

**Interpreting the Competition Commission's Cost of Capital for NIE
Prepared for UK Power Networks****2 January 2014****1. Introduction**

This paper provides First Economics' commentary on the read across between the Competition Commission's (CC's) provisional findings in the Northern Ireland Electricity (NIE) price control inquiry and the RIIO-ED1 cost of capital.

It is structured into three main parts as follows:

- section 2 gives a factual summary of the positions taken by the electricity DNOs in their RIIO-ED1 business plans and by the CC in its provisional findings document;
- section 3 gives our take on the implications of the CC's analysis for RIIO-ED1 allowed returns; and
- section 4 concludes.

2. Assumptions

The electricity DNOs and the CC have all given detailed consideration to gearing, the cost of debt and the cost of equity for an electricity network during recent months, with the DNOs publishing their RIIO-ED1 business plans in July 2013 and the CC publishing its provisional views in the NIE inquiry approximately four months later in November 2013.

The key findings within this body of work are set out below.

2.1 Gearing

The DNOs' business plans all contained a gearing ratio of 65%. This is a notional debt-to-equity ratio – i.e. it does not exactly match any individual DNO's actual gearing – which tallies with the notional gearing assumption that Ofgem used in its December 2009 DPCR5 price control decision.

The CC's provisional findings for NIE allowed for a gearing ratio of 50%, in line with NIE's actual gearing in 2013/14.

2.2 Cost of debt

The DNOs provided for an indexed cost of debt which will adjust annually in line with a pre-determined formula. The calculation is:

the simple average of the reported yields on the iBoxx non-financials 10+ maturity A corporate bond series and the iBoxx non-financials 10+ maturity BBB corporate bond series over the preceding ten years

less

expected inflation, measured as the difference between the yields on conventional 10-year gilts and index-linked 10-year gilts, over the preceding ten years

The value of this index at 31 October 2013 was 2.72%, down from 2.92% at 31 October 2012. The expectation is that the index will continue to fall in the coming years as the relatively high

costs of debt from the 2003-09 period drop out of the index and are replaced by the relatively low cost of debt that is seen in financial markets currently. Most DNOs forecast in their plans that the allowed cost of debt would fall below 2.5% at the start of the 2015-23 control period and remain below 2.5% throughout the eight years.

The CC's provisional findings provided for an allowed cost of debt of 3.4% (real). This allowance was built as follows:

- embedded debt costs – the CC's analysis of the cost of debt started with a reference back to its standing policy towards embedded debt, as laid out in its 2007 Heathrow/Gatwick, 2008 Stansted and 2010 Bristol Water inquiries. Specifically, the CC stated again that "it would normally expect to factor a measure of existing 'embedded' fixed-rate debt costs into its calculation of the cost of debt".¹ In NIE's case, the company has two outstanding tranches of debt worth £575m that pay an average coupon of 6.5% in nominal terms. The CC deflated this nominal cost of debt for 2.8% per annum RPI inflation to give a real cost of embedded debt of 3.6%;
- new borrowing costs – the CC identified that NIE will need to raise new debt in the new price control period in order to finance ongoing investment. The CC estimated that the cost of this new debt in the period to September 2017 will be 4.65% to 6.2% in nominal terms or 1.4% to 3.4% in real terms. It took the mid-point of this range as its point estimate of the forward-looking cost of debt; and
- fees and other costs – the CC added to the cost of new debt only a further 10 basis points for fees and an additional 20 basis points for the cost of raising new debt and holding cash on the balance sheet ahead of use.

The CC's final cost of debt calculation was an 80:20 weighted average of the cost of embedded debt and new borrowing, giving an allowance of 3.4% (i.e. $3.6\% \times 0.8 + 2.7\% \times 0.2 = 3.4\%$).

2.3 Cost of equity

2.3.1 Risk-free rate, equity-risk premium and expected market return

The DNOs anchored their cost of equity calculations to the risk-free rate, equity-risk premium and expected market return assumptions that Ofgem used in its DPCR5, RIIO-GD1 and RIIO-T1 determinations. The numbers are 2.0%, 5.25% and 7.25% respectively. This intentionally amounts to taking a long-run view of the cost of equity, in which returns are set to match the returns that risk-free and equity-market investments have historically delivered over long periods of time, as the best available estimate of the returns that such investments are likely to deliver in future.

