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Ratings

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Electricite de France S.A.

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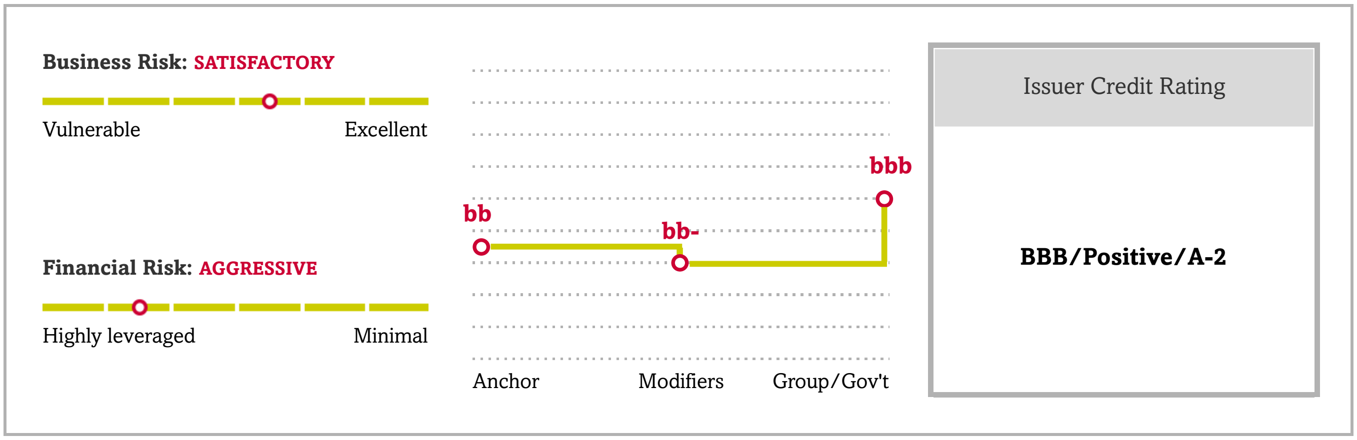
Electricite de France S.A.



Credit Highlights

Overview

Key strengths	Key risks
World's largest vertically integrated utility outside China, with a dominant position in France and strong positions in the U.K. and Italy.	EDF's eight nuclear newbuilds, which are currently under construction, in France and the U.K. are highly complex and among Europe's largest industrial projects developed by a single company.
Strong support from the highly-rated French government, its sole owner. As France's main power generator and distribution grid operator, EDF plays a pivotal role in France's energy transition through nuclear newbuilds.	Structural negative free cash flows due to a considerable and inflexible nuclear investment program.
Proven flexibility to cut dividends and receive common equity, and good access to debt and hybrid capital markets.	Exposure to volatile power prices, while regulatory and fiscal measures partly cap the upside.
Relatively high contribution from domestic regulated earnings (a quarter of EBITDA on average), notably through wholly-owned Enedis, which manages most of France's distribution network.	

Nuclear operations continue to drive our view of EDF's stand-alone credit profile (SACP) due to risks for newbuilds. In our view, EDF has largely addressed stress corrosion issues at its domestic nuclear operations. The company's swift action remedied the severe issues that had heavily contributed to unplanned outages and substantial negative EBITDA in 2022. Despite persisting concerns on the company's aging fleet and uncertain prospects for a sustainable recovery beyond 350 terawatt hours (TWh)--representing approximately 65% of its 62 gigawatt (GW) capacity--EDF's power generation has significantly exceeded our base case overall since April 2023. This caused consolidated EBITDA to overshoot considerably.

EBITDA, which reached a record high in 2023, helped reduce leverage and will likely remain high over the coming few years. Last year's robust EBITDA, supported by a recovery in power generation and sustained market prices, far exceeded our expectations and enabled EDF to reduce S&P Global Ratings-adjusted debt by €9.4 billion, despite the increased asset-retirement obligations that offset part of the 2022 increase. Power generation has continued to rise year to date. Over the next few years, we expect EBITDA will remain high at €25 billion-€35 billion. This, coupled with moderate taxes and limited dividends, should nearly cover the company's planned capital expenditure (capex) over 2024-2026. As such, we assume our assessment of the company's financial risk profile will remain significant, according to our standard calibration. That is, despite heavy newbuild spending, we expect funds from operations (FFO) to debt of 20%-30%, a slightly negative discretionary cash flow (DCF)--based on our assumption of limited mergers and acquisitions--and adjusted debt broadly stable at €85 billion-€90 billion. We expect leverage will be well within the company's target of below 4x up to 2026. Furthermore, we continue to anticipate EDF's stack of intermediate equity hybrids will not fall significantly below €10 billion, factoring in calls and any refinancings, including the one announced on June 5, 2024.

