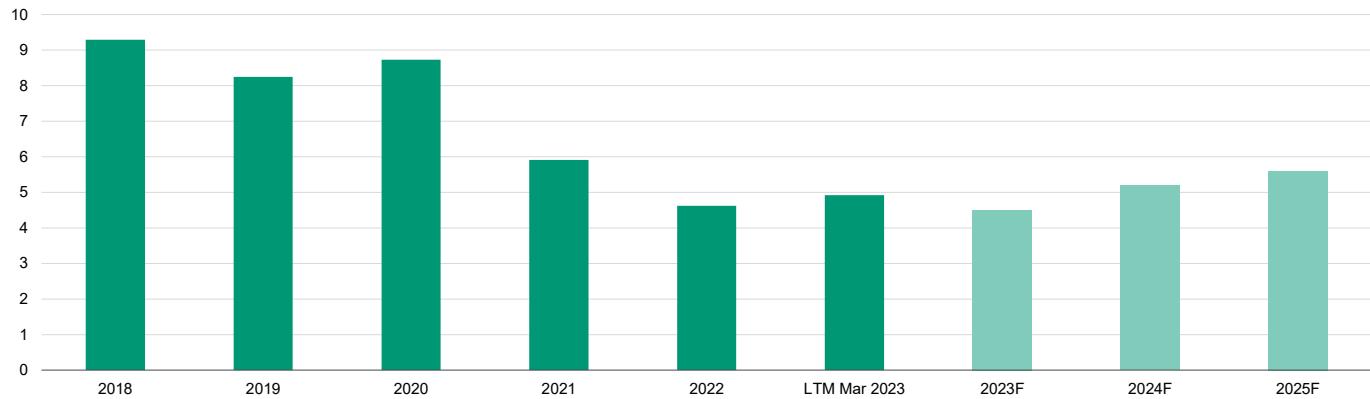
Local grids remain a highly fragmented market
Local market shares



Market shares based on number of connections.
Source: Vattenfall Corporate Factbook (March 2023)

In 2023, we expect earnings from Vattenfall's distribution segment to remain fairly stable. In Sweden, where Vattenfall is the largest owner and operator of electricity distribution grids, tariffs are subject to a revenue cap. For the current regulatory period spanning 2020-23, the weighted average cost of capital was cut to 2.16% (later revised upwards to 2.35% following additional studies from the Swedish Energy Markets Inspectorate), down from 5.85% in the prior regulatory period (2016-19). Parameters for the upcoming regulatory period 2024-2027 are not known. In our base case, we expect underlying EBITDA from the distribution segment to modestly increase.

Exhibit 13

Earnings from distribution will stabilise
Distribution underlying EBITDA (SEK billion)


Sources: Vattenfall annual reports and Moody's Investors Service estimates

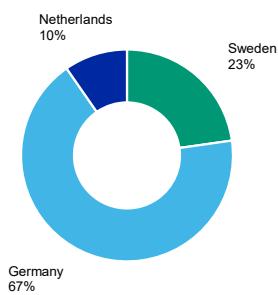
Regulated earnings from distribution grids carry lower risk than conventional or renewable generation. In this regard, the relative limited proportion of earnings emanating from the regulated distribution grid weighs on our assessment of Vattenfall's credit quality.

Heat activities add to diversification, but profitability has significantly weakened

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, Amsterdam and Uppsala. The German market accounts for most of Vattenfall's heat sales — 9.4 TWh out of 14.1 TWh in total in 2022.

In an average year, we estimate that heat accounts for most of this segment's EBITDA, with the remainder of earnings generated from sale of electricity from condensing plants and as a by-product from Vattenfall's combined heat and power (CHP) plants. In 2022, the share of heat was lower than in previous years as a result of higher temperatures and electricity generation decreased as a result of the lower spreads. As a result, the underlying EBITDA of the segment dipped to negative SEK640 million in 2022, reflecting higher gas prices, which led to lower clean spark spreads primarily affecting heat operations. Higher operating expenses largely driven by ongoing projects and planned maintenance also hurt the underlying operating profit.

