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CREDIT OPINION
24 May 2019

Update

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RATINGS

TenneT Holding B.V.

Domicile	Netherlands
Long Term Rating	A3
Type	LT Issuer Rating - Dom Curr
Outlook	Stable

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

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TenneT Holding B.V.

Update to credit analysis

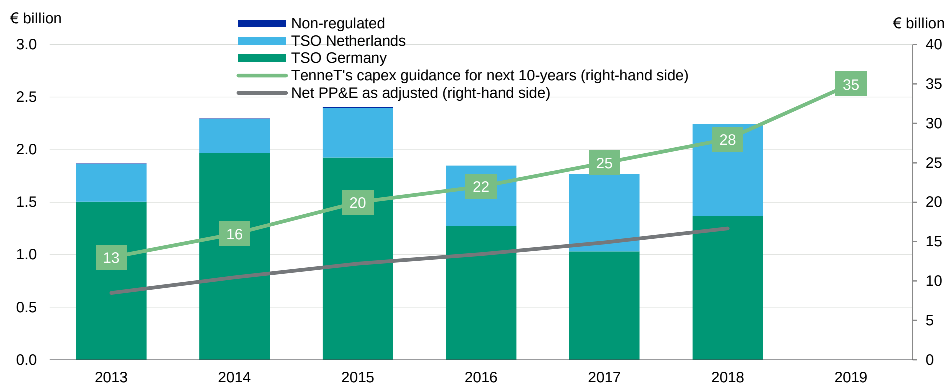
Summary

TenneT Holding B.V. (TenneT, A3 stable)'s credit quality is underpinned by (1) the company's monopoly position as the licensed provider of electricity transmission services in the Netherlands and its service area in Germany; and (2) the relatively stable and predictable flows it generates under these well-defined and relatively stable regulatory frameworks. We expect TenneT's network operations in Germany to continue to account for the majority of the group's earnings and regulated assets under its planned investment programme.

TenneT's credit profile is constrained by the group's continuing large investment programme, which will weaken key credit metrics. The impact has been manageable, to-date, due to (1) the measures taken to strengthen its capital structure in recent years; and (2) both regulatory frameworks allowing timely cost recovery for large investment projects. However, given the latest further increase in planned capital expenditure over the next decade, driven by obligations to connect a further c. 7GW of offshore wind over 2024-30 in the Netherlands, and the lower allowed return in both frameworks, we expect TenneT's key credit metrics to remain under pressure through the early 2020s.

Exhibit 1

Further growth in TenneT's investment levels and asset base expected over coming decade
Evolution of actual and planned investment levels



Source: TenneT; Moody's Investors Service

TenneT's A3 rating incorporates a two-notch uplift from its stand-alone credit quality taking into account its ownership by the Dutch government (Aaa/P-1, stable) and the strategic importance to national energy policy. Government support was most recently evidenced in December 2016 when TenneT received a committed equity contribution from the Dutch state of up to €1.19 billion in support of their investment programme in the Netherlands.

Credit strengths

» Monopoly position of electricity transmission network operations in the Netherlands and Germany

» Stable and predictable cash flow underpinned by well-defined and relatively stable regulatory frameworks

» Strong support by TenneT's owner, the Government of the Netherlands, results in two-notch uplift from stand-alone credit quality

Credit challenges

» Lower allowed returns in current regulatory periods, and limited scope for outperformance on certain cost allowances in Germany, will reduce financial flexibility

» Further growth in already large investment programme will increase leverage and depress key credit metrics

Rating outlook

The stable outlook reflects our expectation that TenneT will continue to meet minimum ratio guidance over the medium term, in particular Funds From Operations (FFO) to Net Debt at least in the high single digits in percentage terms, despite pressure from its investment programme and lower allowed regulatory returns.

Given the further increases in planned investments, TenneT has limited financial headroom at the current rating level over the period to 2023 (and the end of the current regulatory period in Germany), absent (1) taking further measures to support its financial profile; and/or (2) securing successful appeal(s) of certain aspects of its regulatory determinations, with those in Germany having a greater bearing on TenneT's overall credit quality.

Factors that could lead to an upgrade

Given the further material increases in planned investments over the next decade, primarily in the mid-to-late 2020s, and the lower allowed returns over the next few years, upward rating pressure is considered unlikely. However, an upgrade could be considered if, during the main phase of its investment programme, TenneT were to exhibit FFO interest coverage solidly above 3.0x and FFO/Net Debt at least in the low teens in percentage terms on a sustainable basis.

Factors that could lead to a downgrade

Downward rating pressure would arise if TenneT's financial profile deteriorated such that it was unlikely to meet minimum ratio guidance, which includes: (1) FFO Interest Coverage of at least 2.5x, (2) FFO/Net Debt at least in the high single digits in percentage terms; and (3) Retained Cash Flow (RCF)/ Net Debt of above 5%. This could result from further increases in planned investment without offsetting measures to strengthen TenneT's balance sheet and/or adverse regulatory decisions.

Key indicators

Exhibit 2

TenneT's IFRS-based credit metrics are impacted by movements in regulatory assets and liabilities, underlying metrics are more stable

	31/12/2014	31/12/2015	31/12/2016	31/12/2017	31/12/2018
FFO Interest Coverage	8.5x	5.2x	5.3x	6.9x	7.0x
Net Debt / Fixed Assets	36.1%	42.2%	58.9%	58.6%	60.6%
FFO / Net Debt	31.8%	13.7%	9.8%	13.5%	13.0%
RCF / Net Debt	27.8%	10.9%	6.6%	11.2%	10.6%

Notes: (1) All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. When calculating net debt, the €1.1 billion of perpetual capital securities are treated as 50% equity and 50% debt when we apply our adjustment to TenneT's financial statements. Based on its features, the instrument qualifies for basket "C" treatment under our Cross Sector Rating Methodology 'Hybrid Equity Credit' (September 2018).