We anticipate EDF's cash generation over 2024-2026 will reflect further recovery in domestic nuclear output and sustained earnings at other operations. EDF's domestic nuclear operations should become essentially merchant from 2026 and will continue to face significant unfloored commodity price risk. However, we expect EDF's sustained generation capacity of about 335-350 TWh per year and fairly supportive market prices above €60 per megawatt hour (MWh) over 2026-2030 will support EDF's earnings from power generation assets. The Regulated Access to Historical Nuclear Power (ARENH) regulation, which lapses at year-end 2025, left only about one-third of EDF's domestic power generation exposed to wholesale market prices, while the rest is capped at €42/MWh. In this context, we view as fairly supportive the French government's recent proposal for the years from 2026 and beyond: EDF will be able to deploy an autonomous commercial offer, strike long-term sales contracts with large industrial customers, and receive market prices for its entire current capacity. This would be subject to a 50% tax take on the price achieved above €78/MWh (and to a 90% tax above €110/MWh). The stated aim is to achieve about €70/MWh overall, a part of which contributes to the financing of nuclear newbuilds in France (the NNF program). All prices in 2022 terms.

Nuclear operations continue to weigh on EDF's SACP mainly due to risks for newbuilds. Given the legacy fleet's recovery, our SACP assessment now relies heavily on EDF's role in building eight to 10 new European pressurized reactors (EPRs), in addition to finalizing Flamanville-3 (FLA-3). The related approximate gross capacity of 15 GW-18 GW (14 GW-15 GW net) is equivalent to one-quarter of EDF's current capacity. So far, EPRs have entailed high and hardly predictable construction costs and long lead times. EDF's EPR projects include, in increasing order of risk to our rating:

- 100%-owned FLA-3 in France, which is close to being commissioned.
- Two potential reactors at the U.K.-based Sizewell C project (SZC, 49.4%-owned at year-end 2023). In case of a final investment decision, we expect EDF will reduce its total direct financial involvement to an equity stake below 20.0% and deconsolidate it.
- Two EPRs under construction at Hinkley Point C (HPC) in the U.K. (67.7%-owned at year-end 2023). They are severely beyond planned costing and commissioning dates, which were deferred in January 2024 by three years to 2030.
- Six 100%-owned reactors to be built in France, for commissioning from 2035 (NNF program).

On the plus side, EDF benefits from robust earnings due to fairly supportive power prices and expected support for the NNF. We think nuclear newbuilds' inherent execution risks, coupled with heavy ongoing spending on the €33 billion 2022-2028 Grand Carénage program--which aims to enhance the safety and lifespan of EDF's existing domestic nuclear fleet--represent key credit risks through increased capex and debt. The NNF financing framework is still unclear, despite each of the first six reactors representing a multibillion-euro investment. We expect EDF will have spent some €3 billion by year-end 2024.

Mitigating factors exist. These include the expected continuation of the French government's policy of limited or no dividends (as illustrated after the significant earnings in 2023) and our understanding that the government will support the NNF financially. The latter is subject to the EU's state aid framework but the details are not yet public.

Capex exceeds our expectations. Combined with sizable investments in renewables and distribution grid strengthening, consolidated capex is trending toward roughly €25 billion annually--nearly 50% more than we expected a couple of years ago. About one-quarter of capex will be regulated. As these investments include some €10 billion annually on HPC newbuilds and Grand Carénage, in addition to a ramp-up on NNF, they come with very limited flexibility and somewhat dilute EDF's consolidated business risk in favor of unregulated power generation.

We continue to view the likelihood of extraordinary French government support to EDF as very high, making it the highest among our rated EU utilities. This is based on EDF's very strong link with its sole owner and its very important role for France's energy policy as EDF will lead the highly strategic NNF project over the next two decades. We think EDF's credit quality matters especially during construction, which necessitates financing significant capex. We see a broad-based consensus for France to commit to nuclear energy over the long term. According to this consensus, nuclear energy will help secure the country's energy supply and provide a low-carbon energy source that the current grid can more easily accommodate than a full-renewable mix. Our ratings on EDF factor in the expectation of a continuation of the policy under the new government from July 2024.

Outlook: Positive

The positive outlook reflects upgrade potential over the next 12-24 months, based on a combination of the following assumptions:

- More recovery in domestic nuclear generation toward 350TWh (excluding FLA-3) and EBITDA stabilization at €25 billion-€35 billion;
- Adjusted leverage contained at or below 3x, FFO to debt of 20%-30%, and neutral to mildly negative DCF, under our expected price environment;
- No major overruns at existing nuclear newbuilds, nor major direct financial exposure at SZC; and
- Increasing clarity on the new fiscal regime for the legacy fleet replacing the ARENH regulation from early 2026.

