

## Welcome to your CDP Climate Change Questionnaire 2019

### C0. Introduction

#### C0.1

##### **(C0.1) Give a general description and introduction to your organization.**

SSE plc is one of the UK and Ireland's leading energy companies, involved in the generation, transmission, distribution and supply of electricity, the production, storage, distribution and supply of gas and in the provision of energy-related services. It is a developer, operator and owner of energy assets.

SSE's vision is to be a leading energy company in a low-carbon world. Its purpose is to provide the energy needed today while building a better world of energy for tomorrow. Its strategy is to create value for shareholders and society from developing, operating and owning energy and related infrastructure in a sustainable way.

At the core of its business is a portfolio of world-class renewable generation assets and electricity network businesses. These businesses are particularly well placed to seize the opportunities presented by decarbonisation and electrification. The strategy is therefore focussed on developing, operating and owning assets that create long-term value and are vital to the low-carbon transition.

Through its Sustainable Development Goals (SDGs), the United Nations has created a blueprint for a sustainable world and in 2019, the SSE plc Board agreed to align its business strategy to them, in particular, by prioritising SDG13, Climate Action; SDG7, Affordable and Clean Energy; SDG9 Industry, Innovation and Infrastructure; and, SDG8 Decent Work and Economic Growth. SSE set four fundamental business goals of its own linked to these UN SDGs. The first three goals – to cut in half the carbon intensity of the electricity generated, to develop and build enough renewable energy capacity to treble renewable output and help accommodate 10 million electric vehicles on Britain's electricity networks – are in direct response to the low-carbon challenge. SSE has also committed to the long-term to the principles of Fair Tax and a real Living Wage. These goals represent the most material contribution SSE can make to sustainable development and also represent an exciting strategy for business growth in support of decent work and economic growth.

SSE's businesses are:

1. Wholesale: A leading generator of electricity from renewable sources in the UK and Ireland, with ownership and operation of flexible thermal power. It also owns and operates gas storage facilities in the UK, operates an energy portfolio management division and invests in gas production in the North Sea and west of Shetland.
2. Networks: Delivers energy safely to homes and businesses in GB through its networks Scottish Hydro Electric Transmission plc which owns the high voltage network in the north of Scotland; Scottish Hydro Electric Power Distribution plc and Southern Electric Power Distribution which own the low voltage networks in north of Scotland and central southern England. These businesses are regionally defined and subject to regulatory controls set by Ofgem.
3. Retail: SSE supplies energy and provides infrastructure services to business and public sector customers through its Business Energy and Enterprise divisions. It also supplies energy and related services (including green energy) to household customers on the island of Ireland through SSE Airtricity.

Retail (held for disposal): SSE Supplies energy and other services to the GB household market through SSE Energy Services.

CDP Climate Change Report:

SSE has been reporting to CDP on climate-related issues and opportunities since its inception over 10 years ago. The most material environment impact and opportunity for SSE is climate-related and SSE's business strategy places climate change and the challenge and opportunity of decarbonisation at its core. SSE generates, transmits, distributes and supplies electricity in the UK and Ireland and the most material climate change impacts are associated with its generation activities in its wholesale business. SSE owns and operates 10,532 MW of electricity generation capacity and is one of the largest renewable energy operators across the UK and Ireland. As the owner and operator of electricity networks in the north of Scotland and central southern England, SSEN is at the forefront of network development and operation enabling the connection of renewable electricity to the electricity grid as well as preparing for changes in electricity demand due to electrification of the heat and transport sectors. SSE's strategy is to support the low-carbon transition by reducing the carbon intensity of its own operations through a strategic shift towards a less fossil fuel intensive generation portfolio and supporting the UK to decarbonise by enabling more renewable generation to connect to the electricity transmission network in the North of Scotland.

#### C0.2

##### **(C0.2) State the start and end date of the year for which you are reporting data.**

	Start date	End date	Indicate if you are providing emissions data for past reporting years
Row 1	01/04/2018	31/03/2019	

## C0.3

**(C0.3) Select the countries/regions for which you will be supplying data.**

- Ireland
- United Kingdom of Great Britain and Northern Ireland

## C0.4

**(C0.4) Select the currency used for all financial information disclosed throughout your response.**

- GBP

## C0.5

**(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.**

- Operational control

## C-EU0.7

**(C-EU0.7) Which part of the electric utilities value chain does your organization operate in? Select all that apply.**

Row 1

### Electric utilities value chain

- Electricity generation
- Transmission
- Distribution

### Other divisions

- Gas storage, transmission and distribution
- Smart grids / demand response
- Gas extraction and production

## C1. Governance

### C1.1

**(C1.1) Is there board-level oversight of climate-related issues within your organization?**

- Yes

### C1.1a

**(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.**

Position of individual(s)	Please explain
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<b>Chief Executive Officer (CEO)</b>	<p>Climate-related issues are material to the energy industry, and climate-related risks and low-carbon opportunities have a direct impact on SSE's business strategy and its ability to achieve its business objectives.</p> <p>SSE's Chief Executive (who is a member of the SSE plc Board) has ultimate responsibility in his executive capacity for proposing strategy to the Board, and once set by the Board for leading on its delivery. SSE's strategy is focused on being a leading energy company in a low-carbon world and it does this by focusing on its core renewable generation assets and economically-regulated electricity networks businesses.</p> <p>As a Director of the company and in line with the SSE plc Board's responsibility the Chief Executive is further involved in setting the Group strategy direction and, when setting strategic objectives, considers all material influencing factors including those relating to climate change. For example, GB and Irish government support for low-carbon generation technologies and the requirements of the GB and Irish electricity grids in the transition to low-carbon electricity systems, both impact SSE's strategy and the investment decisions it makes.</p>
<b>Chief Financial Officer</b>	<p>SSE's Finance Director deputises for the Chief Executive and has responsibility on the Board for leading and managing financial performance and overseeing and reporting on SSE's regulated business activities and leading and reporting on agreed M&amp;A transactions. SSE's Finance Director is also responsible for overseeing relationships with the investment community including climate-related matters for example green bonds and other Environment, Social Governance (ESG) linked finance options. SSE's Finance Director is responsible for SSE's commitment to achieve the Task Force on Climate-related Financial Disclosure (TCFD) recommendations, this CDP report and other material climate-related non-financial disclosure. As a member of the Board SSE's Finance Director is responsible for feeding back on these matters to the Board.</p>
<b>Non-Executive Director and Chair of SHEAC</b>	<p>The Chair of the Safety, Health and Environment Advisory Committee and Non-Executive Director is responsible for advising the Board on matters relating to safety, health and environment. The Safety, Health and Environment Advisory Committee (SHEAC) is a sub-Committee of the SSE plc Board. Climate Change is a highly material environmental issue to SSE so therefore is within the SHEAC's remit. The SHEAC is responsible for reviewing and monitoring the implementation of SSE's Environment and Climate Change Policy. It consists of four Non-Executive Directors of the SSE plc Board and five Senior Executives.</p>

## C1.1b

### (C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
<b>Scheduled – all meetings</b>	<p>Reviewing and guiding strategy</p> <p>Reviewing and guiding major plans of action</p> <p>Reviewing and guiding risk management policies</p> <p>Reviewing and guiding annual budgets</p> <p>Reviewing and guiding business plans</p> <p>Setting performance objectives</p> <p>Monitoring implementation and performance of objectives</p> <p>Overseeing major capital expenditures, acquisitions and divestitures</p> <p>Monitoring and overseeing progress against goals and targets for addressing climate-related issues</p>	<p>SSE's Schedule of Reserved matters outlines the Board's responsibilities, core to which is the definition of the company purpose and strategy. The strategic development process is iterative, with strategic considerations forming part of every Board agenda in addition to an annual strategy process. Strategic decision-making is supported by analyses from subject-matter experts, covering the external operating environment and relevant external trends. This includes low-carbon opportunities and climate-related risks in relation to policy developments, environment social and governance matters and stakeholder expectations. In 2018/19 key developments covered included: offshore wind development opportunities, impact of weather and dependency of weather and the role of hydro assets in the low-carbon transition, adoption of net zero by 2050 in the UK and reporting requirements on climate-related financial disclosure.</p> <p>Operationally, climate change strategy and its implementation is delegated to the Chief Executive Officer; MD of Corporate Affairs and Sustainability; and the Chief Sustainability Officer.</p> <p>As described by SSE's strategic pillars (to focus on the core renewables and electricity network businesses; develop, operate and own assets and create value and are vital to the low-carbon transition; create value by investing in low carbon assets; and being sustainable), SSE is committed to supporting the transition to a low-carbon electricity system whilst striving to be a Company that offer's profitable solutions to the world's problems – including climate action.</p> <p>Key Board activities during 2018/19 to support this included:</p> <ul style="list-style-type: none"> <li>• review and monitoring of SSE's agreed capital expenditure programme which continues to support the development of SSE's core renewables and networks businesses</li> <li>• oversight of progress within SSE's renewable pipeline including Beatrice offshore windfarm (completed July 2019) and upcoming CfD project qualification and governance</li> <li>• network investment to support increased renewable capacity within GBs electricity system</li> <li>• approval of SSE's sustainability plan and priorities including: endorsement of a letter of commitment to the UN Global Compact; agreeing a new carbon intensity ambition; and adopting four UN 2030 sustainability goals which will, in part, guide executive remuneration</li> <li>• in the context of Group funding, approval of SSE's second green bond and conversion of the existing Revolving Credit Facility to link to sustainability criteria</li> </ul>

	<ul style="list-style-type: none"> <li>updates from the SHEAC on matters discussed</li> <li>annual review and approval of SSE Environment and Climate Change Policy, which is owned but the Board, to ensure that it remains fit for purpose</li> </ul> <p>SSE discloses key performance metrics in relation to climate change and the environment within its Annual and Sustainability Reports. It is the Board's responsibility to confirm that the Annual Report, taken as a whole, is fair, balanced and understandable and provides the information necessary for shareholders to assess the Company's performance, business model and strategy, following an agreed assurance process. In addition, PwC provide limited sustainability assurance in relation to total carbon emissions, intensity ratio and total water consumed. The development of the annual Sustainability Report is governed by the SHEAC. At each Board meeting Group performance, and therefore strategy implementation, is monitored through business updates and supporting KPIs.</p>
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## C1.2

**(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.**

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	Quarterly
Chief Sustainability Officer (CSO)	Both assessing and managing climate-related risks and opportunities	Quarterly
Other Committee: Members of the Group Executive Committee	Both assessing and managing climate-related risks and opportunities	Quarterly

### C1.2a

**(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).**

#### Where in the organizational structure this position(s) and/or committee(s) lie:

The Chief Executive has overall lead responsibility for sustainability issues, including climate change. The Chief Executive is a member of the Board, the Group Executive Committee and is a regular attendee of the Safety, Health and Environment Advisory Committee (SHEAC) which is a sub-Committees to the SSE plc Board. The Chief Executive is advised and assisted by:

- relevant committees within SSE's governance structure, including: the Group Executive Committee (of which the Chief Executive is a member and which reports to the Board); and the Group Safety, Health and Environment Committee (SHEC) (reports to the Group Executive Committee); and
- senior management, including SSE's Chief Sustainability Officer (who reports to the Chief Executive).

The Chief Sustainability Officer is responsible for advising the Board, Group Executive Committee and business units on sustainability-related issues and strategy (including climate-related issues and opportunities). In addition, the Chief Sustainability Officer reports directly to the Chief Executive, has been appointed to the Safety, Health and Environment Advisory Committee (SHEAC, a Board level committee), and is a member of two of the three SSE Group-wide sub-committees of the Group Executive Committee: Group Safety, Health and Environment Committee and the Group Risk Committee. Furthermore, the Chief Sustainability Officer is a non-executive Director of the Board of SSEPD, the subsidiary company which is responsible for SSE's networks businesses.

The members of the Group Executive Committee include the Chief Executive (position detailed above), Finance Director, Energy Director, Managing Director, Scottish and Southern Electricity Networks, Managing Director, Transmission and Managing Director, SSE Renewables. These roles are responsible for implementing the agreed business and sustainability strategy through the operational management of SSE's businesses. This committee and the Executive sub-Committees with relevant delegated authorities support SSE's focus on its low-carbon core and complementary businesses.

#### Why responsibilities for climate-related issues have been assigned to this/these position(s) or committee(s)

Through the CEO's position on the Board the CEO, in conjunction with the Board, is responsible for setting the strategic direction of SSE; the implementation of which is the responsibility of the Group Executive Committee which is led by the Chief Executive. As climate change is highly material to SSE's strategy, the Chief Executive and relevant sub-Committees have a responsibility to manage climate-related issues and low-carbon opportunities. The Chief Sustainability Officer has the responsibility for considering sustainability issues of key stakeholders and the external environment and this includes climate change as it is a core issue and opportunity for the business. The Group Executive Committee is responsible for managing and mitigating these risks and opportunities (where climate change features). The Group Executive Committee implements Group strategy set by the Board through the operational

management of SSE's businesses. It drives climate-related performance programmes across the company and also considers climate-related issues on a standing basis annually, with other climate-related issues being considered as and when required as advised by the Chief Executive Officer or Chief Sustainability Officer. The SHEAC and SHEC consider climate-related issues in line with their Terms of Reference.

### Specific responsibilities with regard to assessment and monitoring of climate-related issues:

The Chief Executive is responsible for considering material influencing factors (which includes climate-related issues and low-carbon opportunities) when proposing and leading the delivery of strategy (which is centred on addressing the issue of climate change and supporting the low-carbon transition); implementing and driving climate-related performance programmes across the organisation (for example, reviewing progress of projects in construction including offshore wind developments Beatrice Wind Farm and Seagreen Wind Farm as well as Major Transmission Network upgrade projects through its large capital projects quality committee); and communicating and providing feedback on the implementation of Board agreed policies including the Climate Change and Environment Policy.

The Chief Sustainability Officer is responsible for: the function of Group Sustainability which assesses, manages and monitors climate-related issues and opportunities in the context of strategic development; and oversees external reporting, which includes non-financial disclosures such as those in relation to climate change. In addition, the Chief Sustainability Officer, is responsible for driving sustainability performance across the organisation and reports progress on sustainability activities to the Board and SSE's stakeholders. This includes working with business units to deliver the business strategy and implementing the four 2030 business goals, three of which address the challenge and opportunity of climate change.

The members of the Group Executive Committee ensure that each business within the Group are equipped with the necessary resources to deliver the strategy effectively and efficiently by considering the expectations of stakeholders in respect of economic, social and environmental impacts. This includes the impacts and opportunities related to climate change.

## C1.3

**(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?**

Yes

### C1.3a

**(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).**

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#### Who is entitled to benefit from these incentives?

Chief Executive Officer (CEO) (Board member)

#### Types of incentives

Monetary reward

#### Activity incentivized

Emissions reduction target

#### Comment

Part of the remuneration for SSE's Executive Directors is determined by their performance against the Annual Incentive Plan (AIP). The AIP award is determined by performance against both financial metrics and non-financial performance. In March 2019, the Remuneration Committee agreed to align a significant proportion of the AIP to progress against the achievement of SSE's new 2030 sustainability goals. Three of the four goals are climate-related and drive renewable development, electrification and reduce carbon emissions.

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#### Who is entitled to benefit from these incentives?

Chief Finance Officer (CFO) (Board member)

#### Types of incentives



Monetary reward

**Activity incentivized**

Emissions reduction target

**Comment**

Part of the remuneration for SSE's Executive Directors is determined by their performance against the Annual Incentive Plan (AIP). The AIP award is determined by performance against both financial metrics and non-financial performance. In March 2019, the Remuneration Committee agreed to align a significant proportion of the AIP to progress against the achievement of SSE's new 2030 sustainability goals. Three of the four goals are climate-related and drive renewable development, electrification and reduce carbon emissions.

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**Who is entitled to benefit from these incentives?**

Energy Director (Board member)

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction target

**Comment**

Part of the remuneration for SSE's Executive Directors is determined by their performance against the Annual Incentive Plan (AIP). The AIP award is determined by performance against both financial metrics and non-financial performance. In March 2019, the Remuneration Committee agreed to align a significant proportion of the AIP to progress against the achievement of SSE's new 2030 sustainability goals. Three of the four goals are climate-related and drive renewable development, electrification and reduce carbon emissions.

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**Who is entitled to benefit from these incentives?**

Board/Executive board

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction target

**Comment**

The Annual Bonus scheme for Executive Directors was based on personal objectives, which included the achievement of sustainability targets and goals (which includes climate and environment related targets and goals).

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**Who is entitled to benefit from these incentives?**

Chief Sustainability Officer (CSO)

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction target

**Comment**

There are several managers in SSE whose jobs are directly related to sustainability management (which includes climate change objectives and targets), and therefore their salary and any incentive (monetary and non-monetary) is linked to the fulfilment of these sustainability related personal targets.

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**Who is entitled to benefit from these incentives?**

All employees

**Types of incentives**

Monetary reward

**Activity incentivized**

Other, please specify

Achievement SSE's sustainability value

**Comment**

Annual appraisals for all SSE employees are based around its 6 core values, one of which is sustainability. Individual performance is assessed and has implications on whether annual incremental pay rises and/ or bonuses are given.

NB: Activity incentivised is reported as Other: Achievement of SSE's sustainability value.

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**Who is entitled to benefit from these incentives?**

All employees

**Types of incentives**

Recognition (non-monetary)

**Activity incentivized**

Emissions reduction target

**Comment**

Better Off is SSE's energy and water campaign, working with staff to highlight and adopt positive behaviours and develop a 'switch off' culture both at work and at home. As part of this campaign, SSE has a target to reduce carbon emissions from energy use in non-operational buildings by 2030 by 20%. A network of Energy Champions, made up of SSE employees, is helping to share the Better Off messages with colleagues and act as a local source of advice on energy reduction measures.

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**Who is entitled to benefit from these incentives?**

Management group

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction project

**Comment**

There are several managers in SSE whose jobs are directly related to environmental management and climate change, and therefore their salary and any incentive (monetary and non-monetary) is linked to the fulfilment of environment and climate change related personal targets.

**C2. Risks and opportunities****C2.1**

**(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.**

	From (years)	To (years)	Comment
<b>Short-term</b>	0	3	SSE's time horizons for assessing climate-related risks and opportunities are aligned with other business practice time horizons. The three climate related time horizons mirror the investment/capital and regulatory time horizons that govern SSE's financial, operational and capital plans. SSE's short-term horizon for assessing climate-related risks and opportunities is 0 to 3 years. This is influenced by the viability assessment of the company. Each year, in line with the requirements within provision C.2.2 of the UK Corporate Governance Code and as part of the risk assessment process, the Board assesses the prospects of the Company over the next 3 financial years. It is through this process that SSE determines its Group Principal Risks. Material influencing factors are considered when reviewing Group Principal Risks including those relating to climate change. The Directors have determined that as this time horizon is consistent with the Group's current capital programme and is within the strategy planning period, a greater degree of confidence over the forecasting assumptions modelled can be established.
<b>Medium-term</b>	4	12	<p>SSE's medium-term horizon for considering climate-related risks and opportunities is 4 to 12 years (to 2030). This is influenced by work done by the Committee on Climate Change (CCC), which is an independent, statutory body set up to monitor the UK's progress towards meeting targets set out in the Climate Change Act 2008 and to ensure emissions targets are set based on expert independent assessment of the evidence. The Act requires the Government to set legally-binding, five-yearly carbon budgets, twelve years in advance, from 2008 to 2050, to act as stepping stones towards these targets. In relation to the power sector, the CCC has estimated that the average grid intensity of electricity generated in 2030 should be between 50 and 100 gCO<sub>2</sub>/kWh. It has recommended that the UK Government provide a longer-term view of future low-carbon power auctions to support an emissions intensity below 100 gCO<sub>2</sub>/kWh by 2030. The carbon budgets and the CCC's recommendations both impact policy makers' time horizons, which in turn provides a framework for SSE's business planning.</p> <p>An example of SSE using this horizon in its planning is through the setting of its new, longer term carbon intensity target: to reduce the carbon intensity of the electricity it produces by 50% by 2030, based on 2018 levels. A key influencing factor in SSE adopting this target year to work towards was the guidance from the CCC of what the average grid intensity of electricity generated in 2030 should be in order to meet UK emission reduction targets.</p> <p>In addition to this, within this medium-term time horizon, the end of Ofgem price control periods for both electricity transmission and electricity distribution regulatory settlements fall (2021 for transmission and 2023 for distribution). These price control periods are currently in 8-year blocks, albeit there are proposals to reduce this to 5 years, meaning that the planning for future price control periods will take place within this medium-term horizon.</p>
<b>Long-term</b>	13	30	Many of SSE's assets have a lifetime that exceeds 20 years, therefore SSE naturally has a long-term business outlook. The long-term horizon runs beyond 13 years and is focused on the trends and scenarios that may shape the future energy system, including climate-related policy, markets, technology and weather/climate impacts. The period from 2030 and beyond, is the period where there is far less clarity or certainty around the market and policy. Nevertheless, it is possible for SSE to understand and consider a number of permutations of both opportunities and threats it may face in that period, which are detailed within SSE's Post-Paris report, which assessed the resilience of SSE's business models to various warming scenarios (see more detail in C3.1d). As part of work undertaken for Post-Paris, SSE has undertaken scenario analysis for the long-term horizon. Three scenarios were established by using publicly available data from National Grid's Future Energy Scenarios which forecasts energy scenarios out to 2040 and SSE projected these out to 2050 using the same assumptions.