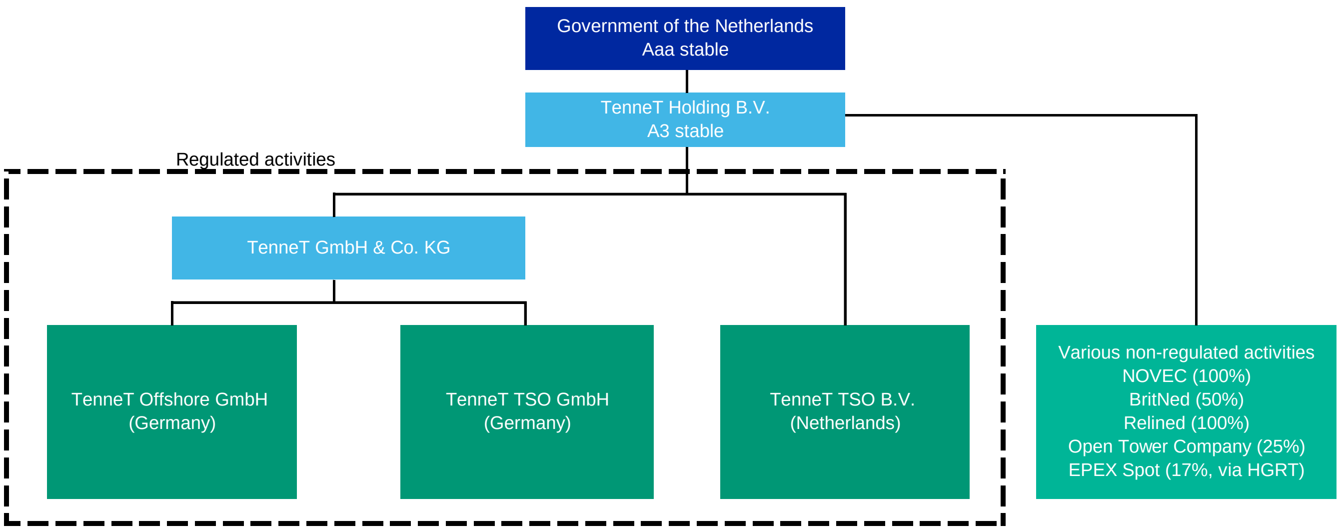
Source: Moody's Financial Metrics™

Profile

TenneT Holding B.V. (TenneT) is the fully state-owned holding company of TenneT TSO B.V. and TenneT GmbH & Co. KG, the intermediate holding company for the group's German subsidiaries TenneT TSO GmbH and TenneT Offshore GmbH. TenneT TSO B.V. is the sole owner and operator of the Netherlands' high voltage transmission grids. TenneT TSO GmbH is the owner and operator of the high-voltage electricity transmission network that runs north to south through large sections of Germany. With a total grid length of around 23,000 kilometres (km), TenneT's network area covers over 41 million end-users in the Netherlands and Germany.

Exhibit 3

Simplified organisation structure as of 31 December 2018

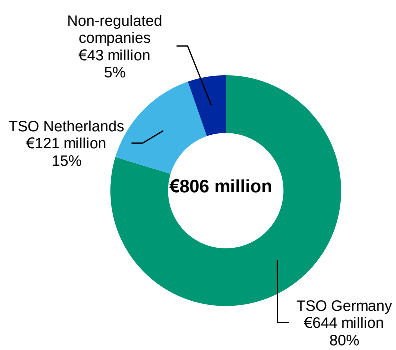


Source: Annual report

Close to 100% of TenneT's revenue and around 95% of its operating income stems from regulated network activities in the Netherlands and Germany. The remaining activities, including participations in the North West European energy exchange (EPEX Spot) and the merchant cable operator BritNed, are strongly associated with the core business.

Exhibit 4

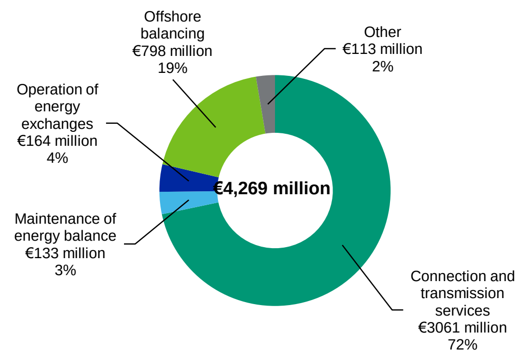
Underlying EBIT split by operating segment in FY2018



Source: Company's report

Exhibit 5

Revenue breakdown under IFRS accounting in FY2018



Source: Company's report

Detailed credit considerations

Low business risk underpinned by developed regulatory regimes

Assessment of the regulatory framework is a key credit consideration for TenneT given it derives the vast majority of its earnings from its monopoly electricity transmission activities in the Netherlands, where it is the national TSO, and in Germany. Given the majority of TenneT's operating profit (typically around 75% of underlying EBIT) are derived from its German network activities, a trend we expect to continue with over 65% of TenneT's planned investments over the next decade being in Germany and the regulatory framework providing nominal (rather than real) returns, our assessment of the stability and predictability of the regulatory framework for the group's operations is primarily driven by our assessment of the German framework.

We view both the regulatory frameworks as well-defined and relative stable. However, our assessment of stability and predictability of the German regulatory framework reflects a combination of:

» **a shorter track record** of incentive based regulation than most other Western European jurisdictions; since 2009 compared to the late 1990s to the mid 2000s in Western Europe (from 2001 in the Netherlands for electricity transmission).

» **limited transparency**, in the public domain, prior to key regulatory determinations**.** In recent years, most national regulatory authorities (NRAs) have adopted increasingly consultative approaches prior to taking key regulatory decisions. By contrast, in Germany, the energy regulator (the Bundesnetzagentur, BNetzA), continues to initially consult mostly on a private level with the energy networks, although major changes and amendments are still being consulted on publicly. Importantly, not all key regulatory parameters, in particular neither the regulated asset base nor a detailed financial model, are publicly disclosed. has continued to keep most of this stakeholder consultation, primarily with the energy networks, private and only published its final determination. The Dutch regulator (the Authority of Consumer and Markets, ACM) adopts a consultative approach, with determinations largely driven by regulatory inputs in a mechanistic manner, and publishes a financial model alongside the final determination.

» **decisions on specific aspects of regulatory framework published in a piecemeal manner.** Unlike most other NRAs in Western Europe, the BNetzA has tended to publish decisions on specific aspects in a piecemeal manner, e.g. the decision on allowed equity returns was published in summer 2016 whilst that on cost efficiency parameters was published in late 2018. In the Netherlands, decisions on key all aspects of the regulatory framework for the regulatory period are summarised in the Method Decisions.

Exhibit 6

TenneT scored 'A' for Stability and Predictability of Regulatory Regime

Stability and Predictability of Regulatory Regime by Country as scored under Moody's Regulated Electric and Gas Networks methodology

Aaa	Aa	A	Baa
Great Britain[1]	Czech Republic	Belgium - Flanders	Belgium - Wallonia
	Finland	Estonia	Poland
	France	**Germany**	Spain
	Ireland (RoI & NI)	Portugal	
	Italy		
	Netherlands[2]		
	Norway[3]		

Notes: 1) Only onshore incumbent network operators, excludes OFTOs (Aa); 2) Excludes N.V. Nederlandse Gasunie and TenneT (A); 3) Excludes Solveig Gas Norway A.S. (Baa); (4) As of April 2019

Source: Moody's Investors Service

TenneT has increased cash flow visibility for its German operations through 2023, albeit tighter expenditure allowances on investment measure projects and lower allowed equity returns apply

TenneT has increased cash flow visibility for its German operations through 2023, the end of the current regulatory period for German electricity networks, following decisions taken by the BNetzA in recent years on key regulatory parameters.