Additionally, we expect EDF's and the French government's approach toward sharing financial risks related to the NNF will become clearer.

Downside scenario

We could revise the outlook to stable if the SACP does not strengthen in line with our expectation. This could result from renewed industrial challenges at the existing nuclear fleet or newbuilds, or a pronounced deviation from our base-case leverage expectations. All else remaining equal, a positive or negative action on the sovereign rating on France (unsolicited, AA-/Stable/A-1+) would not in itself lead to an upgrade or downgrade of EDF.

Upside scenario

Barring any changes in our view on extraordinary government support, an upgrade could occur if EDF:

- Resolved its industrial challenges at the domestic nuclear fleet;
- Generated only modestly negative DCF if any, with FFO to debt of 20%-30% and no further major overrun at HPC; and
- Confirmed no major financial exposure to SZC.

A directional clarification of state support for the financing of NNF could also support an upgrade.

Our Base-Case Scenario

Assumptions

- French nuclear output, outside FLA-3, of 335 TWh, 350 TWh, and 350 TWh for 2024, 2025, and 2026, respectively.
- French hydro output of 40 TWh for each of these years.
- Realized domestic and U.K. power prices of about €75/MWh from 2025.
- Working capital outflows of about €3 billion in 2024 and working capital inflows of about €4 billion in 2025.

- Cash dividends of about €1 billion annually (limited to hybrid coupons and dividends to minority interests) and no new equity issuances nor repurchases.
- Net annual capex trending toward €25 billion by 2026, including 100% of capex earmarked for HPC and the NNF.
- No significant acquisitions and disposals.
- Overall broadly stable deficits on unfunded nuclear obligations and employee obligations, relative to year-end 2023 levels.

Key metrics

Electricite de France S.A--Key metrics*

	--Fiscal year ended Dec. 31--				
(Bil. €)	**2022a**	**2023a**	**2024e**	**2025f**	**2026f**
EBITDA	-13.0	38.2	34-36	26-28	30-32
Funds from operations (FFO)	-16.5	30.8	27-28	21-22	25-26
Operating cash flow	-9.2	29.4	23-24	26-27	22-23
Capital expenditure	17.9	20.2	22-23	23-24	24-25
Discretionary cash flow	-27.8	8.4	-0.5	1.0	-2.8
Debt (adjusted)	95.2	85.8	88-89	89-90	91-92
FFO to debt (%)	-17.4	35.9	31-32	24-25	27-28
Debt to EBITDA (x)	-7.3	2.2	2.5-3.0	3.0-3.5	3.0-3.5

*All data include S&P Global Ratings' adjustments. a--Actual. e--Estimate. f--Forecast.

Company Description

Fully state-owned EDF is the largest integrated power company globally, excluding China, with a global net installed capacity of 122.7 GW and power generation of 467.6 TWh in 2023. EDF is France's dominant electricity operator and has strong positions in the U.K. through EDF Energy, and in Italy through 97.45%-owned Edison. Over the next few years, we expect regulated operations (primarily French power distribution) will contribute on average about one-fifth to consolidated EBITDA and one-quarter to capex, most of it related to domestic power generation and supply.

EDF owns and manages France's low- and medium-voltage public distribution network, primarily through wholly-owned Enedis, Europe's largest distribution network operator, with a regulated asset base of €53.7 billion (at Jan. 1, 2021). Via its nuclear power-dedicated asset fund, EDF also owns 50.1% of RTE (A/Stable/A-1) but does not control it. RTE is France's national high-voltage transmission power grid, with a regulated asset base (RAB) of close to €17 billion.

In 2023, low-carbon energy sources accounted for 90% of total power generation, nuclear power for 78%, and hydro energy for 9%. EDF Renewables is a major wind and solar company, with a global net installed capacity of 15.1 GW. It contributes less than 5% to EBITDA, similar to Dalkia (energy services and heating and cooling networks). These include gas activities and EDF Trading, which provides market optimization and risk management services via wholesale energy market operations.

