

# Revenue payments to oil & gas companies due to the UK's energy bills support package

Quantifying revenues flowing to oil & gas extraction companies from the UK government due to the Energy Price Guarantee and Energy Bill Relief Scheme

## Research questions

1. Estimate the total revenues flowing from the government to oil & gas companies due to the Energy Price Guarantee and the Energy Bill Relief Scheme in Winter 2022/3. This includes revenue flows for both imports and domestic extraction of gas.
2. Estimate the total revenues flowing from the government to oil & gas companies extracting gas on the UK Continental Shelf due to the Energy Price Guarantee and the Energy Bill Relief Scheme in Winter 2022/3.
3. Estimate the revenues flowing from the government to individual oil & gas companies extracting gas on the UK Continental Shelf due to the Energy Price Guarantee and the Energy Bill Relief Scheme in Winter 2022/3.
4. Provide a range of Scenarios covering different consumption forecasts and future gas and electricity price curves

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## Summary

This analysis quantifies the revenues expected to flow from the government to oil & gas companies, via energy supply companies and electricity generation companies, due to the government setting maximum prices for gas and electricity that households and businesses will pay from October 2022 to April 2023. Under the Energy Price Guarantee and Energy Bill Relief Scheme, the government has committed to cover costs where electricity and gas prices are above the set maximum.

**Our analysis estimates that government will effectively make a total payment to all oil & gas companies of between £19.8 billion to £42.8 billion if this winter is a typical winter<sup>1</sup>, or between £23.2 billion to £50.1 billion if this winter is a cold winter.<sup>2</sup> These are revenues flowing both to UK North Sea companies, and to companies who export gas to the UK from other countries.**

The lower estimates are based on gas futures contracts for this winter from October 21st - that is, the agreed price curve on October 21st for gas deliveries during the winter.

The higher estimates are based on a situation where gas prices return to the the gas futures price curve from September 13th - still well below their peak.

These numbers make up a large part of the total cost of the government's Energy Price Guarantee and Energy Bill Relief Scheme - estimated at £31 billion and £29 billion respectively by the government on 18th October 2022.<sup>3</sup>

**This analysis estimates that this winter, between £7.4 and £15.3 billion in revenues will be effectively paid from the UK government to oil & gas companies extracting gas specifically on the UK Continental Shelf.**

**This includes £1,090 million to £2,260 million paid to Total, £1,030 million to £2,130 million paid to Harbour Energy, £580 million to £1,210 million paid to Shell and £500 million to £1,040 million paid to BP.**

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<sup>1</sup> The typical winter scenario used in the National Grid Gas Winter Outlook is within the top 50% of winter temperatures that have been observed over the previous 30 years and was experienced in 2019/20.

<sup>2</sup> The cold winter scenario used in the National Grid Gas Winter Outlook is within the coldest 10% of the previous 30 winters and was experienced in 2010/2011.

<sup>3</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1111612/E02808483\\_HMT\\_Out-of-turn\\_supplementary\\_estimates\\_Accessible.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1111612/E02808483_HMT_Out-of-turn_supplementary_estimates_Accessible.pdf)

## Results in Numbers

**Total revenue flow to all oil & gas companies in Typical Winter:**

**£19.8 billion to £42.8 billion**

**Total revenue flow to all oil & gas companies in Cold Winter:**

**£23.2 billion to £50.1 billion**

**Revenue flow to UK Continental Shelf oil & gas companies:**

**£7.4 billion to £15.3 billion**

**Revenue flow to Total for gas extraction in UK North Sea:**

**£1.08 billion to £2.26 billion**

**Revenue flow to Harbour Energy for gas extraction in UK North Sea:**

**£1.03 billion to £2.13 billion**

**Revenue flow to Shell for gas extraction in UK North Sea:**

**£0.58 billion to £1.21 billion**

**Revenue flow to BP for gas extraction in UK North Sea:**

**£0.50 billion to £1.04 billion**

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## Research questions

- 1. Estimate the total revenues flowing from the government to oil & gas companies due to the Energy Price Guarantee and the Energy Bill Relief Scheme in Winter 2022/3. This includes revenue flows for both imports and domestic extraction of gas.**
- 2. Estimate the total revenues flowing from the government to oil & gas companies extracting gas on the UK Continental Shelf due to the Energy Price Guarantee and the Energy Bill Relief Scheme in Winter 2022/3.**
- 3. Estimate the revenues flowing from the government to individual oil & gas companies extracting gas on the UK Continental Shelf due to the Energy Price Guarantee and the Energy Bill Relief Scheme in Winter 2022/3.**
- 4. Provide a range of Scenarios covering different consumption forecasts and future**

