

## C0. Introduction

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### C0.1

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

AGL Energy Limited (AGL) retails natural gas, electricity and energy related products and services to over 3.5 million customer accounts across New South Wales, Victoria, South Australia, Queensland and Western Australia. AGL has a diverse power generation portfolio, including base, peaking and intermediate generation plants, spread across traditional thermal (gas and coal) generation as well as renewable sources (including hydro, wind, landfill gas and solar). As of 30 June 2017, AGL operated 10,246 MW installed generation capacity, which included 1,890 MW of renewable generation capacity. AGL has moved away from gas production and is in the process of divesting all natural gas producing assets.

AGL's Greenhouse Gas Policy acknowledges that Australia is moving to a carbon-constrained future, and provides a framework within which AGL will structure its carbon reduction activities, and presents a pathway for the gradual decarbonisation of the AGL generation portfolio by 2050.

AGL is listed on the Australian Securities Exchange (ASX code: AGL), AGL is an S&P/AASX 50 company. AGL maintains an investment credit grade rating of Baa2 from Moody's.

### C0.2

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**(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 | Select the number of past reporting years you will be providing emissions data for |
|-------|------------------|------------------|---|--|
| Row 1 | July 1 2016      | June 30 2017     | No  | <Not Applicable>   |
| Row 2 | <Not Applicable> | <Not Applicable> | <Not Applicable>  | <Not Applicable>   |
| Row 3 | <Not Applicable> | <Not Applicable> | <Not Applicable>  | <Not Applicable>   |
| Row 4 | <Not Applicable> | <Not Applicable> | <Not Applicable>  | <Not Applicable>   |

### C0.3

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

Australia

### C0.4

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

AUD

### C0.5

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**(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

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**(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

**Other divisions**

Gas storage, transmission and distribution

Smart grids / demand response

Battery storage

Micro grids

Coal mining

Gas extraction and production

C1. Governance

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C1.1

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

Yes

C1.1a

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**(C1.1a) Identify the position(s) of the individual(s) on the board with responsibility for climate-related issues.**

| Position of individual(s) | Please explain  |
|---------------------------|---|
| Board/Executive board     | AGL's highest level of direct responsibility for climate change sits with its Board through its standing committees. In 2015, the AGL Board approved the publication of AGL's Greenhouse Gas Policy, which includes commitments to: decarbonise our generation portfolio by 2050; continue to invest in low and zero emitting technologies; and advocate for effective, long term and integrated climate and energy policy. The Board reviewed AGL's Carbon Constrained Future report (2016), as well as AGL's Powering a Climate Resilient Economy report (2018), designed to meet the recommendations of the Taskforce on Climate-Related Financial Disclosures' voluntary disclosure framework. The AGL Board has established four standing committees of its members; the committee with the highest level of direct responsibility for climate change is the Safety, Sustainability and Corporate Responsibility Committee. AGL's carbon impact and response to climate change are key areas of focus for the Committee. |

C1.1b

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**(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  |
|---|---|---|
| Scheduled – all meetings  | <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 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>The Board is responsible for reviewing and guiding climate change strategy. The AGL Board has established four standing committees of its members; the committee with the highest level of direct responsibility for climate change is the Safety, Sustainability and Corporate Responsibility Committee. This committee meets quarterly, and assists the Board in (a) reviewing and overseeing the development and implementation of policies and procedures which enable AGL to operate its businesses ethically, responsibly and sustainably, including regarding climate change; and (b) monitoring the decisions and actions of management in achieving AGL's objective to be a safe, ethical, responsible and sustainable organisation, including as regards AGL's actions on climate change. In April 2015, the AGL Board approved the publication of AGL's Greenhouse Gas Policy. This policy provides a Board-endorsed direction for the organisation including commitments to: decarbonise our generation portfolio by 2050; continue to invest in low and zero emitting technologies; and advocate for effective, long term and integrated climate and energy policy. AGL's carbon impact and response to climate change are key areas of focus for the Committee. At each of its quarterly meetings, the Board's SSCR Committee reviews AGL's compliance against its Greenhouse Gas Policy. At each meeting, the SSCR also reviews AGL's greenhouse gas emissions, emissions intensity, and an analysis of AGL's performance and risks against legislated safeguard baselines regulated by the Australian Government's Clean Energy Regulator. The SSCR and the full Board reviews and approved AGL's 2017 Sustainability Report, and the greenhouse strategies and performance data contained therein. The Board also reviewed AGL's Carbon Constrained Future report which was released with AGL's 2016 Sustainability Report.</p> |

**C1.2**

**(C1.2) Below board-level, provide the highest-level management 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   |
| Other, please specify (Executive GM - Stakeholder Relations)    | Both assessing and managing climate-related risks and opportunities | Quarterly   |
| Other, please specify (Chief Economist)                         | Both assessing and managing climate-related risks and opportunities | Quarterly   |
| Other, please specify (Senior Sustainability Manager)           | Both assessing and managing climate-related risks and opportunities | Quarterly   |
| Other, please specify (Manager - Greenhouse and Sustainability) | Both assessing and managing climate-related risks and opportunities | Quarterly   |
| Risk 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.**

Acting as the highest level of management in the organisation, the AGL Executive Team builds sustainability considerations into business strategy and day to day operations. Responsibility for AGL's strategy in relation to climate change issues lies within the Sustainability and Engagement team within the Stakeholder Relations business unit, which is led by the Executive General Manager of Stakeholder Relations.

The Sustainability and Engagement team, led by the Chief Economist, is responsible for the reporting of greenhouse gas emissions and energy, carbon policy and regulation, and carbon modelling and analysis, as well as integrating these into the organisation's sustainability strategy and disclosures. This team provides updates on AGL's performance against climate change targets and AGL's Greenhouse Gas Policy to the Board Safety, Sustainability and Corporate Responsibility Committee on a quarterly basis. These updates are prepared by the Senior Manager – Sustainability in conjunction with the Manager – Greenhouse and Sustainability.

Additionally, AGL produces an annual Sustainability Report, which sets out AGL's approach to climate change risk management, including updates on performance against targets over the reporting year. The Annual Sustainability Report is managed by AGL's Senior Manager – Sustainability, with inputs from the Manager – Greenhouse and Sustainability; this report is reviewed by the Chief Economist, AGL's Executive Team, and approved by the Board.

Risks associated with carbon, energy efficiency and renewable energy policies are managed as part of AGL's broader interaction with wholesale and retail energy markets, with governance processes in place to monitor and manage policy compliance. Responsibility for reporting and oversight of policy compliance lies with Group Risk and Compliance and ultimately overseen by the Board's Audit and Risk Management Committee. AGL's Sustainability and Engagement Team provides inputs into risk updates, which are sent to Group Risk and Compliance for updating the Board's Audit and Risk Management Committee.

## C1.3

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

Yes

## C1.3a

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**(C1.3a) Provide further details on the incentives provided for the management of climate-related issues.**

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

Board/Executive board

**Types of incentives**

Recognition (non-monetary)

**Activity incentivized**

Other, please specify (Climate change risk management)

**Comment**

The Board represents the apex of AGL's corporate governance structure and as such, is ultimately accountable for complying with the Australian Securities Exchange (ASX) Corporate Governance Council's 'Corporate Governance Principles and Recommendations – 3rd Edition' (ASX Principles). The ASX Principles include a recommendation (Recommendation 7.4) that "A listed entity should disclose whether it has any material exposure to economic, environmental and social sustainability risks and, if it does, how it manages or intends to manage those risks". Climate change has been identified as a 'strategic imperative' to AGL's ongoing sustainability, and in recent years as one of AGL's material issues. Therefore, directors on AGL's Board are remunerated, in part, on their performance in identifying and managing risks associated with climate change. An example of how the Board demonstrates its compliance with this recommendation is through the Board's review and approval of AGL's annual Sustainability Report, which is a key means of disclosing to the public AGL's approach to identifying and managing climate change-related risks.

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

Chief Executive Officer (CEO)

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction project

**Comment**

Climate change has been identified as a 'strategic imperative' to AGL's ongoing sustainability. Therefore, AGL's CEO is incentivised, in part, on the CEO's performance in identifying and managing risks associated with climate change. The CEO is incentivised based on meeting objectives relating to the Powering Australian Renewables Fund (PARF), an investment vehicle aimed at facilitating the construction of approximately 1,000 MW of renewable

generation. In addition, the CEO is incentivised for delivering increased lower-carbon emitting electricity generation sources as part of AGL's 'NSW Generation Plan'. Under this plan, AGL has identified a need for 1,600MW of renewable energy assets. For the purposes of this question, these are classed as "emission reduction projects" in that the successful delivery of new renewable projects through the fund will contribute to the decarbonisation of Australia's electricity market.

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

Chief Financial Officer (CFO)

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction project

**Comment**

The CFO is incentivised based on meeting objectives relating to the Powering Australian Renewables Fund (PARF), an investment vehicle aimed at facilitating the construction of approximately 1,000 MW of renewable generation. For the purposes of this question, these are classed as "emission reduction projects" in that the successful delivery of new renewable projects through the fund will contribute to the decarbonisation of Australia's electricity market.

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

Other C-Suite Officer

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction project

**Comment**

AGL's Chief Economist has responsibility for AGL's Sustainability Reporting and Greenhouse Reporting. Additionally the Chief Economist is responsible for ensuring AGL's compliance with AGL's Greenhouse Gas Policy, and is incentivised based, in part, on AGL's performance against this policy.

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

Environment/Sustainability manager

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction target

**Comment**

The Senior Manager - Sustainability has core performance objectives that are strategically aligned with decarbonisation and climate change policy.

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

Environment/Sustainability manager

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction target

**Comment**

The core performance objectives of the Manager - Greenhouse and Sustainability are strategically aligned with decarbonisation and compliance with AGL's GHG Policy.

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

Facilities manager

**Types of incentives**

Monetary reward

**Activity incentivized**

Efficiency project

**Comment**

AGL's Performance Managers have objectives relating to the implementation of energy efficiency projects.

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

Business unit manager

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction project

**Comment**

The General Manager - Development and Construction is incentivised based on the completion of planing, development and funding tasks for new large scale renewable projects. These projects can be classified as emission reduction projects as they displace fossil-fuel electricity generation in the grid. The General Manager - Development and Construction is also incentivised for developing a portfolio of future development prospects, in line with commitments in our GHG Policy.

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

Chief Operating Officer (COO)

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction project

**Comment**

The Executive General Manager – Group Operations is incentivised based on meeting objectives relating to development of new electricity generation assets. These assets include renewable and lower-emissions energy projects (such as renewable energy and gas-fired power stations), developed either by AGL alone or in partnership with other entities, e.g. with the Powering Australian Renewables Fund (PARF), which is an investment vehicle aimed at facilitating the construction of approximately 1,000 MW of renewable generation. For the purposes of this question, these are classed as "emission reduction projects" in that the successful delivery of renewable and lower-emissions projects will contribute to the decarbonisation of Australia's electricity market.

**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  |
|-------------|--------------|------------|--|
| Short-term  | 0            | 2          | For the purposes of this survey AGL's short term risk planning is currently aligned to a time period between the immediate term and 2 years. |
| Medium-term | 2            | 5          | For the purposes of this survey AGL's medium term risk planning is currently aligned to a time period between 2 and 5 years.                 |
| Long-term   | 5            | 10         | For the purposes of this survey AGL's long-term risk planning is currently aligned to a time period between 5 and 10 years plus.             |

**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.**

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

**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                                      | AGL employs a comprehensive scenario analysis approach. Using this framework, we analyse uncertainty in areas critical to our business and develop several possible 'future states' that could result from different combinations of events and outcomes. The scenario analysis process is premised on taking a broad view of possible futures, rather than a narrow forecast, enabling more robust investment and decision making. It captures strategic insight across the business to track leading indicators that suggest that the world may be shifting from one scenario to another, enabling strategy to pivot in response. Our scenario analysis process enables AGL to maintain a constant and nuanced awareness of competitive pressures in the market, and to anticipate changes in our markets and respond in an agile fashion across our business. |

**C2.2b**

**(C2.2b) Provide further details on your organization’s process(es) for identifying and assessing climate-related risks.**

AGL’s general risk management methodology is adaptable and can be applied at the enterprise wide level or for a project, business, or asset process. Climate change is managed in the same manner as any risk to which the organisation is exposed to.

AGL’s Risk Management Policy, which has been approved by AGL’s Board, mandates that management utilise risk management principles in decision-making, requires all AGL employees to consider their functions and roles and how to manage risks arising from their business decisions and activities. AGL’s Statement of Risk Appetite, reviewed annually by the Audit & Risk Management Committee, sets out AGL’s risk appetite in relation to strategic, financial, market and operational risks, as well as AGL’s risk tolerance (activities for which AGL has no appetite). A strong risk management culture is critical to enabling AGL to achieve its strategic, operational, and commercial objectives and can also be a source of competitive advantage.

The most significant strategic risks undergo a full review annually; material and emerging risks are identified, monitored, and reviewed continually and proactively, with reporting to the Audit & Risk Management Committee and Executive Team quarterly. The risk management framework also incorporates an escalation process to empower different levels of management to execute decisions, subject to appropriate processes and protocols.

All risks, including climate change risks, identified through the AGL risk management methodology are ranked in terms of their potential consequence and the likelihood of that consequence occurring, to calculate their inherent risk rating (e.g. extreme, very high, high, moderate, or low). Potential consequences are assessed in relation to the following categories:

- Commercial
- Customer experience
- Regulatory compliance
- Reputation and community
- Environment
- Health and safety, and
- People.

Any controls, processes, or governance practices in place at AGL that serve to reduce either the likelihood or the severity of consequences (in relation to the above categories) associated with each risk are also assessed, allowing the calculation of the residual risk rating (e.g. extreme, very high, high, moderate, or low). The appropriateness of the control environment at AGL, and any further actions required are regularly reviewed and are the subject of monitoring and reporting to AGL management and/or the Board. The determined level of residual risks trigger requirements to notify different levels of management to the risk– for example, the Board, the Audit & Risk Management Committee, the relevant Executive General Manager (or delegate), the relevant General Manager (or delegate) or the relevant Manager.

More specific examples of escalation are conducted using risk cost methodology which adds an additional layer of quantitative analysis to assist in the allocation of capital and operational allocation based on a risk and opportunity analysis.

**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 | Australia’s continued public policy uncertainty relating to climate change creates ongoing risks to AGL’s ability to perform against its strategic imperatives and deliver on its key objectives. Accordingly, AGL continues to work within current Commonwealth and State policies and advocate for long-term, nationally-consistent public policy settings on climate change. The Commonwealth’s Large-scale Renewable Energy Target requires the generation of additional electricity from large-scale renewable sources by 2020 through to 2030. Electricity retailers are required to contribute to the target through the purchase of Large Scale Generation Certificates (LGCs, known previously as RECs). As a major retailer participating in this market, AGL is exposed to general price and volatility risk through this mandated scheme. Over the past decade AGL has invested significantly in renewable electricity generation, in line with AGL’s strategy to be largely self-sufficient in meeting obligations under the Renewable Energy Target. AGL invested \$200 million in equity to seed the Powering Australian Renewables Fund, which is developing 1,000 MW of renewable generation. This in addition to the further generation development outlined in AGL’s NSW Generation Plan should allow AGL to meet its obligations under the RET. See the plan here: <a href="https://www.agl.com.au/about-agl/media-centre/asx-and-media-releases/2017/december/agl-announces-plans-for-liddell-power-station">https://www.agl.com.au/about-agl/media-centre/asx-and-media-releases/2017/december/agl-announces-plans-for-liddell-power-station</a> AGL is also a liable entity under a range of state-based energy efficiency schemes, which expose the company to a low level of general price and volatility risk. As well having reporting obligations under the National Greenhouse and Energy Reporting Act. Longer-term, AGL’s operation of its generation fleet and wholesale energy markets business remain exposed to uncertainty around energy markets supply, disparate State and Commonwealth regulatory frameworks and the risk that future policy decisions and regulatory structures may impose greater operational rigidity on the business, impacting on AGL’s ability to effectively manage its portfolio. AGL is focused on diversifying its asset portfolio by fuel, geography and technology and continues to develop a pipeline of diverse projects to enable to AGL to adapt to an evolving regulatory environment. |

|                     | Relevance & inclusion     | Please explain   |
|---------------------|---------------------------|--|
| Emerging regulation | Relevant, always included | The potential implementation of disparate State and Commonwealth climate change and energy policies also presents risks to AGL's business, given AGL's integrated operations across the National Electricity Market. Accordingly, AGL considers the trajectory of any State-based emissions targets impacting upon the energy sector need to be appropriately coordinated with the National Electricity Market. Long-term, nationally consistent policy is the most desirable policy outcome for the energy sector, given the long-term investment horizons and large upfront costs involved. Nationally coordinated targets would also ameliorate some of the economic risks associated with setting emissions reductions targets at the State level. Currently federal energy policy is the National Energy Guarantee (NEG). The NEG is a proposed design for combining an emissions requirement and reliability guarantee that will require retailers to contract with, or directly invest in, generation, storage or demand response. AGL welcomes the approach to integrate emissions reductions policy with energy policy through the proposed design of the NEG. AGL feels that the NEG would provide some certainty to the market. We consider that the design of any mechanism must principally address: Cost - The Guarantee should be designed with the greatest regulatory efficiency possible, which consists of minimal disruption to existing markets and at the lowest net cost to customers. Emissions - The Guarantee should ensure that the NEM achieves its pro-rata share of Australia's international commitment for emissions reductions with a view to ramping up to a potential of net zero emissions by 2050. Reliability - The Guarantee should provide direction on the appropriate mechanisms by which reliability can be maintained as a result of increasing amounts of intermittent generation. Certainty - Objectives of the Guarantee must enhance the existing operation of the market and also consider other market reforms and reviews. Competition - Competitive, transparent, efficient, and liquid markets for energy and other products must be encouraged and enhanced to drive lowest cost outcomes. In a highly regulated industry such as the energy industry, government decisions have a significant influence on the way we source, produce and price energy and energy-related products. |
| Technology          | Relevant, always included | AGL is focused on diversifying its asset portfolio by fuel, geography and technology and continues to develop a pipeline of diverse projects to enable to AGL to adapt to an evolving regulatory environment. Australia's energy markets are undergoing a significant period of transition, characterised principally in the shift away from thermal power generation towards a greater penetration of utility-scale renewable energy sources and distributed energy resources driven by customers. AGL is engaged in several demand response programs in collaboration with the Australian Renewable Energy Agency (ARENA) and the Australian Energy Market Operator (AEMO). Our demand response program in New South Wales contracted by ARENA and AEMO will deliver 20 MW in total over three years. In its first year, the program will deliver 17 MW of commercial and industrial demand response and 1 MW of demand response from AGL's residential customers. The residential component will increase to 2 MW in the second year and 3 MW in the final year. AGL has contracted separately with AEMO to provide demand response for the period 1 November 2017 to 31 March 2018. The scale of this program is initially contracted at 10 MW and is anticipated to increase to a higher scale. AGL anticipates that the role of traditional generation will increasingly be met by flexible distributed energy resources and a range of low-emissions generation. However, the proliferation of distributed energy resources within a broader generation mix will require a commensurate ability to co-ordinate those assets to maximise the benefit to the primary and ancillary wholesale markets.   |
| Legal               | Relevant, always included | Most legal risks associated with climate change for AGL relate to potential non-compliance with existing climate-change related regulations, including reporting obligations and compliance with certificate schemes. Additionally, instances of climate change related litigation are emerging overseas, along with the consideration that Directors of emissions-intensive companies have a legal duty to disclose a foreseeable risk of harm to the company.  |
| Market              | Relevant, always included | Australia's energy markets are undergoing a significant period of transition, characterised principally in the shift away from thermal power generation towards a greater penetration of utility-scale renewable energy sources and distributed energy resources driven by customers. The progressive reduction in thermal generation capacity within the National Electricity Market has been accompanied by an increased focus on system security, reliability, and energy management systems. As the generation mix changes to incorporate a growing amount of renewable energy, demand for energy services such as Frequency Control Ancillary Services (FCAS), reactive power, and inertia will increase as the traditional suppliers of these services (i.e. thermal power stations) exit the market. As AGL transitions away from our existing coal-dominated electricity generation portfolio, we intend to replace it with a mix of technologies with a significantly lower carbon intensity whilst remaining both cost-effective and reliable.   |
| Reputation          | Relevant, always included | Through our Greenhouse Gas Policy, AGL has made a series of specific commitments in relation to climate-change. We expect that our stakeholders will scrutinise our performance in this regard and hold us to account, and recognise the risk of a detrimental impact to AGL's reputation should these commitments not be upheld.  |
| Acute physical      | Relevant, always included | Climate change has the potential to increase the frequency and severity of extreme weather events in Australia, including floods, fires, and natural disasters. AGL has assessed the associated risk of operational disruption resulting in plant damage or unavailability and revenue losses. While in the short term AGL considers the likelihood of this risk impacting upon its business to be low, AGL has devised a range of detective, preventative and corrective measures to manage this risk, including alarm and monitoring systems, water suppression systems, summer readiness audits, crisis management processes and separate plans to address asset management, dam safety management, bushfire mitigation, flood management and emergency response.   |
| Chronic physical    | Relevant, always included | Precipitation changes also have the potential to impact upon the efficacy of hydro generation assets in Australia. AGL owns and operates several hydro assets across Victoria and New South Wales. When these assets were acquired, a key element of the due diligence work undertaken involved long-term hydrology considerations. AGL engaged experts in this field and considered the risks associated with reduced rainfall and changes in rainfall patterns. AGL's hydro assets are predominantly peaking generation, typically only operating for a short period each week. Peakier demand created by changes in climatic conditions may increase the value of peak generation assets. In this context, AGL in June 2017 announced an investment of \$295 million in a 210MW gas-fired peaking power station in South Australia. Changes in rainfall in water catchments can result in water supply for hydro assets may be constrained. AGL has also completed detailed modelling designed to inform the public about the problems associated with higher temperatures and peak demand. Rising temperatures stemming from the effects of anthropogenic climate change have the potential to impact directly upon electricity demand patterns, given that electricity demand is heavily dependent on both economic growth and temperature. In the Australian market, it has been observed that, as temperatures rise, the demand for electricity also rises, particularly in summer seasons (due to higher air-conditioning usage). Given that demand can change quite rapidly due to higher temperatures, wholesale electricity prices at peak demand times have the potential to increase by several thousand percent. Current climate science indicates that temperatures (both average and peak) are likely to increase throughout the National Electricity Market (predominantly on Australia's east coast). This is likely to drive higher, peakier electricity demand and lower residential gas demand in winter.   |
| Upstream            | Relevant, always included | Peakier electricity load presents both risks and opportunities for AGL. As the owner of generation assets that operate during peak demand, peakier demand provides opportunity to bid electricity into the market at times of highest value. Conversely, as a retailer of electricity, AGL could be exposed to high costs if hedge contracts for supply do not match customer demand. Peak demand growth is significantly higher than underlying demand growth, so unit costs are increasing to recover capital expenditure on infrastructure that has a poor utilisation rate. Peakier electricity load may also present opportunities for businesses operating in demand response, to manage impacts on the electricity system and its effects upon anthropogenic climate change. AGL is engaged in several demand response programs and anticipates that these services will become an important feature of Australia's evolving energy markets. Such markets are likely to become even more important with increased deployment of variable non-hydro renewable resources as a strategy to mitigate climate change.  |
| Downstream          | Relevant, always included | Customers are increasingly adopting distributed energy solutions. These include embedded solar PV installations and energy efficiency with the potential to combine battery storage. Effective utilisation of this technology has the potential to impact the long-term demand for centralised electricity generation as well as impact the ability of price structures to reflect and therefore recover costs involved.   |