We view the regulatory framework as supportive of the large investment requirements of the Germany electricity TSOs, which is particularly important given these levels have materially increased in recent years and are expected to remain at elevated levels over the period to 2030 under the latest German network development plan (discussed below). This reflects that German TSOs benefit from (1) allowed returns on capital invested during the construction period (for enhancement capex recognised under the so-called 'investment measures'); (2) a generic opex allowance for investment measures in construction; (3) a cost sharing mechanism for payments to offshore wind farms; and (4) an overall liability cap for connection delay damages.

The BNetzA has tightened some regulatory cost allowances in this period, particularly those pertaining to so called "investment measure" projects. For example, TenneT has achieved significant outperformance against the regulatory opex allowance for connecting offshore wind farms to the transmission grid during the construction phase. However, with actual opex and capex costs for this activity now being passed through in the current regulatory period this will no longer be the case. Although having a much less material impact on earnings, the opex lump-sum allowance for new onshore investment measure applications (made since 1 January 2019) has been lowered to 0.2% during the construction phase, while the 0.8% remains applicable after starting operations. More details on changes to the investment measure are discussed in the highlight box below.

Overview of changes to the investment measures

In recent years, the BNetzA has made a number of changes to cost allowances for expenditure under the investment measure mechanism, outlined below:

1. In 2016, the allowance for expenditure under the investment measure mechanism has been reduced by the portion of expenditure that is linked to network replacement rather than expansion, to avoid double counting with the regulatory depreciation allowed as part of the revenue building blocks. The extent of the resulting tightening in cost allowances is moderated by new offshore connections and core onshore high voltage direct current (HVDC) cables, which account for a large part of TenneT's investments, being exempt from this approach.
2. The current generic opex allowance for projects under construction (0.8% per annum for onshore investments and 3.4% for offshore investments) has been changed. This fixed percentage allowance, particularly for offshore investments enneT has connected 6.2GW of offshore wind farms to the grid, has benefitted TenneT's metrics in recent years.
3. For offshore projects, a pass-through of actual opex and capex costs has been effective since 2019, one year later than previously planned, with grandfathering options for investments completed before 31 December 2019. With the pipeline of German offshore projects now slowing, only BorWin3 and DolWin6 are expected to be connected by 2025 (in 2019 and 2023 respectively), we believe there was reduced scope to earn significant levels of outperformance over the next few years even if prior arrangements had been retained.
4. For new onshore investment measure applications (i.e. applications in 2019 or later) the opex lump sum allowance is reduced to 0.2% during the construction phase, but the 0.8% remains applicable after starting operations. Existing investment measure applications are not affected.

We note that the BNetzA intends to review its approach to compensating for capital investment costs prior to the start of the next regulatory period, with all current investment measures valid until 2023. This will likely form part of a wider update of the underlying legislation, which defines the approach for the third regulatory period but not beyond. We expect, however, that the general principles of timely cost recovery will be maintained.

Given these changes to the investment measure, we believe the likelihood of TenneT out- or under-performing regulatory cost allowances will be principally driven by whether its realised rate of annual cost productivity improvement is greater than regulatory assumptions. In this period, the regulator has reduced the sector wide component (X-gen) from 1.5% per annum to 0.9% per annum, though this is a smaller cut than for gas networks where it was lowered to 0.49% (in the first two regulatory periods both fuels had the same rate). Since TenneT's company specific cost efficiency factor is almost 100% (99.92%) in this period, slightly higher than in the prior period (97%), regulatory allowances are slightly less demanding than in the prior period.

Allowed equity returns are materially lower, both compared to the prior regulatory period (6.91% compared to 9.05% [both nominal, pre-tax, post-trade tax] on most of TenneT's assets)[1] and other European electricity transmission system operators (TSOs) receiving a nominal return, as shown in Exhibit below, which will weaken cash flow based metrics. (The BNetzA, like the federal energy regulator in Belgium, only sets the allowed equity return rather than the allowed return on the whole regulated asset base with German network companies' actual cost of debt feeding into the overall cost assessment). This is principally due to the cuts in the (1) risk-free rate, reflecting the continued low interest environment since the global financial crisis; and (2) market risk premium, components of the calculation.

Exhibit 7

Allowed equity returns are lower than other European electricity TSOs receiving a nominal pre-tax return

Parameter	Germany[1] (2019-23)	Germany[1] (2014-18)	Netherlands[2] (2016)	Netherlands[2] (2021)	Austria[3] (2018-22)	Belgium[4] (2020-23)	Czech Republic (2016-20)	Finland[5] (2019)	France[6] (2017-21)	Norway[7] 2019E
Gearing	60%	60%	50%	50%	60%	60%	45.75%	50%	60%	60%
Tax rate	18%	18%	25%	25%	25%	25%	19%	20%	34.43%	22%
Risk free rate (real)										*1.5%*
Inflation rate			*0.77%*	*1.42%*						*2.20%*
Risk free rate (nominal)	2.49%	3.80%	1.28%	1.28%	1.87%	2.40%	3.82%	1.81%	2.70%	3.70%
Asset beta			0.44	0.39	0.4		0.536	0.4	0.37	0.35
Equity beta	0.83	0.66	0.78	0.68	0.85	0.53	0.901	0.72	0.73	0.875
Market risk premium	3.80%	5.44%	5%	5%	5%	3.5%	5%	5%	5%	5.0%
Iliquidity premium						10%		0.6%		
Equity risk premium	3.15%	3.59%	3.93%	3.43%	4.25%	2.04%	4.51%	3.60%	3.65%	4.38%
Cost of equity (nominal, post-tax)	5.64%	7.39%	5.21%	4.72%	6.12%	4.68%	8.32%	6.01%	6.35%	8.08%
Cost of equity (nominal, pre-tax)	**6.91%**	**9.05%**	6.95%	6.29%	8.16%	6.24%	10.27%	7.51%	9.68%	10.35%

Notes: (1) Levels applicable to assets after 2006 ('new' assets). Assets acquired or built before 2006 ('old' assets) receive a real equity return adjusted for inflation, 5.12% this period compared to 7.14% in the prior regulatory period. Allowed equity return for the current regulatory period are subject to an outstanding appeal. (2) Allowed returns reflect the new Method Decisions published in January 2019, though these are subject to an appeal. Dutch network operators receive a real pre-tax return applies but to facilitate comparison the nominal pre-tax cost of equity levels are shown. (3) Allowed return on existing assets. 'New assets' receive an 80 basis point higher equity return. (4) The allowed equity return is materially higher in the current regulatory period. (5) The regulatory methods apply for the 2016-19 and 2020-23 regulatory periods with the risk-free rate parameter updated annually. (6) Regulatory period runs from August - July rather than in calendar years. (7) Within the allowed equity return calculation the inflation rate is updated annually.
Source: Regulatory data; Moody's Investors Service

Any benefit from successful appeals by network operators not expected to benefit metrics before early 2020s

The lower allowed equity returns and tighter expenditure allowances will reduce TenneT's financial flexibility over the remainder of the current regulatory period. However, the extent of this reduction will be dependent on the outcome of a number of appeals that TenneT (TenneT TSO GmbH) has pending, the most material of which pertain to (1) allowed equity returns; and (2) the assumed sector wide annual cost improvement factor (X-gen), both filed toegther with most German electricity network operators, including the other three electricity TSOs.

