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THE HIDDEN WIRING

HOW ELECTRICITY IMPORTS THREATEN BRITAIN'S ENERGY SECURITY

TONY LODGE & DANIEL MAHONEY

SUMMARY

- Since 2012, EU emissions legislation has led to closures of UK coal and oil fired power stations. Rather than building replacement gas fired power stations, the Government has been increasingly looking to import more electricity.
- Between 2013 and 2016, the amount of electricity Britain imported from Europe via undersea interconnector cables rose by 52%. It is now estimated that the UK will be receiving 10 times more power from overseas in 2030 than was projected in 2012.
- Interconnectors can be a useful way of delivering secure and cheap supplies across Europe, as they can both import and export electricity. But in Britain's case, it is increasingly one-way traffic. In the 12 months to March 2017 the UK imported 17.22 TWh but only exported 2.78 TWh.
- There are two big problems with this. First, imported electricity enjoys an unfair advantage over domestic generation by being exempted from the Carbon Price Floor and network transmission charges. This means that rather than cutting carbon emissions, we are often 'offshoring' them instead.
- Second, many of the electricity markets from which the UK plans to import more power are expected to have lower supplies going forward, especially as they phase out their own coal, oil or even nuclear power stations. The German election results could exacerbate this problem, given the likelihood that the Greens will form part of the ruling coalition.
- This could threaten the UK's energy security, leaving the country short of power – or having to pay higher bills.



1. INTRODUCTION

The increasing use of renewables as part of the electricity grid has meant that existing and new-build gas fired power stations have to remain on standby, which often makes their operations unprofitable.¹ The Capacity Market offers payments to these generators in order to ensure [security of supply](#) and ultimately to incentivise investment in new and existing gas fired power generation, which is required to replace the coal fired power stations and older nuclear plants which are being closed down.

The coal stations are closing as a result of the EU Large Combustion Plant Directive (2001), the EU Industrial Emissions Directive (2010), and the UK Carbon Price Support legislation (alternatively known as the Carbon Price Floor).

However, the Capacity Market is failing to attract adequate new dispatchable gas fired generation. The UK's 2012 Gas Generation Strategy stated that 26 GW of new gas fired generation would be needed by 2030. On the current trajectory (see Figure 1) the UK will spectacularly miss that goal, undershooting by nearly 12 GW.

In response, the Government decided to encourage the importing of electricity from continental Europe through interconnectors. The 2012 projections suggested that the UK would generate 123.9 TWh of electricity from gas fired power stations (known as CCGTs) in 2030 and import only 6 TWh. By 2016, these figures had changed to just 68 TWh from gas plants and the import of 67 TWh of electricity.²

Glossary of Terms

CCGT *Combined Cycle Gas Turbine (gas fired power station)*

GW *Gigawatt*

MW *Megawatt*

MWh *Megawatt hour*

TWh *Terrawatt hour*

The Government's Clean Growth Strategy paper claims that there could be at least 9.5 GW more interconnection by the early-to-mid 2020s, in addition to the 4 GW today and the 4.4 GW under construction³. This paper argues that a growing over-reliance on interconnectors and a lack of domestic capacity could pose a future risk to the UK's electricity market.

Interconnectors will not always be able to provide the UK with the electricity it needs, as supplies can be diverted to meet demand elsewhere depending on factors on the continent: climatic, geopolitical, technical and logistical.

Importantly, new industry research shows that as the UK looks to import more electricity from the EU, many of the major electricity markets in central and western Europe – from which we expect to import – will have falling and tightening capacity margins going forward, as their own older coal, oil and nuclear generation closes and supplies via renewables become more intermittent. In particular, the recent German election result throws further doubt on its future energy policies.

¹ Gas fired generation in the UK largely consists of Combined Cycle Gas Turbine (CCGT) plants

² 2012 & 2016 government energy and emissions projections [see annex for breakdown of figures]

³ HM Government, The Clean Growth Strategy, October 2017



Figure 1: Shortfall in new gas fired generation vs 2012 ambitions
 Gas generation ambition from DECC; current projections extrapolated from Capacity Market auctions.

