# How will SP ENERGY NETWORK'S RIIO-T3 INVESTMENT PLANS impact the wider UK economy?

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## 1 INTRODUCTION

In December 2024, all GB electricity transmission network owners (TOs) submitted business plans to the regulator, Ofgem, for the RIIO-T3 period, which will run from April 2026 through to March 2031. A new element of this process, driven **by the new statutory 'growth duty' put on Ofgem by the UK Government in May 2024**[i], is for transmission network owners to understand and explain how investment plans may enable sustainable economic growth processes.

This policy brief summarises the findings of a research project at the Centre for Energy Policy (CEP) exploring how the RIIO-T3 investment plans of SP Energy Networks are likely to impact the trajectory of UK GDP and employment. The research has been funded by SP Energy Networks, but conducted entirely independently, using our peer reviewed multi-sector economic-wide scenario simulation model, UKENVI.

**We focus on the £8.8 billion of the planned spending that involves network expansion over the 5 years from 2026 to 2031**[ii] and consider how this may respond to rising electricity use as projected in **the National Energy Systems Operator's 'Leading the Way' Future Energy Scenario**[iii]. Our scenario design and simulation approach incorporate both the need to recover investment costs through user bills (largely over an assumed 45-year lifetime of assets created) and the presence of persisting supply constraints in the UK labour market.

**Our headline result is that SP Energy Networks' proposed investment activity would trigger sustained net expansionary processes across the economy, both in terms of the enabling activity itself and the net impact on energy bills. Net GDP and employment uplifts of up to 2 billion per annum and 11,500 jobs, and small net gains in real income and spending by UK households (averaging at £60 per annum), are sustained into the long-term.**

**These benefits are larger in all timeframes than would be the case if investment is reactionary to changing electricity demand. Our results show that sustained GDP and employment gains would be reduced, by around £500 million per annum and 3,100 jobs, if SP Energy Networks only invested after demand fully transpires. We also find that gains could generally be greater if worker and skills shortages in the UK labour market are overcome.**

### The UKENVI model

UKENVI is a multi-sector economy-wide computable general equilibrium (CGE) model, used to simulate how the UK economy adjusts to different scenarios around changes in industry activity and/or policy. UKENVI has been extensively peer-reviewed, both in its development and in applications across the wider energy policy and net zero policy space. This includes several papers involving simulation of the likely dynamic economy-wide impacts of electricity network upgrades or expansion[iv]. The analyses reported here[v] is also the subject of a submission to a new peer-reviewed scientific journal.

## 2 KEY FINDINGS

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**1** **The RIIO-T3 investment plan of SP Energy Networks would drive and sustain wider social and economic benefits in the near- and long-term. In 2030 there is a net GDP uplift of just over £1 billion, associated with a net gain of 7,447 jobs. Over the long-term the uplift in the trajectory of UK GDP is £2 billion per annum with net employment gains of 11,459. Moreover, the expansion results in some real income and spending gains for UK households, averaging at £60 per household per year.**

See **Table 1** and the green trendlines reflecting our central case scenario in **Figure 1**[vi] (page 4). We also ran scenarios where investment costs are recovered more quickly, within 35 rather than 45 years. This marginally erodes the 2030 results in **Table 1**, but slightly accelerates the adjustment to the long run outcomes shown for the 45-year case in **Figure 1**[vii].

**TABLE 1**

**Key economy-wide impacts of SP Energy Networks RIIO-T3 investment plans**

| **Net economy-wide gains** | 2030 | Long term |
|---|---|---|
| **GDP** (real impacts in 2023 prices) | 1.04 billion | 2.00 billion |
| **Jobs** (full-time equivalents) | 7,447 | 11,459 |
| **Average annual real household income gain** | £46.78 | £60.21 |
| **Consumer price index** (CPI) | 0.09% | 0.06% |

In terms of the impacts on consumers, while the recovery of investment costs (socialised across all UK users in the case of transmission system investment) adds to electricity bills, investing early in capacity to meet increased future demand eases this pressure. The main implication is that **small but important net reductions in energy bills are made possible** (0.12% on average from the end of the RIIO-T3 investment period in 2031 and further increasing once the cost recovery is concluded).