In March 2018, the higher regional court in Düsseldorf concluded that the allowed equity return may have been set too low because the BNetzA did not adequately reflect on available evidence when taking the decision to cut the return. The court surveyor opinion recommended a higher market risk premium of 4.55% (compared to 3.8%) to reflect the current capital market situation, which would be at or slightly below recent determinations by other European regulators (see Exhibit above) and result in a 77 basis point increase in allowed equity returns.

In late April 2018 the BNetzA lodged an appeal with the Federal Court of Justice. Should the Federal Court of Justice rule that the allowed equity return is too low, with a decision not expected until later this year, the BNetzA would need to recalculate the allowed equity return. Given tariffs are set in the autumn for the forthcoming calendar year, we would expect TenneT not to realise the upside of any higher equity return before 2021 with the cash flow benefit smeared over the remainder of the regulatory period (c. €65-70 million per annum increase in FFO over 2021-23, c. 0.5% on FFO/Net Debt over the period, if the court surveyor opinion is ultimately adopted, we estimate).

We have no visibility on when the appeal on X-gen will be heard. Electricity network operators, are seeking as a minimum, the level to be aligned with that for gas network operators (0.49% versus 0.9%), which was the case in the two prior regulatory periods.

In the Netherlands, amended regulatory determination slightly credit positive for TenneT but further cuts in allowed return post 2021 expected

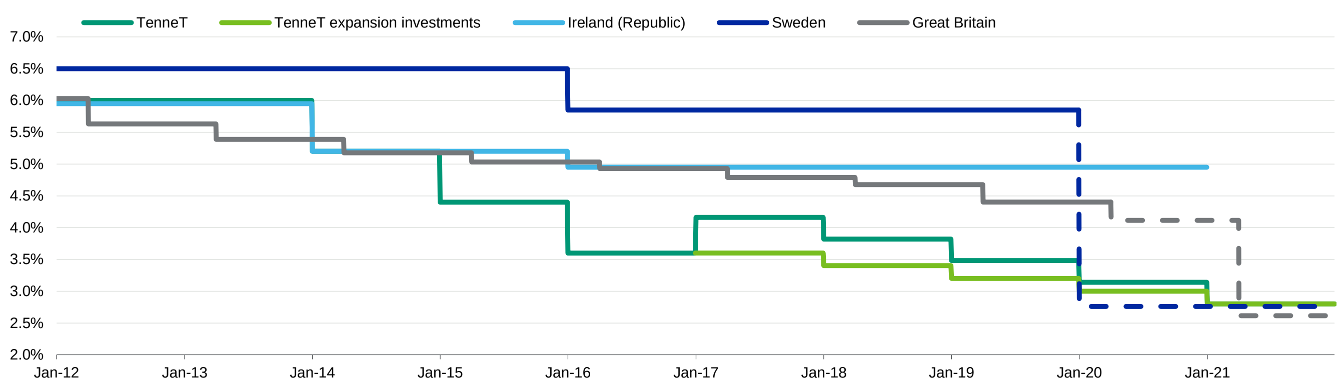
TenneT has good cash flow visibility for its Dutch operations for a further 2.5 years under the regulator's amended Final Determination (Method Decisions) for the 2017-21 regulatory period, published in January 2019 after the Trade and Industry Tribunal (CBb) annulled the original Method Decisions in July 2018 following an appeal by network operators of certain aspects of the Method Decisions.

Under the regulatory framework, TenneT is able to recover investment costs for all offshore projects and certain onshore ones (RCR projects) during construction, which is particularly important given the group's significant and growing, particularly offshore, capex programme (discussed below). Whilst allowed returns are materially lower than those of other European TSOs whose operations are also governed by a real framework, reducing operating cash flows, this is partially offset by the group's low average cost of debt (c. 2% at end 2018 we estimate) which is below, and we expect will remain below, the regulator's assumption (which falls from 3.58% to 2.29% over the period for existing assets[2]) for the duration of the regulatory period.

Exhibit 8

TenneT's allowed return is below that of peers and expected to fall over the period to 2021

Evoluion of real pre-tax allowed returns for European electricity TSOs



Notes: (1) The TenneT series reflect the amended Method Decisions for the 2017-21 regulatory period. The ACM set a real, pre-tax WACC for all system operators of 4.5% (originally 4.3%) in 2016 and 2.8% (originally 3.0%) in 2021. This method takes into account embedded costs. However, because embedded debt costs is not applicable for expansion investment, the WACC for expansion investment falls from 3.8% to 2.8% (originally 3.6% and 3.0% respectively; a cost of debt of 2.19% is applied across the period for these investments). (2) Estimates for Sweden and Great Britain, which refers to National Grid Electricity Transmission (A3, stable), are based on the regulator's draft decision for the forthcoming regulatory period.
Source: Regulatory data; Moody's estimates

We expect TenneT to achieve modest outperformance on cost allowances for the regulatory period, primarily reflecting the further reduction in the dynamic efficiency target for this period under the amended Method Decisions (from 0.8% to 0% per annum). We expect the increment revenue benefit for the regulatory period (€50-60 million) to be recouped in 2020 tariffs, benefitting FFO / Net Debt by around 0.3-0.4% points in this year.

In our view, the amended Method Decisions also reduce the risk of underperformance against certain other cost allowances, in particular (1) procurement costs for energy and ancillary services that we had expected to increase over time but where the allowance was held fixed over the period (the bonus malus system that existed in the prior regulatory period was reinstated); and (2) the opex allowance of 1% of the investment value of the offshore grid. For the latter, TenneT is seeking full reimbursement of all maintenance costs, including preventive, with a final court verdict expected within the next few months. In the current regulatory period the sums involved are limited, particularly in the context of the wider group, but will be increasingly important given the growth in this area.

