MOODY'S INVESTORS SERVICE

CREDIT OPINION
3 July 2019

Update

Rate this Research

RATINGS

Electricite de France

Domicile	Paris, France
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

Celine Cherubin +33.1.5330.3366
VP-Senior Analyst
celine.cherubin@moodys.com

Neil Griffiths-Lambeth +44.20.7772.5543
Associate Managing Director
neil.griffiths-lambeth@moodys.com

Aurelie Salmon +33.1.5330.3364
Associate Analyst
aurelie.salmon@moodys.com

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

Electricite de France

Update to credit analysis

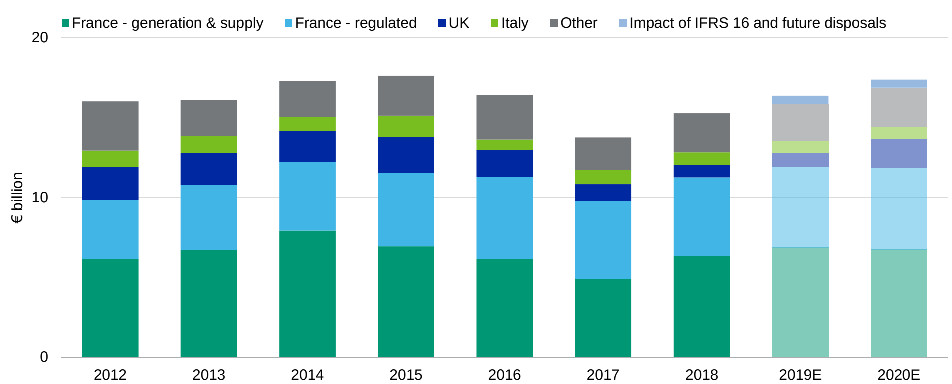
Summary

Electricite de France's (EDF, the group) credit quality is constrained by (1) its fixed-cost merchant power generation in France and the UK, which exposes it to power price volatility; (2) increasing competition in the French supply market; (3) a significant capital spending programme which results in negative free cash flow (FCF); and (4) the construction risk associated with the Hinkley Point C (HPC) new nuclear project in the UK.

These challenges are balanced by (1) the scale and breadth of its businesses in France, which account for more than two-thirds of its EBITDA; (2) the stabilising contribution to earnings from its domestic regulated activities and renewables business, which together account for around 40% of the group's EBITDA; and (3) its geographical diversification because of its sizeable positions in other European countries.

From a financial risk perspective, we expect EDF to achieve funds from operations (FFO)/net debt at least in the mid-to-high teens in percentage terms in the short to medium term.

Exhibit 1
Higher power prices and operational improvement support earnings recovery from the 2017 low
EBITDA (in € billion)



The 2019 and 2020 estimates represent Moody's forward view, not the view of the issuer.
Sources: Company reports, Moody's Investors Service

The A3 rating incorporates two notches of uplift, given the company's 83.7% ownership by the Government of France (Aa2 positive).

Credit strengths

» Leading electric utility in France

» Regulated activities and geographical diversification, which support cash flow stability

» Expectation of high support from the French government, given the company's 83.7% state ownership

Credit challenges

» High volumes of fixed-cost, low-emission, merchant power generation in France and the UK, which expose the company to power price volatility

» Significant capital spending programme, which results in structural negative FCF without asset disposals

» Uncertainties surrounding the evolution of nuclear regulations and EDF's organisational and financial structure as part of France's energy transition plan

» Increasing competition in the French supply market

» Construction risk associated with the Flamanville 3 and HPC nuclear power plant projects in France and the UK

Rating outlook

The stable outlook reflects our expectation that EDF's FFO/net debt will remain at least in the mid-to-high teens in percentage terms over 2019-20.

Factors that could lead to an upgrade

Upward rating pressure is unlikely in the medium term, given the group's substantial capital spending commitments and uncertainties surrounding the evolution of the electricity market in France, including nuclear regulations, and EDF's organisational and financial structure. Nevertheless, the ratings could be upgraded if (1) there is clarity on the market's evolution; and (2) EDF achieves credit metrics in excess of the guidance on a permanent basis, most likely as a result of higher power prices or the introduction of regulatory measures that would support the group's business model.

Factors that could lead to a downgrade

The ratings could be downgraded if (1) the company's credit metrics fall below our guidance for an A3 rating; (2) a change in the group's relationship with the French government were to cause us to remove the uplift for government support; or (3) there were to be a significant downgrade of France's government rating.

Key indicators

Exhibit 2
Electricite de France

	12/31/2014	12/31/2015	12/31/2016*	12/31/2017*	12/31/2018	2019E	2020E
(CFO Pre-W/C + Interest) / Interest	4.7x	5.0x	5.3x	4.8x	5.4x	5.2x	5.4x
(CFO Pre-W/C) / Net Debt	18.4%	18.5%	18.5%	17.7%	21.3%	19.7%	20.6%
RCF / Net Debt	14.3%	15.6%	17.4%	16.8%	19.7%	18.3%	19.2%

All figures and ratios are calculated using Moody's estimates and standard adjustments. Moody's forecasts (f) or projections (proj.) are Moody's opinion and do not represent the views of the issuer. Periods are financial year-end unless indicated. LTM = Last 12 months.
*These ratios do not take into account the fair value of EDF's stake in RTE included in the company's dedicated assets.
Source: Moody's Investors Service

