NERA

Financeability Analysis for Scottish Power Transmission over RIIO-T3

Notional Stochastic Modelling Results

10 December 2024

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1 | Introduction and Assumptions

Introduction

- We have been commissioned by Scottish Power Transmission (SPT) to undertake financeability analysis on a notional basis for SPT's December 2024 Business Plan submission to Ofgem using stochastic risk modelling

- In this report, we present the notional financeability results of our stochastic risk modelling using a modified version of Ofgem's Business Plan Financial Model (BPFM) for RIIO-3 provided to us by SPT
  - The modified BPFM allows us to test whether a given package of regulatory parameters enables a notionally financed SPT to remain financeable, defined by having a sufficiently high probability of meeting minimum levels of credit metrics required for an investment-grade credit rating
  - The modified BPFM also corrects for several issues identified in Ofgem's original BPFM

- The remainder of this report sets out:
  - Our risk modelling framework
  - The distributional assumptions we used for our modelled risk factors
  - The results of our stochastic risk modelling, focusing on Moody's credit ratios and resulting credit rating
  - The corrections we made to Ofgem's original BPFM that affect our risk modelling results

- We have also undertaken separate notional and actual financeability analysis for SPT for RIIO-T3 using deterministic modelling using Ofgem's prescribed financeability scenarios for transmission operators for RIIO-3, which we cover in a separate report
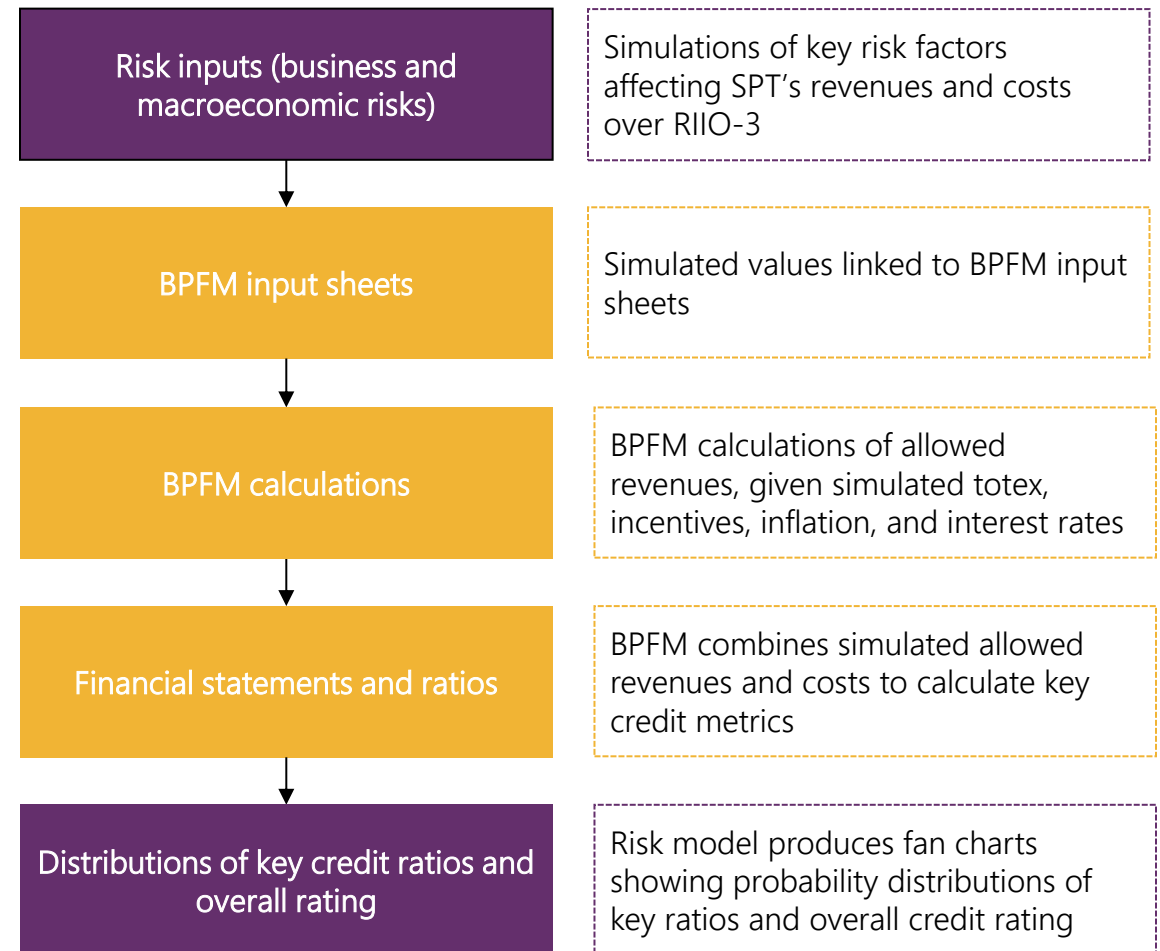
Key Conclusions