The average allowed return over the regulatory period was unaltered under the amended Method Decisions. However, we viewed the ACM's determination as credit negative. This reflected the ex-post change to the reference period for the asset beta component, which resulted in an equal and opposite sized reduction in 2021 to the increase in the 2016 WACC resulting from the CBb required amendment to the peer group, since it (1) negated the incremental revenue from the higher 2016 and 2021 WACCs that would have otherwise occurred[3]; and (2) it reduced investor confidence in the stability and predictability of the regulatory regime.

We note that if the ACM uses the same allowed returns methodology in the forthcoming regulatory period, based on the prevailing macroeconomic parameters (primarily inflation and bond yields), then the WACC is likely to be cut further to the low 2s in percentage terms (real, pre-tax) depressing cash flows.

Continued very sizeable investment programme will increase leverage

TenneT is continuing to undertake a very sizeable investment programme on the Dutch and German electricity transmission grids (both onshore and offshore). The programme is aimed at connecting new, primarily renewable, generation sources, strengthening existing transmission assets and removing bottlenecks on both transmission networks.

TenneT's guidance of planned capex over the forthcoming ten years has almost trebled in the last six years, from c. €13 billion in 2013 to c. €35 billion in 2019 (compared to net PP&E of €16.7 billion at end 2018). The vast majority of these increases relate to the higher costs for German onshore investments as a result of undergrounding, rather than overgrounding, now being required for the vast majority of the routes for new connections. This is reflected in TenneT's guidance for total investments in the next 10-years in Germany increasing from c. €8 billion to c. €23 billion over the same period. We expect the absolute cost increases are greatest for the HVDC North-South connections in Germany (SuedLink and SuedOstLink) given the size of these projects.

Exhibit 9

Summary of TenneT's largest planned investment projects

Country	Type	Key projects
Germany	Onshore[1]	**DC** - SuedOstLink (jointly with 50Hertz; SuedLink (jointly with TransnetBW) **AC** - Ostbayernring; Wahle - Mecklar; Conneforde - Cloppenburg - Merzen; Stade - Landesbergen; Westküstenleitung; Ostküstenleitung; Raitersaich - Altheim
Germany	Offshore	6.2GW connected (mainly DC), expected to rise to over 8GW by 2023 (when BorWin3 and DolWin6 connected) 15GW by 2030 targeted (with other German TSOs)
Netherlands	Onshore	**380kV projects**: Ranstad 380 North ring; North West 380; and South West 380 (East and West)
Netherlands	Offshore	0GW currently connected. 3.5GW to be connected by 2023 (5x 0.7GW wind farms). Additional 6.1GW in 2024-2030 (3x 0.7GW HVAC projects; 4GW HVDC projects)
	Interconnectors[2]	NordLink (Germany - Norway) COBRAcable (Netherlands - Denmark)

Note: (1) Some of the DC projects in Germany are being built by two German TSOs given the proposed lines go through the licence areas of both TSOs. For example, the costs of the SuedLink project (a 2x 2GW HVDC North-South connection) is being shared equally between TenneT and TransnetBW (owned by Energie Baden-Wuerttemberg AG, A3 stable). (2) Interconnectors not connecting Germany and the Netherlands.
Source: Moody's Investors Service

Facilitating ambitious energy policy objectives in Germany and the Netherlands will mean investment levels remain high throughout the early and mid 2020s

Given (1) the time associated with obtaining the relevant permissions for the above onshore projects in Germany; (2) the ambitious decarbonisation objectives of both the German and Dutch governments we expect TenneT's investment levels at very sizeable levels throughout the 2020s, as reflected in capex guidance provided by the company and the latest German network development plan (NEP) for the period to 2030.

In the Netherlands, the draft Climate agreement ("Klimaatakkoord"), which is expected to be signed next month, requires a further c. 7GW increase in offshore wind energy capacity between 2024 and 2030 in order to deliver the policy objective of at least a 49% reduction in CO2 levels compared to 1990 levels. TenneT has guided to an incremental c. €5 billion of capex, in addition to the c. €2 billion required to connect the five offshore wind farms with a total capacity of 3.5GW that will be built in the Dutch sector of the North Sea in the period until 2023 (required under the 2013 National Energy Agreement).

Track record of measures taken to strengthen capital structure; continued prudent financial policy likely to be required to manage demands of further capex increase

In recent years, TenneT has taken a series of measures to strengthen its capital structure given the further increase in planned investments.

We consider the committed equity contribution from the Dutch government of up to €1.19 billion in support of TenneT's investment programme in the Netherlands, the proceeds of which will be drawn down in four tranches over the 2017-20 period (the 2017-18 tranches totalling €500 million have already been drawn down), provide the greatest benefit to TenneT's capital structure. Whilst payment of the final tranche, €410 million, is subject to reassessment later this year, we expect TenneT to receive the full amount based on delivery of its planned capex programme.

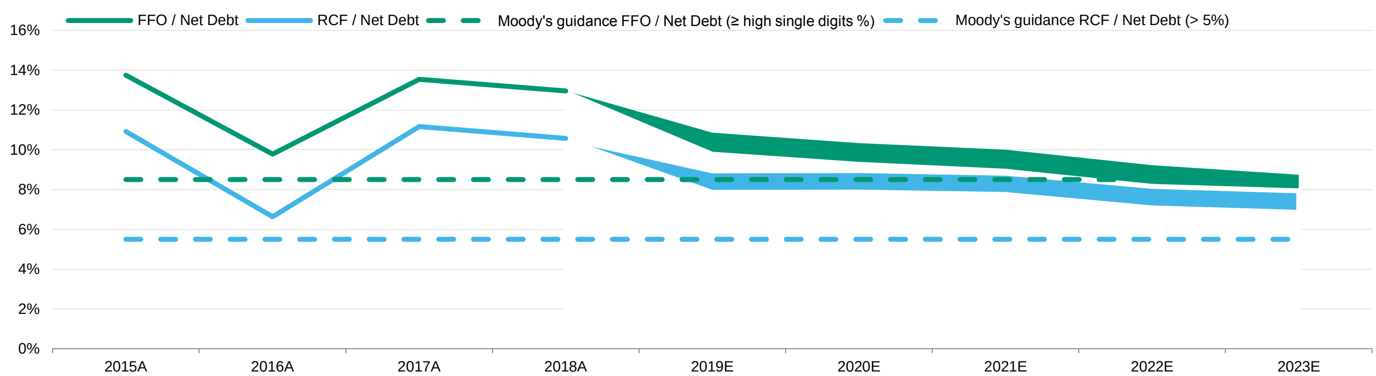
The upsizing of TenneT's hybrid capital in 2017 and 2018[4], with an associated net increase in hybrid equity credit of €300 million and the continued lower dividend payout ratio, 35% [5] (rather than 50%) for the remainder of this decade, also strengthens TenneT's position.