**C2.2**

**(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.**

A specific climate change risk identification, assessment, and management process

**C2.2a**



**(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.**

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	>6 years	<p>Within SSE, the consideration of climate-related risks are both:</p> <ol style="list-style-type: none"> <li>integrated into SSE's Group Risk Management Framework (RMF) which continuously assesses its 10 Group Principal Risks of which, the majority are influenced to varying degrees by climate-rated impacts and issues; and,</li> <li>Specifically identified and assessed in a focused medium term risk assessment process governed by SSE's climate-related risks and opportunities Steering Group.</li> </ol> <p>The RMF continuously assesses its 10 Group Principal Risks. SSE's Group Executive Committee and sub-Committees oversee each of SSE's Principal Risks, and a full review of these is carried out each year, including: the effectiveness and appropriateness of relevant controls; detailed analysis relating to monitoring information; and comprehensive scenario impact analysis. As part of the ongoing assessment of the Principal Risks, Key Risk Indicators are reported to oversight committees on a regular basis. Climate-related influencing factors (the physical impacts of climate change, international and national agreements around climate change and the need for low-carbon generation) are considered throughout SSE's Principal Risks including: Commodity Prices; Development and Change; Energy Infrastructure Failure; Politics, Regulation and Compliance and Safety and the Environment. The Group Risk team works with Managing Directors (MDs), GEC and its sub-Committees on an ongoing basis to develop and improve risk management tools and processes (e.g. scenario analysis), to ensure business level risks are identified, managed and regularly reviewed, and that risk reporting to the Board, Audit Committee and GEC meets Corporate Governance Code requirements.</p> <p>The climate-related risks and opportunities Steering Group conducts an in-depth assessment of climate-related risks and opportunities over the medium term and to identify and assess the significant climate-related risks and opportunities that impact the business. The aim of this analysis is to review risk over the medium term and to present the potential financial impact of climate-related effects on its business. This involves the exploration of uncertain yet plausible outcomes of climate-related physical and transition risks and opportunities across the key areas of the business over the short (up to 3 years), medium (3 to 10 years) and long-term (up to 30 years).</p>

**C2.2b**

**(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks. 5,000 characters (currently 4700 characters)**

**Process for identifying and assessing climate-related risks at a company and asset level:**

Climate-related risks impact significantly on SSE Group Principal Risks and the identification, assessment and management of these risks is therefore integrated into its Group Risk Management Framework (RMF). This framework is governed by the Board, which has overall responsibility for determining the nature and extent of risk it is willing to take and for ensuring that risks are managed effectively across the Group. SSE's Group Executive Committee (GEC) and its sub-Committees have responsibility for overseeing SSE's Principal Risks and implement a comprehensive Principal Risk Self-Assessment. At an asset level, each of SSE's divisional MDs implement a Divisional Risk Approach as part of the RMF which tailors operational risk identification to the requirements of the business area.

The climate-related risks and opportunities risk assessment process conducted by the climate-related risks and opportunities Steering Group complements the RMF. This process assesses climate-related risks and opportunities by monitoring key climate-related trends in the external environment; key stakeholder issues and concerns; internal safety, health and environment business unit risk assessment outputs which relate to climate-related impacts; as well as climate-related influencing factors in the RMF. This assessment is completed for each of the key business areas (ie renewables, thermal, transmission, distribution and retail). Each risk or opportunity is then assessed as to its impact over the (up to 3 years), medium (4 to 10 years) and long term (up to 30 years).. Those risks and opportunities that are identified as material (ie have the potential to impact business objectives, reputation or the financial performance of the company) are then assessed in terms of potential financial impact. For climate-related risks, this involves modelling the financial cost of the risk (ie reduced earnings and maintenance costs) along with the cost of mitigation over the identified timeframe that the risk is perceived to impact the business. For climate-related opportunities, the financial benefits (ie operating profit or earnings) are identified and balanced against the costs of implementation again over the timeframe that the opportunity is perceived to be realised by the business. Each risk and opportunity is then assessed in terms of a worse and best case scenario.

The output of this climate-related risk and opportunity risk assessment process is a set of uncertain yet plausible outcomes of climate-related physical and transition risks and opportunities that have the potential to impact SSE's business over the short, medium and long term.

**Assessment of risk size and scope and significance of risks (including climate-related risks):**

To support the RMF Self-Assessment process, SSE develops a suite of severe but plausible scenarios for each risk through its Viability Assessment, based on relevant real life events that have been observed in markets within which the Group operates or related markets globally. Examples include critical asset failure and changes to key government energy policies. Scenarios that have the greatest potential to adversely affect SSE's ability to deliver its vision, strategy and purpose are stress tested against forecast available financial headroom.

**The process for determining relative significance of climate-related risks as part of the risk process:**

The complementary climate-related risk and opportunities risk assessment process identifies risks and opportunities that are greater than £100m in earnings impact as well as with the potential to impact the business objectives, strategy, financial performance or reputation of the company.

**Frequency of risk identification and assessment processes at group and divisions**

The climate-related risk and opportunity risk assessment process is conducted on an ongoing basis by the Steering Group with an annual review of the outputs. The Steering Group consists of finance and sustainability professionals from the core business and is reviewed and approved by SSE's Company Secretary, Finance Director and the Chief Sustainability Officer.

**Risk definitions and how SSE defines substantive financial / strategic impact on its business**

SSE only accepts risk when: it is consistent with its core purpose, strategy and values; is well understood; can be effectively managed; and offers commensurate reward. SSE defines risk as any event or circumstance that has potential to threaten achievement of its strategic objectives or compromise its SSE SET values.

## C2.2c

### (C2.2c) Which of the following risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	SSE faces risks from changes in obligations arising from operating in markets in the UK and Ireland which are subject to a high degree of regulatory, legislative and political intervention or uncertainty. The climate-related risks and opportunities relating to current regulation are identified through the Group Principal Risk review process for the 'Politics, Regulation and Compliance' Principal Risk. The Committee on Climate Change Net Zero Report recommends urgent action by Government to legislate for net zero target based on technical feasibility and cost improvements and is identified as a material influencing factor on the 'Politics, Regulation and Compliance' Principal Risk. Climate Change legislation (UK Climate Change Act 2008 and Irish Government's National Mitigation Plan) impacts financial, strategic and operational decisions. The risks and opportunities to SSE are in relation to the impact of current legislative frameworks in terms of its financial and strategic decisions around renewables investments, operation of thermal assets and development of new infrastructure. For example, the UK Climate Change Act 2008 and Clean Growth Strategy (published in 2017) and its Industrial Strategy describe the mechanisms for the UK to transition to a low-carbon economy. These policies have led to an increase in renewable generation contributing to the GB electricity network. With Committee on Climate Change recent report on Net Zero, an accelerated path towards further decarbonisation is plausible. The 2019 CfD auction is designed to enable the development of up to 6GW of new renewable projects in the UK. SSE is involved in two offshore prospects (Seagreen (Phase 1, up to 1,050MW) and Dogger Bank (up to 3.6GW)) as well as Viking Wind Farm which is also eligible to compete as a 'remote island wind' project. The risk that SSE faces is that key off-shore developments fail to succeed in any CfD auction, which in turn risks the viability of the projects. Future CfD auctions also impact on SSE's electricity networks as these auctions determine the scale and location of future new generation plant that requires to be connected to the grid. Uncertainty over the medium-term on the future scale, shape and timing of new generation plant is determined by policy and lack of certainty means system planning can be more difficult.
Emerging regulation	Relevant, always included	SSE faces risks from changes in obligations arising from operating in markets in the UK and Ireland which are subject to a high degree of regulatory, legislative and political intervention or uncertainty. The climate-related risks and opportunities relating to emerging regulation are identified through the Group Principal Risk review process for the 'Politics, Regulation and Compliance' Principal Risk. International and national agreements such as the 2015 Paris Agreement on Climate Change have been identified as a material influencing factor on the 'Politics, Regulation and Compliance' Principal Risk. Climate Change legislation (UK Climate Change Act 2008 and Irish Government's National Mitigation Plan) has the potential to impact the strategy, finance and investment decisions that are made by SSE. The risks and opportunities SSE faces in relation to the impact of emerging legislative frameworks is in terms of its financial and strategic decisions around renewables investments, operation of thermal assets and development of new infrastructure. For example, in Ireland the policy process for renewable development is awaiting State Aid approval. This impacts SSE's Arklow Bank Wind Park which has a lease but is awaiting details regarding the auction process for new Renewable Electricity Support Scheme (RESS). SSE believes that offshore wind has real opportunities from the second RESS auction, indicatively scheduled for 2020, with further auctions signalled for 2021, 2023, and 2025. However, the risk to SSE is that the ongoing uncertainty of the policy and auction process continues to delay capital and investment decisions in new renewable wind developments in Ireland.
Technology	Relevant, always included	The climate-related risks relating to technology are identified through the Group Principal Risk review process for the 'Development and Change' and 'Major Projects Quality' Principal Risks. SSE's 'Development and Change' Principal Risk, highlights that SSE faces the risk of failing to recognise and react appropriately to climate-related competition, technological advancements and changes in customer expectations. SSE's 'Major Projects Quality' Principal Risk highlights that SSE faces the risk that its climate-related assets that it builds do not meet the quality standards required to

	Relevance & inclusion	Please explain
		support economic lives of typically 15 to 30 years. The reason why technology is included in SSE's risk reviews is because technology has the potential to impact the strategy, finance and investment decisions that are made by SSE. For example, technology risk is relevant to Scottish and Southern Electricity Networks (SSEN), both in transmission and distribution networks. These businesses are central to supporting the transition to a low-carbon electricity system – connecting clean energy, supporting electrification of transport and facilitating change as local 'system operators' – and require significant modernisation and reform. SSEN's distribution businesses in the north of Scotland and central southern England are leading the industry through a number of high impact innovation and demonstration projects. The risk is that SSEN's technologies fail to adapt quickly enough to changed patterns of electricity demand and supply, and that customer expectations are not met. That is why SSEN has a deliberate strategy to take a leadership position within the electricity networks industry with innovative demonstration projects that enable far greater levels of flexibility.
Legal	Relevant, always included	SSE faces risks from changes in obligations arising from operating in markets in the UK and Ireland which are subject to a high degree of regulatory, legislative and political intervention or uncertainty. The climate-related risks and opportunities relating to emerging regulation are identified through the Group Principal Risk review process for the 'Politics, Regulation and Compliance' Principal Risk. International and national agreements such as the 2015 Paris Agreement on Climate Change have been identified as a material influencing factor on the 'Politics, Regulation and Compliance' Principal Risk. Climate Change legislation (UK Climate Change Act 2008 and Irish Government's National Mitigation Plan) has the potential to impact the strategy, finance and investment decisions that are made by SSE. Compliance is core to securing SSE's legitimacy as a provider of energy. For example, not meeting legislative requirements such as the current Emissions Performance Standard would represent a legal risk for SSE. This risk of non-compliance with this legislation and the impact of fines or other legal consequences is considered low because SSE has a transition plan where no electricity generation from coal will occur after 2025. However, a greater risk might be where carbon targets across the country are failing to be met and this could lead to the risk of the introduction of new legislation that impacts SSE's strategy, finance and investment decisions.
Market	Relevant, always included	SSE 'Commodity Prices' Group Principal Risk highlights that SSE faces risks associated with the Group's exposure to fluctuations in both the physical volumes and price of key commodities, including electricity, gas, carbon dioxide permits, oil and related foreign exchange values. International and national agreements such as the 2015 Paris Agreement on Climate Change have been identified as a material influencing factor on this Principal Risk. SSE's 'Energy Affordability' Group Principal Risk highlights that SSE faces risks from the combination of the cost of providing reliable and sustainable energy and the level of customers' incomes means that energy becomes unaffordable to a significant number of SSE's customers. This risk is directly connected to political interventions and commodity price exposure. Public policies, including those aimed at reducing carbon emissions and energy consumption is identified as a material influencing factor on this Principal Risk. Market forces are a relevant risk because there are a number market forces that impact on SSE's wholesale, retail and transmission/ distribution activities in the countries in which SSE operates and invests (i.e. UK and Ireland), which have the ability to influence the capital, operational and financial decisions of the company and the markets in which it operates. For example, offshore wind represents an opportunity for SSE to deliver its own decarbonisation ambitions and contribute to the achievement of the UK's and Ireland's carbon targets. The Crown Estate and the Crown Estate Scotland have signalled their intent to make new seabed rights available to offshore wind developers to ensure new projects can start to operate from the late 2020s. SSE is following this process closely to prepare for potential new offshore wind leasing in the form of extensions and new sites. The risk to this opportunity is the highly competitive nature of the growing offshore wind industry. The CfD auctions to date are proven to be highly competitive resulting in aggressive cost reductions.
Reputation	Relevant, always included	Reputational risk is not identified as a risk in its own right, however impacts are evaluated and 'Reputation' is used as an indicator in the risk assessment process. Climate-related reputational risks arise as a result of not managing and responding appropriately to the other climate-related risks highlighted in this table. For example, there is a public and political consensus on the need to address climate change, evident the Committee on Climate Change report on Net Zero. SSE publicly supports the aims Net Zero report and believes that an accelerated path to limit global warming to no more than 1.5 degree centigrade must be pursued. SSE has also publicly announced its new, longer term carbon ambition: to reduce the carbon intensity of the electricity it generated by 50% by 2030, based on 2018 levels. Failure to take action to meet this ambition could result in reputational damage to SSE for a number of SSE's key stakeholders, including society, shareholders, and government and regulators – especially in the context of the growing public support for tackling climate change.
Acute physical	Relevant, always included	SSE's 'Energy Infrastructure Failure' Group Principal Risk highlights that SSE faces the risk of national energy infrastructure failure, whether in respect of assets owned by SSE or those owned by others which SSE relies on, that prevents the Group from meeting its obligations. Severe adverse weather that causes damage or interrupts energy supply or generation is identified as a material influencing factor on this risk. In addition to this, weather associated seasonal fluctuations in demand, supply and generation capabilities – which may or may not be in line with historical trends both in GB and across Europe – is highlighted as a material influencing factor on the 'Commodity Prices' Principal Risk. Severe adverse weather that causes damage or interrupts energy supply or generation can impact the Group's ability to meet its business objectives and influences investment decisions made. For example, SSE's Networks business is at risk of the impacts of severe adverse weather events which can result in flooding of substations and/or damage to overhead lines. In late February/early March 2018, SSE's Network's business was impacted by severe weather conditions when a cold wave, named the 'Beast from the East', combined with Storm Emma to bring high winds and significant snowfall to the UK and Ireland. Power needed to be restored to over 22,500 customers in its central southern England network region.
Chronic physical	Relevant, always included	SSE's 'Energy Infrastructure Failure' Group Principal Risk highlights that SSE faces the risk of national energy infrastructure failure, whether in respect of assets owned by SSE or those owned by others which SSE relies on, that prevents the Group from meeting its obligations. Severe adverse weather that causes damage or interrupts energy supply or generation is identified as a material influencing factor on this risk. In addition to this, weather associated seasonal fluctuations in demand, supply and generation capabilities – which may or may not be in line with historical trends both in GB and across Europe – is highlighted as a material influencing factor on the 'Commodity Prices' Principal Risk. Long-term changes in climate have the potential to impact SSE's ability to meet its obligations. For example, changes in climate could impact SSE's ability to produce electricity from its wind and hydro generation assets, which would impact on SSE's Wholesale business.

	Relevance & inclusion	Please explain
		Changes in climate could also impact the amount of gas and electricity used by customers which would affect SSE's Retail business. SSE's Networks business is at risk of the impacts of changes in climate, including severe adverse weather events which can result in flooding of substations and/or damage to overhead lines. It would also need to adapt its approach to operation and investment in infrastructure to meet the change in electricity generation and consumption patterns as a result of long-term changes in climate.
Upstream	Relevant, sometimes included	SSE relies on its supply chain to deliver major projects and ensure it operates successfully. A significant proportion of SSE's expenditure with suppliers supports large capital projects, which enable the generation of low-carbon energy or the connection of low-carbon generation to the grid, such as Beatrice offshore windfarm and the Caithness-Moray transmission project. Many of these projects are in remote areas which are subject to harsh weather conditions in the north of Scotland. Severe adverse weather as a result of changes in climate can impact the ability of SSE's suppliers to deliver these projects in a timely manner, which could impact SSE's ability to meet its objectives and ultimately impact SSE's capital investments and earnings. In addition, like SSE, some of its suppliers may face similar climate-related political, regulatory and compliance risks, which may impact their ability to deliver their products/services for SSE.
Downstream	Relevant, sometimes included	SSE defines risk as any event or circumstance which has the potential to threaten the achievement of its business objectives or compromise its values. By definition, SSE's ten Group Principal Risks have the potential to impact on SSE's customers as they have the potential to impact the achievement of SSE's business objectives and its delivery of its obligations. SSE's customers are primarily impacted through climate-related aspects of the two Group Principal Risks: 'Energy affordability' and 'Energy Infrastructure Failure'. Impacts on SSE's customers are considered in the 'Energy Affordability' Group Principal Risk, which highlights that SSE faces risks from the combination of the cost of providing reliable and sustainable energy and the level of customers' incomes means that energy becomes unaffordable to a significant number of SSE's customers. This risk is directly connected to political interventions and commodity price exposure. Public policies, including those aimed at reducing carbon emissions and energy consumption are identified as a material influencing factor on this Principal Risk. For example, the cost of government levies (which support things such as carbon reduction initiatives and renewable energy projects) in the GB energy market increase the cost of energy customers' bills, which impacts on the affordability of energy for SSE's customers. SSE has long been an advocate for these to be collected through general taxation. SSE's 'Energy Infrastructure Failure' Group Principal Risk highlights that SSE faces the risk of national energy infrastructure failure, whether in respect of assets owned by SSE or those owned by others which SSE relies on, that prevents the Group from meeting its obligations. Severe adverse weather that causes damage or interrupts energy supply or generation is identified as a material influencing factor on this risk, which can impact on SSE's ability to provide energy to its customers. In addition to this, weather associated seasonal fluctuations in demand, supply and generation capabilities – which may or may not be in line with historical trends both in GB and across Europe – is highlighted as a material influencing factor on the 'Commodity Prices' Principal Risk, which is closely linked to energy affordability for SSE's customers.

## C2.2d

### (C2.2d) Describe your process(es) for managing climate-related risks and opportunities. [5000 characters]

SSE has a system of internal control which involves frameworks on governance (focusing on high quality and effective decision making), strategy (including financial and sustainability objectives and goals), risk (detailed in question 2.2a and 2.2b), assurance (independent programme of audits/ compliance) and standards and quality (sets standards/ guidelines to deliver the core purpose). This system of internal control supports the identification of risks or opportunities along with their mitigation and transfer, acceptance or control.

Physical risk: For instance one of SSE's 10 Principal Risks, Commodity Prices, identified that climate-related risk is a material influencing factor and that chronic long term changes in climate patterns can cause sustained seasonal fluctuations in temperatures that may result in lower rainfall and reduced wind which ultimately impacts the supply/ demand of electricity. This risk materialised in 2018/19 when SSE experienced lower than expected renewable energy outputs, extreme weather along with higher than expected gas prices. SSE's system of internal control identified that whilst the opportunity to mitigate against year-to-year weather variability is limited, SSE has an element of geographical and technological diversity amongst its renewable portfolio providing a natural hedge to changing weather patterns within and between years. Furthermore, crisis management and business continuity plans are in place to deal with severe weather events that can damage energy assets. In addition, SSE's governance framework identified the need to mitigate this risk further by: implementing an asset-by-asset approach to hedging to ensure trading positions cannot have a material impact on SSE Group earnings which will be implemented fully by April 2020; and establishing The Energy Markets Risk Committee to oversee and ensure effective implementation of the revised hedging arrangements.

Transition opportunity: SSE's strategic framework identifies, climate change in the form of international and national agreements such as the 2015 Paris Agreement as a material influencing factor affecting the business. For example, in 2018/19 there has been growing calls towards a 'net zero' emission target to reflect science. SSE's governance framework identified this as an opportunity for the business, the Board agreed to align its business strategy to address the challenge of climate change and the opportunity that it presents by redefining its vision 'to be a leading energy company in a low-carbon world' and 'creating value for shareholders and society from developing, operating and owning energy and related infrastructure in a sustainable way'. As part of this strategy SSE set four 2030 sustainability goals, three of which are in direct response to the low-carbon challenge. These are – to cut in half the carbon intensity of the electricity we generate, to develop and build enough renewable energy capacity to treble renewable output and help accommodate 10 million electric vehicles on Britain's electricity networks.

## C2.3

### (C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?



Yes

**C2.3a****(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.****Identifier**

Risk 1

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type**

Physical risk

**Primary climate-related risk driver**

Chronic: Changes in precipitation patterns and extreme variability in weather patterns

**Type of financial impact**

Reduced revenues from lower sales/ output

**Company- specific description**

Longer term changes in climate patterns cause sustained higher temperatures that may result in lower rainfall and reduced wind levels. These changes may impact SSE's renewables output and associated earnings.

