Module: Introduction

Page: Introduction

CC0.1

Introduction
Please 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 3.6 million customer accounts across New South Wales, Victoria, South Australia, and Queensland. 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 2016, AGL operated 10,409 MW installed generation capacity, which included 1,920 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.

CC0.2

Reporting Year
Please state the start and end date of the year for which you are reporting data.
The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.
We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been

offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year.
Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

Enter Periods that will be disclosed
Wed 01 Jul 2015 - Thu 30 Jun 2016

CC0.3

Country list configuration

Please select the countries for which you will be supplying data. If you are responding to the Electric Utilities module, this selection will be carried forward to assist you in completing your response.

Select country
Australia

CC0.4

Currency selection

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

AUD ($)

CC0.6

Modules

As part of the request for information on behalf of investors, companies in the electric utility sector, companies in the automobile and auto component manufacturing sector, companies in the oil and gas sector, companies in the information and communications technology sector (ICT) and companies in the food, beverage and tobacco sector (FBT) should complete supplementary questions in addition to the core questionnaire.
If you are in these sector groupings, the corresponding sector modules will not appear among the options of question CC0.6 but will automatically appear in the ORS navigation bar when you save this page. If you want to query your classification, please email respond@cdp.net.
If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below in CC0.6.

Further Information

Module: Management

Page: CC1. Governance

CC1.1

Where is the highest level of direct responsibility for climate change within your organization?

Board or individual/sub-set of the Board or other committee appointed by the Board

CC1.1a

Please identify the position of the individual or name of the committee with this responsibility

The AGL Board has established four standing committees of its members: the Audit and Risk Management Committee; the People and Performance Committee; the Nominations Committee; and the Safety, Sustainability and Corporate Responsibility Committee, which meet regularly to oversee key risks affecting AGL's business.

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; and
(b) monitoring the decisions and actions of management in achieving AGL’s objective to be a safe, ethical, responsible and sustainable organisation.

The Committee operates under a formal charter and currently comprises three non-executive and independent Directors. The Committee oversees and reviews, amongst other things:

- AGL’s actions to meet its obligation to maintain the health and safety of its people;
- the social, environmental and ethical effects of AGL’s activities, and the systems for managing compliance with AGL’s sustainability policies and practices;
- initiatives to enhance AGL’s sustainable business practices and reputation as a responsible corporate citizen;
- the integration of safety, sustainability and corporate responsibility matters in the formulation of AGL’s strategy, risk management framework, health, safety and environment management systems, and people and culture priorities; and
- AGL’s compliance with all relevant legal and regulatory requirements governing the matters within its responsibilities.

AGL's carbon impact and response to climate change are key areas of focus for the Committee. The Committee reviews AGL's annual 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 Sustainability Report.

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.

Additionally, risks associated with carbon, energy efficiency and renewable energy policies are managed as part of AGL's broader interaction with wholesale energy markets. Responsibilities lie with the Head of Wholesale Markets Risk, and are ultimately overseen by the Board Audit and Risk Management Committee.

At the executive level, 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 Economic Policy and Sustainability team within the Stakeholder Relations business unit. This team is responsible for greenhouse gas emissions and energy reporting, carbon policy and regulation, and carbon modelling and analysis, as well as sustainability strategy and reporting.

CC1.2

Do you provide incentives for the management of climate change issues, including the attainment of targets?

Yes

CC1.2a

Please provide further details on the incentives provided for the management of climate change issues

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
Facility managers		Efficiency project	The Performance and Efficiency Manager has objectives relating to the implementation of energy efficiency projects.
Management group	Monetary reward		The AGL 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.
Management group	Monetary reward		The Senior Manager Carbon and Renewable Energy Policy’s core performance objectives are all strategically aligned with decarbonisation and climate change policy.
Chief Executive Officer (CEO)	Monetary reward	Emissions reduction project	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. 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.
Chief Operating Officer (COO)	Monetary reward	Emissions reduction project	The COO 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.
Chief Financial Officer (CFO)	Monetary reward	Emissions reduction project	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.
Business unit managers	Monetary reward	Emissions reduction project	The General Manager Power Development 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 Power Development is also incentivised for developing a portfolio of future development prospects.