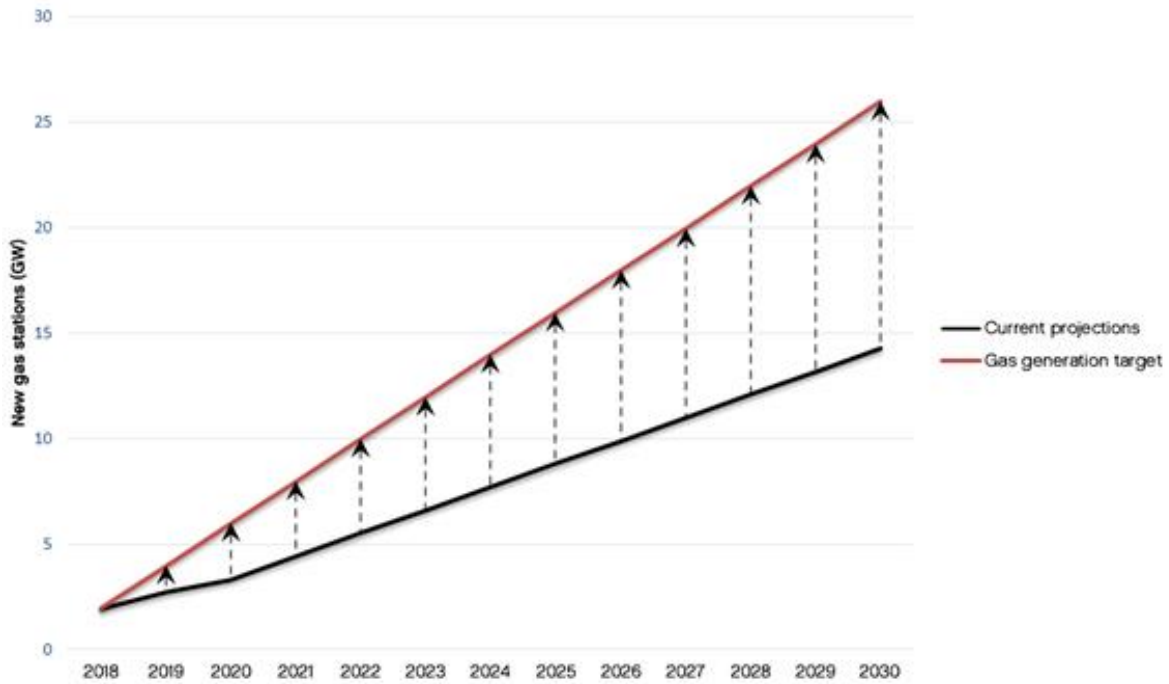
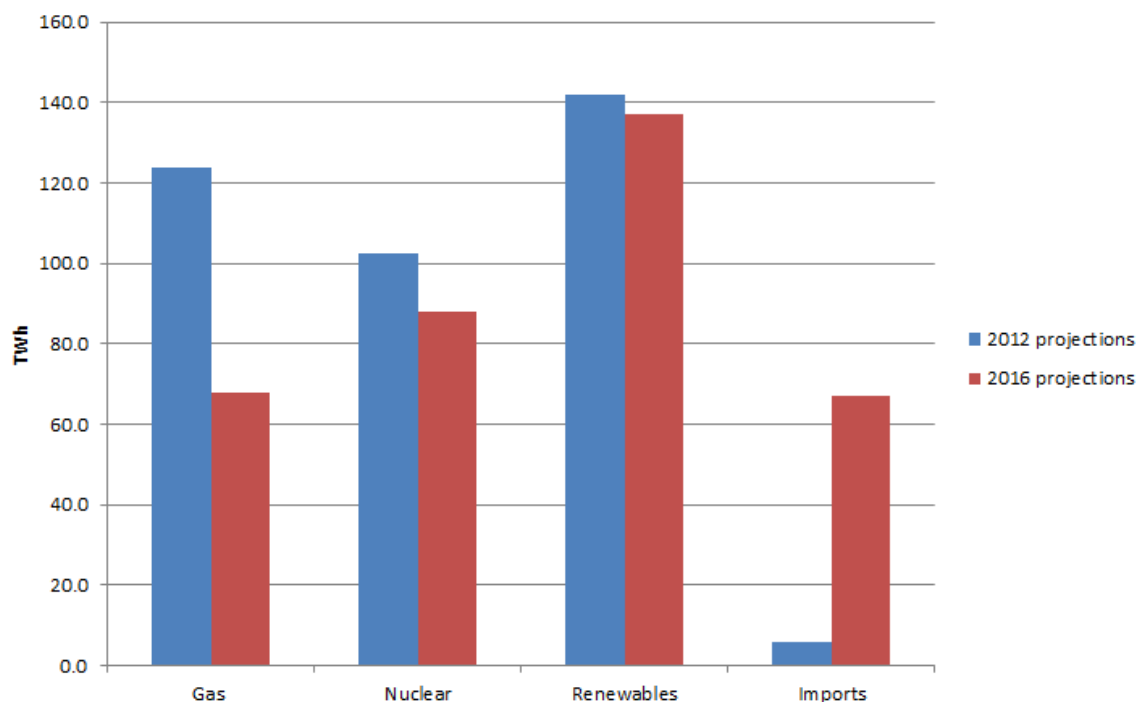


Figure 2: Power generation projections in 2030
 Via DECC and BEIS; see Annex for full details



Boosting British security of supply through more interconnectors is dependent on a healthy electricity capacity surplus in continental markets. This could ensure delivery at times of system need – but EU-based energy companies do not expect this to be the case given capacity margin falls, particularly in Germany. Our increased reliance on interconnection consequently risks security-of-supply issues for the UK.

Figure 3: Firm electricity capacity margin in 2012 (blue) and 2023 (gold) in Central and Western Europe⁴