Given the latest planned further step-up in investment levels, primarily in the early-to-mid 2020s, and the lower allowed returns in both jurisdictions, we expect TenneT will need to maintain a prudent financial policy in order to maintain FFO / Net Debt at least in the high single digits in percentage terms throughout the early 2020s. We consider TenneT has limited financial headroom at the current rating level over the period to 2023 (and the end of the current regulatory period in Germany), absent (1) taking further measures to support its financial profile; and/or (2) securing successful appeal(s) of certain aspects of its regulatory determinations, with those in Germany having a greater bearing on its overall credit quality.

Exhibit 10

Given the further increases in planned investments, TenneT has limited financial headroom at the current rating level over the period to 2023

Evolution of TenneT's key credit metrics assuming no new measures to support financial profile



Historic: (1) TenneT's historic IFRS-based metrics reflect volatility in volumes and auction receipts as well as true-up adjustments for over- and under-recovery against allowed regulatory revenues. When these are stripped out underlying performance is less volatile, with reported FFO / Net Debt between 13.7% and 15.5% over the 2016-18 period.
Projections: Assumptions include (1) no further measures taken to support financial profile aside from continuation of current dividend policy, i.e. no further equity contributions beyond receiving the final two tranches of the (up to) €1.19 billion announced in December 2016 or issuance of hybrid capital securities; (2) no upside from outstanding appeals of aspects of its existing regulatory determinations, aside from the benefit of the lower frontier shift in the Netherlands with the incremental revenue all coming in 2020 tariffs.
Source: Moody's estimates

We view TenneT's divestment of minority stake sales in German offshore wind farms earlier this decade as broadly credit neutral reflecting the positive benefit of upstream guarantees being tempered by the (slight) weakening on RCF of distributions to minority interests. However, any changes in contractual arrangements for any future minority stakes sales may alter our assessment, e.g. removal of presence of upstream guarantee (negative) and/or external debt being raised at the project level (rather than intercompany loans from TenneT Holding). We note that with the growth in asset base, and net debt, from the continued large capex programme, the impact of the minority stakes sold to-date have a diminishing effect on metrics over time (last sale to Copenhagen Infrastructure Partners was five years ago).

Strong support by TenneT's owner, the Government of the Netherlands, results in two-notch uplift from stand-alone credit quality

TenneT's A3 rating incorporates a two-notch uplift from its stand-alone credit quality taking into account its ownership by the Dutch government and the strategic importance to national energy policy. Government support was most recently evidenced by the aforementioned €1.19 billion committed equity contribution from the Dutch government, in support of the group's investment programme. Prior to this TenneT also received an equity increase of €600 million from the government, received in two equal installments in December 2011 and June 2012.

We note the latest committed equity contribution followed TenneT TSO B.V. being designated as the national offshore electricity TSO in the Netherlands and being required to deliver phase 1 of additional offshore wind farm connections (3.5GW by 2023). Given the key role TenneT's investment programme will play a key role in facilitating Dutch energy policy objectives, the importance of providing grid connections for new renewables connected to the transmission grid and reinforcing the onshore grid is accentuated by the government planning to phase out all coal by 2030 under the coalition agreement and draft law, we continue to view the likelihood of support as strong.

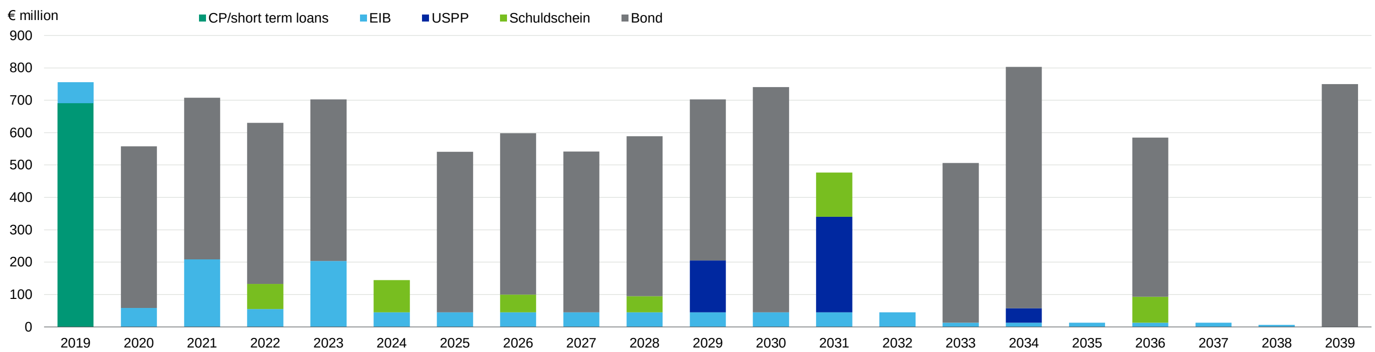
Liquidity analysis

We expect TenneT to maintain a good liquidity position over the next 12 months, supported by: (1) operating cash flows (c. €2.3-2.4 billion in 2019); (2) €1,750 million of expected proceeds from the US private placement issuance (€500 million received in January 2019) and the latest green bond issuance (€1,250 million announced and priced in May 2019); (3) draw down of committed equity contributions from the Dutch state (€280 million in 2019; (4) €2.55 billion of committed facilities, as of December 2018, comprising a €350 million EIB facility related to TenneT's share of costs on the NordLink interconnector and a fully undrawn €2.2 billion committed revolving credit facility, maturing July 2021. These will be sufficient to cover c. €0.8 billion of debt maturities in 2019 (mainly commercial paper), dividend payments (including hybrid interest) of c. €0.2 billion and planned investments.