SSE's businesses activities are significantly influenced by the weather: from influencing how much energy is demanded from customers, to providing the 'fuel source' for renewable generators. Therefore weather patterns are an important contributor to SSE's business performance. Weather affects production of renewable energy, the operation of the electricity transmission and distribution networks, and the amount of gas and electricity SSE's energy customers use.

One of the most material impacts that weather can have is fluctuations in weather patterns impacting adversely on the output of SSE's hydro-electric and wind generation assets. SSE has hydro-electric generation assets across the north of Scotland, and onshore wind farms across the UK and Ireland (with the majority of installed capacity in Scotland).

Changes in generation output that is associated with changes in the weather is already factored into SSE's Risk Management Framework. There is the possibility that climate change could exacerbate these weather-related fluctuations by impacting weather patterns over the longer term. The risk facing SSE is that lower levels of wind and rainfall could reduce the output from SSE's wind and hydro assets which could result in a reduction in revenue.

**Time horizon**

Long-term

**Likelihood**

Likely

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

£100,000,000

**Explanation of financial impact figure**

Based on SSE's long-term monitoring of weather changes and current forecasts, a plausible scenario has been established of significantly below-average rainfall and of low wind. The combination of both these weather impacts will result in reduced renewable generation output and associated earnings. This weather risk is a perennial feature of risk for SSE as the largest generator of renewable electricity in the UK and Ireland.

**Weather patterns affect renewable output and in any one year the potential adverse financial impact on renewable earnings is estimated to be around £100m.** This figure represents a worst-case scenario of a combination of the worst year of hydro generation output and the worst year of onshore wind generation output from the past decade coinciding. The calculation is based on differences between average and lowest outputs over the last 10 years combined with reasonable assumptions for forward power prices. This weather risk is a perennial feature of risk for SSE as the largest generator of renewable electricity in the UK and Ireland.

#### Management method

While the opportunity to **mitigate** against year-to-year weather variability is limited, there is an element of geographical and technological diversity amongst SSE's renewable portfolio providing a natural hedge to changing weather patterns within and between years. For example, SSE has 2,299MW of on-and off-shore wind capacity across GB and Ireland. In addition, SSE operates 1,450MW of hydro electricity generation capacity (including pumped storage) which includes 91 hydro dams in the north of Scotland covering a water catchment area of 5,382 sq. miles. Hydro generation is unique in SSE's portfolio, as it can be characterised as renewable and flexible. These geographical and technologically diverse assets enabled SSE to achieve its highest ever output from renewable energy in 2018/19, increasing to 9.8TWh from 9.4TWh the previous year and accounting for 32% of SSE's total generation output.

Furthermore, SSE monitors short- and long-term weather conditions so that it can manage and respond to conditions to conditions for the benefit of customers and support business objectives. For instance, in the first half of 2018/19 SSE experienced a relatively dry, still weather period which resulted in lower wind speeds and hydro production than expected. In the past few years, SSE responded to changes in climate patterns (such as those experienced in the summer of 2018/19) by operating and adapting its hydro generation activities in a different way to the way it did 5 to 10 years ago.

SSE has crisis management and business continuity plans in place to deal with severe weather events that can damage energy assets. These are tested regularly and are designed for the management of, and recovery from, safety and environmental events.

Costs are incorporated into ongoing stakeholder engagement activities, strategy, maintenance, asset monitoring and investment programmes. One element of these costs that can be directly attributed to this climate-related risk is the monitoring/forecasting of weather by SSE's meteorological team. The costs directly attributed to SSE's meteorological team and the management of weather is in the region of £250,000 annually.

#### Cost of management

250,000

#### Comment

Leave blank

#### Identifier

Risk 2

#### Where in the value chain does the risk driver occur?

Direct operations

#### Risk type

Physical risk

#### Primary climate-related risk driver

Acute: Increased severity of extreme weather events such as cyclones and floods

#### Type of financial impact

Reduced revenues from lower sales/ output

#### Company- specific description

**Increased severity of extreme weather events, such as storms, floods and heat waves bring prolonged extreme temperatures, wind or rainfall.** These severe adverse weather events can cause damage or interrupt energy supply or generation, and this is a key risk to SSE's business. The risk is that these events can impact the Group's ability to meet its business objectives and influences investment decisions made. For instance, weather events such as storms, floods and heat waves may damage network assets which result in the loss of incentive revenue and increased maintenance costs for SSE's Distribution Networks business (SSE). For example, SSE's Networks (SSE) business is at risk of the impacts of severe adverse weather events which can result in flooding of substations and/or damage to overhead lines and cause



power supplies to customers to be disrupted. In late February/early March 2018, SSE's Network's business was impacted by severe weather conditions when a cold wave, named the 'Beast from the East', combined with Storm Emma to bring high winds and significant snowfall to the UK and Ireland.

**Time horizon**

Short-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

£145,000,000

**Explanation of financial impact figure**

To estimate a potential financial impact, it is assumed that the next distribution price control (2023 to 2028) will be of similar value and size as the current RIIO-ED1 distribution price control (2015 to 2023). It is also assumed that for three years fault costs will increase by 10% and for two of these years we will see a decrease in annual incentive revenue by an additional 10%. It is also forecast that another two years of extreme weather will cause an additional 20% increase in fault related costs and a similar decrease in incentive income. This is consistent with the number of faults and current RIIO-ED1 incentive and penalty methodology. The estimated cost of faults and loss of incentive income over the next 10 years may result in a potential reduction of earnings of up to £145m cumulatively.

**Management method**

To mitigate the impact of severe weather events, SSE monitors short- and long-term weather conditions; has crisis management and business continuity plans; and has a continuous programme of investment in strengthening and improving the resilience of the electricity network. For example, in 2019, SSEN invested £4.5m to elevate a substation above the flood risk level near Osney Island, a riverside village in Oxfordshire, to safeguard it from the risk of flood damage. The works involve replacing outdoor equipment which is sensitive to flood levels by constructing an elevated building on part of the existing site. This will ensure that the power supply to over 10,000 customers in the local area is protected.

Examples of the cost to management of directly mitigating severe adverse weather in SSEN is the combination of costs associated with investment in tree cutting (which is fundamental to the ongoing maintenance of SSE's assets) and flood protection. The combination of these costs is £20.5m.

**Cost of management**

£20,500,000

**Comment**

Leave blank

**Identifier**

Risk 3

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type**

Transition risk

**Primary climate-related risk driver**

Policy and legal: Mandates on and regulation of existing products and services

### Type of financial impact

Policy and legal: Write-offs, asset impairment, and early retirement of existing assets due to policy changes

### Company- specific description

#### Policy risk: Stretching climate change policy results in the closure of unabated gas assets from 2030 onwards.

The low-carbon transition requires a significant increase in renewable generation. Flexible generation is required to provide electricity when renewable output is low. In the short-term (by the end of 2020s) gas generation is likely to provide that flexibility. However, to meet climate change commitments the UK and Irish governments may strengthen climate change policies and require thermal generation to be removed or abated in the medium- to long-term (beyond 2030).

SSE has around 5.3GW of installed gas- and oil-fired generation, the vast majority of which is gas-fired generation. Much of SSE's existing Combined Cycle Gas Turbine (CCGT) portfolio will move towards the end of its natural life during the 2020s. In May 2018, SSE announced its intention to invest £350m in a new CCGT power station at Keadby, Lincolnshire, and construction is underway. This asset will use state-of-the-art technology, making it the most efficient gas-fired power station on the UK power system, and making a significant contribution to securing Britain's electricity supplies through the 2020s.

The Committee on Climate Change (CCC) has highlighted the importance of carbon capture and storage (CCS) technology in helping the UK to achieve its carbon targets. However, the longer term risk to SSE in the absence of an economically feasible method of CCS, is that the output of unabated gas plants may need to be curtailed if the UK and Ireland is to meet carbon targets. This may result in a financial impact to earnings as the output of gas-fired generation is impacted beyond 2030.

### Time horizon

Long-term

### Likelihood

Unlikely

### Magnitude of impact

Medium-low

### Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

### Potential financial impact figure (currency)

£300m

### Explanation of financial impact figure

SSE's existing 5.3GW fleet of installed gas- and oil-fired generation will be nearing the end of its expected life by the end of the 2020s. However, 570MW of Combined Cycle Gas Turbine capacity will still be in operation in 2030 and beyond. It is a plausible scenario that this capacity will not be able to generate beyond 2030. It is therefore assumed that the financial impact of this policy change is a loss of five years of forecast revenue for the remaining life of these assets offset against revenue from multifuel assets. **The early closure of the remaining gas assets taking account of the cost to mitigate is estimated to have an adverse impact on earnings of up to £300m cumulatively over five years after 2030.**

### Management method

SSE continues to invest in a diversified generation portfolio of renewable and thermal assets. For example, SSE delivered the 588MW Beatrice offshore wind farm in May 2018 and completed the Stronelaig (228MW capacity) onshore wind farm in December 2018. In addition, SSE has the biggest pipeline of offshore wind farm developments in the UK, including Seagreen Phase 1 (up to 1,050MW), Dogger Bank (up to 3.6GW – SSE share 50%), and further options for Seagreen Phases 2 & 3 (up to 3,200 MW) and Greater Gabbard Extension (up to 504MW – SSE share 50%).

SSE also engages with UK and Irish Governments, European Commission, Members of European Parliament and others on low-carbon policy. During these discussions, SSE supports a Carbon Price Floor, the EU ETS, Levy Control Framework and other legislation that supports a move towards a low-carbon economy, with gas providing an important role in the security of supply.

SSE has ten years' experience of working towards commercial demonstration of Carbon Capture and Storage technology in the UK and experience of working on hydrogen storage projects in partnership with others and monitors developments in order to adapt to an unexpected change in environmental or carbon policy. The costs associated with decommissioning is factored into the end-of-life plans for ageing plant.

Costs are incorporated into ongoing stakeholder engagement activities, strategy, maintenance, asset monitoring and investment programmes. One element of these costs that can be directly attributed to this climate-related risk is Corporate Affairs and Energy Portfolio Management teams' role in managing climate-related policy impacts. The costs directly attributed to these teams and the management of climate-related policy is in the region of £250,000 annually.

**Cost of management**

£250,000

**Comment**

Leave blank

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**Identifier**

Risk 4

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type**

Transition risk: Technology

**Primary climate-related risk driver**

Technology: Unsuccessful investment in new technologies

**Type of financial impact**

Technology: Capital investments in technology development

**Company- specific description**

**Technology risk: Electrification takes place at such speed it overwhelms the distribution network.**

National Grid's 'Two Degree' Future Energy Scenario 2018 expects electric vehicles (EVs) to grow in GB to around 10 million by 2030 and SSE's Distribution business is preparing for such a scenario.

The number of EVs on SSEN's network is currently estimated to be around 25,000, however this is expected to grow rapidly in the coming years in response to ambitious targets set by the UK and Scottish Governments to phase out petrol and diesel vehicles by 2040 and 2032 respectively. National Grid's 2018 Future Energy Scenarios (FES) report estimates a maximum potential for 38.5 million EVs in Britain by 2050, increasing significantly from 25 million estimated by the same year in its 2017 FES report.

SSEN is undertaking work to prepare for this transition, however, if the uptake in EVs takes place at a pace which is dramatically higher than expected in the current models, this could pose challenges to SSEN's distribution networks. The risk is that a disorderly and faster-than expected increase in the uptake of EVs has the potential to affect the reliability of SSEN's distribution network. This could significantly increase the costs to reinforce the network to take account of electrification.

**Time horizon**

Medium-term

**Likelihood**

Unlikely

**Magnitude of impact**

Low

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

Between £50m to £100m

**Explanation of financial impact figure**

An unexpected rapid and exponential uptake of EVs in GB will have the potential to disrupt the electricity network and impact the reliability of the network assets.

Additionally, there would likely be significant additional expenditure incurred due to the distressed nature of delivering capital investment as a result of a GB wide rapid uptake of EVs including the impact on the supply chain. **The financial impact of rapid electrification cumulatively over the next five years on earnings could be between £50m to £100m.**

**Management method**

- SSEN is taking a leadership role on electrification and has set itself a 2030 target to 'build network flexibility that helps accommodate 10 million electric vehicles in the UK'.
- SSEN is working with industry, policy-makers and the regulator to support a phased transition from a Distributed Network Operator (DNO) to a Distributed System Operator (DSO). SSEN's approach is detailed in its DSO strategy *Supporting a Smarter Electricity System*.
- SSEN continues to progress innovation through Ofgem funded structures, and in March 2019 secured £13.8m of funding for Project Local Energy Oxfordshire (LEO) to explore the growth in local renewables, EVs, battery storage, vehicle-to-grid (V2G) technology and demand side response.

Costs are incorporated into ongoing strategy, asset and investment management programmes. One element of these costs that can be directly attributed to this climate-related risk is the networks' strategy and partnership funding teams' role in working with industry, policy-makers and regulators on projects that support the networks business to manage the impact of electrification on the network. The costs directly attributed to these teams is in the region of £250,000 annually.

**Cost of management**

250,000

**Comment**

Leave blank

**(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?**

Yes

**C2.4a****(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.****Identifier**

Opp1

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

**Type of financial impact**

Increased revenue through demand for lower emissions products and services

**Company-specific description**

Development and expansion of SSE's off- and on-shore wind pipeline to support a low-carbon electricity system.

The UK Government's Climate Change Act 2008, its Clean Growth Strategy (published 2017), and its Industrial Strategy, describe the mechanisms for the UK to transition to a low-carbon economy. These policies have led to an increase in renewable generation contributing to the GB electricity network. With the Committee on Climate Change report on Net Zero, an accelerated path towards further decarbonisation is plausible.

In a low-carbon world, new off- and on-shore wind has an important role to play. The UK Government's sector deal has committed to an additional 30GW of installed offshore wind capacity by end of 2030. The combination of strong carbon price, high energy price and continued access to Contracts for Difference (CfD) or other price stabilisation mechanism would continue to support an investment case for SSE in off- and on-shore wind projects. This would benefit SSE as it would enable SSE to invest in its significant pipeline of both on- and off-shore renewable energy projects. Since 2010, SSE has invested over £3.9bn in renewable energy and in 2018/19 invested more than £320m.

SSE currently has the largest renewable energy capacity across the UK and Ireland at around 4GW (including pumped storage) and in 2018/19 achieved its highest ever output from renewable sources (including pumped storage) at 9.8TWh. SSE believes its 8GW wind energy pipeline means it could double its renewable energy output over 20TWh by 2025, which would be a significant step towards its 2030 sustainability goal of trebling renewable output to 30TWh by 2030. SSE has an onshore wind pipeline of over 1GW and an offshore wind development pipeline of over 7GW. SSE believes this pipeline of new assets will play a critical role in helping the UK and Ireland achieve their decarbonisation goals, and contribute to the ultimate goal of zero carbon electricity.

#### Time horizon

Medium-term

#### Likelihood

About as likely as not

#### Magnitude of impact

Medium

#### Are you able to provide a potential financial impact figure?

#### No, we do not have this figure Explanation of financial impact figure

SSE has an off- and on-shore wind development pipeline at varying stages of development of over 8GW. The portfolio has the potential to generate significant additional earnings for SSE. However, SSE is not yet in a position to quantify the scale of this opportunity given the imminent competitive CfD auction being run by the UK Government. The 2019 CfD auction is designed to enable the development of up to 6GW of new renewable energy projects in the UK.

**The potential financial impact of this climate-related opportunity represents one of the most significant available to SSE both in the short- and long-term. Given the highly competitive – and current – nature of the CfD process, it is not appropriate to give estimates of the scale of opportunity this time. SSE expects to give TCFD-style disclosure of the renewables pipeline opportunity in the future.**

#### Strategy to realize opportunity

- SSE has a pipeline of over 8GW of potential new wind development opportunities. With over 1GW of potential new onshore wind projects and a further 7GW of potential offshore wind projects. SSE will develop these projects in partnership and will recycle some capital to support further development.
- SSE has interests in three UK wind projects which are expected to be eligible for the CfD in 2019: 50% of Dogger Bank (up to 3.6GW); Seagreen (Phase One up to 1,050MW) and Viking onshore wind farm on Shetland around 450MW). SSE has further offshore wind project interests in Seagreen Phases 2 and 3, Greater Gabbard Extension and Arklow Bank Wind Park in Ireland.
- SSE engages with UK and Irish Governments, European Commission, Members of European Parliament and others on low-carbon policies.

Costs associated with realising this opportunity involve capital and investment expenditure in renewable projects, the maintenance of development consents and grid connections, alongside ongoing stakeholder engagement activities and major project investment governance processes. The management cost that is directly attributable to this opportunity is the costs associated with the project work completed by the renewables development team and this is in the region of £500,000 annually.

#### Cost to realize opportunity

500,000

#### Comment

Leave blank

#### Identifier

Opp2

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

**Type of financial impact**

Increased revenue through demand for lower emissions products and services

**Company-specific description****Investment in transmission infrastructure in the north of Scotland to support the delivery of an accelerated low-carbon electricity system.**

The UK Government's Climate Change Act 2008, its Clean Growth Strategy (published 2017), and its Industrial Strategy, describe the mechanisms for the UK to transition to a low-carbon economy. These policies have led to an increase in renewable generation contributing to the GB electricity network. With the Committee on Climate Change report on Net Zero, an accelerated path towards further decarbonisation is plausible. SSEN's transmission network plays a key role connecting the sources of renewable generation to the areas of high demand.

SSEN operates the transmission network in the north of Scotland, where 96% of the electricity transmitted is from low-carbon sources. SSEN's transmission network allows the renewable energy generated in the north of Scotland to be transmitted down south to areas of higher demand. This makes it fundamental in facilitating the transition to a low-carbon electricity system. To continue to support this transition, SSEN's transmission business will need to invest in infrastructure to support the low-carbon transition and connect renewable generation projects to its network.

SSEN completed, commissioned and energised its £1.1bn Caithness-Moray transmission reinforcement project at the end of 2018. SSEN's transmission business has projects with a forecast pipeline of investment of around £600m up to 2021, the end of the current Price Control period in 2021. In addition, SSEN continues to work with stakeholders across the three Scottish island groups to take forward proposals to provide transmission connections to enable the connection of renewable electricity generation. The three links could provide an investment opportunity of around £1.5bn for SSEN.

**Time horizon**

Medium-term

**Likelihood**

More likely than not

**Magnitude of impact**

Medium-high

**Are you able to provide a potential financial impact figure?****Additional earnings of up to £100m per year over the period 2022 to 2030****Explanation of financial impact figure**

SSEN Transmission has a current pipeline of transmission projects with a total planned investment of over £600m up to 2021 as part of RIIO-T1. For the next price control period from 2021 to 2023 SSEN has drafted its *Emerging Thinking 2019* paper that forms the basis of the RIIO-T2 business plan. This plan identifies potential investment in the transmission network in the range of £300 to £700 million per annum to support the potential connection of 7.5GW of new renewables in this period. In addition, there is potential for investment in three island links of around £1.5bn for SSEN over the next 10 years.

**Additional earnings of up to £100m per year over the period 2022 to 2030 as a result of capital investment\*.**

*\* this is reflective our Emerging Thinking 2019 paper and investment up to 2026 with steady state investment for the remaining period to 2030.*

**Strategy to realize opportunity**

- SSEN operates the transmission network in the north of Scotland, where 96% of the electricity transmitted is from renewable sources. This network enables the renewable energy generated in the north of Scotland to be transmitted down south to areas of higher demand.
- In 2018/19 SSEN increased the renewables capacity supported by its network by over 1GW, installed renewable electricity generation capacity connected to SSEN's transmission network grew from 3.3GW in April 2013 to over 6GW in April 2019.
- SSEN has a pipeline of transmission projects, with a total planned investment of over £600m up to 2021.



The costs to realise this opportunity are incorporated into the networks strategy, planning and investment programmes. Specifically, the costs to realise this opportunity can be directly attributed to the network's strategy team that is identifying the potential investment required to realise this climate-related opportunity and this is in the region of £250,000.

**Cost to realize opportunity**

250,000

**Comment**

Leave blank

**Identifier**

Opp3

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

**Type of financial impact**

Increased revenue through demand for lower emissions products and services

**Company-specific description**

**Decarbonisation of the electricity system provides the opportunity to increase output and earnings from flexible and renewable hydro assets.**

As the energy system decarbonises, increasing volumes of wind energy is coming onto the GB system. Flexible generation and storage are required to provide electricity when wind output is low. SSE's hydro generation assets (inc. pumped storage) are in a good position to take advantage of an increase in the value of flexible output. Hydro is unique in SSE's portfolio, as it can be characterised as both renewable and flexible. In 2018/19, SSE's hydro stations delivered increased value from their flexibility, enabled by enhancements to SSE's commercial management of these assets. In addition to 400MW of run-of-river hydro, SSE has 750MW of flexible hydro and SSE's 300MW of pumped storage. Flexible hydro operates as 'Britain's biggest battery'.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium-high

**Are you able to provide a potential financial impact figure?**

Yes, single figure estimate

**Potential financial estimate**

£400m

**Explanation of financial impact figure**

SSE has 1,450 MW of existing hydro capacity (inc. pumped storage) and has planning consent for an additional 600MW of pumped storage. SSE has invested in its hydro generation assets to increase flexibility to the UK grid. It is assumed that by providing more flexible hydro output from existing assets SSE could generate an additional £15m per annum through generating additional volumes and/or capturing high prices during system stress periods. Further, balancing market revenue could generate an additional income of up to around £8m a year. These values will vary depending on power prices which are uncertain.