C2.2d



## **(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.**

AGL identifies and reviews its characterisation of climate change risks and opportunities in response to government policy and legislation/regulation, energy market conditions, public sentiment and information concerning the physical impacts of climate change on AGL's assets and the energy supply chain, as well as when AGL is making acquisitions and divestments. Opportunities and risks are assessed at the asset and portfolio level, with related demand and price scenarios modelled and built into earnings forecasts.

Climate change risks include both adaptation and mitigation, with risk identification, assessment and review conducted within the framework outlined. Some can be mitigated through physical intervention (e.g. changes in operations or maintenance protocols), while others require hedging, either through integrated portfolio management or using relevant financial instruments (e.g. weather derivatives).

## **C2.3**

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### **(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**

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### **(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**

Transition risk

#### **Primary climate-related risk driver**

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

#### **Type of financial impact driver**

Technology: Capital investments in technology development

#### **Company- specific description**

The Large-scale Renewable Energy Target (LRET) requires the generation of additional electricity from large-scale renewable sources by 2020 through to 2030. Retailers must contribute to the target through the purchase of Large Scale Generation Certificates (LGCs known previously as RECs). As a major retailer participating in the RET market, AGL is exposed to general price and volatility risk through this mandated scheme. The LRET was the subject of intense negotiation between major parties resulting in the downward revision of the target from 41000GWh to 33000GWh. While the increased certainty regarding the target has improved the risks associated with investment, the reduction in investment that took place prior to the RET target being re-set means that now, investment in approximately 5GW of renewable capacity needs to occur between now and 2020 in order to meet the RET. This continued investment challenge has resulted ongoing discussion as to the challenges of the Renewable Energy Target and contributes to underlying uncertainty as to the long term sustainability of renewable energy assets that impacts financing costs and levels of risk across the supply chain. With closure of thermal operating plant and increasing challenges of security and reliability, focus on the contribution of renewables intensifies and amplifies risks associated with renewable energy regulation and consequently investment

#### **Time horizon**

Medium-term

#### **Likelihood**

Virtually certain

#### **Magnitude of impact**

Medium-high

#### **Potential financial impact**

5100000000

#### **Explanation of financial impact**

AGL's management strategy involves investing directly in the renewable energy required to meet its share of the RET as well as facilitating co-investment via the Powering Australian Renewables Fund. AGL would need to invest approximately \$5.1 billion overall in order to meet its share of the mandated scheme.

#### **Management method**

AGL's business strategy balances the risk between upstream supply of energy and our customers' demand for energy. Vertical integration gives AGL a natural hedge against energy price movements, while providing access to multiple profit pools. Under this strategy AGL sets out its intentions to build new renewable generation to increase self-sufficiency under the LRET. AGL currently has sufficient LGCs to meet its consumer market and existing contracts for business customers for approximately 3 years. AGL recently announced an innovative method to address the risks associated with investment in

renewable energy. The Powering Australian Renewables Fund was developed by AGL as a potential solution to encourage investment in renewable energy. It provides the opportunity for like-minded organisations to directly invest in renewables and includes an innovative structure for 5 -10 year offtake arrangements. Instead of investing in single assets, the Fund provides an opportunity for investors to finance a portfolio of renewable assets, to diversify risk and reduce costs.

**Cost of management**

600000000

**Comment**

Over the past decade AGL has invested over \$3 billion in renewable electricity generation, in line with AGL's strategy to be largely self-sufficient in producing the LRECs required to meet AGL's obligations under the scheme. AGL also recently announced an innovative method to finance an estimated 1000MW of renewable energy. AGL has committed to invest \$200 million in equity to seed the fund.

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**Identifier**

Risk 2

**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 driver**

Market: Change in revenue mix and sources resulting in decreased revenues

**Company- specific description**

The Victorian Energy Efficiency Target Scheme (VEET) (2008 potentially to 2029) requires retailers to purchase energy efficiency savings through energy efficiency certificates to meet their individual targets, based upon market share of the overall target. The South Australian Residential Energy Efficiency Scheme (REES) requires retailers to procure energy efficiency activities (through certificates) applied at the household level. In addition, it requires 35% of the prescribed abatement to be sourced from low-income households. Retailers are also required to deliver a set number of energy audits for low-income households. As a liable entity under each scheme, AGL is exposed to general price and volatility risk through the mandated scheme.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Low

**Potential financial impact**

**Explanation of financial impact**

As a liable entity under each state based energy efficiency scheme, AGL is required to acquire certificates to satisfy its liability. These direct and indirect costs are reflected in energy tariffs for consumers, in either fixed or flexible charges. As with other environmental schemes, AGL seeks to minimise its costs by directly undertaking cost-effective certificate creation activities where possible, and also through trading activity.

**Management method**

AGL continues to provide access to and support for State-based energy efficiency schemes in Victoria and South Australia in particular, such as providing free home energy efficiency audits for certain South Australian customers facing financial hardship.

**Cost of management**

**Comment**

These actions are economic due to the introduction of the regulation (i.e. creation of a level playing field with competitors). AGL considers the management of liability costs for energy efficiency schemes a source of competitive advantage, where our approach offers opportunity to achieve lower costs than the market average.

---

**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: Enhanced emissions-reporting obligations

**Type of financial impact driver**

Policy and legal: Increased costs and/or reduced demand for products and services resulting from fines and judgments

**Company- specific description**

The National Greenhouse and Energy Reporting Scheme (NGER) requires emitters who exceed certain either facility or organisational thresholds to report emissions on a financial year basis. AGL is also exposed to reputational risk associated with non-compliance including impacts on brand and

penalties (i.e. fines) for non-compliance where AGL is a liable entity.

**Time horizon**

Medium-term

**Likelihood**

Very unlikely

**Magnitude of impact**

Low

**Potential financial impact**

360000

**Explanation of financial impact**

Non compliance with Section 19 of the NGER Act may attract a pecuniary penalty of up to \$360,000. In addition non compliance with section 22 of the Act may attract a penalty of up to \$180,000. There are additional costs associated with reputational impacts of non-compliance that have not been quantified.

**Management method**

AGL has developed its Energy and Greenhouse Gas Manual detailing its compliance approach for the National Greenhouse and Energy Reporting Act, including its commitment to undertaking assurance audits on a risk-determined basis. Compliance with legislation including the NGER Act is monitored by AGL's Group Risk, with quarterly reporting to the Board Audit and Risk Management Committee on AGL's state of compliance.

**Cost of management**

200000

**Comment**

Management costs include assurance costs and labour. These actions are economic due to the introduction of the regulation (i.e. creation of a level playing field with competitors).

**Identifier**

Risk 4

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

Direct operations

**Risk type**

Transition risk

**Primary climate-related risk driver**

Policy and legal: Other

**Type of financial impact driver**

Technology: Write-offs and early retirement of existing assets due to technology changes

**Company- specific description**

The increased level of commitment at international levels has increased the likelihood of implementation of policies to meet increasing international expectations with regard to emission reduction. Current Federal government stated targets align with the level of decarbonisation required under the Paris agreement. However, policy settings are currently limited to 2030 and there remains a live debate as to their ability to generate the level of emission reduction and decarbonisation required to meet these international obligations over the medium to long term. The ongoing lack of long term integration of energy and climate policy to the level required perpetuates the lack of certainty as to the structural decarbonisation of the energy generation sector which remains a material contributor to Australia's emission inventory (approx. 33%)

**Time horizon**

Long-term

**Likelihood**

Likely

**Magnitude of impact**

High

**Potential financial impact**

**Explanation of financial impact**

Given the current lack of policy integration, policy uncertainty and weak wholesale market prices, AGL faces increased risk regarding the development of its pipeline of potential renewable energy projects and other investments as wholesale electricity, LREC prices and valuation of carbon emission reduction is potentially below the level that would be required to provide a satisfactory return on investment. AGL is therefore unable to realise appropriate value from these investment opportunities at this time. In addition to this AGL is prevented from performing appropriate assessment of long term investment and capital requirements whilst there remains the level of uncertainty as to the target and policies designed to meet the target. This has the potential to impede efficient deployment of capital although it is difficult to quantify the extent of the financial implications in this situation given the challenges of developing an appropriate counterfactual situation.

**Management method**

AGL has actively participated in the public discourse on the need for long term policy and the need to integrate a range of policies to effect efficient decarbonisation. AGL has engaged proactively with industry, civil society and policy makers in the lead up to and during the COP21 conference in Paris. The AGL GHG Policy underpins a strategy that is committing to: o Decarbonisation of generation by 2050 o No investment in coal fired generation without CCS o End of life closure dates for 3 operating coal plants o Innovative renewable investment o Constructive engagement on energy and climate policy

Examples include: • Signed public statement alongside large Australian Corporates • Adoption of 3 core We Mean Business Commitments • Launched the Powering Australia Renewables Fund (PARF), a \$2-\$3 billion fund to invest in ~1,000 MW of large scale renewable projects –providing innovative financing solutions and risk diversification • Released to the market: "Powering a climate resilient economy" report an economic analysis of AGL operations within a carbon constrained future, specifically the current Australian NDC and a two degree constraint. This includes a specific modelling scenario that highlights economic value at risk (i.e. potential asset valuation impacts).

**Cost of management**

0

**Comment**

Risks are managed as part of business as usual operations, through policy engagement and AGL's energy market research program.

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**Identifier**

Risk 5

**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 driver**

Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

**Company- specific description**

The Emissions Reduction Fund - Safeguard Mechanism is designed to ensure that emissions reductions purchased by the Government are not offset by significant rises in emissions elsewhere in the economy. The safeguard mechanism is intended to set an emissions baseline which is not to be exceeded. As a generator, AGL risks penalties if we breach this baseline.

**Time horizon**

Medium-term

**Likelihood**

Exceptionally unlikely

**Magnitude of impact**

Low

**Potential financial impact**

**Explanation of financial impact**

This policy came into effect as at July 1 2016. In the event the industry baseline is exceeded AGL facilities would then be subject to individual assessments of their emissions performance versus a predetermined baseline. In the event AGL exceeds this individual baseline AGL may be subject to a penalty for the emissions above this baseline.

**Management method**

AGL has implemented internal reporting on a monthly basis in order to track emissions performance against the baseline, so as to be able to proactively manage emissions to remain below threshold levels.

**Cost of management**

0

**Comment**

Risks are managed as part of business as usual operations, along with minor additional reporting. There is a minimal additional cost to the business at present.

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**Identifier**

Risk 6

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

Customer

**Risk type**

Physical risk

**Primary climate-related risk driver**

Chronic: Rising mean temperatures

**Type of financial impact driver**

Increased operating costs (e.g., inadequate water supply for hydroelectric plants or to cool nuclear and fossil fuel plants)

**Company- specific description**

Demand for electricity in Australia is heavily dependent on economic growth and temperature. As temperatures rise, so too does the demand for electricity in summer because of higher utilisation of air conditioning. As demand can change quite rapidly due to higher temperatures, wholesale electricity prices at peak demand times can often increase by several thousand percent. Current climate science indicates that temperatures (both average and peak) are likely to increase throughout the National Electricity Market region (predominately Australia's east coast). This is likely to drive higher electricity demand and lower residential gas demand in winter. In summary, electricity demand is likely to become peakier with increased summer

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air-conditioning load and residential gas demand in winter is likely to fall.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium

**Potential financial impact**

50000000

**Explanation of financial impact**

Peakier electricity load provides potential upsides and downsides for AGL. As owner of generation assets that operate during peak demand, peakier demand provides opportunity to bid electricity into the market at times of highest value. Conversely, as a retailer of electricity, AGL could be exposed to high costs if hedge contracts for supply do not match customer demand. Unhedged exposure to high wholesale prices (even for a relatively short time) could cost AGL tens of millions of dollars.

**Management method**

AGL's business strategy balances risk between upstream supply of energy and our customers' demand for energy. Vertical integration provides AGL with a natural hedge against energy price movements, whilst providing access to multiple profit pools. Horizontal integration through operating across the National Electricity Market provides further diversification of our earnings streams. Another management method AGL has recently undertaken is investment in a Virtual Power Plant (VPP) in South Australia. The VPP was developed to demonstrate alternative ways to manage peaks in energy demand, contribute to grid stability and support the higher penetration of intermittent, renewable generation on the grid. AGL's business strategy, together with AGL's position as an early mover in renewable energy investment will act to mitigate risks related to peakier energy demand and associated price volatility

**Cost of management**

**Comment**

The costs associated with these actions are relatively minor (compared to business as usual). To put these risks in perspective, the price of electricity in the wholesale electricity market can increase from an underlying average of around \$50/MWh to \$14,100 in half an hour (an increase of 25,000%).

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**Identifier**

Risk 7

**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 driver**

Write-offs and early retirement of existing assets (e.g., damage to property and assets in "high-risk" locations)

**Company- specific description**

AGL owns a number of power stations and gas production assets in the eastern states of Australia. The risks to AGL include both physical damage and reduced supply reliability. Physical damage could result from increased incidences of violent storms and reduced operating capacity. In turn, reduced supply reliability could potentially impact on our portfolio position (ability to cost effectively supply retail customers).

**Time horizon**

Medium-term

**Likelihood**

About as likely as not

**Magnitude of impact**

Medium

**Potential financial impact**

**Explanation of financial impact**

The thermal efficiency of power stations declines in hotter weather. AGL (like all market participants) is exposed to higher costs through lower efficiency as temperatures warm. Wholesale electricity and gas markets are quite volatile, unexpected outages due to storms and other climate change can have significant financial implications.

**Management method**

To ensure that current and anticipated physical risks are identified and addressed in relevant areas across the business, AGL has conducted detailed presentations for staff on climate science and climate policy. AGL has recently revised its GHG policy to ensure commitments that align to the Government supported 2 degree goal.

[http://www.agl.com.au/~media/AGL/About%20AGL/Documents/Media%20Center/Corporate%20Governance%20Policies%20Charter/1704015\\_GHG\\_Policy\\_Final.pdf](http://www.agl.com.au/~media/AGL/About%20AGL/Documents/Media%20Center/Corporate%20Governance%20Policies%20Charter/1704015_GHG_Policy_Final.pdf) AGL has also modelled 2 degree scenarios and the current NDC scenario in our TCFD compliant report 'Powering a climate-resilient economy' available here: <https://www.agl.com.au/~media/agl/media/documents/about-agl/sustainability/sustainability-report/2018-tcdf.pdf?la=en&hash=90EB3F65F0B8FE5372F1C91E227813898E410F3C>

**Cost of management**

0

**Comment**

The costs associated with these actions are relatively minor (compared to business as usual)

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**Identifier**

Risk 8

**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 driver**

Increased operating costs (e.g., inadequate water supply for hydroelectric plants or to cool nuclear and fossil fuel plants)

**Company- specific description**

AGL owns a number of hydro assets in Victoria and New South Wales. When these assets were acquired, a key element of the due diligence work undertaken involved long-term hydrology considerations. AGL engaged experts in this field and considered the risks associated with reduced rainfall and changes in rainfall patterns

**Time horizon**

Unknown

**Likelihood**

Unknown

**Magnitude of impact**

Medium-high

**Potential financial impact****Explanation of financial impact**

AGL's hydro assets are predominantly peaking generation, typically only operating for a short period each week. Peakier demand created by changes in climatic conditions will increase the value of peak generation assets. AGL has recently announced an investment of \$295 million in a 210MW gas fired peaking power station in South Australia (<http://aglblog.com.au/2017/06/agl-announces-development-of-295-million-power-station-in-south-australia/>) Based on the predictions for precipitation changes, AGL notes water supply for hydro assets may be constrained, however, this risk is counterbalanced by the increasing financial value of peak electricity supplies.

**Management method**

AGL's management strategies include: - Investing in peaking power stations. - Minimising exposure to peak electricity prices through integrated portfolio management and the use of hedging contracts, insurance and other financial instruments. - Considering new technologies opportunities such as the smart metering technologies. AGL has also completed detailed modelling designed to inform the public about the problems associated with higher temperatures and peak demand. This research can be found at: <http://www.sciencedirect.com/science/article/pii/S1040619013000870>

**Cost of management****Comment**

The costs associated with these actions are relatively minor (compared to business as usual)

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**Identifier**

Risk 9

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

Customer

**Risk type**

Transition risk

**Primary climate-related risk driver**

Market: Changing customer behavior

**Type of financial impact driver**

Market: Reduced demand for goods and/or services due to shift in consumer preferences

**Company- specific description**

Customers are increasingly adopting distributed energy solutions. These include embedded solar PV installations and energy efficiency with the potential to combine battery storage. Effective utilisation of this technology has the potential to impact the long term demand for centralised activity as well as impact the ability of price structures to reflect and therefore recover costs involved.

**Time horizon**

Short-term

**Likelihood**

Very likely

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**Magnitude of impact**

Medium

**Potential financial impact****Explanation of financial impact**

Growing awareness is driving consumer purchasing decisions. Generous subsidies have driven the uptake of over 4 GW of new solar PV in Eastern Australia. Lower aggregate demand for electricity acts to suppress wholesale electricity prices which affects the value of electricity produced by AGL's power generation assets.