Exhibit 11

TenneT has a well-balanced debt maturity profile

Breakdown of interest bearing debt at 31 December 2018



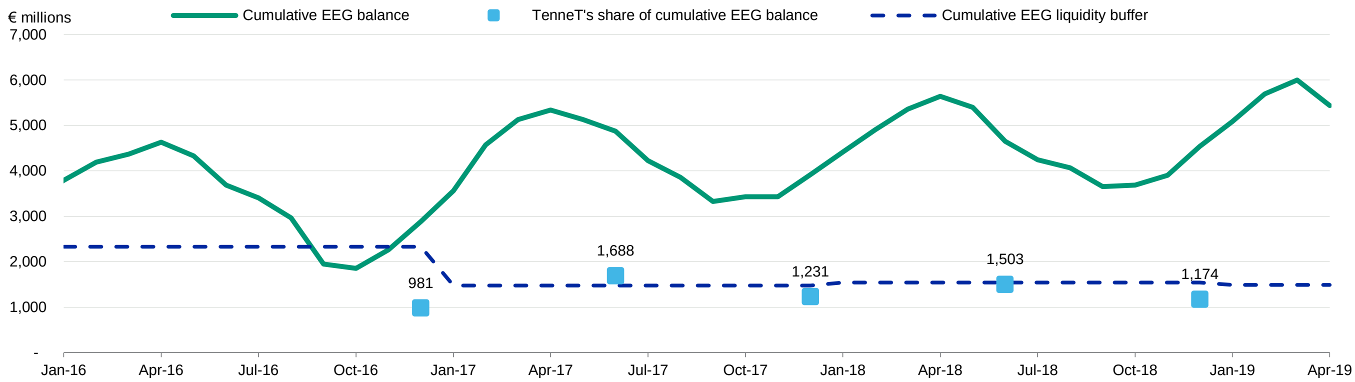
Note: (1) Non-call period of €1.1 billion of green hybrids ends on 1 June 2024 (not included). (2) The three tranches of €500 million US private placement that settled in January 2019 are included. The €1.25 billion of green bonds launched and priced in May 2019 are also included.
Source: Annual report; Company announcements

Under the German Renewable Act (Erneurbare Energien Gesetz, or EEG), TenneT is also required to buy renewable energy at set feed-in-tariffs and sell it on the spot market. The difference is covered through a surcharge payment, determined annually[6] (set at 6.41 €ct/kWh for 2019), which is added to the consumer tariffs. In recent years, the German electricity TSOs have, in aggregate, held cash balances related to EEG significantly above the liquidity reserve buffer, even during the summer months when there are typically working capital outflows. (See "German electricity transmission networks: Large cash balances related to administering renewable obligation will overstate financial metrics in 2018 and 2019", published October 2018, for more information.) However, unlike for the other German electricity TSOs, this has not resulted in TenneT's reported metrics being overstated as since October 2016, following a decision by the German energy regulator, funds related to EEG are not at TenneT's free disposal and are separated from other cash balances. We expect the cumulative EEG balance to remain significantly above the liquidity buffer over the remainder of 2019, thus removing any financing requirement for TenneT from administering these requirements.

Exhibit 12

Like other German TSOs TenneT holds significant EEG funds, albeit since October 2016 these are not at the group's free disposal

TenneT's share of cumulative balance of renewable surcharge balance in Germany



Note: (1) In 2016 the German regulator decided that the funds related to EEG can no longer be at TenneT's free disposal and should be separated. The separation of funds was realised in October 2016. The other German TSOs continue include EEG funds in reported cash and cash equivalents.
Source: www.netztransparenz.de/EEG/EEG-Konten-Uebersicht; TenneT

Rating methodology and scorecard factors

TenneT is rated in accordance with the rating methodology for Regulated Electric and Gas Networks, published in March 2017, and the rating methodology for Government-Related Issuers (GRIs), published in June 2018.

Exhibit 13

TenneT Holding B.V. - Rating Factors Grid

Regulated Electric and Gas Networks Industry Grid [1][2]	Current FY 12/31/2018		Moody's 12-18 Month Forward View As of May 2019 [3]	
Factor 1 : Regulatory Environment and Asset Ownership Model (40%)	**Measure**	**Score**	**Measure**	**Score**
a) Stability and Predictability of Regulatory Regime	A	A	A	A
b) Asset Ownership Model	Aa	Aa	Aa	Aa
c) Cost and Investment Recovery (Ability and Timeliness)	A	A	A	A
d) Revenue Risk	A	A	A	A
Factor 2 : Scale and Complexity of Capital Program (10%)				
a) Scale and Complexity of Capital Program	Ba	Ba	Ba	Ba
Factor 3 : Financial Policy (10%)				
a) Financial Policy	Baa	Baa	Baa	Baa
Factor 4 : Leverage and Coverage (40%)				
a) FFO Interest Coverage (3 Year Avg)	6.5x	Aa	5.0x - 6.0x	Aa
b) Net Debt / Fixed Assets (3 Year Avg)	59.4%	A	62% - 65%	Baa
c) FFO / Net Debt (3 Year Avg)	12.2%	Baa	9% - 12%	Ba
d) RCF / Net Debt (3 Year Avg)	9.6%	Baa	7% - 10%	Baa
Rating:				
Scorecard-indicated Outcome from Grid Factors 1-4		A3		Baa2
Rating Lift				
a) Scorecard-indicated Outcome from Grid		A3		Baa2
b) Actual Rating Assigned				baa2
Government-Related Issuer		**Factor**		
a) Baseline Credit Assessment		baa2		
b) Government Local Currency Rating		Aaa		
c) Default Dependence		Moderate		
d) Support		Strong		
e) Final Rating Outcome		A3		

Notes: (1) All ratios are based on 'Adjusted' financial data and incorporate Moody's Standard Adjustements for Non-Financial Corporations. (2) As of 12/31/2018. (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. (4) Projected financial metrics are based on underlying performance, whereas reported metrics are based on IFRS and so will be impacted by volatility in volumes and auction receipts as well as true-up adjustments for over- and under-recovery against allowed regulatory revenues.

Source: Moody's Financial Metrics TM

Ratings

Exhibit 14

Category	Moody's Rating
TENNET HOLDING B.V.	
Outlook	Stable
Issuer Rating -Dom Curr	A3
Senior Unsecured -Dom Curr	A3
Jr Subordinate -Dom Curr	Baa3
Commercial Paper -Dom Curr	P-2
Other Short Term -Dom Curr	(P)P-2

Source: Moody's Investors Service

Appendix

Exhibit 15

TenneT Holdings B.V.