Profile

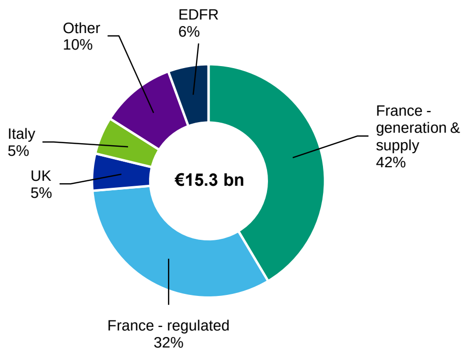
With EBITDA of €15.3 billion in 2018 and net installed generation capacity of 126 gigawatts (GW), Electricite de France (EDF) is one of Europe's largest integrated utilities, providing electricity generation, distribution and supply services. The group is organised along the following business lines: (1) France - generation and supply, where it is the dominant power generator and supplier; (2) France

- regulated, which primarily includes electricity distribution through its subsidiary Enedis; (3) UK, through EDF Energy, the country's largest generator following the acquisition of British Energy; (4) Italy, where it is the third-largest generator through Edison S.p.A. (Baa3 stable); (5) other international, which combines activities in Central and Western Europe, as well as outside of Europe; (6) EDF Renouvelables (EDFR), the group's wholly owned investment vehicle for renewables, excluding hydro; and (7) other activities, which include Framatome, EDF Trading Limited (Baa2 stable) and energy services through Dalkia.

Exhibit 3

France accounts for around 75% of EDF's EBITDA

EBITDA by business segment (31 December 2018)

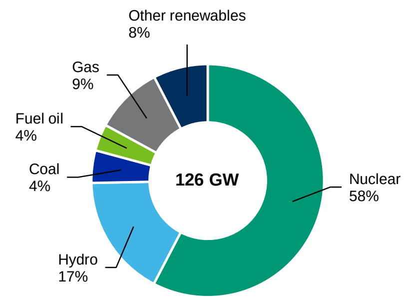


Sources: Company reports, Moody's Investors Service

Exhibit 4

EDF's installed capacity includes mostly nuclear and hydro

Net consolidated capacity by fuel (31 December 2018)



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

EDF is listed on Euronext Paris, with a market capitalisation of around €38 billion. It is 83.7% owned by the French government.

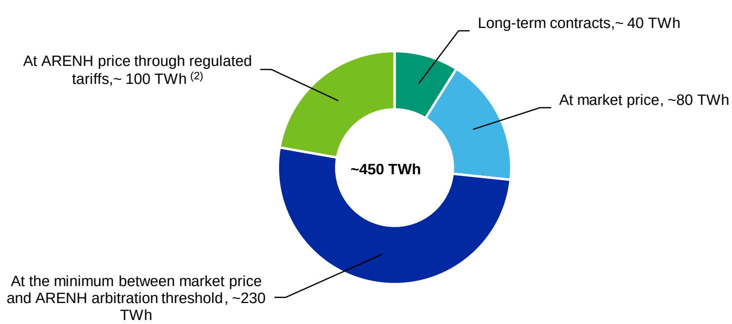
Detailed credit considerations

Fixed-cost generation fleet exposed to volatile power prices

We estimate that commodity-exposed activities account for around 35%-40% of EDF's EBITDA. This reflects the fact that (1) around 100TWh of EDF's domestic electricity volume is directly exposed to market prices (see Exhibit 5); and (2) power generation in the UK and Italy is fully exposed to wholesale prices. Although EDF typically hedges by selling forward a substantial proportion of its outright power generation on a rolling basis, the company retains exposure to market prices as hedges roll off. Capacity payments mitigate only a part of EDF's commodity price exposure.

Exhibit 5

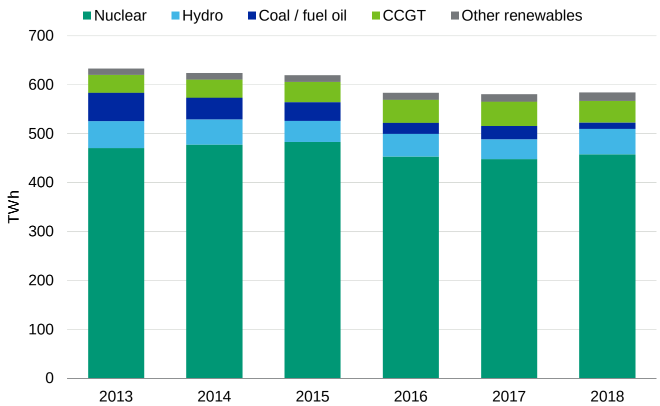
Distribution of electricity sales[1] according to their market exposure in 2018 (in TWh)



1. Sales excluding purchase obligations volumes and volumes under long-term supply contracts.
2. Regulated electricity sales tariffs
Sources: Company reports, Moody's Investors Service

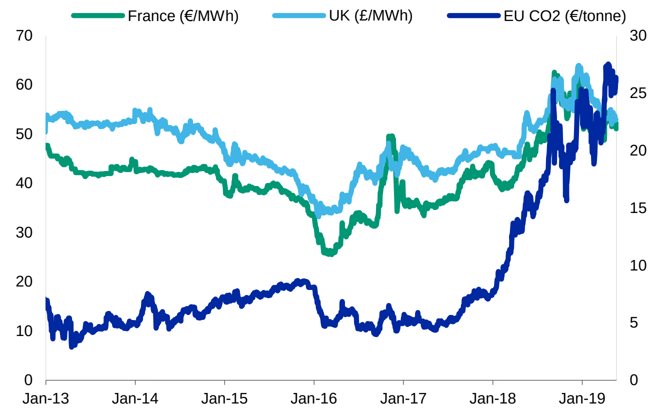
EDF is particularly exposed to movements in wholesale power prices because its generation fleet is predominantly fixed cost in nature: in 2018, 87% of its 584 terawatt-hour (TWh) output was represented by nuclear and hydro, up from 84% in 2017 as a whole, when hydro's contribution was depressed by unusually dry conditions.