**Management method**

AGL has developed products designed to focus on the emerging technology and distributed generation market. While this may compete with certain parts of AGL's established retail business, it will also position AGL to capitalize on and maximize the opportunities from this growing area of energy services.

**Cost of management****Comment**

AGL considers the increasing interest of customers in energy efficiency and distributed generation as a business opportunity, with AGL's new offerings designed to build shareholder value (rather than a risk management cost).

**Identifier**

Risk 10

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

Customer

**Risk type**

Transition risk

**Primary climate-related risk driver**

Reputation: Increased stakeholder concern or negative stakeholder feedback

**Type of financial impact driver**

Reputation: Reduction in capital availability

**Company- specific description**

AGL is also aware that investors and consumers are increasingly focused on climate change and the commercial risks and opportunities associated with reductions in greenhouse gas emissions. AGL maintains a large operational footprint that increases the risk of investors focusing on the carbon intensity of the organization. Over 600 asset owners and asset managers, with combined assets of approximately USD\$20 trillion are currently subscribed to the United Nations Principles of Responsible Investment (SAM, The Sustainability Yearbook 2010). Furthermore CDP represents 534 institutional investors, with USD\$64 trillion in assets under management (CDP website). As a business AGL has increased its focus on reducing its exposure to regulatory risks and explaining climate change risks and opportunities to investors who are increasingly integrating carbon exposure into their analyses. AGL is also concerned about the lack of understanding, that sometimes exists, about how regulatory requirements impact on business profitability.

**Time horizon**

Medium-term

**Likelihood**

Likely

**Magnitude of impact**

Medium

**Potential financial impact****Explanation of financial impact**

Investor perception influences the cost of capital for AGL, and hence ultimately its competitiveness. Reduced credit ratings and lower demand for AGL equity will result in increased financing costs, which can significantly increase the costs for AGL to build or acquire new generation and gas assets, in comparison to its competitors.

**Management method**

AGL actively engages with analysts and the investment community to provide education about how carbon regulation will impact on AGL's business. We have published a paper to try to provide a more uniform approach to assessing carbon risk. It is available at:

<http://www.emeraldinsight.com/journals.htm?articleid=1949829&ini=aob&> In 2018 AGL published a TCFD compliant report 'Powering a climate resilient economy' to engage with the investment community on climate change risks and opportunities. it is available here: [https://www.agl.com.au/-/media/aglmedia/documents/about-agl/sustainability/sustainability-report/2018-tcfd.pdf?](https://www.agl.com.au/-/media/aglmedia/documents/about-agl/sustainability/sustainability-report/2018-tcfd.pdf?la=en&hash=90EB3F65F0B8FE5372F1C91E227813898E410F3C)

[la=en&hash=90EB3F65F0B8FE5372F1C91E227813898E410F3C](https://www.agl.com.au/-/media/aglmedia/documents/about-agl/sustainability/sustainability-report/2018-tcfd.pdf?la=en&hash=90EB3F65F0B8FE5372F1C91E227813898E410F3C) AGL investor presentations include discussion regarding climate change policy, the impacts on the energy industry and the impacts on AGL. AGL is executing a multifaceted strategy to engage policy makers, stakeholders and consumers on its approach to managing the transition to a decarbonized generation sector. Outline in our GHG Policy

[http://www.agl.com.au/-/media/AGL/About%20AGL/Documents/Media%20Center/Corporate%20Governance%20Policies%20Charter/1704015\\_GHG\\_Policy\\_Final.pdf](http://www.agl.com.au/-/media/AGL/About%20AGL/Documents/Media%20Center/Corporate%20Governance%20Policies%20Charter/1704015_GHG_Policy_Final.pdf) An examples of this strategy 'The Powering Australia Renewables Fund' is a \$2-\$3 billion fund to invest alongside institutional organisations in ~1,000 MW of large scale renewable projects providing innovative financing solutions and risk diversification

**Cost of management**

0

**Comment**

Costs associated with these actions The costs associated with these actions are relatively minor (compared to business as usual)

**Identifier**

Risk 10

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

Direct operations

**Risk type**

Transition risk

**Primary climate-related risk driver**

Market: Uncertainty in market signals

**Type of financial impact driver**

Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

**Company- specific description**

At present the South Australian Energy market is undergoing a rapid change in the generation stock serving the state. A combination of factors including high renewable energy penetration, increased gas prices and reduced demand have made continued operation of in-State thermal assets unviable and there is a predicted lack of firm or dispatchable capacity. This situation resulted extreme prices in the 2016 FY causing National coverage and in September 2016 SA experienced a statewide blackout. Subsequent political responses have polarised the energy debate and crystallised the lack of long term certainty creating market dysfunction with parallel high forward prices and corresponding lack of investment in appropriate generation. This situation is increasing the risk and volatility associated with the National energy market and is having economy wide impacts.

**Time horizon**

Short-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium-high

**Potential financial impact****Explanation of financial impact**

As a large retailer and generator within the state of South Australia the impact of a scenario that results in inadequate capacity within South Australia poses a significant risk to AGL. As such in order to mitigate the risk to the greatest extent possible AGL is required absorb ongoing increased operational costs, which translates into reduced recovery of appropriate revenues.

**Management method**

AGL actively engages with policy makers and stakeholders to identify and frame the issues currently developing in South Australia. AGL highlights the need for both a long term evolution of the energy market signals to facilitate appropriate investment in capacity and ancillary services. In June 2017 AGL announced that it would invest \$295 million to develop a 210 MW gas driven peaking power station to be built in South Australia.

**Cost of management**

300000000

**Comment**

The costs of management are associated with the capital costs of the new Barker Inlet Power Station in South Australia

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**C2.4**

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**(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**

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**(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**

Resource efficiency

**Primary climate-related opportunity driver**

Use of more efficient production and distribution processes

**Type of financial impact driver**

Reduced operating costs (e.g., through efficiency gains and cost reductions)

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**Company- specific description**

AGL sees an opportunity to develop more efficient processes at our electricity generation assets, particularly our thermal plant, through a heat rate improvement programme.

**Time horizon**

Current

**Likelihood**

Likely

**Magnitude of impact**

Low

**Potential financial impact**

30000000

**Explanation of financial impact**

AGL has been able to save both fuel use in thermal plant and increase electricity available for export and sale through reducing parasitic loads and increasing thermal efficiency.

**Strategy to realize opportunity**

AGL has a working group of engineers and other specialists to look at the most effective way of increasing thermal efficiency as well as assessing proposed projects. The operations team in conjunction with the working group is setting up thermal efficiency monitoring of plant to ensure they are operated at peak efficiency and to determine opportunities for savings.

**Cost to realize opportunity**

5000000

**Comment**

\$5 million of capital has been set aside as an initial fund for energy efficiency projects. Other projects have and will be funded out of the standard OPEX budget.

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**Identifier**

Opp2

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

Direct operations

**Opportunity type**

Energy source

**Primary climate-related opportunity driver**

Use of lower-emission sources of energy

**Type of financial impact driver**

Returns on investment in low-emission technology

**Company- specific description**

The Large-scale Renewable Energy Target (LRET) requires the generation of an additional 33,000 GWh per year of electricity from large-scale renewable sources by 2020 through to 2030. Retailers must contribute to the 20% target through the purchase of Large Scale Generation Certificates (LGCs, known previously as RECs). AGL has several new renewable generation development opportunities which could be developed

**Time horizon**

Medium-term

**Likelihood**

Likely

**Magnitude of impact**

Medium

**Potential financial impact****Explanation of financial impact**

The Renewable Energy Target provides AGL with the regulatory support to develop its pipeline of renewable energy projects. AGL has committed to invest 200 million dollars of equity funding in the PARF fund from FY2016

**Strategy to realize opportunity**

AGL's integrated business strategy balances the risk between upstream supply of energy and our customers' demand for energy. Vertical integration gives AGL a natural hedge against energy price movements, while providing access to multiple profit pools. Under this strategy AGL also sets out its intentions to build new renewable generation to increase self-sufficiency under the LRET.

**Cost to realize opportunity****Comment**

AGL's management strategy involves investing directly in the renewable energy required to meet its share of the RET. To date AGL has invested \$3 billion. In addition to direct investment AGL has facilitated innovative investment via the Powering Australian Renewables Fund, which included providing equity of \$200 million to seed the fund. As part of PARF the 200 MW Silverton Wind Farm and 453 MW Coopers Gap Wind Farm commenced construction in 2017.

**Identifier**

Opp3

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

Direct operations

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development of new products or services through R&D and innovation

**Type of financial impact driver**

Increased revenue through demand for lower emissions products and services

**Company- specific description**

In Victoria, NSW and South Australia, there are energy efficiency schemes in place. Each of these schemes places a liability on energy retailers to undertake energy efficiency activities. The schemes are certificated and require retailers to purchase energy efficiency certificates to meet their individual targets (based upon market share of the overall target). AGL has partnered with energy efficiency providers to create a substantial volume of certificates under each scheme. In SA, retailers are also required to deliver a set number of energy audits for low-income households.

**Time horizon**

Short-term

**Likelihood**

Very likely

**Magnitude of impact**

Low

**Potential financial impact****Explanation of financial impact**

As a liable entity under each state-based energy efficiency scheme, AGL is required to acquire certificates to satisfy its liabilities. These direct and indirect costs are reflected in energy tariffs for consumers, in either fixed or flexible charges. As with other environmental schemes, AGL seeks to minimise its costs by directly undertaking cost-effective certificate creation activities where possible, and also through trading activities.

**Strategy to realize opportunity**

These schemes provide AGL with opportunity to strengthen its customer interface and secure new customers. As these schemes effectively require liable entities such as AGL to enter households and assist with upgrading energy performance, AGL uses this liability as an opportunity to make new sales, and position itself in the mind of consumers as the leading renewable energy and low-emission energy provider.

**Cost to realize opportunity****Comment**

These actions are economic due to the introduction of the regulation (i.e. creation of a level playing field with competitors). AGL considers the management of liability costs for energy efficiency schemes a source of competitive advantage, where our approach offers the opportunity to achieve lower costs than the market average.

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**Identifier**

Opp4

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

Customer

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development of new products or services through R&D and innovation

**Type of financial impact driver**

Better competitive position to reflect shifting consumer preferences, resulting in increased revenues

**Company- specific description**

Recent developments with the cessation of thermal power have increased the need for system security, reliability and management services - these have increased the potential need for innovative integrated battery systems to assist in grid management

**Time horizon**

Current

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium

**Potential financial impact****Explanation of financial impact**

Increasing focus on alternative sources of grid management services will enable AGL to better integrate cost effective hedging and management

strategies over the longer term with the potential for additional revenue streams at a customer and grid level as technology and processes mature

**Strategy to realize opportunity**

AGL's integrated business strategy balances the risk between the upstream supply of energy and our customers' demand for energy. Integrated battery systems provide the potential for solar/battery products and energy management products to enable coordinated control of energy and grid management demand

**Cost to realize opportunity**

**Comment**

The current economics have required Federal assistance to maintain commercial viability and as such are cost neutral in the current environment, given a maturing process and technology the investment will ensure further investments in these areas are increasingly economic.

**Identifier**

Opp5

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

Customer

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development of new products or services through R&D and innovation

**Type of financial impact driver**

Better competitive position to reflect shifting consumer preferences, resulting in increased revenues

**Company- specific description**

Increases in peak demand due to maximum temperatures increasing provide opportunities for developing new technologies and products and services to assist our customers better manage their demand and embed ourselves further as our customers' preferred energy supplier. AGL has been a leading contributor to the public debate around the need for time of use (ToU) pricing and smart metering technology. Contestability in metering services and the introduction of ToU pricing will allow AGL to provide services to allow customers to cost effectively address changes in temperature extremes.

**Time horizon**

Short-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium

**Potential financial impact**

**Explanation of financial impact**

Climate change may impact customers' energy usage patterns. Peak demand growth is significantly higher than underlying demand growth, so unit costs are increasing to recover capital expenditure on infrastructure that has a poor utilisation rate. AGL is pursuing the provision of smart grid technologies. AGL is working with our customers to manage peak demand through demand management products and integrated coordinated battery systems.

**Strategy to realize opportunity**

AGL has developed new businesses aimed at reducing risks associated with supplying customers with energy. An innovative new service trialled by AGL customers has highlighted the potential for them to eliminate waste and save money by turning appliances off rather than leaving them on stand-by mode. The trial from July to October 2017 gave 3,000 customers with digital electricity meters in Victoria, New South Wales, Queensland and South Australia greater insight into how energy was being used in their homes by breaking down energy consumption by specific household electrical appliance categories. In June 2017 AGL announced that it would invest \$295 million to develop a 210 MW gas driven peaking power station to be built in South Australia.

**Cost to realize opportunity**

300000000

**Comment**

The current economics have required Federal assistance to maintain commercial viability and as such are cost neutral in the current environment, given a maturing process and technology the investment will ensure further investments in these areas are increasingly economic. The costs to realise opportunity are associated with the capital costs of the new Barker Inlet Power Station in South Australia.

**Identifier**

Opp6

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

Customer

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Shift in consumer preferences

**Type of financial impact driver**

Better competitive position to reflect shifting consumer preferences, resulting in increased revenues

**Company- specific description**

Climate change is an increasing issue in the minds of civil society and consumers. The ability to be a constructive leader in the development of coherent and constructive policy will enable AGL to increase its standing within the community. With a material footprint AGL has the opportunity to demonstrate to the community that it is taking the responsibility for managing its emissions prudently and appropriately. This enables AGL to develop a level of trust with government, the community and other stakeholders and enable effective discussion on the need for long term and sustainable carbon policy in line with the Federal Government supported 2 degree goal.

**Time horizon**

Current

**Likelihood**

Virtually certain

**Magnitude of impact**

High

**Potential financial impact****Explanation of financial impact**

Customers are increasingly concerned about climate change and are looking to be associated with organisations that are pursuing constructive approaches to resolving these issues. Both investors and consumers are looking for organisations that demonstrate a constructive understanding of the issues and are seeking to lead the discussion and planning for decarbonisation in the timeframes required under a 2 degree scenario.

**Strategy to realize opportunity**

AGL has a GHG Policy. This provides overarching direction to facilitate a range of activities that will develop trust with investors, stakeholders and the community over time. The policy is available here:

[http://www.agl.com.au/~media/AGL/About%20AGL/Documents/Media%20Center/Corporate%20Governance%20Policies%20Charter/1704015\\_GHG\\_Policy\\_Final.pdf](http://www.agl.com.au/~media/AGL/About%20AGL/Documents/Media%20Center/Corporate%20Governance%20Policies%20Charter/1704015_GHG_Policy_Final.pdf) In addition the GHG policy has provided the catalyst for the following actions: •The Powering Australia Renewables Fund (PARF), a \$2-\$3 billion fund to invest alongside institutional organisations in ~1,000 MW of large scale renewable projects –providing innovative financing solutions and risk diversification

**Cost to realize opportunity**

0

**Comment**

AGL does not expect there to be costs other than business as usual costs with these actions.

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**C2.5**

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

|                                      | Impact        | Description  |
|--------------------------------------|---------------|--|
| Products and services                | Impacted      | Innovation will play a central role in facilitating the global economy's continued growth in a carbon constrained future. Customers are driving a shift away from the traditional, linear electricity supply chain, to a more decentralised and bi-directional market. In addition to up to one in four households across Australia having installed solar PV, a proliferation of more advanced distributed energy resources (for example, digital metering, smart inverters, energy storage, energy management systems, household appliance with smart controls) are now entering the consumer market. These developments are affecting grid utilisation and fundamentally changing the way in which consumers interact with the electricity grid. Rapid advancements in technology are also driving customers' uptake of distributed energy resources. Due to the rate of change regarding technology uptake there is some risk of owning stranded assets resulting in a lower return on investment. As the energy sector transitions towards new technologies, there is also the risk that those new technologies may not perform as expected. AGL is committed to making available innovative and cost-effective solutions for our customers such as distributed renewable generation, battery storage, and demand management solutions.   |
| Supply chain and/or value chain      | Impacted      | AGL's supply chain includes significant amounts of black coal and natural gas purchases. Form the position of Black coal AGL has determined in it's GHG policy to move away from that fuel source by 2035 as a material source of energy for electricity generation. Additionally due to the lower intensity of natural gas and increased demand for the fuel in Australia, AGL is currently examining the possibility of importing LNG into Australia at ac facility in Victoria. This facility if completed, would be the first of it's king in Australia.   |
| Adaptation and mitigation activities | Impacted      | As AGL transitions away from our existing coal-dominated electricity generation portfolio, we intend to replace it with a mix of technologies with a significantly lower carbon intensity whilst remaining both cost-effective and reliable. The AGL Greenhouse Gas Policy plays a key role in the business's strategy. The Board endorsed Greenhouse Gas Policy restated our acceptance of the science of climate change, the likely outcome of decarbonisation of both the economy and electricity generation system and made the following commitments: • AGL will continue to provide the market with safe, reliable, affordable, and sustainable energy options. • AGL will not build, finance, or acquire new conventional coal-fired power stations in Australia (i.e. without CCS). • AGL will not extend the operating life of any of its existing coal-fired power stations. • By 2050, AGL will close all existing coal-fired power stations in its portfolio. • AGL will improve the greenhouse gas efficiency of our operations, and those in which we have an influence. • AGL will continue to invest in new renewable and near-zero emission technologies. • AGL will make available innovative and cost-effective solutions for our customers such as distributed renewable generation, battery storage, and demand management solutions. • AGL will incorporate a forecast of future carbon pricing into all generation capital expenditure decisions. • AGL will continue to be an advocate for effective long-term government policy to reduce Australia's emissions in a manner that is consistent with the long-term interests of consumers and investors. |
| Investment in R&D                    | Impacted      | AGL has developed a number of products and services to assist our customers to transition to a carbon constrained future. AGL's VPP, co-funded with the ARENA, seeks to demonstrate the value that grid-connected batteries can create for a range of stakeholders when managed as part of a coordinated virtual power plant. Once complete, AGL's VPP is expected to include 1,000 smart, connected batteries installed behind-the-meter, with a combined nameplate output of 5 MW and an energy storage capacity of more than 9.8 MWh. The project seeks to enable the 'stacking' of multiple values and demonstrates at a commercial scale the value that distributed energy technologies (solar and batteries in particular) can provide to three groups: • Consumers can use the batteries to self-consume more of their solar power by storing energy produced during the day that might otherwise be exported to the grid • Networks can benefit from peak load shaving and voltage management services that potentially avoids further infrastructure expenditure, and • Retailers can benefit from their reduced wholesale exposure during peak demand periods and using the battery to provide synthetic inertia and frequency balancing services. Importantly, all grid users stand to benefit from such an arrangement through reduced spending on network infrastructure and improved grid stability.   |
| Operations                           | Impacted      | As AGL transitions away from our existing coal-dominated electricity generation portfolio, we intend to replace it with a mix of technologies with a significantly lower carbon intensity whilst remaining both cost-effective and reliable. The AGL Greenhouse Gas Policy plays a key role in the business's strategy. The Board endorsed Greenhouse Gas Policy restated our acceptance of the science of climate change, the likely outcome of decarbonisation of both the economy and electricity generation system and made the following commitments: • AGL will continue to provide the market with safe, reliable, affordable, and sustainable energy options. • AGL will not build, finance, or acquire new conventional coal-fired power stations in Australia (i.e. without CCS). • AGL will not extend the operating life of any of its existing coal-fired power stations. • By 2050, AGL will close all existing coal-fired power stations in its portfolio. • AGL will improve the greenhouse gas efficiency of our operations, and those in which we have an influence. • AGL will continue to invest in new renewable and near-zero emission technologies. • AGL will make available innovative and cost-effective solutions for our customers such as distributed renewable generation, battery storage, and demand management solutions. • AGL will incorporate a forecast of future carbon pricing into all generation capital expenditure decisions. • AGL will continue to be an advocate for effective long-term government policy to reduce Australia's emissions in a manner that is consistent with the long-term interests of consumers and investors. |
| Other, please specify                | Please select |  |