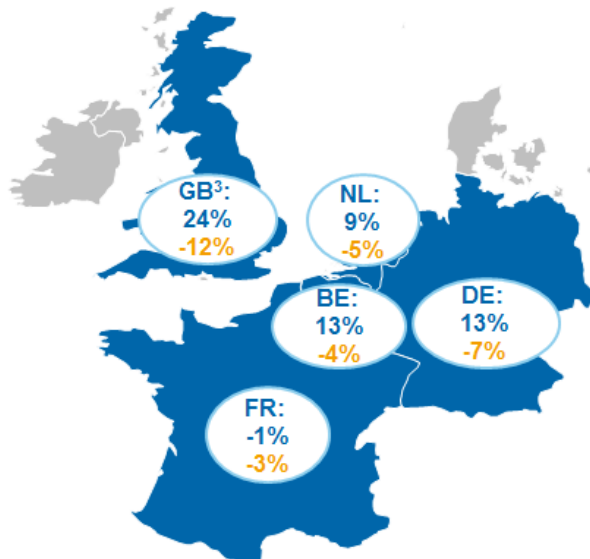
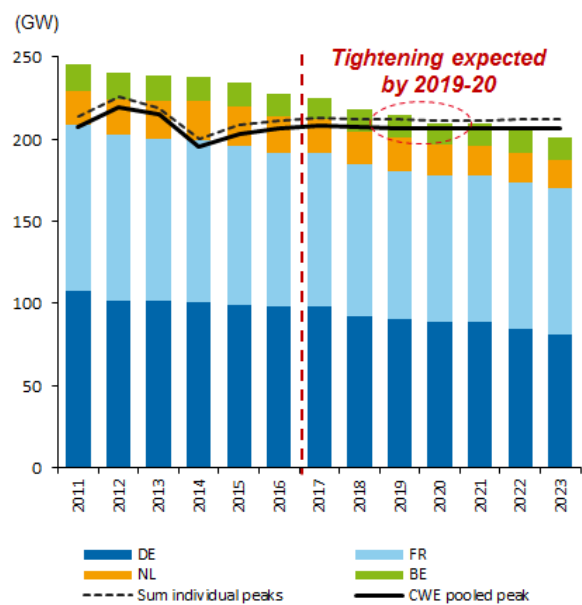


Figure 3 above, which includes all announced closures and new-build, shows how the situation is expected to deteriorate over the coming years.

⁴ GB de-rated margin calculated using National Grid's 'Two Degrees' Future Energy Scenario, 2017, with historical capacity based on annual capacity changes reported in DUKES 2017. De-rated capacity calculated using Capacity Auction de-rating factors for the nearest year. Including interconnectors the margins would be 27.8% for 2012/13 and 1.3% for 2023/24.

Figure 4 similarly details the falling peak load electricity supply and forecast demand (black line) in Central and Western Europe (CWE) through to 2023. (DE is Germany, FR is France, NL is the Netherlands and BE is Belgium.)

Figure 4: Demand-supply balance at peak load in Central and Western Europe⁵



These charts include all publicly announced or fixed power-plant closures and new-build across Europe's main electricity markets. Importantly, they do not anticipate or forecast any extra closures as a result of any new policy interventions in Europe.

Of particular significance is the tightness in German margins as a result of the closure of all German nuclear power plants by 2022. Between 2011 and 2022, Germany will have closed all of

⁵ Source for Figure 3 & 4: BNetzA Kraftwerkliste, 16.11.2016, BNetzA Zu- und Rückbau Liste 16.11.2016, KWSAL 10.11.2016, TenneT Report Monitoring Leveringszekerheid (combined with RES info from CBS); RTE Bilan électrique 2011-2015; RTE Bilan previsionnel (edition 2016) 1 Excludes interconnection. 2 CWE=Central Western Europe. GB de-rated margin calculated using National Grid's 'Two Degrees' Future Energy Scenario, 2017, with historical capacity based on annual capacity changes reported in DUKES 2017. De-rated capacity calculated using Capacity Auction de-rating factors for the nearest year. Including interconnectors the margins would be 27.8% for 2012/13 and 1.3% for 2023/24.



its 17 nuclear power plants, which previously supplied up to a quarter of its electricity demand.⁶

Importantly, the emergence of the Greens as a likely key coalition party in Germany following the recent elections puts further strain on the future of German energy policy. As well as the closure of nuclear plants they are now insisting on the closure of Germany's 20 most polluting coal fired power stations. This has been described as a key demand for any future role supporting Angela Merkel's CDU party.⁷

In France, meanwhile, the new Macron government has stated it could close up to 17 nuclear plants by 2025 in order to limit French dependence on nuclear power to 50% of its total.⁸ France presently generates 75% of its electricity from nuclear plants.⁹ Last month, four French reactors at the Tricastin plant had to be suddenly shut down due to a risk of flooding from a neighbouring canal. This sudden loss of 3600MW of electricity supply could see France facing tight supplies this winter after the nuclear regulator found other flaws at separate sites.¹⁰

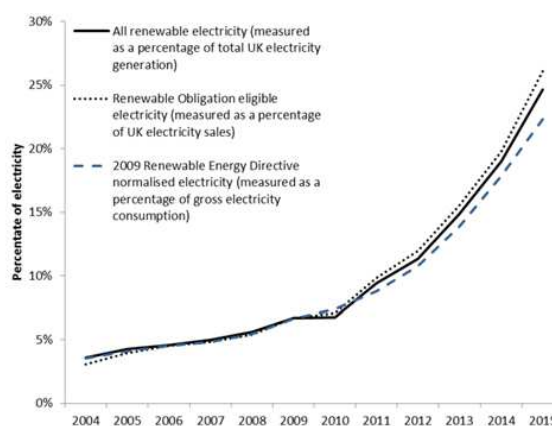
As a result, French front-month electricity futures (the first month for which a futures contract is being traded) jumped 2.54 per cent to 42.45 euros per megawatt, remaining just below a year high set earlier this month.¹¹

2. THE STATE OF THE UK MARKET

The UK's electricity market has been changing dramatically over the past 15 years. Many large coal fired power stations have closed due to EU and UK environmental legislation, while most of

the recent new-build electricity generation has come from weather-dependent technologies: wind and solar power.

Figure 5: The growth of renewables



Note: The Capacity Market was introduced in 2014, when renewable generation had reached around 20% of UK electricity generation

Power from these sources is growing and enjoys priority status with National Grid (see Figure 5). This results in dispatchable electricity generation running less regularly than in the past. However, dispatchable electricity generation, such as that provided by gas, coal and nuclear generation, remains crucial to meet demand when there is little output coming from intermittent or weather dependent sources of power. They deliver security of supply.

