

GHG EMISSIONS & WATER REPORTING

SSE's Criteria



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ABOUT SSE

SSE plc provides energy needed today while building a better world of energy for tomorrow. It invests in, develops, builds, and operates low-carbon electricity infrastructure in support of the transition to net zero. This includes onshore and offshore wind, hydro power, flexible thermal generation, electricity transmission and distribution networks, and localised energy systems. It also provides energy products and services for businesses and other customers.

AIM OF THIS DOCUMENT

This document details the reporting approach used by SSE plc (SSE) to report on GHG emissions and water usage during the financial year (1 April 2021 to 31 March 2022) as a result of operational activities undertaken by the SSE Group.



ORGANISATIONAL BOUNDARIES

INCLUDED IN REPORTING PERIOD

There are two methods that are described in the UK Government Environmental Reporting guidelines (March 2019), GHG Protocol and ISO14064-1:2018 standards: the equity share and control (financial or operational) approaches. An operational control consolidation approach was used to account for emissions. Table 1 describes the business units that are within the operational boundary approach.

The environmental data associated with any divestments is removed from the baseline, intervening years and current year to ensure relevant comparisons and consistent performance towards the green bonds.

Table 1:

Company/ Business Unit	Description
Networks businesses	
SSEN Transmission	SSEN Transmission, operating under licence as Scottish Hydro Electric Transmission plc (SHET), owns, operates and maintains the high voltage 132kV, 275kV and 400kV electricity transmission system in the north of Scotland and its islands. Its network consists of underground cables, overhead lines on wooden poles and steel towers, and electricity substations, extending over a quarter of the UK's land mass crossing some of its most challenging terrain.
SSEN Distribution	SSEN Distribution, operating under licence as Scottish Hydro Electric Power Distribution plc (SHEPD) and Southern Electric Power Distribution plc (SEPD), is responsible for safely and reliably maintaining the electricity distribution networks supplying over 3.8 million homes and businesses across central southern England and the north of Scotland.

Energy businesses	
SSE Renewables	SSE Renewables comprises the existing operational assets and those under development in onshore wind, offshore wind, flexible hydro electricity, run-of-river hydro electricity and pumped storage. Its operational offshore wind installed capacity is 487MW with its onshore wind and hydro electric installed capacity at 1,936MW and 1,459MW respectively.
SSE Thermal	SSE Thermal owns and operates conventional thermal generation in the UK and Ireland. These assets play a key transitional role in the SSE Group and wider energy system, supporting the Balancing Mechanism on the journey to net zero. While providing much-needed system flexibility to ensure stability and security of supply in the short term, SSE Thermal is actively developing options to progressively decarbonise its fleet. SSE Thermal holds around 40% of the UK's conventional underground gas storage capacity. These assets can play an important role in the transition to net zero, supporting stability and security of gas supply in the short term as well as potential conversion to hydrogen storage for a net zero future.
Customers	SSE Business Energy and SSE Airtricity provide energy and related services to households, businesses and public sector organisations across Great Britain and the island of Ireland. SSE Business Energy markets products under the SSE Energy Solutions brand alongside SSE Distributed Energy, selling power to over 469,000 non-domestic customers across GB. SSE Airtricity provides a valuable route to market for SSE's low-carbon energy solutions and green products to customers across the island of Ireland.
SSE Distributed Energy	SSE Distributed Energy is focused on investing in, building and connecting localised flexible energy infrastructure. It also develops solar and battery projects, operates heat networks, and offers integration, aggregation and trading capability.
Energy Portfolio Management	Energy Portfolio Management (EPM) combines trading skills and deep market insights to drive value by providing energy trading, risk management and settlement services, and wider analytical support and insights, including Business Unit advice on long-term market decisions.

ORGANISATIONAL BUSINESS UNITS

EXCLUDED FROM INVENTORY

SSE has excluded any joint ventures in which it does not have operational control. For its scope 3 investment category, SSE has excluded any joint ventures where SSE has an equity ownership of less than 50%. Below is a list of some of the largest business units excluded from the inventory. For a full list of SSE's subsidiary undertakings, partnerships, joint ventures and associates, please refer to pages 303 to 308 of SSE's Annual Report 2022.