**C2.6**

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

|   | Relevance     | Description   |
|---|---------------|---|
| Revenues                                  | Impacted      | AGL acknowledges that climate change risks and opportunities have the possibility of impacting upon revenues in many various ways and we have determined to ensure that AGL will continue to 'prosper in a carbon constrained future'. this is one of AGL's strategic imperatives and as such is incorporated in all strategic decision making.   |
| Operating costs                           | Impacted      | The transition of the electricity sector as a result of climate change has and will continue to result in many risks and opportunities for AGL. AGL realises that to continue to be competitive in an ongoing transitioning market investment in operational efficiencies need to be made . As an example AGL has invested over \$300 million in a customer experience transformation to ensure product and service quality at a competitive price. This has been achieved by limiting operating costs in this competitive environment.   |
| Capital expenditures / capital allocation | Impacted      | AGL's capital expenditure is focused around new generation plant which is covered by the AGL greenhouse gas policy. AGL's Board-endorsed Greenhouse Gas Policy restated its acceptance of the science of climate change, and the likely outcome of decarbonisation of both the economy and electricity generation system and made the following commitments: • AGL will continue to provide the market with safe, reliable, affordable, and sustainable energy options. • AGL will not build, finance, or acquire new conventional coal-fired power stations in Australia (i.e. without CCS). • AGL will not extend the operating life of any of its existing coal-fired power stations. • By 2050, AGL will close all existing coal-fired power stations in its portfolio. • AGL will improve the greenhouse gas efficiency of our operations, and those in which we have an influence. • AGL will continue to invest in new renewable and near-zero emission technologies. • AGL will make available innovative and cost-effective solutions for our customers such as distributed renewable generation, battery storage, and demand management solutions. • AGL will incorporate a forecast of future carbon pricing into all generation capital expenditure decisions. • AGL will continue to be an advocate for effective long-term government policy to reduce Australia's emissions in a manner that is consistent with the long-term interests of consumers and investors. An example of this is the AGL New South Wales Generation Plan. The NSW Generation Plan outlines a mix of high-efficiency gas-combustion peaking plant, renewables, battery, and demand response projects, coupled with an efficiency upgrade of Bayswater Power Station, and a synchronous condenser at the Liddell site. AGL plans to approve and deliver these projects in stages according to market conditions and requirements. The current proposed timeframe is: • Bayswater efficiency and capacity upgrade (100 MW) – approved • Renewables (1,600 MW) – first 953 MW approved* • Demand response (up to 150 MW) – first 20 MW approved • Liddell Synchronous Condenser – approved • Newcastle Gas Peaker (250 MW) – approved • Additional NSW Gas Peaker (500 MW) – feasibility in 2020 • Liddell Battery (250 MW) – feasibility in 2021 |
| Acquisitions and divestments              | Impacted      | AGL's GHG policy requires the incorporation of a carbon price included in acquisition of new assets, and precludes investment in new coal generation assets without CCS. Amid ongoing concerns about the affordability and reliability of energy, there were calls for AGL to sell or extend the operating life of the Liddell coal-fired power station in NSW. In response to this, AGL released its NSW Generation Plan in December 2017. In April 2018 AGL received an offer to acquire Liddell for a cash purchase price of \$250 million from Chow Tai Fook Enterprises and Alinta Energy Pty Limited. AGL rejected the offer from Alinta and reaffirmed the decision to close Liddell at the end of 2022 while continuing with our plan to invest in new generation and repurpose Liddell. The Australian Energy Market Operator has stated that AGL's plan, once implemented, will address any capacity and energy shortfall that may occur following Liddell's closure.   |
| Access to capital                         | Impacted      | AGL is transitioning to reporting that meets the principles of the International Integrated Reporting Framework. This will include TCFD compliant disclosures similar to those made in AGL's 'Powering a climate-resilient economy' report.   |
| Assets                                    | Impacted      | The largest impact on assets occurs as a result of our planned closure, by 2050, of all AGL's coal generation assets as outlined in our greenhouse gas policy. The first of the assets to close will be the Liddell Power Station in 2022. Amid ongoing concerns about the affordability and reliability of energy, there were calls for AGL to sell or extend the operating life of the Liddell coal-fired power station in NSW. In response to this, AGL released its NSW Generation Plan in December 2017. In April 2018 AGL received an offer to acquire Liddell for a cash purchase price of \$250 million from Chow Tai Fook Enterprises and Alinta Energy Pty Limited. AGL rejected the offer from Alinta and reaffirmed the decision to close Liddell at the end of 2022 while continuing with our plan to invest in new generation and repurpose Liddell. The Australian Energy Market Operator has stated that AGL's plan, once implemented, will address any capacity and energy shortfall that may occur following Liddell's closure.   |
| Liabilities                               | Impacted      | Along with the closure of AGL's coal fleet rests the liability of rehabilitation of those assets. In August 2017, AGL released its Rehabilitation Report. Consistent with its Greenhouse Gas Policy, it articulates clear time limits for the closure of its fossil fuel plants, providing certainty to communities and the market as to AGL's decarbonisation pathway. AGL is committed to working with stakeholders to connect rehabilitation priorities with emerging technologies and industries, enabling the best pre-conditions for future growth, diversification, and regional prosperity. AGL considers that the transition is likely to have concentrated impacts on those communities where coal-fired power stations and related mining activities are based. Working in partnership with local communities, governments, and other parts of industry to plan for rehabilitation can act as a catalyst for the broader social, economic, and environmental transition of these regions. The resultant AGL Transition Project is an outcome-oriented process designed to determine the best and most innovative use of site, existing infrastructure, and technologies.   |
| Other                                     | Please select |   |

**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

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

Through its strategic imperatives and key objectives, AGL is positioned to lead Australia's energy market transformation, and the risks and opportunities that climate change presents. AGL has two key strategic imperatives: to prosper in a carbon constrained future, and to build customer advocacy. These imperatives drive AGL's four key objectives: to transition from being a mass retailer to a personalised retailer, from being an operator of large assets to an orchestrator of both large and small assets, from coal-fired power to lower emissions technology, and from leading in existing markets to growing into new ones. These objectives are driving AGL's strategy and decision-making as AGL engages in the multi-decade transition of Australia's energy sector. AGL's strategy can be viewed in the 2018 Annual Report (<https://www.2018annualreport.agl.com.au/directors-report/our-strategy>). AGL's strategy includes its Greenhouse Gas Policy, which outlines its commitment to a range of measures that will drive the decarbonisation of Australia's energy sector while continuing our focus on customer affordability and system reliability.

We are committed to structuring our activities and operating our generation portfolio in a manner broadly consistent with the Commonwealth Government's commitment to a global agreement to limit global warming to less than 2°C above pre-industrial levels. Achieving the '2 degree' outcome will require transition to a decarbonised electricity generation sector. This is likely to take several decades given the sheer scale of replacing the existing generation fleet with low-emissions substitute technology. Furthermore, it will require further evolution of climate change policy, to encourage investment to achieve the significant cuts in emissions required by mid-century. Further discussion of these challenges is provided in the 'Energy market evolution' section of our Sustainability Report.

Our approach to transitioning to a low-carbon future is set out within AGL's Greenhouse Gas Policy (GHG Policy). Our GHG Policy acknowledges that Australia is moving to a carbon-constrained future, and provides a framework within which we will structure our greenhouse gas reduction activities. It also presents a pathway for the gradual decarbonisation of our generation portfolio by 2050.

The GHG Policy states that we will:

continue to provide the market with safe, reliable, affordable and sustainable energy options

not build, finance or acquire new conventional coal fired power stations in Australia (i.e. without carbon capture and storage)

not extend the operating life of any of our existing coal fired power stations

close, by 2050, all existing coal fired power stations in our portfolio

improve the greenhouse gas efficiency of our operations, and those over which we have influence

continue to invest in new renewable and near-zero emission technologies

make available innovative and cost-effective solutions for our customers, such as distributed renewable generation, battery storage, and demand management solutions

incorporate a forecast of future carbon pricing into all generation capital expenditure decisions, and

continue to be an advocate for effective long-term government policy to reduce Australia's emissions in a manner that is consistent with the long-term interests of consumers and investors.

Climate change is recognised by our stakeholders as an important issue for our business. We are working with our investors, customers, employees, communities in which we operate, the broader community, and governments, to clearly articulate the strategic steps we are taking to reduce emissions and transition to a carbon constrained future.

In FY18 we produced our first report in accordance with the principles set out by the Financial Stability Board's (FSB) Task-force of Climate-related Financial Disclosures (TCFD). Our report, entitled Powering a climate resilient economy, outlines the financial risks and opportunities that climate change presents to AGL, and our strategic approach to managing these risks and capitalising on these opportunities. The report refers to scenario analysis modelling we undertook in 2016 to understand the risks and opportunities associated with decarbonisation of our generation fleet. Utilising PLEXOS modelling software, three scenarios of the National Electricity Market were analysed:

no carbon constraint

a carbon constraint that provides a linear pathway from emissions in 2016 to a 26-28% reduction in 2030, and

a carbon constraint that represents a carbon budget consistent with limiting climate change (greenhouse and energy) to 2 degrees above pre-industrial levels.

The modelling shows that our power stations are likely to maintain much of their value in the shift to a carbon constrained world due to their relative low-cost and high efficiency. While the modelling is subject to uncertainty given the decadal timeframes involved, it is instructive for demonstrating the robustness of our assets across a range of potential outcomes.

The full analysis is presented in 'Carbon Constrained Future - AGL's approach to climate change mitigation: a scenario analysis' which was published in the 2016 AGL Sustainability Report.

Achieving significant cuts in emissions will require substantial new investment in renewable energy capacity and the gradual cessation of operations by existing thermal generators. We set out information on the investments we are making in the 'Renewable energy' section of our 2018 Sustainability Report, and how we are working with affected communities as we transition away from coal in the 'Power station transition and closure' section of our 2018 Sustainability Report.

Over FY18 we continued our work in line with the three specific commitments that we signed up to under the We Mean Business Coalition, a joint initiative of the Carbon Disclosure Project, the UN Global Compact and other global organisations. These public commitments comprise using an internal carbon price, reporting comprehensive climate change information in mainstream reports, and ensuring responsible corporate engagement regarding climate change policy.

### C3.1d

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

| Climate-related scenarios                  | Details   |
|--|---|
| 2DS  | In 2016, AGL undertook scenario analysis for a carbon constrained future. Utilising PLEXOS modelling software, three scenarios of the National Electricity Market were analysed: 1. no carbon constraint; 2. a carbon constraint that provides a linear pathway from emissions in 2016 to a 26-28% reduction in 2030 (the current Australian nationally determined contribution (NDC)); and 3. a carbon constraint that represents a carbon budget consistent with limiting climate change to 2 degrees above pre-industrial levels. Based upon evidence published by the IPCC, the total global 'carbon budget' that could be emitted between 2000 and 2050 with a view to maintaining a 67 percent chance of limiting global warming to 2 degrees Celsius is estimated at approximately 1,700 Gt of greenhouse gases. Given the difficulties associated with deriving a carbon budget for Australia, AGL utilised expert advice from the Climate Change Authority. In 2013, the Climate Change Authority stated: 'The Authority proposes a 'modified contraction and convergence' approach to calculating Australia's fair share of the global emissions budget. The approach is equitable and feasible. It involves a gradual convergence to equal per person emissions rights in the future. As a share of the global emissions budget, this implies a national budget of 10.1 Gt CO <sub>2</sub> -e for the period 2013 to 2050. This is about 17 years of emissions at current levels and can be met through a mix of domestic and international emissions reductions.' Adopting a 10.1 Gt (10,100 Mt) overarching carbon budget for Australia for the period 2013 to 2050, AGL has derived an emissions reduction trajectory for Australia and then subsequently the electricity sector and the National Electricity Market. The possible target for 2030, based on the 2-degree scenario, has been arrived at through the following parameters: • Australian carbon budget (2013-2050) of 10,100 Mt of emissions • Electricity sector share of budget of 3,363 Mt of emissions (as the electricity sector comprises around one-third of emissions, one-third of the national budget has been allocated to the electricity sector) • National Electricity Market budget of 3,026 Mt of emissions (as the National Electricity Market's emissions are approximately 90% of total Australian electricity sector emissions). The annual reduction in emissions was derived linearly from 2020 to reflect the current policy environment. Between 2020 and 2050, emissions are projected to be reduced by approximately 7 percent per annum which results in the sector being effectively decarbonised by 2050. AGL's GHG policy provides adequate guidance to allow an orderly transition towards a low carbon future with a 2-degree limit whilst mitigating the risks and optimising the opportunities. As expected, the analysis found that constraining emissions has a material impact on the generation mix within the National Electricity Market. Specifically, it shows that there is a reduction in both black and brown coal-fired output and a large increase in renewable energy generation. The modelling shows that AGL's power stations are likely to maintain much of their value in the shift to a carbon constrained world due to their relative low-cost and high efficiency, when compared to their peers. While the modelling is subject to significant uncertainty given the decadal timeframes involved, it is instructive for demonstrating the robustness of AGL's assets across a range of potential outcomes. |
| Nationally determined contributions (NDCs) | In 2016, AGL undertook scenario analysis for a carbon constrained future. Utilising PLEXOS modelling software, three scenarios of the National Electricity Market were analysed: 1. no carbon constraint; 2. a carbon constraint that provides a linear pathway from emissions in 2016 to a 26-28% reduction in 2030 (the current Australian nationally determined contribution (NDC)); and 3. a carbon constraint that represents a carbon budget consistent with limiting climate change to 2 degrees above pre-industrial levels. This scenario was developed to reflect the existing Commonwealth Government commitment made through the Intended Nationally Determined Contributions (INDC) process during 2015. This commitment is to reduce emissions by 26-28% of 2005 levels by 2030. In many ways this is seen as the 'minimum' emission reduction that is likely to apply in Australia given the agreement reached in Paris in December 2015 at the 21st Conference of the Parties (COP21) entrenches a 'ratchet mechanism'. This mechanism imposes an expectation that emission reduction targets will strengthen over time. The possible target for 2030, based on the NDC scenario, has been arrived at through the following parameters: • 2005 Australian electricity sector emissions – 195Mt • 2005 National Electricity Market emissions (the National Electricity Market's emissions are approximately 90% of total Australian electricity sector emissions – 175Mt • Target in 2030 (27% less than 2005) 128Mt As AGL operates only in the National Electricity Market, it is necessary to pro-rata emission reductions between this and other markets (e.g. the South-West Interconnected System in Western Australia). Using this pro-rata methodology yields an emission reduction target of 128 mt in 2030. To give effect to this target, the scenario utilises annual linear reductions in emissions that give effect to a 26-28% reduction by 2030, relative to 2005 levels. Emission reduction targets are not applied until 2020 to reflect the current policy environment. As expected, the analysis found that constraining emissions has a material impact on the generation mix within the National Electricity Market. Specifically, it shows that there is a reduction in both black and brown coal-fired output and a large increase in renewable energy generation. The modelling shows that AGL's power stations are likely to maintain much of their value in the shift to a carbon constrained world due to their relative low-cost and high efficiency, when compared to their peers. While the modelling is subject to significant uncertainty given the decadal time frames involved, it is instructive for demonstrating the robustness of AGL's assets across a range of potential outcomes.  |

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.**

Our approach to greenhouse gas emissions and climate change (greenhouse and energy) is documented within the AGL Greenhouse Gas Policy. This policy underpins a multifaceted approach to climate change and its associated risks. It is intended to give AGL a path to reducing its emissions by 2050 in line with the accepted science on the speed of decarbonisation required to avoid 2 degrees of warming.

The Board-endorsed Greenhouse Gas Policy restated our acceptance of the science of climate change, the likely outcome of decarbonisation of both the economy and electricity generation system and made the following commitments:

- AGL will continue to provide the market with safe, reliable, affordable, and sustainable energy options.
- AGL will not build, finance, or acquire new conventional coal-fired power stations in Australia (i.e. without CCS).
- AGL will not extend the operating life of any of its existing coal-fired power stations.
- By 2050, AGL will close all existing coal-fired power stations in its portfolio.
- AGL will improve the greenhouse gas efficiency of our operations, and those in which we have an influence.
- AGL will continue to invest in new renewable and near-zero emission technologies.
- AGL will make available innovative and cost-effective solutions for our customers such as distributed renewable generation, battery storage, and demand management solutions.
- AGL will incorporate a forecast of future carbon pricing into all generation capital expenditure decisions.
- AGL will continue to be an advocate for effective long-term government policy to reduce Australia's emissions in a manner that is consistent with the long-term interests of consumers and investors.

A clear example of the impact of AGL's strategy, informed by our Greenhouse Gas Policy, is to place clear time limits on the operation of our fossil fuel plants, providing certainty to communities and the market as to our decarbonisation pathway. We're proud that we announced these greenhouse gas commitments in the absence of government policy to do so, representing the leadership role that AGL has taken in decarbonisation of the Australian economy.

As outlined in the AGL Greenhouse Gas Policy, we use an internal carbon price as part of our assessment of strategic decisions. AGL also incorporates the same cost of carbon into planning and maintenance decisions through a capital budget allocation tool.

This modelling allows for the development of a conservative case for consideration by the relevant executive and board committees against internal investment hurdles.

Key to AGL's plan to decarbonise its electricity generation portfolio is the successful transition through closing and rehabilitating of our thermal assets. In 2017, AGL released its Rehabilitation Report, which outlined AGL's approach and plan to retire, rehabilitate and repurpose its ageing thermal assets in a manner that was inclusive of the needs of local communities, create investment in lower-carbon emissions, and maintain or improve grid stability. Importantly, the Rehabilitation Report identified closure dates for our thermal power stations, identified likely rehabilitation costs, and set out AGL's provisions for rehabilitation and repurposing of these assets. The Rehabilitation Report identifies that AGL is planning to close its thermal power stations by 2048, beginning with Liddell Power Station in 2022, Bayswater and Torrens power stations in 2035, and Loy Yang A Power Station in 2048.

Showing our commitment to our low-carbon transition plan and rehabilitation principles, in 2017 the AGL Board approved our NSW Generation Plan.

Our NSW Generation Plan outlines a mix of high-efficiency gas-combustion peaking plant, renewables, battery and demand response projects, coupled with an upgrade of Bayswater Power Station, and a synchronous condenser at the Liddell Power Plant site. We plan to approve and deliver these projects in stages according to market conditions and requirements.

- Bayswater efficiency and capacity upgrade (100 MW) – approved
- Renewables (1,600 MW) – first 953 MW approved
- Demand response (up to 150 MW) – first 20 MW approved
- Liddell Synchronous Condenser – approved
- Newcastle Gas Peaker (250 MW) – feasibility in 2019 or earlier
- NSW Gas Peaker (500 MW) – feasibility in 2020
- Liddell Battery (250 MW) – feasibility in 2021

This includes projects we have already committed to, including the Coopers Gap Wind Farm (453 MW to be fully operational by mid-2019), the Silverton Wind Farm (200 MW to be fully operational by mid-2018) and 300 MW of solar offtake that will underwrite the development of two new solar power stations in NSW. We are also considering the feasibility of building pumped hydro in the Hunter region.

## C4. Targets and performance

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### C4.1

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

Both absolute and intensity targets

### C4.1a

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

**Target reference number**

Abs 3

**Scope**

Scope 1

**% emissions in Scope**

78.7

**% reduction from base year**

100

**Base year**

2016

**Start year**

2016

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

34054514

**Target year**

2050

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

No, but we anticipate setting one in the next 2 years

**% achieved (emissions)**

0

**Target status**

Underway

**Please explain**

In FY2015, AGL committed in its Greenhouse Gas Policy to close all conventional coal power stations by 2050. Our approach to transitioning to a low-carbon future is set out within AGL's Greenhouse Gas Policy (GHG Policy). Our GHG Policy acknowledges that Australia is moving to a carbon-constrained future, and provides a framework within which we will structure our greenhouse gas reduction activities. It also presents a pathway for the gradual decarbonisation of our generation portfolio by 2050. The GHG Policy states that we will: \* continue to provide the market with safe, reliable, affordable and sustainable energy options \* not build, finance or acquire new conventional coal fired power stations in Australia (i.e. without carbon capture and storage) \* not extend the operating life of any of our existing coal fired power stations \* close, by 2050, all existing coal fired power stations in our portfolio \* improve the greenhouse gas efficiency of our operations, and those over which we have influence \* continue to invest in new renewable and near-zero emission technologies \* make available innovative and cost-effective solutions for our customers, such as distributed renewable generation, battery storage, and demand management solutions \* incorporate a forecast of future carbon pricing into all generation capital expenditure decisions, and \* continue to be an advocate for effective long-term government policy to reduce Australia's emissions in a manner that is consistent with the long-term interests of consumers and investors. Climate change is recognised by our stakeholders as an important issue for our business. We are working with our investors, customers, employees, communities in which we operate, the broader community, and governments, to clearly articulate the strategic steps we are taking to reduce emissions and transition to a carbon constrained future.

