Energy&Climate
INTELLIGENCE UNIT

Monopoly money

How the UK's electricity distribution network operators are posting big profits

September 2017

EXECUTIVE SUMMARY

Britain does not have 'cripplingly' high energy prices, however often you might hear that it does. Government data shows that compared with other EU-15 nations, energy costs overall sit close to the average – with gas slightly below and electricity slightly above.[1]

Nevertheless, there is an issue with commercial electricity bills, especially for the most energy-hungry sectors such as steel, ceramics, glass and paper. On average, for example, UK firms in these industries pay around a third more for electricity than in France. This is not down to 'green' levies – these have reduced the average domestic energy bill by making energy use more efficient, and heavy industrial users are exempt from most of these charges. So, if the reason is not 'green' policy costs, what is it?

In March, the Committee on Climate Change, the government's statutory advisor, published its latest report on energy bills and prices.[2] It pointed the finger at higher wholesale prices from power generators, and at network charges – the cost of generating and conveying energy from producer to consumer, which it noted are higher than in comparable European countries. But the Committee admitted that the picture was less than clear, with its chair Lord Deben saying that having higher costs is an 'unacceptable position, and… we want to know why.'[3]

The vast majority of gas and electricity carriage is performed by monopoly companies – National Grid, and also a number of regional firms. In energy networks, the monopoly model (whether private or public) makes sense, as it would not be efficient or practical to have two sets of wires running alongside each other. In the interest of consumers, the amount of money these firms are allowed to charge is regulated by Ofgem. In early July, Citizens Advice looked at the issue of network costs across both gas and electricity systems. Its report, *Energy Consumers' Missing Billions,* concluded that we are set to be collectively paying about £1bn per year above and beyond what is justified – because Ofgem, it says, was too lax in setting companies' targets. Citizens Advice called for these 'excess profits' to be returned to bill-payers.[4]

We decided to take a closer look at one set of companies that is usually out of the public gaze – the electricity distribution network operators (DNOs).[5] These companies transport electricity from the national high-voltage network (mainly operated by National Grid) to the vast majority of UK homes and businesses; they provide the capillaries to Grid's arteries, the B-roads to its motorways. As with all private monopolies, there is, in theory, scope for excessive profits, and we wanted to shed some light on the question of whether some of the higher network charges cited by the Committee on Climate Change could be attributed to this sector, which generally evades media scrutiny.

Our findings are quite striking. Over the six-year period 2010-2015, the **DNOs reported net profit margins in the range of 25-39% per annum**. These figures are huge by any standard.

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1 https://www.ofgem.gov.uk/publications-and-updates/infographic-bills-prices-and-profits

2 https://www.theccc.org.uk/2017/03/16/uk-climate-action-has-reduced-emissions-without-increases-in-household-energy-bills/

3 https://www.ft.com/content/f8880f4a-09a6-11e7-ac5a-903b21361b43

4 https://www.citizensadvice.org.uk/about-us/policy/policy-research-topics/energy-policy-research-and-consultation-responses/energy-policy-research/energy-consumers-missing-billions/

5 http://www2.nationalgrid.com/UK/Our-company/electricity/Distribution-Network-Operator-Companies/

Citizens Advice calculated that across all the energy networks sector (gas and electricity, transmission and distribution) companies averaged about a 19% annual profit, describing that as 'eye-watering'. Over the six years in question, our results show that with the DNOs, the water comes in a torrent rather than a trickle. The overall average profit recorded by the DNOs was 32%. **This equates to about £10bn on the nation's collective energy bill over six years, or around £27 per home, per year, in profits alone**.

Companies can of course make a significant profit and yet still serve the nation's need for infrastructure renewal by investing most of it in upgrades. This is important as the DNOs are effectively gate-keepers to the vision of a modern, distributed, flexible smart grid that the government wants to build and which promises so much for consumers.[6] ECIU also analysed dividend pay-outs, and found a picture that is both mixed and somewhat hard to decipher. Over the last six years, one of the six DNOs paid out just above 2% in dividends – another paid out more in dividends than it made in profits. The remainder lie in between these extremes.

Across the whole sector, **the average dividend pay-out was 15% of turnover, half of the final profit figure. This equates to a figure pushing £1bn per year, or roughly £13 on the average domestic bill** – money that is effectively taken out of the industry and into shareholder pockets.

One could argue that if this £1bn per year were to stay in the UK it could be put to use elsewhere in the national economy. However, as with the largest generation companies, the vast majority of DNOs are foreign-owned, meaning that **most of this money flows from the bills of British citizens and British companies into other nations' economies**.

Britain has one of the most reliable power networks in the world, and no-one could claim that the DNOs are failing in their core duty of keeping the lights on. But, as with all monopolies, it is fair to question how justified the agreed level of remuneration is – especially given criticism from some companies that DNOs are, as a bloc, not doing all they can to facilitate the transition to a smart, flexible low-carbon power system which according to the National Infrastructure Commission will take £8bn off the nation's annual electricity bill by 2030.

The government is set to release the findings of a review into energy prices before the end of the year, and one presumes that a key question will be to what extent higher prices are down to excess profits, from generators, network operators and other companies in the system. It may also consider lessons from other nations where the equivalent companies to DNOs are publically owned and/or work under single-digit profit caps, incurring lower costs to bill-payers.

6 https://www.gov.uk/government/news/plan-launched-to-bring-smart-energy-technology-into-homes-and-businesses

INTRODUCTION

The last two UK general election campaigns have both seen energy prices highlighted – in 2015 by Labour and in 2017 by the Conservatives – with the threat of a 'price cap' looming over generators and retailers of power. In neither case was the possible role of distributers publicly raised as an issue.

Despite claims to the contrary, public concern surrounding energy bills has generally fallen over the past five years, with just 19% of respondents to a recent government survey saying they were worried or fairly worried about paying their bills (Figure 1).[7] Although this figure is at an all-time low, it is still higher than politicians would like, suggesting that energy costs will remain on the political playing field for some time to come.