## gas and electricity price curves

## Findings

### Revenues flowing from the government to all oil & gas companies in Winter 2022/3

Table 1: Revenues flowing from the government to all oil & gas companies in Winter 2022/3					
	Oct 21 Price Curve		Sep 13 Price Curve		Alternative Price Curve
Standard Winter Consumption	19,787,498,366		42,821,160,359		42,503,713,183
Cold Winter Consumption	23,200,354,984		50,095,335,825		50,520,590,821

### Revenues flowing from the government to oil & gas companies extracting gas on the UK Continental Shelf in Winter 2022/3

Table 2: Revenues flowing from the government to oil & gas companies extracting gas on the UK Continental Shelf in Winter 2022/3					
	Oct 21 Price Curve		Sep 13 Price Curve		Alternative Price Curve
All Consumption Scenarios	7,356,590,662		15,261,487,564		15,108,369,806

## Revenues flowing from the government to individual oil & gas companies extracting gas on the UK Continental Shelf

Table 3: Revenues flowing from the government to individual UKCS oil & gas companies in Winter 2022/3

	Oct 21 Price Curve	Sep 13 Price Curve	Alternative Price Curve
TotalEnergies	1,088,867,930	2,258,892,080	2,236,228,726
Harbour Energy plc	1,025,773,143	2,127,999,882	2,106,649,763
Shell	584,608,349	1,212,789,111	1,200,621,257
NEO Energy	543,787,382	1,128,104,682	1,116,786,463
Spirit Energy	540,216,770	1,120,697,331	1,109,453,430
BP	503,419,215	1,044,359,602	1,033,881,593
Serica Energy	314,309,597	652,045,523	645,503,582
Ithaca Energy	308,442,565	639,874,173	633,454,347
Eni	249,022,201	516,604,688	511,421,619
Perenco	241,548,082	501,099,384	496,071,879
NIOC (Iran)	199,743,031	414,373,441	410,216,053
Neptune Energy	190,620,164	395,447,755	391,480,247
KNOC/Dana	176,908,614	367,002,696	363,320,576
Viaro Energy	176,203,926	365,540,798	361,873,345
ExxonMobil	174,037,840	361,047,183	357,424,814
Ineos Group	163,420,657	339,021,490	335,620,104
ONE-Dyas	118,438,866	245,705,296	243,240,146
APA Corporation	90,743,810	188,250,996	186,362,283
Centrica Energy	87,515,031	181,552,791	179,731,280
IOG	54,979,417	114,056,597	112,912,272

## Methodology

### 1) Summary of Methodology

1. Calculations for the cost to the government for UK gas consumption resulting from the Energy Price Guarantee and the Energy Bill Relief Scheme were made separately for gas and electricity, based on several scenarios for gas and electricity demand and forecast prices for gas and electricity over Winter 2022/2023.
2. We have defined Winter as the six months from start October to end March, in line with other forecasts (e.g. National Grid Winter Outlook<sup>4</sup>). This is also the period currently covered by the universal Energy Price Guarantee and Energy Bill Relief Scheme.<sup>5</sup>
3. The Energy Bill Relief Scheme sets out a maximum price that business will pay for gas and electricity - £75 £/MWh for gas and £211 £/MWh for electricity. Domestic households have a cap of 34 p/kwh of electricity and 10.3 p/kwh - because there are other elements beyond wholesale prices included in household unit prices, representing around 30% of the unit price.<sup>6</sup> When prices are higher than the maximum price, the government covers the difference.
4. The Government guidance states that the cap set for businesses "is equivalent to the wholesale element of the Energy Price Guarantee for households."<sup>7</sup> We have therefore used the 75 £/MWh gas and £211 £/MWh electricity caps to model the wholesale element for all sectors, including domestic, under both the Energy Price Guarantee and the Energy Bill Relief Scheme.
5. Our model works on a monthly basis - identifying direct gas and gas power consumption each month (in several scenarios) and gas and electricity wholesale prices each month (according to several forecasts), to calculate the potential government payment each month for gas consumed in the UK.
6. Using forecasts for gas production from the UK Continental Shelf over the winter, we calculated the proportion of the monthly government payment for gas that will flow to the UKCS gas producers. Using a breakdown of extraction rates by company, we apportioned the payments to individual companies operating on the UK Continental Shelf.