**Target reference number**

Abs 1

**Scope**

Scope 1

**% emissions in Scope**

17.5

**% reduction from base year**

100

**Base year**

2016

**Start year**

2016

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

7585578

**Target year**

2022

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

No, but we anticipate setting one in the next 2 years

**% achieved (emissions)**

0

**Target status**

Underway

**Please explain**

In FY2015 AGL committed in its Greenhouse Gas Policy to close all conventional coal power stations by 2050. This target represents the closure of the Liddell Power Station. While the emissions reduction resulting from this target will not be realised until the closure of Liddell Power Station in 2022, AGL has set out its plan to replace the energy and capacity of Liddell with renewable and lower-carbon electricity generation sources. Entitled the 'NSW Generation Plan', it outlines a mix of high-efficiency gas-combustion peaking plant, renewables, battery and demand response projects, coupled with an upgrade of Bayswater Power Station, and a synchronous condenser at the Liddell Power Plant site. We plan to approve and deliver these projects in stages according to market conditions and requirements. • Bayswater efficiency and capacity upgrade (100 MW) – approved • Renewables (1,600 MW) – first 953 MW approved • Demand response (up to 150 MW) – first 20 MW approved • Liddell Synchronous Condenser – approved • Newcastle Gas Peaker (250 MW) – feasibility in 2019 or earlier • NSW Gas Peaker (500 MW) – feasibility in 2020 • Liddell Battery (250 MW) – feasibility in 2021 This includes projects we have already committed to, including the Coopers Gap Wind Farm (453 MW to be fully operational by mid-2019), the Silverton Wind Farm (200 MW to be fully operational by mid-2018) and 300 MW of solar offtake that will underwrite the development of two new solar power stations in NSW. We are also considering the feasibility of building pumped hydro in the Hunter region. The NSW Generation Plan can be viewed on AGL's website at: <https://www.agl.com.au/-/media/agl/about-agl/documents/media-center/asx-and-media-releases/2017/171209nswgenerationplandecember2017.pdf?la=en&hash=529E1A89370A33DA8F378D761CEEF1D919C9C91D%3E>

**Target reference number**

Abs 2

**Scope**

Scope 1

**% emissions in Scope**

36.8

**% reduction from base year**

100

**Base year**

2016

**Start year**

2016

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

15912788

**Target year**

2035

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

No, but we anticipate setting one in the next 2 years

**% achieved (emissions)**

0

**Target status**

Underway

**Please explain**

In FY2015, AGL committed in its Greenhouse Gas Policy to close all conventional coal power stations by 2050. This target represents the closure of the Bayswater Power Station.

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+2 (location-based)

**% emissions in Scope**

99

**% reduction from baseline year**

10

**Metric**

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

**Base year**

2015

**Start year**

2018

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

0.97

**Target year**

2024

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

No, and we do not anticipate setting one in the next 2 years

**% achieved (emissions)**

0

**Target status**

Underway

**Please explain**

Based on AGL's commitments of closure in the AGL Greenhouse Gas Policy, AGL has targeted a 10% reduction in the emissions intensity of its operated generation by FY14 from a baseline year of FY15. AGL aims to meet this target through the expansion of our renewable generation fleet as well as the staged closure of our coal fired generation.

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

-20

**% 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 energy production

**KPI – Metric numerator**

Development of 1,000 MW of large-scale renewable generation

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

N/A

**Base year**

2016

**Start year**

2016

**Target year**

2020

**KPI in baseline year**

0

**KPI in target year**

1000

**% achieved in reporting year**

15.5

**Target Status**

Underway

**Please explain**

In February 2016, AGL announced the creation of the Powering Australian Renewables Fund (PARF), an innovative financing vehicle for renewable energy. The PARF was established to develop and own around 1,000 MW of large-scale renewable generation, which would require around \$2 to \$3 billion of total investment, and represent around 20 percent of the estimated 5,000 MW of new renewable generation capacity required by 2020 to meet the Federal Government's RET. In July 2016, the PARF was formally launched, with AGL agreeing to commit \$200 million in equity funding and QIC (via its clients the Future Fund and the QIC Global Infrastructure Fund) providing \$800 million of equity funding. The PARF has achieved three major milestones since inception: • In November 2016, AGL reached financial close on selling its existing 102 MW Nyngan and 53 MW Broken Hill solar plants into the fund. The total of 155 MW capacity from these two assets is approximately 15.5% of the targeted 1000 MW of renewable generation • In January 2017, AGL and the PARF reached financial close on the sale and subsequent construction of the 200 MW Silverton wind farm project in western New South Wales. This wind farm is targeted to be fully operational by the middle of 2018. • In August 2017, AGL and PARF reached a final investment decision on construction of the 453 MW Coopers Gap Wind Farm project approximately 250 km west of Brisbane.

**Part of emissions target****Is this target part of an overarching initiative?**

Other, please specify (Australian Federal Govt RET policy)

---

**Target**

Please select

**KPI – Metric numerator****KPI – Metric denominator (intensity targets only)****Base year****Start year****Target year****KPI in baseline year****KPI in target year****% achieved in reporting year****Target Status**

Please select

**Please explain****Part of emissions target****Is this target part of an overarching initiative?**

Please select

---

**Target**

Please select

**KPI – Metric numerator****KPI – Metric denominator (intensity targets only)****Base year****Start year****Target year****KPI in baseline year****KPI in target year****% achieved in reporting year****Target Status**

Please select

**Please explain****Part of emissions target****Is this target part of an overarching initiative?**

Please select

---

**(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       | 13                 | 212000   |
| To be implemented*        | 4                  | 463000   |
| Implementation commenced* | 12                 | 266000   |
| Implemented*              | 1                  | 37000  |
| Not to be implemented     | 1                  | 900  |

### C4.3b

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

**Activity type**

Energy efficiency: Processes

**Description of activity**

Machine replacement

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

38000

**Scope**

Scope 1

**Voluntary/Mandatory**

Voluntary

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

665000

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

20000000

**Payback period**

>25 years

**Estimated lifetime of the initiative**

21-30 years

**Comment**

High pressure (HP) and intermediate pressure (IP) turbine upgrade at Loy Yang A Power Station: Allows total rotor and seals to be overhauled. Allows rotating assembly to be changed out on HP/IP units and reduces outage time and cost. Ensure turbine heat rate is restored. Unit 1 new HD & IP was installed & commissioned late Dec 2017

### C4.3c

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

| Method                                 | Comment  |
|--|--|
| Dedicated budget for energy efficiency | AGL has a dedicated \$5,000,000 budget for energy efficiency projects at our thermal power stations.   |
| Employee engagement                    | AGL has an engagement plan being implemented across our operations group. We also have a team of employees dedicated to identifying and delivering emissions reductions. |
| Internal price on carbon               | AS per our GHG policy AGL uses a carbon price of \$12.50 / tonne when assessing all generation capital projects.   |
| Other                                  | AGL is developing a system to identify and quantify thermal efficiency opportunities across our thermal fleet.   |

C4.5

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**(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

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**(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**

Product

**Description of product/Group of products**

AGL Future Forest - Carbon Offset Product As Australia transitions to a cleaner energy future, carbon emissions remain a reality. Future Forests is an opt-in program for customers who want to reduce the environmental impact of their home energy use. For just a dollar a week, you can offset the carbon emissions associated with your household's electricity usage and fund the production of new Australian native forests.

**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 (Gold Standard VERs)

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

0.02

**Comment**

---

**Level of aggregation**

Product

**Description of product/Group of products**

AGL's Gree power product - selling 100% renewable energy to customers

**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 (National Greenpower)

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

0.15

**Comment**

---

**Level of aggregation**

Product

**Description of product/Group of products**

Sale and installation of solar PV systems to external clients

**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 (Internal methodology)

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

0.19

**Comment**

---

**Level of aggregation**

Product

**Description of product/Group of products**

Operational Energy Management, including Building Energy efficiency software - Software product that allows large multi-site customers to manage energy usage across those sites. Energy Efficiency Audits undertaken by AGL which lead to recommendation and the implementation of energy saving products and activities

**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 (Internal methodology)

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

0.02

**Comment**

---

C-EU4.6



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

AGL's total methane emissions for FY17 was 35,534 tCO<sub>2</sub>e, or 0.08% of total scope 1 emissions, these emissions are not material to AGL's total operated generation emissions footprint.

Around 3/4 of these methane emissions come from the combustion of fuels to produce electricity. The remainder are from natural gas production facilities. At these facilities over FY17 and FY18 AGL has replaced all our gas driven pneumatic devices to air driven devices in order to reduce fugitive emissions of methane.

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## C5. Emissions methodology

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### C5.1

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

**Scope 1**

**Base year start**

July 1 2015

**Base year end**

June 30 2016

**Base year emissions (metric tons CO<sub>2</sub>e)**

43258798

**Comment**

The 2015 / 16 Financial year was the first full reporting year to incorporate the emissions and generation from the AGL Macquarie assets; Bayswater and Liddell coal fired power stations. AGL's Scope 1 emissions are predominantly from the combustion of coal and natural gas for electricity production.

**Scope 2 (location-based)**

**Base year start**

July 1 2015

**Base year end**

June 30 2016

**Base year emissions (metric tons CO<sub>2</sub>e)**

517611.81

**Comment**

The 2015 / 16 Financial year was the first full reporting year to incorporate the emissions and generation from the AGL Macquarie assets; Bayswater and Liddell coal fired power stations.

**Scope 2 (market-based)**

**Base year start**

July 1 2015

**Base year end**

June 30 2016

**Base year emissions (metric tons CO<sub>2</sub>e)**

526491

**Comment**

The 2015 / 16 Financial year was the first full reporting year to incorporate the emissions and generation from the AGL Macquarie assets; Bayswater and Liddell coal fired power stations.

---

### 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.**

Australia - National Greenhouse and Energy Reporting Act

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

## C6. Emissions data

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### C6.1

---

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

**Row 1**

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

43441666

**End-year of reporting period**

<Not Applicable>

**Comment**

### 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**

### C6.3

---

**(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?**

**Row 1**

**Scope 2, location-based**

479969

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

488510

**End-year of reporting period**

<Not Applicable>

**Comment**

Market-based scope 2 emissions were calculated by netting out 100% green power purchases from our Eastwood and Bathurst offices, and Bogong and Dartmouth Hydro Power Stations, and using state-based emissions factors for the remaining electricity consumption.

### 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?**

No

### C6.5

---

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

## Purchased goods and services

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

### Emissions calculation methodology

N/A

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

### Explanation

The emissions from the extraction, production and transportation of all good and services purchased in the financial year are accounted for in the other categories below.

## Capital goods

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

122059

### Emissions calculation methodology

Capital goods purchased in the financial year comprised mainly of the wind turbines purchased for the construction of the Silverton Wind Farm. Total lifecycle emissions have been calculated from the embodied energy of the wind farm.

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

100

### Explanation

Assuming that the majority of Capex of non ongoing process came from the Silverton Wind Farm construction, we assume the capital goods purchased for FY17 to be wind turbines.

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

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

8664765

### Emissions calculation methodology

This is calculated by totaling the emissions from all the electricity consumed by AGL's customers then subtracting the portion of the electricity produced by AGL which is sold to customers. The emissions are calculated using state based emissions factors. In addition this includes the emissions from the combustion of all natural gas sold to AGL customers then subtracting the gas produced by AGL and sold to customers. Again these emissions are calculated using state based emission factors.

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

0

### Explanation

## Upstream transportation and distribution

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

6673

### Emissions calculation methodology

Upstream transportation of various wind turbine components from Germany, Spain and Vietnam. Using an a factor of 0.01 g of CO2e/kg/km of cargo transported by container ship multiplied by the total weight of cargo transported.

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

0

### Explanation

## Waste generated in operations

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

6739

### Emissions calculation methodology

Total waste broken down by type, multiplied by the relevant emission factor as per the Australian National Greenhouse Account Factors.

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

0

### Explanation

## Business travel

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

1105

### Emissions calculation methodology

Emissions calculated by adding emissions from flights as reported by our suppliers plus the emissions from hire cars calculated from the total km driven assuming an average fuel efficiency of 10.7L/100km for petrol vehicles and using NGER emissions factors.

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

50

### Explanation

## Employee commuting

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

7550

### Emissions calculation methodology

Using a breakdown of staff per work location and ABS statistics for type of travel and distance of travel, a model of an average commute per location was developed and emissions calculated using average fuel consumption for cars and NGER factors along with average emissions per journey for other methods of transport.

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

0

### Explanation

## Upstream leased assets

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

### Emissions calculation methodology

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

### Explanation

All leased assets are accounted for in the scope 1 and 2 emissions reported in the financial year.

## Downstream transportation and distribution

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

### Emissions calculation methodology

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

### Explanation

All products sold by the company which were provided to customers in the financial year were transported and distributed by vehicles under the operational control of AGL, and emissions were therefore reported as scope 1 emissions.

## Processing of sold products

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

### Emissions calculation methodology

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

### Explanation

There was no processing of intermediate products by AGL in the reporting year.

## Use of sold products

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

10100000

### Emissions calculation methodology

Calculated by multiplying the total natural gas sales to customers by the Standard NGER emissions factors.

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

0

### Explanation

## End of life treatment of sold products

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

2357

### Emissions calculation methodology

End of life emissions from the total number of PV systems sold in FY17. Assuming 0.3 tCO2e/kW of PV systems sold

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

### Explanation

## Downstream leased assets

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

### Emissions calculation methodology

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

### Explanation

AGL does not own and lease assets to entities over which it does not have operational control.

## Franchises

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

### Emissions calculation methodology

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

### Explanation

AGL does not have any franchises.

**Investments**

**Evaluation status**

Relevant, calculated

**Metric tonnes CO2e**

160000

**Emissions calculation methodology**

Includes the emissions from all assets which AGL has an equity stake.

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

**Explanation**

**Other (upstream)**

**Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e**

**Emissions calculation methodology**

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

**Explanation**

Upstream scope 3 emissions for the financial year are accounted for in the other categories above.

**Other (downstream)**

**Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e**

**Emissions calculation methodology**

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

**Explanation**

Downstream scope 3 emissions for the financial year are accounted for in the other categories above.

C6.7

---

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

Yes

C6.7a

---

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

105315.85

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**

0.0035

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

43930418

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

12584000000

**Scope 2 figure used**

Location-based

**% change from previous year**

11.1

**Direction of change**

Decreased

**Reason for change**

Increased revenue in FY17 cf. FY16, mainly due to higher wholesale customer sales volumes.

---

**Intensity figure**

0.98

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

43930418

**Metric denominator**

megawatt hour transmitted (MWh)

**Metric denominator: Unit total**

44983000

**Scope 2 figure used**

Location-based

**% change from previous year**

1.59

**Direction of change**

Increased

**Reason for change**

Emissions intensity has increased in FY17 compared to FY16 due to lower renewable generation in FY17. FY17 hydro generation was below recent results primarily due to the unseasonably high rainfalls in the winter and spring months of 2016. This resulted in significantly reduced irrigation releases from the major storages of Dartmouth and Eildon, and accordingly generation from these major hydro schemes. Wind generation was also below historical averages primarily due to two planned maintenance outages at Macarthur Wind Farm during the course of FY17 and an unseasonably low wind resource in the months of May and June 2017.

---

**Intensity figure**

12660

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

43930418

**Metric denominator**

full time equivalent (FTE) employee

**Metric denominator: Unit total**

3470

**Scope 2 figure used**

Location-based

**% change from previous year**

2.91

**Direction of change**

Decreased

**Reason for change**

A disproportionate increase in the number of FTE employees in FY17 to the slight increase in total emissions, due to increased employee retention in FY17 compared with FY16.

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**C7. Emissions breakdowns**

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**C7.1****(C7.1) Does your organization have greenhouse gas emissions other than carbon dioxide?**

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 CO2e) | GWP Reference   |
|----------------|---|---|
| CO2            | 43273471                                | Other, please specify (NGER Act 2007), <i>National Greenhouse and Energy Reporting Act 2007</i> |
| CH4            | 35534                                   | Other, please specify (NGER Act 2007)   |
| N2O            | 131889                                  | Other, please specify (NGER Act 2007)   |
| SF6            | 772                                     | Other, please specify (NGER Act 2007)   |

## 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 CO2 emissions (metric tons CO2) | Gross Scope 1 methane emissions (metric tons CH4) | Gross Scope 1 SF6 emissions (metric tons SF6) | Gross Scope 1 emissions (metric tons CO2e) | Comment  |
|------------------------------------|---|---|---|--|--|
| Fugitives                          | 3265  | 17110   | 0   | 20384                                      | Fugitive emissions arising from natural gas storage/processing/transmission at gas utilities, as well as from coal extraction at Loy Yang coal mine. |
| Combustion (Electric utilities)    | 43241308                                      | 18339   | 0   | 43391469                                   |  |
| Combustion (Gas utilities)         | 28218   | 84  | 0   | 28322                                      |  |
| Combustion (Other)                 | 0   | 0   | 0   | 0  |  |
| Emissions not elsewhere classified | 0   | 0   | 772   | 800  | Emissions not involving combustion or fugitive emissions: emissions from SF6 leakage and wastewater handling at electricity utility facilities.      |

## C7.2

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

| Country/Region | Scope 1 emissions (metric tons CO2e) |
|----------------|--------------------------------------|
| Australia      | 43441666                             |

## C7.3

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

By business division

By activity

## C7.3a

**(C7.3a) Break down your total gross global Scope 1 emissions by business division.**

| Business division         | Scope 1 emissions (metric ton CO2e) |
|---------------------------|-------------------------------------|
| AGL Loy Yang              | 18710989                            |
| AGL Macquarie             | 22965756                            |
| Gas and Renewables        | 1764282                             |
| Customer Markets          | 7                                   |
| Operations Support        | 432                                 |
| Project Management Office | 200                                 |



## C7.3c

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

| Activity  | Scope 1 emissions (metric tons CO2e) |
|---|--------------------------------------|
| Coal electricity generation                             | 41676745                             |
| Natural gas electricity generation                      | 1696728                              |
| Wind electricity generation                             | 746                                  |
| Hydro electricity generation                            | 119                                  |
| Large scale solar electricity generation                | 156                                  |
| Small scale generation (predominantly biogas & biomass) | 6502                                 |
| Cogeneration (electricity & steam)                      | 19025                                |
| Corporate offices                                       | 432                                  |
| Other activities  | 259                                  |
| Oil and gas exploration, production and storage         | 40954                                |

## 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 | Net Scope 1 emissions , metric tons CO2e | Comment   |
|--|---|--|---|
| Cement production activities                   | <Not Applicable>                          | <Not Applicable>                         | <Not Applicable>  |
| Chemicals production activities                | <Not Applicable>                          | <Not Applicable>                         | <Not Applicable>  |
| Coal production activities                     | <Not Applicable>                          | <Not Applicable>                         | <Not Applicable>  |
| Electric utility generation activities         | 43382988                                  | <Not Applicable>                         | Scope 1 emissions from all electric utility generation activities, excluding the coal mine component of AGL Loy Yang Power Station and Mine facility. |
| Metals and mining production activities        | <Not Applicable>                          | <Not Applicable>                         | <Not Applicable>  |
| Oil and gas production activities (upstream)   | <Not Applicable>                          | <Not Applicable>                         | <Not Applicable>  |
| Oil and gas production activities (downstream) | <Not Applicable>                          | <Not Applicable>                         | <Not Applicable>  |
| Steel production activities                    | <Not Applicable>                          | <Not Applicable>                         | <Not Applicable>  |
| Transport OEM activities                       | <Not Applicable>                          | <Not Applicable>                         | <Not Applicable>  |
| Transport services activities                  | <Not Applicable>                          | <Not Applicable>                         | <Not Applicable>  |

## 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) |
|----------------|--|--|--|--|
| Australia      | 479969                                     | 488510                                   | 379630.57  | 413.68   |