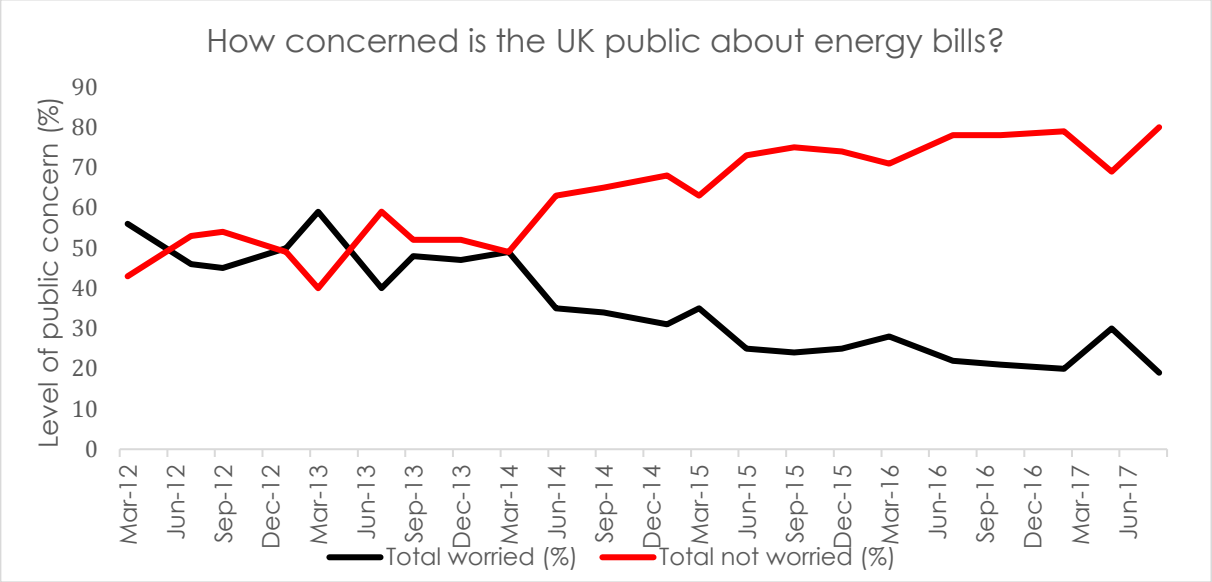

Figure 1: Proportion of British public that are worried (or not worried) about energy bills.
Source: BEIS public attitudes tracker.[8]

The price cap emerged at the 2017 election in an apparent response to bill hikes of £100 or so by some of the 'Big Six' providers – and although some of them tried to blame the hikes on 'green levies'[9], their claims did not appear, in general, to be believed.[10]

The issue of ownership of essential services has also been put back on the agenda, partly by the Labour 2017 manifesto and partly by recent reports on the water and railway industries – both of which concluded that Britons are now paying over the odds to natural monopolies which are run by the private sector.[11,12] These studies estimated that Britons spend £2.3bn per year more on water than we would under a public ownership model, and about £3bn per year more on railways. The energy sector is frequently compared to those industries in the sense that it is an

7 https://www.gov.uk/government/statistics/energy-and-climate-change-public-attitude-tracking-survey-wave-21

8 https://www.gov.uk/government/collections/public-attitudes-tracking-survey

9 http://www.thisismoney.co.uk/money/bills/article-3939980/Electricity-prices-rise-10-January-yes-ve-guessed-green-taxes-blame.html

10 https://www.pressreader.com/uk/daily-mail/20170413/281517930985928

11 https://www.ft.com/content/91a2779a-4077-11e7-9d56-25f963e998b2

12 https://www.thetimes.co.uk/article/privatisation-put-50bn-on-cost-of-running-railway-study-claims-v7nvxkrgc

essential service run by private sector companies with unrestricted ownership under a regulated profits model.

The total amount that we pay for electricity in Great Britain depends on multiple factors.[13] The biggest variable is wholesale fuel costs (principally gas, but also coal and biomass), with other factors including environmental and social levies, network costs (transmission and distribution charges), and retailer profits (Figure 2).

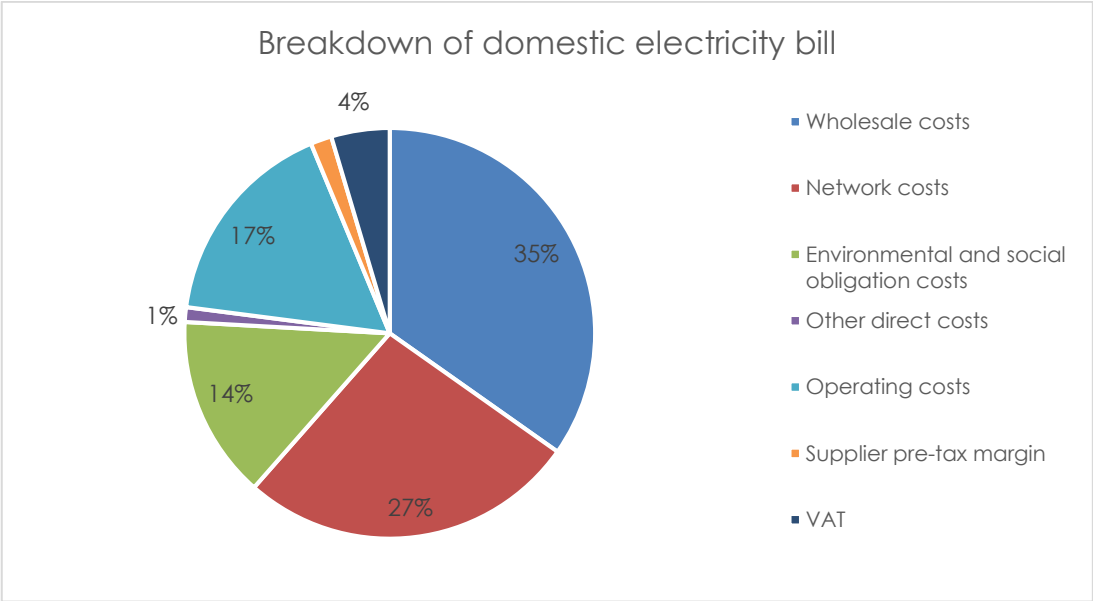

Figure 2: Breakdown of UK domestic electricity bill. **Source:** Ofgem.[14]