This, combined with the boost to employment and other forms of income generation delivered by the wider economic expansion is sufficient to support **a small boost to real household incomes, averaging at just under £47 per UK household in 2030 and rising to just over £60 in the longer term** (all £ values reported in 2023 prices).

These *real* terms gains are delivered despite some sustained pressure on the consumer price index (CPI) as the economy expands in the presence of labour and other constraints. Here, the net impact is not a regressive one, indeed becoming slightly progressive over time, as electricity bills (accounting for a larger share of spending in lower income households) fall slightly. **In the long run, the CPI of the lowest two income quintiles increases by 0.05%, less than the average CPI impact of 0.06%.**

KEY FINDING

**2** **Analysis supports the need for investment, where no expansion of network capacity to meet demand will worsen outcomes for customers shrinking the economy and reducing jobs. It also supports the timing of investment earlier rather than later, with economic benefits significantly increased where investment is delivered at pace as opposed to reactionary investment.**

TABLE 2

**Comparative economy-wide impacts of alternative SP Energy Networks investment scenarios**

| Net economy-wide gains | Scenario | 2030 | Long term |
|---|---|---|---|
| GDP | **Planned investment** (central case) | 1.04 billion | 2.00 billion |
| | **Reactionary investment** | **0.12 billion** | **1.55 billion** |
| | **No network expansion** | **-0.34 billion** | **-1.08 billion** |
| **Jobs** (full-time equivalents) | **Planned investment** (central case) | 7,447 | 11,459 |
| | **Reactionary investment** | **-122** | **8,357** |
| | **No network expansion** | **-5,121** | **-9,951** |
| **Average annual real household income gain** | **Planned investment** (central case) | £46.78 | £60.21 |
| | **Reactionary investment** | **£17.06** | **£49.15** |
| | **No network expansion** | **-£6.70** | **-£15.68** |
| CPI | **Planned investment** (central case) | 0.09% | 0.06% |
| | **Reactionary investment** | **0.10%** | **0.07%** |
| | **No network expansion** | **0.09%** | **0.14%** |

*"Not investing in electricity network expansion* ***would worsen outcomes for customers,*** *causing a contraction in consumer and business activity* ***that would shrink the economy and reduce jobs****"*

We ran two additional scenario simulations to consider how the outcomes reported above would change if a TO like SP Energy Networks did not invest ahead of time. See **Table 2** (which replicates the central case from **Table 1**). In one extreme case, labelled 'No network expansion', we considered **what would happen if electricity demand were to grow as projected under the FES 'Leading the Way' scenario but there is no investment in network expansion**.

Leaving aside any technical barriers to such a scenario, the main finding is that **not investing in electricity network expansion would worsen outcomes for customers, causing a contraction in consumer and business activity that would shrink the economy and reduce jobs**. As early as 2030, GDP would contract by £0.34 billion and over 5,000 jobs would be lost across the economy. We also estimate that average electricity bills would rise by 1.5%. In the long term the UK economy would shift onto a trajectory where GDP is reduced by £1.1 billion per annum and almost 10,000 jobs are lost. The average UK household would lose just under £16 of real income, though the impact for households suffering employment loss would be substantially greater.

While the recovery of investment costs adds to the bills of all users, investing ahead of projected rises in electricity demand (as in our 'planned investment' central case) will, at least initially, create network capacity that is not fully utilised. This will introduce offsetting downward pressure on electricity bills.

In our scenario simulations, where electricity bills adjust with market forces, investing ahead of projected rising demand leads to a **small (0.12%) net decrease in average electricity bills from the end of the RIIO-T3 investment activity in 2031. This further stimulates electricity demand and frees up business and household resources for other types of spending**. These drivers combine to support the sustained net expansion in response to network investment and delivers the GDP and employment outcomes shown in the central case scenario in **Tables 1** and **2** and in **Figure 1's** green trendline.

Of course, there may be concerns about the value of investing *ahead* of projected demand transpiring. However, **our analysis shows that the wider economic outcomes are improved where electricity network capacity is created before rather than after it is required.** See the dark blue trendlines in **Figure 1** where we investigated an albeit technically challenging scenario (given that network expansion cannot really be made via incremental changes) which we label as a 'reactionary investment' scenario. Here, we let the FES 'Leading the Way' scenario do just that in terms of TOs investing only *after* changes in electricity demand transpire.