Scotia Gas Networks (SGN) Limited

Activities: Investment in gas networks

Reason for exclusion:

SSE held a 33.3% financial investment stake in Scotia Gas Networks (SGN). SSE did not have a controlling stake in, or operational control of, this business and SGN completes its own GHG and SECR reporting. On 22 March 2022 SSE sold its entire 33.3% stake in SGN.

SSE E&P (UK) Limited

Activities: Gas exploration and production

Reason for exclusion:

During 2021/22, SSE had investments in gas production assets in the North Sea and west of Shetland, all of which were owned by SSE E&P (UK) Limited. Although this company was wholly owned by SSE, SSE did not hold a controlling stake in any assets.

SSE agreed the sale of all of its interests in its portfolio of gas exploration and production in December 2020, and the disposal of this business was concluded on 14 October 2021.



GHG REPORTING CRITERIA

This section outlines the annual greenhouse gas (GHG) emissions reporting approach used by SSE plc (SSE) to report the tonnes of carbon dioxide equivalent (CO₂e covers CO₂, CH₄, N₂O and SF₆) from the Group's operational activities.

The document provides details of the amount of GHG emissions that can be directly attributed to SSE operations within the declared boundary and scope for the specified reporting period. The inventory has been prepared in accordance with requirements of the UK Government's environmental reporting guidelines (BEIS, March 2019); the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (revised edition) developed by the World Resources Institute and the World Business Council for Sustainable Development (2004); and ISO 14064-1:2018 Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals. Where relevant, the inventory is aligned with industry or sector best practice for emissions measurement and reporting.

This document aims to detail the GHG collection, collation, conversion and reporting process used by SSE to report annual GHG emissions.

SSE continuously seeks to improve the coverage of its GHG reporting and to ensure that its GHG inventory is prepared in line with the latest internationally recognised methodologies. There were no updates to the frameworks and methodologies used to prepare this year's inventory. In 2021/22, additional data points and minor amendments to data management activities has resulted in some 2020/21 GHG and water figures being restated.

GHG EMISSIONS SOURCE INCLUSIONS

The GHG emissions sources included in this inventory are those required by [BEIS reporting standards](#), [GHG Protocol](#) and [ISO14064-1:2018 standards](#). GHG emissions are classified, in accordance with these standards, into the following categories:

- **Direct GHG emissions (scope 1):** GHG emissions from sources that are owned or controlled by the company.
- **Indirect GHG emissions (scope 2):** GHG emissions from the generation of purchased electricity, heat and steam consumed by the company.
- **Indirect GHG emissions (scope 3):** GHG emissions that occur as a consequence of



the activities of the company, but occur from sources not owned or controlled by the company. Inclusion of other scope 3 emissions sources is done on a case-by-case basis in accordance with the guidance given in the Greenhouse Gas Protocol: Corporate Value Chain (Scope 3) Accounting and Reporting Standard (Supplement to the GHG Protocol Corporate Accounting and Reporting Standard).

The following emission sources from SSE operations are included in the GHG emissions reporting:

The direct GHG emissions (scope 1) cover:

- **Generation power stations** – gas, oil and biomass consumed in SSE’s thermal power generation plant (including Power Purchase Agreements) to generate electricity.
- **Gas consumption in buildings** – this is the gas consumed by SSE’s non-operational buildings (offices, depots) to maintain building temperatures.
- **Network fuel consumed** – this includes diesel and gas oil used by fixed generators on islands and mobile generators to generate electricity to maintain the distribution network.
- **Company vehicles** – this is the petrol or diesel used by SSE’s operational vehicles for business activities (operational vehicles are those vehicles that are owned by SSE and used by employees for SSE business activities).
- **Fugitive emissions** – use of sulphur hexafluoride (SF₆) in the transmission and distribution networks for conductivity (used in the switchgears and substations).

The indirect emissions (scope 2) cover:

- **Electricity consumption in buildings** – this is the electricity consumed by SSE’s non-operational buildings (offices, depots, warehouses and call centres). This data excludes leased buildings (which represent less than 1% of employees).
- **Electricity consumption in networks** – this is the electricity used by SSE’s operational buildings (e.g. substations) in the transmission and distribution network.
- **Electricity consumption in thermal power stations** – this is the electricity used by SSE’s GB thermal power stations for the generation of electricity. This data excludes power stations below 100MW which do not have metering and thermal power stations in Ireland.
- **Distribution losses** – this is the electricity lost in SSE’s distribution network in the north of Scotland (SHEPD) and southern central England (SEPD) transporting electricity to the customer.