Despite the occasional media furore, social and environmental levies are best understood as an investment that builds a low-carbon, lower-cost energy system fit for the coming decades – and in doing so, reduces bills by funding energy efficiency improvements. A 2016 report by the Office for Gas and Electricity Markets (Ofgem) said that "Suppliers... reported reduced costs per household associated with government social and environmental programmes".[15] This is backed up by the Committee on Climate Change (CCC) which recently concluded[16] that although low-carbon policies add an up-front charge of around £9 a month to the typical UK household energy bill, their overall impact is to cut the average bill by more than £20 a month.

In recent years, discussion of rising energy tariffs has generally focused on policy costs and the profits of the 'Big Six' firms. But this report will look at another set of companies involved in the electricity business, the distribution network operators (DNOs).

DNOs operate regional power networks and are responsible for linking homes and businesses to National Grid's transmission network (or in Scotland, the networks of Scottish Power Transmission and Scottish Hydro Electric Transmission). To make an analogy with driving, National Grid and its

[13] Northern Ireland is linked to the Republic of Ireland's system

[14] https://www.ofgem.gov.uk/consumers/household-gas-and-electricity-guide/understand-your-gas-and-electricity-bills

[15] https://www.ofgem.gov.uk/system/files/docs/2016/08/retail_energy_markets_in_2016.pdf (p.3)

[16] https://www.theccc.org.uk/2017/03/16/uk-climate-action-has-reduced-emissions-without-increases-in-household-energy-bills/

Scottish counterparts run the motorways and A-roads of the power system – DNOs own and operate the B-roads, local lanes and city streets.

The vast majority of electricity generated in the UK feeds directly into the national high-voltage network before passing through the DNOs' low-voltage networks and on to customers. Using technical terminology, National Grid does transmission and the DNOs do distribution.

For electricity distribution, the UK is split into regions, with operations in the hands of six companies. Of the eight areas shown in Figure 3, two are run by SP Energy Networks and two by Scottish and Southern Electricity Networks (SSEN), with other companies responsible for a single area each. Northern Ireland falls under alternative regulations and is not considered in this report.

Region	Network Operator
1	Scottish and Southern Electricity Networks
2	SP Energy Networks
3	Electricity North West
4	Northern Powergrid
5	SP Energy Networks
6	Western Power Distribution
7	Scottish and Southern Electricity Networks
8	UK Power Networks

Figure 3: Distribution networks in Great Britain

DNO revenues are largely determined by Ofgem under a process known as 'price control'.[17] This process 'ensures Distribution Network Operators (DNOs) can, through efficient operation, earn a fair return on their activities while controlling the end cost to consumers'. The current regime lasts for eight years and operates through an open tender, through which companies bid for contracts. This aims to provide long-term stability to consumers and to prevent a single company from extracting excess profits. The regime is known as RIIO (Revenue = Incentives + Innovation + Outputs), and sets revenue from April 2015 to March 2023.[18]

As the amount of generating capacity connected to the distribution networks grows, DNOs have a vital role in facilitating the growth in renewable and small flexible capacity, and will increasingly play a part in the transition to a smart and flexible system recently outlined by the Government.[19]

17 https://www.ofgem.gov.uk/electricity/distribution-networks/network-price-controls

18 https://www.ofgem.gov.uk/network-regulation-riio-model/riio-ed1-price-control

19 https://www.gov.uk/government/publications/upgrading-our-energy-system-smart-systems-and-flexibility-plan

PRICES AND PROFITS

When looking at the performance of any company it is useful to include multiple years to avoid skewed results by anomalous short-term events. This report uses data from 2010 to 2015 inclusive.[20] Figures were obtained from published annual company reports,[21] all of which are freely available from Companies House.[22] The majority of the companies' reporting periods align with the financial year (April to March), but others use the calendar year. This report uses data as it is presented in respective company accounts, so some records actually run from January 2010 to December 2015, others from April 2010 to March 2016. This variation in reporting periods does not materially affect the conclusions presented.

There are a number of definitions of profit, and two are included here; 'operating profit', which is the profit from business operations before deduction of financials (interest and taxes); and 'net profit' (also known as 'profit for the year' or 'bottom-line profit'), the amount of money left over after everything (including taxes) has been deducted. These figures have been converted into percentages of total revenue and are shown in Table 1.

Company	Revenue (£m)	Operating Profit (£m)	Operating Margin (%)	Final Profit (£m)	Profit margin (%)
Electricity North West	2759	1420	51.5	710	25.7
Northern Powergrid	4260	2204	51.7	1490	35.0
SSE	5750	2370	41.2	1664	28.9
Scottish Power	4399	2375	54.0	1711	38.9
UK Power Networks	8293	4369	52.7	2506	30.2
Western Power	8013	4504	56.22	2618	32.7
Sector	**33473**	**17242**	**51.5**	**10700**	**32.0**

Table 1: DNO revenues, profits and margins from 2010-2015. Figures rounded to nearest £m. Please see appendix 2 for full breakdown of figures.

Over the six years of data analysed, the overall sector final profit margin was 32%. Just shy of a third of total revenue, this value would be the envy of most companies and sectors. Supermarkets,

[20] At time of analysis and writing, full reports were not available for 2016.

[21] See appendix 1. Links are provided to the original annual reports.