Peer Comparison

Table 1

Electricite de France S.A.--Peer comparison					
	Electricite de France S.A.	**Enel SpA**	**Iberdrola S.A.**	**Engie S.A.**	**Fortum Oyj**
Ratings as of June 18, 2024	BBB/Stable/A-2	BBB/Stable/A-2	BBB+/Stable/A-2	BBB+/Stable/A-2	BBB/Stable/A-2
(Mil. €)	**--Fiscal year ended Dec. 31, 2023--**				
Revenue	139,715.0	95,008.0	49,335.0	82,565.0	6,711.0
EBITDA	38,211.0	18,956.0	13,505.0	14,964.0	1,914.0
Funds from operations (FFO)	30,845.0	12,042.5	9,462.5	11,911.0	1,232.0
Interest expense	6,963.0	4,055.5	3,058.5	2,580.0	352.0
Cash interest paid	3,671.0	3,955.5	2,550.5	1,366.0	228.0
Cash flow from operations	29,377.0	14,429.5	9,958.2	12,426.0	1,710.0
Capital expenditure	20,199.0	12,352.0	8,731.0	7,039.0	576.0
Free operating cash flow (FOCF)	9,178.0	2,077.5	1,227.2	5,387.0	1,134.0
Discretionary cash flow (DCF)	8,381.0	-3,204.0	-3,535.4	1,303.0	317.0
Cash and short-term investments	30,267.0	6,641.0	3,127.0	16,578.0	4,183.0
Debt	85,819.5	75,523.5	52,850.9	48,974.2	1,745.4
Equity	58,114.5	41,950.0	56,167.0	34,027.5	8,499.0
Adjusted ratios					
EBITDA margin (%)	27.3	20.0	27.4	18.1	28.5
Return on capital (%)	20.4	9.4	9.2	12.5	16.0
EBITDA interest coverage (x)	5.5	4.7	4.4	5.8	5.4
FFO cash interest coverage (x)	9.4	4.0	4.7	9.7	6.4
Debt/EBITDA (x)	2.2	4.0	3.9	3.3	0.9
FFO/debt (%)	35.9	15.9	17.9	24.3	70.6
Cash flow from operations/debt (%)	34.2	19.1	18.8	25.4	98.0
FOCF/debt (%)	10.7	2.8	2.3	11.0	65.0
DCF/debt (%)	9.8	-4.2	-6.7	2.7	18.2

Business Risk: Satisfactory

Our assessment of EDF's business risk profile as satisfactory balances noteworthy strengths (dominant domestic distribution grid in a strongly supportive regulatory framework; the world's largest generation capacity outside China; the the world's largest nuclear generation capacity, including China; low-variable cost, low-carbon nuclear fleets; and growing wind and solar capacity) with downside risks on the nuclear side (domestic fleet availability, exposure to three in-progress newbuilds, and uncertainty about the financing of NNF).

EDF benefits from its dominant position as the world's largest integrated utility and its large share of regulated activities. EDF is the leader in France in terms of power generation, distribution, and supply, and it has solid positions in the U.K. and Italian power generation markets. We expect regulated networks will contribute one-fifth to consolidated EBITDA under a strongly supportive regulatory framework, primarily through Enedis' position as France's key power distribution network. We expect energy transition-related capex of €6 billion per year will benefit future earnings under the supportive TURPE 6 regulatory tariff (from Aug. 1, 2021) and its successor.

The dominance of nuclear power generation in EDF's business profile comes with risks and opportunities alike. EDF's heavy reliance on capital-intensive nuclear operations implies strong free cash flows absent outages and modernization capex but also significant technology concentration, construction, and outage risks. This is because of aging fleets in France--where 90% of capacity, even including FLA-3, reached 40 years--and the U.K., where almost all reactors are set to close this decade. France's nuclear safety regulation does not set a fixed limit for operations but may grant 10-year extension requests. The first reactor received its final authorization to operate up to 50 years in 2023. We expect EDF's continued investments will prolong the life of its existing fleet until about 2040 or beyond.

We do not anticipate that total domestic nuclear output will exceed 350 TWh (excluding FLA-3), compared with about 390 TWh on average over 2015-2019. Planned outages related to the Grand Carénage program will remain material over 2024-2028. The mobilization of scarce staff represents one of the long-term structural challenges that EDF aims to address and that will take significant time to resolve, in our view.

Until year-end 2025, we expect about two-thirds of EDF's nuclear power production in France will be subject to the ARENH regulation. This imposes a low €42/MWh price cap with no floor. We note positively that the government largely clarified the successor regime in December 2023, which should provide reasonable financing visibility, although on a fully merchant basis. We will assess the impact of the snap elections when the new government's policies are known. EDF's nuclear and renewable assets are well positioned in the merit order, given their low marginal cost. To an extent, they will therefore benefit from fairly sustained power prices, amid the accelerated European energy transition. We are less clear about prices up to 100 TWh of annual generation, related both to transmission and distribution losses and to exports. We expect exports will increase to 60.0 TWh-80.0 TWh annually through 2030 (from 50.3 TWh in 2023).