The indirect emissions (scope 3) cover:

- **Business travel** – domestic (between UK airports), short haul (international flights to/ from UK less than 3,700km, usually to European destinations), long haul (international flights to/ from UK greater than 3,700km, usually to non-European destinations) and international (international flights to/ from non-UK destinations) travel by air, rail and car miles travelled using third party transport (this is vehicles owned and operated by other organisations that SSE employees use to conduct business activities).
- **Well to tank emissions** – this is the GHG emissions associated with the extraction, refining and transportation of the raw fuel sources to SSE’s sites before they are used to generate electricity at the power station, as defined by BEIS reporting guidelines.
- **Gas sold to customers** – the amount of gas sold to customers (industrial and commercial business customers in the UK and Ireland and domestic customers in Northern Ireland and the Republic of Ireland) that is then used by our customers for heating and power purposes. This figure is calculated by taking the amount of gas sold (millions therms) converting it to kWh and then applying a carbon dioxide conversion factor provided by [BEIS reporting guidelines](#).
- **Transmission losses** – the electricity lost in the SHE Transmission network (the network between the generator and the distribution company) in the north of Scotland. The transmission of electricity is managed by the network operator, National Grid.
- **Transmission and distribution losses** – this is the transmission and distribution losses (the energy loss that occurs getting the electricity to SSE non-operational buildings from the power plant) associated with the electricity consumed by SSE’s non-operational buildings (offices, depots, warehouses and call centres) and operational buildings (substations and thermal power stations). This figure is calculated by taking the scope 2 electricity consumption figure for non-operational buildings and electricity consumption in networks and thermal power stations and applying a carbon dioxide conversion factor provided by [BEIS reporting guidelines](#). This data is separate to the losses that SSE’s transmission and distribution networks report.
- **Vessels** – this is the fuel purchased by a third party for use in third party vessels that service offshore wind farms in which SSE has an ownership share and operates on behalf of joint venture partners. For example: Beatrice Offshore Wind Farm Limited (SSE Renewables share 40%); and, Greater Gabbard Offshore Wind Farm (SSE Renewables share 50%).
- **Investments** – Investments in Thermal electricity generation – gas consumed in thermal power generation plant (for example, Seabank with SSE’s 50% ownership share) that SSE does not operate but has a 50%-and-over equity interest. The emissions associated with the generation of electricity is calculated using greenhouse gas emissions data from the generator’s operating company.

The emission sources are explained in detail in Table 2.

GHG INTENSITY FOR SCOPE 1 AND ELECTRICITY GENERATION

Intensity ratios compare emissions data with an appropriate business metric or financial indicator, such as sales revenue or square metres of floor space. To calculate an intensity ratio emissions are divided by an appropriate activity metric (full time equivalents) or financial metric (£ million sales). The results of this provides a normalised data point which is called an intensity ratio.

For SSE the most appropriate business metric is the output from its electricity generation activities (kWh). Using an intensity ratio allows organisations to compare performance over time and with other similar types of organisations

To calculate an intensity ratio emissions are divided by an appropriate activity metric (full time equivalents) or financial metric (£ million sales). The results of this provides a normalised data point which is called an intensity ratio.

For SSE, the intensity ratio is reported in two ways: Scope 1 GHG intensity and electricity generation GHG intensity. The data points that SSE reports on is based on:

- SSE's carbon dioxide equivalent (CO₂e) from its electricity generation emissions data;
- SSE's carbon dioxide equivalent (CO₂e) from its scope 1 emissions data; and
- The total output from SSE's electricity generation, both thermal (gas, oil, biomass, multifuel) and renewables (onshore and offshore wind, hydro and pumped storage).

These intensity ratios are used to measure SSE's performance against its 2030 goals and its Science Based Targets which have been approved by the Science Based Target Initiative (SBTi).

Output reporting (GWh – gigawatt hours)

Output (or volume) from all of SSE's in-scope electricity generation plant is taken from the period 1 April 2021 to 31 March 2022. The output volumes refer to the renewable and thermal power generation plant (including Power Purchase Agreements^(*)) that SSE operates to generate electricity. The output volumes include projects that are operational. For projects that move from construction to operation during the reporting period, output data is taken from the date of commissioning.