Furthermore, the successful development of the consented Coire Glas Pumped Hydro plant could potentially earn additional revenue between 2025 and 2030. This is based on the current revenue projections for the existing pump storage capacity that SSE owns.

**Up to £400m increase in revenue by providing flexible hydro output and investing in new pumped storage output over the next 10 years.**

#### Strategy to realize opportunity

- SSE is investing in a diversified generation portfolio of renewable and flexible generation assets (including hydro generation assets).
- SSE has 400MW of run-of-river hydro, 750MW of flexible hydro alongside 300MW of pumped storage.
- In 2018/19 and 2018/19, and despite challenging weather conditions SSE's hydro fleet delivered increased value from their increased flexibility, enabled by enhancements to SSE's commercial management of these assets.
- Costs associated with realising this opportunity are incorporated into ongoing strategy, maintenance, asset monitoring and investment programmes. One element of these costs that can be directly attributed to this climate-related opportunity is the monitoring/forecasting of weather by SSE's meteorological team. The costs directly attributed to SSE's meteorological team and the management of weather is in the region of £250,000 annually.

#### Cost to realize opportunity

250,000

#### Comment

Leave blank

#### Identifier

Opp4

#### Where in the value chain does the opportunity occur?

Direct operations

#### Opportunity type

Products and services

#### Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

#### Type of financial impact

Increased revenue through demand for lower emissions products and services

#### Company-specific description

**Decarbonisation of transport presents opportunities for SSE's Networks business.** Whilst the number of electric vehicles on SSEN's network is currently estimated to be 25,000, it is expected to grow rapidly in the coming years in response to ambitious targets set by the UK and Scottish Governments to phase out petrol and diesel vehicles by 2040 and 2032 respectively. National Grid's 'Two Degree' Future Energy Scenario 2018 anticipated electric vehicles (EVs) to grow in GB to around 10 million by 2030. National Grid's 'Two Degree' Future Energy Scenario 2018 anticipated electric vehicles (EVs) to grow in GB to around 10 million by 2030. Increase in the uptake of EVs has the potential to provide opportunities for SSE's business as a network operator. In SSEN there is the opportunity to invest in, and develop the network infrastructure required to support the roll out of EVs. This includes smart energy systems, demand side response and distributed flexible and renewable energy.

#### Time horizon

Medium-term

#### Likelihood

Very likely

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?****Yes, an estimated range****Potential financial impact figure**

Between £200m to £400m

**Explanation of financial impact figure**

The uptake of EVs on SSE's networks is likely to provide a significant investment opportunity to support the low carbon transport transition. Studies forecast that EVs will contribute to between £400m to £1bn of capital investment by 2030 for SSE in its network areas. To calculate the revenue impact of rapid electrification of vehicles, SSE has profiled the investment predictions of a fast and average uptake over the period up to 2030. Between £200m and £400m potential increase in cumulative revenue from investment in networks to support electrification of transport up to 2030.

**Strategy to realize opportunity**

- SSEN is taking a leadership role on electrification and has a 2030 target to 'build network flexibility that helps accommodate 10 million electric vehicles in the UK', and during 2018/19, SSEN invested a total of £370.7m in electricity distribution networks.
- SSEN continues to progress innovation through Ofgem funded structures, and in March 2019 secured £13.8m of funding for Project Local Energy Oxfordshire (LEO) to explore the growth in local renewables, electric vehicles, battery storage, vehicle-to-grid (V2G) technology and demand side response.
- Costs to realise this opportunity are incorporated into ongoing strategy, asset and investment management programmes. One element of these costs that can be directly attributed to this climate-related opportunity is the networks team and partnership funding teams' role in working with industry, policy-makers and regulators on projects that support the networks business to manage the impact of electrification on the network. The costs directly attributed to these teams is in the region of £250,000 annually.

**Cost to realize opportunity**

250,000

**Comment**

Leave blank

**C2.5****(C2.5) Describe where and how the identified risks and opportunities have impacted your business.**

	Impact	Description
<b>Products and services</b>	Impacted	<p>The composition of SSE's products and services (ie its portfolio of generation assets) are highly impacted by the risks and opportunities surrounding decarbonisation and the transition to a low-carbon economy. Since 2010, SSE has invested over £3.9bn in renewable energy assets and has a renewable development pipeline of over 8GW of both onshore and offshore new-build wind development projects. Both the UK and Ireland have clear frameworks and targets around decarbonisation, which impact on SSE's investment decisions when it comes to the generation of electricity. Support for renewable energy has allowed SSE to invest in a strong portfolio of renewable generation assets – SSE is one of the largest renewable energy operators across the UK and Ireland and, at 31 March 2019, it has a renewable generation capacity of over 3.7G.</p> <p>In addition, the general increase in renewable generation on the electricity grid in GB, has impacted the investment decisions of SSEN's transmission business. Projects such as Caithness-Moray transmission reinforcement, which is SSE's largest ever capital investment at £1.1bn, are necessary to transport the renewable energy generated in the north of Scotland down south to areas of higher demand. As this renewable energy is variable, SSE's thermal generation assets continue to play a key role in supporting the electricity grid in both the UK and Ireland. Construction of SSE's £350m, 840MW CCGT at Keadby 2 in Lincolnshire, England, is underway and expected to be delivered by 2022. The project will introduce Siemens' first-of-a-kind, high efficiency, gas-fired generation technology to the UK. SSE's Enterprise business is also responding to the low-carbon transition by further developing its capability to provide services such as electric vehicle infrastructure, intelligent energy and information monitoring, as well as district heating schemes.</p>
<b>Supply chain and/or value chain</b>	Impacted	SSE's supply chain benefits from opportunities relating to decarbonisation and the transition to a low-carbon economy. SSE's continued investment in renewable energy projects and the infrastructure that supports it, means the majority of its spend with suppliers is on large capital projects, which enable the generation of low-carbon energy or the connection of low-carbon generation to the grid. Examples include SSE's investment in the 588MW Beatrice Offshore Windfarm Limited (BOWL) (a joint venture, SSE

		share 40%). Completed in May 2019 the £2.6bn project is one of the largest ever private infrastructure investments in Scotland with 84 wind turbines located approximately 13.5km off the Caithness coast, generating clean electricity to power around 450,000 homes. SSE's Networks business has also invested £1.1bn in the Caithness-Moray transmission reinforcement, which is required to transport the renewable energy generated in the north of Scotland down south to areas of higher demand. In addition to this, SSE, in partnership with Siemens, is constructing a first-of-a-kind, high efficiency, gas-fired generation technology in the UK. At a £350m investment, Keadby 2 (an 840MW CCGT in Lincolnshire, England) will be the most efficient CCGT on the system, delivering large-scale capacity from the early 2020s onwards. It will be able to provide the flexible generation needed to support the integration of large-scale renewables into the electricity grid.
<b>Adaptation and mitigation activities</b>	Impacted	<p>Changes in climate and weather patterns across the UK and Ireland highly impact the production of energy from renewable sources (Wholesale), the operation of electricity transmission and distribution businesses (Networks) and the amount of gas and electricity used by customers (Retail). The weather is an important contributor to business performance that is strongly interconnected to SSE's identified Principal Risks of Energy Affordability, Commodity Prices and Energy Infrastructure Failure.</p> <p>To help mitigate these impacts, SSE monitors short- and long-term weather conditions so it can manage and respond for the benefit of customers and to support the fulfilment of its business objectives. SSE's Wholesale business continues to invest in a diversified generation portfolio of renewable and thermal generation assets, to reduce the impact on any one element of its generation fleet. SSE also has crisis management and business continuity plans to deal with severe weather events that can damage energy infrastructure, and these were successfully implemented in the February/ March 2018 in response to the "Beast from the East" cold weather front.</p> <p>As well as these extreme weather events, general weather conditions in 2019 have impacted SSE's business – the temperature in the UK was 1.2 degrees centigrade warmer than the thirty-year average, leading to average domestic gas demand being lower combined with persistently high gas prices in 2018/19 resulted in a higher cost of energy, lower than expected output of electricity from renewable sources and lower volumes of energy consumption.</p> <p>SSE has also identified the risk of changes in climate on its Networks business, where extreme weather events pose risk to the resilience of the network. As a result, SSE continues to invest in maintenance and emergency response solutions, such as new technology that identifies faults on the lines, tree cutting along networks and resilience funds for local communities to support adaptation initiatives and emergency response procedures.</p>
<b>Investment in R&amp;D</b>	Impacted	The risks and opportunities related to decarbonisation and the transition to a low carbon economy and the impact to the way SSE invests in research and development initiatives has a medium impact on SSE's business. SSE is involved in a range of innovative projects and programmes which are designed to progressively transform the energy system, many of which are focused on supporting the transition to a low-carbon economy. For example, in March 2019 SSEN's Project Local Energy Oxfordshire (LEO) received £13.8m of funding from the UK Government's Industrial Strategy Challenge fund. LEO will explore how the growth in local renewables, electric vehicles (EVs, battery storage, vehicle-to-grid (V2G) technology and demand side response can be supported by a local, flexible and responsive electricity grid. Project LEO will run concurrently with Project TRANSITION, funded by £11m Ofgem grant, which will replicate and trial one of the elements of one of the proposed DSO models. Another example is that in early 2019, SSEN worked with leading energy consultants, Regen, to develop scenarios for the growth of new sources of demand and distributed generation in its license area in central southern England for 2018 to 2032 and plans to replicate this study in its Scottish license area later this year.
<b>Operations</b>	Impacted	<p>SSEN's distribution business' operations can be impacted (impact is high) by severe weather events which cause damage to infrastructure and interruption to electricity supply for its customers. For example, severe weather can damage network assets and result in the loss of incentive revenue and increase maintenance costs for SSE's Distribution Networks business (SSEN). The estimated financial impact assumes that the next distribution price control (2023 to 2028) will be of similar value and size as the current RIIO-ED1 distribution price control (2015 to 2023). It is also assumed that for three years fault costs will increase by 10% and for two of these years we will see a decrease in annual incentive revenue by an additional 10%. It is also forecast that another two years of extreme weather will cause an additional 20% increase in fault related costs and a similar decrease in incentive income. This is consistent with the number of faults and current RIIO-ED1 incentive and penalty methodology. The estimated cost of faults and loss of incentive income over the next 10 years may result in a potential reduction of earnings of up to £145m cumulatively.</p> <p>SSE has crisis management and business continuity plans to deal with severe weather events that can damage energy infrastructure. SSE continues to invest in maintenance and emergency response solutions, such as new technology that identifies faults on the lines, tree cutting along networks and resilience funds for local communities to support adaptation initiatives and emergency response procedures. Through monitoring of weather to inform strategic placing of employees and resources, SSEN ensures it is well prepared and resourced to respond promptly to any damage to its network.</p>
<b>Other, please specify</b>	We have not identified any risks or opportunities	SSE has assessed the impact of different climate-related risks and opportunities and has not identified any other categories that have a significant impact on its business.

## C2.6

**(C2.6) Describe where and how the identified risks and opportunities have been factored into your financial planning process.**

	Relevance	Description
<b>Revenues</b>	Impacted	Climate-related risks and opportunities surrounding decarbonisation and the transition to a low-carbon economy are factored into SSE's investment decisions, most notably in the investments made in its Wholesale and Networks businesses. Both the UK and Ireland have clear frameworks and targets around decarbonisation, which impact on SSE's investment decisions when it comes to the generation of electricity. Support for renewable energy has allowed SSE to invest in a strong portfolio of



		renewable generation assets – SSE is the largest renewable energy operators (by installed capacity) across the UK and Ireland and, at 31 March 2019, it has a renewable generation capacity of over 3.7GW. With the increase in renewable energy connecting to the electricity system in GB, SSEN's transmission business is investing in infrastructure to support the low-carbon transition and connect renewable generation projects to its network. During 2018/19 adjusted EBITDA total for the core businesses of electricity networks and renewables was over £1.5bn which was 83% of SSE Group total.
<b>Operating costs</b>	Impacted for some suppliers, facilities, or product lines	<p>While the first response to the climate challenge must be to take action to mitigate it, the second response must be to adapt to changes in weather patterns in order to protect assets, systems and people. Severe adverse weather that causes damage or interrupts energy supply or generation is identified as a material influencing factor on SSE's 'Energy Infrastructure Failure' Group Principal Risk.</p> <p>For example, SSEN's distribution business' operations can be impacted by severe weather events which cause damage to infrastructure and interruption to electricity supply for its customers. The estimated financial impact of severe weather to the networks business is the estimated cost of faults and loss of incentive income over the next 10 years which may result in a potential reduction of earnings of up to £145m cumulatively. This assumes that the next distribution price control (2023 to 2028) will be of similar value and size as the current RIIO-ED1 distribution price control (2015 to 2023). It is also assumed that for three years fault costs will increase by 10% and for two of these years we will see a decrease in annual incentive revenue by an additional 10%. It is also forecast that another two years of extreme weather will cause an additional 20% increase in fault related costs and a similar decrease in incentive income. This is consistent with the number of faults and current RIIO-ED1 incentive and penalty methodology.</p>
<b>Capital expenditures / capital allocation</b>	Impacted	<p>Climate-related risks and opportunities surrounding decarbonisation and the transition to a low-carbon economy are factored into SSE's investment decisions, most notably in the investments made in its Wholesale and Networks businesses. Both the UK and Ireland have clear frameworks and targets around decarbonisation, which impact on SSE's investment decisions when it comes to the generation of electricity. Support for renewable energy has allowed SSE to invest in a strong portfolio of renewable generation assets. With the increase in renewable energy connecting to the electricity system in GB, SSEN's transmission business is investing in infrastructure to support the low-carbon transition and connect renewable generation projects to its network.</p> <p>During 31 March 2019, SSE's investment and capital expenditure totalled over £1.42bn, including over £1bn investment in renewable energy and regulated energy networks. SSE has a wider investment and capital expenditure programme of around £6bn for the five years to 2023 focused on low-carbon infrastructure.</p>
<b>Acquisitions and divestments</b>	Impacted for some suppliers, facilities, or product lines	SSE's strategy is to support the transition to a low carbon electricity system. Core to this is focusing on its low-carbon businesses of renewable generation and regulated energy networks. Climate-related risks and opportunities surrounding decarbonisation are factored into SSE's acquisitions and divestments. For example, in November 2018 SSE stated that Gas production is a non-core activity that is ultimately inconsistent with its focus on decarbonisation and it is taking active steps to prepare for its disposal of investments in this activity.
<b>Access to capital</b>	Impacted	An ability to raise funds at competitive rates is fundamental to the sustainable financing of projects in a low-carbon economy. In September 2018, SSE issued its second Green Bond of €650m. This was in addition to SSE's inaugural €600m Green Bond issued in September 2017. This means that SSE is the largest issuer of Green Bonds in the UK corporate sector. The proceeds from both SSE's Green Bonds have been allocated to refinancing part of SSE's £1.1bn portfolio of eligible projects of onshore wind farms in the in UK and Ireland and the 1.2GW Caithness Moray transmission project as listed in SSE's Green Bond Framework. The main criteria for a project to be eligible was that it must contribute to a positive environmental impact, support SSE's commitment to the ongoing reduction of the carbon intensity of its electricity generation and finally, support SDG 13 (take urgent action to combat climate change and its impacts).
<b>Assets</b>	Impacted	<p>SSE is the leading renewable energy generator in the UK and Ireland. It develops, owns and operates a diverse and sustainable portfolio of renewable and generation plant. SSE is one of the largest renewable energy operators across the UK and Ireland and, at 31 March 2018, it has a renewable generation capacity of over 3.7GW.</p> <p>SSE's investment in renewable energy in the UK and Ireland totalled over £326m in 2018/19. Significant progress was made over the year increasing SSE's renewable energy portfolio, with the delivery of the joint venture Beatrice offshore wind farm (SSE share 40%: 235MW) and Stronelairg onshore windfarm (288MW). SSE's onshore wind farm pipeline consists of around 1GW of potential new build projects, including the joint venture Viking wind farm located on Shetland and Strathy South wind farm. SSE has interests in two offshore wind projects which are expected to be eligible for the CfD auction in May 2019: Dogger Bank and Seagreen in the UK. Overall, SSE has an on- and offshore wind development pipeline of over 8GW at varying stages of development.</p> <p>Since 2013, SSEN's transmission business has invested around £2.3bn in building and reinforcing an expanded electricity network so that low-carbon, renewable electricity can get to the homes and business that need it. In 2018/19, SSE undertook a major investment programme in electricity networks totalling over £680m. this included the completion, commissioning and energisation of the Caithness-Moray electricity transmission link.</p>
<b>Liabilities</b>	Impacted	Distribution networks are central to the fight against climate change – connecting clean energy, supporting electrification of transport and facilitating change as local 'system operators' – and require significant modernisation and reform. SSEN's distribution businesses in the north of Scotland and central southern England are leading the industry through a number of high impact innovation and demonstration projects. The flexibility revolution that is beginning to emerge at the local distributed network level is exciting and will enable more local generation to connect, and with smart technology, it can be done in a way that avoids wholesale renewal of the network. SSEN believes this reform of its network is core to tackling climate change, keeping costs down for customers and to the future success of its business.
<b>Other</b>	We have not identified any risks or opportunities	SSE has assessed the impact of different climate related risks and opportunities and has not identified any other categories that have a significant impact on its financial planning processes.

## C3. Business Strategy

### C3.1

**(C3.1) Are climate-related issues integrated into your business strategy?**

Yes

#### C3.1a

**(C3.1a) Does your organization use climate-related scenario analysis to inform your business strategy?**

Yes, qualitative and quantitative

### C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b

**(C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b) Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.**

Yes

#### C3.1c

**(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.**

**Company-specific details of how business objectives/strategy have been influenced by climate-related issues:**

SSE's vision is to be a leading provider of energy and related services in a low-carbon world. At the core of its business are a portfolio of world-class renewable generation assets and electricity network businesses. These businesses are particularly well placed to seize the opportunities presented by decarbonisation and electrification. The strategy is therefore focussed on developing, operating and owning assets that create long-term value and are vital to the low-carbon transition.

The main climate-related factor which has influenced SSE's strategy is the serious risk that climate change presents as well as the increasing pressure from society for businesses and government to act. Climate change policy in the UK is underpinned by the UK Climate Change Act 2008 and in Ireland it is the Climate Act 2015. These laws provide the legislative context for business decisions taken by SSE.

SSE's renewables portfolio and electricity networks provide the core infrastructure to support the transition to a low-carbon energy system, complemented by thermal plant that provides vital flexibility, offsetting the variability of renewables output. To realise these opportunities and to contribute to the transition to low-carbon electricity systems in the UK and Ireland, SSE's approach is twofold:

1. To reduce the carbon intensity of its own operations through a strategic shift towards a less fossil fuel intensive generation portfolio: SSE invested over £3.8bn since 2010 in renewables. SSE currently has the largest renewable energy capacity across the UK and Ireland at around 4GW and has significant opportunities in onshore and offshore wind farm developments, with an 8GW pipeline. In 2018/19, coal-fired generation contributed just 2%, renewable generation 32% and gas- and oil- fired generation 66% of SSE's total generation output.
2. To support the UK to decarbonise by enabling more renewable generation to connect to the electricity transmission network in the North of Scotland: by investing in over £2.7bn since 2013 in new electricity transmission infrastructure.

**Link between business strategy and emissions reductions target:**

SSE's business strategy is linked to an emissions reduction target. In 2018/19 SSE Plc Board agreed to align its strategy to the UN Sustainable Development Goals. The first three goals with corresponding targets have been developed in direct response to the low-carbon challenge and they involve – cutting electricity generated carbon intensity by 50% by 2030 (base year 2018), to develop and build by 2030 enough renewable energy capacity to treble renewable output to 30TWh a year and build electricity network infrastructure to help accommodate 10 million electric vehicles in GB by 2030.

**Substantial business decisions influenced by climate-related issues:**

SSE recognises that the transition to a low-carbon world is its greatest opportunity. SSE's renewables portfolio and electricity networks provide the core infrastructure to support the transition to a low-carbon energy system, complemented by thermal plant that provides vital flexibility, offsetting the variability of renewables output. Substantial business decisions influenced by climate-related issues included: the investment of over £3.8bn in renewables



since 2010; the investment in £2.7bn since 2013 in new electricity transmission infrastructure to allow renewable energy generated in the North of Scotland to be transported south to areas of higher demand; the issue of SSE's second Green Bond of €650m meaning SSE is the largest issuer of Green Bonds in the UK corporate sector; continued advocacy on strong carbon price; progress on disclosing for the first time the financial quantification of the most material climate-related risks and low-carbon opportunities.