## C7.6

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

By business division

By activity

## C7.6a

**(C7.6a) Break down your total gross global Scope 2 emissions by business division.**

| Business division         | Scope 2, location-based emissions (metric tons CO2e) | Scope 2, market-based emissions (metric tons CO2e) |
|---------------------------|--|--|
| AGL Loy Yang              | 252608   | 252608   |
| AGL Macquarie             | 175513   | 184297   |
| Gas and Renewables        | 49241  | 49205  |
| Customer Markets          | 21   | 21   |
| Operations Support        | 2586   | 2379   |
| Project Management Office | 0  | 0  |

**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) |
|---|--|--|
| Coal Electricity Generation                             | 428121   | 436905   |
| Natural Gas Electricity Generation                      | 16189  | 16189  |
| Wind Electricity Generation                             | 5773   | 5773   |
| Hydro Electricity Generation                            | 8301   | 82645  |
| Large Scale Solar Electricity Generation                | 1127   | 1127   |
| Small Scale Generation (Predominately Biogas & Biomass) | 1259   | 1259   |
| Cogeneration (Electricity & Steam)                      | 71   | 71   |
| Corporate Offices                                       | 2586   | 2379   |
| Other Activities  | 289  | 289  |
| Oil and Gas Exploration, Production & Storage           | 16253  | 16253  |

**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?**

Increased

**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  |  | <Not Applicable>    |                              |  |
| Other emissions reduction activities    |  | <Not Applicable>    |                              |  |
| Divestment                              |  | <Not Applicable>    |                              |  |
| Acquisitions                            |  | <Not Applicable>    |                              |  |
| Mergers                                 |  | <Not Applicable>    |                              |  |
| Change in output                        | 128219                                 | Increased           | 0.29                         | Combined yearly emissions from Bayswater , Liddell, Torrens Island and Loy Yang Power Stations increased in FY17 cf. FY16, related to increased total generation output (44214 GWh in FY16 increased to 44224 GWh in FY17). In particular, gross generation output from Loy Yang Power Station, which has an emissions intensity above AGL's average portfolio emissions intensity, increased 1.08% from 15715 GWh in FY16 to 15885 GWh in FY17. |
| Change in methodology                   |  | <Not Applicable>    |                              |  |
| Change in boundary                      |  | <Not Applicable>    |                              |  |
| Change in physical operating conditions |  | <Not Applicable>    |                              |  |
| Unidentified                            |  | <Not Applicable>    |                              |  |
| Other                                   |  | <Not Applicable>    |                              |  |

## C7.9b

**(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?**

Location-based

## C8. Energy

### C8.1

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

More than 50% but less than or equal to 55%

### 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          | No   |
| 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)               | LHV (lower heating value) | 321526.39                  | 135544261.4                    | 135865787.79     |
| Consumption of purchased or acquired electricity        | <Not Applicable>          | 380.6                      | 379249.96                      | 379630.57        |
| Consumption of purchased or acquired heat               | <Not Applicable>          | <Not Applicable>           | <Not Applicable>               | <Not Applicable> |
| Consumption of purchased or acquired steam              | <Not Applicable>          | <Not Applicable>           | <Not Applicable>               | <Not Applicable> |
| Consumption of purchased or acquired cooling            | <Not Applicable>          | <Not Applicable>           | <Not Applicable>               | <Not Applicable> |
| Consumption of self-generated non-fuel renewable energy | <Not Applicable>          | 65064.78                   | <Not Applicable>               | 65064.78         |
| Total energy consumption                                | <Not Applicable>          | 386971.77                  | 135923511.37                   | 136310483.14     |

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 steam         | Yes   |
| Consumption of fuel for the generation of cooling       | No  |
| Consumption of fuel for co-generation or tri-generation | Yes   |

C8.2c

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

**Fuels (excluding feedstocks)**

Bituminous Coal

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

70164935.28

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

70164935.28

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

0

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

0

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

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

**Fuels (excluding feedstocks)**

Lignite Coal

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

55618295.28

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

55618295.28

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

0

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

0

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

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

---

**Fuels (excluding feedstocks)**

Other, please specify (Coal seam methane)

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

335596.12

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

251370.83

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

84225.29

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

0

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

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

---

**Fuels (excluding feedstocks)**

Diesel

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

166016.39

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

153510.28

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

12506.11

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

0

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

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

---

**Fuels (excluding feedstocks)**

Distillate Oil

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

30965

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

30965

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

0

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

0

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

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

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**Fuels (excluding feedstocks)**

Bioethanol

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

3.33

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

0

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

3.33

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

0

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

&lt;Not Applicable&gt;

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

---

**Fuels (excluding feedstocks)**

Motor Gasoline

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

3795.56

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

0

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

3795.56

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

0

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

&lt;Not Applicable&gt;

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

---

**Fuels (excluding feedstocks)**

Landfill Gas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

166230.56

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

0

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

166230.56

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

0

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

&lt;Not Applicable&gt;

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

---

**Fuels (excluding feedstocks)**

Liquefied Petroleum Gas (LPG)

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

356.11

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

0

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

356.11

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

0

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

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

---

**Fuels (excluding feedstocks)**

Natural Gas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

9224301.67

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

8982037.22

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

115597.78

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

24114.72

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

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

102551.94

---

**Fuels (excluding feedstocks)**

Sludge Gas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

155292.5

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

155292.5

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

0

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

0

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

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

0

---

**C8.2d**

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

## Bioethanol

### Emission factor

2.6

### Unit

kg CO<sub>2</sub>e per GJ

### Emission factor source

The emission factor applied is that provided in Schedule 1 of the NGER Measurement Determination.

### Comment

## Bituminous Coal

### Emission factor

90.89

### Unit

kg CO<sub>2</sub>e per GJ

### Emission factor source

We have reported the weighted average of three emissions factors, for the 3 facilities where we combust black coal. At Bayswater and Liddell, the emission factor is calculated using method 2 as per the NGER Measurement Determination. For Loy Yang A the emission factor applied is that provided in Schedule 1 of the NGER Measurement Determination.

### Comment

Weighted average of Liddell, Bayswater and Loy Yang black coal consumption

## Diesel

### Emission factor

70.2

### Unit

kg CO<sub>2</sub>e per GJ

### Emission factor source

The emission factor applied is that provided in Schedule 1 of the NGER Measurement Determination.

### Comment

## Distillate Oil

### Emission factor

73.84

### Unit

kg CO<sub>2</sub>e per GJ

### Emission factor source

The emission factor applied is that provided in Schedule 1 of the NGER Measurement Determination.

### Comment

## Landfill Gas

### Emission factor

4.83

### Unit

kg CO<sub>2</sub>e per GJ

### Emission factor source

The emission factor applied is that provided in Schedule 1 of the NGER Measurement Determination.

### Comment

## Lignite Coal

### Emission factor

93.23

### Unit

kg CO<sub>2</sub>e per GJ

### Emission factor source

The emission factor for brown coal combusted at Loy Yang is calculated using method 2 as per the NGER Measurement Determination

### Comment



### Liquefied Petroleum Gas (LPG)

**Emission factor**

61.5

**Unit**

kg CO2e per GJ

**Emission factor source**

The emission factor applied is that provided in Schedule 1 of the NGER Measurement Determination.

**Comment**

### Motor Gasoline

**Emission factor**

69.7

**Unit**

kg CO2e per GJ

**Emission factor source**

The emission factor applied is that provided in Schedule 1 of the NGER Measurement Determination.

**Comment**

### Natural Gas

**Emission factor**

50.98

**Unit**

Please select

**Emission factor source**

Weighted average of natural gas emission factor for AGL Torrens, calculated using method 2 as per the NGER Measurement Determination, and the standard natural gas emission factor for other assets, which is that provided in Schedule 1 of the NGER Measurement Determination.

**Comment**

### Sludge Gas

**Emission factor**

4.83

**Unit**

kg CO2e per GJ

**Emission factor source**

The emission factor applied is that provided in Schedule 1 of the NGER Measurement Determination.

**Comment**

### Other

**Emission factor**

50.49

**Unit**

kg CO2e per GJ

**Emission factor source**

Weighted average of emission factors for Moranbah Power Station and Camden Gas Project: Moranbah emission factor is calculated using method 2 as per the NGER Measurement Determination; for Camden the emission factor applied is that provided in Schedule 1 of the NGER Measurement Determination.

**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 | 47998260.83                  | 3012821.09  | 3634990.83                                    | 65064.78   |
| Heat        | 0                            | 0   | 0   | 0  |
| Steam       | 45056.38                     | 0   | 0   | 0  |
| Cooling     | 0                            | 0   | 0   | 0  |

## C-EU8.2e

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(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.

### Coal – hard

**Nameplate capacity (MW)**

4640

**Gross electricity generation (GWh)**

25454.61

**Net electricity generation (GWh)**

24123.34

**Absolute scope 1 emissions (metric tons CO2e)**

22964780

**Scope 1 emissions intensity (metric tons CO2e per GWh)**

0.9

**Comment**

Consists of AGL Macquarie assets

### Lignite

**Nameplate capacity (MW)**

2210

**Gross electricity generation (GWh)**

15885.28

**Net electricity generation (GWh)**

14544.49

**Absolute scope 1 emissions (metric tons CO2e)**

18710989

**Scope 1 emissions intensity (metric tons CO2e per GWh)**

1.17

**Comment**

Consists of AGL Loy Yang Power Station.

### Oil

**Nameplate capacity (MW)**

0

**Gross electricity generation (GWh)**

0

**Net electricity generation (GWh)**

0

**Absolute scope 1 emissions (metric tons CO2e)**

0

**Scope 1 emissions intensity (metric tons CO2e per GWh)**

0

**Comment**

## Gas

### Nameplate capacity (MW)

1507.46

### Gross electricity generation (GWh)

3023.63

### Net electricity generation (GWh)

2832.98

### Absolute scope 1 emissions (metric tons CO2e)

1717433

### Scope 1 emissions intensity (metric tons CO2e per GWh)

0.56

### Comment

AGL assets as at 30 June 2017 included in the 'gas' category comprise: • 1280 MW Torrens Island Power Station; • 160 MW Somerton Power Station; • 50 MW Hunter Valley Gas Turbines; • 12.6 MW Moranbah coal seam gas power station; • 4.4 MW Coopers cogeneration facility; and • Wilpena diesel generator.

## Biomass

### Nameplate capacity (MW)

21.64

### Gross electricity generation (GWh)

113.07

### Net electricity generation (GWh)

110.24

### Absolute scope 1 emissions (metric tons CO2e)

5798

### Scope 1 emissions intensity (metric tons CO2e per GWh)

0.05

### Comment

Consists of Werribee Biogas and seven landfill gas generators across New South Wales, Tasmania and Western Australia.

## Waste (non-biomass)

### Nameplate capacity (MW)

0

### Gross electricity generation (GWh)

0

### Net electricity generation (GWh)

0

### Absolute scope 1 emissions (metric tons CO2e)

0

### Scope 1 emissions intensity (metric tons CO2e per GWh)

0

### Comment

## Nuclear

### Nameplate capacity (MW)

0

### Gross electricity generation (GWh)

0

### Net electricity generation (GWh)

0

### Absolute scope 1 emissions (metric tons CO2e)

0

### Scope 1 emissions intensity (metric tons CO2e per GWh)

0

### Comment

**Geothermal**

**Nameplate capacity (MW)**

0

**Gross electricity generation (GWh)**

0

**Net electricity generation (GWh)**

0

**Absolute scope 1 emissions (metric tons CO2e)**

0

**Scope 1 emissions intensity (metric tons CO2e per GWh)**

0

**Comment**

**Hydroelectric**

**Nameplate capacity (MW)**

787.85

**Gross electricity generation (GWh)**

836.43

**Net electricity generation (GWh)**

833.89

**Absolute scope 1 emissions (metric tons CO2e)**

0

**Scope 1 emissions intensity (metric tons CO2e per GWh)**

0

**Comment**

**Wind**

**Nameplate capacity (MW)**

923.75

**Gross electricity generation (GWh)**

2325.62

**Net electricity generation (GWh)**

2269.33

**Absolute scope 1 emissions (metric tons CO2e)**

0

**Scope 1 emissions intensity (metric tons CO2e per GWh)**

0

**Comment**

**Solar**

**Nameplate capacity (MW)**

155.76

**Gross electricity generation (GWh)**

359.75

**Net electricity generation (GWh)**

353.46

**Absolute scope 1 emissions (metric tons CO2e)**

0

**Scope 1 emissions intensity (metric tons CO2e per GWh)**

0

**Comment**

**Other renewable**

**Nameplate capacity (MW)**

0

**Gross electricity generation (GWh)**

0

**Net electricity generation (GWh)**

0

**Absolute scope 1 emissions (metric tons CO2e)**

0

**Scope 1 emissions intensity (metric tons CO2e per GWh)**

0

**Comment**

**Other non-renewable**

**Nameplate capacity (MW)**

0

**Gross electricity generation (GWh)**

0

**Net electricity generation (GWh)**

0

**Absolute scope 1 emissions (metric tons CO2e)**

0

**Scope 1 emissions intensity (metric tons CO2e per GWh)**

0

**Comment**

**Total**

**Nameplate capacity (MW)**

10246.46

**Gross electricity generation (GWh)**

47998.42

**Net electricity generation (GWh)**

45067.76

**Absolute scope 1 emissions (metric tons CO2e)**

43399000

**Scope 1 emissions intensity (metric tons CO2e per GWh)**

0.9

**Comment**

C8.2f

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**(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**

Energy attribute certificates, Guarantees of Origin

**Low-carbon technology type**

Other low-carbon technology, please specify (Unspecified renewable energy sources.)

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

365.41

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

0.53

**Comment**

A number of AGL's offices have purchased 'GreenPower' from their electricity retailer(s). GreenPower is a Government accredited program that allows consumers to choose to have their electricity 'provided' by renewable energy sources. Electricity retailers must surrender Large Generation Certificates (LGCs) equaling the total amount of GreenPower electricity supplied to customers. Emission factors are provided at state-level. The emission factor of 0.53 metric tonnes CO<sub>2</sub>e per MWh. is for South Australia, and the low carbon consumption is for the Eastwood site.

---

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

Energy attribute certificates, Guarantees of Origin

**Low-carbon technology type**

Other low-carbon technology, please specify (Unspecified renewable energy sources. )

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

27.9

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

1.09

**Comment**

A number of AGL's hydroelectric power stations have purchased 'GreenPower' from their electricity retailer(s). GreenPower is a Government accredited program that allows consumers to choose to have their electricity 'provided' by renewable energy sources. Electricity retailers must surrender Large Generation Certificates (LGCs) equaling the total amount of GreenPower electricity supplied to customers. Emission factors are provided at state-level. The emission factor of 1.09 metric tonnes CO<sub>2</sub>e per MWh. is for Victoria, and the low carbon consumption is for the Dartmouth site.

---

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

Energy attribute certificates, Guarantees of Origin

**Low-carbon technology type**

Other low-carbon technology, please specify (Unspecified renewable energy sources. )

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

5.18

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

1.09

**Comment**

A number of AGL's hydroelectric power stations have purchased 'GreenPower' from their electricity retailer(s). GreenPower is a Government accredited program that allows consumers to choose to have their electricity 'provided' by renewable energy sources. Electricity retailers must surrender Large Generation Certificates (LGCs) equaling the total amount of GreenPower electricity supplied to customers. Emission factors are provided at state-level. The emission factor of 1.09 metric tonnes CO<sub>2</sub>e per MWh. is for Victoria, and the low carbon consumption is for the Bogong site.

---

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

Energy attribute certificates, Guarantees of Origin

**Low-carbon technology type**

Other low-carbon technology, please specify (Unspecified renewable energy sources.)

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

15.2

**Emission factor (in units of metric tons CO<sub>2</sub>e per MWh)**

0.84

**Comment**

A number of AGL's offices have purchased 'GreenPower' from their electricity retailer(s). GreenPower is a Government accredited program that allows consumers to choose to have their electricity 'provided' by renewable energy sources. Electricity retailers must surrender Large Generation Certificates (LGCs) equaling the total amount of GreenPower electricity supplied to customers. Emission factors are provided at state-level. The emission factor of 0.84 metric tonnes CO<sub>2</sub>e per MWh. is for NSW, and the low carbon consumption is for the Energy Connections Bathurst site.

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## C-EU8.4

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

No

## C9. Additional metrics

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### C9.1

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

##### Description

Energy use

##### Metric value

486899

##### Metric numerator

Total energy use is measured in TJ.

##### Metric denominator (intensity metric only)

N/A

##### % change from previous year

0.73

##### Direction of change

Increased

##### Please explain

AGL's total energy use was materially the same in FY17 as in FY16 as energy use is driven by electricity production from thermal plant which also remained materially consistent. Energy consumption data has been determined in accordance with the National Greenhouse and Energy Reporting Act 2007 and its supporting legislative framework that has been produced (and is periodically updated) by the Australian Federal Government. Energy consumption includes all instances where fuels are combusted, or otherwise consumed by AGL's activities (including flaring, venting and degradation of energy commodities). However, the reported values do not include situations where fuel commodities are used as a feedstock (e.g. in the manufacture of LPG), or where the commodities are not significantly altered by the consumption (such as the consumption of wind, water and solar energy). Data comprises energy consumed at our operated facilities, and does not include energy purchased through the wholesale market which is sold to our customers. Energy consumption has been rounded to the nearest TJ.

---

##### Description

Other, please specify (Compliance with AGL's GHG Policy)

##### Metric value

100

##### Metric numerator

% compliance with AGL's Greenhouse Gas Policy

##### Metric denominator (intensity metric only)

N/A

##### % change from previous year

0

##### Direction of change

No change

##### Please explain

AGL has a target of full compliance with its Greenhouse Gas Policy. AGL maintained compliance with the GHG policy in FY17 and FY18 This is assured each year through a limited assurance engagement with Deloitte.

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## C-EU9.5a

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(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  |
|---------------------------------|---|--|------------------------|--|
| Gas                             | 441000000   | 75.8   | 2021                   | This CAPEX is for the construction of the Barker Inlet peaking station in South Australia and the Newcastle power station in New South Wales. From 1 July 2017 - 30 June 2021  |
| Other renewable                 | 141000000   | 24.2   | 2021                   | This expenditure is for the investigation and development of other energy generation assets that have yet to be finalised. A percentage of this will be spend on new gas developments as well. From 1 July 2017 - 30 June 2021 |

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 (AGL's Customer Experience Transformation)<br><i>AGL's Customer Experience Transformation program has been a 3 year program to enhance our customers digital experience and drive value for customers</i> | An example of the outcome of this has been the development of AGL's Energy Insights' tool which allows customers personalised estimates about how much energy was used by each appliance category, what the approximate cost was and how it contributed to their overall bill. This allows customers to take charge of their energy consumption. | 201000000                         | 100   | 2021                   |

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**

July 1 2018

**Investment end date**

June 30 2022

**Investment area**

Equipment

**Technology area**

Steam turbine and/or other component upgrades

**Investment maturity**

Large scale commercial deployment

**Investment figure**

200000000

**Low-carbon investment percentage**

100

**Please explain**

The Bayswater upgrade project is a replacement of the original turbines with modern turbine technology providing an additional 100MW of generation capacity, enough to power 100,000 average Australian homes without the need for additional coal use, and therefore without additional emissions.

---

**Investment start date**

July 1 2016

**Investment end date**

June 30 2040

**Investment area**

Products

**Technology area**

Renewable energy

**Investment maturity**

Large scale commercial deployment

**Investment figure**

600000000

**Low-carbon investment percentage**

100

**Please explain**

The Powering Australian Renewables Fund (PARF) is a landmark financing initiative created by AGL. PARF is an innovative financing initiative designed by AGL to unlock investment in large-scale renewable energy. The fund aims to develop and own approximately 1,000 MW in large-scale renewable generation projects, providing opportunity for investors to finance a portfolio of renewable assets, to diversify risk and reduce costs. The fund was established in 2016 through a partnership with QIC, on behalf of its clients the Future Fund and those invested in the QIC Global Infrastructure Fund. AGL's \$600 million dollar investment represents a 20% share in PARF (at a total value of \$3 billion). This share is in both debt and equity, and gives AGL the rights to the electricity generated through numerous medium term PPAs.