The output refers to the generation from the thermal and renewable generating sites at the Notional Balancing Point. This is where demand is managed and is comparable across the industry for trading and monitoring.

Output data is based on meter points at the Notional Balancing Point. This data is collected by Exelon, stored on SONET (an external database that stores electricity settlement data) and

managed through an internal finance management system by business finance at SSE. The data excludes the output that is constrained.

Electricity generation emissions data

The fuel consumed in SSE's thermal power generation plant (gas, oil and biomass including Power Purchase Agreements) to generate electricity is used to calculate the carbon dioxide equivalent emissions. This also includes diesel and gas oil used by fixed generators on islands. The emission sources are explained in detail in Table 2 in the business unit 'SSE Thermal' row.

Footnote:

^(*) Includes 100% output from Seabank power station up to 31 September 2021 when SSE's Power Purchase Agreement ended, and then excludes output from SSE's 50% ownership share from October 2021 onwards. This is to reflect the fact that scope 1 emissions exclude activities in which SSE does not operate. As a result, the emissions from Seabank is categorised as a scope 3 emission from October 2021 onwards in accordance with SSE's 50% ownership share.



Table 2:

BUSINESS UNIT	GHG EMISSIONS SOURCE	GHG EMISSIONS LEVEL SCOPE	DATA SOURCE & COLLECTION PROCESS	DATA COLLECTION UNIT	UNCERTAINTY (description)
SSE Thermal	Fuel used by power stations to generate electricity – gas, oil and biomass	Scope 1	Fuel used (gas, oil and biomass) is measured through meters and weight tickets and converted using UK ETS guidelines for the United Kingdom and EU ETS guidelines for the Republic of Ireland for the calendar year. However, SSE reporting period is from 1 April to 31 March, hence Energy Portfolio Management (EPM) team estimate GHG emissions in the final quarter using the power generation data and composition of the fuel used. The estimation is reconciled annually prior to EU ETS calendar year submission. EPM estimates power station emissions based on known plant activity, closures/ acquisitions and power generation data to estimate emissions and for emissions trading purposes.	kWh	
All business units combined	Operational vehicles & plant (diesel)	Scope 1	Fuel is bought using fuel cards from independent fuel suppliers or dispensed at onsite fuel depot. Fuel card data is provided by independent fuel suppliers to Fleet Services. Fuel cards are reconciled with supplier invoices. Fuel dispensed from onsite depots is recorded and consolidated with fuel dispensed data from the independent suppliers.	Litres	
All business units combined	Operational vehicles & plant (petrol)	Scope 1	Fuel is bought using fuel cards from independent fuel suppliers or dispensed at onsite fuel depot. Fuel card data is provided by independent fuel suppliers to Fleet Services. Fuel cards are reconciled with supplier invoices. Fuel dispensed from onsite depots is recorded and consolidated with fuel dispensed data from the independent suppliers.	Litres	Fuel invoices do not include fuel dispensed a few days before the invoice so there is delay in reporting periods however this balances during the year and between financial reporting periods.
All business units combined	Mobile plant (used when substations fail) – diesel and gas oil	Scope 1	Fuel purchased is recorded through a fuel card or through purchase of fuel stock – all recorded in fleet database.	Litres	