This effectively means that existing and new-build dispatchable generators need to remain on standby, which often makes their operations unprofitable. The Capacity Market provides the opportunity of contracted cash flow to these

⁶ BBC World Europe, Germany: Nuclear power plants to close by 2022, May 2011

⁷ Daily Telegraph, 26 September 2017 'Germany election upset clouds future of energy policies'

⁸ Power-technology.com

⁹ France 24, 12 July 2017 'France could close 17 nuclear reactors by 2025'

¹⁰ Reuters, 28 September 2017, 'EDF to close Tricastin nuclear plant over flooding risk'

¹¹ Ibid



generators over time to ensure that they remain financially viable.

The Capacity Market is intended to ensure security of supply and ultimately to incentivise investment in new and existing gas fired power generation (CCGTs), which is required to replace much of the closing coal fired and nuclear power generation.

Electricity generators bid into a capacity auction to supply power. If generators win a contract, they then pledge their availability to provide electricity when needed in the future. The auction price is designed to encourage investment in new power stations and strengthen the economic case for existing ones.

The key in this auction is the price it delivers; the lower the price, then the poorer the case for new investment and plant retention.

In recent auctions, the price has been too low. The price next year's key auction (Feb 2018) delivers, and the new domestic plant build it encourages, is now critical to the survival of the Government's energy policies.

Much of the blame for the historic low price can be placed on a growing dependence on more imported electricity.

In 2012, the UK's Gas Generation Strategy claimed that up to 26 GW of new gas fired generation capacity would be needed by 2030, and the Capacity Market is seen as a vital tool in delivering this.

3. THE COST OF THE CAPACITY MARKET

Estimates of the direct cost of the Capacity Market vary. The Department of Business, Energy and Industrial Strategy (BEIS) has

estimated that by early 2018 it will add between £28 and £38 to an average customer bill.¹² Given that this cost arises from the increase in renewables within the electricity network, this should be viewed as a cost associated with the Government's renewables policy.

However, this by no means represents the full cost of the government's renewables policy. The price of all the network and balancing costs will come out at around £185 per household by 2020-21, according to John Constable of the Renewable Energy Foundation. The direct subsidies given to renewable energy generators will cost £7.6bn in 2011-12 prices, coming out at around £281 per household.¹³

As previously stated, in 2012 the Government believed that from 2012 to 2030, the UK should be building 26 GW of new gas fired generation. Yet the previous Capacity Market auctions, which are vital to ensuring that this ambition is achieved, are not particularly encouraging in this respect.

In summer 2016, the Government made the decision to increase procurement levels by approximately 6 GW from the previous year's auction and made it clear in the consultation '[Coal Generation in GB - Pathway to a Low Carbon Future](#)' that a solution must be found to close elderly coal fired power stations and send clear signals to secure new gas fired generation.

The results from the [latest capacity auction](#), which is procuring capacity for delivery from 2020/21 onwards, show that existing generation received 85% of the total awards.¹⁴ Although approximately 9 GW of new large gas plant entered last December's auction, there were

¹² Energy UK, Capacity Market, December 2016

¹³ CPS Economic Bulletin, '[Are We Heading for Blackout Britain?](#)'

¹⁴ National Grid, Provisional Auction Results, T-4 Capacity Market Auction 2020/21



only [two substantial new-build](#) gas fired generating entrants accepted – Centrica Kings Lynn (333 MW) and Spalding Energy (298 MW). Despite manufacturers offering competitive build packages, ultimately the clearing price was still too low for the proposed new projects.

Industry experts [estimated](#) that around three to four large new CCGTs were needed from the auction to attract adequate investment into the energy sector. In fact, the only two gas fired plants secured were mid-sized, leading analysts at Barclays to [conclude](#) that the auction “*will largely be viewed as a disappointment by the UK government in terms of securing the significant levels of new gas fired generation capacity they hoped for*”.¹⁵

The previous two auctions had also failed to attract significant new gas fired generation. The first in 2014 secured only one new 1.9 GW CCGT at Trafford in Greater Manchester, which has now [reneged](#) on its capacity agreement, having been given an extended grace period to try and find suitable investment.¹⁶ To date, efforts to get this plant built have been unsuccessful.

The [second auction](#) in 2015 secured another large gas fired power station at Carrington (also near Manchester), which has a capacity of 818MW. However, this project was committed to development before entering into and securing a one-year capacity market contract.

As seen in Table 1 and Figure 1, the UK will spectacularly miss its 2012 gas generation ambitions if the current trajectory is maintained. On the current trajectory, by 2030 new gas fired additions will undershoot by nearly 12 GW.

Table 1: New gas fired generation secured at capacity auctions

2018/19	1.9 GW
2019/20	0.8 GW
2020/21	0.6 GW
Average additions per year	1.1 GW
2030 trajectory	14.3 GW
2030 aim (set in 2012)	26 GW
Gap by 2030	11.7 GW

4. WHAT ARE THE IMPLICATIONS?

Earlier this year, a former boss of National Grid [claimed](#) that the UK has enough generation capacity to meet electricity demand. This pronouncement comes despite National Grid’s latest Winter Outlook [suggesting](#) that the UK’s electricity margins are very narrow, which raises questions over security of future supply.¹⁷

Even if the UK is not set for blackouts, there are still some troubling developments. The closure of many coal fired stations means the UK needs a robust investment environment to encourage new gas fired generation. However, the Capacity Market has failed and continues to fail to achieve this.