The CC's provisional findings for NIE provided for a real risk-free rate of 1.0% to 1.5%, an equity-risk premium of 4.0% to 5.0% and an expected stock market return of 5.0% to 6.5%. These numbers derive from the CC's view that there has been a fundamental change in financial markets during recent years, in which investors have come to expect lower returns from their investments.

This position can be seen first in the stance that the CC took on the risk-free rate:

¹ CC (2013), Northern Ireland Electricity Limited Price Determination: Provisional Determination, paragraph 13.53.

13.121 Long-dated index-linked yields have remained below 1 per cent for at least the last five years (see Figure 13.3). The prolonged period of low yields may suggest that long-run rather than temporary factors are at work. We therefore now see some grounds for assuming a lower RFR, more in line with actual long-dated index-linked yields. We think that there is some justification for an uplift to take account of the uncertain effects of quantitative easing and the CPI/RPI gap discussed above. However, we see little justification for the upper end of the range of the RFR above 1.5 per cent.

13.122 We provisionally adopt a range of 1 to 1.5 per cent for the real RFR. We note that the lower end of this range is well above current short-term real interest rates (which are negative) and would remain above short-term real interest rates during the period even if short-term real interest rates increased above the levels implied by current forward rates.

It also came through clearly in the discussion of the equity-risk premium / expected market return:

13.144 The interpretation of the evidence on market returns remains subject to considerable uncertainty. The CC has said in recent regulatory inquiries that 7 per cent is an upper limit for the expected market return, based on the approximate historical average realized return for short holding periods. We think that it may be appropriate to move away from this upper limit based on historical realized returns and place greater reliance on forward-looking estimates which tend to support an upper limit of 6.5 per cent. We note the following points in support of setting an upper limit for the market return of 6.5 per cent:

(a) We consider that the return on the market is a more stable parameter than the ERP. However, it remains the case that it exhibits considerable volatility and cannot therefore be regarded as fixed over time.

(b) We consider that there is logic to the proposition that a long-term decline in RFRs, as we discuss above, should correspond with an increased demand for equities and thus increased prices and lower returns.

(c) We note research conducted by DMS suggesting a clear relationship between real interest rates and real returns on equities and bonds in the subsequent five-year period.

(d) A forward-looking expectation of a return on the market of 7 per cent does not appear credible to us, given economic conditions observed since the credit crunch and lowered expectations of returns.

13.145 Further, the implied range for the ERP of 4 to 5 per cent appears consistent with the following evidence:

(a) the lower end of the 5 to 6 per cent range suggested by the pure historical analysis conducted by DMS (see paragraph 13.133);

(b) DMS's decomposition approach (see paragraph 13.136) suggesting an ERP of 4.5 to 5 per cent; and

(c) Fama & French's forward-looking projections based on the DGM suggesting an ERP of 4.4 per cent (see paragraph 13.134).

13.146 Based on the above, we consider that the appropriate upper limit for the market return is 6.5 per cent. In the context of setting a cost of capital for NIE, we are less concerned with a lower limit to the expected market return (since we would wish to avoid NIE's cost of capital being too low), but in this context we consider 5 per cent an appropriate lower bound figure.

13.147 We therefore provisionally estimate a range of 5 to 6.5 per cent for the market return, and implied range of 4 to 5 per cent for the ERP.

2.3.2 Beta

The DNOs' cost of equity calculations provided for an equity beta of 0.9. This is equivalent to an asset beta of 0.38.² The DNOs were guided by Ofgem's previous decisions in this area during the DPCR5, RIIO-GD1 and RIIO-T1 reviews, which had provided for betas of between 0.9 and 0.95.

The CC benchmarked NIE's beta to empirical estimates of betas for five listed companies: National Grid, Pennon, Severn Trent, SSE and United Utilities. The CC found that these comparators provided a range for the asset beta of 0.26 to 0.55. It selected a narrowed down range of 0.40 to 0.45 that lies just above the mid-point of this wider range based on a number of factors, including the inherent statistical uncertainty in beta estimation, precedent from previous CC inquiries and the possibility that investors might perceive NIE to present risks that lie towards the upper end of the comparator range.