**Climate issues that have influenced the strategy in the past year:**

Climate change driven legislation and policies have impacted SSE's business decisions in the past year: • Expanding SSE's renewable energy portfolio, with 228MW of new onshore wind farm capacity in 2018/19 and a further 8GW of on and off-shore capacity in varying stages of development. • In total, including that connected at a distribution level, SSEN connected over 1GW of renewable electricity to its transmission network in 2018/19. • Operating frameworks which include: establishing SSE Renewables as a standalone business focused on renewables growth; reducing the carbon intensity of the electricity it generates as well as the total carbon emissions and making the case for net zero carbon target in the UK for 2050.

**Short-term strategy (current to next 10 years):**

SSE continues to invest in new renewable energy and the infrastructure that supports it as well as to reduce the carbon intensity of the electricity it generates. SSE's investment and capital expenditure in 2018/19 was over £1.4bn, including £1bn in renewable energy and regulated energy networks. SSE is now one year into its plan for total investment and capital expenditure of around £6bn across the five years to March 2023. Economically-regulated electricity networks and renewable sources of energy are expected to account for 70% of this. SSE will also continue to invest in its internal energy efficiency projects to reduce energy use from our own operations and behaviour change programme and installation of AMR and smart meters.

**Long-term strategy (2030 and beyond):**

In the long-term, SSE's vision is to be a leading energy company in a low carbon world. It will continue to focus on the core renewables generation assets and regulated electricity network businesses that are well placed to seize the opportunities presented by decarbonisation and electrification. It has the largest installed renewable capacity across UK and Ireland, and the generation capacity connected to its electricity transmission network in the north of Scotland is almost entirely renewable. It will continue to invest in low-carbon assets.

**Influence of Paris Agreement:**

SSE joined climate NGOs and leading businesses in calling for governments in the UK to legislate for tougher and quicker action, and the adoption of a net zero emissions target by 2050. In addition, in his role as Vice President of industry body Eurelectric, SSE's Chief Executive, launched a new study that demonstrates how the European power sector can become fully carbon neutral by 2045 through investment in renewable energy and electricity networks.

**C3.1d**

**(C3.1d) Provide details of your organization's use of climate-related scenario analysis.**

Climate-related scenarios	Details
	<p>Note: FES refers to Future Energy Scenarios. The selection for other: UK National Grid FES and internal energy and company specific FES.</p> <p>In November 2017, SSE committed to meeting the Task Force on Climate-related Financial Disclosures (TCFD) recommendations in full by 2021. These recommendations focus on businesses' strategies to manage climate-related risks and low-carbon opportunities, with an emphasis on financial disclosure and the use of scenario analysis. SSE's response to the four themes of the TCFD recommendations is detailed in its Annual Report 2019 and in its Sustainability Report 2019. In addition, SSE's Sustainability Report 2019 provides the next step on SSE's journey to meeting the recommendations of the TCFD. Pages 24 and 25 of the Sustainability Report 2019 present the potential financial impact of climate-related effects on its SSE's business. The analysis does not constitute forward looking guidance, rather it explores uncertain yet plausible outcomes to support the aim of providing consistent, comparable and clear climate-related financial information. The information is in the spirit of TCFD recommendations.</p> <p>In addition, SSE published its first carbon scenarios report, Post-Paris, in July 2017, assessing the resilience of its business model in GB against three climate change scenarios. The report focused on the material parts of SSE's business that are at most risk from the impact of market and policy changes associated with carbon reduction ambitions: SSE's Wholesale, Transmission and Distribution businesses.</p> <p>Three scenarios were established by using publicly available data from National Grid's Future Energy Scenarios. These scenarios have taken account of the whole energy system (electricity, heat and transport) to allow an understanding of what will feature in the GB generation portfolio to meet demand and how transmission and distribution will respond to the changes in demand and supply to deliver the different scenario end points. For each scenario, SSE assessed the resilience of its business across time horizons: short term 0 to 3 years; medium term 4 to 12 years; and long term 13 to 30 years. These time horizons are aligned with SSE's other business practice time horizons and mirror the investment/capital and regulatory time horizons that govern our financial, operational and capital plans. The scenarios used were: 'Super Green' – a scenario where GB contributes its share of carbon reduction to limiting global temperature rises to a 1.5 degree centigrade warming scenario; 'Gone Green' -- a scenario where it contributes to a 2 degree centigrade warming scenario; and 'No Progress' – a business as usual scenario where emissions would be in line with a 3 to 4 degree centigrade warming scenario. It was also considered to be prudent to undertake a sensitivity analysis of low nuclear versions of each of these three scenarios.</p>

The results of the assessment showed that SSE's combination, and balanced range, of valuable distribution, transmission and generating assets are found to be vital to GB's electricity system over the time horizons and in every climate scenario assessed. The report also found that the optionality of SSE's development pipeline is in an advantageous place to respond to new opportunities that climate change mitigation may bring. For example, investment of over £3.9bn in renewables since 2010, move from a portfolio weighted towards coal/gas to one weighted towards renewables/flexible thermal generation; and investment of over £2.7bn since 2013 in new electricity transmission infrastructure to support the low carbon transition. This scenario analysis and report reaffirms SSE's climate change and business strategy.

SSE will continue to develop its scenario analysis by extending it to cover gas and bring more financial information into its disclosure. This will support SSE to understand the impact of climate change on future business strategy. In addition, SSEN's transmission business uses scenario planning (based on National Grid Future Energy Scenarios (FES)) to understand likely future network requirements. As a result of this work SSEN has recognised that developments on its transmission network in the north of Scotland do not fit a GB standard. To address this, SSEN is using more granular assumptions based on local knowledge to develop more relevant localised FES. This will enable SSEN to identify potential future requirements of its transmission network and inform business strategy and investments.

## C-AC3.1e/C-CE3.1e/C-CH3.1e/C-CO3.1e/C-EU3.1e/C-FB3.1e/C-MM3.1e/C-OG3.1e/C-PF3.1e/C-ST3.1e/C-TO3.1e/C-TS3.1e

### (C-AC3.1e/C-CE3.1e/C-CH3.1e/C-CO3.1e/C-EU3.1e/C-FB3.1e/C-MM3.1e/C-OG3.1e/C-PF3.1e/C-ST3.1e/C-TO3.1e/C-TS3.1e) Disclose details of your organization's low-carbon transition plan.

SSE's vision is to be a leading provider of energy and related services in a low-carbon world. At the core of its business are a portfolio of world-class renewable generation assets and electricity network businesses. These businesses are particularly well placed to seize the opportunities presented by decarbonisation and electrification. The strategy is therefore focussed on developing, operating and owning assets that create long-term value and are vital to the low-carbon transition.

SSE's renewables portfolio and electricity networks provide the core infrastructure to support the transition to a low-carbon energy system, complemented by thermal plant that provides vital flexibility, offsetting the variability of renewables output. To realise these opportunities and to contribute to the transition to low-carbon electricity systems in the UK and Ireland, SSE's approach is twofold:

1. To reduce the carbon intensity of its own operations through a strategic shift towards a less fossil fuel intensive generation portfolio: SSE invested over £3.8bn since 2010 in renewables. SSE currently has the largest renewable energy capacity across the UK and Ireland at around 4GW and has significant opportunities in onshore and offshore wind farm developments, with an 8GW pipeline. In 2018/19, coal-fired generation contributed just 2%, renewable generation 32% and gas- and oil- fired generation 66% of SSE's total generation output.
2. To support the UK to decarbonise by enabling more renewable generation to connect to the electricity transmission network in the North of Scotland: by investing in over £2.7bn since 2013 in new electricity transmission infrastructure.

## C4. Targets and performance

### C4.1

#### (C4.1) Did you have an emissions target that was active in the reporting year?

Both absolute and intensity targets

#### C4.1a

#### (C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

##### Target reference number

Abs 1

##### Scope

Scope 1+2 (location-based)

**% emissions in Scope**

1

**Targeted % reduction from base year**

20

**Base year**

2018

**Start year**

2018

**Base year emissions covered by target (metric tons CO2e)**

45,331

**Target year**

2030

**Is this a science-based target?**

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science-Based Targets initiative

**% of target achieved**

10

**Target status**

Underway

**Please explain**

This target covers SSE's scope 1 gas consumption and SSE's scope 2 electricity consumption in its UK non-operational buildings (which covers: offices, depots and call centres).

The target is an: Absolute reduction in carbon emissions associated with the energy use in SSE's property portfolio by 20% by 2030, based on 2018 baseline.

Target performance: SSE's behaviour change programme, Better Off, aims to engage employees on energy efficiency activities, and SSE has invested £12.3m since 2011/12 on energy efficiency and renewable technologies in its buildings and depots. During 2018/19, investments included a £200,000 investment in solar photovoltaic installations at our Perth Campus and various depot sites throughout our estate, resulting in an estimated emissions reduction of almost 200 tCO<sub>2</sub>, and building energy management systems across multiple sites. As part of SSE's new agile working arrangements, SSE has invested significantly in its property portfolio, consolidating multiple non-operational sites into modern buildings which use energy more efficiently. Electricity consumption reduced by 13% between 2017/18 and 2018/19 and gas usage for the same period dropped by 5% as a result of improved building operation and utilisation.

This is a science-based target. It was assessed using the SBTi Sector Decarbonisation Approach methodology by SSE. SSE has a suite of targets which together meet the SBTi criteria.

**C4.1b**

**(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).**

**Target reference number**

Int 1

**Scope**

Scope 1

**% emissions in Scope**

99

**Targeted % reduction from base year**

50

**Metric**Metric tons CO<sub>2</sub>e per megawatt hour (MWh)\***Base year**

2018

**Start year**

2018

**Normalized base year emissions covered by target (metric tons CO<sub>2</sub>e)**

305

**Target year**

2030

**Is this a science-based target?**

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science Based Targets initiative

**% of target achieved**

7

**Target status**

Underway

**Please explain**

This target covers: SSE's carbon emissions that arise from the consumption of coal, oil, gas and biomass in SSE's thermal generation plant (including Power Purchase Agreements). The intensity ratio covers the total output from SSE's thermal (oil, gas, coal, multifuel) and renewable (wind, both onshore and offshore, hydro including pumped storage and biomass) electricity generation portfolio.

Performance against the target: SSE's target is to reduce the carbon intensity of the electricity it generates by 50% by 2030, based on 2018 levels. This means that SSE's electricity generation carbon intensity is now forecast to be around 150gCO<sub>2</sub>e/kWh by 2030, which represents a 75% cut based on its original 2006 baseline.

Between 2017/18 and 2018/19 the carbon intensity of SSE's generated electricity fell by 7% from 305gCO<sub>2</sub>e/kWh to 284gCO<sub>2</sub>e/kWh, as a result of changes in its generation output mix. SSE had a record year of renewable generation output and this, combined with a reduction in the coal-fired and gas- and oil-fired generation output, resulted in the reduction in carbon intensity.

It is important to note that SSE does not expect the achievement of this target in 2030 to have followed a linear year-to-year reduction path. Market driven and weather related fluctuations may mean there are some years in which emissions may risk. However, SSE fully expects to achieve its 2030 target and the long-term trend continues to be significant reduction in the carbon intensity of the electricity it generates.

This is a science based target. The science based target was assessed using SSE's internal model based on the UK government's Climate Change Act 2008 ambitions. In addition, this science based target was assessed using the SBTi Sector Decarbonisation Approach methodology by SSE. SSE has a suite of targets which together meet the SBTi criteria.

**% change anticipated in absolute Scope 1+2 emissions**

50

**% change anticipated in absolute Scope 3 emissions**

0

## C4.2

(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.

---

### Target

Renewable electricity consumption

### KPI – Metric numerator

kWh purchased renewable electricity

### KPI – Metric denominator (intensity targets only)

kWh total purchased electricity

### Base year

2018

### Start year

2018

### Target year

2020

### KPI in baseline year

0

### KPI in target year

1

### % achieved in reporting year

0

### Target Status

Underway

### Please explain

SSE has committed to work towards buying renewable energy that is certified for its own operations by 2020.

### Part of emissions target

Not applicable.

### Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

## C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

### C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

#### C4.3a

(C4.3a) Identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	40	
To be implemented*	0	0
Implementation commenced*	1	292,113
Implemented*	3	104,448
Not to be implemented	0	0

#### C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

##### Activity type

Low-carbon energy installation

##### Description of activity

Wind:

(Offshore and onshore wind)

##### Estimated annual CO2e savings (metric tonnes CO2e)

100,683

##### Scope

Scope 1

##### Voluntary/Mandatory

Voluntary

##### Annual monetary savings (unit currency – as specified in CC0.4)

Leave Blank

##### Investment required (unit currency – as specified in CC0.4)

1400000000

##### Payback period

16-20 years

##### Estimated lifetime of the initiative

21-30 years

##### Comment

SSE completed one new onshore wind energy projects (Stronelairg) in the last 12 months, adding around 228MW of capacity to its renewables portfolio between 1 April 2018 and 31 March 2019. SSE's renewable energy capacity, including conventional hydro and pumped storage was 3,767 MW between 1 April 2017 and 31 March 2018. Investment in renewables is required by EU legislation with country targets set and legislation in place to



support this. These projects support SSE's carbon intensity target by increasing the renewable energy capacity and output. SSE's total scope 1 carbon emissions are reduced by these projects. The column requesting 'annual monetary savings' is not applicable to these investments. The investment required column refers to the continuing significant investment SSE is undertaking in its assets, with capital and investment expenditure of over £1.4bn in 2018/19, with over £1bn of this investment in renewable energy and regulated electricity networks. The column requesting 'payback' is defined as the income earned and includes the cost of capital. For all major projects, SSE investigates the project and then if viable the project moves from under investigation to implementation commenced. This is why there are no projects currently in the 'to be implemented' section.

#### Activity type

Energy efficiency: Building services

#### Description of activity

Other, please specify (Building controls, HVAC, Lighting)

#### Estimated annual CO2e savings (metric tonnes CO2e)

3,765

#### Scope

Scope 2 (location-based)

Scope 2 (market-based)

#### Voluntary/Mandatory

Voluntary

#### Annual monetary savings (unit currency – as specified in CC0.4)

272,000

#### Investment required (unit currency – as specified in CC0.4)

430,000

#### Payback period

4 - 10 years

#### Estimated lifetime of the initiative

21-30 years

#### Comment

SSE has a 10 year programme with a budget of over £10 million for energy efficiency investments including: 1. A programme of large investments - such as replacement boilers, inverter speed drive controls, free cooling systems, solar PV installation) and a smaller scale programme for energy efficiency improvements (such as onsite energy audits, LED lighting and sub metering). 2. Behaviour change projects through SSE's Better Off campaign that involves: competitions and awareness raising programmes to reduce energy. These programmes are aimed at reducing energy consumption from SSE's property portfolio by 20% by 2018 (baseline 2012). Over the last six-year period, the non-operational building carbon footprint has experienced a carbon reduction of 38%. During 2018/19 investments of around £ designated as energy efficiency improvement work were delivered across the non-operational buildings estate. This reduces SSE's scope 2 emissions. This initiative supports our absolute internal energy target. The programme directly aims to reduce the energy SSE uses to manage its assets and therefore the carbon emissions associated with running its operations. There are no projects that are in the 'to be implemented' category.

### C4.3c

#### (C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	Examples include, meeting EU ETS allocations, ECO targets and Electricity Market Reform requirements. A major programme of investment is under way in electricity transmission infrastructure in Great Britain to support the transition to lower carbon electricity generation, increase security of supply and promote economic growth. The requirement to connect large volumes of dispersed renewable generation, supported and incentivised by policy-makers at Scottish, UK and EU levels, represents a fundamental change from the historic role of SHE Transmission's network. In 2018/19, 1GW of new renewable generation capacity was connected, bringing the total to over 6GW, up from around 3.3GW in 2013. SHE Transmission's work to upgrade its network the largest capital project undertaken by SSE to support the connection of new renewable energy and customer needs: Caithness-Moray, an investment of £1.1 billion.
Dedicated budget for energy efficiency	We have an annual budget for energy efficiency investments in larger projects within our wider property budget. We also have a separate budget for smaller scale energy efficiency improvement works which is used following onsite energy audits.

Method	Comment
Dedicated budget for low-carbon product R&D	SSE has research and development projects in energy efficiency, demand side management and low carbon products/ services. For example, in March 2019 SSEN's Project Local Energy Oxfordshire (LEO) received £13.8m of funding from the UK Government's Industrial Strategy Challenge fund. LEO will explore how the growth in local renewables, electric vehicles (EVs, battery storage, vehicle-to-grid (V2G) technology and demand side response can be supported by a local, flexible and responsive electricity grid. Project LEO will run concurrently with Project TRANSITION, funded by £11m Ofgem grant, which will replicate and trial one of the elements of one of the proposed DSO models. Another example is that in early 2019, SSEN worked with leading energy consultants, Regen, to develop scenarios for the growth of new sources of demand and distributed generation in its license area in central southern England for 2018 to 2032 and plans to replicate this study in its Scottish license area later this year.
Employee engagement	We have numerous employee engagement initiatives throughout the year focussing on sustainability and the environment, highlighting issues such as energy efficiency, business and commuter travel. Examples of this include our energy reduction initiatives, which involves SSE's Better Off campaign.
Internal incentives/recognition programs	Our employee 'Innovation station' scheme was launched a few years ago now, and rewards financially, and through recognition, good business improving ideas which are submitted. Many ideas are linked with carbon reduction.
Partnering with governments on technology development	SSE works with governments and other partners to develop low carbon technologies. For example: SSEN's Project Local Energy Oxfordshire and Project Transition will explore in partnership with Local Authorities, transport agencies and other organisations growth in local renewables, electric vehicles, battery storage, vehicle-to-grid technology and demand side response.

## C4.5

**(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?**

Yes

### C4.5a

**(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.**

#### Level of aggregation

Company-wide

#### Description of product/Group of products

Support of low carbon energy infrastructure: In total, including that connected at a distribution level, SSEN connected around 1GW of renewable electricity to its transmission network in 2018/19. This reduces third party scope 2 emissions as it supports the decarbonisation of electricity generation and the carbon emissions associated with grid electricity mix.

#### Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

#### Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

Scope 2 - GHG Protocol

#### % revenue from low carbon product(s) in the reporting year

48

#### Comment

The emissions saved by third parties are related to the scope 2 emissions. The amount of electricity consumed by a customer will be reduced as a result of a reduction in the carbon emission conversion factor which will be lowered because of a higher proportion of renewable electricity generation in the grid.

**Level of aggregation**

Company-wide

**Description of product/Group of products**

Move to low carbon generation: SSE's long term strategy is to provide a sustainable energy product through a diverse generation portfolio. This is achieved through investment in renewable energy technology and a move from a portfolio weighted towards coal:renewables to one weighted towards gas:renewables. For all energy customers the high proportion of renewable energy in SSE's generation mix plays a role in helping its customers reduce scope 2 emissions as the carbon emissions associated with the grid electricity mix is lowered.

**Are these low-carbon product(s) or do they enable avoided emissions?**

Low-carbon product and avoided emissions

**Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions**

Other, please specify

Scope 2 - GHG Protocol

**% revenue from low carbon product(s) in the reporting year**

23

**Comment**

The emissions saved by third parties are related to the scope 2 emissions. The amount of electricity consumed by a customer will be reduced as a result of a reduction in the carbon emission conversion factor which will be lowered because of a higher proportion of renewable electricity generation in the grid.

**Level of aggregation**

Company-wide

**Description of product/Group of products**

Provision of education and energy efficiency measures – Using energy more efficiently should allow SSE's customers to avoid carbon emissions and reduce their scope 1 and 2 emissions from their use of gas and electricity. SSE supports energy efficiency programmes such as ECO and smart metering. For example, as of 31 March 2019, SSE Energy Services had over 1.2m smart meters on supply in customer homes. SSE also continues to educate its customers and other third parties on the subject of sustainability, climate change and energy efficiency through various publications, educational programmes and presentations.

**Are these low-carbon product(s) or do they enable avoided emissions?**

Avoided emissions

**Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions**

Other, please specify

Scope 2 - GHG Protocol

**% revenue from low carbon product(s) in the reporting year**

10

**Comment**

The emissions saved by third parties are related to the scope 1 and scope 2 emissions. The carbon saved by a customer will depend on the energy saving initiatives implemented and the energy consumed.

**Level of aggregation**

Company-wide

**Description of product/Group of products**

SSE's Business Energy and Enterprise businesses provide energy and energy-related services to customers across the UK and Ireland. As well as providing tailored energy efficiency advice to its customers, SSE Business Energy offers a 100% renewable energy tariff – SSE Green. SSE Enterprise delivers smart energy and telecoms solutions to a broad client base of business customers and public sector organisations across the UK and Ireland. For example, SSE Enterprise has been addressing decarbonisation and infrastructure challenges across London through a diverse range of projects. Supporting the city to green its transport, SSE Enterprise Contracting has installed over 650 electric vehicle charging points across London, and a major electric bus charging facility at Waterloo Bus Depot, assisting the deployment of London's zero emission, single deck bus fleet.