[22] https://www.gov.uk/government/organisations/companies-house

for example, consider margins upwards of 5% as a sign of success. They, however, exist in a sector with lower 'capital intensity' i.e. a lower overall cost of assets required to generate revenue. Margins are generally higher in capital intensive businesses. A 2014 BBC investigation found that across five industrial sectors, including oil and gas and automotive manufacture which are both industries with a higher capital intensity, none posted an average profit of more than 20%.[23,24]

DNOs are natural monopolies working under a profit regulator, so are not directly comparable with companies in a fully competitive market. Perhaps a more direct comparison is with the national transmission network, owned and operated by National Grid Electricity Transmission plc (NGET), a subsidiary of National Grid. NGET's revenue is also regulated by Ofgem. A study of its operating margin and profit margin gives us figures of 31.8% and 21.2% respectively – substantially lower than the DNOs, although still way above the expected figure for competitive industries.[25]

So what does this mean for customers and their bills? In short, British households and businesses contributed an aggregate £10.7bn to the profits of the six DNO companies over this period. Based on the proportion of energy costs borne by UK households, this equates to around £27 per household per year.[26]

The remainder is paid for by businesses, whose use represents around two-thirds of demand but which on average pay a lower per-KWh rate due to bespoke deals with suppliers. It is hard, though, to work out the overall cost to individual businesses because both the scale of usage and tariffs vary widely between companies. But it is clearly substantial, and gives ammunition to the Committee on Climate Change's argument that network charges are an important factor in UK commercial energy prices.

[23] http://www.bbc.co.uk/news/business-28212223

[24] The five sectors were pharmaceuticals, banking, automotive manufacture, oil and gas, and media. There were individual companies that had profit margins over 20%.

[25] See appendix 3 for full breakdown of individual years.

26 ECIU calculation based on 44% of total electricity costs falling to households and 27 million residences.

INTERNATIONAL COMPARISONS

Distribution networks are core components of a modern electricity system, present in almost all developed nations. In principle there is plenty of scope for comparing the British situation with other countries.

However, direct comparisons can be difficult. For instance, in Germany there are around 900 DNOs, with the vast majority having fewer than 100,000 customers each. Many are municipally- rather than privately-owned. However, they and their profits are regulated.[27] Indeed, for connecting new power cables to the network (whether for consumers or new generators), profits are capped at 9.05% per year to the end of 2018, and then 6.91% per year from 2019 to 2023. For the operation of existing assets they are capped at 7.14%, which will reduce to 5.12% from 2019.[28]

The situation in France is very different from that in Germany, with effectively only one DNO company, Enedis (previously known as ERDF, formerly a subsidiary of EDF).[29] In 2016, it had revenues of €13.8bn, with a final profit of €786m - a profit margin of 5.9%.[30]

While profits in some European countries may be lower than in the UK, there are other nations with similar net profit ratios. Australia, for example, generally hovers around the 30% mark. The Australian system is similar to Britain's in consisting of regional companies (although some are majority publicly-owned and others majority privately-owned) with profits limited by a regulator.

Compared with equivalents in mainland Europe, profit margins of UK DNOs appear to be unusually high – a picture that also emerged in the recent Citizens Advice report[31], which concluded that companies are making *excess* profits across the whole energy system.

[27] The German regulator is commonly called BNetzA. Details are here.

[28] Information obtained in an ECIU interview with Karsten Wiedemann of the German Association of Energy Market Innovators

[29] http://www.enedis.fr/english

[30] http://www.enedis.fr/sites/default/files/Enedis_Chiffres_cles_2016.pdf

[31] https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/EnergyConsumersMissingBillions.pdf

DIVIDENDS AND OWNERSHIP

Arguably more notable than the high profit margins are dividend pay-outs reported in the accounts analysed. The 'dividend pay-out ratio' expresses the proportion of company revenue that is returned to shareholders as dividends in any given period. The average figure across all UK DNOs for the period 2010-2015 is 15.5%; in other words, for every £100 the sector received in income, £15.50 was paid out in dividends and not, by definition, reinvested back into the respective business.[32] This figure represents approximately half of the final annual profits.

Using the Department for Business, Energy & Industrial Strategy's (BEIS) figures for expenditure on energy by final user,[33] it is possible to calculate how much of the nation's total electricity bill goes towards the DNOs' dividends (Table 2).

Year	Total expenditure on electricity (£m)	Total dividends paid by DNOs (£m)	Percentage of total expenditure (%)
2010	30,165	227	0.8
2011	30,855	673	2.2
2012	32,805	1,757	5.4
2013	34,650	723	2.1
2014	34,160	1,056	3.1
2015	34,415	752	2.2

Table 2: Annual total UK electricity expenditure and DNO dividends. Figures rounded to nearest £million.

In total, for the period 2010-2015, over £5.1billion was paid out in dividends. Based on around 44% of national electricity expenditure falling to domestic customers, each household contributes around £13 per year to DNO dividends.

It is also worth noting the final destination of these pay-outs. The ultimate owners of five of the six DNOs are not registered in the UK, and ownership of the sixth is spread wide too. This is almost unique in Europe. As research by trade body Eurelectric shows,[34] amongst EU nations, only the UK and Bulgaria have distribution networks that are predominantly under foreign ownership.[35]

[32] For full broken down figures, see appendix 2.

[33] https://www.gov.uk/government/statistics/dukes-annual-tables (expenditure on energy by final user to 2015 spreadsheet)

[34] http://www.eurelectric.org/media/113155/dso_report-web_final-2013-030-0764-01-e.pdf

[35] Bulgaria has three DNOs: CEZ and Energo-Pro are Czech-owned, and EVN is Austrian-owned. For more information on the Bulgarian market, see this 2014 briefing note.

- **Electricity North West** is owned by NW Electricity Networks (Jersey) Limited, which in turn is owned by First State Investments Fund management, ultimately owned by the Commonwealth Bank of Australia. The group's dividend policy is to '*distribute the maximum amount of available cash in each financial year at semi-annual intervals*'.[36] Over the analysed period, Electricity North West had total revenues of £2.76bn, and paid £340m out in dividends, a dividend:turnover ratio of 12.3%.