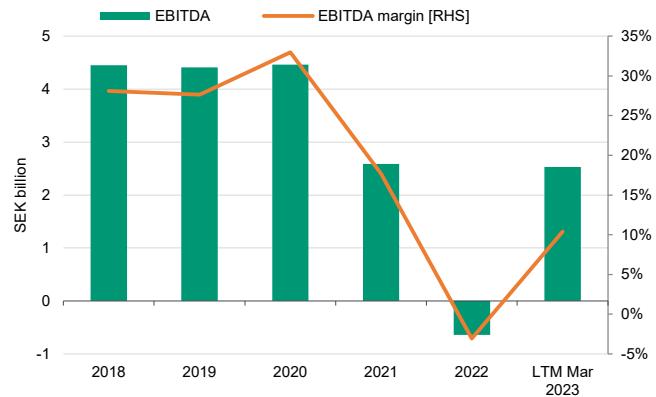
Exhibit 14

Heat activities are mainly located in Germany
Production of heat, in 2022


Total production of 14.6 TWh.

Sources: Company's reports and Moody's Investors Service

Exhibit 15

Heat earnings were subject to pressure from higher commodity costs in 2022
EBITDA in SEK billion


Underlying EBITDA as reported.

Sources: Company's reports and Moody's Investors Service

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

We expect this division's earnings to return to growth again in 2023 following lagging heat revenue indexation, with spreads remaining relatively stable. In March 2022, Vattenfall inaugurated the new biofuel-fired heat plant Carpe Futurum in Uppsala; this plant will lower CO₂ emissions by about 200,000 tonnes per year. The plant has a heating capacity of 110 MW and is a significant part of a long-term SEK3.5 billion investment programme to phase out fossil fuels.

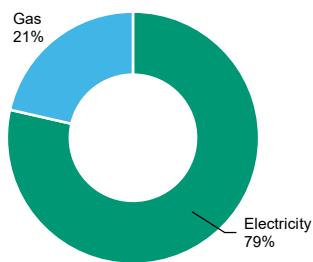
In May 2022, Vattenfall announced that it was exploring strategic options for its Heat Berlin segment, which is the largest district heating network in Western Europe. A sale of this segment could bring in substantial proceeds. However, an eventual divestment of this business would also reduce further the share of contracted and regulated earnings in the business mix and leave Vattenfall more exposed to volatility in wholesale power markets.

The retail segment provides a strong platform for development of energy solutions

In 2022, the Customers and Solutions segment contributed 15% to Vattenfall's underlying EBITDA. This segment includes supply of electricity and gas to residential, commercial and industrial customers. The company has 10.9 million customers, with operations in the Nordic countries, the Netherlands, Germany, the UK and France. Vattenfall's underlying EBITDA increased significantly in 2022 and recorded SEK8.4 billion of EBITDA, up from SEK3.2 billion in 2021. The sharp increase in the EBITDA was mainly driven by a combination of a 4% increase in the customer base, as well as temporary procurement effects of gas and electricity. Indeed, during Q1 2023, the underlying EBITDA of the segment decreased by around half compared with the year-earlier period as these temporary effects started to unwind. In terms of earnings, we expect that the Customer and Solution segment will be a drag on the underlying EBITDA throughout 2023 before it again returns to growth in 2024.

Exhibit 16

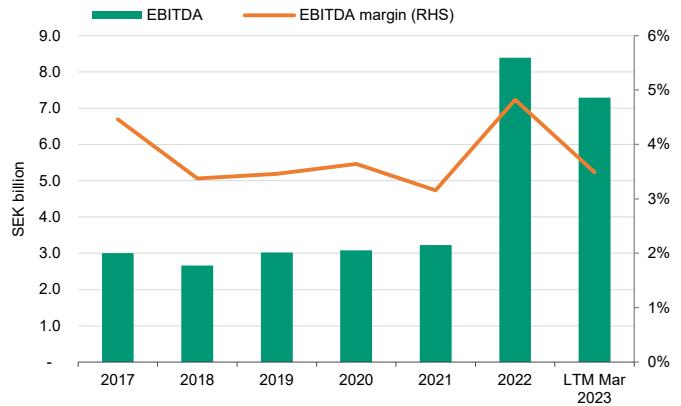
Electricity accounts for the bulk of Vattenfall's sales
Sales volume for the 12 months that ended March 2023