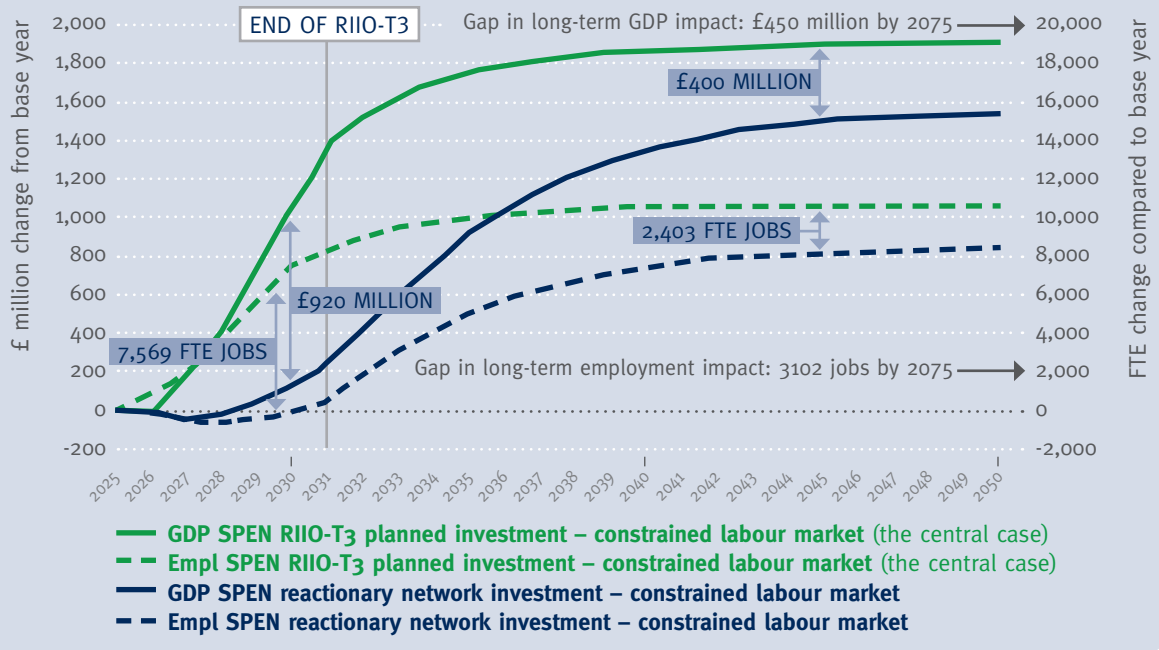
> *"**The wider economic outcomes are improved** where electricity network capacity is created before rather than after it is required"*

The results in **Figure 1** show that if investment were made entirely in reaction to electricity demand, the pathway of UK GDP uplift would be qualitatively similar to that where SP Energy Networks invests ahead of demand, though potentially with some net job losses in initial timeframes, due to the delay in investment activity. However, **the economic expansion associated with reactionary investment follows a lower trajectory compared to investing ahead of time.**

Here, **Figure 1** shows that **taking a reactionary approach to investing in electricity network capacity would shift the GDP trajectory down by approximately £920 million per annum in 2030 (supporting 7,569 fewer jobs across the economy) narrowing to around £450 million in the long run (supporting 3,102 fewer jobs)**.

**FIGURE 1**

**Comparison of UK GDP and employment trajectories for central case scenario (SPEN RIIO-T3 investment plans) vs entirely reactionary investment**
(both assuming a constrained labour market – all £ values in 2023 prices)



Thus, the wedges between the GDP and employment trendlines for planned and reactionary investment in **Figure 1** could be translated as the societal value of investing ahead of time. This is largely driven by what happens to energy bills.

Here, **a crucial impact of reactionary mode network investment is that for over 20 years the demand for electricity exceeds supply, which will put upward pressure on the energy bills of all users.** This is because, even in 'reactionary mode', TOs cannot adjust capacity instantly or even within the same year, with the implication that **the role of the electricity bill driver of wider economic outcomes flips from enhancing to constraining GDP and employment trajectories.**

Moreover, the outcome for households becomes less progressive under reactionary investment, with slightly more upward pressure on the CPI, overall and in the lowest two household income quintiles, relative to the central 'planned investment' case. For the lowest income households, more costly electricity constitutes a larger share of total spending, with the implication that the CPI increase for the lowest two income quintiles under 'reactionary investment' approaches the averages (0.1% in 2030 and 0.07% in the long run) shown in **Table 2**.

