NERA

Depreciation under-recovery from RIIO-1 extension of asset lives

A report for SPT

21 August 2025

ECONOMICS. EXPERTS. EXPERIENCE.

CONFIDENTIALITY

Our clients' industries are extremely competitive, and the maintenance of confidentiality with respect to our clients' plans and data is critical. NERA rigorously applies internal confidentiality practices to protect the confidentiality of all client information.

Similarly, our industry is very competitive. We view our approaches and insights as proprietary and therefore look to our clients to protect our interests in our proposals, presentations, methodologies, and analytical techniques. Under no circumstances should this material be shared with any third party without the prior written consent of NERA.

Scope of work and structure of this report

- We were commissioned by SPT to model the implications of Ofgem's decision at RIIO-1 to extend regulatory asset lives to 45 years to reflect average expected economic life. Through illustrative modelling, we show that the RIIO-1 depreciation policy creates a material "depreciation holiday" resulting in a build-up of RAV and increase in customer charges over time, as well as a deterioration in financeability.
- Our report has the following structure:

Summary	4
Background Background to Ofgem's RIIO-1 decision to extend asset lives to 45 years	7
Illustrative modelling of depreciation under-recovery for T3 and beyond What is the level of under-recovery for SPT in T3 and beyond if RIIO-1 depreciation rules remain in place?	9
Illustrative modelling of impact of depreciation under-recovery for T3 and beyond What is the impact on RAV, allowed revenues and financeability of the depreciation under-recovery for SPT in T3 and beyond?	17

1 Summary

Summary: Ofgem's RIIO-1 decision to extend assets lives to 45 years had perverse effect of undermining intergenerational equity, creating a material depreciation deficit. We estimate under-recovery of £1.2-1.4bn for SPT to mid-2060s, transferring costs to future consumers.

- At RIIO-1, Ofgem extended asset lives from 20 to 45 years for new assets to bring regulatory asset lives closer to expected economic lives, to ensure intergenerational equity and sustainable financeability. Contrary to Ofgem's aim, we show that the switch to 45-year asset lives had the perverse effect of materially reducing depreciation charges relative to any reasonable depreciation benchmark over T3 and beyond.
- We calculate SPT's depreciation under-recovery under RIIO rules relative to three different benchmarks for the economic depreciation charge:
  1. RIIO depreciation compared to a continuation of TPCR4 depreciation rules, i.e. 20-year depreciation life ("benchmark 1"), indicates **£1.4bn under-recovery (23/24 prices).** This benchmark holds totex after TPCR4 constant at 2004-13 average levels, to remove the effect of totex ramp-up from energy transition on our estimates.
  2. RIIO depreciation compared to a 45-year asset life (Ofgem's assumed economic asset life) applied to all historical capex, our proxy for the economic depreciation charge ("benchmark 2"), indicates **£1.2bn under-recovery (23/24 prices)**. This benchmark uses SPT's "central" totex forecast for T3+, but the estimate of the under-recovery under this benchmark is not sensitive to future totex assumptions.
  3. RIIO depreciation compared to capex (constant at 2004-13 level), an alternative proxy for economic depreciation ("benchmark 3"), indicates **£1.4bn under-recovery (23/24 prices)**. As for benchmark 1, we hold totex after TPCR4 constant at 2004-13 levels to remove the effect of totex ramp-up from energy transition.
- While there is uncertainty around the magnitude of under-recovery arising from the RIIO-1 policy change given uncertainty around the true level of economic depreciation, our benchmarks point to under-recovery of £1.2-1.4bn (23/24 prices) from T3 to late 2060s.
- We find no evidence of past depreciation "over-recovery", as we find that i) SPT's depreciation since privatisation was in line with or below capex; and ii) SPT's total depreciation allowance since privatisation is closely aligned with the allowance under the hypothetical benchmark based on 45-year straight line applied to all historical capex. The depreciation holiday introduced at RIIO-1 therefore comes at the expense of future customers.
- In line with Ofgem's submissions at ED1 appeal, our analysis shows that the depreciation under-recovery negatively affects financeability and long-term customer bills:
  - FFO-based ratios deteriorate by up to 54bps during "depreciation holiday" period and 44bps in long run, compounding pressure on ratios from energy transition;
  - Long-term charges (i.e., depreciation + return) increase by around 3 per cent.
- Using HMT Green Book methodology and considering our three different benchmarks, we also calculate that the deferral of depreciation under RIIO policy imposes costs of 0.3-0.4bn in PV terms (23/24 prices) to SPT customers.

Background

2

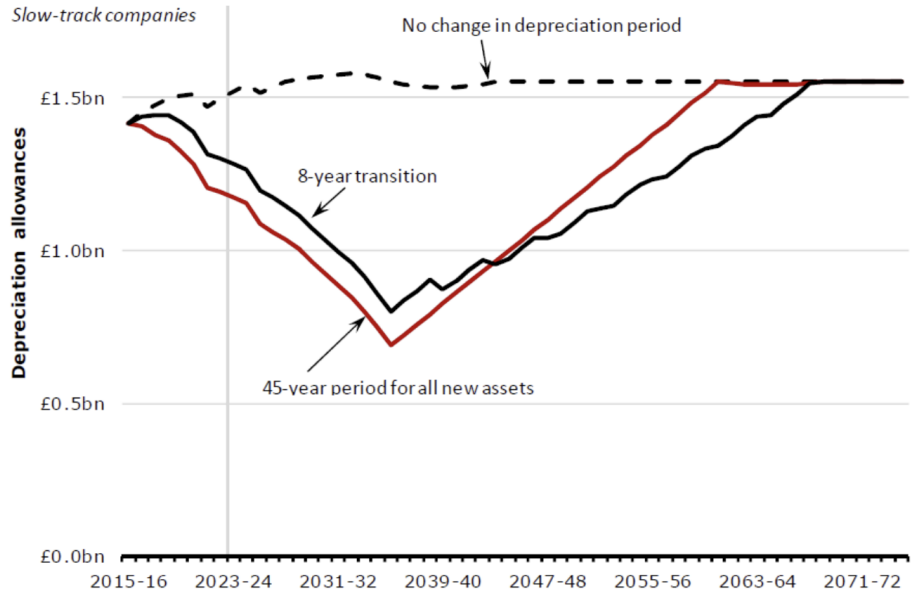
Background to Ofgem's RIIO-1 decision to extend asset lives to 45 years

Ofgem's RIIO-1 decision to extend assets lives from 20 to 45 years for new assets creates a material "depreciation holiday gap" for current customers, leading to issues with intergenerational equity, financeability and long-term affordability.

- At RIIO-1, Ofgem extended asset lives for electricity transmission (and distribution) networks from 20 to 45 years for new assets, in line with the average expected economic life (based on CEPA 2010 report), to ensure intergenerational equity and sustainable financeability.
  - Ofgem phased-in the new asset life assumption by extending asset life by 3 years each year during the RIIO-1 period to address short-term financeability concerns.
- Contrary to Ofgem's objectives, the *change* in asset lives in RIIO-1 had the perverse effect of creating a material "depreciation holiday gap" for current customers.
  - "Depreciation gap" exists as the depreciation of pre-RIIO RAV additions based on a 20-year asset life falls out of allowed revenues, but depreciation of RIIO RAV additions based on 45 years is not yet fully built up (see Figure).
  - The phasing in of the new 45-year assumption over RIIO-1 had a small effect on mitigating the size of the "depreciation gap" (see Figure).
- The RIIO-1 depreciation policy if left unchanged will create issues with intergenerational equity, financeability and long-term affordability (failing Ofgem's own criteria for implementation of the policy, as acknowledged by Ofgem/CMA for DNOs in the context of the 2015 BGT appeal).

Ofgem's own modelling shows that the *change* in asset lives at RIIO-1 from 20 to 45 years creates a material "depreciation holiday gap"

Figure 7: GEMA's analysis of the long-term effects on depreciation of the change in asset lives



Source: First witness statement of Ian Rowson.

Source: CMA (2015), BGT vs GEMA, Final determination, p.128.

Illustrative modelling of depreciation under-recovery for T3 and beyond

What is the level of under-recovery for SPT in T3 and beyond if RIIO-1 depreciation rules remain in place?