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<sup>4</sup> <https://www.nationalgrid.com/gas-transmission/insight-and-innovation/winter--outlook>

<sup>5</sup>

<https://news.sky.com/story/how-much-will-my-energy-bills-increase-next-year-now-price-guarantee-will-only-last-six-months-12723517>

<sup>6</sup> <https://commonslibrary.parliament.uk/research-briefings/cbp-9491/>

<sup>7</sup>

<https://www.gov.uk/government/news/government-outlines-plans-to-help-cut-energy-bills-for-businesses>

## 2) Modelling government payments for each month for direct gas consumption

1. Direct gas demand is gas consumed directly in homes, in businesses and in large industrial sites connected to the gas national transmission system. This does not include gas used in gas power stations to generate electricity.
2. Total direct gas demand over the winter, broken down by non-daily metered (households and small business) and daily metered (larger businesses and industrial users), was sourced from the National Grid Gas Winter Outlook<sup>8</sup>. This takes into account reduced usage this winter due to high prices. National Grid Gas Winter Outlook provides two scenarios, one representing direct gas consumption in a typical winter (Scenario 1) and one in a cold winter (Scenario 2).<sup>9</sup>
3. Past monthly data from 2019-2022 for gas demand<sup>10</sup> allows future gas consumption for the winter to be apportioned by month.
4. Wholesale gas price forecast curves (with average values for each month) were based on gas futures contracts<sup>11</sup> for the winter in September and October, and a forecast by an energy market consultancy<sup>12</sup>.
5. As this analysis was conducted during October, average futures contracts for this month were not available. Instead, data for actual wholesale gas prices<sup>13</sup> was sourced for the first three weeks of October, to construct an average price for the month. This was used for all price curves.
6. The forecast price curves all show the gas price remaining above the government price guarantee throughout the period.
7. Deducting the 75 £/MWh gas price guarantee from the forecast gas price shows the average £/MWh the government will pay for gas each month, for each gas price forecast curve.
8. Multiplying the forecast monthly direct gas consumption (for each scenario) by the £/MWh the government will pay for gas each month (for each gas price forecast curve), gives a monthly payment in £s by the government for directly consumed gas (for each consumption scenario and each gas price forecast curve).

<sup>8</sup> <https://www.nationalgrid.com/gas-transmission/insight-and-innovation/winter--outlook>

<sup>9</sup> <https://www.nationalgrid.com/gas-transmission/insight-and-innovation/winter--outlook>

<sup>10</sup> Inland energy consumption: primary fuel input basis (ET 1.2 - monthly)

<https://www.gov.uk/government/statistics/total-energy-section-1-energy-trends>

<sup>11</sup> <https://www.erce.energy/graph/uk-natural-gas-futures-curve/>

<sup>12</sup> <https://www.businesswisesolutions.co.uk/energy-market-snapshot/>

<sup>13</sup> <https://www.cliffordtalbot.co.uk/energy-prices/>

### 3) Modelling government payments for each month for consumption of electricity generated from gas

1. Consumption of electricity generated from gas per month in our Consumption Scenario 1 was based on a 5% reduction in electricity demand from winter 2021/22. This was calculated using BEIS monthly data on electricity consumption<sup>14</sup> and BEIS quarterly statistics on the fuel used in electricity generation<sup>15</sup>.
2. Consumption of electricity generated from gas per month in our Consumption Scenario 2 was modelled based on figures for total gas to be consumed for power generation during the 22/23 winter from the National Grid Gas Winter Outlook<sup>16</sup>, the 2021 thermal efficiency for combined cycle gas turbine stations published by BEIS,<sup>17</sup> and downgraded by 5% for losses. The electricity demand was then apportioned to each month, based on the spread of electricity demand in winter 2021/22, using BEIS data.<sup>18</sup>
3. Wholesale electricity price forecast curves (with average values for each month) were calculated based on the gas futures market<sup>19</sup> for the winter in September and October, with an additional alternative curve based on a forecast by an energy market consultancy<sup>20</sup>. Wholesale electricity prices have shown a close correlation to wholesale gas prices throughout 2022. Regardless of whether wholesale electricity prices for renewables and nuclear are decoupled, wholesale prices for electricity from gas can be reasonably assumed to continue their relationship to the wholesale gas prices over the next six months, given high gas prices. We modelled the correlation between past wholesale gas and electricity prices since Jan 2022<sup>21</sup> using a linear regression, and used this to estimate future wholesale electricity prices based on gas futures contracts.
4. As this analysis was conducted during October, futures contracts for the month were not available. Instead, data for actual wholesale electricity prices<sup>22</sup> was sourced for

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<sup>14</sup> Availability and consumption of electricity (ET 5.5 - monthly)