BUSINESS UNIT	GHG EMISSIONS SOURCE	GHG EMISSIONS LEVEL SCOPE	DATA SOURCE & COLLECTION PROCESS	DATA COLLECTION UNIT	UNCERTAINTY (description)
SSEN – Transmission and Distribution	Fugitive emissions (SF ₆) – SHE Transmission, SHEPD & SEPD	Scope 1	Transmission and distribution engineers record SF ₆ top ups and exception events requiring SF ₆ top up in the asset management system, Maximo. The ENA model gives typical loss rate figure as a result of normal operation.	kg	
SSEN Distribution	Losses (SHEPD & SEPD)	Scope 2	Figures for network losses are calculated using standard distribution losses guidance (produced by Elexon) to compute the losses in the distribution system.	kWh	Based on industry standards for line losses and distribution losses
SSE Thermal	Thermal power station electricity consumption	Scope 2	There are 21 operational thermal power stations in the UK and Ireland. The large power stations (with capacity greater than 100 MW) have automatic electricity meters. Meter reading data of electricity use are transmitted through Elexon. This data is recorded on SSE's finance system TM1 and then downloaded onto an excel spreadsheet. Reconciliation of meter reads is completed with monthly invoices.	kWh	Some thermal power stations are excluded from the data because they are below 100MW (12 sites) and they do not have meters to measure consumption and electricity consumption is assumed to be minimal. Data excludes thermal power stations in Ireland.
All business units combined	Non-operational building electricity consumption	Scope 2	<p>Non-operational buildings are classed as offices, depots, warehouses and call centres. There are around 160 non-operational sites. Most non-operational buildings have automatic electricity meter. Records of electricity use are transmitted through automatic meter readings to Clarity and IMServ. Clarity and IMServ integrates with ESG economonitor web based facility where the electricity use is downloaded into an excel spreadsheet. Reconciliation of meter reads is completed with monthly invoices.</p> <p>Where tenants occupancy portions of non-operational buildings, electricity consumption is apportioned based on the floor area that the tenants occupy. The electricity</p>	kWh	<p>Not all non-operational buildings are on half hourly meters. Some are based on submitted actual meter reading, or estimated on billing system.</p> <p>Data excludes leased buildings with small number of employees (less than 1% of employees).</p>

BUSINESS UNIT	GHG EMISSIONS SOURCE	GHG EMISSIONS LEVEL SCOPE	DATA SOURCE & COLLECTION PROCESS	DATA COLLECTION UNIT	UNCERTAINTY (description)
All business units combined	Non-operational buildings – gas usage	Scope 1	<p>consumption that takes place within the communal areas of shared non-operational buildings are split 50:50 between SSE and the tenant.</p> <p>Non-operational buildings are classed as offices, depots, warehouses and call centres. There are around 160 non-operational sites. Most non-operational buildings have automatic gas meters. Records of gas use are transmitted through automatic meter readings to MeterPower. MeterPower integrates with ESG ecomonitor web based facility where the gas use is downloaded into an excel spreadsheet. Reconciliation of meter reads is completed with monthly invoices.</p> <p>Where tenants occupancy portions of non-operational buildings, gas consumption is apportioned based on the floor area that the tenants occupy. The gas consumption that takes place within the communal areas of shared non-operational buildings are split 50:50 between SSE and the tenant.</p>	kWh	<p>Not all non-operational buildings are on half hourly meters. Some are based on submitted actual meter reading, or estimated on billing system. Where actual consumption data is not available, gas consumption is estimated based on the prior year's consumption data.</p> <p>Data excludes leased buildings with small number of employees (less than 1% of employees).</p>
SSEN Distribution	Substations – SHEPD & SEPD	Scope 2	<p>Substation electricity consumption is estimated as there are no meters in place. This is done by classifying the types of consumption and estimating the energy use of using the electrical load of the appliance. This includes:</p> <ul style="list-style-type: none"> • Space Heaters: Based on multiples of 3kW off peak heating on for 6hrs per day for 4 months of the year in the south and 6 months in the north (only 10% of buildings heated in HV sites). • Panel Heaters: Based on multiples of 0.07kW (only 10% of HV sites with separate lv panels). 	kWh	<p>Substations are not metered so their energy consumption is based upon estimates which are based on the size of the substation, electricity capacity and the operation activities of each building through the financial year.</p>

BUSINESS UNIT	GHG EMISSIONS SOURCE	GHG EMISSIONS LEVEL SCOPE	DATA SOURCE & COLLECTION PROCESS	DATA COLLECTION UNIT	UNCERTAINTY (description)
SSEN Transmission	Substations	Scope 2	<ul style="list-style-type: none"> • Lighting: Based on multiples of 0.2kW, on for 10 days during the year. • Battery-Chargers: Based on multiples of 0.5kW continuous supply to DC standing loads. • Mains powered equipment: Based on 0.5kW continuous supply. • Transformer Coolers: Based on cooler ratings of individual transformers. Substations are assumed to have 2 transformers on average, with coolers in operation for 10 days of the year. • Electrical load has been calculated for each type of substation, using the principles detailed above. The calculated average annual load has then been multiplied by the relevant number of substations giving total figures in kWh. <p>Substation electricity consumption is estimated as there are no meters in place. This is done by classifying the types of consumption and estimating the energy use of using the electrical load of the substation. This includes:</p> <ul style="list-style-type: none"> • Categorising substations based on the number of transformers connected • Categorising substations based on the number of circuits connected • Estimating the total energy use of the substation by viewing metered data from the current and previous reporting years <p>Estimates are made by comparing substations based on their size with sites that have metered data available.</p>	kWh	Substations are not metered so their energy consumption is based upon estimates which are based on the size of the substation, electricity capacity and the operation activities of each building through the financial year.