- We consider two scenarios in our stochastic modelling:
    - Scenario 1: The SPT corrected Ofgem base case which uses Ofgem's SSMD regulatory parameters but corrects for a number of modelling issues in Ofgem's BPFM (most notably targeting 55% closing gearing and modelling the allowed COD based on the RAV weighted approach)
    - Scenario 2: The SPT BP submission case which uses the regulatory parameters proposed in SPT's BP submission - i.e., allowed COE of 6.6% (real CPIH), tiered sharing factors and an additional NPV neutral revenue adjustment of £494m (23/24 prices)

- In both scenarios, we jointly simulate all modelled risk factors, i.e., macroeconomic risks (inflation and interest rates) and SPT business risks (totex, ASTI risk, and incentives)

- The SPT corrected Ofgem base case produces a notional Moody's rating of Baa2 at the 50th percentile,* with an average rating score of 9.1, slightly below the middle of the Baa2 range of 8.5-9.5

- Under the SPT corrected Ofgem base case, there is risk of Baa3 downgrade, which occurs in Y4 and Y5 at the 95th percentile with a rating score of 9.6 and 9.8, respectively. At the 90th percentile, the rating score is 9.4 in Y5, which is just below the Baa3 downgrade threshold of 9.5

- Under SPT BP submission assumptions, the notional rating improves to weak Baa1 at the 50th percentile, with an average rating score of 8.3, towards the bottom of the Baa1 range of 7.5-8.5

- SPT's proposed adjustments to regulatory parameters significantly reduce the risk of Baa3 downgrade, with Moody's rating remaining at Baa2 throughout RIIO-3 at the 95th percentile

In this report, when we refer to "Moody's credit rating" or "rating", this represents the indicative credit rating implied by applying the Moody's scorecard.

Our overall risk modelling approach

- We have modelled the following key risk factors for SPT for RIIO-T3:
  - Totex risk
  - Incentives and ASTI risk
  - CPIH inflation risk
  - Interest rate risk (affecting the risk-free rate and the cost of debt)

- For each risk factor, we define probability distributions drawing on our own analysis for macroeconomic variables and SPT's expert judgment for totex and incentives (see next slide)

- We have converted the deterministic BPFM into a stochastic model capable of running simulations based on the probability distributions for the key risk factors. The model is capable of simulating credit metrics and implied credit ratings arising from these distributions
  - To do so, we have integrated the BPFM with a simulation plug-in ("Crystal Ball"), which allows simulating risk factors and recording credit ratio outputs
  - We focus on Moody's rating methodology

- In addition to converting the BPFM into a risk model, we make several changes to the BPFM given issues we have identified (see Section 3)

Illustration of our risk modelling framework

Risk inputs (business and macroeconomic risks)	Simulations of key risk factors affecting SPT's revenues and costs over RIIO-3
BPFM input sheets	Simulated values linked to BPFM input sheets
BPFM calculations	BPFM calculations of allowed revenues, given simulated totex, incentives, inflation, and interest rates
Financial statements and ratios	BPFM combines simulated allowed revenues and costs to calculate key credit metrics
Distributions of key credit ratios and overall rating	Risk model produces fan charts showing probability distributions of key ratios and overall credit rating

Modelled business risk factors and distributional assumptions

Risk factor	Distributional assumption	Detail
Actual totex	• Triangular distribution • **Most likely**: SPT base totex (£10,464m real 23/24); **P5**: 10% underspend relative to most likely, **P95**: 10% overspend	• Assuming risks increase over time such that early years of RIIO-T3 are subject to less risk compared to the later years, with the ±10% P5/P95 range applying over the whole of RIIO-T3 • Not correlated to any other risk factors
Incentives – Quality of Connections	• Uniform distribution • **Min**: -0.50% of ex-ante base revenue (EABR), **max**: +0.30% of EABR	• Assumed to be correlated with Timely connections performance
Incentives – Timely connections	• Uniform distribution • **Min**: -0.05% of EABR, **max**: 0.00% of EABR	• Assumed to be correlated with Quality of Connections performance
Incentives - ENS	• Uniform distribution • **Min**: -1.90% of EABR, **max**: +0.40% of EABR	• Not correlated to any other risk factors
Incentives – SO:TO	• Uniform distribution • **Min**: no reward, **max**: £10m p.a. reward	• Not correlated to any other risk factors
ASTI – ODI	• Custom distribution based on SPT view • **P50**: Half-year delay, **P10**: 1-month delay, **P90**: 2-year delay	• Simulating delay (number of days) and applying daily penalty of £95k (real 23/24) based on SPT assumption • Assuming penalties are profiled over last 3 years of RIIO-T3 based on SPT view
ASTI – licence breach penalty	• Applies when ASTI delay is equal to or greater than 2 years (i.e., in P90+ delay scenario)	• Penalty equal to 10% of FY2030 base revenue and assumed to apply in Y5 of RIIO-T3