- **Northern Powergrid** is owned by Berkshire Hathaway Energy, which itself is 90% owned by Warren Buffett's Berkshire Hathaway.[37] Its dividend pay-outs are lower than other DNOs analysed. It returned only £100m in dividends over the period, against revenues of £4.26bn: a dividend:turnover ratio of just 2.4%.

- **UK Power Networks** is 100% owned by the Cheung Kong Group, a conglomerate based in Hong Kong. Over the review period it had total revenues of £8.29bn and paid out dividends of £882.5m, a 10.6% dividend:turnover ratio.[38]

- **Western Power** is owned by PPL Corporation, previously known as Pennsylvania Power and Light. It is a US-based listed company trading on the New York Stock Exchange. Western Power had revenues of £8.01bn, and paid out £547.8m in dividends, a dividend:turnover ratio of 6.8%.

- **Scottish Power** owns SP Energy Networks, which is in turn the parent company of SP Manweb and SP Distribution, the two companies acting as DNOs. SP Energy Networks also owns the transmission system in the south of Scotland (Scottish Power Transmission) and an asset management company (SP Power Systems).[39] In this analysis, only SP Manweb and SP Distribution accounts were included. Scottish Power in turn is owned by the Spanish company Iberdrola, which is listed on the Madrid stock exchange with the biggest shareholders being Qatari.[40] Combining SP Manweb and SP Distribution figures gives a revenue of £4.4bn and dividends of £1.5bn - a dividend:turnover ratio of 34.3%.

- Finally, **SSE** owns Scottish and Southern Electricity Networks, which is the parent company of Southern Electric Power Distribution and Scottish Hydro Electric Power, the two companies working as DNOs. Again, just the DNO accounts were analysed here. SSE is listed on the London Stock Exchange, and its top five shareholders are Capital Group (US, 14.9%), Blackrock (US, 6.7%), UBS (Swiss, 5.2%), Invesco Ltd (US, specific fund based in Bermuda, 5.2%), UBS via its funds (Swiss, 5.0%).[41] The two SSE DNOs had combined revenues of £5.75bn and paid out £1.81bn in dividends - a dividend:turnover ratio of 31.5%. Strikingly,

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[36] As stated in its annual report each year.

[37] http://www.berkshirehathaway.com/qtrly/1stqtr17.pdf

[38] UKPN was bought by the Cheung Kong Group in June 2010. It changed accounting periods from Jan-Dec to Apr-March in 2015, so its figures also include the period Jan-March 2016.

[39] It should be noted that SP Power Systems is a "major service provider" to both SP Manweb and SP Distribution. This means that SP Power Systems conducts the day-to-day operations for the two SP distribution companies. SP Power Systems is profit making, and also pays dividends back to SP Energy Networks. Those profits and dividends are not taken into account in this report.

[40] Further analysis of Iberdrola's stock market ownership shows their top five shareholders (as at March 2017) are; Qatar Holdings Luxembourg (Luxembourg) 8.51%; Qatar Investment Authority (Qatar) 8.51%, Nexgen Capital (Ireland) 5.18%; Bilbao BKFB (Spain) 4.92%, Natixis (France) 4.84%.

[41] Information correct as of April 2017.

this ratio was *higher* than its 'bottom line' profit margin of 28.9%. This event could occur as a one-off in any given year due to exceptional circumstances, but is highly unusual when spread out over a six-year period.

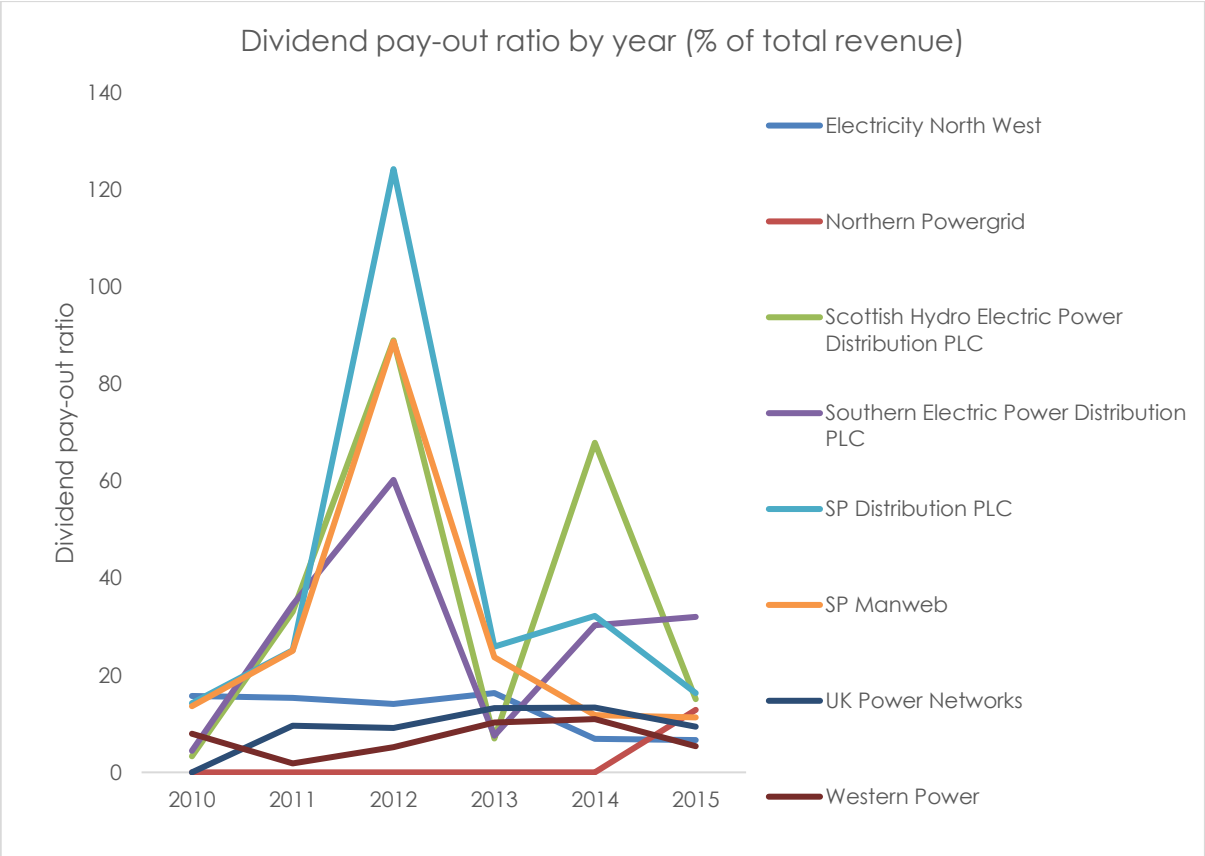

Figure 3: Dividend:turnover ratios of six UK DNOs. See appendices for further details.