This potential lack of new and adequate dispatchable electricity generation may not lead to power cuts, but it could lead to surges in power prices. For example, in September 2016 a series of unexpected incidents [led](#) to prices temporarily surging from £40/MWh to £999/MWh.¹⁸

¹⁵ Daily Telegraph, Old coal beats new gas for subsidy cash to keep the lights on, December 2016

¹⁶ Utility Week, Trafford power station reneges on capacity agreement, December 2016

¹⁷ National Grid, 2016/17 Winter Outlook Report

¹⁸ Daily Telegraph, Power price surges to record high on supply shortage fears, September 2016



Figure 6: Projection of electricity generation by source (2012 estimates, see Annex for more)¹⁹

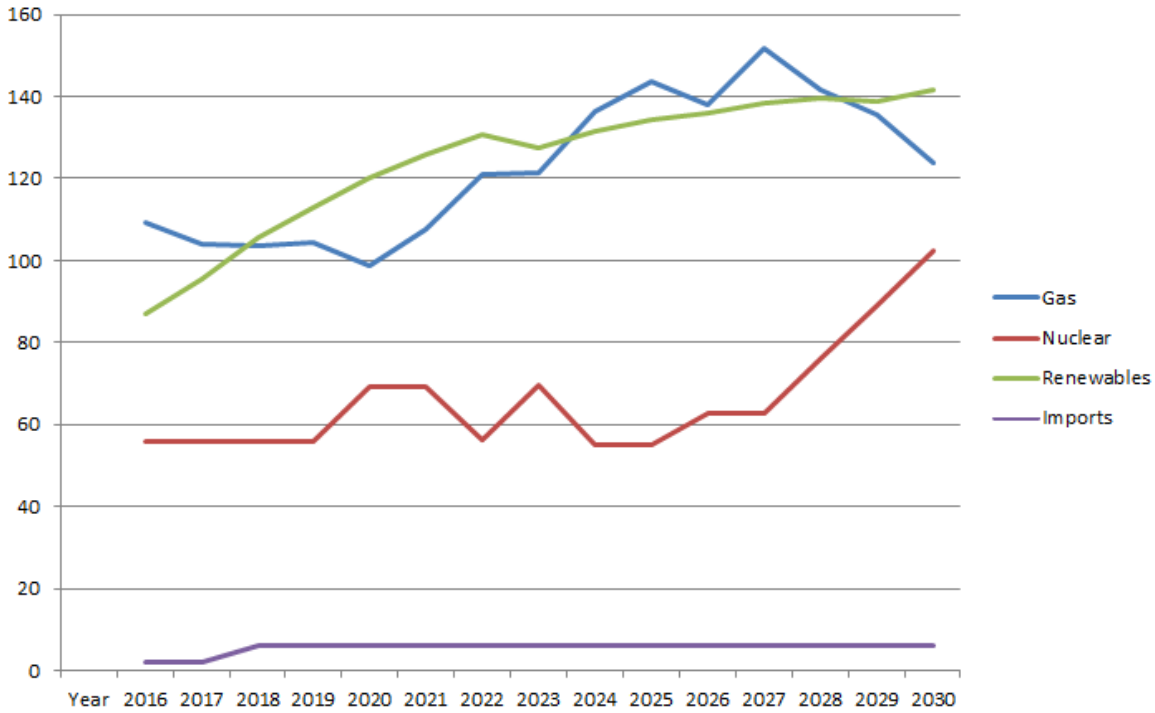
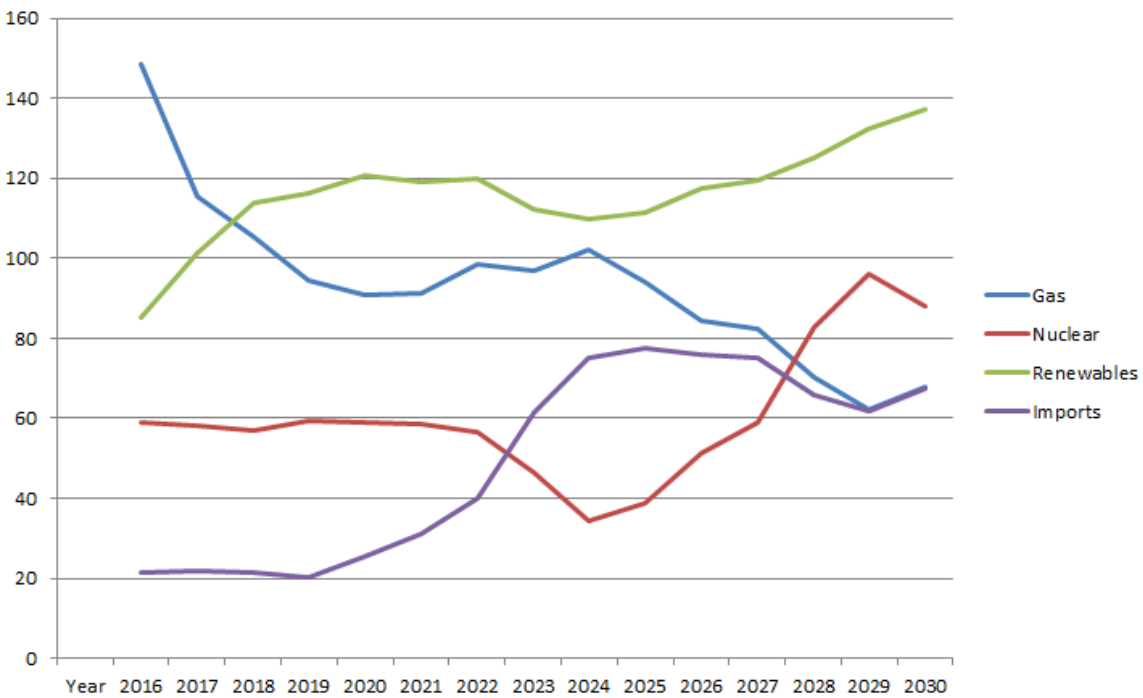