Modelled macroeconomic risk factors and distributional assumptions

| Risk factor	Distributional assumption	Detail
CPIH inflation	• Triangular distribution • **P50**: 2.1%, **P10**: -0.7%, **P90:** 5.5% (average over RIIO-T3)	• Based on OBR October 2024 forecasts of expected inflation and inflation risk • Assuming inflation persistence using correlation coefficient between inflation in year t and t-1 of 0.61, based on analysis of historical CPIH autocorrelation since 1997 (start of Bank of England 2% inflation targeting)
Risk-free rate - 20Y ILG yields	• Normal distribution • **Mean**: 1.27% real CPIH (Scenario 1), 1.54% real CPIH (Scenario 2); **Standard deviation**: 1.54% (average over RIIO-T3)	• Scenario 1 mean based on 20Y ILG (real CPI) forecast contained in BPFM. Scenario 2 mean adds 27bps uplift to RFR as per SPT BP submission case • Standard deviation based on 5Y historical volatility, assuming interest rate uncertainty grows over time • Assuming perfect correlation between simulation in year t and t-1
Cost of debt - iBoxx Utilities yields (FY)	• Normal distribution • **Mean**: 3.93% real CPIH (Scenario 1), 4.60% real CPIH (Scenario 2), **Standard deviation**: 1.49% (average over RIIO-T3)	• Scenario 1 mean based on iBoxx Utilities forecast contained in BPFM. Scenario 2 mean based on NERA updated iBoxx Utilities forecast as of end October 2024 • Standard deviation based on 5Y historical volatility, assuming interest rate uncertainty grows over time • Assuming perfect correlation with simulated RFR and between simulation in year t and t-1 • RAV-weighting using Ofgem's SHETL methodology, but RAV weighting starts from Year 1 of RIIO-T2 and opening RAV based on 18-year trailing average • 60bps additional borrowing cost allowance as per SPT BP submission

Notional Financeability Stochastic Modelling Results for RIIO-3

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Overview of modelled scenarios

	SPT corrected Ofgem case (Scenario 1)	SPT BP submission case (Scenario 2)
COE (real CPIH)	5.1% (as per Ofgem BPFM base case)	6.6% (as per SPT business plan submission)
COD (real CPIH)	4.0% (RAV weighted average, starting in RIIO-2, 18Y trailing average for RIIO2 opening RAV based on average industry tenor, +60bps for issuance costs, use BPFM iBoxx projections)	4.2% (RAV weighted average, starting in RIIO-2, 18Y trailing average for RIIO2 opening RAV based on average industry tenor, +60bps for issuance costs, use updated NERA iBoxx projections)
Notional gearing	Additional equity injections to achieve 55% closing notional gearing	As per SPT corrected Ofgem case (Scenario 1)
BPFM corrections	Correcting for all issues identified with BPFM calculations that affect notional risk modelling (see Appendix)	As per SPT corrected Ofgem case (Scenario 1)
Additional NPV neutral revenue adjustment	None	NPV neutral revenue adjustment to achieve Baa1 rating for notional company (£494m in 23/24 prices):

For Scenario 2, Additional NPV neutral revenue adjustment:

31 Mar 2027	31 Mar 2028	31 Mar 2029	31 Mar 2030	31 Mar 2031
14	60	107	145	168

	SPT corrected Ofgem case (Scenario 1)	SPT BP submission case (Scenario 2)
Sharing factor	50%	Tiered sharing factor: - 25% incentive rate up to 5% totex over/underspend - 15% incentive rate for 5%-10% totex over/underspend - Capped (i.e., no incentive) after 10% totex over/underspend
Other assumptions	As per Ofgem BPFM base case	As per SPT corrected Ofgem case (Scenario 1)

Scenario 1: SPT corrected Ofgem case (1/2)