Exhibit 6
Most of EDF's generation output ...
Output by technology



Sources: Company reports, Moody's Investors Service

Exhibit 7
... is exposed to volatile power prices
One-year forward baseload power price



Sources: FactSet, Bloomberg

Similar to other large European markets, including the UK, forward baseload power prices in France rose sharply in 2018, reaching €60/MWh, driven by the higher CO_2 price, which doubled in the year. Although power prices retreated in the first half of 2019, to around €50/MWh, they remain well above the 2016 levels.

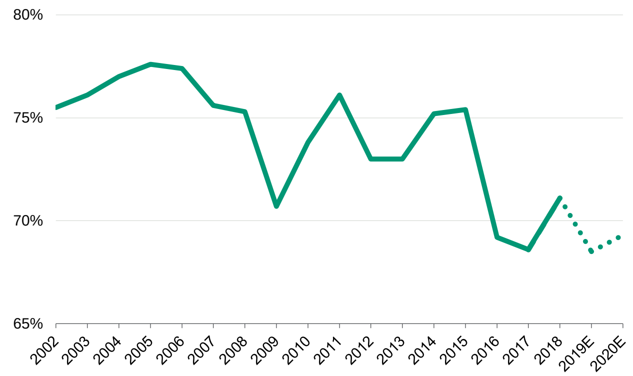
At these levels, the French wholesale price is at the top of our estimated range of €40-€50/MWh for the period up to 2022, although we note that prices for delivery in 2020 and 2021 are in backwardation. Differences between our lower commodity price assumptions and current market prices account for the gap (see Europe's electricity markets: In France, decarbonisation targets are overshadowed by the future of nuclear, published in July 2018).

If sustained, higher power prices will boost EDF's profit from its predominantly fixed-cost, low-emission generation fleet. The overall boost to the group's earnings will depend on its hedging strategy and the extent to which its supply margins are squeezed by higher wholesale price input costs. The group typically hedges planned output two years ahead of delivery, and it estimates that around 100 TWh of its output in France (after taking into account the direct and indirect effects of the ARENH mechanism) is exposed to market price movements, when the power price and capacity price are above the €42/MWh ARENH (Accès régulé à l'électricité nucléaire historique) price.

Improved domestic operational performance to be sustained in 2019, but UK output will be lower

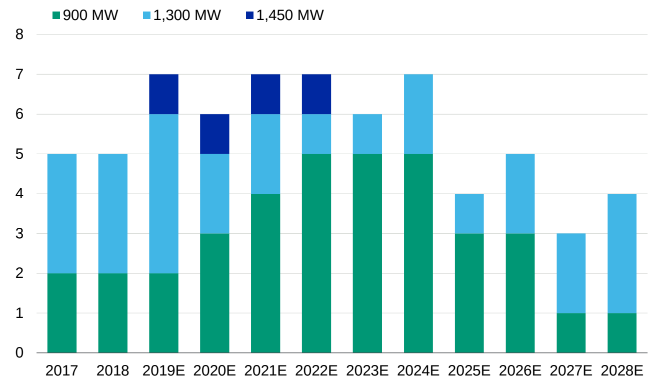
Given the high fixed-cost/low variable-cost nature of nuclear generation, EDF's earnings are particularly sensitive to the availability and output of its French and UK plants. After a low point in 2017, partly because of unplanned outages as a result of investigations into equipment manufactured in certain plants of Framatome, output in 2018 recovered to 393 TWh, up 2.4% from 379 TWh in 2017. Improved hydrology boosted hydropower generation in France to 46.5 TWh, up 25% from 2017. The group is guiding to broadly stable domestic nuclear output in 2019 at 395 TWh, notwithstanding the higher number of 10-year inspections: cumulative output in the five months to May of 175.2 TWh, up 0.6% year on year, indicates it is on track to achieve this. However the outlook is for lower production in the UK, due to the inspection at Hunterston B, and an extended unplanned outage of Dungeness B: at end-May, output in the year to date was 21.4 TWh, down almost 15% year on year.

Exhibit 8
Nuclear availability in France recovered from its 2017 low ...
Load factor of the French nuclear fleet



The 2019 and 2020 estimates represent Moody's forward view, not the view of the issuer.
Sources: Company reports, Moody's Investors Service

Exhibit 9
... but current elevated levels of maintenance will weigh on output
Number of 10-year inspections by reactor type



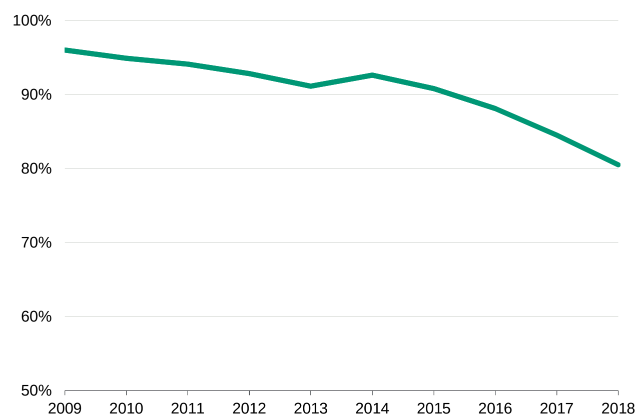
Source: Company reports

Position as the leading electric utility in France challenged by growing competition in the supply market

EDF is the leading electricity generator in France, with 89 GW of installed generation capacity. The company's annual domestic generation (450.6 TWh in 2018, excluding French island activities, representing 82% of the national power output and mostly generated by nuclear and hydro power plants) is matched by its downstream position, which consists of more than 28 million electricity customer accounts, or about 65% of the electricity market.