<https://www.gov.uk/government/statistics/electricity-section-5-energy-trends>

<sup>15</sup> Fuel used in electricity generation and electricity supplied (ET 5.1 - quarterly)

<https://www.gov.uk/government/statistics/electricity-section-5-energy-trends>

<sup>16</sup> <https://www.nationalgrid.com/gas-transmission/insight-and-innovation/winter--outlook>

<sup>17</sup> Plant loads, demand and efficiency (DUKES 5.10)

<https://www.gov.uk/government/statistics/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes>

<sup>18</sup> Availability and consumption of electricity (ET 5.5 - monthly)

<https://www.gov.uk/government/statistics/electricity-section-5-energy-trends>

<sup>19</sup> <https://www.erce.energy/graph/uk-natural-gas-futures-curve/>

<sup>20</sup> <https://www.businesswisesolutions.co.uk/energy-market-snapshot/>

<sup>21</sup> Data sourced from Ofgem's Wholesale Market Indicators

<https://www.ofgem.gov.uk/energy-data-and-research/data-portal/wholesale-market-indicators>

<sup>22</sup> <https://www.cliffordtalbot.co.uk/energy-prices/>

the first three weeks of October, to construct an average price for the month. This was used for all price curves.

5. The forecast price curves all show the electricity price remaining well above the government price guarantee throughout the period.
6. Deducting the 211 £/MWh electricity price guarantee from the forecast electricity price shows the average £/MWh the government will pay for electricity generated from gas each month.
7. Multiplying the forecast monthly consumption of electricity generated from gas (for each scenario) by the £/MWh the government will pay for electricity each month (for each price forecast curve), gives a monthly payment in £s by the government for electricity generated from gas (for each consumption scenario and each price forecast curve).

#### 4) Modelling Government revenues per month that flow to oil & gas companies for UK gas consumption, due to the Energy Price Guarantee and Energy Bill Relief Scheme

1. For each month, adding together the payment by the government for directly consumed gas and the payment by the government for electricity generated from gas, gives a total government payment that flows to companies supplying gas into the UK gas network (both from domestic production on the UKCS and imports).

#### 5) Modelling Government revenues per month that flow to oil & gas companies extracting gas on the UK Continental Shelf, due to the Energy Price Guarantee and Energy Bill Relief Scheme

1. The National Grid Gas Winter Outlook includes a forecast for volumes of gas supplied from UKCS domestic extraction over the winter 2022/3.
2. As the National Grid Gas Winter Outlook data on domestic gas production is for the entire winter and not monthly, we assumed that gas production does not vary from month to month in the winter. Production tends to be lower in summer months due to scheduled maintenance. But examining past UKCS gas production data<sup>23</sup> shows there is not a consistent divergence between months in winter.

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<sup>23</sup> Natural gas production and supply (ET 4.2 - monthly)  
<https://www.gov.uk/government/statistics/gas-section-4-energy-trends>

3. Comparing this to the volume of gas consumed domestically (also sourced from the NG Gas Winter Outlook) provides the proportion of the total government payment to gas suppliers, that flows to companies producing gas on the UKCS.
4. Multiplying this proportion with the total payment each month for gas, gives the total government payment each month flowing to all companies extracting gas on the UKCS.

## 6) Modelling Government revenues per month that flow to individual oil & gas companies extracting gas on the UK Continental Shelf, due to the Energy Price Guarantee and Energy Bill Relief Scheme

1. Uplift sourced data for 2022 and 2023 gas production by individual companies operating on the UKCS from Rystad. This was used to identify the 2022 and 2023 proportions of total UKCS gas production that each company is responsible for. As winter 2022/23 is half in 2022 and half in 2023, we used the average of the 2022 and 2023 proportions to describe the proportion of UKCS gas production each company is responsible for this winter.
2. Applying this proportion to the total government payment each month flowing to all companies producing gas on the UKCS, gives the government payment each month flowing to individual companies producing gas on the UKCS.

## 7) Assumptions and additional notes:

- Payments for UKCS gas and to individual UKCS gas companies are the same for all different Consumption Scenarios, as gas extraction levels are unlikely to vary in different Consumption Scenarios during the winter.
- We assume that the same mix of domestic vs imported gas applies for direct gas consumption and for gas power generation.
- We assume that payments above the maximum price set by government filter back to the gas extraction companies due to the high wholesale price, even though the payments are initially made to energy retail companies. This is because energy retail companies, electricity generators running gas-fired power stations, and gas shipping companies all have to pay high wholesale gas prices when purchasing gas.



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