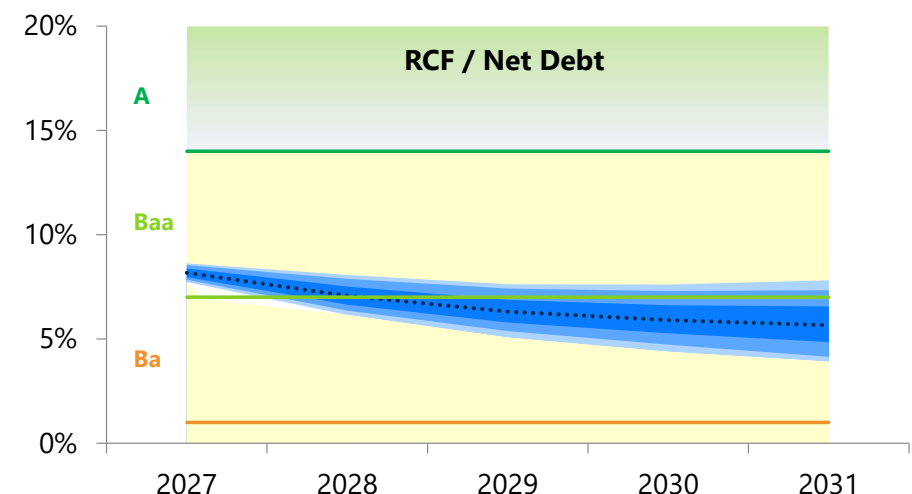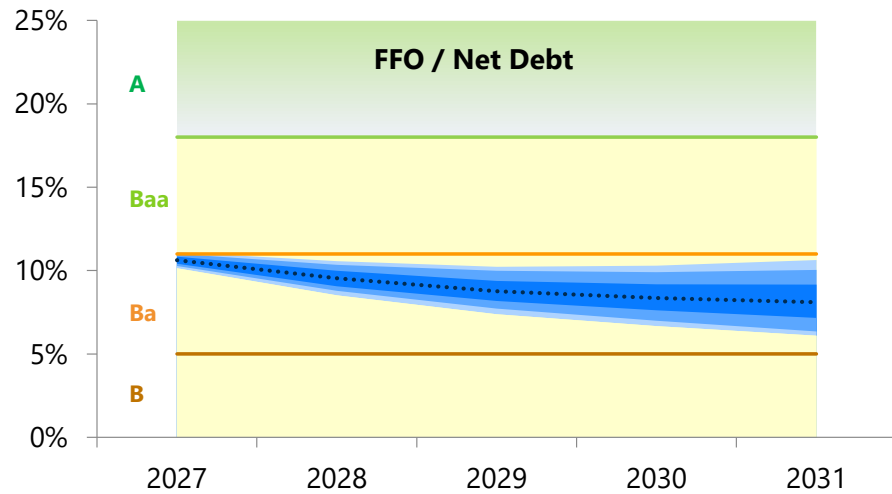5.1% CoE, 4.0% CoD, 55% notional closing gearing, 50% sharing factor, no NPV neutral revenue adjustment
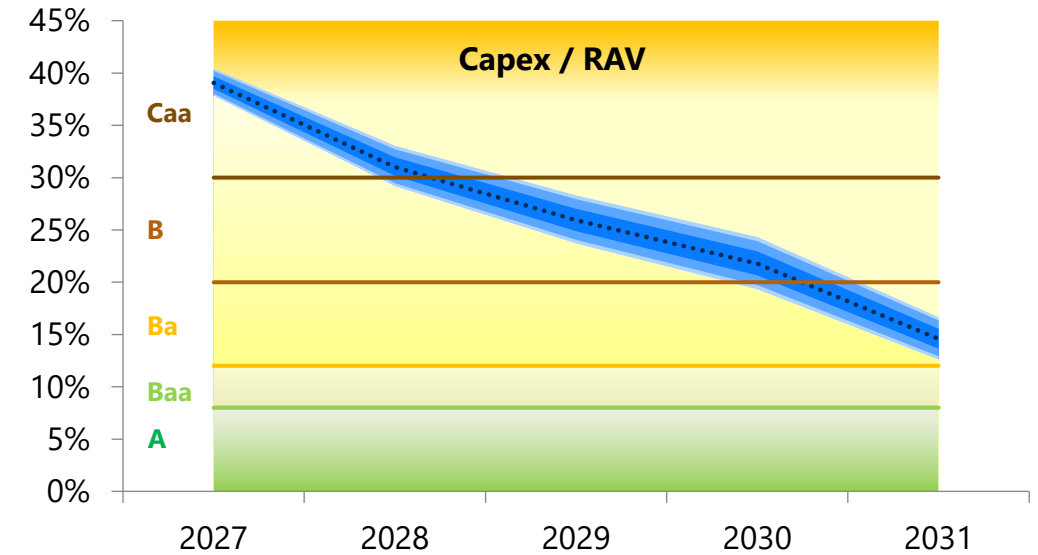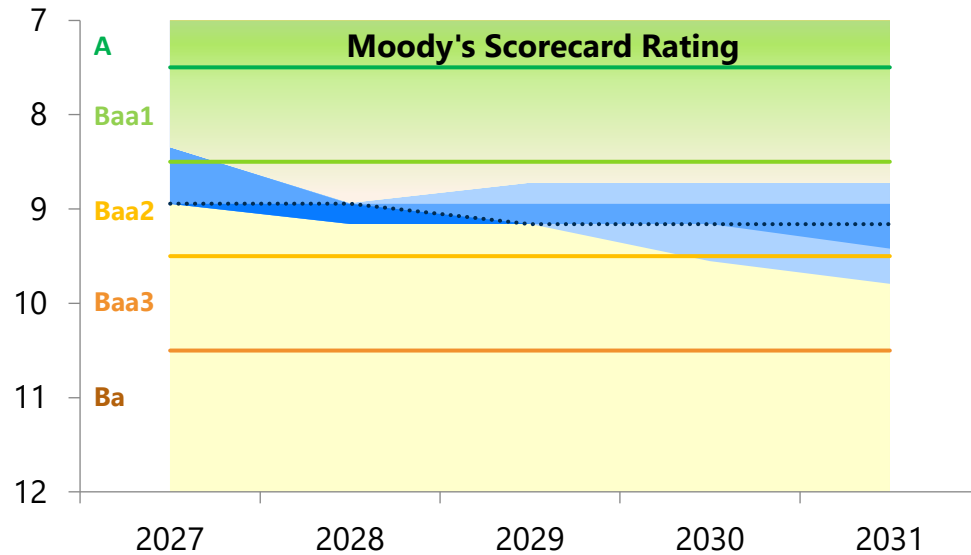
Confidence levels: 50% - 75% - 90% - 95%