BUSINESS UNIT	GHG EMISSIONS SOURCE	GHG EMISSIONS LEVEL SCOPE	DATA SOURCE & COLLECTION PROCESS	DATA COLLECTION UNIT	UNCERTAINTY (description)
All business units combined	Flights – domestic – short haul – long haul – international	Scope 3	Booked through SSE's web based travel booking system provided by Capita, which provides distances in km for all journeys.	km	The actual flight distance may not always be exactly as standard for the route, the conversion factors used take account of the fact that distances travelled may not be representative of the journey due to changes in flight paths for safety/ weather/ etc.
All business units combined	Train	Scope 3	Booked through SSE's web based travel booking system Capita, which provides distances in km for all journeys.	km	Small % of train journeys will be booked direct through the train company rather than using the SSE travel desk system.
All business units combined	SSE & SEC Cars (petrol, diesel and electric vehicles)	Scope 3	Claims made through expenses system for business purposes using employees own cars or car ownership scheme (COS) cars. The mileage relates to the date the miles were claimed. The mileage claim data is run through the Harmony system. Distances are in miles and converted to km (using 1.609 conversion factor).	km	
SSE Thermal	Greenhouse gas emissions from electricity generation at power stations where SSE has an equity investment but does not have operational control.	Scope 3	Data is provided by the third party owner of the generation site for the financial year.	CO ₂	

BUSINESS UNIT	GHG EMISSIONS SOURCE	GHG EMISSIONS LEVEL SCOPE	DATA SOURCE & COLLECTION PROCESS	DATA COLLECTION UNIT	UNCERTAINTY (description)
SSE Thermal	Fuel purchased – gas, oil and biomass for generation of electricity	Scope 3	Fuel purchased during the financial year (gas, oil and biomass) is measured through meters and weight tickets and converted into kWh using standard industry recognised conversion factors or supplier specific factors.	kWh	Fuel purchased (diesel and oil) may not necessarily be used in the year, or in the reporting period, as there are on-site storage facilities for these fuels.
Business Energy and SSE Airtricity	Gas sold to customers	Scope 3	<p>Gas volumes are based on settlement data published by Xoserve. SSE receives an allocation of the settlements data based on the total amount of gas used by the local distribution zone based on its portfolio of customers. This number covers both domestic (for the island of Ireland) and business customers (industrial and commercial) for Great Britain and the island of Ireland.</p> <p>The GHG emissions are calculated by taking the scope 3 gas sold to customers and applying the carbon dioxide conversion factor provided by BEIS reporting guidelines.</p>	Million therms	In line with gas settlement industry standard, gas reported contains a portion of unidentified gas supplied. This is to ensure total supply matches demand for the UK gas delivery.
All business units combined	Electricity use in non-operational buildings	Scope 3	This is the transmission and distribution losses (the energy loss that occurs transporting electricity to SSE non-operational buildings from the power plant) associated with the electricity consumed by SSE’s non-operational buildings (offices, depots, call centres). This figure is calculated by taking the scope 2 electricity consumption figure for non-operational buildings and applying a carbon dioxide conversion factor provided by BEIS reporting guidelines.	kWh	
SSEN Transmission and Distribution losses (for electricity use)	Electricity use in substations	Scope 3	This is the transmission and distribution losses (the energy loss that occurs getting the electricity to SHE Transmission, SEPD and SHEPD substations from the power plant) associated with the electricity consumed in SHE	kWh	