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## C10. Verification

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### 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**

Limited assurance

**Attach the statement**

AGL NGER Limited Assurance Opinion 2017\_Signed.pdf

**Page/ section reference**

All pages

**Relevant standard**

ASAE3000

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

99

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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**

Limited assurance

**Attach the statement**

AGL NGER Limited Assurance Opinion 2017\_Signed.pdf

**Page/ section reference**

All pages

**Relevant standard**

ASAE3000

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

92

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## C10.1b

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**(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**

deloitte\_limited\_assurance\_opinion\_2017\_-\_release\_2.pdf

**Page/section reference**

As noted on page 2 of the assurance statement Deloitte assured AGL's 'Supply Footprint' covering GRI 305-3 scope 3 emissions. This Footprint covers AGL's Material scope 3 emissions being; Fuel and energy related activities and Use of Sold Products. Additionally AGL's 'Equity Footprint' is also assured and covers scope 3 emissions from investments. This covers over 99% of AGL's scope 3 emissions.

**Relevant standard**

AA1000AS

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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  |
|---|---|--|---|
| C3. Business strategy                     | Other, please specify (Compliance with AGL's greenhouse policy) | AA1000 APS   | AGL has a target of full compliance with its Greenhouse Gas Policy. This is assured each year through a limited assurance engagement with Deloitte.<br>deloitte_limited_assurance_opinion_2017_-_release_2.pdf  |
| C8. Energy                                | Other, please specify (AGL's energy consumption and production) | Compliance with Section 19 of the National Greenhouse and Energy Reporting Act 2007 ('NGER Act') in accordance with the National Greenhouse and Energy Reporting (Audit) Determination 2009 ('NGER Audit Determination'), Standard on Assurance Engagements ASAE3410 Assurance Engagements on Greenhouse Gas Statements (ASAE3410), Auditing Standard ASQC1 Quality Control for Firms that Perform Audits and Reviews of Financial Reports and Other Financial Information, and Other Assurance Engagements (ASQC1) and the guidance contained in the NGER Audit Determination Handbook. | AGL has its energy consumption and production footprint assured as part of the annual AGL National Greenhouse and Energy Reporting assurance.<br>AGL NGER Limited Assurance Opinion 2017_Signed.pdf   |
| C6. Emissions data                        | Year on year emissions intensity figure                         | AA1000 APS   | AGL reports emissions intensity as part of our sustainability reporting against GRI standards. Deloitte has assured the carbon intensity and trend within the sustainability report against GRI 305-4<br>deloitte_limited_assurance_opinion_2017_-_release_2.pdf  |
| C12. Engagement                           | Other, please specify (Public Policy engagement)                | AA1000 APS   | AGL had a target in FY17 of: -AGL will publish all material submissions in relation to public policy matters; - AGL will annually disclose all groups which it is a member of that may influence public policy This covers engagement with the organisations and industry association listed in question 12. This target was met and assurance was conducted against GRI 415-1 as part of the annual sustainability report assurance engagement by Deloitte.<br>deloitte_limited_assurance_opinion_2017_-_release_2.pdf |

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)?**

No, and we do not anticipate being regulated in the next three years

C11.2

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

Yes

C11.2a

**(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.**

**Credit origination or credit purchase**

Credit purchase

**Project type**

Forests

**Project identification**

Projects are forestry in nature and verified under WWF's gold standard. The projects are based in Western Australia's Wheatbelt region and Yarra Yarra Biodiversity Corridor – where over 90% of land has been cleared for agriculture . Leading scientists and conservation groups, including Conservation International and the WWF, have identified both areas as biodiversity hotspots. These unique areas offer an opportunity to create a habitat for a wide range of Australian flora and fauna species.

**Verified to which standard**

Gold Standard

**Number of credits (metric tonnes CO2e)**

8180

**Number of credits (metric tonnes CO2e): Risk adjusted volume**

8180

**Credits cancelled**

Yes

**Purpose, e.g. compliance**

Voluntary Offsetting

*These offsets are part of AGL's customer offsets product, 'Future Forrests'*

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**C11.3**

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

Yes

**C11.3a**

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

**Objective for implementing an internal carbon price**

Stakeholder expectations  
Change internal behavior  
Drive energy efficiency  
Drive low-carbon investment  
Stress test investments  
Identify and seize low-carbon opportunities

**GHG Scope**

Scope 1

**Application**

AGL also incorporates the same cost of carbon into planning and maintenance decisions through a capital budget allocation tool. The tool that is utilised for program assessment and prioritisation incorporates an internally modelled carbon price to ensure the value of abatement and carbon efficiency is appropriately valued in the internal decision making process. This results in a periodic reporting process that enables effective assessment of opportunities based on a combination of factors including not only the financial payback but ensuring this reflects the carbon abatement opportunity as well.

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

12.5

**Variance of price(s) used**

To define the internal carbon price, AGL utilised a range of information, including but not limited to, prices imposed at the time of acquisition via the Australian government emissions reduction fund, projections of carbon prices based on a range of political (national and international) outcomes, forward trajectories from government and market institutions and internal modelling.

**Type of internal carbon price**

Shadow price

**Impact & implication**

AGL's carbon price places a value not only on emissions but on efficiency and is seen internally as a de facto metric for efficiency implementation. The carbon price is used on all CAPEX generation expenditure and has been used to approve otherwise borderline projects. This modeling allows for the development of a conservative case for the consideration by the relevant executive and board committees against internal investment hurdles. In addition AGL is developing a range of scenarios that are to be utilized to test resilience of strategic and operational decisions against a range of potential outcomes. Within these scenarios AGL has included a price on carbon consistent with expectations as to potential carbon prices in a carbon constrained future

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**C12. Engagement**

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**C12.1**

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

Yes, our suppliers  
Yes, our customers  
Yes, other partners in the value chain

---

**C12.1a**

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

**Type of engagement**

Compliance & onboarding

**Details of engagement**

Included climate change in supplier selection / management mechanism

**% of suppliers by number**

79

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

88.4

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

2

**Rationale for the coverage of your engagement**

The types of activities covered by this engagement include suppliers of capital goods; upstream transportation and distribution; business travel; employee

commuting; and, end of life treatment of sold products. The total Scope 3 emissions covered under this engagement equates to approximately 1% of AGL's total Scope 3 emissions as reported at question C6.5. This because the majority of AGL's Scope 3 emissions relate to customer-related activities, which is reflective of the retail energy industry that AGL operates in. Note: the % of suppliers by number and % total procurement spend (direct and indirect) related to contracted suppliers only.

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

AGL has implemented a sustainable procurement program, a company-wide initiative designed to embed sustainability principles into our supply chain practices. The program aims to reduce AGL's exposure to the reputational risk from engaging in business with suppliers whose unsustainable business conduct may result in negative social and environmental impacts. All suppliers are required to comply with obligations outlined in the AGL Supplier Code of Conduct and may be asked to complete a Supplier Code of Conduct Questionnaire. Where areas of non-compliance with the Supplier Code of Conduct are identified, a corrective action plan is developed in collaboration with the supplier to address them. New suppliers identified as being of high value / risk may also be required to complete a detailed Sustainable Procurement Questionnaire. The Supplier Code of Conduct covers Environmental Management (including mechanisms to reduce greenhouse gas emissions), Corporate Governance and Ethics, Risk Management, Labour Policies, Human Rights and Discrimination, Occupational Health and Safety, Community, and Supply Chain. Depending on the materiality of carbon emissions from the supplier, the supplier's ability and willingness to improve their emissions, and other matters, AGL may decide to not award the contract to the supplier. We have completed a review of Material Supplier Code of Conduct where one was marked as non-compliant for Supplier Chain metrics. They have indicated they are working on improving compliance in this area. In FY17, AGL set itself the target that 100% of AGL Supplier Agreements signed in FY17 to include the AGL Supplier Code of Conduct. AGL achieved this target in FY17 and again in FY18. In FY18 we also set an additional target to evaluate at least 80% of material suppliers for compliance with our Supplier Code of Conduct (material suppliers being defined as a supplier whose spend with AGL is \$15 million or greater per annum, and/or who supplies goods or services that are assessed as very high or extreme risk according to AGL's Fully Integrated Risk Management matrix). We exceeded this target with 93%. Refer to the 2017 Sustainability Report (<http://agl2017.reportonline.com.au/sustainabilityreport/economic-performance/supply-chain>) and 2018 Sustainability Report (<https://www.2018sustainabilityreport.agl.com.au/people/contractor-and-supplier-management>).

#### **Comment**

AGL has implemented a sustainable procurement program, a company-wide initiative designed to embed sustainability principles into our supply chain practices. The program aims to reduce AGL's exposure to the reputational risk from engaging in business with suppliers whose unsustainable business conduct may result in negative social and environmental impacts. All suppliers are required to comply with obligations outlined in the AGL Supplier Code of Conduct and may be asked to complete a Supplier Code of Conduct Questionnaire. Where areas of non-compliance with the Supplier Code of Conduct are identified, a corrective action plan is developed in collaboration with the supplier to address them. New suppliers identified as being of high value / risk may also be required to complete a detailed Sustainable Procurement Questionnaire. The Supplier Code of Conduct covers Environmental Management (including mechanisms to reduce greenhouse gas emissions), Corporate Governance and Ethics, Risk Management, Labour Policies, Human Rights and Discrimination, Occupational Health and Safety, Community, and Supply Chain. Depending on the materiality of carbon emissions from the supplier, the supplier's ability and willingness to improve their emissions, and other matters, AGL may decide to not award the contract to the supplier.

---

#### **Type of engagement**

Engagement & incentivization (changing supplier behavior)

#### **Details of engagement**

Other, please specify (Develop Supplier Corrective Action Plans)

#### **% of suppliers by number**

79

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

88.4

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

2

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

The types of activities covered by this engagement include suppliers of capital goods; upstream transportation and distribution; business travel; employee commuting; and, end of life treatment of sold products. The total Scope 3 emissions covered under this engagement equates to approximately 1% of AGL's total Scope 3 emissions as reported at question C6.5. This because the majority (~9 Mt CO<sub>2</sub>e) of AGL's Scope 3 emissions relate to customer-related activities, which is reflective of the retail energy industry that AGL operates in. Note: % of suppliers by number and % total procurement spend above relate to contracted suppliers only.

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

We have completed a review of Material Supplier Code of Conduct where one was marked as non-compliant for Supplier Chain metrics. They have indicated they are working on improving compliance in this area. In FY17, AGL set itself the target that 100% of AGL Supplier Agreements signed in FY17 to include the AGL Supplier Code of Conduct. AGL achieved this target in FY17 and again in FY18. In FY18 we also set an additional target to evaluate at least 80% of material suppliers for compliance with our Supplier Code of Conduct (material suppliers being defined as a supplier whose spend with AGL is \$15 million or greater per annum, and/or who supplies goods or services that are assessed as very high or extreme risk according to AGL's Fully Integrated Risk Management (FIRM) matrix). We exceeded this target with a rate of 93%. Refer to the 2017 Sustainability Report (<http://agl2017.reportonline.com.au/sustainabilityreport/economic-performance/supply-chain>) and 2018 Sustainability Report (<https://www.2018sustainabilityreport.agl.com.au/people/contractor-and-supplier-management>) for further details.

#### **Comment**

AGL has implemented a sustainable procurement program, a company-wide initiative designed to embed sustainability principles into our supply chain practices. The program aims to reduce AGL's exposure to the reputational risk from engaging in business with suppliers whose unsustainable business conduct may result in negative social and environmental impacts. All suppliers are required to comply with obligations outlined in the AGL Supplier Code of Conduct and may be asked to complete a Supplier Code of Conduct Questionnaire. Where areas of non-compliance with the Supplier Code of Conduct are identified, a corrective action plan is developed in collaboration with the supplier to address them. New suppliers identified as being of high value / risk may also be required to complete a detailed Sustainable Procurement Questionnaire. The Supplier Code of Conduct covers Environmental Management (including mechanisms to reduce greenhouse gas emissions), Corporate Governance and Ethics, Risk Management, Labour Policies,

Human Rights and Discrimination, Occupational Health and Safety, Community, and Supply Chain. Depending on the materiality of carbon emissions from the supplier, the supplier's ability and willingness to improve their emissions, and other matters, AGL may decide to not award the contract to the supplier.

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## C12.1b

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

#### Type of engagement

Education/information sharing

#### Details of engagement

Run an engagement campaign to education customers about your climate change performance and strategy

#### Size of engagement

50

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

25

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

In 2017 AGL launched its new brand campaign which included a focus on AGL's approach to decarbonisation. More than just an advertising campaign, the web content includes information and advice to help customers play a part in reducing emissions and becoming more energy efficient. Media included TV, outdoor advertising, press ads, digital display advertising and social media. The television commercial includes the lines: "Let's be honest: things need to change. So starting in 2022 and ending by 2050, we're getting out of coal. We've started a fund that will put up to \$3 billion into making renewable energy for everyone. We already run Australia's largest solar and wind farms. But this is just the beginning." The commercial can be viewed on AGL's website: <https://content.agl.com.au/energy/the-plan/> Given the scale of this brand campaign, AGL targeted all consumers including customers with multiple media touchpoints to maximise the extent of engagement. Launched in FY17, AGL also offers a low-cost offset product for residential customers to offset the carbon emissions associated with their electricity consumption called 'Future Forests'. AGL's Future Forests product is advertised on AGL's website.

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

The campaign saw our brand metrics increase through the period the campaign was in market. Each media channel exceeded its channel objectives. Details on reach of each channel are listed below: Digital: AGL's brand advertisement campaign across all digital channels was estimated to have reached 19 million people. TV Commercial: For those people who viewed AGL's television brand commercial, it was seen at least three times by: 77% of viewers in Sydney 79% of viewers in Melbourne 78% of viewers in Brisbane 85% of viewers in Adelaide 84% of viewers in northern NSW 78% of viewers in Victoria. Large format (e.g. billboards): approximately 3.8 million people were exposed to the advertisement. Office tower summary: The campaign reached 1.1M people (demographic of ages 25 to 54) Small format (e.g. posters in public places) reached more than 4 million people.

---

#### 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

50

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

AGL engages with its customers on climate-related issues through a number of means, including: \* AGL electricity bills contain links to AGL's free online energy efficiency tool, called My AGL IQ. \* AGL electricity bills have contained a link to enable AGL's customers to sign up to AGL's carbon offset product, Future Forests, for \$1 per week. \* AGL's website contains a page on AGL's Future Forests program, at: <https://www.agl.com.au/solar-renewables/future-forests> \* AGL's Future Forests program has been included in AGL's call centre call script, which asks customers to consider signing up to Future Forests.

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

Uptake of AGL's Future Forests program has increased %163 from June 2017 to June 2018, to 7,982 customers.

---

#### Type of engagement

Education/information sharing

#### Details of engagement

Please select

#### Size of engagement

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

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

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

---

**Type of engagement**  
Education/information sharing

**Details of engagement**  
Please select

**Size of engagement**

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

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

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

---

**Type of engagement**  
Education/information sharing

**Details of engagement**  
Please select

**Size of engagement**

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

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

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

---

**Type of engagement**  
Education/information sharing

**Details of engagement**  
Please select

**Size of engagement**

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

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

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

---

**Type of engagement**  
Education/information sharing

**Details of engagement**  
Please select

**Size of engagement**

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

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

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

---

**Type of engagement**  
Education/information sharing

**Details of engagement**  
Please select

**Size of engagement**

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

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

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

---

**Type of engagement**  
Education/information sharing

**Details of engagement**  
Please select

**Size of engagement**

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

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

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

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

% Scope 3 emissions as reported in C6.5

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

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

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

% Scope 3 emissions as reported in C6.5

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

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

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

% Scope 3 emissions as reported in C6.5

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

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

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

% Scope 3 emissions as reported in C6.5

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

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

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

% Scope 3 emissions as reported in C6.5

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

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

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

% Scope 3 emissions as reported in C6.5

---

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

Impact of engagement, including measures of success

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

% Scope 3 emissions as reported in C6.5

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

Impact of engagement, including measures of success

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

% Scope 3 emissions as reported in C6.5

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

Impact of engagement, including measures of success

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

% Scope 3 emissions as reported in C6.5

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

Impact of engagement, including measures of success

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

% Scope 3 emissions as reported in C6.5

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

Impact of engagement, including measures of success

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

% Scope 3 emissions as reported in C6.5

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

Impact of engagement, including measures of success

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

---

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

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

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

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

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

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

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

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

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

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

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

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

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

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

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

---

**Type of engagement**

Education/information sharing

**Details of engagement**

Please select

**Size of engagement**

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

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

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

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C12.1c

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**(C12.1c) Give details of your climate-related engagement strategy with other partners in the value chain.**

AGL engages with both retail and institutional investors throughout the year, which includes AGL's strategy and approach to decarbonising its generation portfolio. At AGL's Annual General Meeting, AGL provides all shareholders with the opportunity to vote on a range of issues and to raise questions, including AGL's climate change performance and strategy, with AGL's Directors and senior executives. In addition, AGL holds a number of investor briefings each year, which include AGL's strategy and performance regarding climate change. In addition, we engage with institutional investors in Australia and overseas on the issues of climate change at broker-hosted conferences and regular road-shows.

AGL participates in investor surveys focused on ESG performance, including the CDP Climate Change Program. The investment community uses these tools to collect relevant non-financial performance information to facilitate informed investment decisions.

We participate in a semi-annual qualitative and quantitative survey of the perceptions of equity investors and analysts conducted by an independent third party, which enables these stakeholders to provide unattributed feedback on AGL's Board, management, strategy, financial performance, disclosure and communication. Feedback from these surveys is used to guide AGL's strategy.

In 2017, AGL implemented a formal process for engaging with lenders around their ESG policies. A 'Lender Code of Conduct Questionnaire' has been developed and is distributed to lenders when issuing debt facility invitations. The questionnaire indicates AGL's preference for lenders who can demonstrate they have a strong governance framework, have adopted ethical standards, and have a robust risk management framework covering ESG risks, among other issues. The questionnaire also indicates that AGL expects lenders to "strive to reduce environmental harm by maximising the efficient use of natural resources, energy, water and raw materials and minimise pollution (inclusive of greenhouse gases pollution) and waste".