The risks and achievements of French and U.K. nuclear newbuilds remain key credit considerations. Repeated material cost overruns and delays in the case of FLA-3 and HPC (the latter triggering a €11 billion write-down in 2023) highlight significant operating and contingency risks related to nuclear newbuilds. At HPC, despite successive commissioning dates being pushed back, there remains a high risk of further delays to the commissioning of units 1 and 2 (by 15 and nine months, respectively) and additional costs. As for the FLA-3 EPR, while grid connection should be achieved this summer, extensive repairs 18 months after commissioning suggest lingering risks. Given EDF's track record of execution, these two projects carry further contingency risks for EDF, in our view, while increasing its large investment pipeline.

Regarding projects that are not yet sanctioned (NNF and SZC), we factor in EDF's involvement in SZC and in six EPR-2 reactors under the NNF. We expect the most significant NNF-related capex will emerge later this decade. A key credit driver will be the amount, timing, and nature of government support for the NNF funding and remuneration. We note the E.U. Commission's approval of the Czech government's financial support related to the Dukovany newbuild on April 30, 2024.

The largely contracted and growing renewables portfolio enhances EDF's positioning. We understand that EDF aims to triple wind and solar installed capacity to achieve 100 GW gross capacity (including hydro) by 2030, from 37.7 GW at year-end 2023, which is an ambitious target. The company added net capacity of 1.5 GW in 2023, while 4.2 GW were under construction at year-end 2023. Renewables, not just hydro energy, will increasingly contribute to EDF's earnings. This is despite administrative hurdles and opposition in many European countries, which has slowed new capacity deployment. We understand earnings stability benefits from long-term contracting.

Financial Risk: Aggressive

Our key credit metrics will stabilize as sustained FFO finances nearly all capex. Our assessment of EDF's financial risk profile balances its high absolute and relative adjusted debt with credit-supportive features, including ongoing access to senior and hybrid markets at competitive rates, limited acquisitions, and a track record of receiving equity and paying limited dividends, if any, from the parent company, barring above-expectation earnings. We adjust metrics for employee and (mostly nuclear-linked) asset-retirement obligations.

Capex will increase on the legacy fleet until 2028 and on nuclear newbuilds. The Grand Carénage, newbuilds, and higher grid capex push annual consolidated capex toward €25 billion, with low flexibility to defer outlays and upside risks on continued sector-wide inflation and project-management risks. We anticipate that these high investments will translate into slightly negative free operating cash flow over 2024-2026, with the outlook beyond that depending heavily on any government support to the NNF. Until 2030, the cash flow contribution from nuclear newbuilds will be limited to FLA-3, contributing from full-year 2027 onward.

Risks to credit metrics focus on nuclear newbuilds and legacy asset-retirement obligations, as illustrated by the latter's €4 billion increase in 2023. We do not factor in our forecasts an increase in deferred income, which stood at €3.4 billion at year-end 2023 and comprised advances to EDF under long-term power supply contracts and partner advances received as nuclear plant financing and associated long-term contracts.

Financial summary

Table 2

Electricite de France S.A.--Financial summary

Industry sector: Energy

	--Fiscal year ended Dec. 31--				
(Mil. €)	**2023**	**2022**	**2021**	**2020**	**2019**
Revenue	139,715.0	143,476.0	84,461.0	69,031.0	71,317.0
EBITDA	38,211.0	(13,038.0)	17,456.0	16,274.0	16,716.0
Funds from operations (FFO)	30,845.0	(16,563.0)	13,412.5	13,341.5	13,698.5
Interest expense	6,963.0	3,051.0	(621.4)	2,145.8	695.5
Cash interest paid	3,671.0	2,243.0	1,767.5	1,949.5	2,095.5
Cash flow from operations	29,377.0	(9,199.0)	11,149.5	12,185.5	12,818.5
Capital expenditure	20,199.0	17,861.0	17,045.0	15,428.0	15,969.0
Free operating cash flow (FOCF)	9,178.0	(27,060.0)	(5,895.5)	(3,242.5)	(3,150.5)
Discretionary cash flow (DCF)	8,381.0	(27,842.0)	(6,419.0)	(3,259.0)	(3,083.0)

Table 2

Electricite de France S.A.--Financial summary (cont.)