**Are these low-carbon product(s) or do they enable avoided emissions?**

Low-carbon product and avoided emissions

**Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions**

Other, please specify

Scope 2 - GHG Protocol

**% revenue from low carbon product(s) in the reporting year**

5

**Comment**

The emissions saved by third parties are related to the scope 2 emissions (indirect emissions: electricity consumption). For third party contracts that sign up to renewable energy contracts the renewable energy is zero carbon emissions and this will reduce the scope 2 carbon emissions associated with electricity consumption for that customer. Depending on the contract that is entered and the amount of electricity used will depend on the carbon saved by customers.

## C-EU4.6

**(C-EU4.6) Describe your organization's efforts to reduce methane emissions from your activities.**

SSE has identified that carbon dioxide emissions are its material greenhouse gas. Therefore, SSE prioritises programmes to reduce carbon dioxide emissions from its generation activities and other indirect sources of carbon dioxide emissions. Methane is highlighted as an issue however by addressing the issue of carbon dioxide emissions in its generation portfolio SSE also addresses the emission of methane emissions at its assets. SSE also views SF6 another potent greenhouse gas as a material risk for its transmission and distribution businesses. Technology such as LDAR is used to manage and repair leaks and this is an ongoing focus for SSE and its networks businesses. Risks are reviewed annually. Overwhelmingly carbon dioxide emissions are the most material greenhouse gas priority. SSE remains vigilant regarding the emergence of higher priority risks relating to greenhouse gases.

## C5. Emissions methodology

### C5.1

**(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).**

**Scope 1**

**Base year start**

April 1, 2018

**Base year end**

March 31, 2019

**Base year emissions (metric tons CO2e)**

8,814,393

**Comment**

**Scope 2 (location-based)**


---

**Base year start**

April 1, 2018

**Base year end**

March 31, 2019

**Base year emissions (metric tons CO2e)**

719,483

**Comment**

The location based scope 2 figure is calculated using BEIS conversion factors.

**Scope 2 (market-based)**


---

**Base year start**

April 1, 2018

**Base year end**

March 31, 2019

**Base year emissions (metric tons CO2e)**

719,483

**Comment**

The market based scope 2 figure is calculated using BEIS residual conversion factors and this is the same as the location based conversion factors.

## C5.2

**(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.**

Defra Voluntary 2017 Reporting Guidelines

European Union Emission Trading System (EU ETS): The Monitoring and Reporting Regulation (MMR) – General guidance for installations

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

## C6. Emissions data

### C6.1

**(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?**

**Reporting year**


---

**Gross global Scope 1 emissions (metric tons CO2e)**

8,794,543

**Start date**

April 1, 2018

**End date**

March 31, 2019

**Comment**

This excludes biomass.

## C6.2

### (C6.2) Describe your organization's approach to reporting Scope 2 emissions.

**Row 1**

**Scope 2, location-based**

We are reporting a Scope 2, location-based figure

**Scope 2, market-based**

We are reporting a Scope 2, market-based figure

**Comment**

SSE's Scope 2 emissions are emissions from the generation of purchased electricity, heat and steam consumed by the company. These indirect emissions cover:

- Electricity consumption in buildings – this is the electricity consumed by SSE's non-operational buildings (customer call centres, offices). 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.

## C6.3

### (C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO<sub>2</sub>e?

**Reporting year**

**Scope 2, location-based**

719,483

**Scope 2, market-based (if applicable)**

719,483

**Start date**

April 1, 2018

**End date**

March 31, 2019

**Comment**



## C6.4

**(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?**

Yes

### C6.4a

**(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.**

#### Source

Joint ventures

#### Relevance of Scope 1 emissions from this source

Emissions are not relevant

#### Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

#### Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

#### Explain why this source is excluded

This report excludes any joint ventures in which SSE does not have operational control. Below is an example of the largest business unit excluded from the inventory. For a full list of SSE's subsidiary undertakings, partnerships, joint ventures and associates, please refer to pages 230 to 237 of SSE's Annual Report 2019. Scotia Gas Networks (SGN): SGN is a Joint Venture and SSE does not have operational control over these operations. Covering Scotland and the south of England, SGN is the gas network company distributing natural and green gas to 5.9 million homes and businesses through a network of 74,000km of mains and services. SSE has 33% shareholding. SGN reports its greenhouse gas emissions in its environmental reports annually. The percentage of total emissions contained within SGN's annual environment report represents less than 1% of SSE's total carbon emissions.

## C6.5

**(C6.5) Account for your organization's Scope 3 emissions, disclosing and explaining any exclusions.**

### Purchased goods and services

#### Evaluation status

Relevant, calculated

#### Metric tonnes CO<sub>2</sub>e

53,025,507

#### Emissions calculation methodology

67 suppliers responded (out of 130 suppliers that were asked to take part) to the CDP supply chain programme to SSE's request for climate change data in 2018/19. Total scope 1 and 2 and 3 allocated emissions for these suppliers was 2,749,961 tCO<sub>2</sub>e. The carbon emissions calculated covers all the scope 1, 2 and 3 allocated emissions reported by these 67 companies. SSE will be one of many customers for each of these suppliers. The emissions reported have not been allocated to SSE they are the total emissions reported by each of the supplier for scopes 1 and 2. These suppliers represent around 10% of SSE's total procurement expenditure in 2018/19 (which was around £3.2 billion in 2018/19). These suppliers feature in SSE's top 250 and were selected based on the level relevance/ impact of climate change to the supplier as well as the level of spend in SSE's supplier programme. These suppliers support SSE's capital projects for renewable generation projects, transmission and distribution operations as well as IT, human resource and financial services. These suppliers provide capital

goods (such as wind turbines and steel lattice towers) to SSE and therefore the second row of this table is included in this section of the response. This data has not been verified/ assured. This was the second year SSE has taken part in the CDP supply chain request and SSE is taking part in this programme in 2019/20.

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

100

**Explanation**

The carbon emissions calculated covers all the scope 1, 2 and 3 emissions allocated to SSE by the 67 companies that responded to the CDP request for climate change data in 2018/19. SSE has then calculated the total emissions based on the spend and allocated emissions of the 67 responding customers to understand the total supplier based scope 3 emissions for its £3.2bn supply chain spend. SSE is working with its suppliers and CDP to understand how it can get a more accurate picture of its supplier carbon emissions in the future. 67 suppliers out of SSE's top 250 suppliers took part in the CDP supply chain survey in 2017/18 and responded to SSE's request for climate change data.

**Capital goods**

**Evaluation status**

Not relevant, explanation provided

**Explanation**

Capital goods are reported as part of the emissions reported in 'purchased goods and services' above. SSE has no other emissions associated with this category not already reported in the above category or in other categories.

**Fuel-and-energy-related activities (not included in Scope 1 or 2)**

**Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

1,283,315

**Emissions calculation methodology**

Transmission and Distribution losses for electricity use in non-operational buildings: 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 operational (power stations) and 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. As defined by DEFRA's reporting guidelines the transmission and distribution losses are included in this section instead of scope 2. Transmission and Distribution losses for electricity use in substations: 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 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. As defined by DEFRA's reporting guidelines the transmission and distribution losses are included in this section instead of scope 2. Well to tank emissions: Fuel purchased during the financial year (coal, oil, gas and biomass) is measured through meters and weight tickets and converted into kWh using standard industry recognised conversion factors. Power Purchase Agreements are reported as Scope 1 emissions as the energy generated from these facilities is 100% used by SSE. PwC assures this data.

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

100

**Explanation**

PwC assure this data.

**Upstream transportation and distribution**

**Evaluation status**

Not relevant, explanation provided

**Explanation**

The Fuel and energy related scope 3 emissions cover this category and these are detailed in the above category. SSE has no other emissions associated with this category not already reported in the above category or in other categories.

### Waste generated in operations

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**Evaluation status**

Not relevant, explanation provided

**Explanation**

The carbon impact of our waste was less than 1% of the total carbon emissions and therefore it is not incorporated into our footprint.

### Business travel

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**Evaluation status**

Not relevant, calculated

**Metric tonnes CO2e**

10,305

**Emissions calculation methodology**

Km for flights (domestic, short haul, long haul and international), rail and company car travel are reported and relevant DECC/DEFRA conversion factors are applied to calculate CO2e for each type of travel. PwC assure this data.

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

100

**Explanation**

The carbon impact of SSE's business travel (flights and rail) is less than 1% of the total carbon emissions. SSE reports this data and PwC assures this data.

### Employee commuting

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**Evaluation status**

Not relevant, explanation provided

**Explanation**

SSE has programmes in place to support our employees to make low carbon travel options when commuting, for example Bike to Work scheme. In comparison to our other scope 3 emissions, these emissions are not material (less than 1% of total scope 3 emissions) and the data quality would be based on employee commuting surveys and estimated mileage data from sample data sets.

### Upstream leased assets

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**Evaluation status**

Not relevant, explanation provided

**Explanation**

SSE does not have any activities associated with this activity.

### Downstream transportation and distribution

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**Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

87,001

**Emissions calculation methodology**

Transmission losses – the electricity lost in the Scottish Hydro Electric (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. When transferring power across the SHE Transmission System, some of the power is 'lost' known as 'Transmission Losses'. Figures for transmission losses are calculated using standard transmission losses guidance (produced by Elexon) to compute the losses in the transmission system. This data is reported by National Grid as the system operator. They report this figure for the financial year 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 April 2016 to March 2017 the data will be based on the previous financial year April 2015 to March 2016. The data is verified by an independent third party, WSP, for National Grid. PwC assure this data.

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

100

**Explanation**

When transferring power across the SHE Transmission System, some of the power is 'lost' known as 'Transmission Losses'. Figures for transmission losses are calculated using standard transmission losses guidance (produced by Elexon) to compute the losses in the transmission system. This data is reported by National Grid as the system operator. They report this figure for the financial year 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 April 2016 to March 2017 the data will be based on the previous financial year April 2015 to March 2016. The data is verified by an independent third party, WSP, for National Grid. PwC assure this data.

**Processing of sold products****Evaluation status**

Not relevant, explanation provided

**Explanation**

SSE does not have any activities associated with this activity.

**Use of sold products****Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

7,910,707

**Emissions calculation methodology**

Gas sold to customers – the amount of gas sold to customers (retail and business customers) 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 (<https://www.gov.uk/guidance/measuring-and-reporting-environmental-impacts-guidance-for-businesses>).

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

100

**Explanation**

Gas volumes are based on settlements data published by Xoserve. SSE receive 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 and business customers (industrial and commercial). To calculate the domestic usage values, the monthly demand totals are divided by the mid-month customer number and then totalled for the financial year to give the total energy sold to customers. The carbon emissions are calculated by taking the scope 3 gas sold to customers figure and applying the carbon dioxide conversion factor provided by BEIS reporting guidelines. PwC assure this data.

**End of life treatment of sold products****Evaluation status**

Not relevant, explanation provided

**Explanation**

SSE does not have any activities associated with this activity.

**Downstream leased assets**

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**Evaluation status**

Not relevant, explanation provided

**Explanation**

SSE does not have any activities associated with this activity.

**Franchises**

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**Evaluation status**

Not relevant, explanation provided

**Explanation**

SSE does not have any activities associated with this activity.

**Investments**

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**Evaluation status**

Relevant, calculated

**Metric tonnes CO<sub>2</sub>e**

2,717,233

**Emissions calculation methodology**

SSE has investments in a number of companies, the most significant in terms of climate change reporting is SSE's E&P business. SSE E&P UK Ltd is the way through which SSE has equity shareholding in gas producing assets. This company is wholly owned by SSE, however its stake in any gas producing asset is significantly below 50%. SSE does not operate any of the assets and therefore the carbon emissions associated with this are excluded from SSE's carbon inventory. Total output for SSE's E&P business in 2018/19 was 504 million therms. This figure is calculated by taking the total gas output (millions therms) converting it to Kwh and then applying a carbon dioxide conversion factor provided by BEIS reporting guidelines (<https://www.gov.uk/guidance/measuring-and-reporting-environmental-impacts-guidance-for-businesses>). This data has not been verified/ assured by PwC and therefore has not been publicly disclosed in SSE's annual reports. However, SSE has begun to understand the carbon emissions associated with these investments and SSE will continue to review the extent to which these investments contribute to the total carbon emissions inventory and assess whether these emissions should be included as part of the PwC assurance exercise in the future.

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

100

**Explanation**

SSE's E&P business has a diverse equity share in over 15 producing fields across 17 licenses in three regions. Gas production currently produces enough gas to supply all of SSE's Business Energy customers as well as SSE Airtricity household customers in Ireland. SSE E&P Ltd is the way through which SSE has equity shareholding in gas producing assets. The company, SSE E&P Ltd, is wholly owned by SSE, but its stake in any gas producing assets is significantly below 50%. Total output from SSE's E&P business in 2018/19 was 543 million therms. SSE does not operate these assets and therefore SSE has excluded the carbon emissions associated with these assets from its carbon inventory.

**Other (upstream)**

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**Evaluation status**

Not relevant, explanation provided

**Explanation**



SSE does not have any activities associated with this activity.

**Other (downstream)**

**Evaluation status**

Not relevant, explanation provided

**Explanation**

SSE does not have any activities associated with this activity.

**C6.7**

**(C6.7) Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?**

Yes

**C6.7a) Provide the emissions from biologically sequestered carbon relevant to your organization in metric tons CO2.**

19,840

**C6.10**

**(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.**

**Intensity figure**

0.0013

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

9,533,866

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

7,332,000,000

**Scope 2 figure used**

Location-based

**% change from previous year**

220

**Direction of change**

Increased

**Reason for change**

SSE's scope 1 and 2 carbon emissions decreased by nearly 14% between 2017/18 and 2018/19. Over 90% of emissions are associated with SSE's electricity generation assets and these decreased by 13% in the same period. This was a result of a change in the mix of the generation portfolio with a greater proportion of gas:renewables than in previous years which weighted towards coal:gas. In addition, SSE's revenue decreased substantially reflecting changes in the way financial accounts calculate revenue for electric utility businesses. The carbon intensity revenue ratio increased by over 200% due to the change to accountancy practices.

**Intensity figure**

0.309

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

9,533,866

**Metric denominator**

megawatt hour generated (MWh)

**Metric denominator: Unit total**

30,835,000

**Scope 2 figure used**

Location-based

**% change from previous year**

8

**Direction of change**

Decreased

**Reason for change**

SSE's scope 1 and 2 carbon emissions decreased by nearly 14% between 2017/18 and 2018/19. Over 90% of emissions are associated with SSE's electricity generation assets and these decreased by 13% in the same period. This increase was a result of a change in the generation mix from one weighted towards coal:gas to one that is focused on gas:renewables. Total generation output decreased by around 7% between 2017/18 and 2018/19. The reason for the reduction in the carbon intensity per MWh is a result of SSE's strategy to reduce the carbon intensity of its electricity generation portfolio, by moving from a portfolio weighted towards coal/ gas to a lower carbon alternative weighted towards gas/ renewables. Therefore as well as a decrease in the output there has been an overall reduction in the carbon intensity per MWh generated as the higher carbon electricity generating assets are replaced by lower emitting or renewable generating assets.

**Intensity figure**

468

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

9,533,866

**Metric denominator**

full time equivalent (FTE) employee

**Metric denominator: Unit total**

20,370

**Scope 2 figure used**

Location-based

**% change from previous year**

12

**Direction of change**

Decreased

**Reason for change**

SSE's scope 1 and 2 carbon emissions decreased by nearly 14% between 2017/18 and 2018/19. Over 90% of emissions are associated with SSE's electricity generation assets and these decreased by 13% in the same period. This decrease was a result of a 7% reduction in SSE's total generation output between 2017/18 and 2018/19. SSE's FTE numbers reduced marginally by nearly 2%. Therefore, the reduction in full time equivalents, output and a change to the generation mix contributed to a total reduction in the carbon intensity per full time equivalent employee.

## C7. Emissions breakdowns

### C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

#### C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO <sub>2</sub> e)	GWP Reference
CO <sub>2</sub>	8757309	IPCC Fifth Assessment Report (AR5 – 100 year)
CH <sub>4</sub>	10391	IPCC Fifth Assessment Report (AR5 – 100 year)
N <sub>2</sub> O	13787	IPCC Fifth Assessment Report (AR5 – 100 year)
SF <sub>6</sub>	13056	IPCC Fifth Assessment Report (AR5 – 100 year)

#### C-EU7.1b

(C-EU7.1b) Break down your total gross global Scope 1 emissions from electric utilities value chain activities by greenhouse gas type.

	Gross Scope 1 CO <sub>2</sub> emissions (metric tons CO <sub>2</sub> )	Gross Scope 1 methane emissions (metric tons CH <sub>4</sub> )	Gross Scope 1 SF <sub>6</sub> emissions (metric tons SF <sub>6</sub> )	Gross Scope 1 emissions (metric tons CO <sub>2</sub> e)	Comment
<b>Fugitives</b>	0	0	13,056	13,056	Fugitive emissions – use of sulphur hexafluoride (SF <sub>6</sub> ) in the transmission and distribution networks for conductivity (used in the switchgears and substations).
<b>Combustion (Electric utilities)</b>	8,717,411	10,391	0	8,727,803	Generation power stations – coal, oil and gas consumed in SSE's thermal power generation plant (including Power Purchase Agreements) to generate electricity.  This excludes biomass as this is reported in C6.7.
<b>Combustion (Gas utilities)</b>	0	0	0	0	Not applicable.
<b>Combustion (Other)</b>	39,898	0	0	39,898	<ul style="list-style-type: none"> <li>Gas consumption in buildings – this is the gas consumed by SSE's non-operational buildings (offices, depots, call centres) to maintain building temperatures.</li> <li>Distribution network fuel consumed – this includes diesel and gas oil used by generators and mobile generators to generate electricity to maintain the distribution network.</li> <li>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).</li> </ul>

<b>Emissions not elsewhere classified</b>	13,787	0	0	13,787	Other GHG emissions (excluding carbon dioxide and methane) that arise from energy consumed in power generation stations – coal, oil and gas consumed in SSE's thermal power generation plant (including Power Purchase Agreements) to generate electricity.  This excludes biomass as this is reported in C6.7.
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## C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
United Kingdom of Great Britain and Northern Ireland	7,942,280
Ireland	852,262

## C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By activity

### C7.3c

(C7.3c) Break down your total gross global Scope 1 emissions by business activity.

Activity	Scope 1 emissions (metric tons CO2e)
Generation (excludes biomass)	8,741,590
Operational vehicles and plant	33,103
Mobile plant - gas oil	4,866
SF6 for transmission and distribution	13,056
Fixed generation in distribution	555
Gas consumed in non-operational buildings	1,374

## C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e	Comment
Electric utility generation activities	8,741,590	Excludes biomass

## C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
United Kingdom of Great Britain and Northern Ireland	718,826	718,826	387155	0
Ireland	657	657	1618	0

## C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By activity

## C7.6c

(C7.6c) Break down your total gross global Scope 2 emissions by business activity.