BUSINESS UNIT	GHG EMISSIONS SOURCE	GHG EMISSIONS LEVEL SCOPE	DATA SOURCE & COLLECTION PROCESS	DATA COLLECTION UNIT	UNCERTAINTY (description)
SSEN Transmission	Losses (National Grid)	Scope 3	<p>Transmission, SEPD and SHEPD substations. This figure is calculated by taking the scope 2 substation electricity consumption and applying a carbon dioxide conversion factor provided by BEIS reporting guidelines.</p> <p>When transferring power across the SHE Transmission System, some of the power is 'lost' known as 'Transmission Losses'.</p> <p>Figures for transmission losses are calculated using standard transmission losses guidance (produced by Elexon) to compute the losses in the transmission system.</p> <p>This data is reported by National Grid as the system operator. They report this figure for the period of July to June to SSE for its assets. The figure is for the previous financial year as a result of the timing of the data capture process. This means for the financial year 1 April 2021 to 31 March 2022 the data will be based on the previous financial year July 2020 to June 2021. The data is verified by an independent third party, WSP, for National Grid.</p>	kWh	Based on industry standards for transmission losses

BUSINESS UNIT	GHG EMISSIONS SOURCE	GHG EMISSIONS LEVEL SCOPE	DATA SOURCE & COLLECTION PROCESS	DATA COLLECTION UNIT	UNCERTAINTY (description)
SSE Renewables	Fuel used by vessels to travel to and from offshore wind farms	Scope 3	<p>There are two joint ventures that are operational and use vessels to maintain offshore windfarms in the UK and Ireland.</p> <p>Fuel data is collected from the third party that owns and operates the vessels. Scottish Fuels supply all the fuel data for Beatrice Offshore Windfarm Limited (BOWL) and ASCO provide fuel data for Greater Gabbard Offshore Windfarm Limited (GGOWL).</p> <p>This data is sent by each third party and collected by BOWL and GGOWL SHE teams. The fuel data is stored by Renewables SHE and consolidated into one report to cover all offshore vessel activities using excel. All data is verified using monthly invoices.</p>	Litres	Fuel used by third party in vessels contracted to support SSE's operation of offshore wind farms.

GHG CONVERSION FACTORS

To calculate all the fuel sources into GHG emissions the BEIS UK conversion factors spreadsheet is downloaded annually from [BEIS website](#). The following conversion factors are applied to each source of emissions (table 3).

For the fuel used by generation the emissions are calculated by the power stations and converted using the EU ETS guidelines. This is then verified by independent third parties and evidence submitted to regulators in accordance with EU ETS legislation.

Table 3:
Conversion Factor Source available [here](#).

ACTIVITY	EMISSIONS FACTOR YEAR	CATEGORY OF EMISSION FACTORS USED
• Thermal generation	2021	As per EU ETS categories
• Operational vehicles & plant (diesel)	2021	Fuels
• Operational vehicles & plant (petrol)	2021	Fuels
• Mobile plant – gas oil	2021	Fuels
• Fugitive emissions (SF ₆) – SHE Transmission, SHEPD & SEPD	2021	Refrigerant & other
• Fuel combustion – for mobile and fixed generation on distribution networks (diesel) – SHEPD & SEPD	2021	Fuels
• Losses (SHEPD & SEPD)	2021	UK electricity
• Non-operational building electricity consumption – Great Britain	2021	UK electricity and overseas electricity
• Non-operational building electricity consumption – Ireland	2021	Overseas electricity
• Thermal power station electricity consumption	2016	UK electricity
• Non-operational buildings – gas usage	2021	Fuels
• Substations – SHE Transmission, SHEPD & SEPD	2021	UK electricity
• Flights – domestic	2021	Business travel – air
• Flights – short haul	2021	Business travel – air
• Flights – long haul	2021	Business travel – air
• Flights – international	2021	Business travel – air
• Train	2021	Business travel – land
• SSE & SEC cars (petrol & diesel)	2021	Business travel- land
• SSE & SEC cars (electric)	2021	Business travel- land
• Transmission and distribution losses for electricity use in non-operational and thermal power stations buildings	2021	Transmission and distribution
• Transmission and distribution losses for electricity use in SHE Transmission, SEPD and SHEPD substations	2021	Transmission and distribution
• Transmission and distribution losses in the transmission (National Grid) network	2020	UK electricity
• Well to tank emissions for fuel purchased for generation	2021	WTT - fuels
• Gas sold to customers	2021	Fuels
• Vessels fuel use	2021	Fuels

GHG EMISSIONS SOURCE EXCLUSIONS

Emissions sources in Table 3 have been identified and excluded from the GHG emissions inventory.