Key assumptions for illustrative modelling of SPT revenues over T3 and beyond

- To assess the implications of continuing with the existing RIIO depreciation policy, we constructed a simplified model for calculating allowed revenues for SPT under illustrative assumptions for T3 up to T17 (2098).
- The model assumptions do not represent a forecast from SPT and only serve the purpose of illustrating the issues with the existing RIIO depreciation policy.

Category	Modelling Assumption
Historical RAV additions	• SPT's historical RAV additions taken from T3 BPFM version used for Dec 2024 business plan submission. • For pre-vesting (pre-1991) capex, we use 2011 Ofgem data on the MEAV of pre-1991 capex for the electricity transmission sector.* – To derive SPT specific estimates of pre-1991 capex, we scale the sector-wide MEAV figures downward by SPT's share of total sector 1991 opening RAV (i.e. 15%).
T3+ totex and capitalisation rate projections	• Informed by projections of totex and capitalisation rates from SPT. SPT totex scenarios assume elevated totex until 2045, and lower, constant steady-state levels thereafter. • Illustrative modelling assumes the following totex levels (expressed as multiple of T2 average actual totex): 4.3x until 2040, 3.2x from 2041-2045 and 2.1x thereafter (= base case) • Capitalisation rates for start at 91% until 2040, slightly decreasing to 88% from 2041, and falling to 83% from 2045 (= base case) • We consider two sensitivities to the base case totex** – High: T3 totex as per base, T4+ equal to 1.2x base case; natural cap rates as per base case for T3, 92% until 2040, 90% from 2041-2045, 88% from 2045 – Low: T3 totex as per base, T4+ equal to 0.8x base case; natural cap rates as per base case for T3, 89% until 2040, 86% from 2041-2045, 78% from 2045 • For some of our modelling, we also assume totex is held constant at 10-year historical average levels as of end of TPCR4 (i.e., 2004-13), to remove the effects of totex ramp-up from energy transition. This serves as a proxy for a "steady-state" totex scenario.
Allowed return and notional financial structure	• Allowed return on equity of 5.0% (real CPIH) in line with mid-point of Ofgem's SSMD for RIIO-T3/GD3 and allowed return on debt of 3.7% to 4.6% over T3 and 4.6% thereafter (real CPIH), in line with SPT's Dec 2024 business plan submission. • Notional gearing of 55% and ILD share of 30%, as per T3 SSMD.
Other allowed revenue items	• Assume pass through stays constant in real terms in line with T2 levels, taken from T3 BPFM version used for Dec 2024 business plan submission. • Assume all other revenue elements (incentives, taxes etc.) are zero for simplicity.

Notes: * See Ofgem (31 March 2011), Decision on strategy for the next transmission and gas distribution price controls - RIIO-T1 and GD1 Financial issues, Figure A2.1. ** Results shown in next slides refer to base case unless stated otherwise.

Our approach to modelling the depreciation under-recovery associated with the RIIO-1 change in asset lives considers a number of illustrative benchmarks against which under-recovery is measured.

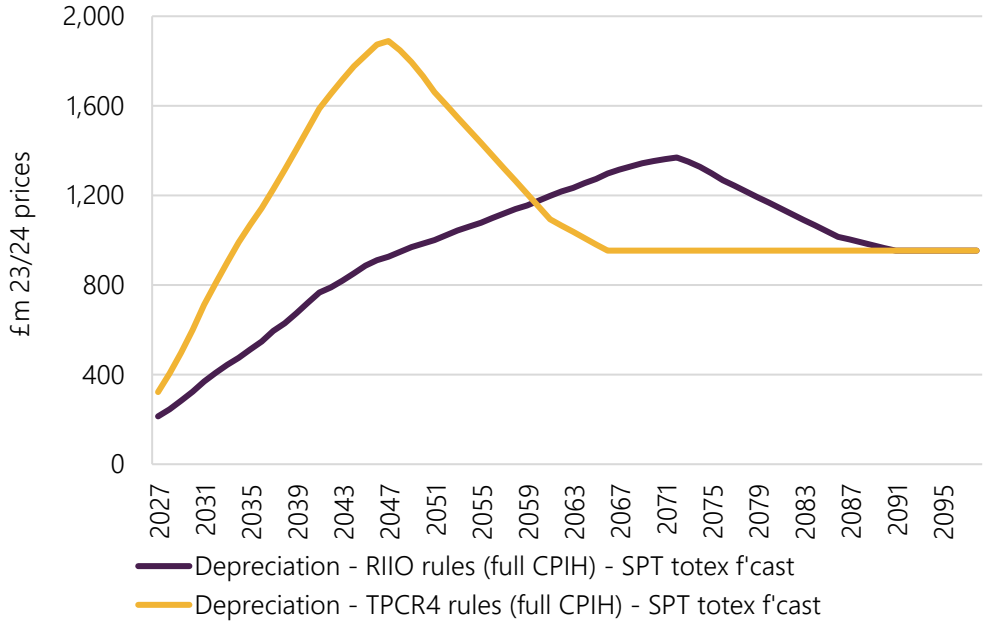
- We assess the extent of depreciation under-recovery associated with the RIIO-1 change in asset lives using three illustrative benchmarks*:
  1. TPCR4 policy ("benchmark 1"): First, we compare depreciation assuming a continuation of existing RIIO rules ("depreciation under RIIO rules") with depreciation calculated assuming a continuation of the rules applied in TPCR4, i.e. 20-year asset life.**
     - Asset life assumption is generally irrelevant for the purpose of calculating the depreciation charge in steady state.*** But in an environment of growing totex, there is a risk that a 20-year asset life is shorter than the useful economic life and therefore should not be applied to incremental capex associated with energy transition. To remove this effect, we also calculate depreciation under-recovery assuming capex after TPCR4 equal to 10-year historical average as of end TPRC4 (i.e., 2004-13 average),**** removing the impact of energy transition.
  2. Economic depreciation proxy ("benchmark 2"): Second, we compare depreciation under RIIO rules with a proxy for capital consumption, i.e. an economic depreciation charge, calculated by applying a 45-year asset life to all historical capex and assuming a straight-line profile, as per Ofgem's RIIO assumption.
     - The true economic depreciation charge is uncertain in terms of the asset life, depreciation profile, and to what extent if at all it should be indexed. For our proxy, we align the assumptions with Ofgem's RIIO assumptions.
  3. Capex ("benchmark 3"): Third, we compare depreciation under RIIO rules with capex over time.
     - Capex provides an alternative proxy for economic depreciation or capital consumption, without having to make explicit assumptions about asset lives, depreciation profile or indexation. We should expect depreciation to broadly track capex over long periods of time, if depreciation is a good measure of capital consumption. To remove the impact of energy transition, we calculate depreciation under-recovery assuming capex after TPCR4 is equal to the 2004-13 average.
- For the purpose of our calculations, we assume full CPIH indexation of the RAV when calculating the depreciation under RIIO rules as well as for all the illustrative benchmarks. We consider the impact of semi-nominal WACC in Section 4.
- Our depreciation under-recovery estimates include the period from T3 to the point at which depreciation under RIIO rules and depreciation under the respective benchmark converge (i.e., until there is no more gap).

Notes:
* The objective of our benchmarks is to proxy depreciation based on the economic use of the asset, irrespective of the depreciation policy applied to date. This approach does not leave investors better or worse off, as as long as this depreciation is deducted from the opening RAV accumulated to date. ** This benchmark includes the RAV differential, as it assumes the continuation of TPCR4 policy rules which include the RAV differential. For benchmarks 2 and 3, we do not include the RAV differential in the benchmarks, as these benchmark do not relate to past depreciation policy rules. ***The specific asset life assumption does not make any difference to the depreciation charge when the company is in steady state, i.e. when capex is constant over time. This is because n years of identical historical capex values are depreciated using an asset life equal to n, which results in depreciation always being equal to the capex itself in steady state.

Benchmark 1: Using "TPCR4 policy" as a benchmark, we calculate SPT would under-recover depreciation by £1.4bn (23/24 prices) over T3 and beyond, if RIIO depreciation rules remain unchanged. Under-recovery calculation considers only "steady state" capex, removing the impact of energy transition.