2.4 Overall cost of capital calculations

Tables 1 and 2 bring together the preceding estimates into an overall calculation of allowed returns and a more detailed breakdown of the cost of equity.

The middle column of table 2 re-gears the CC's calculation to 65% gearing in order to create a like-for-like comparison of the cost of equity.³

Table 1

	CC (Period: April 2012 to September 2017)	DNOs' RIIO-ED1 business plans (Period: April 2015 to March 2023)
Gearing	50%	65%
Cost of equity (range)	3.8% to 5.5%	–
Cost of equity (point estimate)	4.8%	6.7%
Cost of debt	3.4%	< 2.5% (forecast)
Cost of capital	4.1%	< 4% (forecast)

* Excluding ENW, whose proposed cost of equity is 6.8%.

² Using the formula $\beta_a = (1 - g) \cdot \beta_e + g \cdot \beta_d$ and assuming $\beta_d = 0.1$.

³ All other things being equal, higher leverage makes equity returns more volatile and results in a higher beta / cost of equity.

Table 2

	CC (Period: April 2012 to September 2017)	CC re-g geared (Period: April 2012 to September 2017)	DNOs' RIIO-ED1 business plans (Period: April 2015 to March 2023)
Gearing	50%	65%	65%
Risk-free rate	1.0% to 1.5%	1.0% to 1.5%	2.0%
Equity-risk premium	4.0% to 5.0%	4.0% to 5.0%	5.25%
Asset beta	0.40 to 0.45	0.40 to 0.45	0.38
Debt beta	0.1	0.1	0.1
Equity beta	0.70 to 0.80	0.96 to 1.10	0.9
Cost of equity (range)	3.8% to 5.5%	4.8% to 7.0%	–
Cost of equity (point estimate)	4.8%	~6.1% [*]	6.7%

^{*} 6.1% is the 60th percentile in the range, consistent with the CC's positioning of its point estimate. We note that Ofgem has put forward a slightly different point estimate in its December 2013 consultation document.

3. Analysis

An inspection of the above tables shows that there are a number of differences in the approaches that the DNOs and the CC took when calculating allowed returns:

- the CC is proposing to use a significantly higher cost of debt than the electricity DNOs put forward in their business plans. This is due principally to difference in policy – i.e. the CC's use of actual embedded debt costs vs Ofgem's preference for an benchmark/indexed cost of debt – the consequences of which are then magnified by NIE's comparatively expensive embedded debt;
- the CC has a lower risk-free rate and a lower equity-risk premium. This also reflects differences in the CC's and the electricity DNOs' approaches, with the CC putting greater weight on current, forward-looking estimates of the generic CAPM parameters for the 2012-17 period and the DNOs preferring to use historical realised returns as the anchor for expected future returns for the 2015-23 period; and
- the CC has a higher beta. This is mainly a consequence of the CC's reading of recent empirical estimates of the betas for the UK listed utilities, which come out slightly higher than the beta estimates that Ofgem has inserted into recent price control decisions.⁴

The first and the third of these things contribute to higher returns for NIE and the second points in the direction of a lower return. Taken together, the pluses outweigh the minuses and the CC provisionally awarded NIE a higher return than the DNOs are likely to take from the RIIO-ED1 price control, as may be seen in the last line of table 1.

Against this backdrop, Ofgem consulted in December 2013 on the implications that the CC's provisional findings have for its calculating of the RIIO-ED1 allowed return. We give our take on this matter in three parts below.

⁴ Note, in particular, that 0.38 lies below the mid-point of the CC's wider 0.26 to 0.55 range.

3.1 The CC's views are provisional at this stage

The first, and in our view most important, point to make is that the CC has not yet published its final views on NIE's allowed returns or the individual parameters that will go in to that cost of capital calculation. The CC's November 2013 document was a consultation document in which the CC set out its current thinking for the express purpose of eliciting feedback and counterviews from interested parties.