SPT corrected Ofgem case generates notional Moody's rating of Baa2 at the 50th percentile, with an average rating score of 9.1, slightly below the middle of the Baa2 range of 8.5-9.5

There is risk of Baa3 downgrade, which occurs in Y4 and Y5 at the 95th percentile with a rating score of 9.6 and 9.8, respectively. At the 90th percentile, the rating score is 9.4 in Y5, which is just below the Baa3 downgrade threshold of 9.5

Scenario 1: SPT corrected Ofgem case (2/2)

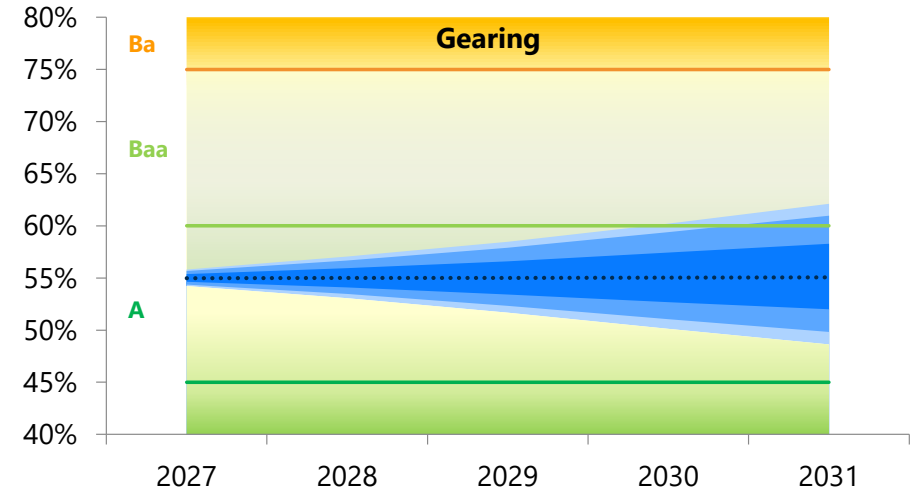5.1% CoE, 4.0% CoD, 55% notional closing gearing, 50% sharing factor, no NPV neutral revenue adjustment
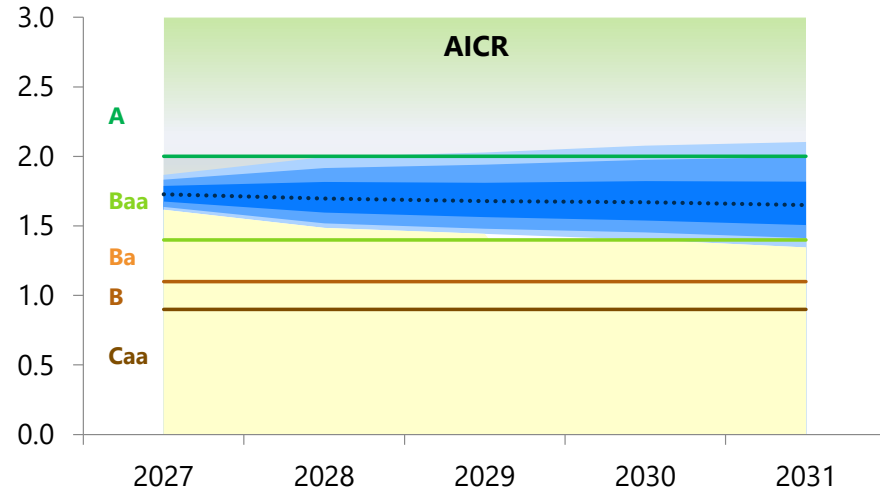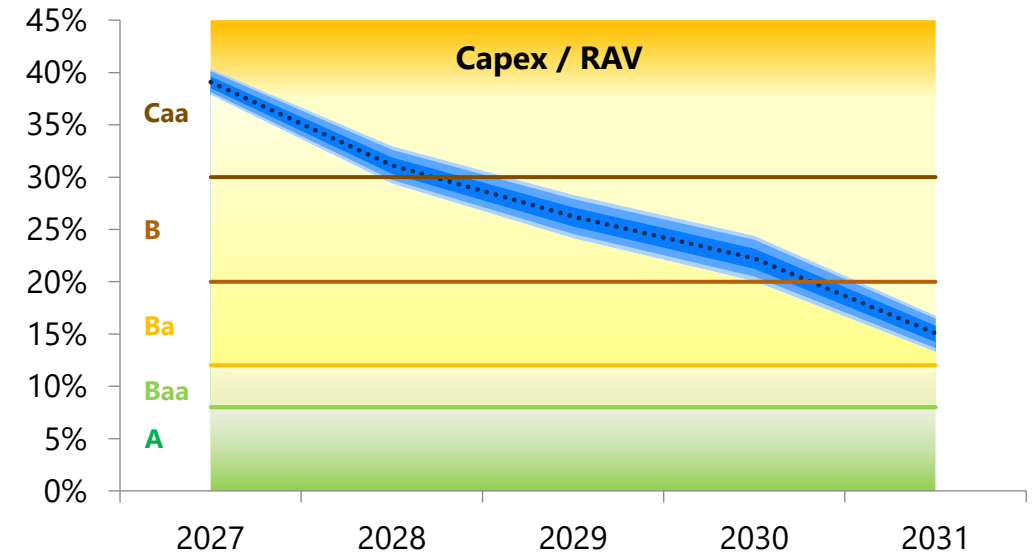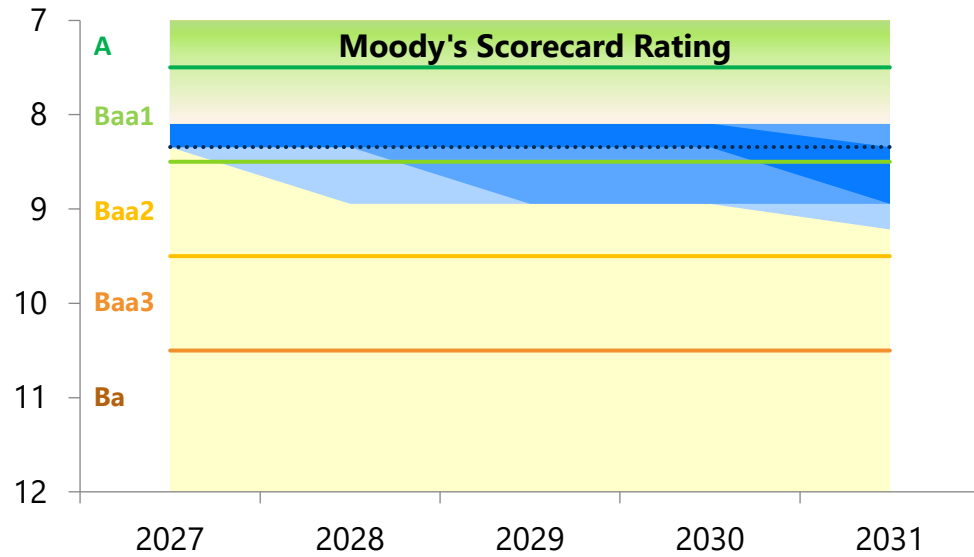