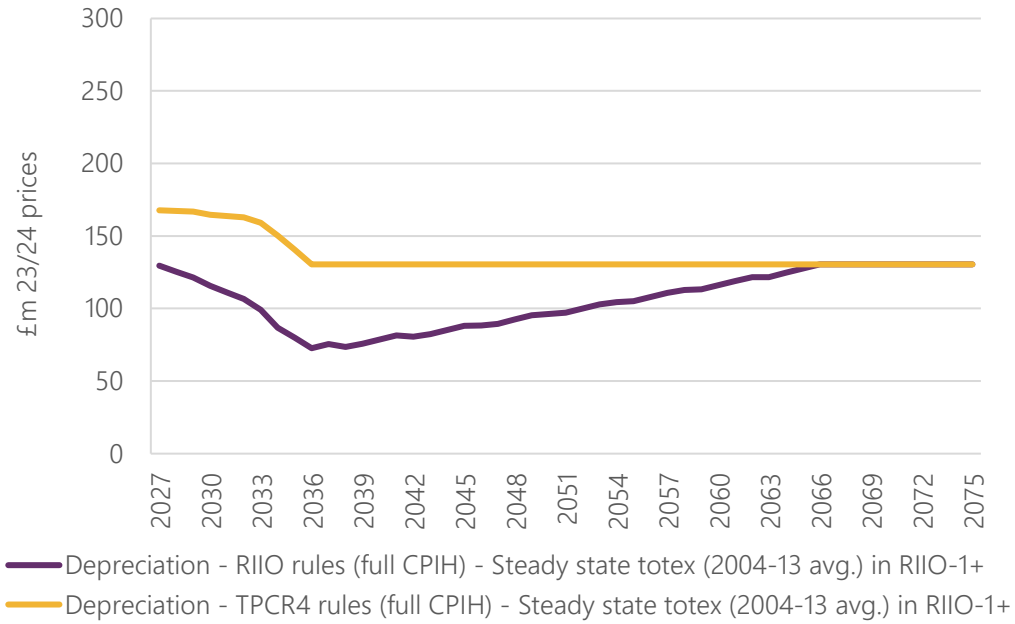
SPT under-recovers depreciation by £11.4bn (23/24 prices)* when measured against "TPCR4 policy" benchmark**

- The £11.4bn estimate likely overstates the impact of the "depreciation holiday" introduced at RIIO-1, as it is affected by incremental totex associated with energy transition, for which the "steady state" TPCR4 20Y asset life assumption may not be appropriate (as explained on previous slide).



Removing totex growth after TPCR4 to remove effect of energy transition, we calculate under-recovery of £1.4bn (23/24)* prices for SPT

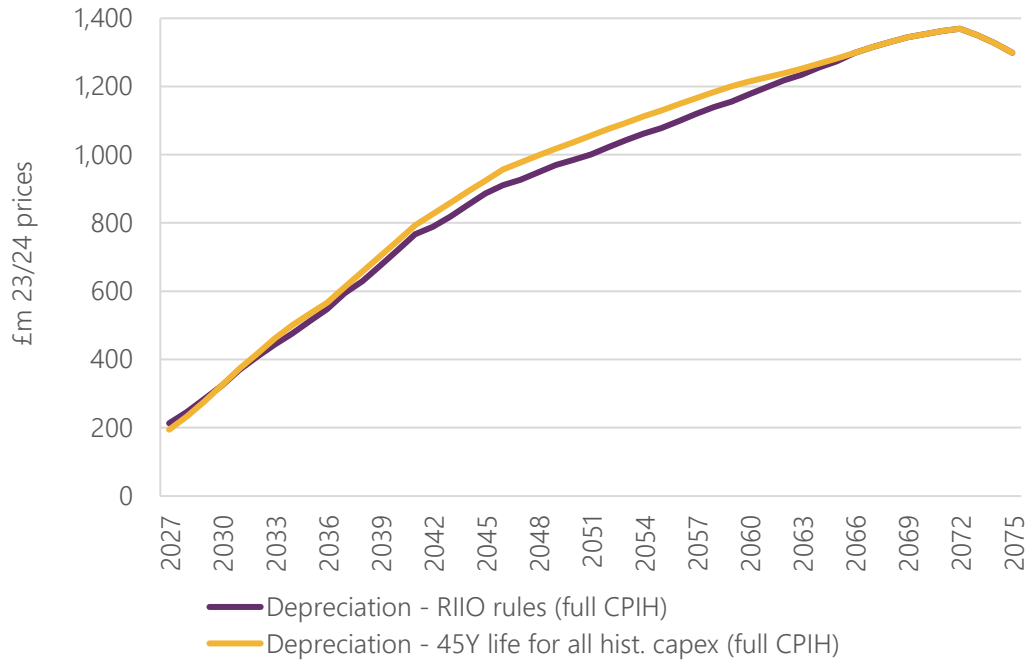
- To remove effect of energy transition totex ramp-up, we calculate under-recovery by assuming totex after TPCR4 is constant at 10Y historical average as of end TPCR4 (i.e., 2004-13). This approximates a "steady state" scenario, where the asset life assumption is irrelevant and TPCR4 policy provides a proxy for the economic depreciation benchmark.



Notes: *The estimates include under-recovery in T3 and beyond (i.e., until convergence of depreciation), and do not reflect any under-recovery from T1 and T2. ** The depreciation for the "TPCR4 policy" benchmark is calculated by applying the TPCR4 rules to all historical RAV additions from T3 onwards, i.e. a 20-year asset life applied to all historical (and future) RAV additions from T3 onwards.

Benchmark 2: Using 45-year straight line depreciation applied to all historical capex (proxy for economic depreciation charge) as a benchmark, SPT would under-recover depreciation by £1.2bn (23/24 prices) over T3 and beyond, if RIIO depreciation rules remain unchanged.

SPT under-recovers depreciation by £1.2bn (23/24 prices)* when measured against benchmark based on 45-year applied to all historical capex**



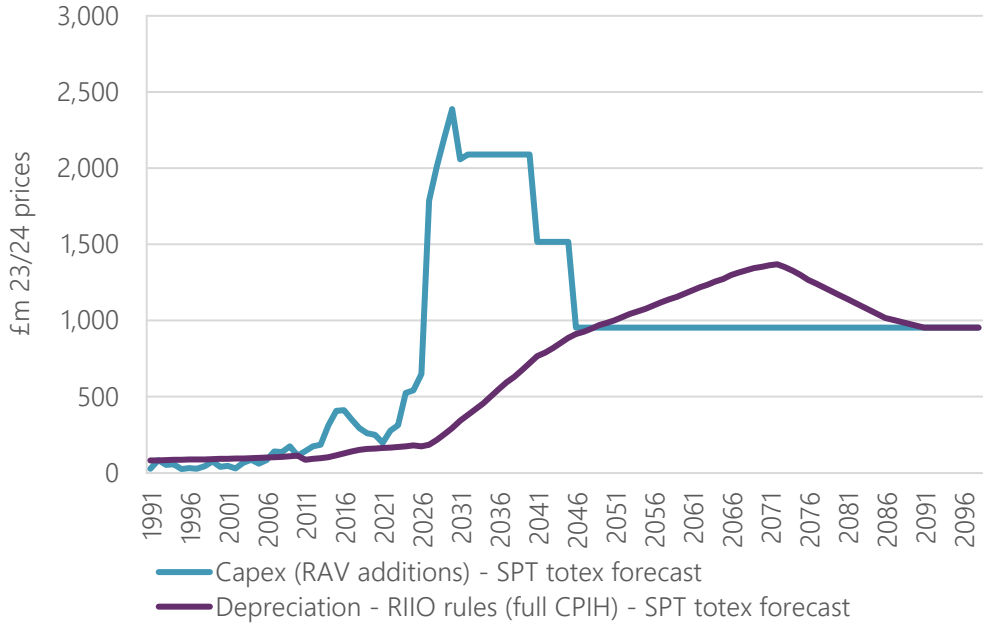
- We calculate the proxy for the economic depreciation charge by applying a 45-year asset life and straight-line depreciation to all historical capex.**
  - The calculation requires us to assume historical capex prior to 1991, which we derive based on Ofgem 2011 estimates of the MEAV of pre-1991 additions (see slide 10).
  - Assumptions for pre-1991 capex are not a material driver of our results, given the pre-1991 capex falls out of the benchmark depreciation charge in the early 2030s (i.e. 45 years after 1991).
- Our under-recovery estimate is independent of totex assumptions for RIIO-T2 onwards under the 45-year life assumption, as depreciation under RIIO rules as well as our proxy of the economic depreciation charge both apply a 45-year asset life to RAV additions over this period.