Thus, **a key conclusion of our analysis is that better and more progressive outcomes for consumers and the wider economy will be delivered by TOs like SP Energy Networks investing earlier rather than later in new capacity.**

**BOX 1**

### What if all UK TOs made similar investment plans?

**We also ran scenarios** extending our central case (planned investment and constrained labour market) analysis to the full transmission network. In the absence of information on the business plans of the other TOs, for illustrative purposes we have assumed that SSEN and NGET scale their networks in a similar manner to SP Energy Networks.

Our results suggest that **in 2030, a per annum GDP gain of £5.7 billion and 37,785 net jobs gains could be realised. In the long-term, the sustained GDP uplift grows to just under £11.1 billion per annum, associated with net employment gains of more than 61,200.** These greater economy-wide gains enable a larger uplift in the average UK household income. See **Table 3**. However, these net gains are associated with significant displacement of employment, production and investment activity across other sectors, as reflected in the substantially higher CPI increases in **Table 3** compared to the SP Energy Networks only case in **Table 1**.

**TABLE 3**

### Key economy-wide impacts of all UK TO RIIO-T3 investment plans

| **Net economy-wide gains** | 2030 | Long term |
|---|---|---|
| **GDP** (real impacts in 2023 prices) | 5.65 billion | 11.05 billion |
| **Jobs** (full-time equivalents) | 37,785 | 61,210 |
| **Average annual real household income gain** | £246.69 | £337.45 |
| **Consumer price index** (CPI) | 0.55% | 0.37% |

KEY FINDING

**3** **The GDP and employment uplifts associated with RIIO-T3 network investment could be maximised further where broader supply chain and labour market constraints are reduced.**

The net UK-wide employment outcomes for our central case (SP Energy Networks' investment plans only) in **Table 1** and **Figure 1** involve gains concentrated in the construction sector and the electricity industry itself. There is **some displacement of employment particularly in more labour-intensive sectors of the economy (e.g., wholesale and retail activity) due to wage cost driven price pressures where the UK labour market is characterised by worker and skills shortages.**

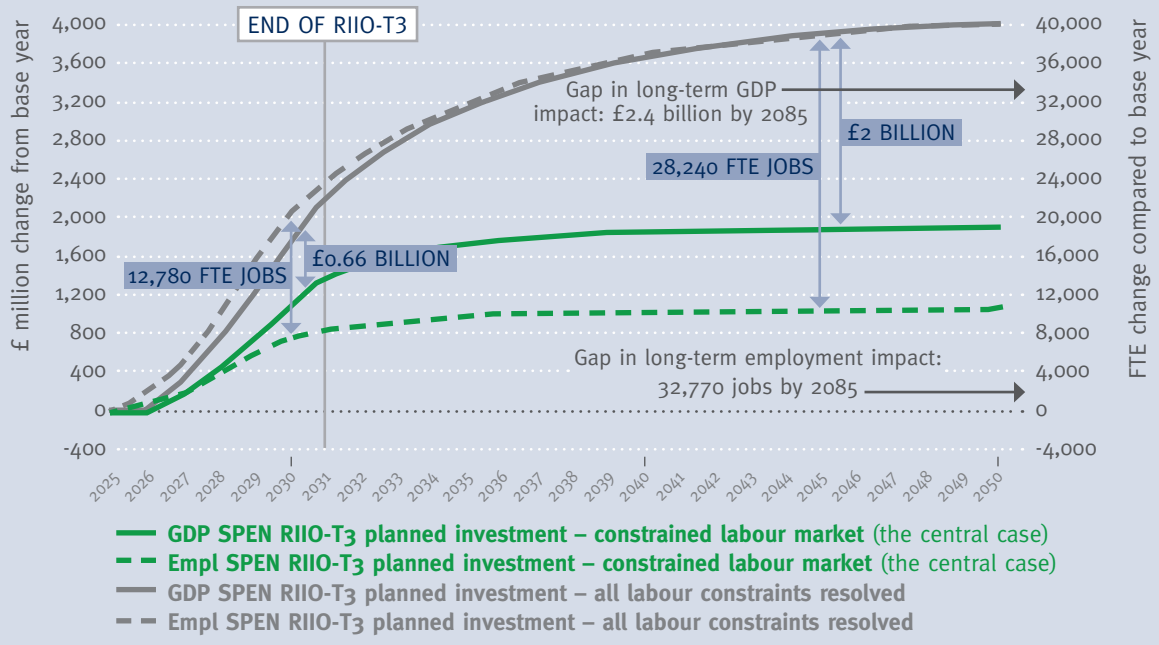
The central case results above reflect how this combines with some upward pressure on investment costs, due to the increased requirements on construction activity, to feed through to an increase in the CPI (peaking at almost 0.09% in 2030, settling at 0.06% from the late 2030s) and some displacement of UK export production (maximised at -£1.24 billion in 2030).