Confidence levels: **50%** - **75%** - **90%** - **95%**

Scenario 2: SPT BP submission case (1/2)

6.6% CoE, 4.2% CoD, 55% notional closing gearing, tiered sharing factor, £494m NPV neutral revenue adjustment

Confidence levels: 50% - 75% - 90% - 95%

SPT BP submission case improves notional rating to weak Baa1 at the 50th percentile, with an average rating score of 8.3, towards the bottom of the Baa1 range of 7.5-8.5

SPT's proposed adjustments to regulatory parameters significantly reduce the risk of Baa3 downgrade, with Moody's rating remaining at Baa2 throughout RIIO-3 at the 95th percentile

Scenario 2: SPT BP submission case (2/2)

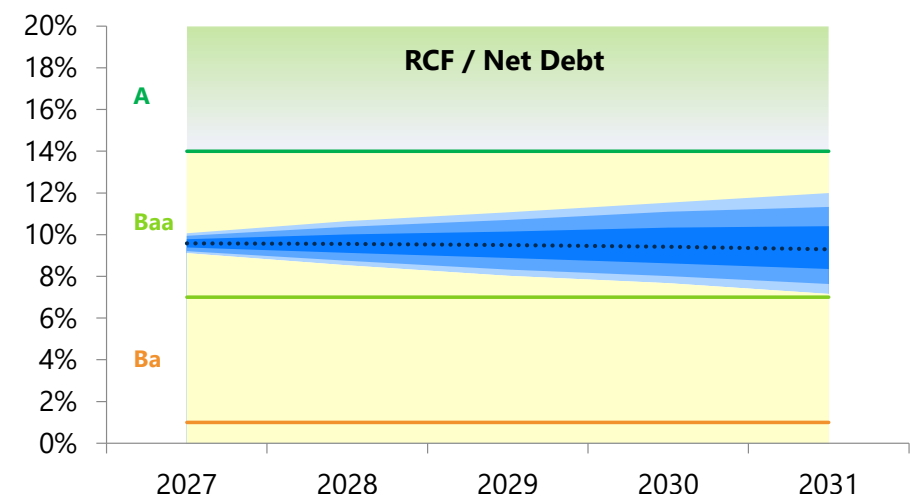6.6% CoE, 4.2% CoD, 55% notional closing gearing, tiered sharing factor, £494m NPV neutral revenue adjustment
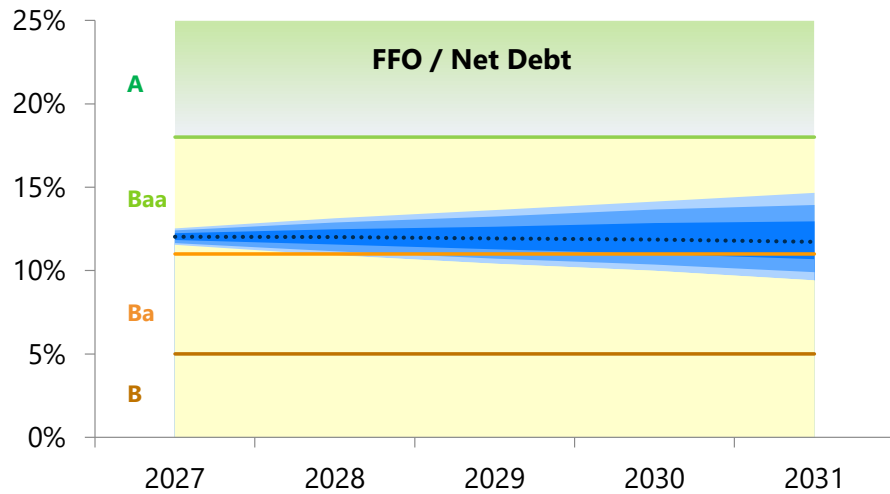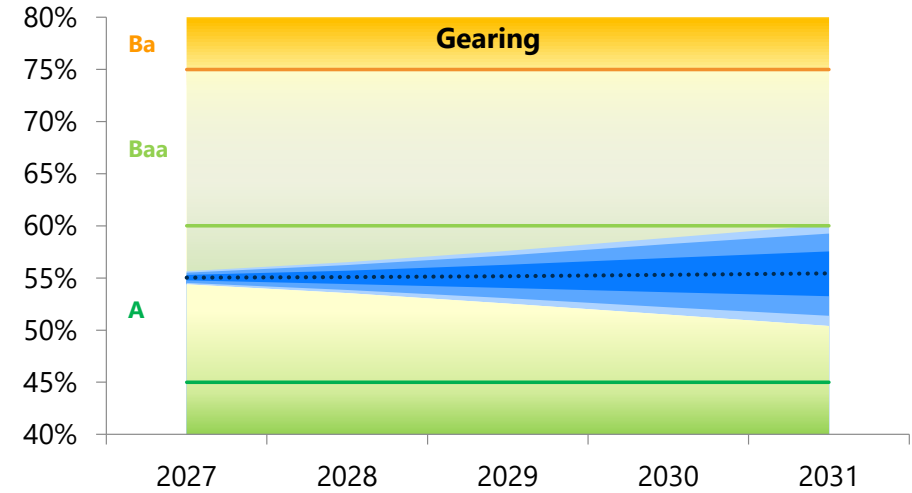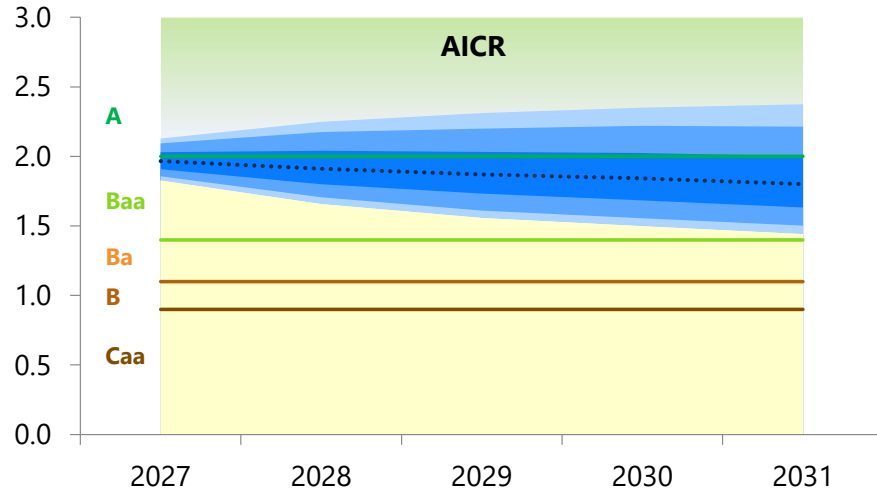
Confidence levels: 50% - 75% - 90% - 95%