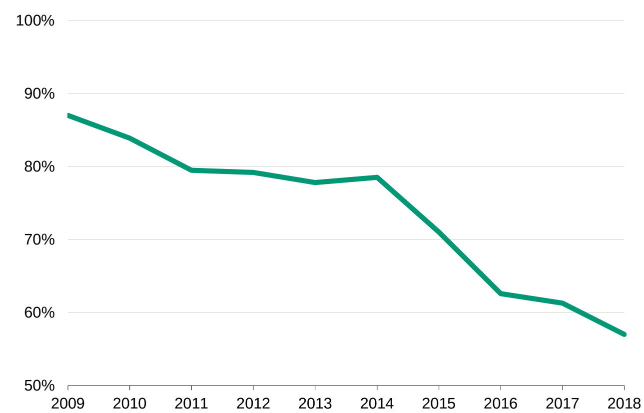
This market position, combined with the predominantly regulated nature of electricity tariffs until 2015, has historically underpinned the predictability of EDF's cash flow. However, growing competition in the supply market, as illustrated by a recent greater churn (see Exhibits 10 and 11), exacerbates the strain on earnings.

Exhibit 10
EDF is gradually losing market share in both the residential ...
Incumbent share of the residential electricity supply market in France



Source: CRE

Exhibit 11
... and nonresidential power supply markets in France
Incumbent share of the nonresidential electricity supply market in France



Source: CRE

Over the longer term, EDF could face an accelerated erosion of its market share in the French residential market if regulated electricity tariffs were to be ended. The European Union (EU) is pushing for a phaseout of regulated tariffs as part of its Energy Union initiative, although this is unlikely to come into force before the next decade. However, the short-term pressure in France to eliminate regulated tariffs has eased following a ruling in May 2018 by the country's highest administrative jurisdiction (*Conseil d'Etat)*: this ruling endorsed regulated tariffs as serving the public economic interest of price stability, subject to certain conditions — including that they be subject to regular reviews, and restricted to residential and small to medium-sized nonresidential sites.

Regulated activities and geographical diversification provide cash flow stability

EDF's credit profile is supported by its regulated activities in France, which accounted for 32% of the group's EBITDA in 2018. Such activities include, in addition to domestic electricity distribution through its subsidiary Enedis, regulated generation, network and supply businesses in the French islands. These exclude EDF's 50.1% interest in France's transmission network owner and operator RTE, which is equity accounted.

Enedis' revenue benefits from a high degree of visibility under a regulatory framework that entered its fifth regulatory period in August 2017 for four years (TURPE 5). Under this framework, Enedis earns a return on regulated equity of 4% (nominal, pretax) and a 2.5% margin on its €51 billion regulated asset base.

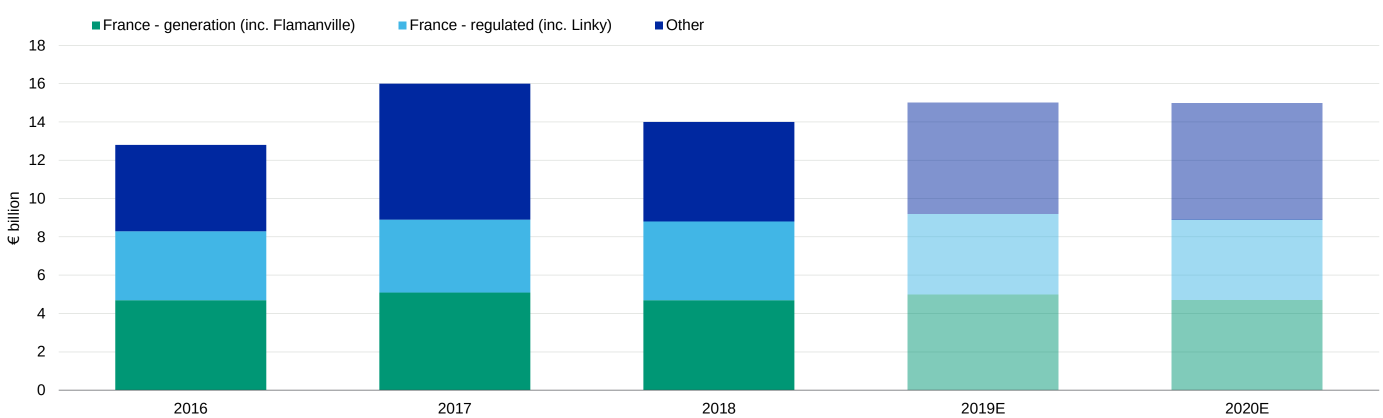
The group's activities outside France account for roughly a quarter of its EBITDA. Just over 40% of that is generated by its nuclear assets in the UK and the fast-growing renewables business of EDFR (8 GW of net installed capacity as of year-end 2018 [excluding hydro], with a further 2.4 GW gross capacity under construction), which should provide some ballast to the group's earnings outside France. Around 85% of EDFR's revenue comes from long-term contracts, with an average remaining life of 14 years.