Figure 7: Projection of electricity generation by source (2016 estimates, see Annex for more)²⁰



¹⁹ Department of Energy and Climate Change

²⁰ Department for Business, Energy & Industrial Strategy



A lack of adequate new dispatchable power to cover plant closures or similar related incidents could see this reoccur on a more regular basis.

The lack of new gas fired generation could therefore have implications for the competitiveness of UK industry. It could also increase the cost and unreliability of electricity for consumers, while leaving the UK more dependent on foreign electricity imports post-Brexit.

5. THE GOVERNMENT'S PLAN: HIGHER IMPORTS AND MORE NUCLEAR

The Government is keen to expand the use of undersea cables known as interconnectors to import more foreign electricity and cover the lack of new replacement power plants at home. It is now estimated that the UK will receive 67 TWh of power from interconnectors in 2030, which is a tenfold increase in the projection that was made in 2012.²¹

In a written Parliamentary Answer in March 2017, it was announced that foreign imports of electricity had risen by 52% in just three [years](#), highlighting a strong trend to rely more on imports as power plants at home close and are not replaced.²²

In the 2016 Spring [Budget](#), George Osborne pledged support to at least 9 GW of additional interconnection capacity, which was an 80% increase on previous estimates and brings the projected level of interconnection capacity to nearly 14 GW over the next decade.²³

Table 2: Current and proposed interconnectors and their capacities to Britain²⁴

<i>Name</i>	<i>Country</i>	<i>Capacity</i>
IFA	France	2 GW
Britned	Holland	2.3 GW
Moyle	Northern Ireland	0.45 GW
EWIC	Republic of Ireland	0.5 GW
NEMO	Belgium	1 GW
Eleclink	France	1 GW
Total by 2020		6.15 GW

6. THE PROBLEMS WITH THE PLAN

Interconnectors should not be seen as an alternative to new gas fired generation. Interconnectors will not always be able to provide the UK with the electricity it needs, as supplies can be diverted to meet demand elsewhere – particularly as capacity margins fall across Europe.

Foreign electricity imported into Britain (from coal and gas generation on the Continent) also enjoys an unfair advantage over electricity generated in Britain, as the foreign generator will not have had to pay the GB Carbon Price Floor, which is faced by domestic fossil fuel plants.

This raises the charge of severe market distortion and a possible Competition and Markets Authority challenge from British electricity generators.

More interconnectors will also depress the Capacity Market price, which would reduce the incentive to retain existing gas fired generation

²¹ 2012 and 2016 energy and emissions projects [see annex for data]

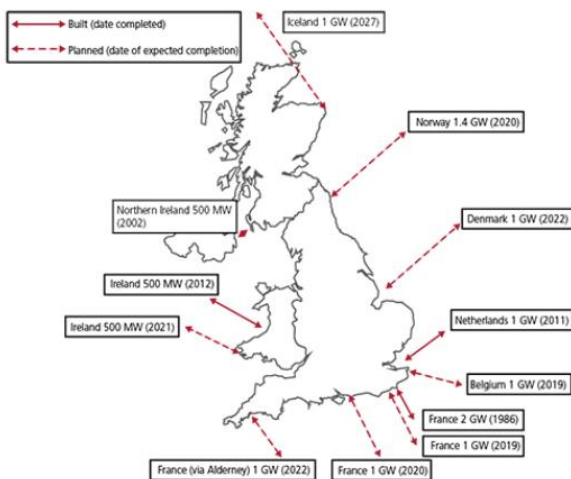
²² WPQ, 21.3.17, 67877

²³ Budget 2016 'Red Book' p64

²⁴ Department of Energy and Climate Change

and build new ones. In the 2016 auction, 2.3 GW of existing interconnectors received support. This would have had a negative impact on the clearing price and meant that, potentially, some new gas fired generation missed out on receiving Capacity Market support.

Figure 8: Existing interconnectors and those at various stages of planning (2017)²⁵



The next auction, in early 2018, will therefore be a crucial test for both the Government and investor confidence.

But there are also specific issues that need addressing:

National Grid conflict of interest

The Government will need to address the growing conflict of interest relating to National Grid. This is a privately owned company listed on the stock market which owns the main national pipelines and the electricity transmission network, alongside having the responsibility for keeping the lights on and balancing the electricity network.

It therefore has a huge commercial interest in boosting the import of foreign electricity through undersea interconnectors, irrespective of the negative domestic policy implications.

Last year both OFGEM and the Commons Energy and Climate Change Select Committee called for an independent system operator (ISO) to replace National Grid in operating the energy transmission network.

Nuclear power

Prioritising the construction of nuclear plants over gas fired generation will be highly expensive. Peter Atherton – a well-respected energy analyst – has [highlighted](#) the enormous prospective costs of the Hinkley Point power plant over the coming decades. EDF are being offered guaranteed prices of over twice the wholesale power price, which will be indexed linked to the CPI measure of inflation for 35 years. Atherton argues that an equivalent capacity of gas fired generation could be created for just 14% of the cost.