**If the UK's worker and skills shortages were fully resolved, the net GDP per annum and employment gains under 'planned investment' would increase by almost £0.7billion (to £1.7 billion) and 12,780 (to 22,230) in 2030, and ultimately by £2.4 billion (to £4.4 billion) and 32,770 (to 44,230) over the long-term.**

The key point is that over the long term, cost-price pressures are almost (but not entirely) eliminated if worker and skills shortages are resolved. See the grey trendlines in **Figure 2**, where employment also grows faster relative to GDP in the absence of wage cost pressure. This latter (fully unconstrained) outcome is unlikely given the clear evidence of persisting skill and worker shortages in the UK and the likelihood that these can never be entirely resolved. Another key economic condition affecting all the outcomes reported here is

FIGURE 2

**UK GDP and employment trajectories due to SP Energy Networks RIIO-T3 investment on transmission network, with and without labour market constraints** (all £ values in 2023 prices)



the fact that electricity network investment introduces additional demand for the very busy UK construction sector. This has implications for the costs of investment across the economy, which will add to the displacement pressures that constrain the level of net economic benefits that can be delivered. The impact of both these factors **emphasises the need for policy leadership in both alleviating supply constraints and coordinating across the range of investment actions – not limited to electricity network expansion – that need to be taken if net zero commitments are to be delivered upon.**

## 3 CONCLUSIONS

Our analysis demonstrates that by supporting increased construction and electricity industry to enable electricity demand to grow as projected, **the RIIO-T3 investment plans of SP Energy Networks *would* enable sustainable economic growth processes, as required under Ofgem's new statutory 'growth duty'**. Moreover, the **pre-emptive investment planned will ease the burden on all users** both by easing electricity bill pressures and supporting earlier and greater wider economic expansion and job creation than would be possible with reactionary investment. However, **the magnitude of gains depends crucially on the extent to which current constraints (on worker and skills availability) in the UK labour market persist over time.**

### Endnotes/References


i See https://www.gov.uk/government/publications/growth-duty
ii At the time of writing, SP Energy Networks have not yet published their RIIO-T3 Business Plan. Please see https://www.spenergynetworks.co.uk/pages/riio_t3_business_plan.aspx for updates
iii Here we used the 2023 NESO scenario data at: https://www.neso.energy/document/283061/download
iv For example: Katris et al. (2024), studying the UK's projected heat pump deployment, in Energy Strategy Reviews at https://doi.org/10.1016/j.esr.2024.101518; Alabi et al. (2022), studying the UK's https://doi.org/10.1016/j.eneco.2022.106001
v A fuller set of results, an overview of our methodology and detail on the scenario development are provided in an Appendix to this brief, available to download at: https://doi.org/10.17868/strath.00091529
vi Note that in all scenarios considered here, the sustained wider economic expansion delivered is a result of network expansion to support projected higher electricity demand (informed by the FES 'Leading the Way' scenario) during this price control period only. That is, our estimates do not take account of required future investment beyond the RIIO-T3 period, which could enable further expansion, depending on the extent to which labour supply constraints persist
vii See the full set of scenario simulation results reported in the Appendix document (link provided in endnote v)


## About the Centre for Energy Policy

Established in 2014 and based at the University of Strathclyde, the Centre for Energy Policy (CEP) works with government, industry and other partners to understand and address the pressing public policy challenge of ensuring transitions to net zero deliver sustainable and more equitable prosperity. Over the last decade, CEP's research has helped shape UK and Scottish Government policy across the areas of industrial decarbonisation, energy efficiency, low carbon heating and transport and energy infrastructure.

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