This arguably makes it premature for Ofgem to be consulting on the implications of the CC's 'findings' for the RIIO-ED1 review. It is more logical that Ofgem should wait until it has the CC's final determination, due to be published some time between March 2014 and May 2014, before considering the read across between the two reviews.

The responses that the CC has received to its provisional findings highlight a number of areas in which there could conceivably be movement in the CC's position.

NIE, supported by Phoenix Natural Gas and Phoenix's owner Hastings Fund Management, has asked the CC to revise up its estimate of the cost of equity. In particular, they have:

- put forward new evidence on the contemporaneous equity-risk premium / expected market return, which they claim casts doubt on the CC's numbers; and
- questioned the CC's decision to take a point estimate from the middle of the cost of equity range, pointing out that the CC has always selected from the top end of its ranges in previous inquiries.

The NI Utility Regulator focused in its response on two aspects of the CC's calculations which it believes came out too high, namely:

- the cost of debt, where the regulator is asking the CC to look again at the RPI adjustment it makes when converting the nominal cost of debt to a real cost of debt; and
- the equity beta, which the regulator argues should be much lower than the CC has assessed based on its reading of the empirical comparator data.

It is possible that the CC will reject the parties' representations in its final determination document. But it is also conceivable that there will be some movement in the overall allowed return or, alternatively, in the component parts of the CC's 4.1% figure.

In the latter scenario, Ofgem's reading of the implications for the RIIO-ED1 allowed return could be materially different from the message that Ofgem has taken from the CC's provisional findings.

3.2 The CC's allowed return needs to be looked at as an overall package

Ofgem's December 2013 consultation focuses exclusively on the cost of equity, with attention then confined only to the risk-free rate / equity-risk premium / expected market return elements of the CAPM calculation. As we highlighted above, the differences between the CC's and DNOs' approaches to the allowed return calculation go further than this. The sense we have is that Ofgem has been quick to notice the key area in which the CC has been tougher than the DNOs, but much more reluctant to recognise that there were other places in which the DNO business plans were more aggressive than the CC.

As an encapsulation of this point, it is important not to lose sight of the fact that the CC's provisional findings provide the Northern Ireland electricity distribution network with a higher level of return than the GB electricity distribution networks have sought to collect from customers. The detriment that GB customers would suffer from the inclusion of a comparatively high risk-free rate / equity-risk premium / expected market return is offset by the inclusion of a lower beta in the CAPM cost of equity calculation and by the acceptance by the DNOs of the low values that Ofgem's cost of debt index will produce in the 2015-23 period.

We note that UK Power Networks alluded to the same sort of point in its business plan when it referred to its financial proposals as a 'package' and, in particular, when it highlighted the gap that there is likely to be between its actual cost of debt and Ofgem's allowed cost of debt. The figures in table 3 are reproduced from UKPN's plan.

Table 3

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
UKPN actual cost of debt	2.5%	2.5%	2.5%	2.6%	2.6%	2.7%	2.9%	2.9%
Ofgem index value	2.6%	2.5%	2.5%	2.4%	2.3%	2.1%	2.1%	2.1%

The calculations made at July 2013 forecast that there will be differential of 0.3 percentage points between UKPN's actual cost of debt and the allowed cost of debt on average over an eight-year period. All other things being equal, this will mean that UKPN's actual return on regulatory equity (RORE) sits around 0.55 percentage points below the allowed cost of equity of 6.7% in UKPN's business plan.⁵ If UKPN were to have adopted the CC's standing approach of factoring a company's actual cost of debt into the cost of capital calculation, or if Ofgem were now to use this approach in its RIIO-ED1 determination having seen the stance that the CC has taken in the NIE inquiry, UKPN would suffer no such loss.

It should also be noted that the CC provided in its provisional determination for debt fees and for the costs of carrying cash ahead of use. Ofgem has consistently refused to incorporate such allowances into its cost of debt index. Although the size of the amounts here are smaller – 30 basis applied to new debt only in the CC's calculations – they constitute another debt-related squeeze on UKPN's RORE which the CC's provisional findings do not impose on NIE.

Crucially, the above two factors together are more than sufficient to offset and cancel out the difference between the electricity DNOs' 6.7% cost of equity and the ~6.1% cost of equity that the DNOs and/or Ofgem would factor into price limits if they were to cut and paste the CC's provisional findings on the cost of equity in the NIE inquiry into the RIIO-ED1 cost of capital calculation.