Significant capital spending programme creates execution risk and results in negative FCF before asset sales

EDF faces a substantial capital spending programme over the next few years, with limited flexibility to reduce its spending significantly, mostly because of the large investment required to maintain and upgrade its distribution network and nuclear fleet in France. The latter is estimated at €45 billion over 2014-25 and reflects (1) the ageing status of the existing fleet, which is more than 30 years old on average, as well as EDF's strategy to extend its lifespan to 50 years (or more); (2) the group's ongoing programme to reduce unplanned outages and boost availability; and (3) more stringent nuclear safety requirements after Fukushima.

Other significant projects (excluding HPC, discussed below) include (1) the 1.6 GW Flamanville 3 nuclear plant, which had been scheduled to start in late 2019. However, in mid-June, the French Nuclear Safety Authority (ASN) ruled that EDF would have to repair eight welds in the containment building before commissioning the reactor. [1] We expect EDF to update on the revised schedule and construction cost in the upcoming weeks; (2) the €4.05 billion Linky smart meter project, which is due to be completed by 2022; and (3) the expansion of renewable capacity through EDFR, including the development of 30 gross GW of solar capacity in France between 2020 and 2035. We expect capital spending to remain high, with the group guiding to net investments of close to €15 billion in 2019.

Exhibit 12
We expect EDF's capital spending programme to remain significant
Net investments, excluding the asset disposal programme (€ billion)



The 2019 and 2020 estimates represent Moody's forward view, not the view of the issuer.
Sources: Company reports, Moody's Investors Service

HPC increases construction risk

In early 2017, EDF began the construction of a new 3.2 GW nuclear power plant at HPC in the UK. HPC will only be the fifth plant in the world that will use the European Pressurised Reactor technology. The European Pressurised Reactor technology is linked with a series of cost overruns and delays at Olkiluoto in Finland and Flamanville in France, where construction cost trebled from initial expectations.

The total construction cost of the HPC project, of which 66.5% will be funded by EDF and the remaining 33.5% by its partner China General Nuclear Power Corporation (CGN, A2 stable), was revised upwards in July 2017 to £19.6 billion (in 2015 money), up from a previous estimate of £18.1 billion. This illustrates the risks that EDF and CGN face in constructing the power station within budget and on schedule. In addition, with the first unit likely to be commissioned not before the end of 2025, EDF's balance sheet will have to shoulder the financial implications of a very long construction phase during which the investment will not generate any cash flow.

Balance-sheet strengthening is positive for financial risk profile in the near term …

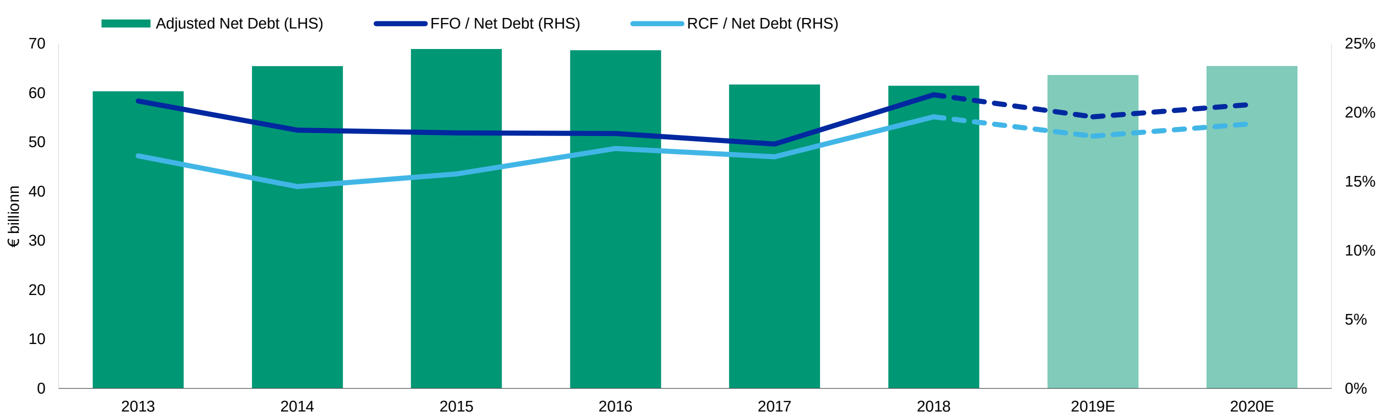
EDF has delivered on the April 2016 plan to strengthen its balance sheet. Following the scrip dividend option for 2015, 2016 and 2017, and the €4 billion capital increase in 2017, the company made further progress in cutting operating and capital spending in 2018. With the sale of its stake in the Dunkerque LNG terminal and the real estate portfolio in October and November last year, respectively, it completed its €10 billion asset disposal programme 2015-20 two years ahead of schedule. In 2019-20, the group is planning to dispose of a further €2 billion-€3 billion of assets; EDF already completed the €436 million sale of its stake in Alpiq end of May 2019.

Improved operating cash flow and assets disposals helped contain the rise in net reported financial debt to €33.4 billion in 2018, from €33.0 billion a year earlier. On an adjusted basis, net debt was broadly flat at €61.5 billion, with a reduction in pension provisions as a result of a higher discount rate helping offset an increase in the provisions for nuclear waste management and decommissioning. Combined with the strong recovery in EBITDA to €15.3 billion, broadly stable debt was reflected in the strengthening of FFO/net debt to 21.3% in 2018 from 17.7% in 2017, above our guidance for the rating.