Total sales for the 12 months that ended March 2022: 212 TWh.
Sources: Company's reports and Moody's Investors Service

Exhibit 17

EBITDA margins increased in 2022 because of temporary sourcing effects for electricity and gas
EBITDA in SEK billion



Underlying EBITDA as reported.
Sources: Company's reports and Moody's Investors Service

Vattenfall has been actively securing contracts for the supply of renewable electricity (for example, to a growing number of data centres in the Nordic countries) and other products (for example, solar panels). While development of new customer solutions supports revenue growth, markets will remain difficult with further pressure on the company's margins.

Credit metrics in 2023 will weaken on the back of high capital spending

Vattenfall's FFO/net debt (per our definition) was 50.4% for 2022. During the year, margin call payments reversed as Vattenfall saw an outflow of SEK63.0 billion last year, compared with an inflow of SEK88 billion in 2021. In addition, Vattenfall paid an extraordinary high

dividend for the year (SEK25 billion), which also contributed to a largely negative free cash flow for the year. However, the deterioration of credit metrics was largely a reflection of the anticipated reversal of margin payments and Vattenfall's credit metrics continue to remain very solidly positioned and above its self-imposed target range of 22%-27% FFO/net debt.

Throughout 2023, we expect credit metrics to weaken, driven mainly by a high level of capital spending (more than SEK40 billion) and some impact still from unwinding of margin payments. As a consequence, we expect free cash flow to be largely negative for the year and lead to FFO/net debt in the low 20s. However, metrics should again strengthen quite substantially in 2024, and we expect the company's credit metrics to remain solidly positioned for the rating category over the medium term.

Adjusted debt affected by high nuclear and pension liabilities

As of the end of December 2022, Vattenfall's total adjusted debt (our definition) of SEK249.6 billion included around SEK81.7 billion in adjustments related to pension and nuclear liabilities. Some SEK20.0 billion of the total amount was related to German nuclear obligations. The German nuclear obligations have been significantly reduced following the payment of around SEK17.2 billion, of which SEK4.7 billion is related to the risk premium required for the externalisation of the liabilities, in July 2017.

Government ownership is supportive of credit quality

Vattenfall is the largest electric utility in Sweden, where it accounts for more than 55% of domestic power generation, mainly based on hydro and nuclear; owns the largest electricity distribution grid; and supplies more than 900,000 retail electricity customers.

While we recognise the strategic importance of the company within Sweden, we also acknowledge the state's determinedly noninterventionist stance. The authorities would hesitate to intervene (such as through a direct capital injection) except in the most extreme circumstances, that is, where there is a threat to key strategic Swedish assets such as nuclear and hydropower plants, and the network infrastructure.

ESG considerations

Vattenfall AB's ESG Credit Impact Score is Moderately Negative CIS-3

Exhibit 18

ESG Credit Impact Score

CIS-3

Moderately Negative



For an issuer scored CIS-3 (Moderately Negative), its ESG attributes are overall considered as having a limited impact on the current rating, with greater potential for future negative impact over time. The negative influence of the overall ESG attributes on the rating is more pronounced compared to an issuer scored CIS-2.

Source: Moody's Investors Service

Vattenfall's ESG Credit Impact Score is moderately negative (**CIS-3**), indicating that its ESG attributes are overall considered as having a limited impact on the current rating, with greater potential for future negative impact over time. The CIS-scoring reflects moderately negative environmental and social risks, partly offset by low to neutral governance risks.