Note that in citing ~6.1% as our CC benchmark, we deliberately pair the CC's risk-free rate and the CC's equity-risk premium with the CC's equity beta. The CC's equity beta range is derived from the same comparator set of five companies that Ofgem has tended to refer to in its work, but comes out as slightly higher numbers due to the statistical methods used (e.g. the inclusion of weekly data as well as daily data in the estimates). As a consequence, it is not tenable for Ofgem to claim that the CC's provisional findings does not qualify Ofgem's estimate of the DNOs'

⁵ The calculation is $0.3 \times 0.65 / 0.35 = 0.55$.

beta. In particular, we note that Ofgem's 0.38 asset beta sits noticeably below the mid-point of the CC's overall 0.26 to 0.55 range and below the narrowed down 0.40 to 0.45 range.

3.3 The DNOs' business plans and the CC's provisional findings cover different periods

The final point we need to make is that the task of estimating the cost of equity over the period to September 2017 is not the same as the task of estimating the cost of equity over the period to March 2023 (i.e. the end dates of the NIE and RIIO-ED1 price controls respectively). In the case of the shorter time period, it is arguably easier to give recognition to current market data on the basis that there is a lower likelihood that market conditions will change materially within a short period of time. By contrast, when the relevant time horizon more than doubles from just less than four years to close to ten years, there is naturally much more uncertainty about the persistence of current market conditions.

The CC's provisional findings clearly state upfront that its estimates tie to a specific period of time:

Relevant period

13.6 We are calculating the required return over the period 1 April 2012 to 30 September 2017 and we think it is the expected cost of capital in this period that is relevant.

The CC adds that:

13.7 We noted that we were setting the cost of capital in the autumn of 2013 for a five-year period that began in April 2012. We therefore had the benefit of approximately 18 months of actual data.

We consider this to be a very important factor to take into account when interpreting the CC's provisional findings. It means, for example, that the CC was able to factor the negative real gilt yields of the last year and half directly into its cost of equity calculation, leaving it to take a forward look only for the last four years of the control period. The CC's 1.0% to 1.5% risk-free rate and the 5.0% to 6.5% expected market return in a sense therefore average across known (low) and forecast (potentially higher) data.

More generally, the CC is always very careful in its reports to pronounce on the price control, and the cost of capital within that price control, only for the specific company that is the subject of the reference it has been given. This makes it very dangerous to infer the views that the CC might or might not take towards the cost of capital of a different company over a different period of time, especially at a point in time when one has to decide what to make of data from an unprecedented five years of unusual market conditions.

4. Conclusions

The overall sense that we are left with is that Ofgem has perhaps been rather hasty with its recent consultation. It is consulting on the CC's provisional findings before the CC has itself had a chance to reflect on responses to its own consultation. It appears to have read the CC's report in a very selective way, thus giving the unfair impression that DNO shareholders are seeking to collect higher rewards than the CC is giving NIE. And it has not obviously made any allowance for the differences in the CC's terms of reference and its own task in the RIIO-ED1 review.

Having been closely involved in both the RIIO-ED1 review and the NIE inquiry, we do not share the view that the CC's provisional findings call into question the level of return that UKPN and the other DNOs factored into their July 2013 business plans. The claims for sub-4% returns compare

favourably with the 4.1% return that the CC has provisionally awarded NIE and, indeed, with the returns that are emerging from contemporaneous reviews in the aviation, telecoms and water sectors. This is shown in table 4 below.

Table 4

Sector	Allowed proposed returns, vanilla real
DNO RIIO-ED1 business plans	< 4%
CC, NIE provisional findings	4.1%
Water and sewerage company business plans*	4.1% to 4.5%
ORR. Network Rail price control decision	4.3%
Ofcom, BT Openreach price control proposals	4.6%
CAA, Heathrow airport price control proposals	4.85%

* inclusive of the allowed returns in companies' retail price controls.

Looked at in the round, we do not think there is cause for Ofgem to take action at this time to reduce returns below the level that the DNOs have requested.