Peer comparison table

	TenneT Holding B.V. A3 Stable (BCA baa2)			Statnett SF A2 Stable (BCA baa2)			N.V. Nederlandse Gasunie A1 Stable (BCA a3)			Eurogrid GmbH Baa1 Stable		
(in USD million)	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-15	FYE Dec-16	FYE Dec-17
Revenue	3,146	4,492	5,041	767	860	1,064	1,713	1,402	1,473	10,490	10,438	11,402
EBITDA	1,061	1,729	1,978	409	476	654	1,189	896	820	62	403	865
Total Debt	8,525	10,538	11,561	3,519	4,451	4,903	4,498	4,547	4,391	2,148	3,038	3,450
Net Debt	8,359	10,472	11,552	3,181	4,186	4,502	4,246	4,498	4,360	1,053	1,748	1,761
FFO Interest Coverage	5.5x	7.1x	7.1x	6.3x	5.5x	6.5x	7.6x	9.6x	8.0x	13.4x	5.9x	4.4x
Net Debt / Fixed Assets	58.9%	58.6%	60.6%	64.5%	69.7%	66.6%	46.1%	43.6%	44.0%	27.2%	39.7%	32.6%
FFO / Net Debt	9.8%	13.5%	13.0%	10.6%	8.4%	11.3%	20.7%	19.0%	15.5%	41.8%	17.6%	15.9%
RCF / Net Debt	6.6%	11.1%	10.6%	9.3%	7.4%	10.5%	12.5%	16.0%	8.7%	31.6%	11.6%	9.1%
Debt / EBITDA	8.4x	5.7x	6.0x	8.8x	9.3x	8.0x	4.0x	4.8x	5.5x	35.4x	7.9x	3.8x

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

Exhibit 16

TenneT Holdings B.V. Adjusted Net Debt breakdown

(in EUR million)	FYE Dec-14	FYE Dec-15	FYE Dec-16	FYE Dec-17	FYE Dec-18
As Reported Total Debt	**3,325.0**	**4,661.0**	**7,504.0**	**7,742.0**	**8,720.0**
Pensions	126	130	179	186	208
Leases	160	110	150	348	636
Hybrid Securities	260	260	260	509	559
Non-Standard Public Adjustments	(10.0)	(10.0)	(10.0)	(9.0)	(9.0)
Moody's Adjusted Total Debt	**3,861.0**	**5,150.5**	**8,082.5**	**8,775.5**	**10,113.5**
Cash & Cash Equivalents	(83.0)	(3.0)	(157.0)	(55.0)	(8.0)
Moody's Adjusted Net Debt	**3,778.0**	**5,147.5**	**7,925.5**	**8,720.5**	**10,105.5**

Notes: (1) All figures & ratios calculated using Moody's estimates & standard adjustments; (2) The operating lease adjustment materially increased from 2017 because operational lease commitments for German power plants previously recorded under grid related commitments were reclassified to operational lease commitments.
Source: Moody's Financial Metrics™

Exhibit 17

TenneT Holdings B.V.

Adjusted Funds From Operation (FFO) breakdown

(in EUR million)	FYE Dec-14	FYE Dec-15	FYE Dec-16	FYE Dec-17	FYE Dec-18
As Reported Funds from Operations (FFO)	**1,192.0**	**804.0**	**844.0**	**1,320.0**	**1,341.0**
Leases	10.9	7.1	9.6	75.6	132.7
Capitalized Interest	(15.0)	(19.0)	(10.0)	(8.0)	(8.0)
Hybrid Securities	(16.5)	(16.5)	(16.5)	(18.5)	(15.0)
Alignment FFO	(103.0)	86.0	55.0	(36.0)	(58.0)
Unusual Items - Cash Flow	236.0	(55.0)	2.0	(13.0)	53.0
Non-Standard Public Adjustments	(102.0)	(99.0)	(109.0)	(141.0)	(136.0)
Moody's Adjusted Funds from Operations (FFO)	**1,202.4**	**707.6**	**775.1**	**1,179.1**	**1,309.7**

Notes: (1) All figures & ratios calculated using Moody's estimates & standard adjustments; (2) The operating lease adjustment materially increased from 2017 because operational lease commitments for German power plants previously recorded under grid related commitments were reclassified to operational lease commitments; (3) Non-standard adjustments pertain to share in profit of joint venture and associates.

Source: Moody's Financial Metrics™.

Exhibit 18
TenneT Holdings B.V.
Selected historical adjusted financials

(in EUR Millions)	FYE Dec- 2014	FYE Dec- 2015	FYE Dec- 2016	FYE Dec- 2017	FYE Dec- 2018
Income Statement					
Revenue	2,569	2,844	2,843	3,976	4,269
% Change In Sales (Yoy)	5.8%	10.7%	0.0%	39.9%	7.4%
EBITDA	1,271	943	959	1,530	1,675
EBITDA Margin %	49.5%	33.2%	33.7%	38.5%	39.2%
EBIT	939	187	353	825	842
EBIT Margin %	36.6%	6.6%	12.4%	20.8%	19.7%
Interest Expense	161	168	180	201	217
Net Income	518	-5	141	203	412
Balance Sheet					
Cash & Cash Equivalents	83	3	157	55	8
Current Assets	2,089	1,778	3,199	3,843	3,890
Net Property Plant And Equipment	10,478	12,196	13,461	14,870	16,677
Non-Current Assets	11,005	12,738	14,590	15,734	17,411
Total Assets	13,613	14,516	17,789	19,577	21,304
Current Liabilities	4,796	4,682	5,201	5,575	5,556
Gross Debt	3,861	5,151	8,083	8,776	10,114
Non-Current Liabilities	5,262	6,876	8,926	9,786	11,228
Total Liabilities	10,548	11,558	14,127	15,361	16,785
Total Equity	3,065	2,958	3,663	4,216	4,519
Total Liabilities & Equity	13,613	14,516	17,789	21,304	19,577
Cash Flow					
Funds From Operations	1,202	708	775	1,179	1,310
Cash Flow From Operations	1,615	1,256	425	1,503	1,362
Capital Expenditures	(2,157)	-2,515	-1,806	-1,838	-2,457
RCF	1,051	562	497	972	1,069
FCF	(693)	-1,405	-1,659	-542	-1,336
FFO / Net Debt	31.8%	13.7%	9.8%	13.5%	13.0%
RCF / Net Debt	27.8%	10.9%	6.3%	11.1%	10.6%
FCF / Net Debt	-18.3%	-27.3%	-20.9%	-6.2%	-13.2%
Interest Coverage					
EBITDA / Interest Expense	7.9x	5.6x	5.3x	7.6x	7.7x
(FFO + Interest) / Interest Expense	8.5x	5.2x	5.3x	6.9x	7.0x
Leverage					
Debt / EBITDA	3.0x	5.5x	8.3x	5.7x	6.0x
Debt / Book Capitalization	0.5x	0.5x	0.6x	0.6x	0.7x

Notes: (1) IFRS-based credit metrics reflects volatility in volumes and auction receipts as well as true-up adjustments for over- and under-recovery against allowed regulatory revenue. (2) All metrics are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations
Source: Moody's Financial Metrics™

Endnotes

1 This rate applies on post 2006 assets.

2 2.19% for expansion investments

3 It resulted in an equal and opposite sized reduction in the 2021 WACC as the increase in the 2016 WACC resulting from the CBb required amendment to the peer group

4 Source: The €100 million tap of the €1 billion hybrid was also awarded a 50% equity credit

5 of underlying profit (less dividend paid to non-controlling interest and dividend on the existing hybrid

6 In October for the forthcoming calendar year.

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