Appendix: List of corrections to Ofgem's BPFM relevant to risk modelling

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List of BPFM issues corrected in risk modelling (1/3)

Ref	Modelling Area	Issue/Limitation	Impact and Correction
[1]	FFO calculation (Moody's)	Calculation of FFO for notional company (FinancialStatements row 101) deducts fast pot expenditure instead of opex. This is inconsistent with Moody's approach which uses opex.	Overstates or understates FFO, depending on whether opex > or < than fast pot. Deducting opex instead of fast pot to calculate FFO.
[2]	AICR (Moody's)	AICR for notional company does not include the excess fast money adjustment (linked to a switch which is off for notional company in RatingSimulator rows 39 and 40). This is inconsistent with Moody's, which applies the adjustment in all cases. If applied, the adjustment is calculated based on the difference between ex-ante allowed fast pot and ex-ante allowed opex. This is incorrect. The adjustment should be calculated based on the difference between allowed fast pot (after overspend) and what allowed fast pot (after overspend) would be if a natural capitalisation rate was used, assuming actual opex is deducted in calculating FFO. [Detail: The objective of the adjustment is to calculate the true impact on FFO of opex out/underperformance after sharing. The adjustment should therefore remove from FFO the allowance for opex based on fast pot (after sharing) and instead include an allowance for opex (after sharing) that would have been received if natural capitalisation rates were used.	Overstates or understates AICR, depending on whether opex > or < than fast pot. Using revised adjustment formula: - (Allowed fast pot (after overspend) – (Ex-ante opex + (Actual opex-Ex-ante Opex)*(1-sharing)).

Note: We also correct the calculation of notional RCF/net debt to include interest on tax & interest, in line with Ofgem's stated its intention for interest on tax & interest to be included in all Moody's notional ratios.

List of BPFM issues corrected in risk modelling (2/3)

Ref	Modelling Area	Issue/Limitation	Impact
[3]	Moody's rating and ratios	Moody's credit rating calculated based on 3-year averages of Moody's ratios, as opposed to annual ratios for relevant year.	Masks any deterioration/improvement in ratios over RIIO-3. We report annual ratios and rating to analyse evolution of rating over RIIO-T3.
[4]	Automatic equity injection	BPFM automatically injects equity when gearing increases 5% above notional. This makes sense for the base case if there is substantial capex growth expected. But in scenario modelling, the automatic additional equity injection eliminates any potential financeability issue arising from a downside scenario by design.	Not a true downside test of financeability. Equity injections could be used ex-post to solve a financeability issue, but they should not be assumed before the issue is identified in modelling. We keep equity injections fixed at base case levels in risk modelling, with no additional equity issued beyond what is assumed in the central case.
[5]	Allowed return under partial nominal indexation	The allowed return has been calculated by taking: allowed COE and ILD in real CPIH terms, inflating to nominal, combining with nominal fixed rate COD, calculating a nominal WACC and deflating with the semi-nominal price index (Return&RAV row 53). This inflates and deflates the real COE and ILD cost into nominal and back into real in an inconsistent way and leads to short term inflation affecting the allowed return, which it should not.	Allowed return slightly understated and incorrectly fluctuates with outturn CPIH inflation. We calculate the allowed return by taking the weighted average of the real COE, real ILD rate and the nominal COD.

List of BPFM issues corrected in risk modelling (3/3)

Ref	Modelling Area	Issue/Limitation	Impact
[6]	RAV weighted allowed COD modelling	RAV additions for allowed COD take "real" RAV modelled in CPIH terms and inflate with year start and year end inflation, as per SHETL approach for RIIO-2. (MainInputs rows 394-400) This produces a result where the modelled nominal opening RAV does not equal closing in the preceding year in RIIO-3, because RAV is in fact only part CPIH indexed and the modelling in "real CPIH" terms in the BPFM includes a downward adjustment for the nominal indexation element which is calculated based on a FY average inflation index. If an index other than FY average CPIH is used to re-inflate the "real CPIH" values, the adjustment for the nominal indexation element becomes incorrect, resulting in an inconsistent RAV in nominal terms over time.	RAV additions for allowed return on debt calculations are incorrect, as modelled opening RAV does not equal closing RAV in preceding year. We calculate RAV growth based on nominal RAV modelled using FY average inflation index.
[7]	Re-gearing for notional	Equity injections are based on targeting opening gearing equal to notional, but due to large capex in year closing gearing substantially exceeds notional (by around 7p.p. for SPT). Equity injections should be targeting closing gearing to equal to notional, for consistency with the allowed rate of return. Equity injections modelled in the original BPFM are therefore insufficient.	Understated notional re-gearing amounts and associated equity issuance costs. We correct the calculation to target notional closing gearing.

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