The reasons behind the variance in pay-out ratios are not clear. Some figures in particular raise eyebrows – such as in 2012, when the two SSE DNOs had pay-out ratios of 89.0% and 60.3%, and the two Scottish Power DNOs had payout ratios of 88.8% and 124.3%. The disparity between these values and the dividend pay-out ratio of Northern Powergrid are also notable.

It is also notable that Ofgem runs an innovation fund to stimulate investment in the sector, providing capital to DNOs for projects that upgrade the system.[42] The efficacy of using Ofgem funds in this way could be questioned in the light of profit and dividend pay-outs highlighted in this report.

42 https://www.ofgem.gov.uk/network-regulation-riio-model/network-innovation/electricity-network-innovation-allowance

CONCLUSION

Regional distribution network operators are not only a vital component of the UK power system today, they are critical to realising the vision of a flexible low-carbon smart grid, which the National Infrastructure Commission calculates will save the UK up to £8bn per year on its collective electricity bill.[43]

Thus, Britain and its consumers need DNOs that are proactively investing in the future – guided by a regulator that prioritises transitioning to the future on an equal footing with providing for the present.

Does the UK have that? Our research, together with the recent report from Citizens Advice, suggests that it may not. Approximately one-third of the revenue of DNOs is emerging as profit; and while companies may be investing some of that profit in the future, cumulatively at least half of it is leaving the system, being paid straight out into shareholders' pockets.

Profits and dividends are the reward for capital taking the risk of ownership. However, with DNOs (and some other regulated monopolies) there is little risk – these companies are guaranteed all the work in a certain area, and have no competition. DNOs are not affected by wholesale power price rise risks as they do not, at any stage, own the electricity running through their wires. And there is little 'demand risk' either. Should the amount of electricity demanded by consumers fall, DNO revenues will not (in effect, they are paid via the standing charge section of electricity bills). In fact, the only real risk is regulatory: should the Government or Ofgem decide their revenues are too high, they can set a lower revenue figure in the next negotiation round. Thus, it is entirely fair to raise the question of whether companies in a sector with basically no risk should be making six or seven times the profit margins of those in sectors where there is genuine competition and, therefore, genuine existential risk.

While no-one would question the right of a private company to make a profit and pay a dividend, and while there are undeniable benefits from foreign ownership including access to capital, it could be argued that Britain's DNOs could be investing far more than they are in hastening the transition to a flexible smart grid that the Government wants to see.

This is not true of all – indeed, Western Power Distribution recently released its 'DSO strategy document',[44] where it details the steps it will undertake to transform itself into a district system operator. The shift from DNO to DSO will see grid operators take a more active role in managing and balancing the grid, akin to that currently under the remit of National Grid. This transition may appear to be one of nomenclature only, but is seen by many as an essential step towards proactively managing a dynamic system rather than a passive bunch of wires.

Following on the heels of these questions comes another: if all European nations except the UK and Bulgaria have publicly- and/or nationally-owned network operators, what is the evidence that private, international ownership is a better model? Grist is given to this mill by events such as the decision of people in several German cities, notably Hamburg,[45] to take their local grids out of

43 https://www.gov.uk/government/publications/smart-power-a-national-infrastructure-commission-report

44 https://www.westernpower.co.uk/docs/About-us/Our-business/Our-network/Strategic-network-investment/DSO-Strategy/DSO-Transition-Strategy.aspx

45 https://www.worldfuturecouncil.org/energy-remunicipalisation-hamburg-buys-back-energy-grids/

private ownership and return them to community control. Conversely, of course, some would argue that free movement of capital should generally increase capital productivity and thus private ownership is inherently more efficient - therefore Britain and Bulgaria have it right. Answering this question is beyond the scope of this report but there is no doubt that it is a live question and will become more so if the Government's impending review of energy prices decides that Britain's network costs are unreasonably high.

By highlighting an under-scrutinised component of energy bills, this report has attempted to shine light on one of the multiple factors that dictate the outgoings of millions of UK households. With energy costs likely to remain politically contentious in the future, it is hoped that the findings outlined here will be of use in future discussions.

This report was written by Matt Finch, ECIU Business and Economic Analyst

We would like to thank Morgan Wild, Senior Policy Researcher and the Citizens Advice Bureau, and Richard Anderson, Energy Consultant for their help with reviewing this work.

APPENDIX 1

Individual Company Reports

Group	Subsidiary	2010	2011	2012	2013	2014	2015	Companies House
Electricity Northwest	**Electricity Northwest**	ENW March 2011 AR	ENW March 2012 AR	ENW March 2013 AR	ENW March 2014 AR	ENW March 2015 AR	ENW March 2016 AR	ENW Co. House
Northern Powergrid	**Northern Powergrid** [46]	NP 2010 AR	NP 2011 AR	NP 2012 AR	NP 2013 AR	NP 2014 AR	NP 2015 AR	NP Co. House
SSE	**Scottish Hydro Electrical Power Distribution**	All SHEPD annual reports can be downloaded as pdfs from the Scottish and Southern Electricity Networks website here, with the exception of the 31/03/12 report[47], which is available from Companies House here.						SHEPD Co. House
	Southern Electric Power Distribution	All SEPD annual reports can be downloaded as pdfs from the Scottish and Southern Electricity Networks Website here, with the exception of 31/03/12 report[48], which is available from Companies House here.						SEPD Co. House
Scottish Power	**SP Distribution PLC**[49]	Scottish Power do not list their individual business units' annual reports on their website, so all the below reports are taken from Companies House.						SPD PLC Co. House
		SPD 2010 AR	SPD 2011 AR	SPD 2012 AR	SPD 2013 AR	SPD 2014 AR	SPD 2015 AR	
	SP	Scottish Power do not list their individual business units annual reports on their website, so all the						SPM PLC Co.