Activity	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Electricity consumed in buildings (operational and non-operational)	100,051	100,051
Electricity consumed by substations in the transmission and distribution networks	9,598	9,598
Losses in the distribution network in the north of Scotland and south of England	609,834	609,834

## C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

## C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined) and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption				
Other emissions reduction activities	264,000	Decreased	2.5	<p>Scope 1 and 2 emissions reduced from 11,066 ktCO2e to 9,534 ktCO2e between 2017/18 and 2018/19. This was a reduction of 1,532 ktCO2e.</p> <p>This reduction is partly attributed to an increase in the amount of output from SSE's renewable generation assets, as well as a reduction in total output:</p> <ul style="list-style-type: none"> <li>In 2017/18 SSE's output from its renewable generation assets was 9,428 GWh and this increased to 9,779 GWh in 2018/19. This was an increase of 351 GWh between the two years.</li> <li>In 2017/18 total output was 33,098 GWh, in comparison to 30,835 GWh in 2018/19. A reduction of 2,263 GWh.</li> </ul> <p>In addition, SSE invested in energy efficiency projects in its own buildings/ operations. These projects brought about 22,656 tCO2e savings.</p> <p>To calculate the emission value decrease the following has been taken into account:</p> <ul style="list-style-type: none"> <li>Renewable energy output increased by 351 GWh;</li> <li>Total output reduced by 2,263 GWh between 2017/18 and 28/19;</li> <li>Emissions reductions associated with the increased renewable electricity output is 242 ktCO2e (total emissions reduction 1,563 ktCO2e / total reduction in output 2,263 GWh = 0.69 ktCO2e per GWh; 0.69 * 351 GWh = 242 ktCO2e);</li> <li>Emission saving projects 22 ktCO2e + 242 ktCO2e = 264 ktCO2e.</li> </ul> <p>Therefore, the total emissions value decrease is arrived at by taking the total emission reduction activities 264 ktCO2e / total scope 1 and 2 emissions in 2017/18 11,066 ktCO2e * 100 = 2.5%.</p>
Divestment				
Acquisitions				



Mergers				
Change in output	1,319,000	Decreased	12	<p>Scope 1 and 2 emissions reduced from 11,066 ktCO<sub>2</sub>e to 9,534 ktCO<sub>2</sub>e between 2017/18 and 2018/19. This was a reduction of 1,532 ktCO<sub>2</sub>e.</p> <p>This reduction is partly attributed to a reduction in total output, as well as an increase in the amount of output from SSE's renewable generation assets:</p> <ul style="list-style-type: none"> <li>• In 2017/18 total output was 33,098 GWh, in comparison to 30,835 GWh in 2018/19. A reduction of 2,263 GWh.</li> <li>• The main contributor to the reduced output was a fall in the thermal generation output from 23,670 GWh to 21,056 GWh between 2017/18 and 2018/19, a decrease of 2,614 GWh.</li> <li>• Renewable energy generation increased by 351 GWh between the two periods.</li> </ul> <p>To calculate the emission value decrease the following has been taken into account:</p> <ul style="list-style-type: none"> <li>• Total output reduced by 2,263 GWh between 2017/18 and 28/19;</li> <li>• Renewable energy generation increased by 351 GWh between 2017/18 and 28/19;</li> <li>• Scope 1 and 2 emissions reduced by 1,532 ktCO<sub>2</sub>e;</li> <li>• Emissions reductions associated with the reduced output is 242 ktCO<sub>2</sub>e (total emissions reduction 1,563 ktCO<sub>2</sub>e / (total reduction in output less renewable energy increased output 2,263 minus 351 = 1,912 GWh) = 0.69 ktCO<sub>2</sub>e per GWh; 0.69 * 1,912 GWh = 1,319 ktCO<sub>2</sub>e).</li> </ul> <p>Therefore, the total emissions value decrease is arrived at by taking the reduced generation output emission reduction 1,319 ktCO<sub>2</sub>e / total scope 1 and 2 emissions in 2017/18 11,066 ktCO<sub>2</sub>e = 12%.</p>
Change in methodology				
Change in boundary				
Change in physical operating conditions				
Unidentified				
Other				

## C8. Energy

### C8.1

**(C8.1) What percentage of your total operational spend in the reporting year was on energy?**

More than 0% but less than or equal to 5%

### C8.2

**(C8.2) Select which energy-related activities your organization has undertaken.**

	Indicate whether your organization undertakes this energy-related activity
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes

Consumption of purchased or acquired heat	Yes
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

## C8.2a

**(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.**

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	68,000	21,056,000	21,124,000
Consumption of purchased or acquired electricity		0	352,713	352,713
Consumption of purchased or acquired heat		0	7,467	7,467
Consumption of self-generated non-fuel renewable energy		9,711,000		9,711,000
Total energy consumption		9,779,000	21,416,180	31,195,180

## C8.2b

**(C8.2b) Select the applications of your organization's consumption of fuel.**

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	No
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

## C8.2c

**(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.**

### Fuels (excluding feedstocks)

Coal

### Heating value

HHV (higher heating value)

### Total fuel MWh consumed by the organization

579,000

### MWh fuel consumed for self-generation of electricity

579,000

### MWh fuel consumed for self-generation of heat

0

**Comment**

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**Fuels (excluding feedstocks)**

Natural Gas

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

20,183,000

**MWh fuel consumed for self-generation of electricity**

20,813,000

**MWh fuel consumed for self-generation of heat**

0

**Comment**

---

**Fuels (excluding feedstocks)**

General Municipal Waste

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

294,000

**MWh fuel consumed for self-generation of electricity**

294,000

**MWh fuel consumed for self-generation of heat**

0

**Comment**

---

**Fuels (excluding feedstocks)**

Biomass Municipal Waste

**Heating value**

HHV (higher heating value)

**Total fuel MWh consumed by the organization**

68,000

**MWh fuel consumed for self-generation of electricity**

68,000

**MWh fuel consumed for self-generation of heat**

0

**Comment****C8.2d****(C8.2d) List the average emission factors of the fuels reported in C8.2c.****Biomass Municipal Waste**

---

**Emission factor**

0.29

**Unit**

kg CO2e per MWh

**Emission factor source**

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.

**Comment****Coal**

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**Emission factor**

1.45

**Unit**

kg CO2e per MWh

**Emission factor source**

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.

**Comment****General Municipal Waste**

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**Emission factor**

0

**Unit**

kg CO2e per MWh

**Emission factor source**

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.

**Comment****Natural Gas****Emission factor**

0.39

**Unit**

kg CO2e per MWh

**Emission factor source**

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.

**Comment****C8.2e**

**(C8.2e) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.**

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	10,073,000	386,619	9,779,000	0
Heat	20,183,000	7,467	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

**C-EU8.2e**

**(C-EU8.2e) For your electric utility activities, provide a breakdown of your total power plant capacity, generation, and related emissions during the reporting year by source.**

Power generation source	Nameplate capacity (MW)	Gross electricity generation (GWh)	Net electricity generation (GWh)	Absolute Scope 1 emissions (metric tons CO2e)	Scope 1 emissions intensity (metric tons CO2e per GWh)	Comment
Coal – hard	1,510	579	579	836,881	1445	
Lignite	0	0	0	0	0	
	0	0	0	0	0	



Oil							
Gas	5,221	20,183	20,183	7,904,709	391		
Biomass	18	68	68	19,840	291		
Waste (non-biomass)	34	294	294	0	0		
Nuclear	0	0	0	0	0		
Geothermal	0	0	0	0	0		
Hydroelectric	1,450	3,543	3,543	0	0		
Wind	2,299	6,168	6,168	0	0		
Solar	0	0	0	0	0		
Other renewable	0	0	0	0	0		
Other non-renewable	0	0	0	0	0		
Total	10,532	30,835	30,835	8,761,429	2,127		0

## C8.2f

**(C8.2f) Provide details on the electricity, heat, steam and/or cooling amounts that were accounted for at a low-carbon emission factor in the market-based Scope 2 figure reported in C6.3.**

### Basis for applying a low-carbon emission factor

No purchases or generation of low-carbon electricity, heat, steam or cooling accounted with a low-carbon emission factor

### Low-carbon technology type

### Region of consumption of low-carbon electricity, heat, steam or cooling

### MWh consumed associated with low-carbon electricity, heat, steam or cooling

### Emission factor (in units of metric tons CO2e per MWh)

### Comment

SSE has committed to work towards buying renewable energy that is certified for its own operations by 2020.

## C-EU8.4

**(C-EU8.4) Does your electric utility organization have a transmission and distribution business?**

Yes

## C-EU8.4a

**(C-EU8.4a) Disclose the following information about your transmission and distribution business.**

### Country/Region

United Kingdom of Great Britain and Northern Ireland

### Voltage level

Transmission (high voltage)

### Annual load (GWh)

4769.7

### Scope 2 emissions (basis)

Leave blank

### Scope 2 emissions (metric tons CO2e)

Leave blank as SSE's transmission losses are scope 3

### Annual energy losses (% of annual load)

5.25 (SEPD) and 7.1 (SHEPD)

**Length of network (km)**

3111.4

**Number of connections**

104

**Area covered (km2)**

57,347.7

**Comment**

SSE is the sole-owner of three economically-regulated electricity network licensees that are jointly operated under the brand of Scottish and Southern Electricity Networks (SSEN). The three networks are:

1. Scottish Hydro Electric Transmission plc which owns the high voltage network in the north of Scotland.
2. Scottish Hydro Electric Power Distribution plc which owns the low voltage network in the north of Scotland.
3. Southern Electric Power Distribution which owns the low voltage network in central southern England.

This data refers to Scottish Hydro Electricity Transmission Plc.

Scope 2 emissions cover:

- Petrol and diesel used by SSE's vehicles.
- Use of sulphur hexafluoride (SF6) in the transmission and distribution networks for conductivity (used in the switchgears and substations).
- Electricity consumption in buildings and substations to manage the transmission electricity system.
- Business travel (flights and rail).
- 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 associated with the electricity consumed in buildings and substations and is separate to the transmission losses reported.

Length of network is defined as the total route length. The total circuit length for SSE's transmission business is 4,838.4km.

SSE's transmission losses are classified as scope 3 emissions and reported in question C6.5. These emissions are classified as scope 3 because SSE does not operate these transmission assets. SSE's transmission losses emissions in 2018/19 were 87,001 tonnes CO2e.

**Country/Region**

United Kingdom of Great Britain and Northern Ireland

**Voltage level**

Distribution (low voltage)

**Annual load (GWh)**

39,190.4

**Scope 2 emissions (basis)**

Location based

**Scope 2 emissions (metric tons CO2e)**

609833

**Annual energy losses (% of annual load)**

2

**Length of network (km)**

126,640.86

**Number of connections**

48,912

**Area covered (km2)**

79,524.28

**Comment**

SSE is the sole-owner of three economically-regulated electricity network licensees that are jointly operated under the brand of Scottish and Southern Electricity Networks (SSEN). The three networks are:

1. Scottish Hydro Electric Transmission plc which owns the high voltage network in the north of Scotland.
2. Scottish Hydro Electric Power Distribution plc which owns the low voltage network in the north of Scotland.
3. Southern Electric Power Distribution which owns the low voltage network in central southern England.

This data refers to the totals for Scottish Hydro Electric Power Distribution plc and Southern Electric Power Distribution. Data can be provided for each license area and this can be found in regulatory reports for these businesses.

Scope 2 emissions cover:

- Petrol and diesel used by SSE's vehicles.
- Use of sulphur hexafluoride (SF6) in the transmission and distribution networks for conductivity (used in the switchgears and substations).
- Electricity consumption in buildings and substations to manage the distribution electricity system.
- 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.
- Business travel (flights and rail).
- Transmission and distribution losses associated with the electricity consumed in buildings and substations and is separate to the transmission losses reported.

Number of connections: Details both the total number of connections by DNO and by Third Parties on SSE's behalf and the Totals split by License Area as these are the splits reported to Ofgem. The number of connections, 33,267, refers to the total number for both SHEPD (10,928) and SEPD (22,339) and excludes third parties. The total number of connections by third parties in SHEPD (600) and SEPD (15,045) is: 15,645.

## C9. Additional metrics

### C9.1

**(C9.1) Provide any additional climate-related metrics relevant to your business.**

### C-EU9.5a

**(C-EU9.5a) Break down, by source, your total planned CAPEX in your current CAPEX plan for power generation.**

Primary power generation source	CAPEX planned for power generation from this source	Percentage of total CAPEX planned for power generation	End year of CAPEX plan	Comment
Wind	326,000,000	23	2019	During the year to 31 March 2019, SSE's investment and capital expenditure totalled over £1.42bn. Over £1bn of this, around 70% was on regulated networks and renewables. Over 2019/20, SSE expects to invest around £1.5bn, again concentrated predominantly on its core networks and renewables businesses. Since 2010, SSE has invested over £3.9bn in renewable energy, of which more than £320m was in 2018/19. The majority of this spend relates to SSE's equity share of Beatrice offshore windfarm.

## C-EU9.5b

(C-EU9.5b) Break down your total planned CAPEX in your current CAPEX plan for products and services (e.g. smart grids, digitalization, etc.).

Products and services	Description of product/service	CAPEX planned for product/service	Percentage of total CAPEX planned products and services	End of year CAPEX plan
Other, please specify (Connections of renewable energy (wind) )	<p>During the year to 31 March 2019, SSE's investment and capital expenditure totalled over £1.42bn. Over £1bn of this, around 70% was on regulated networks and renewables. This included the completion of the Caithness-Moray electricity transmission link which was SSE's largest single investment at £1.1bn.</p> <p>SSE continued to invest significantly across both of its distribution networks in the north of Scotland and central southern England. During 2018/19, SSEN invested a total of £341m in its electricity distribution networks. These investments support a flexible electricity system which will be central to delivering an electrified low-carbon economy and support the electrification of heat and transport in the future.</p>	680,000,000	48	2019

## C-CO9.6/C-EU9.6/C-OG9.6

(C-CO9.6/C-EU9.6/C-OG9.6) Disclose your investments in low-carbon research and development (R&D), equipment, products, and services.

### Investment start date

April 1, 2018

### Investment end date

March 31, 2019

### Investment area

R&D

### Technology area

Energy storage

### Investment maturity

Applied research and development

### Investment figure

£3,272,274

### Low-carbon investment percentage

81 – 100%

**Please explain**

- SSE has invested in low carbon products and services in relation to energy storage over the past year. For example, in March 2019 SSEN's Project Local Energy Oxfordshire (LEO) received a total of £13.8m of funding from the UK Government's Industrial Strategy Challenge fund. LEO will explore how the growth in local renewables, electric vehicles (EVs, battery storage, vehicle-to-grid (V2G) technology and demand side response can be supported by a local, flexible and responsive electricity grid. In addition, in Ireland SSE was involved in advanced renewable generation forecasting models (FREMI: Forecasting Renewable Energy with Machine Intelligence) to enable the industry to respond to and manage the Irish Single Energy Market requirements. This forecasting tool reduces financial risk exposure for suppliers and generators and enables consumers to benefit from cost savings.

**C10. Verification****C10.1**

**(C10.1) Indicate the verification/assurance status that applies to your reported emissions.**

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

**C10.1a**

**(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 and/or Scope 2 emissions and attach the relevant statements.**

**Scope**

Scope 1

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

High assurance

**Attach the statement**
 SSE-plcs-GHGWater-assurance-report-2019-final-24-May-2019-signed.pdf
**Page/ section reference**

1 and 2

**Relevant standard**Other, please specify  
PwC Assurance**Proportion of reported emissions verified (%)**

100



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**Scope**

Scope 2 location-based

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

High assurance

**Attach the statement**

 SSE-plcs-GHGWater-assurance-report-2019-final-24-May-2019-signed.pdf

**Page/ section reference**

1 and 2

**Relevant standard**

Other, please specify

PwC assurance

**Proportion of reported emissions verified (%)**

100

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**Scope**

Scope 2 market-based

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

High assurance

**Attach the statement**

 SSE-plcs-GHGWater-assurance-report-2019-final-24-May-2019-signed.pdf

**Page/ section reference**

1 and 2

**Relevant standard**

Other, please specify

PwC assurance

**Proportion of reported emissions verified (%)**

100

## C10.1b

**(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.**

### Scope

Scope 3- at least one applicable category

### Verification or assurance cycle in place

Annual process

### Status in the current reporting year

Complete

### Attach the statement

 SSE-plcs-GHGWater-assurance-report-2019-final-24-May-2019-signed.pdf

### Page/section reference

1 and 2

### Relevant standard

Other, please specify  
PwC Assurance

## C10.2

**(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?**

Yes

## C10.2a

**(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?**

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C4. Targets and performance	Year on year emissions intensity figure	ISAE3000	PwC Assurance

## C11. Carbon pricing

### C11.1

**(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?**

Yes

### C11.1a

**(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.**

EU ETS

Other carbon tax, please specify

Carbon Price Support (CPS) - GB only

## C11.1b

(C11.1b) Complete the following table for each of the emissions trading systems in which you participate.

### EU ETS

#### % of Scope 1 emissions covered by the ETS

100

#### Period start date

January 1, 2018

#### Period end date

December 31, 2018

#### Allowances allocated

0

#### Allowances purchased

8,737,215

#### Verified emissions in metric tons CO<sub>2</sub>e

8,737,215

#### Details of ownership

Facilities we own and operate

#### Comment

Examples of facilities that SSE owns and operates include some joint ventures such as Marchwood and Seabank power stations

## C11.1d

(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?

The EU ETS scheme applies to SSE's generation business, which has by far the greatest carbon emitting impact of our entire business. SSE's overall strategy is to seek to comply through a mix of allowance purchase, abatement and use of project credits. Emissions under the EU ETS are treated as a cost of generation, similar to fuel, for the purposes of managing our energy portfolio. Therefore the trading of emissions allowances is carried out in conjunction with trading associated commodities; electricity, gas and coal. In order to comply with targets SSE is constantly trying to improve the efficiency of its power stations and trialling various carbon abatement technologies. For example, in 2018/19 SSE began construction at its 840MW CCGT at Keadby 2 in Lincolnshire. This project will introduce Siemens' first-of-a-kind, high efficiency, gas-fired generation technology to the UK.

## C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

## C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

## C11.3a

**(C11.3a) Provide details of how your organization uses an internal price on carbon.**

### Objective for implementing an internal carbon price

Navigate GHG regulations  
 Drive low-carbon investment  
 Stress test investments  
 Identify and seize low-carbon opportunities

### GHG Scope

Scope 1  
 Scope 3

### Application

Scope of emissions: The use of a carbon price impacts SSE's scope 1 (in particular generation emissions) and scope 3 (transmission and distribution losses) emission categories.

Rationale for using a carbon price: The use of a carbon price is a key component of many of SSE's operational and capital investment decisions. The price of carbon is reflected in decisions to run generation plant and renewable generation technologies, the investments made in new and existing capital projects and how we perform in the energy markets.

### Actual price(s) used (Currency /metric ton)

£18/metric ton CPS, £16.80/metric ton 2018/19 average EUETS

### Variance of price(s) used

The UK's Carbon Price Floor sets the carbon price up to 2021. SSE believes it is a critical part of the UK's energy policy. SSE believes that the UK's Carbon Price Floor is one of the most important policy tools the government has to help industry continue to deliver reliable and lower carbon electricity cost-effectively.

### Type of internal carbon price

Implicit price

### Impact & implication

Where and how SSE uses a carbon price, for example:

- SSE's Energy Portfolio Management team internalises the price of carbon in its energy market models, for example in 2018/19 ongoing 'low dark' spreads combined with the Carbon Price Support Rate resulted in greater use of gas-fired generation relative to coal.
- SSE's capital investment decisions in future electricity generation are supported by the renewables obligation and in the future contracts for difference. These long term support mechanisms for low carbon generation influence the way in which SSE develops and invests in new renewable technologies. For example, SSE has invested over £3.9bn in renewable energy since 2010, of which more than £320m was in 2018/19. In 2018/19 SSE delivered the 588MW Beatrice offshore wind farm and 228MW Stronelairg onshore wind farm. SSE also achieved its highest ever output from renewable sources increasing output from 9.4TWh to 9.8 TWh between 2017/18 and 2018/19 and this was a result of the continued investment in renewable electricity. SSE has the largest renewable energy capacity across the UK and Ireland at around 4GW (including pumped storage).

Actual price and process to determine the price: The UK's Carbon Price Floor sets the carbon price up to 2021. SSE believes it is a critical part of the UK's energy policy. SSE believes that the UK's Carbon Price Floor is one of the most important policy tools the government has to help industry continue to deliver reliable and lower carbon electricity cost-effectively. SSE continued to promote a strong carbon price by advocating to the UK Chancellor, along with other power companies ahead of the Budget in November 2018, that the Government should keep the Total Carbon Price stable during the period of uncertainty around Brexit and continue the UK's

future participation in the EU Emissions Trading Scheme (ETS). SSE welcomed the Government's commitment in May 2019 to a strong carbon price. SSE also supported carbon pricing through submissions to consultations on Ireland's National Energy and Climate Plan.

## C12. Engagement

### C12.1

#### (C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

Yes, our customers

### C12.1a

#### (C12.1a) Provide details of your climate-related supplier engagement strategy.

##### Type of engagement

Information collection (understanding supplier behavior)

##### Details of engagement

Collect climate change and carbon information at least annually from suppliers

##### % of suppliers by number

50

##### % total procurement spend (direct and indirect)

80

##### % Scope 3 emissions as reported in C6.5

100

##### Rationale for the coverage of your engagement

67 suppliers responded (out of 130 suppliers that were asked to take part) to the CDP supply chain programme to SSE's request for climate change data in 2018/19. Total scope 1 and 2 and 3 allocated emissions for these suppliers was 2,749,961 tCO<sub>2</sub>e. The carbon emissions calculated covers all the scope 1, 2 and 3 allocated emissions reported by these 67 companies. SSE will be one of many customers for each of these suppliers. The emissions reported have not been allocated to SSE they are the total emissions reported by each of the supplier for scopes 1 and 2. These suppliers represent around 10% of SSE's total procurement expenditure in 2018/19 (which was around £3.2 billion in 2018/19). These suppliers feature in SSE's top 250 and were selected based on the level relevance/ impact of climate change to the supplier as well as the level of spend in SSE's supplier programme. These suppliers support SSE's capital projects for renewable generation projects, transmission and distribution operations as well as IT, human resource and financial services. These suppliers provide capital goods (such as wind turbines and steel lattice towers) to SSE and therefore the second row of this table is included in this section of the response. This data has not been verified/ assured. This was the second year SSE has taken part in the CDP supply chain request and SSE is taking part in this programme in 2019/20.

##### Impact of engagement, including measures of success

The impact of SSE's supplier engagement strategy is measured through a series of indicators including: 1. Number/ percentage of suppliers responding to the CDP request for data on climate change; 2. Number/ percentage of suppliers providing scope 1 and 2 emissions data; and 3. SSE's ability to improve its scope 3 data reporting to include suppliers.

As a result of the 2018/19 CDP supply chain programme the impact of the engagement included: 1. Over 50% of SSE's suppliers responded; 2. 40% reported scope 1 and 2 emissions enabling SSE to continue to report its scope 3 emissions related to its suppliers; 3. 22% of our suppliers reported an emissions intensity or allocated emissions to SSE; 4. 35% of our suppliers reported a target; 5. SSE's suppliers reported reducing emissions by 6.5 million tonnes of carbon dioxide as a result of emission reduction activities and 6. 40% of SSE's suppliers reported buying renewable electricity or a percentage of their energy from a renewable electricity mix.