Industry sector: Energy

	--Fiscal year ended Dec. 31--				
(Mil. €)	**2023**	**2022**	**2021**	**2020**	**2019**
Cash and short-term investments	30,267.0	28,889.0	22,458.0	21,056.0	22,621.0
Gross available cash	30,267.0	28,889.0	22,202.9	20,872.0	22,378.0
Debt	85,819.5	95,203.0	74,843.1	75,850.4	72,073.5
Equity	58,114.5	40,751.0	55,857.0	49,581.0	51,185.5
Adjusted ratios					
EBITDA margin (%)	27.3	(9.1)	20.7	23.6	23.4
Return on capital (%)	20.4	(18.8)	5.3	4.5	6.3
EBITDA interest coverage (x)	5.5	(4.3)	(28.1)	7.6	24.0
FFO cash interest coverage (x)	9.4	(6.4)	8.6	7.8	7.5
Debt/EBITDA (x)	2.2	(7.3)	4.3	4.7	4.3
FFO/debt (%)	35.9	(17.4)	17.9	17.6	19.0
Cash flow from operations/debt (%)	34.2	(9.7)	14.9	16.1	17.8
FOCF/debt (%)	10.7	(28.4)	(7.9)	(4.3)	(4.4)
DCF/debt (%)	9.8	(29.2)	(8.6)	(4.3)	(4.3)

Reconciliation

Table 3

Electricite de France S.A.--Reconciliation of reported amounts with S&P Global Ratings' adjusted amounts

	--Fiscal year ended Dec. 31, 2023--								
Electricite de France S.A. reported amounts (mil. €)									
	Debt	**Shareholders' equity**	**EBITDA**	**Operating income**	**Interest expense**	**S&P Global Ratings' adjusted EBITDA**	**Cash flow from operations**	**Dividends**	**Capital expenditure**
Reported	82,329.0	52,168.0	36,983.0	13,174.0	3,136.0	38,211.0	29,808.0	1,112.0	21,021.0
S&P Global Ratings' adjustments									
Cash taxes paid	--	--	--	--	--	(3,695.0)	--	--	--
Cash interest paid	--	--	--	--	--	(2,534.0)	--	--	--
Trade receivables securitizations	1,764.0	--	--	--	--	--	706.0	--	--
Reported lease liabilities	4,318.0	--	--	--	--	--	--	--	--
Intermediate hybrids reported as equity	6,004.5	(6,004.5)	--	--	315.0	(315.0)	(315.0)	(315.0)	--
Postretirement benefit obligations/deferred compensation	12,480.0	--	353.0	353.0	629.0	--	--	--	--
Accessible cash and liquid investments	(30,267.0)	--	--	--	--	--	--	--	--
Capitalized interest	--	--	--	--	822.0	(822.0)	(822.0)	--	(822.0)

Table 3

Electricite de France S.A.--Reconciliation of reported amounts with S&P Global Ratings' adjusted amounts (cont.)

Dividends received from equity investments	--	--	702.0	--	--	--	--	--	--
Asset-retirement obligations	9,191.0	--	--	--	2,061.0	--	--	--	--
Nonoperating income (expense)	--	--	--	1,427.0	--	--	--	--	--
Noncontrolling interest/minority interest	--	11,951.0	--	--	--	--	--	--	--
EBITDA: Gain/(loss) on disposals of PP&E	--	--	228.0	228.0	--	--	--	--	--
EBITDA: Business divestments	--	--	(55.0)	(55.0)	--	--	--	--	--
Depreciation and amortization: Impairment charges/(reversals)	--	--	--	13,011.0	--	--	--	--	--
EBIT: Other (situational)	--	--	--	363.0	--	--	--	--	--
Total adjustments	3,490.5	5,946.5	1,228.0	15,327.0	3,827.0	(7,366.0)	(431.0)	(315.0)	(822.0)
S&P Global Ratings' adjusted amounts									
	Debt	**Equity**	**EBITDA**	**EBIT**	**Interest expense**	**Funds from operations**	**Cash flow from operations**	**Dividends paid**	**Capital expenditure**
Adjusted	85,819.5	58,114.5	38,211.0	28,501.0	6,963.0	30,845.0	29,377.0	797.0	20,199.0

Liquidity: Adequate

We regard EDF's liquidity as adequate. Our assessment considers the company's strong cash position--supporting a 1.2x coverage of uses by sources--its very proactive refinancing, solid relationships with banks, and a track record of ample access to capital, not least because EDF is a strategic entity for the French government. We note that capex and significant debt maturities are inflexible.