[46] Northern Powergrid was known as CE Electric UK until October 2011. Annual reports provided are for the group holding company and include statements about IUS and CE Gas. These are subsidiary companies that have no discernable effect on overall financial figures.

[47] All March 2012 report links on the SSEN website will download the respective companies 2011 reports (information correct as of June 2017).

[48] As above.

[49] Changed name in October 2013 from SP Distribution Limited to SP Distribution PLC.

	Manweb	below reports are taken from Companies House.						House
		SPM 2010 AR	SPM 2011 AR	SPM 2012 AR	SPM 2013 AR	SPM 2014 AR	SPM 2015 AR	
UK Power Networks	**UK Power Networks**	UKPN 2010 AR[50]	UKPN 2011 AR	UKPN 2012 AR	UKPN 2013 AR	UKPN 2014 AR	UKPN 2015 AR	UKPN Co. House
Western Power		Western Power do not list their individual annual reports on their website, so all the below reports are taken from Companies House.						
	PPL WEM		PPL WEM March 2012 AR	PPL WEM March 2013 AR	PPL WEM March 2014 AR			PPL WEM Co. House
	PPL WW / PPL UK Distribution Holdings (SW+Wales)	PPL WW March 2011 AR	PPL WW March 2012 AR	PPL WW March 2013 AR	PPL WW March 2014 AR	PPL UK March 2015 AR	PPL UK March 2016 AR	PPL UK Co. House

Reporting period notes:

Reporting periods for Northern Powergrid, SP Distribution and SP Manweb are January - December (*calendar year reporting*).

Reporting periods for Electricity North West, Scottish Hydro Electric Power Distribution, Southern Electric Power Distribution and Western Power are all April-March (*financial year reporting*).

UK Power Networks changed from calendar year reporting to financial year reporting in 2016, so their 2015 annual report covers the period Jan 2015 - March 2016. The three extra months are not presumed to have any material effect on this report.

For ease of comparison financial year reports are labelled as the year they predominantly cover e.g. Electricity North West March 2011 annual report is labelled 2010. This means, for instance, Northern Powergrid's January-December 2015 report is compared to Electricity North West's March 2015-April 2016 report.

[50] 2010 annual report not listed on the UKPN website, so therefore taken from Companies House.

Western Power notes:

Western Power Distribution bought the two Midlands DNOs (previously known as Central Networks East plc and Central Networks Limited) from E.ON for £3.6bn in April 2011[51]. This new business unit was named 'PPL WEM' (*Pennsylvania Power + Light, West + East Midlands*). Following a corporate reorganisation in October 2014, PPL WEM's figures were incorporated into the group parent company's reports.

PPL WW Holdings Limited was the group holding company for the South West and Wales DNOs. Following a corporate reorganisation in October 2014, it changed its name to PPL UK Distribution Holdings and became the group (including the Midlands companies) parent company. Prior to 2011, PPL WW Holdings Limited was known as Western Power Distribution Holdings Limited.

[51] As explained in the directors report of PPL WEM Holdings PLC's March 2012 annual report.