Table 4:

GHG EMISSIONS SOURCE	GHG EMISSIONS LEVEL SCOPE	DATA SOURCE & COLLECTION PROCESS
Operational vehicles on the island of Ireland	Scope 1	Minimal
Bus travel	Scope 3	Bus not used for business travel
Taxi travel	Scope 3	Minimal – taxis only taken on short journeys – distances not logged
Hire Car Travel	Scope 3	Minimal
Helicopter travel	Scope 3	Minimal
Electricity consumption in residential property and leased buildings	Scope 2	Minimal
Gas consumption in residential property, leased buildings and generation sites where it is used for heating purposes on the site itself.	Scope 1	Minimal
Waste to Landfill	Scope 3	Minimal
Water & Waste Water	Scope 3	Minimal
Fugitive emissions of methane from Gas Storage venting	Scope 1	Minimal
SF ₆ from SSE Thermal switchgear and embedded distribution	Scope 1	Minimal
Well to tank emissions from other fuel use in operations that is not related to generation activities	Scope 3	Minimal
Thermal power station electricity consumption at sites with capacity lower than 100MW (18 sites) that do not have meters to measure consumption. Thermal power stations in Ireland are excluded.	Scope 2	Minimal

GHG EMISSIONS CALCULATIONS AND RESULTS

GHG emissions for the organisation are calculated in excel spreadsheet 'Appendix 1' where they are stated by greenhouse gas, by scope, by business unit and as total emissions. The GHG emissions are also loaded on to a Power BI report which can provide the same breakdown.

WATER REPORTING CRITERIA

This document aims to detail the water data collection, collation, conversion and reporting process used by SSE to report annual water volumes in millions of cubic meters (millions m³) for the reporting period.

WATER SOURCE INCLUSIONS

The water sources included in this inventory are those required by BEIS reporting standards and include the total water (millions m³):

- **abstracted** – the volume of water taken from rivers, lochs, sea, estuaries and mains supplies for operational activities;
- **consumed** – the volume of water used by the business to conduct its operations; and
- **returned** – the volume of water returned to source (river, loch, sea or estuary).

SSE uses water for four main purposes:

1. to cool its generation plant (thermal generation operations);
2. as process water for a variety of operations (thermal generation operations);
3. as a source of energy in hydro generation schemes; and
4. for amenities in offices and buildings.

The table below details the source of the water data, how the water data is collected and reported, and any uncertainties in the water data.



Table 5:

BUSINESS UNIT	WATER VOLUME SOURCE	DATA SOURCE & COLLECTION PROCESS	UNCERTAINTY (description)
SSE Thermal	Water volumes abstracted and returned at entry and exit points of each power plant	<p>Flow meters transfer water volumes automatically from the flowmeters to the PI (process information) system. Water use data is automatically downloaded from this system into excel.</p> <p>For Great Island power station in Ireland, water for cooling is measured using a pump running hours methodology rather than flowmeters as these are not available. This methodology uses the pump performance and pump curve to measure flow rates and has been agreed with the EPA.</p>	<p>For the power stations that use flow meters, if there is a failure in the flowmeter PI system then there is backup process used which involves pump running hours (this takes account of pump performance and the pump curve to measure flow rates) and has been agreed with the Regulators.</p> <p>Data for Rhode and Tawnaghmore covers the period between 1 January and 31 December 2021 and data for all other sites covers the period between 1 April and 31 March 2021/22.</p>
SSE Renewables: hydro generation	Water volumes abstracted and returned is the water that passes through the hydro generation turbine at the SSE power station	<p>Volumes of water abstracted and returned are measured via telemetry. The telemetry system collects and records the input data (which is based on the water head (the intake and the loch level) and the power generation) to estimate the volume of water that passes through a turbine each time.</p> <p>The input data uses the power generated to calculate the flow of water that would have been required (and so effectively uses the turbine as a flowmeter).</p>	
All business units combined (non-operational offices and buildings)	Water	<p>Non-operational buildings are classed as offices, depots and warehouses. There are around 160 non-operational sites. Water meter readings are provided on a regular basis for facility managed sites with the largest desk capacities and occupancies. Due to a reduction in office-based head count during and after the pandemic a review of occupancy patterns is ongoing at SSE office and non-operational site locations. Monthly meter readings are manually recorded at the 18 sites and logged centrally.</p>	<p>Water consumption is based on 18 key properties that are metered.</p>
SSE Thermal (offices and buildings)	Water	<p>Monthly meter readings are manually recorded at the sites and logged centrally.</p>	