Principal liquidity sources	Principal liquidity uses
Principal liquidity sources for the 12 months from March 31, 2024, include: • Cash and cash equivalents of €28 billion (about €36 billion pro forma the senior bond issuance in May 2024); • Our estimate of about €10 billion availability under committed credit lines maturing more than one year	Principal liquidity uses over the same period include: • Debt maturities of close to €23 billion; • Estimated capex of €20 billion; • Negative working capital of €5 billion-€7 billion; and • No cash dividends by the parent company of under €1 billion, including on hybrids and to minority

out. This includes two syndicated credit facilities maturing in December 2025, for a combined €5.5 billion; and • Estimated cash FFO approaching €20 billion.	interests.

Debt maturities

As of Dec. 31, 2023:

- 2024: €18.9 billion
- 2025-2028: €28.4 billion
- Thereafter: €39.4 billion

Environmental, Social, And Governance

ESG factors are a moderately negative consideration in our credit rating analysis of EDF. EDF's governance, which we assess as neutral, mostly flags risks related to the uncertainties regarding the company's ability to proactively identify, manage, and resolve risks for the company's existing aging nuclear fleet and newbuilds.

Regarding existing reactors, given repeated unplanned outages, we consider the track record relatively poor, though improving, and reflective of the inherent complexity of managing aging nuclear generation assets. The record was further marred, mostly between late 2021 and early 2023, by the scale and effect of technical issues on EDF's core French nuclear operations--which EDF has promptly remedied.

Regarding newbuild nuclear reactor projects in France and the U.K., we also factor in inherent risks of cost overruns and delays, significantly mitigated to date only in the case of SZC. Each of them stands among the largest industrial projects across sectors globally (excluding China). All are over a decade late on original planning and we expect capex will approach or exceed €12 million-€15 million per MW of capacity in 2024 money, excluding capital remuneration and dismantlement liabilities.

- On HPC, over 2022-2024, EDF announced some £10 billion of additional capex, most of which it will fully bear, and which is deferred by about three years to 2029-2030 in its commissioning base case, shortening by at least 18 months of HPC's protective 35-year contract for difference with the U.K. government. EDF wrote off about €13 billion on its U.K. assets, principally HPC, over 2022-2023.
- Despite first grid connection planned for third-quarter 2024 and contained remaining capex, we expect FLA-3 will only contribute from full-year 2027, given a prolonged outage in 2026 to repair the vessel head.

In addition to these impairments, over 2022-2023 EDF recorded multiple nuclear-related one-off expenses on its global fleet, totaling about €2.7 billion. These include a €1,073 million provision for spent fuel and FLA-3 repair costs totalling €1,137 million.

Environmental considerations primarily reflect the company's prominent nuclear operations. With the world's largest nuclear generation fleet and 93% of 2023 production decarbonated, EDF's carbon footprint is relatively small. We estimate its scope 1 combined emissions for its metropolitan French generation and supply and its U.K. operations, effectively the core of the company, were just 7 grams of CO2 equivalent emissions per kWh (g/kWh) of power and heat produced in 2023. EDF's total scope 1 emissions amounted to 37 g/kWh and derive from French islands, Edison, and Dalkia. EDF targets 22 g/kWh by 2035.

However, environmental and social risks related to the future long-term storage of nuclear waste offset EDF's low carbon footprint. Total provisions related to nuclear power generation of €63.5 billion increased by €4.2 billion in 2023, half of which due to a new downstream contract with Orano. We adjust EDF's debt for net asset retirement obligations by €9.1 billion at year-end 2023.

In addition, we factor into our assessment the French government's support of EDF's strategic role in the French energy transition, its public mission embedded in its power network activities, and its social role as a major employer in France. Yet we also see as a great social challenge the negative track record of project management and third-party reports pointing to a loss of technical skills and quality within the French nuclear industry, both for EDF and throughout the supply chain. We believe these challenges remain to be fully addressed.

Issue Ratings - Subordination Risk Analysis

Capital structure

EDF has limited, or secured, debt at subsidiaries, relative to its overall gross consolidated debt.

Analytical conclusions

We do not notch down EDF's senior unsecured debt as the holding company issues most of the company's debt.

Hybrid ratings, issuance capacity and refinancing

We include a degree of support to our hybrid rating. In the case of junior subordinated debt ratings, we include a fraction of the four-notch uplift we assign to the senior debt to reflect extraordinary government support. The significant losses in 2022 did not prompt EDF to consider that junior hybrid debtholders absorb losses, nor did it increase the likelihood that state support continues to accrue to EDF as an overall entity, which also benefits hybrid debtholders. Thus, the ratings on all debt obligations are in line with the issuer credit rating. For hybrids, we remove all but one of the four notches of uplift we assign to the senior debt ratings.