Exhibit 19

ESG Issuer Profile Scores

Source: Moody's Investors Service

Environmental

Vattenfall's exposure to environmental risks is moderately negative (**E-3** issuer profile score). In addition to a moderately high carbon transition risk, Vattenfall's environmental score also incorporates a degree of resource risks linked to its 11.5 GW of hydro operations. It also incorporates a degree of physical climate risks related to its network operations in Sweden where potential flooding is a risk factor. As a nuclear operator with 5.5 GW of capacity, Vattenfall's nuclear operations is also exposed to both a degree of physical climate risk and waste & pollution given the costs associated with nuclear decommissioning and nuclear waste treatment.

Social

Vattenfall's exposure to social risks is moderately negative (**S-3** issuer profile score) and reflects the risk that demographics and societal trends could include public concerns over affordability, including public expectation that utilities should act as a public service. These pressures could turn into adverse political intervention.

Governance

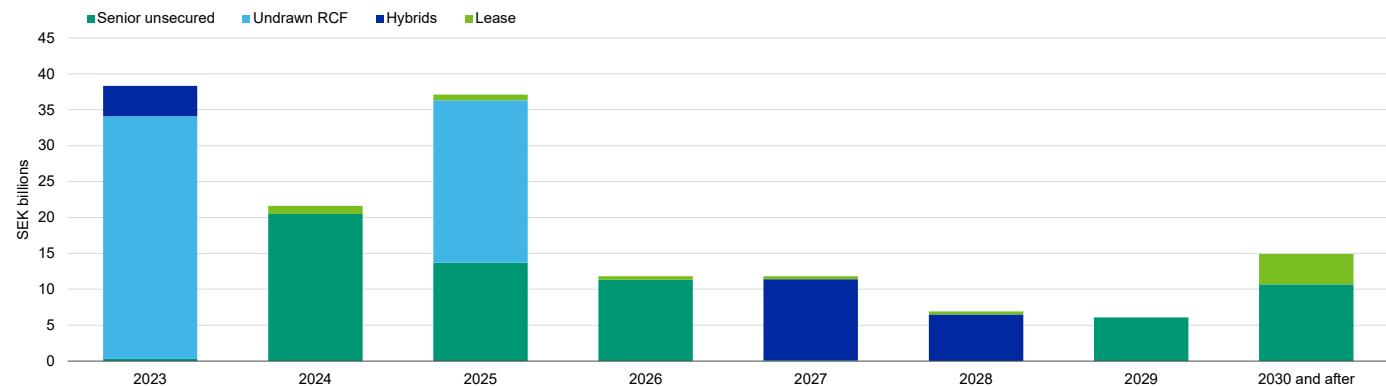
Vattenfall's governance risk is neutral-to-low (**G-2**). As a government-owned company, we assess that the independence of Vattenfall's board is relatively weak and that management may face competing priorities. However, its board has also shown a track record of creditor friendly decisions. For example, during the COVID-19 outbreak, the board took the decision to halve dividend payments. Governance risks are also balanced by other considerations associated with government ownership, including transparent reporting and oversight.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moody's.com. In order to view the latest scores, please click [here](#) to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Liquidity analysis

As of the end of March 2022, Vattenfall's liquidity was supported by SEK79.5 billion of cash and short-term investments, and a committed revolving credit facility (RCF) of €2 billion (SEK22.5 billion). The RCF, which is fully undrawn, expires in November 2025.

Exhibit 20

**Vattenfall has a fairly well-spread debt maturity profile
As of the end of March 2023**

Maturity of hybrids shown at first call dates.

Following the issuance of a new £250 million hybrid in May 2023, Vattenfall has bought back and canceled its \$400m 6.100% NC Nov-23 hybrid

Sources: Company's reports and Moody's Investors Service

Structural considerations

Vattenfall's capital structure includes a mix of senior unsecured bonds, bank debt and hybrid securities. Given the features of the hybrids, we treat them as 50% debt and 50% equity for financial leverage calculations.

Methodology and scorecard

Vattenfall is rated in accordance with the [Unregulated Utilities and Unregulated Power Companies](#) rating methodology, published in May 2017. The company's Baseline Credit Assessment (BCA) on a historical basis is in line with the scorecard-indicated outcome.