With French power prices at the upper end of our range estimate of €40-€50/MWh, the outlook is for EBITDA to rebound further in 2019. The group guides to a range of €16.0 - €16.7 billion (incorporating a positive €700 million impact from application of IFRS 16), based on certain assumptions including slightly higher French nuclear output, application of the delayed regulated tariff increase of 5.9% from 1 June in line with the regulator's recommendation, and a resumption of the UK capacity market from the second half of the year. Potential risks to the group's EBITDA ambitions over 2019-20 include shortfalls in UK output, and delays to the commissioning of Flamanville 3. Absent major asset disposals, we estimate net financial debt will rise in 2019, and that FFO/net debt will soften a little from 2018, but nevertheless remain in the region of 20%.

Exhibit 13

We estimate EDF's credit metrics will remain solid in 2019, following recovery in 2018



The 2019 and 2020 estimates represent Moody's forward view, not the view of the issuer.

Sources: Moody's Financial Metrics™, Moody's Investors Service

… but further measures required to address structural negative pressure on cash flow

Notwithstanding the group's improved operating performance, the scale of its investment spending is reflected in ongoing negative free cash flow. In 2019, for example, EDF guides to free cash flow of > €600 million, after disposal proceeds and excluding HPC and Linky - which we estimate will require aggregate annual capex of approximately €3 billion over 2019-21. Given the political endorsement of EDF's capital spending programme (notably in respect of HPC, Linky and the development of renewables) and its scale relative to its cash flow generation capacity, our view of EDF's credit quality reflects our expectation that the French government would continue to provide financial relief if needed.

In our view the French government's Programmation pluriannuelle de l'energie (PPE), published in November 2018, reflects a recognition of the need to address the group's structural FCF pressures. This is reflected in the current discussions around potential remedial measures as part of the country's energy transition plan — including adjusting the current 'asymmetric' ARENH regulatory regime and a re-organisation of the group.

Measured energy transition plan allows EDF time to adapt, but regulation and group structure under discussion

The government's PPE outlines its plan to continue the country's energy transition to a carbon neutral economy. It targets, inter alia, reduced energy consumption and the improved resilience of the country's energy mix through diversification by growing renewables' installed capacity and progressively reducing reliance on the nuclear fleet. It also recognises the need to address the structural pressures on EDF's cash flow exerted by its large capital spending commitments and (1) flagged that integral to achieving the electricity sector's transformation in a cost-efficient manner will be a revision of nuclear regulation (including the ARENH mechanism, whose formal expiry date is 2025), which is needed to give EDF the financial capacity to make the investment required to extend the life of the existing nuclear fleet, and more generally, to support the country's energy transition; and (2) indicated that it was also considering the organisational and financial structure that would allow EDF best to operate in delivering the PPE.[2]

In the context of EDF remaining an integrated group, the government asked EDF to present its proposal by the end of the year to reshuffle the group's configuration and shareholdings to comply with European Commission guidelines and to address the structural pressures exerted on its cash flow generation from its capital spending programme. While discussions are ongoing, there has been limited communication from both EDF and the French government. However, recent press reports, suggest a possible re-configuration could involve a split of the group into two entities: 'EDF Blue' and 'EDF Green', with the former potentially 100% owned by the French government, and the latter potentially 65% to 70% owned. Reports suggest that EDF Blue could house the French nuclear, hydroelectric activities, Framatone and RTE; with EDF Green potentially housing renewables (excluding hydroelectric activities), customers & services activities, Enedis and international activities. However, discussions remain at an early stage, with further detail expected to emerge by year end.

More generally, the PPE's principal provisions represent an extension and update of France's existing plans and, therefore, are broadly consistent with EDF's strategy. We view as positive the measured pace of the planned transformation over the period to 2035 and the flexibility built into the plan, which will allow EDF sufficient elbowroom to adapt its strategy accordingly.

Expectation of high support from the French state

Given the 83.7% stake held by the French government, EDF is considered a government-related issuer (GRI) under our methodology. Accordingly, and based on our estimate of high support in case of financial distress, the A3 rating factors in two notches of uplift from the group's BCA of baa2.

Our estimate of high support reflects (1) the strategic importance of EDF to the French government as the owner and operator of France's nuclear power plants, (2) the company's highly unionised and politically influential work force, and (3) the French government's track record of supporting strategically important entities, illustrated by the government subscribing for €3 billion to EDF's capital increase in March 2017 and exercising its option to take EDF's dividend in shares.

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 32% 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 EDF is moderately well positioned to face carbon transition risks compared with peers, given the low-variable-cost nature and low carbon intensity (57g CO_2/kWh) of its nuclear and hydro power generation fleet, as well as the growing contribution of renewables and regulated activities to its earnings. This is offset by the company's significant exposure to large-scale, centralised generation.

Our framework for assessing the risk associated with decarbonisation in this industry is set out in Carbon transition brings risks and opportunities for Unregulated Utilities, published in October 2016.

Liquidity analysis

EDF's liquidity is underpinned by its material cash flow, large holdings of cash and cash equivalents, and committed bank facilities. As of 31 December 2018, the group had €23.6 billion of cash and cash equivalents, and liquid financial assets. In addition, unused committed credit facilities amounted to €11.4 billion, of which €3.2 billion mature within one year. In March, the group added a €300 million sustainable revolving credit facility to its liquidity availability. We believe that these sources of liquidity are sufficient for the group to meet short-term debt maturities of €8.3 billion, as well as capital spending and dividend payments over the next 18 months. In addition, EDF's debt maturities are well spread, avoiding any significant concentration of refinancing risk.

Rating methodology and scorecard factors

EDF is rated in accordance with the rating methodologies for Unregulated Utilities and Unregulated Power Companies, published in May 2017, and Government-Related Issuers, published in June 2018.