**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
- Funding research organizations
- 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  |
|----------------------------|--------------------|--|--|
| Mandatory carbon reporting | Support            | AGL has been a strong supporter of the National Greenhouse and Energy Reporting Act 2007 which requires companies in Australia to report their emissions, energy production and consumption to the Commonwealth Government. AGL regularly engages in regulatory working groups and review processes to continue to improve the operation and efficiency of the scheme. | There are opportunities to introduce effective materiality thresholds to improve the efficiency of the scheme - i.e. which would maintain the quality of the data set collected by government but which would reduce the regulatory burden on companies. |

| Focus of legislation    | Corporate position            | Details of engagement  | Proposed legislative solution   |
|-------------------------|-------------------------------|--|---|
| Clean energy generation | Support                       | <p>AGL has actively participated in each review of the Australian Mandatory Renewable Energy Target over the past decade (2004, 2007, 2010, 2012 and 2014). AGL continues to support investment in new renewable energy, however recognises that a convergence of factors is making new investment financially intractable, including: policy uncertainty, associated barriers to exit highly carbon-intensive power generation (due to policy uncertainty); declining electricity demand; and the design of the National Electricity Market (being an energy-only market). See <a href="http://www.sciencedirect.com/science/article/pii/S0313592615000156">http://www.sciencedirect.com/science/article/pii/S0313592615000156</a>. AGL has actively supported increased investment in Clean Energy generation through the development of the Powering Australian Renewables Fund (see: <a href="https://www.agl.com.au/about-agl/what-we-stand-for/sustainability/powering-australian-renewables-fund">https://www.agl.com.au/about-agl/what-we-stand-for/sustainability/powering-australian-renewables-fund</a>). AGL understands that current market design requires evolution to enable an effective market to support investment where higher penetration of renewables is forthcoming. AGL has highlighted the need for policy makers, academics and regulators to identify potential changes to the current energy only market to enable appropriate valuation of all services required for the delivery of a safe and reliable energy system. See: <a href="http://thehub.agl.com.au/wpcontent/uploads/2015/10/AGL_SAClimateStrategy_Submission_Oct2015.pdf">http://thehub.agl.com.au/wpcontent/uploads/2015/10/AGL_SAClimateStrategy_Submission_Oct2015.pdf</a>. AGL economists have also published extensively on this issue to facilitate constructive debate with the latest publication here: <a href="http://www.sciencedirect.com/science/article/pii/S1040619016300306">http://www.sciencedirect.com/science/article/pii/S1040619016300306</a></p>  | <p>AGL believes that renewable energy policy should be considered in two time frames and within the context of the broader energy market. In the medium term, policy makers must consider the interaction of the factors affecting wholesale energy markets in assessing what the best policy mechanism is for supporting investment in new large scale renewable energy projects. Renewable energy policy cannot be considered in isolation of broader energy market design and consideration must be given to policy that drives the progressive closure of older, emissions-intensive power stations or retrofitting with CCS technology, providing for a structural decarbonisation and modernisation of the energy supply sector. AGL provided a submission to the Australian Government's National Energy Guarantee, arguing that the transition to a sustainable NEM that utilises substantial amounts of renewable energy must be orderly. AGL has argued that Australia is in serious need of a long-term carbon policy that drives investment in low-emissions sources and can steer the electricity sector smoothly through the process of replacing aging thermal plant with less emissions-intensive generation, while also meeting other electricity sector objectives. Regarding emissions specifically, AGL argues that the mechanism should ensure that the National Electricity Market achieves its pro-rata share of Australia's international commitment for emissions reductions with a view to ramping up to a potential of net zero emissions by 2050. AGL's submission can be viewed here: <a href="http://thehub.agl.com.au/wp-content/uploads/2018/03/AGL-submission_ESB-National-Energy-Guarantee-consultation-paper.pdf">http://thehub.agl.com.au/wp-content/uploads/2018/03/AGL-submission_ESB-National-Energy-Guarantee-consultation-paper.pdf</a> Also see: <a href="http://www.sciencedirect.com/science/article/pii/S0313592615000156">http://www.sciencedirect.com/science/article/pii/S0313592615000156</a> and <a href="http://onlinelibrary.wiley.com/doi/10.1111/1759-3441.12114/abstract">http://onlinelibrary.wiley.com/doi/10.1111/1759-3441.12114/abstract</a>. The AGL GHG policy also has further information here: available at <a href="https://content.agl.com.au/wp-content/uploads/2017/04/AGL_Greenhouse_Gas_Policy.pdf">https://content.agl.com.au/wp-content/uploads/2017/04/AGL_Greenhouse_Gas_Policy.pdf</a>.</p> |
| Cap and trade           | Support with major exceptions | <p>AGL has supported the implementation of a national, broad based emissions trading scheme that enables Australia to meet its medium and long-term emission reduction targets at least cost. AGL's position is that a range of policies are required to drive appropriate rates and efficiency of decarbonisation. Both market mechanisms and properly targeted regulation are required to develop the appropriate outcomes. Further information on AGL's views is available about the AGL GHG Policy at <a href="https://content.agl.com.au/wp-content/uploads/2017/04/AGL_Greenhouse_Gas_Policy.pdf">https://content.agl.com.au/wp-content/uploads/2017/04/AGL_Greenhouse_Gas_Policy.pdf</a></p>  | <p>AGL has argued carbon policy certainty is essential to efficient market function, particularly to the ability of utilities to invest in long-lived energy infrastructure. This is particularly true of the energy generation sector. It is important that governments set both binding and aspirational medium and long-term emission reduction targets. AGL supports the use of both regulatory and market-based policy mechanisms to deliver the required emission reductions. Importantly, a range of policies are likely to be needed. Specifically AGL has recommended &gt; emissions standards for all new power stations; &gt; regulation which drives the progressive closure of older, emissions-intensive power stations or retrofitting with CCS technology; and &gt; continued incentives for renewable energy with increased scope to include all zero and near-zero emission energy sources. AGL publicly discloses its submissions on these issues via the AGL Hub(<a href="https://thehub.agl.com.au">https://thehub.agl.com.au</a>) with a recent example: <a href="https://thehub.agl.com.au/articles/2018/07/submission-to-the-energy-security-board-neg">https://thehub.agl.com.au/articles/2018/07/submission-to-the-energy-security-board-neg</a></p>  |
| Climate finance         | Support                       | <p>In early 2016 AGL Energy (AGL) announced an innovative approach to renewable energy investment. The Powering Australian Renewables Fund. The Powering Australian Renewables Fund is an investment vehicle for institutional capital to invest directly in renewable energy assets. It is Structured to provide the necessary scale, diversification (by asset and location) and balance of risk to attract experienced infrastructure investors, while also meeting AGL's needs. QIC Global Infrastructure (QIC) is the preferred equity partner in the Powering Australian Renewables Fund. Designed to support investment in approximately 1000 megawatts of renewable energy, the fund enables QIC and its clients to invest in a portfolio of greenfield and brownfield assets. AGL has advocated that due to a range of factors the investment environment for further investment in renewable energy is challenging, including supply-demand imbalance, policy uncertainty and revisions of legislative instruments. AGL has discussed the need for further policies to enable investors to better diversify and align risk appetites when investing in and providing finance for renewable energy generation.</p>  | <p>AGL also considers that establishing carbon policy certainty is essential to securing private sector project finance for new energy generation projects (including renewables). AGL's economic working paper 26 provides analysis of this topic: <a href="http://www.emeraldinsight.com/journals.htm?articleid=17035902&amp;show=abstract&amp;AGL">http://www.emeraldinsight.com/journals.htm?articleid=17035902&amp;show=abstract&amp;AGL</a> has taken internal steps to encourage renewable energy investment through the development of the Powering Australian Renewables Fund - <a href="https://www.agl.com.au/about-agl/what-we-stand-for/sustainability/powering-australian-renewables-fund">https://www.agl.com.au/about-agl/what-we-stand-for/sustainability/powering-australian-renewables-fund</a></p>  |
| Energy efficiency       | Support                       | <p>AGL has consistently supported the amalgamation of existing state-based energy efficiency schemes into a national energy efficiency initiative. AGL supports the role of energy efficiency in assisting households manage their energy usage and costs. For example, in this submission: <a href="https://thehub.agl.com.au/articles/2014/02/agl-makes-submission-to-nsw-review-of-energy-efficiency-programs-for-low-income-households">https://thehub.agl.com.au/articles/2014/02/agl-makes-submission-to-nsw-review-of-energy-efficiency-programs-for-low-income-households</a> AGL has also developed an Affordability Initiative that seeks to use energy efficiency and solar projects to improve energy affordability for low-income customers. Further information is available at: <a href="http://www.sacoss.org.au/sites/default/files/public/documents/Lauren%20Solomon%20SACOSS%20H%26A%202015%20(Consumer%20Pr">http://www.sacoss.org.au/sites/default/files/public/documents/Lauren%20Solomon%20SACOSS%20H%26A%202015%20(Consumer%20Pr</a> AGL has responded to a range of submissions highlighting the importance of developing an appropriate policy environment to encourage increased uptake of electric vehicles to assist in the decarbonisation of the transport sector and the development of integrated energy management sessions. See: <a href="http://thehub.agl.com.au/2014/08/agl-highlights-importance-integratedapproach-alternative-transport-policy/">http://thehub.agl.com.au/2014/08/agl-highlights-importance-integratedapproach-alternative-transport-policy/</a> and <a href="http://thehub.agl.com.au/wpcontent/uploads/2015/12/AGL-Submission-VIC-Govt-New-EnergyTechnologies-Sector.pdf">http://thehub.agl.com.au/wpcontent/uploads/2015/12/AGL-Submission-VIC-Govt-New-EnergyTechnologies-Sector.pdf</a> AGL set a target that by the end of FY18, at least 10% of AGL's corporate fleet will be electric vehicles. AGL met this target, with a rate of 11% being achieved (refer to the 2018 Sustainability Report at <a href="https://www.2018sustainabilityreport.agl.com.au/customers/product-innovation">https://www.2018sustainabilityreport.agl.com.au/customers/product-innovation</a>)</p> | <p>AGL supports the consideration by Australian governments of policies that have been successfully implemented in international markets to improve the access and affordability of EVs. These include establishing a national EV target, including EVs in government fleets and extending Fringe Benefits Tax (FBT) exemptions (that currently apply to certain vehicles) to also cover EVs. In addition non financial incentives could include road use, parking and alternative measures under the control or administration of the state government. Many of these issues have been considered in research conducted on behalf of the former Australian electricity industry supply association (esaa) by Energeia - see <a href="http://energeia.com.au/wp-content/uploads/2016/03/Energeia-Reportfor-ESAA_-_Optimal-AFV-Policy-Targets-and-Settings-forAustralia.compressed.pdf">http://energeia.com.au/wp-content/uploads/2016/03/Energeia-Reportfor-ESAA_-_Optimal-AFV-Policy-Targets-and-Settings-forAustralia.compressed.pdf</a></p>  |

## C12.3b

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

Yes

## C12.3c

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

#### Trade association

Clean Energy Council (CEC)

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

Consistent

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

The CEC is the peak body for Australia's clean energy industry, made up of more than 550 member companies working in the renewable energy and energy efficiency sectors. Key policy principles supported are: - to accelerate the development and deployment of renewable energy and energy efficiency technology (clean energy) and to ensure at least 20 per cent of Australia's electricity is generated by renewable energy by 2020; - contribute towards a level playing field for clean energy technology relative to fossil fuel-based energy generation sources, including through a price on carbon (and other complementary measures); - achieve long term policy stability to underpin investment in clean energy technology, based on national consistency and minimal administrative burden; - support the development and deployment of clean energy technologies; and - reduce the cost and improve the efficiency of clean energy technologies ensure the safety and reliability of clean energy technology.

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

AGL is not on the Board of the CEC, however AGL maintains an active role in the CEC providing input into policy and position formulation and government engagement. As a sponsoring member AGL is actively involved in the policy development of the CEC as well as a range of technology directorates.

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#### Trade association

Business Council of Australia (BCA)

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

Consistent

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

Energy and greenhouse gas emission reduction policies should support Australia's future economic growth and not compromise Australia's global competitiveness. Australia's greenhouse gas emissions reduction measures should be commensurate with global action, broadly based across the economy, and achieve emissions reductions at least cost. This organisation is a member of the Australian Climate Roundtable.

<http://www.australianclimateroundtable.org.au/>

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

AGL is an active member of the BCA, and as such provides input to policy discussions and submissions. BCA membership is made up of the CEOs of 100 of Australia's top companies across a range of sectors including mining, retail, manufacturing, infrastructure, information technology, financial services and banking, energy, professional services, transport and telecommunications. AGL is specifically involved in the BCA Climate and Energy committee designed to develop high level policy approaches to progress the integration of climate and energy policy within Australia.

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#### Trade association

Australian Industry Group (Ai Group)

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

Consistent

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

The Australian Industry Group is a peak industry association in Australia which, along with its affiliates, represents the interests of more than 60,000 businesses in an expanding range of sectors including: manufacturing; engineering; construction; automotive; food; transport; information technology; telecommunications; call centres; labour hire; printing; defence; mining equipment and supplies; airlines; and other industries. Ai Group supports energy and climate change policy designed to ensure future energy is affordable and secure, and that climate and energy policy is stable, predictable and credible, and minimises the potential for sovereign risk.

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

While not on the Board, AGL is an active member of the Ai Group, and as such provides input to policy discussions and submissions.

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#### Trade association

Australian Energy Council (AEC)

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

Consistent

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

The Australian Energy Council represents 22 major electricity and downstream natural gas businesses operating in competitive wholesale and retail energy markets. These businesses collectively generate the overwhelming majority of electricity in Australia and sell gas and electricity to over 10 million homes and businesses. The AEC began operating from 1 January 2016. With Australia's energy industry undergoing a period of rapid change, member

companies of the Energy Supply Association of Australia (esaa), the Energy Networks Association (ENA) and the Energy Retailers Association of Australia (ERAA) decided to reorganise and rationalise their representative associations in 2015. The AEC supports the implementation of a well-designed emissions trading scheme achieving least cost abatement, along with adequate industry assistance and long term policy certainty. This organisation is a member of the Australian Climate Roundtable. <http://www.australianclimateroundtable.org.au/>

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

AGL Executive General Manager of Stakeholder Relations sits on the Board of the AEC. AGL is an active member of AEC and as such provides input to policy discussions and submissions.

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**Trade association**

Sustainable Business Australia (SBA)

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

Consistent

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

SBA is a not-for profit organisation whose purpose is to promote national and global efforts to advance business leadership in corporate responsibility. In 2014 SBA was appointed Australia's Global Partner for World Business Council for Sustainable Development (WBCSD). The SBA is a member of and current secretariat for the 'Businesses for a Clean Economy' (B4CE) initiative, of which AGL is a signatory.

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

AGL's Chief Economist sits on the Board of SBA. AGL is an active member of SBA and as such provides input to policy discussions and submissions.

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**C12.3d**

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**(C12.3d) Do you publicly disclose a list of all research organizations that you fund?**

Yes

**C12.3e**

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

AGL aims to provide and engage stakeholders with access to the right information so that the effects of energy market and climate change policy on both AGL's business and AGL's customers are fully understood as well as the long term implications of energy policy across the industry and civil society.

AGL participates in the development of public policy by providing submissions, consulting with government, participating in government networking events and by speaking at government inquiries.

AGL provided a submission to the Australian Government's National Energy Guarantee, arguing that the transition to a sustainable National Electricity Market that utilises substantial amounts of renewable energy must be orderly. AGL has argued that Australia is in serious need of a long-term carbon policy that drives investment in low-emissions sources and can steer the electricity sector smoothly through the process of replacing aging thermal plant with less emissions-intensive generation, while also meeting other electricity sector objectives. Regarding emissions specifically, AGL argues that the mechanism should ensure that the National Electricity Market achieves its pro-rata share of Australia's international commitment for emissions reductions with a view to ramping up to a potential of net zero emissions by 2050. AGL's submission can be viewed here: [http://thehub.agl.com.au/wp-content/uploads/2018/03/AGL-submission\\_ESB-National-Energy-Guarantee-consultation-paper.pdf](http://thehub.agl.com.au/wp-content/uploads/2018/03/AGL-submission_ESB-National-Energy-Guarantee-consultation-paper.pdf)

AGL also works with a number of energy industry associations to provide common industry and business positions to governments on energy market and climate change policy issues. However, there are occasions where AGL's position differs from the association to which it belongs. Where possible, AGL informs stakeholders of this difference of opinion to avoid confusion. Copies of AGL's submissions are publicly available on relevant government department websites. Submissions are also published on AGL's corporate blog ([thehub.agl.com.au](http://thehub.agl.com.au)).

AGL has a detailed stakeholder engagement process including our Stakeholder Advisory Council which is outlined in the 2018 AGL Sustainability Report (<https://www.2018sustainabilityreport.agl.com.au/stakeholders/stakeholder-advocacy>). AGL utilises the principles of materiality, inclusivity and responsiveness in how it engages with government and other stakeholders. The AGL Applied Economic Policy and Research Working Paper Series and AGL Climate Change Council are innovative examples of AGL stakeholder engagement.

AGL publishes its Applied Economic and Research Working Paper Series, to provide critical analysis of energy market trends and policy settings to industry stakeholders and policy makers. Over FY17, AGL has published 5 working papers which can be accessed on the AGL Hub (<https://thehub.agl.com.au/articles/2017/09/energy-market-evolution-working-papers-fy17-performance>). AGL is increasingly using social media to communicate and engage with the community. The Hub is a forum for AGL to provide timely and accessible information to interested stakeholders on a broad range of issues, such as: AGL's customer focused initiatives, key external presentations by employees, AGL's economic working papers and rapidly evolving energy policies.

AGL representatives make themselves available to contribute to a range of energy and climate related events and seminars across the spectrum of energy and climate policy. At these events AGL will present on a range of issues and provides insights gained from its position in the energy industry to inform a range of stakeholders as to potential risks and opportunities presented by climate change and related policy developments. These presentations, informed by AGL experience, information and insight enable broad discussion on important issues as they relate to the integration of climate policy into the broader energy generation sector.

**C12.3f**

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**(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?**

To ensure that all AGL's activities which have the potential to influence policy are consistent with AGL's climate change strategy, AGL's Greenhouse Gas Policy outlines the key positions that AGL takes in its public advocacy around climate change policy and activities. The policy is available here: <https://www.agl.com.au/-/media/aglmedia/documents/about-agl/who-we-are/corporate-governance-policy/corporate-governance-policies-charter/20170530-agl-greenhouse-gas-policy.pdf?la=en&hash=858B711B21A29B74E13D8ECE18B2BC6208BB848E>.

Compliance with the greenhouse gas policy is assured by a 3rd Party assurance provider (in FY17: Deloitte) as part of AGL's sustainability reporting assurance.

AGL ensures that all of its process and discussions are transparent, for example by making policy submissions publicly available on relevant government department websites as well as on the AGL Hub site ([thehub.agl.com.au/](http://thehub.agl.com.au/)).

AGL also undertakes regular engagement with key stakeholders, both formally and informally, to facilitate discussions on relevant policy issues, on areas that are both different and similar to AGL's position. For example, AGL actively engages through the AGL Climate Change Council, which includes representatives from AGL and NGOs such as WWF-Australia, Australian Conservation Foundation and The Climate Institute. The Climate Change Council meets quarterly to enable discussion and constructive dialogue on a range of issues relating to climate change, including government policy, emission reduction targets and program implementation.

AGL has also made the following public commitments for FY17, which AGL reported in the 2017 Sustainability Report, to demonstrate the transparency of our commitments to stakeholders:

- 1) AGL will publish all material submissions in relation to public policy matters on the AGL Hub;
- 2) AGL will annually disclose all groups which it is a member of that may influence public policy; and
- 3) Compliance with AGL Greenhouse Gas Policy: 100%.

AGL met or exceeded all of these three targets in FY17. These targets were also extended to FY18 and were again met. Performance against these (and other) targets is monitored on a quarterly basis and performance reported to the Board Safety, Sustainability and Corporate Responsibility Committee. Progress against these targets is externally assured at the completion of the financial year, and the result public reported via the Sustainability Report.

AGL maintains an internal register of activity against the commitments made under its Greenhouse Gas Policy, which is actively monitored by the Economic Policy and Sustainability Team

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## 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).**

**Publication**

In voluntary sustainability report

*Commentary on AGL's GHG emissions performance is provided in the 'Climate change (greenhouse and energy)' section of the 2017 Sustainability Report. Additional GHG performance data is provided in AGL's online Data Centre, available at: <http://agl2017.reportonline.com.au/data-centre/environment>*

**Status**

Complete

**Attach the document**

AGL 2017 Sustainability Report.pdf

**Content elements**

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

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**Publication**

In mainstream reports in accordance with TCFD recommendations

*Note: AGL's 'Powering a resilient economy' report, prepared in accordance with TCFD recommendations, provides information current as at June 2018*

**Status**

Complete

**Attach the document**

FINAL TCFD Report\_08Aug2018.pdf

**Content elements**

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

Other metrics

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**C14. Signoff**

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**C-FI**

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**(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.**

All of AGL's emissions, energy consumption and production, and target data uses financial year 2017 numbers. Given the timing of the submission this year a the policy, governance and engagement information is based on the most recently available except where explicitly stated, particularly with reference to AGL's recently released Sustainability Report for FY18 and TCFD compliant report 'Powering a climate resilient economy'.

Attached to this question are copies of the documents referred to elsewhere in this submission:

- AGL's 2017 Sustainability Report
- AGL's 2018 Sustainability Report
- AGL's Greenhouse Gas Policy
- AGL's TCFD compliant report 'Powering a climate resilient economy'
- AGL's Carbon Constrained Future Report
- AGL's Rehabilitation Report

AGL\_Energy\_2018\_Sustainability\_Report.pdf  
carbon\_constrained\_future.pdf  
AGL\_Greenhouse\_Gas\_Policy.pdf  
FINAL TCFD Report\_08Aug2018.pdf  
AGL 2017 Sustainability Report.pdf  
170810-agl-rehabilitation-report.pdf

### 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 | AGL Energy, Chief Economist | Chief Sustainability Officer (CSO)<br><i>The Chief Economist role includes the role of Chief Sustainability Officer</i> |

### Submit your response

**In which language are you submitting your response?**

English

**Please confirm how your response should be handled by CDP**

|                             | Public or Non-Public Submission | I am submitting to |
|-----------------------------|---------------------------------|--------------------|
| I am submitting my response | Public                          | Investors          |

**Please confirm below**

I have read and accept the applicable Terms