Given the 100% ownership by the Swedish government, Vattenfall is considered a government-related issuer (GRI) under our [Government-Related Issuers](#) methodology, published in February 2020. 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 21

Rating factors
Vattenfall AB

Unregulated Utilities and Unregulated Power Companies Industry Grid [1][2]			Current LTM 3/31/2023	Moody's 12-18 Month Forward View As of June 2023 [3]	
Factor 1 : Scale (10%)		Measure	Score	Measure	Score
a) Scale (USD Billion)		Aa	Aa	Aa	Aa
Factor 2 : Business Profile (40%)		Baa	Baa	Baa	Baa
a) Market Diversification		Baa	Baa	Baa	Baa
b) Hedging and Integration Impact on Cash Flow Predictability		Ba	Ba	Ba	Ba
c) Market Framework & Positioning		Baa	Baa	Baa	Baa
d) Capital Requirements and Operational Performance		Aa	Aa	Aa	Aa
e) Business Mix Impact on Cash Flow Predictability		Baa	Baa	Baa	Baa
Factor 3 : Financial Policy (10%)		Baa	Baa	Baa	Baa
a) Financial Policy		7.2x	Baa	3.4x - 3.8x	Ba
Factor 4 : Leverage and Coverage (40%)		45.4%	A	24% - 28%	Baa
b) (CFO Pre-W/C) / Net Debt (3 Year Avg)		30.5%	A	17% - 19%	Baa
c) RCF / Net Debt (3 Year Avg)					Baa1
Rating:					
a) Indicated Outcome from Scorecard			A3		
b) Actual Rating Assigned					
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 3/31/2023; 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

Ratings

Exhibit 22

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

Appendix

Exhibit 23

Peer comparison

(in EUR million)	Vattenfall AB			Iberdrola S.A.			EnBW Energie Baden-Wuerttemberg AG			Statkraft AS		
	A3 Stable			Baa1 Stable			(P)Baa1 Stable			A3 Stable		
	FYE Dec-20	FYE Dec-21	FYE Dec-22	FYE Dec-20	FYE Dec-21	FYE Dec-22	FYE Dec-20	FYE Dec-21	FYE Dec-22	FYE Dec-20	FYE Dec-21	FYE Dec-22
Revenue	15,152	17,762	22,591	33,145	39,114	53,949	19,694	32,148	56,003	3,161	8,329	15,632
EBITDA	4,401	5,762	2,440	9,555	11,644	12,770	2,705	3,010	3,877	1,018	3,183	6,502
Total Assets	45,962	76,295	71,231	122,369	141,607	154,478	45,965	71,273	69,504	17,241	31,025	32,443
Total Debt	17,538	19,188	22,462	44,230	48,382	53,759	21,248	22,759	22,227	3,871	4,469	4,031
Net Debt	12,291	2,684	7,051	40,803	44,349	49,151	14,211	10,876	11,456	2,813	782	(1,544)
FFO / Net Debt	28.3%	169.4%	50.4%	19.7%	21.7%	20.3%	17.0%	24.1%	27.7%	34.7%	166.8%	-190.3%
RCF / Net Debt	23.7%	147.1%	15.2%	11.5%	15.8%	13.8%	13.9%	20.5%	24.0%	12.0%	120.7%	-127.4%
(FFO + Interest Expense) / Interest Expense	8.4x	10.6x	5.4x	7.4x	7.6x	5.5x	5.7x	6.4x	5.0x	16.8x	18.7x	25.7x
Debt / Book Capitalization	56.1%	44.9%	62.3%	45.1%	43.4%	45.1%	65.2%	66.9%	59.8%	27.3%	27.0%	22.2%

All figures and ratios calculated using Moody's estimates and standard adjustments. FYE = Financial year-end. LTM = Last 12 months. RUR* = Ratings under review, where UPG = for upgrade and DNG = for downgrade.