Moreover, the Hinkley project has faced a [series of](#) delays and increases to its cost, which is not particularly encouraging if the Government is depending on new large nuclear plants for future electricity supply.

Another large proposed nuclear plant at Moorside in Cumbria is [struggling](#) to secure corporate backing and could even now be dropped.

²⁵ House of Lords Select Committee on Economic Affairs



7. CONCLUSION & RECOMMENDATIONS

Renewable energy policies

Gas fired generation is required to remain on standby to account for the growing level of intermittency arising from additional weather dependent renewable energy. This is hampering the economic viability of gas fired generation.

The Government can ensure that the level of intermittency on the UK's electricity network is curtailed by freezing renewable energy subsidy levels from 2020-21 onwards, which would somewhat help reduce the impact on gas plant economic viability. Legislation should also be set out to ensure that the renewable energy subsidy cap for 2020-21 (£7.6 billion in 2011-12 prices) is not allowed to be breached.

Efforts should, instead, be ploughed into making storage technology economically viable, which would eliminate the need for further subsidies for renewables while allowing many gas plants to remain operational for longer periods.

The Carbon Price Floor

The Carbon Price Floor (CPF) makes generating electricity from fossil fuel power plants in Britain more expensive than in the rest of Europe. It acts as a deterrent to investment in new gas fired (CCGT) power generation, irrespective of the benefit it has had in encouraging electricity generation to switch from coal to gas. This will soon be irrelevant as all coal plants are expected to be closed or running on very low loads.

The CPF will then primarily penalise gas fired generation on which the UK is becoming more dependent. It also allows electricity imports an

unfair advantage as overseas generators do not pay the tax.

With Brexit, the UK must become more competitive and strive to deliver lower energy prices and reliable energy supplies. Consequently, electricity generation should, at the very least, face the same levels of carbon taxation as its competitors in the rest of Europe.

Interconnectors

Government must urgently consider the eligibility of these undersea cables to participate in the UK capacity market auctions. A large amount of interconnector capacity has been successful in obtaining capacity market contracts, while new gas fired generation has received minimal support.

Government projections suggest that interconnector capacity will be used increasingly as an alternative for domestic capacity. This could be detrimental to UK electricity market transparency, fluidity and price stability in the future.

Interconnectors also, as outlined in this paper, enjoy a transmission asset status which allows them to avoid paying network charging costs as domestic generators must. This affords them a valuable cost advantage and allows them to participate in UK capacity market auctions (a mandate given by EU State Aid approval in 2014 which should be reviewed following Brexit).

It is wrong to regard interconnectors as a national generation asset. Their infrastructure in the UK is not responsible for generating electricity and consequently they are not a British energy generating asset.

Also, the imported electricity they carry does not face the UK's Carbon Price Floor, despite



the fact much of it will have been generated by coal and gas fired generation or oil plants overseas.

It is estimated that the Carbon Price Floor and network charge exemptions alone create an advantage for interconnectors over domestic generators equivalent to approximately £10/MWh, or more than 20% of the baseload electricity price.²⁶ The Competition and Markets Authority should therefore look into the possible market distortion and unfair competitive advantages enjoyed by interconnectors and their operators.

Expansion of interconnectors should be considered at a much later stage, after the UK has overcome its domestic energy challenges and again enjoys a healthy surplus margin in reliable electricity generation. This would then allow the UK to export electricity and genuinely develop a balanced two-way market. Today they are being used and supported to cover failing domestic policies.

'Offshoring' emissions

More interconnectors allow the UK Government to effectively "offshore" emissions to the rest of the EU and claim an emissions reduction victory. This is despite the fact that the power plants in Germany, Holland, Belgium and France may have just as high emissions as those that the UK has shut down.

Between 2011 and 2015, Germany opened 10.7 GW of new coal fired generation. This is more new coal capacity than was constructed in the entire two decades after the fall of the Berlin Wall: 43% of its electricity now comes from coal, the majority from burning lignite.²⁷

Holland and Belgium are similarly retaining their coal fired capacity. Consequently Britain's desire to increase electricity supplies from Europe will largely come from coal, lignite and gas fired generation – at least in the immediate and medium term – and not renewable sources or nuclear plants.

National Grid has boasted in recent months that Britain has enjoyed "coal free periods" because no coal fired plants have been generating electricity in the UK. But this is at best misleading and at worst disingenuous, as the UK was very probably importing electricity which had been generated from coal plants in Europe.²⁸

Ministers have admitted it is impossible to trace the fuel source of the electricity which is imported to the UK by interconnector – but the cross-border flow of electricity generated by fossil fuels (particularly coal) is considerable within Europe, especially between Germany, France, Holland and Belgium.²⁹

Price rises

Growing dependence on electricity imports through interconnectors could lead to price rises for UK consumers. Though many commentators point to the present situation where imported electricity is often cheaper than that generated in the UK, they omit to highlight how growing import penetration can raise prices.

In December 2016 a ship in the English Channel dragged its anchor during Storm Angus across the interconnector with France and caused

²⁶ 'Dash for Interconnection' Aurora Energy Research, February 2016

²⁷ World Nuclear Association paper 'Nuclear Power in Germany' August 2017

²⁸ BBC News, 22 April 2017, 'First coal free day in Britain since 1880s'

²⁹ WPQ, 6.12.16, 56264



supplies to be halved for two months while repairs were completed.