Notes: * The estimate only includes under-recovery in T3 and beyond (i.e., until convergence of depreciation) and does not reflect any under-recovery from T1 and T2. ** Applying a 45-year asset life to all historical capex, including to capex that has "already been depreciated", would not lead to SPT over-recovering depreciation (or recovering twice). Generally, depreciation can be calculated under any approach, and this would not constitute a double count, as long as this depreciation is deducted from the opening RAV accumulated to date.

Benchmark 3: If a good measure of capital consumption, depreciation should broadly reflect capex over long periods. Prior to RIIO-1&2, depreciation in line or lower than capex, but then falls below. Gap is £1.4bn (23/24 prices) measured against capex held at 2004-13 average level (to remove energy transition totex step-up).

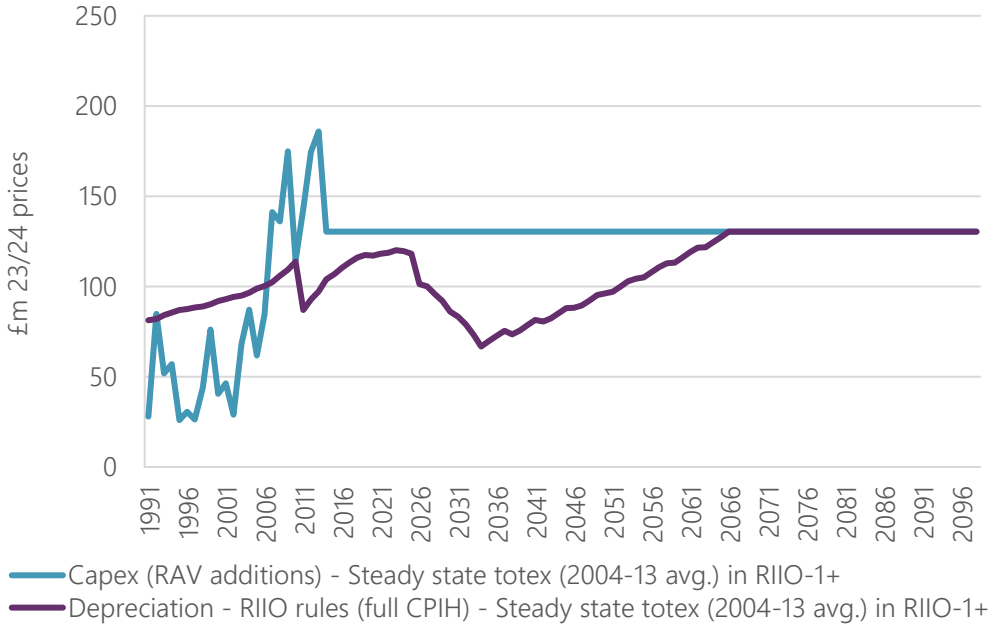
Depreciation has been broadly in line with or below capex prior to RIIO-1&2, suggesting no evidence of historical depreciation "over-recovery"

- The comparison of capex and depreciation after TPCR4 is part affected by the assumed growth in totex associated with energy transition and would therefore overstate the magnitude of the depreciation under-recovery.



Assuming totex is held constant at 2004-13 levels to remove effect of energy transition, the "depreciation holiday" gap is £1.4bn (23/24 prices)*

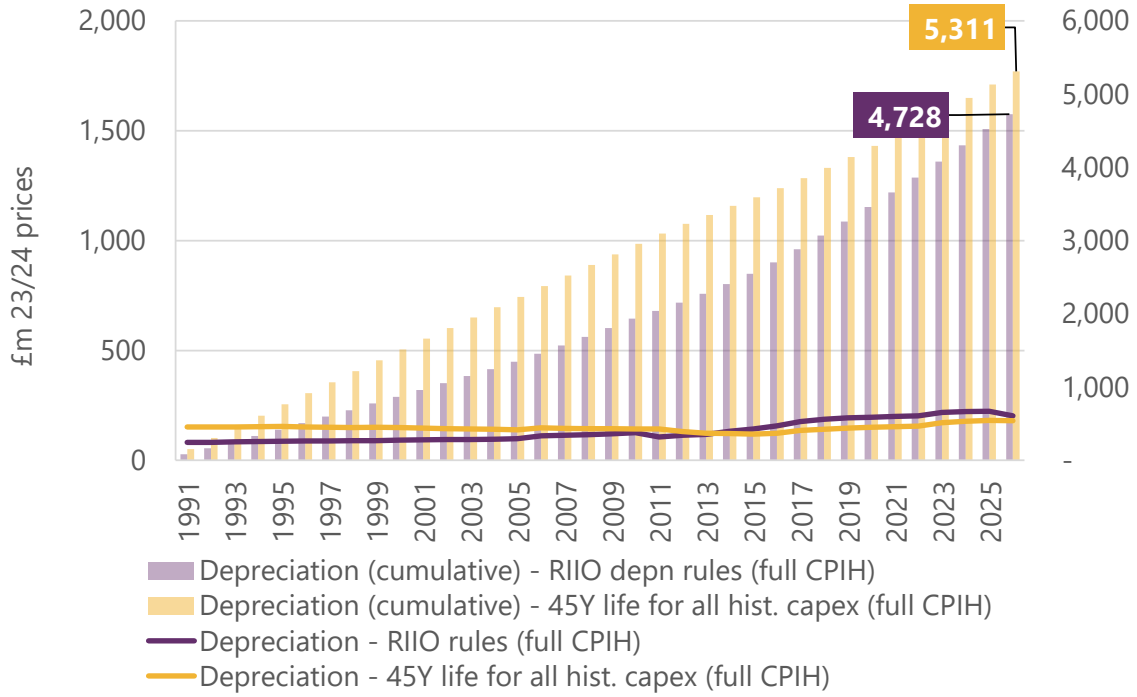
- To remove the effect of totex ramp-up in energy transition, we compare depreciation under RIIO rules to capex by assuming totex after TPCR4 is constant at the 10Y historical average as of end TPCR4 (i.e., 2004-13). This approximates a "steady state" scenario, where the comparison of depreciation and capex provides a direct estimate of the depreciation under-recovery.



Note: *The estimate only includes under-recovery in T3 and beyond (i.e., until convergence of depreciation) and does not reflect any under-recovery from T1 and T2.

SPT's total historical depreciation allowance since privatisation up to end of RIIO-T2 is somewhat lower than hypothetical depreciation calculated using the 45-year economic benchmark. Hence, we find no evidence of past depreciation over-recovery.

Actual historical depreciation under RIIO rules since privatisation vs depreciation under 45-year asset life applied to all historical capex



- To determine extent of any historical depreciation over/under-recovery, we compare:
  - SPT's actual historical depreciation allowances since privatisation up to end of RIIO-T2 (purple); and
  - a hypothetical depreciation allowance calculated by applying a straight-line 45-year asset life to all of SPT's actual historical capex (yellow).
- Our comparison shows that:
  - SPT's actual depreciation (purple line) was below the hypothetical economic depreciation charge (yellow line) prior to 2011, and higher thereafter.
  - Cumulatively, SPT's actual depreciation allowance (£4.7bn 23/24 prices) is below the hypothetical economic depreciation charge (£5.3bn 23/24 prices).
- We conclude that there is no evidence of SPT over-recovering depreciation in the past (since privatisation in 1991 up to the end of RIIO-T2).
  - The reason for the lack of over-recovery despite Ofgem using an asset life below 45 years prior to RIIO is the fact that the RAV at privatisation has been set at a discount to the MEAV. This discount appears to have offset the effect of a shorter asset life assumption and cumulatively produced depreciation allowances slightly below the economic depreciation benchmark up to the end of RIIO-T2, as shown in the figure.
- This analysis is consistent with the previous slide, which shows that deprecation is broadly in line with or below capital expenditure up to 2022, which also suggests no over-recovery of depreciation to date.

Note: *We use MEAV values from Ofgem (31 March 2011), Decision on strategy for the next transmission and gas distribution price controls - RIIO-T1 and GD1 Financial issues, Figure A2.1. To derive SPT specific estimates from the sector-wide figures in Figure A2.1, we scale sector-wide figures by SPT's share of total sector 1991 opening RAV (i.e., 15%).