Exhibit 14

Rating factors

Unregulated Utilities and Unregulated Power Companies Industry Grid [1][2]	FY ending 31, December 2018		Moody's 12-18 Month Forward View As of June 2019 [3]	
Factor 1 : Scale (10%)	**Measure**	**Score**	**Measure**	**Score**
a) Scale (USD Billion)	Aaa	Aaa	Aaa	Aaa
Factor 2 : Business Profile (40%)				
a) Market Diversification	A	A	A	A
b) Hedging and Integration Impact on Cash Flow Predictability	A	A	A	A
c) Market Framework & Positioning	Baa	Baa	Baa	Baa
d) Capital Requirements and Operational Performance	Ba	Ba	Ba	Ba
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)	5.1x	Baa	4.8x - 5.3x	Baa
b) (CFO Pre-W/C) / Net Debt (3 Year Avg)	19.1%	Ba	18% - 20%	Ba
c) RCF / Net Debt (3 Year Avg)	17.9%	Baa	17% - 19%	Baa
Rating:				
a) Scorecard indicated outcome		Baa1		Baa1
b) Actual Baseline Credit Assessment				baa2
Government-Related Issuer				**Factor**
a) Baseline Credit Assessment				baa2
b) Government Local Currency Rating				Aa2
c) Default Dependence				High
d) Support				High
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 12/31/2018; 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 15

Category	Moody's Rating
ELECTRICITE DE FRANCE	
Outlook	Stable
Issuer Rating	A3
Senior Unsecured	A3
Jr Subordinate	Baa3
Commercial Paper	P-2
EDF TRADING LIMITED	
Outlook	Stable
Issuer Rating	Baa2
EDISON S.P.A.	
Outlook	Stable
Issuer Rating	Baa3

Source: Moody's Investors Service

Appendix

Exhibit 16

Peer comparison

	Electricite de France			ENGIE SA			RWE AG			E.ON SE			ENEL S.p.A.		
	A3 Stable			A3 Stable			Baa3 Stable			Baa2 Stable			Baa2 Stable		
(in EUR millions)	FYE Dec-16	FYE Dec-17	FYE Dec-18	FYE Dec-16	FYE Dec-17	FYE Dec-18	FYE Dec-16	FYE Dec-17	FYE Dec-18	FYE Dec-16	FYE Dec-17	FYE Dec-18	FYE Dec-16	FYE Dec-17	FYE Dec-18
Total Assets	282,418	275,542	286,158	163,965	154,554	158,295	77,285	69,201	80,513	63,081	55,488	55,090	158,842	158,791	168,958
EBITDA	15,606	13,677	11,852	10,937	9,259	9,040	2,167	3,129	1,112	2,575	8,026	3,675	14,777	15,033	16,176
CFO Pre-W/C	12,693	10,943	13,091	8,296	8,462	7,507	2,857	2,957	- 181	3,742	6,355	3,294	9,750	10,484	10,747
Retained Cash Flow	11,948	10,368	12,105	5,214	5,663	4,920	2,402	2,760	- 1,198	2,653	5,805	2,411	7,098	7,466	7,175
Net Debt	68,672	61,722	61,499	45,547	42,238	41,847	24,416	21,284	4,662	28,497	20,795	18,204	45,533	46,545	51,711
CFO pre-W/C / Net Debt	18.5%	17.7%	21.3%	18.2%	20.0%	17.9%	11.7%	13.9%	-3.9%	13.1%	30.6%	18.1%	21.4%	22.5%	20.8%
RCF / Net Debt	17.4%	16.8%	19.7%	11.4%	13.4%	11.8%	9.8%	13.0%	-25.7%	9.3%	27.9%	13.2%	15.6%	16.0%	13.9%
(CFO pre-W/C + Interest)/ Interest	5.3x	4.8x	5.4x	6.2x	6.8x	5.9x	2.8x	4.1x	0.8x	3.3x	4.3x	2.9x	4.6x	5.2x	5.1x
Debt / Book Capitalization	72.1%	65.2%	63.9%	53.4%	54.3%	54.1%	80.6%	70.8%	42.5%	91.2%	76.4%	71.1%	46.4%	47.6%	51.3%

All figures and ratios are calculated using Moody's estimates and standard adjustments. FYE = Financial Year-End. LTM = Last 12 Months.
Source: Moody's Financial Metrics™

Exhibit 17

EDF's adjusted debt breakdown

(in EUR Millions)	FYE Dec-13	FYE Dec-14	FYE Dec-15	FYE Dec-16	FYE Dec-17	FYE Dec-18
As Reported Debt	**51,637**	**55,652**	**64,183**	**65,195**	**56,846**	**59,188**
Pensions	12,324	14,113	13,714	14,693	14,063	11,687
Operating Leases	3,223	3,660	3,828	3,876	4,488	4,368
Hybrid Securities	3,063	5,048	5,048	5,048	5,048	5,051
Securitizations	1,151	1,225	1,544	1,304	903	1,095
Non-Standard Adjustments	6,603	3,424	2,970	3,472	2,731	3,703
Moody's-Adjusted Debt	**78,000**	**83,121**	**91,287**	**93,588**	**84,079**	**85,092**

Nonstandard adjustments include notably nuclear provisions (net of dedicated assets), debt guarantees (€974 million as of 31 December 2018), accrued interest (€1.3 billion as of 31 December 2018) and derivatives (€2.0 billion as of 31 December 2018) (the last two being removed from debt as reported). All figures are calculated using Moody's estimates and standard adjustments.