At the time the UK was fortunate to be exporting electricity, so the incident actually reduced electricity prices in the UK as surplus supplies became available. But if the interconnector had been damaged when the UK was importing electricity – which is overwhelmingly the trend – then power prices would have increased significantly.

At first glance it would appear that more interconnection is good for the UK. But this ignores the wider implications of falling capacity margins across the EU and how interruptions or diversions in import supplies going forward could pose serious risks for UK consumers.

Existing coal plants

In its consultation [process](#) on the closure of Britain's coal fired power stations the Government conceded that they are operating beyond their original design life and are on average 47 years old. The Government should set out a clear trajectory to the end of these plants, thereby offering a clear signal to investors in new gas fired generation. It should consider tightening the CO₂ emissions permitted by coal plants with a new Emissions Performance Standard, which would increase year on year and provide a phased reduction in coal capacity but, crucially, not pose any sudden risk on security of supply.

Action on the issues above can deliver:

- A more robust Capacity Market Auction Price in the future which will deliver new gas fired generation.
- Less need to keep elderly coal plants on the system into the next decade because new gas fired generation has not been delivered.
- Reduced exposure to falling electricity supplies overseas.
- Cheaper electricity prices in the medium to long term as the electricity system is less prone to unexpected price spikes due to insufficient available generating capacity at any one time.
- A reassessment of the role and value of more interconnectors, better market transparency as regards the competitive advantages they enjoy and acknowledgement of the distortions and market arbitrage they create.
- A credible and accountable measure of UK emissions with less “offshoring” into Europe's power sector.
- Stronger security of energy supply, price transparency and national policy accountability in the post Brexit era.

Tony Lodge
Daniel Mahoney



Data and references from Written Parliamentary Answers

From 2013 to 2016 the amount of electricity imported from Europe via interconnectors rose by 52%.^{30 31}

The amount of imported electricity consumed per annum has increased to over 6% of the total.^{32 33}

The current operational capacity of the interconnectors stands at 4 GW.³⁴ However, under government plans this will double by 2023.³⁵ This will lead to a growing reliance on imported electricity, with up to 10% of all British electricity likely to be imported from Europe by 2020 as domestic power stations close.

By 2030, it is proposed that there will be an additional 9.5 GW of interconnector capacity added³⁶, totalling nearly 20 GW; more than a fourfold increase in just over ten years.

This could result in imported electricity accounting for more than 20% of UK supplies by 2030.

Through interconnectors, the UK can both export and import electricity, supposedly ridding the notion of a one-way relationship. However, Britain's growing dependence on imported electricity is clear to see: in the 12 months to March 2017 the UK imported 17.22 TWh (Terrawatt hours)³⁷ but only exported 2.78 TWh³⁸. In practice, this means for every 100 TWh we import, we only export 16 TWh. The disparity between exports and imports exemplifies how reliant the UK is becoming on imported electricity.

³⁰ WPQ, 18.5.16, 37065

³¹ WPQ, 21.3.17, 67877

³² WPQ, 4.7.17, 2892

³³ WPQ, 21.3.17, 67877

³⁴ WPQ, 4.7.17, 2896

³⁵ WPQ, 4.7.17, 2897

³⁶ *Ibid*

³⁷ WPQ, 4.7.17, 2893

³⁸ WPQ, 4.7.17, 2894



Annex: 2012 and 2016 electricity generation projections

2016 projections (TWh)					2012 projections (TWh)				
Year	Gas	Nuclear	Renewables	Imports	Year	Gas	Nuclear	Renewables	Imports
2016	148	59	85	21	2016	109.1	56.1	87.1	2.1
2017	115	58	101	22	2017	103.9	56.1	95.6	2.1
2018	105	57	114	21	2018	103.4	56.1	105.8	6.0
2019	94	59	116	20	2019	104.5	56.1	113.0	6.0
2020	91	59	121	25	2020	98.9	69.3	120.2	6.0
2021	91	59	119	31	2021	107.5	69.3	125.9	6.0
2022	98	56	120	40	2022	121.0	56.4	130.6	6.0
2023	97	46	112	61	2023	121.2	69.7	127.3	6.0
2024	102	34	110	75	2024	136.4	55.1	131.5	6.0
2025	94	39	111	77	2025	143.8	55.1	134.2	6.0
2026	84	51	117	76	2026	138.1	62.7	136.0	6.0
2027	82	59	119	75	2027	151.7	62.7	138.4	6.0
2028	70	83	125	66	2028	141.6	76.0	139.7	6.0
2029	62	96	133	62	2029	135.5	89.2	139.0	6.0
2030	68	88	137	67	2030	123.9	102.5	141.8	6.0

2012 via <https://www.gov.uk/government/publications/2012-energy-and-emissions-projections>

2016 via <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2016>



THE AUTHORS

Tony Lodge is a leading transport and energy analyst. His past publications include *The Great Green Hangover – How to cut bills and avoid an energy crisis* (Centre for Policy Studies, 2015), *Rail's Second Chance - putting competition back on track* (Centre for Policy Studies, 2013), *The Atomic Clock - How the Coalition is gambling with Britain's energy policy* (Centre for Policy Studies, 2012) and *Rescuing Renewables – How energy storage can save green power* (Bow Group, 2010)

Daniel Mahoney is Deputy Director and Head of Economic Research at the Centre for Policy Studies. He previously worked in research roles for a number of parliamentarians, including a three-year posting as a senior researcher to a former Chancellor of the Exchequer. He is author of *UK Manufacturing: How to Fuel the Engine*, *Who Will Fix London's Housing Crisis?* and *The Great Overtake*.

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