Conclusion: The change in depreciation policy at RIIO-1 results in substantial depreciation under-recovery in the range of £1.2-1.4bn (23/24 prices) for SPT over the period T3 up to the late 2060s. The "depreciation holiday" for customers over this period comes at the expense of future customers.

- Although there is uncertainty around the magnitude of depreciation under-recovery arising from the RIIO-1 policy change, given the true economic depreciation charge is uncertain, our range of benchmarks point to an under-recovery in the range of £1.2-1.4bn (23/24 prices) over the period T3 up to the late 2060s:*
  - When measured against depreciation charges calculated under the previous TPCR4 depreciation rules and assuming totex after TPCR4 is held constant at 10-year historical average levels from 2004-2013 to remove the effect of totex ramp-up in energy transition ("steady state" proxy), we calculate depreciation under-recovery of £1.4bn (23/24 prices) for SPT under RIIO depreciation rules.
  - When measured against our proxy for the economic depreciation charge, 45-year straight line (same as Ofgem RIIO assumptions) depreciation applied to all historical capex, we calculate under-recovery of £1.2bn (23/24 prices) for SPT under RIIO depreciation rules.
  - When compared to capex and assuming totex after TPCR4 is held constant at TPCR4 levels to remove the effect of totex ramp-up in energy transition ("steady state" proxy), we calculate depreciation under-recovery of £1.4bn (23/24 prices) for SPT under RIIO depreciation rules.
  - Our estimates of depreciation under-recovery are not affected by future totex and therefore unchanged under the "high" and "low" totex scenarios
- In principle, material depreciation under-recovery should be expected, given the change in depreciation policy means that the depreciation of pre-RIIO assets fully falls out of allowed revenues after 20 years, but the depreciation of RIIO assets under the longer 45-year rule does not fully build up until the mid 2060s.
- As a result of the depreciation holiday, customers over the period T3 to the late 2060s will not pay the full economic depreciation if the RIIO rules remain in place, at the expense of future customers.
  - Our comparison of capex and depreciation for the period since privatisation until RIIO-T2 reveals depreciation was in line with or below capex, which indicates that prior to RIIO-1&2, SPT did not over-recover depreciation charges.
  - In addition, SPT's total historical depreciation allowance since privatisation up to the end of RIIO-T2 is broadly aligned with the total allowance under a hypothetical benchmark based on 45-year straight line applied to all historical capex, which also indicates SPT did not over-recover depreciation charges in the past.
  - Overall, we find no evidence of a past "over-recovery". The depreciation holiday introduced at RIIO-1 therefore comes at the expense of future customers.
- The depreciation holiday issue arises in part due to the fact that RAV was set at a discount to the MEAV at privatisation. The RIIO-1 extension of asset lives has the effect of unwinding this discount, providing customers during the depreciation holiday period an additional benefit, at the expense of future customers who subsequently pay for a higher RAV (i.e. the full MEAV) in perpetuity. By contrast, setting depreciation in line with the economic depreciation charge ensures that the benefit of the privatisation MEAV discount would be maintained in the form of a lower RAV in perpetuity, equally benefitting all customers since privatisation.

Note: * As shown on the previous slides, the depreciation gap under each of the three benchmarks closes by the late 2060 (i.e., depreciation under RIIO rules converges with benchmark depreciation).

Illustrative modelling of impact of depreciation under-recovery for T3 and beyond

What is the impact on RAV, allowed revenues and financeability of the depreciation under-recovery for SPT in T3 and beyond?

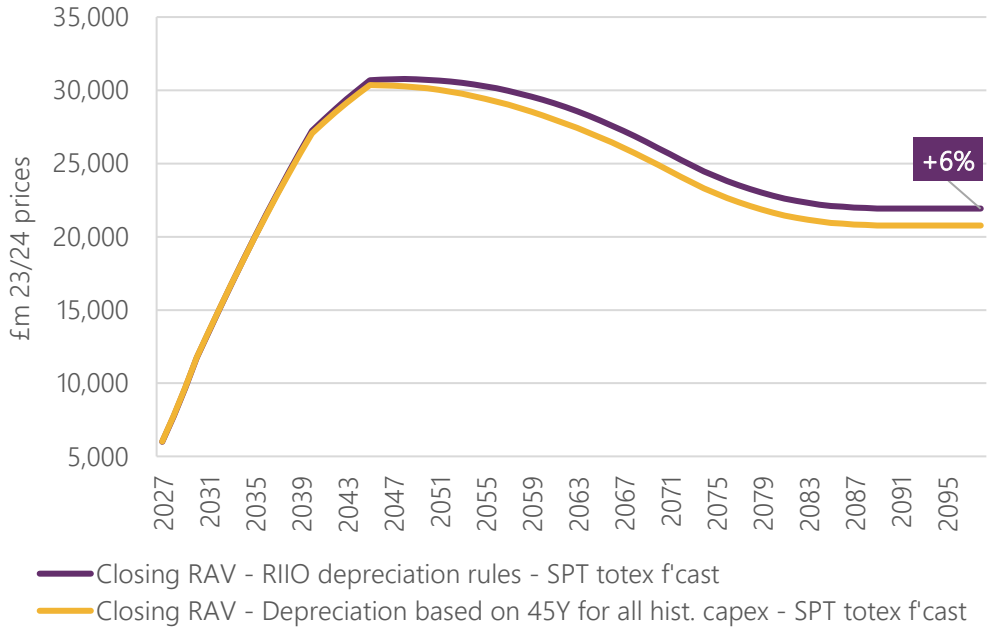
Overview of impact on RAV, allowed revenues and financeability of the depreciation under-recovery if the RIIO depreciation policy continues unchanged in T3 and beyond

- In the previous section, we explained that SPT under-recovers depreciation by £1.2-1.4bn (23/24 prices) over T3 until the 2060s under the RIIO depreciation policy. This is a material "depreciation gap", when compared to e.g. SPT's projected T2 closing RAV of £4.4bn (23/24 prices).
- In this section, we explain that if this "depreciation gap" is not addressed and the RIIO depreciation policy continues in T3 and beyond, then:
  - Depreciation under-recovery translates 1:1 into a permanent increase in RAV over time. This permanently increases the allowed return element of allowed revenues over time.
  - Current customers receive a "discount" on network charges while the depreciation under-recovery outweighs the increase in allowed returns. But future customers pay the cost of this discount, as the depreciation under-recovery amount remains embedded in the RAV forever.
  - Credit ratios (FFO-based) suffer in the short term due to the drop in depreciation which reduces cash flows. Ratios remain weaker forever as a result of the permanent increase in RAV.
- This creates issues with i) inter-generational equity (future customers bear the cost of current service provision), ii) financeability (ratios are weaker in both the short and long term), and iii) long-term affordability (bills are higher in the long run which puts further pressure on affordability in the context of energy transition).
- In the following slides, we quantify the impact on RAV, allowed revenues, and ratios of continuing the current RIIO depreciation policy versus what RAV, allowed revenues and ratios would be if the "depreciation gap" was closed and customers paid full economic depreciation from T3 onwards.
  - To illustrate the effects, we use the proxy of economic depreciation which applies a straight line 45-year asset life to all historical capex. This matches Ofgem's RIIO assumptions on asset life and speed of recovery, although we note that the true economic depreciation is uncertain.
  - As this benchmark provides the lowest estimate of depreciation under-recovery (i.e., £1.2bn), the magnitude of the illustrative impacts is likely conservative – i.e. the other benchmarks would result in more adverse impacts on RAV, revenues, and ratios.

If RIIO depreciation policy is unchanged, the depreciation under-recovery will translate directly into a permanent increase in RAV and allowed returns over time, relative to scenario where economic depreciation is applied in T3+. Current customers receive a "discount", but future customers pay the cost.