Source: Moody's Financial Metrics™

Exhibit 18

EDF's adjusted EBITDA breakdown

(in EUR Millions)	FYE Dec-13	FYE Dec-14	FYE Dec-15	FYE Dec-16	FYE Dec-17	FYE Dec-18
As Reported EBITDA	**17,870**	**19,268**	**18,485**	**17,551**	**16,738**	**14,728**
Pensions	-925	-426	-1,071	-408	-403	-476
Operating Leases	525	610	638	646	748	728
Interest Expense – Discounting	-1,688	-1,723	-1,742	-2,369	-2,075	-2,611
Securitizations	38	36	46	51	36	41
Unusual	100	-64	-138	-108	-1,519	-809
Non-Standard Adjustments	229	206	234	243	151	250
Moody's-Adjusted EBITDA	**16,149**	**17,907**	**16,453**	**15,606**	**13,677**	**11,852**

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

Source: Moody's Financial Metrics™

Exhibit 19

Electricite de France

Select historical Moody's-adjusted financial data

(in EUR Millions)	FYE Dec-13	FYE Dec-14	FYE Dec-15	FYE Dec-16	FYE Dec-17	FYE Dec-18
INCOME STATEMENT						
Revenue/Sales	71,916	73,383	75,006	71,203	64,892	68,976
EBITDA	16,149	17,907	16,453	15,606	13,677	11,852
EBIT	8,576	9,467	6,933	7,132	4,538	2,298
Interest expense	3,228	3,215	3,175	2,974	2,917	2,961
BALANCE SHEET						
Net debt	60,338	65,430	68,964	68,672	61,722	61,499
CASH FLOW						
Capital Expenditure (CAPEX)	-13,203	-13,805	-14,524	-14,344	-14,856	-16,251
Cash from investing Activities	-11,868	-12,477	-18,574	-16,504	-11,822	-17,230
Dividends	-2,398	-2,678	-2,040	-745	-575	-986
Retained Cash Flow (RCF)	10,176	9,580	10,735	11,948	10,368	12,105
RCF / Net Debt	16.9%	14.6%	15.6%	17.4%	16.8%	19.7%
Free Cash Flow (FCF)	-4,228	-5,629	-3,911	-3,441	-3,040	-3,809
FCF / Net Debt	-7.0%	-8.6%	-5.7%	-5.0%	-4.9%	-6.2%
PROFITABILITY						
%Sales in Sales (YoY)	-0.4%	2.0%	2.2%	-5.1%	-8.9%	6.3%
EBIT margin %	11.9%	12.9%	9.2%	10.0%	7.0%	3.3%
EBITA margin	13.0%	13.9%	10.9%	11.4%	8.5%	4.7%
EBITDA margin %	22.5%	24.4%	21.9%	21.9%	21.1%	17.2%
INTEREST COVERAGE						
EBIT / Interest Expense	2.7x	2.9x	2.2x	2.4x	1.6x	0.8x
EBITDA/ Interest Expense	5.0x	5.6x	5.2x	5.2x	4.7x	4.0x
(EBITDA - CAPEX)/ Interest Expense	0.9x	1.3x	0.6x	0.4x	-0.4x	-1.5x
LEVERAGE						
Debt / EBITDA	4.8x	4.6x	5.5x	6.0x	6.1x	7.2x
Net Debt / EBITDA	3.7x	3.7x	4.2x	4.4x	4.5x	5.2x

Source: Moody's Investors Service

Moody's related publications

Press Releases:

- Moody's assigns Baa3 rating to hybrid notes of EDF; stable outlook, 22 September 2018

Issuer Comments:

- Electricite de France: France's measured energy transition plan allows EDF time to adapt, but certain issues yet to be decided, 3 December 2018
- Electricite de France: Ratings unaffected following change in sovereign rating outlook, 8 May 2018
- Electricite de France: Credit impact of Jaipur nuclear project will depend on final terms, 12 March 2018
- Electricite de France 2018 guidance revision is credit negative; long-term challenges more critical, 14 November 2017

Credit Opinions:

- Edison S.p.A.: Update to credit analysis, 1 June 2018
- EDF Trading Limited: Update to credit analysis, 5 July 2018

Sector Comments:

- Regulated electric & gas networks – Great Britain: Regulator signals smaller cut to allowed return, but many uncertainties remain, 30 May 2019
- Regulated energy networks – United Kingdom Labour Party details energy network nationalisation policy, 16 May 2019
- Unregulated electric and gas utilities - EMEA: Higher power prices are positive for generators but credit impact is moderate, 21 November 2018
- Unregulated utilities and power companies - UK: European court ruling on UK capacity market puts £4.3 billion of contracts at risk, 19 November 2018
- Unregulated electric and gas utilities - EMEA: European Commission approval of capacity mechanisms is credit positive for generators, 23 February 2018

Sector In-Depth:

- Non-financial Corporates - France: Broadly stable bond, loan issuance supported by stable environment, steady credit quality, 30 October 2018
- Corporate government-related issuers - France: Government ownership and support for some GRIs will likely decline over time, 19 October 2018
- Europe's electricity markets: In France, decarbonisation targets are overshadowed by the future of nuclear, 31 July 2018
- Europe's electricity markets: In Europe, higher carbon price would benefit generators, 31 July 2018

Industry Outlook:

- Unregulated electric and gas utilities - EMEA: 2019 outlook changed on improved earnings momentum, 21 November 2018

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

Endnotes

1 ASN letter sent to EDF the 19th of June.

2 See Electricite de France: France's measured energy transition plan allows EDF time to adapt, but certain issues yet to be decided, 3 December 2018.

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

REPORT NUMBER 1176228

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

MOODY'S
INVESTORS SERVICE