APPENDIX 2

Individual Annual Figures

Company Name	Year		PnL				Margins		
	Accounts to	Covering all / majority of	Turnover (£m)	Operating Profit (£m)	Final Profit (£m)	Dividend Payout (£m)	Operating Profit Margin (%)	Final Profit margin (%)	Dividend Payout (%)
Electricity North West	31/3/11	2010	393.8	210.4	121.2	62.0	53.43	30.78	15.74
Electricity North West	31/3/12	2011	404.6	189.4	69.7	62.0	46.81	17.23	15.32
Electricity North West	31/3/13	2012	468.0	224.2	143.2	66.0	47.91	30.60	14.10
Electricity North West	31/3/14	2013	508.0	280.4	187.3	83.0	55.20	36.87	16.34
Electricity North West	31/3/15	2014	533.7	301.3	71.8	37.0	56.45	13.45	6.93
Electricity North West	31/3/16	2015	450.8	214.6	117.0	30.0	47.60	25.95	6.65
			2,758.9	1,420.3	710.2	340.0	51.48	25.74	12.32
Northern Powergrid	31/12/10	2010	605.7	318.0	213.7	0.0	52.50	35.28	0.00
Northern Powergrid	31/12/11	2011	642.4	350.3	221.7	0.0	54.53	34.52	0.00
Northern Powergrid	31/12/12	2012	696.1	370.1	263.2	0.0	53.17	37.81	0.00
Northern Powergrid	31/12/13	2013	722.0	366.4	260.9	0.0	50.74	36.14	0.00
Northern Powergrid	31/12/14	2014	817.6	415.6	261.0	0.0	50.83	31.92	0.00
Northern Powergrid	31/12/15	2015	776.3	383.8	269.7	100.0	49.44	34.73	12.88
			4,260.1	2,204.2	1,490.2	100.0	51.74	34.98	2.35
SHEPD PLC	31/3/11	2010	301.9	103.7	63.5	10.0	34.35	21.03	3.31
SHEPD PLC	31/3/12	2011	302.2	101.7	58.1	100.0	33.65	19.23	33.09
SHEPD PLC	31/3/13	2012	337.0	137.5	93.0	300.0	40.80	27.60	89.02
SHEPD PLC	31/3/14	2013	360.0	153.5	120.9	25.0	42.64	33.58	6.94
SHEPD PLC	31/3/15	2014	368.1	128.7	80.8	250.0	34.96	21.95	67.92
SHEPD PLC	31/3/16	2015	332.3	100.4	61.7	50.0	30.21	18.57	15.05
			2,001.5	725.5	478.0	735.0	36.25	23.88	36.72
SEPD PLC	31/3/11	2010	562.7	266.9	185.3	25.0	47.43	32.93	4.44
SEPD PLC	31/3/12	2011	578.8	236.4	167.2	200.0	40.84	28.89	34.55
SEPD PLC	31/3/13	2012	663.8	324.1	240.8	400.0	48.82	36.28	60.26
SEPD PLC	31/3/14	2013	659.6	293.9	228.0	50.0	44.56	34.57	7.58
SEPD PLC	31/3/15	2014	659.4	283.2	185.7	200.0	42.95	28.16	30.33
SEPD PLC	31/3/16	2015	623.8	239.5	178.7	200.0	38.39	28.65	32.06
			3,748.1	1,644.0	1,185.7	1,075.0	43.86	31.63	28.68
COMBINED SSE			5,749.6	2,369.5	1,663.7	1,810.0	41.21	28.94	31.48
SP Distribution PLC	31/12/10	2010	386.0	245.7	172.1	55.0	63.65	44.59	14.25
SP Distribution PLC	31/12/11	2011	377.1	222.0	166.5	95.0	58.87	44.15	25.19
SP Distribution PLC	31/12/12	2012	376.5	216.4	170.5	468.0	57.48	45.29	124.30
SP Distribution PLC	31/12/13	2013	378.7	171.8	130.3	98.0	45.37	34.41	25.88
SP Distribution PLC	31/12/14	2014	369.1	149.1	87.8	119.0	40.40	23.79	32.24
SP Distribution PLC	31/12/15	2015	397.2	183.0	133.4	65.0	46.07	33.59	16.36
			2,284.6	1,188.0	860.6	900.0	52.00	37.67	39.39
SP Manweb PLC	31/12/10	2010	256.2	138.3	94.2	35.0	53.98	36.77	13.66
SP Manweb PLC	31/12/11	2011	299.6	169.8	129.3	75.0	56.68	43.16	25.03
SP Manweb PLC	31/12/12	2012	349.2	214.3	162.4	310.0	61.37	46.51	88.77
SP Manweb PLC	31/12/13	2013	387.4	216.8	159.0	92.0	55.96	41.04	23.75
SP Manweb PLC	31/12/14	2014	424.4	241.2	155.4	50.0	56.83	36.62	11.78
SP Manweb PLC	31/12/15	2015	397.7	206.4	150.0	45.0	51.90	37.72	11.32
			2,114.5	1,186.8	850.3	607.0	56.13	40.21	28.71
COMBINED SCOTTISH POWER			4,399.1	2,374.8	1,710.9	1,507.0	53.98	38.89	34.26
UK Power Networks	31/12/10	2010	244.7	116.5	52.7	0.0	47.61	21.54	0.00
UK Power Networks	31/12/11	2011	1,354.6	619.1	310.6	130.0	45.70	22.93	9.60
UK Power Networks	31/12/12	2012	1,480.4	819.3	462.7	135.0	55.34	31.26	9.12
UK Power Networks	31/12/13	2013	1,607.6	921.4	586.3	213.0	57.32	36.47	13.25
UK Power Networks	31/12/14	2014	1,666.1	887.0	481.6	222.5	53.24	28.91	13.35
UK Power Networks	31/3/16	2015	1,939.4	1,005.4	612.5	182.0	51.84	31.58	9.38
			8,292.8	4,368.7	2,506.4	882.5	52.68	30.22	10.64
Western Power - PPL WEM	31/3/12	2011	766.1	346.8	158.1	0.0	45.27	20.64	0.00
Western Power - PPL WEM	31/3/13	2012	889.4	566.7	343.0	47.0	63.72	38.57	5.28
Western Power - PPL WW	31/3/11	2010	503.0	300.0	208.3	40.0	59.64	41.41	7.95
Western Power - PPL WW	31/3/12	2011	570.1	348.8	241.7	10.5	61.18	42.40	1.84
Western Power - PPL WW	31/3/13	2012	609.6	355.4	253.5	30.8	58.30	41.58	5.05
Western Power	31/3/14	2013	1,574.0	732.5	399.7	162.0	46.54	25.39	10.29
Western Power	31/3/15	2014	1,620.1	971.7	529.0	177.8	59.98	32.65	10.97
Western Power	31/3/16	2015	1,480.6	882.5	484.9	79.7	59.60	32.75	5.38
			8,012.9	4,504.4	2,618.2	547.8	56.21	32.67	6.84
OVERALL TOTALS			33,473.4	17,241.9	10,699.6	5,187.3	51.51	31.96	15.50

Note - Operating profit figures for UKPN in 2012 and 2013 include exceptional items

APPENDIX 3

National Grid Electricity Transmission Annual Figures

	Year		PnL				Margins		
	Accounts to	Covering all / majority of	Turnover (£m)	Operating Profit (£m)	Final Profit (£m)	Dividend Payout (£m)	Operating Profit Margin (%)	Final Profit margin (%)	Dividend Payout (%)
National Grid UK ET	31/3/11	2010	2,549	904	505	150	35.46	19.81	5.88
National Grid UK ET	31/3/12	2011	2,813	870	545	200	30.93	19.37	7.11
National Grid UK ET	31/3/13	2012	3,111	1,040	647	400	33.43	20.80	12.86
National Grid UK ET	31/3/14	2013	3,393	1,078	763	300	31.77	22.49	8.84
National Grid UK ET	31/3/15	2014	3,713	1,171	770	655	31.54	20.74	17.64
National Grid UK ET	31/3/16	2015	3,979	1,161	906	310	29.18	22.77	7.79
			19,558	6,224	4,136	2,015	31.82	21.15	10.30

Source: companies house reports

Note: pre-exceptional operating profit figures were used