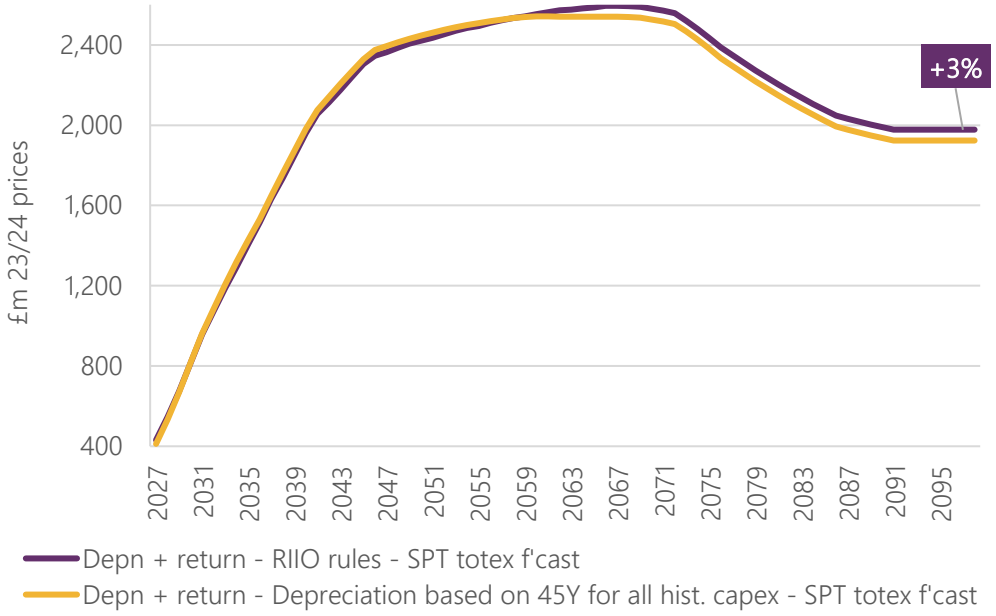
If current RIIO depreciation policy continues, the depreciation under-recovery translates 1:1 into a permanent increase in RAV* and a higher allowed return over time as a result

- Even after depreciation under RIIO rules fully builds up in the 2060s under the 45-year rule (see slide 13), the stock of historical under-recovery that has accumulated up until then – i.e., £1.2bn under benchmark 2 - will remain permanently embedded in the RAV.
  - The long-run RAV is thus elevated by 6%, as shown below for "base" totex (4% under "high" totex and 8% under "low" totex)



Under RIIO depreciation rules, at first customers pay lower charges due to "depreciation holiday", but from 2050s the higher RAV and return element dominates and charges are permanently elevated

- Given RAV remains higher forever by the amount of accumulated depreciation under-recovery, network charges remain higher forever compared to charges based on economic depreciation.
  - Depreciation + return is 3% higher in long-run, as shown below for "base" totex (2% under "high" totex and 4% under "low" totex)

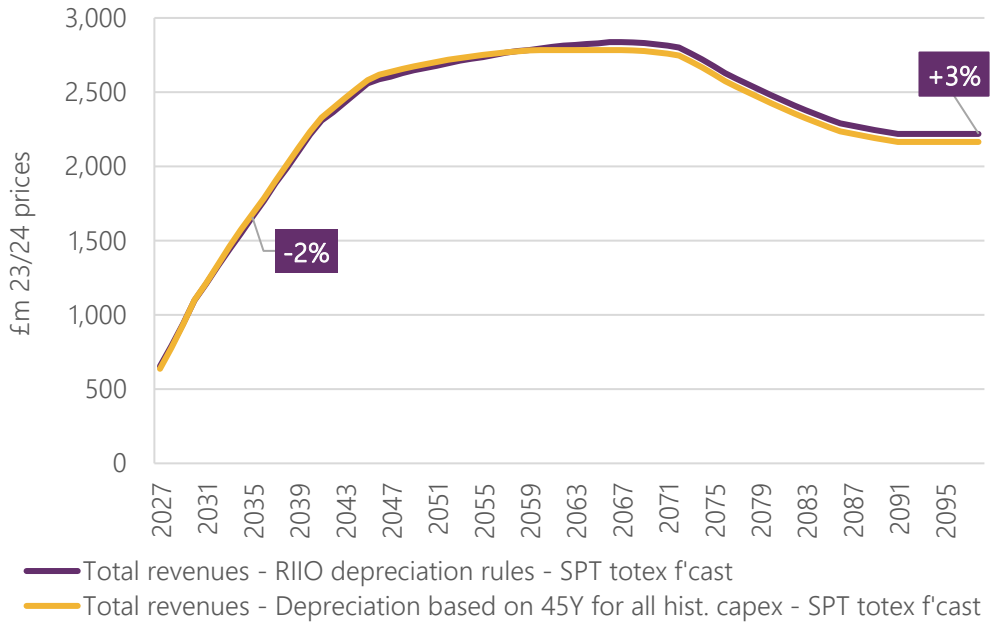


Notes: *On slide 12, we show that the RIIO depreciation lies below the economic depreciation charge, as proxied by 45-year asset life, from RIIO-T3 to late 2060s– i.e. the depreciation holiday. The respective depreciation charges are subtracted from opening RIIO-T3 RAV, and therefore mathematically the RAV under RIIO rules remains higher by the amount of the depreciation holiday (as per Figure above).

Under RIIO depreciation rules, current customers receive a “discount” on their charges, with future customers paying for this discount in the form of permanently higher charges.

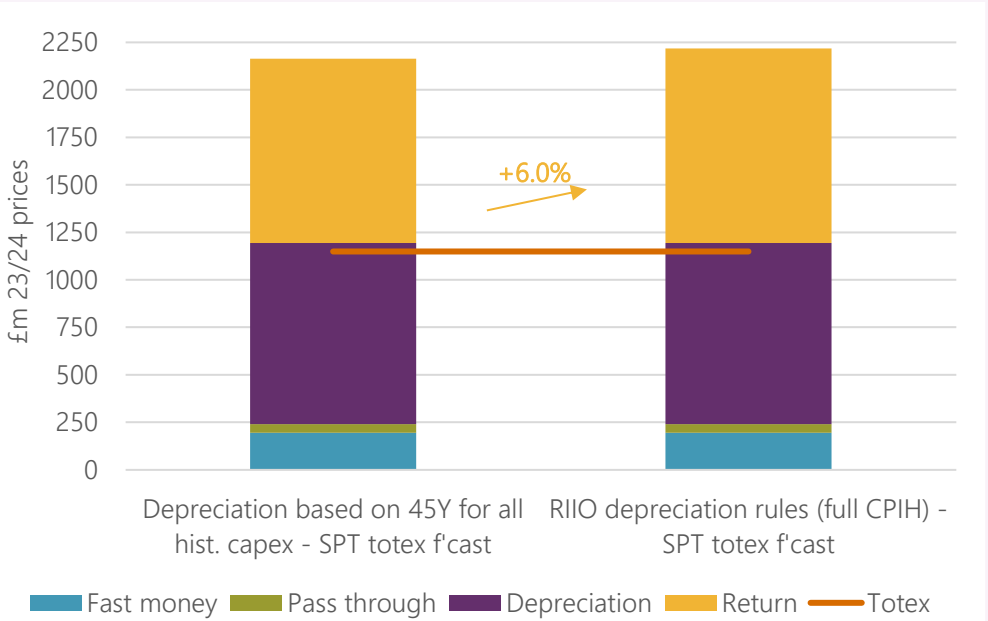
Under RIIO depreciation rules, allowed revenues are initially lower but permanently increase in long-run compared to scenario where economic depreciation is applied in RIIO-T3+

- Allowed revenues are 2% lower in 2035, but increased by 3% in the long-run compared to scenario where economic depreciation is applied (under “base” totex)



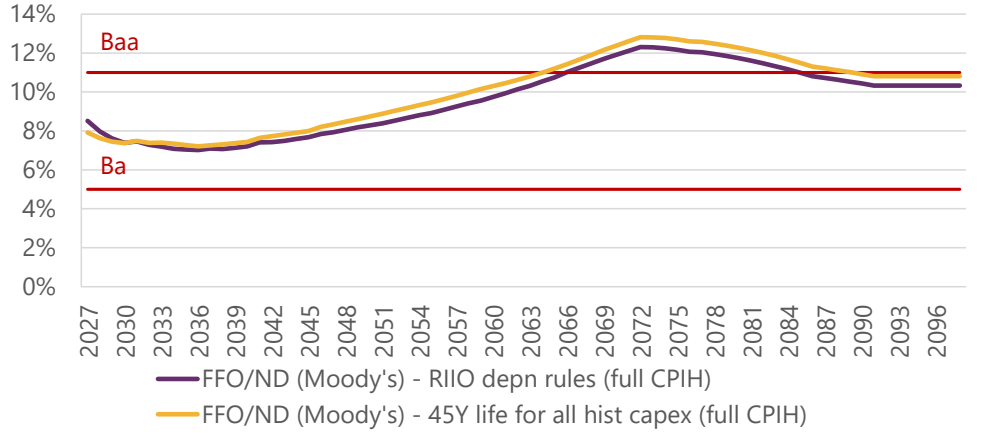
Higher long-term charges under RIIO depreciation policy are driven by an increased return element due to a permanent increase in RAV