Source: Moody's Financial Metrics™

Exhibit 24

Moody's-adjusted debt breakdown

Vattenfall AB

(in SEK million)	FYE	FYE	FYE	FYE	FYE
	Dec-18	Dec-19	Dec-20	Dec-21	Dec-22
As Reported Total Debt	88,275	97,627	104,775	126,408	176,765
Pensions	39,686	44,026	43,824	40,328	27,812
Leases	6,984	0	0	0	0
Hybrid Securities	(9,916)	(10,082)	(9,652)	(10,211)	(8,880)
Non-Standard Adjustments	28,550	31,815	37,794	40,233	53,930
Moody's Adjusted Total Debt	153,579	163,386	176,741	196,759	249,627
Cash & Cash Equivalents	(37,635)	(31,151)	(52,879)	(169,239)	(171,264)
Moody's Adjusted Net Debt	115,944	132,235	123,862	27,520	78,363

All figures are calculated using Moody's estimates and standard adjustments.

Source: Moody's Financial Metrics™

Exhibit 25

Moody's-adjusted EBITDA breakdown

Vattenfall AB

(in SEK million)	FYE	FYE	FYE	FYE	FYE
	Dec-18	Dec-19	Dec-20	Dec-21	Dec-22
As Reported EBITDA	37,014	44,920	49,122	80,719	25,186
Unusual Items - Income Statement	(176)	(4,334)	(1,519)	(21,162)	0
Leases	1,164	0	0	0	0
Interest Expense - Discounting	(2,239)	(2,297)	(2,165)	(2,033)	(2,009)
Non-Standard Adjustments	1,321	1,115	701	910	2,858
Moody's Adjusted EBITDA	37,084	39,404	46,139	58,434	25,886

All figures are calculated using Moody's estimates and standard adjustments.

Source: Moody's Financial Metrics™

Exhibit 26

Select historical adjusted financial data

Vattenfall AB

(in SEK million)	FYE Dec-18	FYE Dec-19	FYE Dec-20	FYE Dec-21	FYE Dec-22
INCOME STATEMENT					
Revenue	152,091	166,360	158,847	180,119	239,644
EBITDA	37,084	39,404	46,139	58,434	25,886
EBIT	19,623	20,559	27,888	40,993	8,146
Interest Expense	5,136	5,336	4,713	4,843	9,007
Net income	10,096	10,823	15,338	28,460	(1,634)
BALANCE SHEET					
Net Property Plant and Equipment	245,531	256,563	249,060	252,828	276,901
Total Assets	469,338	450,643	463,188	782,358	791,616
Total Debt	153,579	163,386	176,741	196,759	249,627
Cash & Cash Equivalents	37,635	31,151	52,879	169,239	171,264
Net Debt	115,944	132,235	123,862	27,520	78,363
Total Liabilities	371,524	347,038	355,859	591,438	672,828
CASH FLOW					
Funds from Operations (FFO)	26,236	32,604	35,032	46,620	39,491
Cash Flow From Operations (CFO)	42,020	16,939	41,961	102,176	1,407
Dividends	3,644	4,071	5,627	6,135	27,553
Retained Cash Flow (RCF)	22,592	28,533	29,405	40,485	11,938
Capital Expenditures	(22,757)	(26,995)	(22,311)	(26,132)	(25,800)
Free Cash Flow (FCF)	15,619	(14,127)	14,023	69,909	(51,946)
INTEREST COVERAGE					
(FFO + Interest Expense) / Interest Expense	6.1x	7.1x	8.4x	10.6x	5.4x
LEVERAGE					
FFO / Net Debt	22.6%	24.7%	28.3%	169.4%	50.4%
RCF / Net Debt	19.5%	21.6%	23.7%	147.1%	15.2%
Debt / EBITDA	4.1x	4.1x	3.8x	3.4x	9.6x
Net Debt / EBITDA	3.2x	3.4x	2.7x	0.5x	3.0x

All figures and ratios are calculated using Moody's estimates and standard adjustments. Periods are financial year-end unless indicated. LTM = Last 12 months.

Source: Moody's Financial Metrics™

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