Given EDF's considerable debt and equity, the company has significant capacity to raise hybrids outstanding (€12.0 billion at year-end 2023 at the transaction exchange rate), while remaining within our typical 15% guidance. We do not expect EDF's total stack of hybrids outstanding to decrease significantly below €10 billion.

Government Support

EDF's nuclear generation will remain crucial for France's power mix over the coming decades. In 2022, Russia's 80% cut of its gas exports to Europe, and the subsequent continuing tightness in Europe's gas and power price levels and volatility, prompted a significant shift in EU energy policymaking. We view state aid as less of an issue for energy-market systemic utilities because the EU will focus on three goals over the next few years: Security of supply, affordability, and accelerating the energy transition. France firmly believes nuclear is key to achieve these goals and has assigned EDF the primary role in achieving these objectives.

In our view, constraints about state aid to key energy suppliers have somewhat eased in the context of the EU's energy transition plan and continuing tightness on power markets. Since the start of Europe's gas crisis, Germany and other countries that are traditionally less interventionist than France resorted to extraordinary measures to occasionally support the capital or liquidity of high-profile utilities. Since EDF generates about three times more power than any other utility in Europe, we believe the company is even more important when it comes to providing energy security for the European power platform than it was before 2021. This eases constraints on French government support to EDF. Given nuclear phase-outs by France's neighbors, EDF's nuclear capacity represents about 60% of the EU's and about 10x of the next-largest company's nuclear capacity. Across technologies, we estimate EDF generates one-sixth of the

EU's power.

Through its domestic nuclear fleet, EDF is central to France's energy goals since the energy transition fosters electricity demand and the expansion of renewables is slow. The French government expects EDF, whose nuclear fleet generates about 70% of France's electricity, will start commissioning six to 14 new EPR reactors from 2035. We believe this will support EDF's creditworthiness and continuity of operations, especially since the company is constructing these extremely complex projects with very long lead times. EDF's importance to the French energy sector also adds to the government's incentives to protect the creditworthiness of a company that is primarily operating legacy assets.

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- Renewable Energy Funding in 2023: A "Capital Transition" Unleashed, Sept. 14, 2023
- EU's Proposed Energy Market Redesign Mitigates Merchant Risks And Accelerates Renewables, April 3, 2023

Business And Financial Risk Matrix

	Financial Risk Profile					
Business Risk Profile	Minimal	Modest	Intermediate	Significant	**Aggressive**	Highly leveraged
Excellent	aaa/aa+	aa	a+/a	a-	bbb	bbb-/bb+
Strong	aa/aa-	a+/a	a-/bbb+	bbb	bb+	bb
Satisfactory	a/a-	bbb+	bbb/bbb-	bbb-/bb+	**bb**	b+
Fair	bbb/bbb-	bbb-	bb+	bb	bb-	b
Weak	bb+	bb+	bb	bb-	b+	b/b-
Vulnerable	bb-	bb-	bb-/b+	b+	b	b-

Ratings Detail (As Of July 2, 2024)*

Electricite de France S.A.	
Issuer Credit Rating	BBB/Positive/A-2
Commercial Paper	A-2
Junior Subordinated	B+
Senior Unsecured	BBB
Short-Term Debt	A-2
Issuer Credit Ratings History	
05-Jun-2024	BBB/Positive/A-2
14-Dec-2022	BBB/Stable/A-2
24-May-2022	BBB/Watch Neg/A-2
21-Feb-2022	BBB/Negative/A-2
17-Jan-2022	BBB+/Watch Neg/A-2
22-Jun-2020	BBB+/Stable/A-2
17-Apr-2020	A-/Watch Neg/A-2
10-Oct-2019	A-/Negative/A-2
Related Entities	
Coentreprise de Transport d'Electricite	
Issuer Credit Rating	A-/Stable/--
Senior Unsecured	BBB+

Ratings Detail (As Of July 2, 2024)*(cont.)	
EDF Energy Customers Ltd.	
Issuer Credit Rating	BB-/Positive/NR
EDF Energy Ltd.	
Issuer Credit Rating	BB-/Positive/B
Edison SpA	
Issuer Credit Rating	BBB/Positive/A-2
RTE Reseau de Transport d Electricite	
Issuer Credit Rating	A/Stable/A-1
Commercial Paper	
Local Currency	A-1
Senior Unsecured	A

*Unless otherwise noted, all ratings in this report are global scale ratings. S&P Global Ratings' credit ratings on the global scale are comparable across countries. S&P Global Ratings' credit ratings on a national scale are relative to obligors or obligations within that specific country. Issue and debt ratings could include debt guaranteed by another entity, and rated debt that an entity guarantees.

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