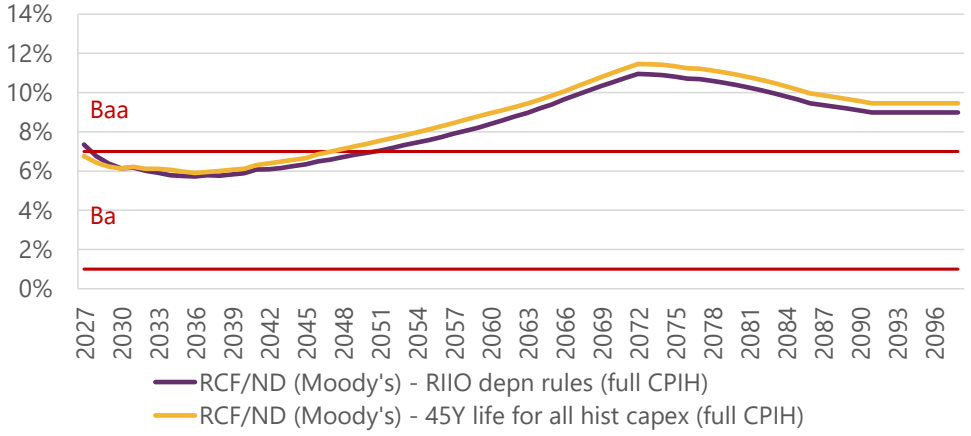
- In the long-term (2098) return is 6% higher relative to scenario where economic depreciation is applied in RIIO-T3+ (under “base” totex)
  - As shown, long-term (2098) revenues are substantially higher than totex, primarily due to the return element. The increasing importance of the return element may exacerbate issues of political acceptability of charges increases.



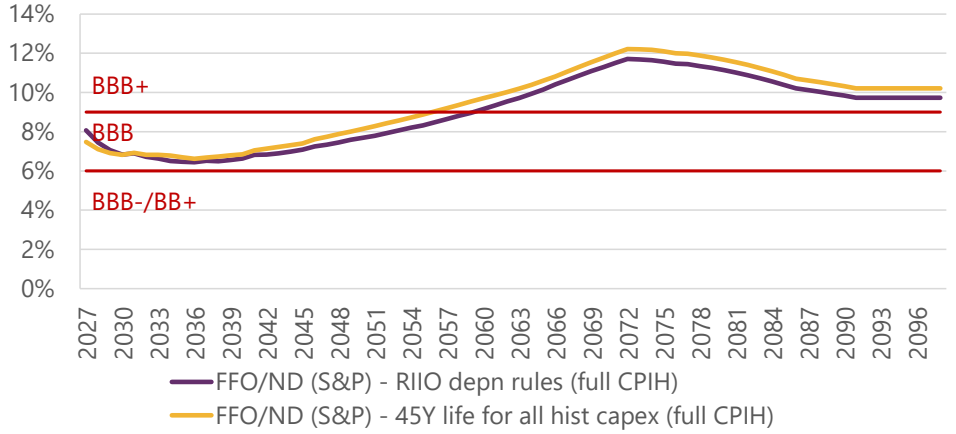
Under RIIO depreciation rules, financeability is negatively impacted by the "depreciation holiday", with FFO-based ratios falling by up to 54bps during "depreciation holiday" period and by 44bps in the long run under "central" totex scenario, relative to scenario where economic depreciation is applied in T3+.

Under RIIO rules, Moody's FFO/debt and RCF/debt weaken by up to 54bps during the "depreciation holiday", and by 44bps in the long-run, relative to scenario where economic depreciation applied*





S&P's key ratio FFO/debt also decreases by up to 54bps during "depreciation holiday" period and by 44bps in long run, compared to scenario where economic depreciation applied in T3+ *



- We focus on the incremental impact of "depreciation holiday" on ratios, rather than absolute levels, which depend on other regulatory assumptions which are not yet known (e.g. allowed return).
- Ratios deteriorate during "depreciation holiday" period as a result of loss of cash-flows from lower depreciation allowance under RIIO rules. Ratios remain depressed even after depreciation fully builds up under the 45-year rule, due to the increase in RAV. Higher RAV leads to a lower depreciation/RAV ratio which in turn depresses FFO/net debt, given FFO broadly calculated as depreciation plus equity return.
- Two of Moody's credit ratios affected (FFO/debt and RCF/debt, 17.5% combined weight in overall rating), while the remaining two (AICR and gearing, 22.5% combined weight) unaffected. S&P's key ratio FFO/debt affected.**

Notes: * In "High" ("Low") totex scenario, ratios weaken by up to 70bps (44bps) during "depreciation holiday" and 60bps (34bps) in long-run. ** Moody's thresholds shown in figures refer to FFO/debt and RCF/debt sub-factors, which Moody's combines with ratings for other sub-factors (i.e., other ratios and qualitative factors) to conclude on an overall scorecard implied credit rating.

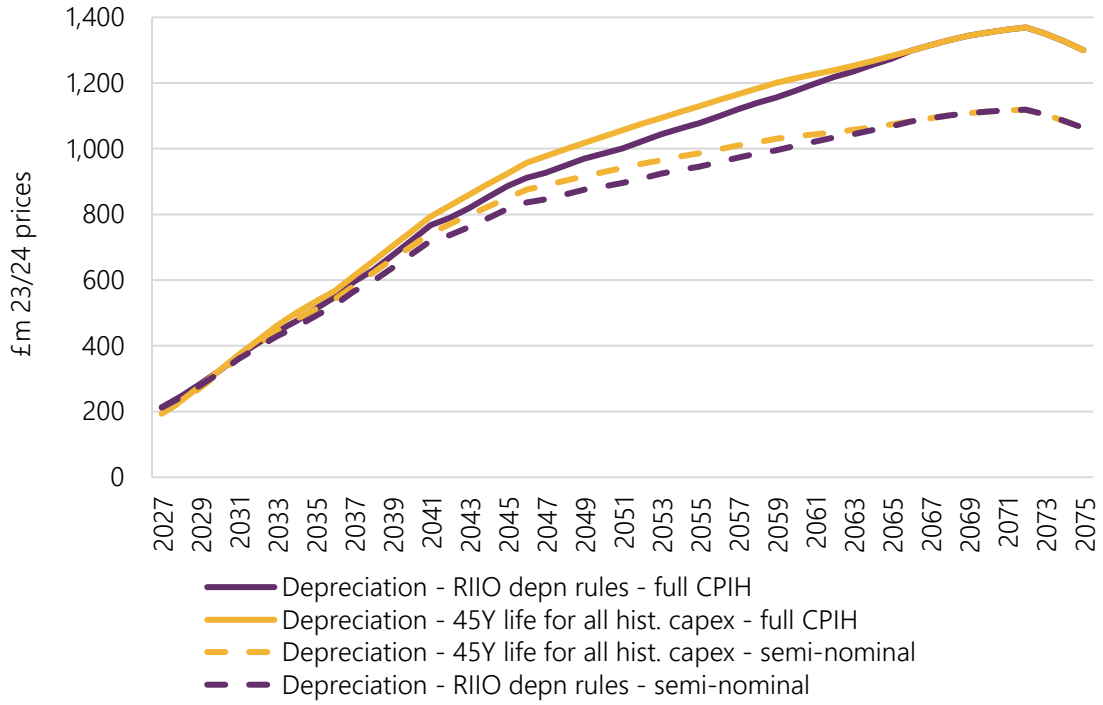
Using Green Book methodology, we estimate a real cost to SPT's customers of £0.3-0.4bn from the deferral of depreciation under RIIO policy

- The RIIO depreciation rules involve a deferral of depreciation or "depreciation holiday" of £1.2bn based on benchmark 2, which leads to a permanently higher RAV over time, and higher customer charges given the higher WACC*RAV return component of charges (see slide 19).
- Not only does the RIIO depreciation policy result in higher charges to future customers, the policy also results in a real cost to customers, following the Green Book guidance published by HMT for the appraisal of public policy on social or customer welfare.[1]
- The Green Book requires the use of a social time preference rate (STPR) of 3.5% to be used in all public sector appraisals (declining to 3.0% after 30 years and 2.5% after 75 years). The guidance explains that the use of STPR contrasts with the private sector discount rate, typically based on the weighted average cost of capital (WACC), which incorporates allowances for the cost of raising capital and compensation for risk.[2] For example, in our modelling we have assumed a WACC of 4.27% real CPIH, based on Ofgem's SSMD for T3.
- The lower STPR means that customers prefer to pay depreciation charges today rather than deferring them into the future via a higher RAV, at the cost of WACC*RAV return.
- We have calculated the cost of RIIO depreciation relative to our three benchmarks. Drawing on these counterfactuals, we estimate that the RIIO depreciation rules impose PV costs of £0.3bn to SPT's customers when compared to benchmark 2 and 3, and £0.4bn when compared to benchmark 1 (all expressed in 23/24 prices).