SSE has therefore for the second time reported scope 3 carbon emissions data for its suppliers products and services, this was 53,000 ktCO<sub>2</sub>e.

##### Comment

**Type of engagement**

Compliance &amp; onboarding

**Details of engagement**

Included climate change in supplier selection / management mechanism

Code of conduct featuring climate change KPIs

Climate change is integrated into supplier evaluation processes

**% of suppliers by number**

60

**% total procurement spend (direct and indirect)**

80

**% Scope 3 emissions as reported in C6.5**

100

**Rationale for the coverage of your engagement**

SSE has developed a range of tools to encourage responsible business practices in its supply chain, including its Responsible Procurement Charter; responsibility dashboard, sustainability criteria in pre-qualification process; and introduction of clauses on topics in its standard contract forms for new suppliers. SSE also employs a Strategic Supplier Relationship Management programme which is aimed at SSE's top 10 to 15 suppliers. Our strategic suppliers are defined as those suppliers in the top 10 of SSE's procurement spend and provide an essential/unique service to our business. emissions performance. In addition, the Strategic Supplier Relationship Management programme engages its suppliers through Joint Steering Groups held at Managing Director level. The groups discuss and initiate sustainability initiatives to drive better performance, product development and value engineered sustainable propositions. Examples include: the development and introduction of innovative and often disruptive technologies that reduce the carbon footprint of a product and improve carbon emissions performance.

**Impact of engagement, including measures of success**

SSE is developing the measures of success and will report on performance in the next reporting period.

**C12.1b****(C12.1b) Give details of your climate-related engagement strategy with your customers.****Type of engagement**

Education/information sharing

**Details of engagement**

Share information about your products and relevant certification schemes (i.e. Energy STAR)

**Size of engagement**

100

**% Scope 3 emissions as reported in C6.5**

85

**Please explain the rationale for selecting this group of customers and scope of engagement**

Material issues for energy customers include: affordable and accessible energy; quality customer service; responsiveness to vulnerability; efficient energy use; and the impact of industry change. SSE engages with customers daily through customer calls and social media activity using various channels, written, spoken and visual communication as well as social media. It engages at a deeper level through qualitative research and detailed surveys, and holds customer forums and consultation events to gain customer feedback. One area of engagement is energy efficiency which in turn helps to reduce customer carbon emissions. The roll out of smart meters is part of SSE's engagement with its domestic customers. For business customers, SSE has invested in new business activities in its contracting, energy solutions, and heat businesses (SSE Enterprise) to provide low carbon and energy efficiency products/ services to business customers and public sector organisations. Examples include: • SSE Enterprise which has expanded its business solutions into energy optimisation and demand side response where there is an opportunity to use data and technology to improve outcomes for customers; and has an energy performance team responsible for securing, structuring and delivering Energy Performance Certificates. • SSE Business Energy offers a 100% renewable energy tariff – SSE Green. It supplies renewable electricity matched to Renewable Energy Guarantee of Origins (REGOs), certifying that the purchased electricity has been generated exclusively through a portfolio of wind and hydro assets.

**Impact of engagement, including measures of success**



The impact of these measures includes: • SSE Green: SSE's 100% renewable energy tariff allows organisations to report zero emissions for their purchased electricity. • Smart meters: As of 31 March 2019, SSE had over 1.2m smart meters on supply in customers' homes. • Customer energy efficiency measures: In 2018/19, SSE promoted energy efficiency measures such as loft, cavity and sold wall insulation and boiler replacements in customers' homes through the government mandated scheme, helping to improve the energy efficiency of around 15,500 homes.

## C12.3

**(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?**

Direct engagement with policy makers

Trade associations

Other

## C12.3a

**(C12.3a) On what issues have you been engaging directly with policy makers?**

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
<b>Clean energy generation</b>	Support	<p>Offshore and onshore wind ambition – SSE has advocated for the UK government to provide ambitious support for offshore wind and onshore wind via the Contracts for Difference (CfD) framework. This included advocating for the UK government to commit to a programme of CfD auctions in order to enable the offshore wind industry to deploy at least 30GW of offshore wind by 2030. SSE has also strongly advocated for inclusion of remote island onshore wind projects to be included in pot 2 auctions alongside offshore wind. SSE advocated for the UK government to be more ambitious in the upcoming CfD allocation round 3, following the decision to cap total volume at 6GW regardless of how cost-competitive the bids in the auction are.</p> <p>On onshore wind, SSE has supported industry advocacy for the technology to be able to compete for CfDs within pot 1 allocation alongside other mature renewables technologies. In addition, SSE has continued to make the case for planning reforms in Scotland to enable the most advanced turbine technology to be deployed, thereby decreasing the cost of onshore wind.</p>	SSE supports the current legislation in place as SSE believes the Contracts for Difference (CfD) to be a viable, long term support mechanism for low carbon generation. SSE has provided input to the Scottish Government and Parliament in response to its consultation on how to improve planning legislation with a view to improving the prospects of building new and repowered onshore wind.
<b>Carbon pricing</b>	Support	SSE has advocated for the UK to remain in the EU ETS post Brexit to maintain the benefits of a wide traded scheme and keep continuity. If that is not possible politically, SSE has supported creation of a UK ETS but only on the basis that it is linked to the EU ETS from the outset to maintain all of the benefits. SSE supported the option to implement a Carbon Emissions Tax to replace EU ETS until the end of phase III in the event of a No Deal Brexit.	SSE supported the changes via the Finance Act to implement a Carbon Emissions Tax in the event that it is needed in a No Deal Brexit scenario to replace the EU ETS.
<b>Carbon pricing</b>	Support	SSE supports the maintenance of the Carbon Floor Price (CFP), which has played a major part in reducing the UK's carbon emissions by triggering fuel switching in the electricity market from coal to gas. Carbon pricing provides stability and predictability to low carbon investment. SSE joined other energy companies in writing to the Chancellor ahead of Budget 2018 to make the case for maintaining Carbon Price Support Rates unchanged.	SSE welcomed the UK government's commitment at Budget 2018 to keep Carbon Price Support Rates (CPSR) unchanged.
<b>Climate ambition</b>	Support	SSE strongly supports the UK legislating for a net zero GHG emissions target by 2050. SSE joined a number of other companies in The Prince of Wales's Corporate Leaders Group (CLG) in writing to the Prime Minister in November 2018 calling for a net zero target. SSE welcomed the CCC's advice report in May 2019 and subsequently wrote to the Secretary of State, Greg Clark MP, calling for the target to be adopted and setting out the role which SSE commits to playing to deliver on net zero. SSE also supports the Scottish Government's intention to legislate for a net zero emissions target by 2045 in line with the CCC advice.	SSE supports the amendments to the Climate Change Act which the UK government has made.
<b>Ireland's Climate Action Plan</b>	Support	SSE engaged with government departments and parliamentary members on what should be included in Ireland's Climate Action Plan which was published in June 2019. SSE advocated for a 70% renewable electricity target, an ambitious offshore wind target and measures to drive the decarbonisation of heat and transport.	SSE will continue to engage with the Government on the implementation of their Climate Plan on matters of relevance to various business units in SSE Ireland.
<b>Energy Efficiency (non-domestic)</b>	<p>Support the principles</p> <p>Softly support a DNO-led obligation</p> <p>Concerns about a supplier-led obligation</p>	<p>Improving business energy efficiency by at least 20% by 2030: UK Government set out its ambition in the Clean Growth Strategy (2016). UK Government has since issued two calls for evidence, the first on helping business to improve the way they use energy and the second focused on an energy efficiency scheme for SMEs.</p> <p>Three proposals for SMEs emerged: an energy efficiency auction; an energy efficiency obligation (obligated body not specified, but suppliers, networks and generators mooted); and opening up finance measures to SMEs. UK Government is considering responses to this call for evidence.</p>	<p>SSE supports the principle, and believes business energy efficiency needs to be addressed. Any such policy should be funded in a progressive manner, which avoids creating both distortions within the energy market and distortions within the sectors SMEs operate in.</p> <p>An auction scheme could be effective in supporting the Government's objective and support the development of supply chains for established and newer technologies (as per the CfD and Capacity Market auctions).</p>

		SSE responded to both of these consultations, has met with BEIS officials responsible for developing policy and participated in industry roundtables/discussions.	<p>Consideration would need to be given to several areas during detailed policy design:</p> <ul style="list-style-type: none"> <li>• Quality and standards</li> <li>• Accessibility to a broad range of parties</li> <li>• Eligible measures</li> <li>• Ensuring certainty of delivery</li> </ul> <p>For an obligation, a DNO-led approach would be most appropriate given the geographic monopolies of network companies, the enduring customer relationship and the impact energy efficiency could have on network management activities. If introduced, this would need to be appropriately funded and incentivised.</p>
<b>Energy efficiency</b>	Support with minor exceptions	<p>SSE is part of an Energy Efficiency Obligation Scheme in Ireland which applies to both domestic and commercial sectors. The scheme has been successful in delivering energy savings.</p> <p>Consultation is taking place on the next phase of the EEOS scheme for 2021-2030 which will bring the scheme in line with the new Energy Efficiency Directive 2018. Ireland's energy efficiency target will be higher in the next phase.</p>	<p>SSE supports the overall aim of the scheme. SSE believes that energy efficiency measures are the best approach for consumers to minimise their energy bills. SSE however believes that the way in which energy efficiency measures are implemented and funded should be reviewed, so they facilitate cost effective delivery.</p>
<b>Energy efficiency</b>	Support	<p>The 2012 Energy Efficiency Directive set out a number of binding measures to help the EU reach its 20% energy efficiency target by 2020.</p> <p>In order to achieve the EU's 20% energy efficiency target by 2020, EU countries have set individual national energy efficiency targets. SSE will continue to work, via Eurelectric, closely with the European Commission to contribute to the discussion on how this can be reached. The Clean Energy Package, involved a new amending Directive on Energy Efficiency (2018/2002) which updates the energy efficiency policy framework ahead of 2030 and beyond. This includes an energy efficiency target for 2030 of at least 32.5% across the EU. Importantly, the directive allows for a possible upward revision in the target in 2023, in case of substantial cost reductions as a result of economic or technological developments.</p> <p>Amendments to the Directive entered into force in December 2018 and need to be transposed into national law by Member States by 25 June 2020. SSE is engaging with the UK Government and other key stakeholders to understand the application of this law following the United Kingdom's withdrawal from the European Union.</p>	<p>SSE has been consistent in its view of being fully supportive of energy efficiency targets. SSE remains supportive of a bottom up approach to expand upon and tighten existing legislation in order to implement cost-effective energy efficiency measures for the economy.</p>
<b>Energy efficiency</b>	Support with minor exceptions	<p>The Energy Company Obligation (ECO) – focuses on energy efficient solutions, reducing carbon emissions and helping people out of fuel poverty. There have been three iterations of ECO so far – ECO1, ECO2 and ECO3.</p> <p>SSE continues to work closely with the UK Government and other stakeholders on how to improve future funding and delivery models for energy efficiency. SSE believes that energy efficiency policy must be designed to ensure cost effectiveness. Past schemes have been overly complex and have not represented value for money for the customers that pay for them. There is a strong case for the cost to be funded progressively by taking into account an individual's ability to pay. General taxation has the advantage of being means-tested, proportionate to earnings and hence more socially progressive.</p>	<p>SSE supports the overall aim of ECO. SSE believes that energy efficiency measures are the best approach for consumers to minimise their energy bills. SSE however believes that the way in which energy efficiency measures are implemented and funded should be reviewed, so they facilitate cost effective delivery.</p>
<b>Clean energy generation</b>	Support	<p>SSE played an active role in Eurelectric's response to the Clean Energy Package (CEP). Regarding the broader Renewable Energy Directive (RED) which aims to improve the design and stability of support schemes for renewables, SSE is supportive of the binding EU-wide renewable energy target of at least 32% and more so by the inclusion of the review clause by 2023 for an upward revision of the EU level target. SSE believes that decarbonisation will require stronger coordination across Europe. Via its position within Eurelectric and Wind Europe, SSE has also engaged with the relevant departments in the European Commission on the CEP, particularly on the National Energy and Climate Plans (NECPs) and will continue to do so as the deadline for Member States to submit the final plans is 31 December 2019.</p>	<p>SSE's core, low-carbon businesses are the engine rooms of its strategic delivery, and the business, therefore, remains fully supportive of an EU-wide renewable energy target for 2030 which would provide the long-term certainty for investment in the necessary infrastructure to decarbonise the UK and Irish economies in a cost effective way. SSE has joined other businesses and NGOs to call for the UK Government and the Scottish Government to set a net zero emissions target for 2050 at the latest.</p>
<b>Other, please specify (Low-carbon networks)</b>	Support	<p>SSE has a networks business, SSEN, that owns and operates transmission &amp; distribution networks across GB. SSEN has engaged directly with OFGEM as part of the current RII0-1 price control and discussions on the next set of price controls in the 2020s. SSEN has also provided BEIS with evidence from demonstration projects into best practice for delivering low carbon networks. SSEN has recently issued tenders as part of business-as-usual to procure flexibility as an alternative to network reinforcement in constrained areas. For example SSEN can provide incentives to energy efficiency projects that reduce peak demand.</p>	<p>SSEN fully supports the low carbon networks programmes. In a recent publication Supporting a Smarter Electricity System, SSEN set out a vision to transition from a DNO to a DSO, which acts as a neutral facilitator of new technologies. An example of SSEN supporting new technologies is the My Electric Avenue project, which investigated the impact of Electric Vehicle (EV) clusters on the electricity network. Following on from the findings of this project a new project called 'Smart EV' is collaboration with other Network Operators, Government, Ofgem and representatives from automobile and digital industries. One of the key objectives is to agree standards for EV charging.</p>
<b>Energy Efficiency (non-domestic)</b>	Support the principles Softly support a DNO-led obligation	<p>Improving business energy efficiency by at least 20% by 2030: UK Government set out its ambition in the Clean Growth Strategy (2016). UK Government has since issued two call for evidence, the first on helping business to improve the way they use energy and the second focused on an energy efficiency scheme for SMEs.</p>	<p>SSE supports the principle, and believes business energy efficiency needs to be addressed. Any such policy should be funded in a progressive manner, which avoids creating both distortions within the energy market and distortions within the sectors SMEs operate in.</p>

	Concerns about a supplier-led obligation	<p>Three proposals for SMEs emerged: an energy efficiency auction; an energy efficiency obligation (obligated body not specified, but suppliers, networks and generators mooted); and opening up finance measures to SMEs. UK Government is considering responses to this call for evidence.</p> <p>SSE responded to both of these consultations, has met with BEIS officials responsible for developing policy and participated in industry roundtables/discussions.</p>	<p>An auction scheme could be effective in supporting the Government's objective and support the development of supply chains for established and newer technologies (as per the CfD and Capacity Market auctions). Consideration would need to be given to several areas during detailed policy design:</p> <ul style="list-style-type: none"> <li>• Quality and standards</li> <li>• Accessibility to a broad range of parties</li> <li>• Eligible measures</li> <li>• Ensuring certainty of delivery</li> </ul> <p>For an obligation, a DNO-led approach would be most appropriate given the geographic monopolies of network companies, the enduring customer relationship and the impact energy efficiency could have on network management activities. If introduced, this would need to be appropriately funded and incentivised.</p>
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### C12.3b

**(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?**

Yes

### C12.3c

**(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.**

#### Trade association

Energy UK, Association of Decentralised Energy (ADE), Electricity Association of Ireland

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

Energy UK and ADE supports the 2050 UK net zero target.

**How have you influenced, or are you attempting to influence their position?**

SSE has influenced adoption of positions in support of action via its Board position in Energy UK. SSE also has staff on various committees in these associations which helps to reinforce progressive positions on key issues.

#### Trade association

Eurelectric (members via Energy UK, Energy Networks Association and Electricity Association of Ireland)

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

Eurelectric's major objectives are to deliver carbon neutral electricity in Europe 'well before' 2050, ensuring a cost-effective, reliable supply through an integrated market and developing energy efficiency and the electrification of the demand side to mitigate climate change.

**How have you influenced, or are you attempting to influence their position?**

SSE has influenced adoption of positions in support of action via its Board position in Energy UK. SSE was also until recently been a Board member of Eurelectric. SSE also has staff on various committees in these associations which helps to reinforce progressive positions on key issues. In 2018/19, SSE's Chief Executive, in his role as Vice President of industry body Eurelectric, launched a new study that demonstrates how the European power sector can become fully carbon neutral by 2045 through investment in renewable energy and electricity networks.

#### Trade association

Renewables UK

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

Renewable UK is the trade association representing renewable organisations in the UK (wind, solar, wave and tidal). Their aim is to create the conditions that will see the renewable sector continue to thrive.

Renewables UK supports the 2050 UK net zero target.

**How have you, or are you attempting to, influence the position?**

As a member of this organisation, SSE has strongly advocated that Renewable UK make the case for, and support a policy environment that encourages, low-carbon investment. Since 2018, SSE Renewable's Director of Capital Projects has sat on the Board in a personal capacity. A large focus of the Board's work has been to support the Offshore Wind Sector deal and guide the association's approach to onshore wind.

#### Trade association

Scottish Renewables

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

Scottish Renewables is the trade association representing Scotland's renewable energy industry. They work to grow Scotland's renewable energy sector to sustain its position at the forefront of the global clean energy industry. Scottish Renewables supports the 2050 UK net zero target.

**How have you, or are you attempting to, influence the position?**

As a member of this organisation, SSE has strongly advocated that Scottish Renewables make the case for, and support a policy environment that encourages, low-carbon investment in Scotland. SSE is represented on the Scottish Renewables board, with a strong focus on guiding engagement around Scottish planning policy to support future onshore wind development.

#### Trade association

Confederation of British Industry (CBI) (in Northern Ireland only)

IBEC – Ireland only

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

CBI and IBEC supports energy efficiency, future proofing business against climate threats and moving businesses towards carbon neutrality by enabling the market to develop the solutions that are needed to achieve these goals. In Northern Ireland, engagement with the CBI has been focused on highlighting the need for an revised energy policy in NI. Currently the Strategic Energy Framework runs out in 2020, however, its has become outdated with many of targets including the 40% renewable energy target all but reached. On the issue of climate change in NI it has recently been reported by the CCC that NI will have to play 'Catch up' when it comes to introducing policies to tackle climate change. NI is the only devolved administration without its own climate change legislation

**How have you, or are you attempting to, influence the position?**

SSE and IBEC advocates that the CBI supports low carbon investment, policy on carbon targets/ EU ETS/ energy efficiency.

#### Trade association

International Emissions Trading Association (IETA)

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**



International Emissions Trading Association advocates emissions trading globally and the EU ETS.

**How have you influenced, or are you attempting to influence their position?**

As a member of this organisation, SSE has strongly advocated for emissions trading globally and reform of the EU ETS.

## C12.3e

**(C12.3e) Provide details of the other engagement activities that you undertake.**

SSE engages with other organisations on an ad hoc basis in relation to climate-related issues and communications such as carbon pricing, net zero and the low carbon transition.

For example:

- SSE joined climate NGOs (including the Cambridge Institute for Sustainability Leadership and CDP) and leading businesses in calling for governments in the UK to legislate for tougher and quicker action, and the adoption of a net zero emissions target by 2050.
- SSE's Chief Executive, in his role as Vice President of industry body Eurelectric, launched a new study that demonstrates how the European power sector can become fully carbon neutral by 2045 through investment in renewable energy and electricity networks.
- In 2018/19 SSE joined the Power Past Coal Alliance (PPCA) which is a global alliance of national and sub-national governments, businesses and organisations working to advance the transition away from unabated coal power generation. SSE is a member of the Utilities Taskforce which seeks to share experiences and expertise in the transitioning away from coal with countries and companies where there is ambition to follow suit.

## C12.3f

**(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?**

SSE's business strategy and sustainability value (one of six of its core values) guides its overall approach on environment and climate change issues. SSE has policy and public affairs specialists based in Glasgow, Edinburgh, London, Belfast and Dublin who engage openly and constructively with legislators, officials and other policy makers on all aspects of environment (including water) and climate change policy. All communications across the business are managed by these experts and processes are in place to ensure consistency, quality and accuracy of communications across SSE. SSE has a commitment to responsible political engagement and this is communicated through its political engagement policy. This policy is in place for all employees and is consistently applied across the SSE Group and governs both SSE's policies in this area – for example its policy on political contributions - and serves as a guide to how employees should conduct themselves when representing SSE to government or other institutions. SSE has also signed up to the voluntary membership of the Chartered Institute of Public Relations' UK Lobbying Register. A Lobby Register is in place in Ireland which SSE is required to make quarterly updates to. Alongside the SSE Group policy, employees are governed by its Code of Conduct. SSE also participates in mandatory registration for political engagement where such register exist (e.g. SSE's European Declaration).

## C12.4

**(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).**

Attach SSE's publications:

1. Annual report and accounts 2019 pages 28 to 31
2. Sustainability Report 2019 pages 16 to 33 and 36 to 43
3. News and views articles pages 1 to 4

## C14. Signoff

### C-FI

**(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.**

## C14.1

**(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.**

	Job title	Corresponding job category
Row 1	Finance Director	Finance Director