Sources:
1. HMT (2022) The Green Book.
2. HMT (2022) The Green Book, para A6.2.

Introduction of semi-nominal indexation at T3+ would not resolve the depreciation under-recovery caused by the change in asset lives introduced at RIIO-1. A sizeable depreciation gap remains (£1.0bn to £1.5bn in 23/24 prices).

Applying semi-nominal to both depreciation under current RIIO rules and under 45-year economic benchmark (benchmark 2), a sizeable gap of £1.0bn remains



- Partial indexation under semi-nominal would lead to lower depreciation charges compared to full CPIH indexation, as a result of the lower indexation of the RAV.
- This would affect both the depreciation under RIIO rules as well as the economic benchmark depreciation which both shift downwards under semi-nominal indexation (as illustrated by dashed purple and yellow lines on the LHS).
- Due to the shift in both depreciation lines, the resulting depreciation gap becomes:[1)]
  - £1.0bn (in 23/24 prices) using benchmark 2; and
  - £1.5bn (in 23/24 prices) using benchmark 1.[2)]
- Semi-nominal indexation therefore does not resolve the depreciation gap and other enduring solutions would be needed

Notes: 1) We do not estimate under-recovery under Benchmark 3 which compares depreciation under RIIO-1 rules to capex when held constant at ED1 levels, Under semi-nominal indexation this comparison would involve comparing fully CPIH-indexed capex to semi-nominally indexed depreciation, which would be inconsistent. We therefore consider only benchmark 1 and benchmark 2 under semi-nominal indexation. 2) There is a slight increase in the gap under benchmark 1 since under semi-nominal indexation, future depreciation is only partly indexed so that delaying depreciation recovery reduces its real value. The 20-year asset life brings forward more depreciation in earlier years, when it holds more real value, meaning that the size of the cumulative depreciation gap increases in real terms under semi-nominal (i.e., the shorter asset life for benchmark 1 results in less "erosion" do depreciation from partial indexation). For the same reason, benchmark 1 exceeds depreciation under current RIIO-1 rules in perpetuity, so that they do not converge in steady state. For benchmark 1 we therefore calculate under-recovery up to 2068 (when Bmk2 and current policy converge).

Conclusion: Continuing with RIIO depreciation rules at T3+ has negative implications for intergenerational equity, financeability and LT affordability.

- Our calculations show that if current RIIO depreciation policy continues unchanged at T3, the associated "depreciation holiday" gap of £1.2bn (23/24 prices) estimated using benchmark 2 will lead to issues with:
  - Intergenerational equity: Current customers receive a "discount" on network charges due to "depreciation holiday", but future customers (from around 2050) pay higher charges forever as a result of the associated increase in RAV and allowed return, relative to scenario where economic depreciation is applied in T3+. The increase in charges under RIIO depreciation rules after 2050 – and the increasing importance of the return element in charges – may exacerbate issues of political acceptability.
  - LT affordability of charges: We calculate that total revenues increase by 3% in the long-run if RIIO depreciation rules remain in place, compared to the scenario where economic depreciation is applied in T3+. The "depreciation holiday" therefore further accentuates LT bill affordability pressures from energy transition.
  - Financeability: FFO-based ratios (Moody's FFO/debt and RCF/debt and S&P FFO/debt) deteriorate by up to 54bps during the "depreciation holiday" period, and by 44bps in the long run under the RIIO depreciation policy, relative to scenario where economic depreciation is applied in T3+. The pressure on financeability during the "depreciation holiday" period exacerbates any pressures on financeability from energy transition.
- Using Green Book's social time preference rate (STPR) as the discount rate, customers prefer to pay depreciation charges today rather than deferring them into the future via a higher RAV, at the cost of WACC*RAV return. We estimate a real cost to SPT's customers of £0.3-0.4bn (PV, 23/24 prices) from the deferral of depreciation under the current RIIO policy.
- The above illustrations of impacts of continuing the RIIO depreciation policy is based on the proxy of economic depreciation which applies a straight line 45-year asset life to all historical capex (benchmark 2), which shows a lower depreciation under-recovery compared to benchmark 1 and 3 (i.e., £1.2bn compared to £1.4bn under benchmark 1 and 3). Accordingly, the other benchmarks would result in more adverse impacts on RAV, revenues, and ratios than reported above.
- The introduction of semi-nominal indexation would not resolve the depreciation under-recovery caused by the change in asset lives introduced at RIIO-1 and a sizeable depreciation gap remains (£1.0bn to £1.5bn in 23/24 prices).
  - Other policy solutions would be needed (e.g. shortening regulatory asset lives, introducing sum-of-year digits approach etc.)
- In its RIIO-T3 Draft Determinations, Ofgem proposed to reduce the capitalisation rate for bucket 2 totex from a natural average rate of close to 100 per cent to 85 per cent to support financeability in RIIO-T3. We assess the impact of Ofgem's proposed cap rate adjustment on the depreciation under-recovery issue and long-term financeability in a separate report (NERA report "Long-term implications of Ofgem's T3 DD capitalisation rate adjustment proposal")

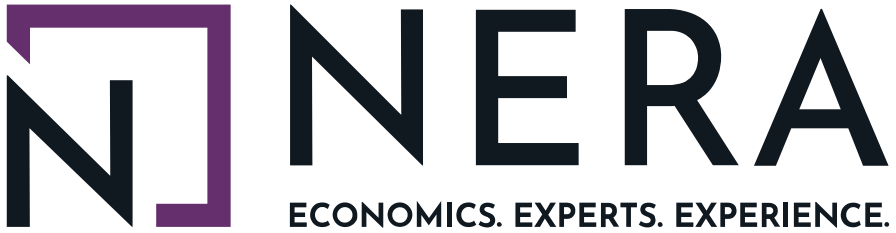
QUALIFICATIONS, ASSUMPTIONS, AND LIMITING CONDITIONS

This report is for the exclusive use of the NERA client named herein. This report is not intended for general circulation or publication, nor is it to be reproduced, quoted, or distributed for any purpose without the prior written permission of NERA. There are no third-party beneficiaries with respect to this report, and NERA does not accept any liability to any third party.

Information furnished by others, upon which all or portions of this report are based, is believed to be reliable but has not been independently verified, unless otherwise expressly indicated. Public information and industry and statistical data are from sources we deem to be reliable; however, we make no representation as to the accuracy or completeness of such information. The findings contained in this report may contain predictions based on current data and historical trends. Any such predictions are subject to inherent risks and uncertainties. NERA accepts no responsibility for actual results or future events.

The opinions expressed in this report are valid only for the purpose stated herein and as of the date of this report. No obligation is assumed to revise this report to reflect changes, events, or conditions, which occur subsequent to the date hereof.

All decisions in connection with the implementation or use of advice or recommendations contained in this report are the sole responsibility of the client. This report does not represent investment advice nor does it provide an opinion regarding the fairness of any transaction to any and all parties. In addition, this report does not represent legal, medical, accounting, safety, or other specialized advice. For any such advice, NERA recommends seeking and obtaining advice from a qualified professional.


NERA
ECONOMICS. EXPERTS. EXPERIENCE.