Further Information

AGL has successfully integrated many climate change issues and policy responses into its business as usual operations, such as the implementation and management of renewable energy schemes, energy efficiency schemes, development of energy management and efficiency offerings for residential, small business and C&I customers and the development of new renewable energy projects. This results in a large number of individual employees whose day to day activities contribute to addressing climate change related issues despite the fact they may not necessarily readily identify this as the primary incentivised focus of their role. The CEO, CFO and Executive General Manager Group Operations (marked as COO above) all have objectives in relation to the Powering Australian Renewables Fund (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.

Page: CC2. Strategy

CC2.1

Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities

Integrated into multi-disciplinary company wide risk management processes

CC2.1a

Please provide further details on your risk management procedures with regard to climate change risks and opportunities

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment
Six-monthly or more frequently	Board or individual/sub-set of the Board or committee appointed by the Board	All regions where AGL operates assets and/or has customers - primarily Victoria, New South Wales, ACT, Queensland and South Australia	> 6 years	The AGL Board has ultimate responsibility for risk management and internal control systems. To assist it in its responsibilities the Board has established the Board Audit and Risk Management Committee (ARMC). AGL has also established a Group Risk and Compliance function, supported by dedicated and specialist risk areas embedded within the organisation. Group Risk considers the impacts of climate change on the execution of AGL's integrated strategy, and in particular on policy response and intervention. AGL has a large investment in both renewable and thermal generation,

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment
				with risks that are either amplified or muted depending on political outcomes both nationally and internationally. Examples of this in the Australian context are Renewable Energy Targets and climate change policy. All time horizons are considered in risk assessments, with a cascading effect of focus; at its highest in the 12-24 month period, and a more strategic focus from three years and beyond.

CC2.1b

Please describe how your risk and opportunity identification processes are applied at both company and asset level

AGL's risk management methodology is adaptable and can be applied at the enterprise wide level or for a project /business/asset process.

AGL's risk policy is mandated by the Board, and expects that AGL's management will utilise risk management principles in its decision making and encourages all employees to consider their functions and roles and how to minimise risk in order to maximise all possibilities for their outcomes. At the company level the risk identification process is linked to the delivery of AGL's integrated business strategy, with risks defined as the effect of uncertainties on the achievement of objectives.

AGL's 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 ARMC and executive team quarterly.

Climate change is managed in the same manner as any risk that the organisation is exposed to.

AGL identifies and reviews its characterisation of climate change risks and opportunities in response to public sentiment, government policy and legislation/regulation, energy market conditions and information concerning the physical impacts of climate change on AGL's assets and the energy supply chain, as well as when the business is making acquisitions and divestments.

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

Opportunities and risks of climate change related policies are assessed at the asset and portfolio level, with related demand and price scenarios modelled and built into earnings forecasts.

CC2.1c

How do you prioritize the risks and opportunities identified?

AGL's risk management framework incorporates an escalation framework in order to empower different levels of management to execute decisions, subject to appropriate processes and protocols.

Climate change risks (indeed all risks) identified through the AGL risk management methodology are ranked in terms of their potential consequence and the likelihood of that consequence occurring, in order 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/Profitability/Assets;
- Business Continuity;
- Customer;
- Reputation; Regulatory/ Legal;
- Environment/Community; and
- People/Safety.

Any controls, processes or governance practices in place at AGL which 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 the inherent and residual risks trigger requirements to notify different levels of management to the risk– for example, the Board, the Board Audit and Risk Management Committee, the relevant Group 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.

AGL's risk prioritisation is also achieved through external disclosures and public reporting, eg the AGL Carbon Constrained Future report.

CC2.1d

Please explain why you do not have a process in place for assessing and managing risks and opportunities from climate change, and whether you plan to introduce such a process in future

Main reason for not having a process	Do you plan to introduce a process?	Comment

CC2.2

Is climate change integrated into your business strategy?

Yes

CC2.2a

Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process

Addressing climate change is integral to AGL building long-term shareholder value. As an energy utility with significant electricity generation assets (both thermal and renewable), natural gas reserves and 3.7 million gas and electricity customers, it is estimated that around 7% of Australia's greenhouse gas emissions arise as a result of AGL's operations.

AGL's business is highly exposed to Australia's national response to climate change, with policies such as emissions trading (or other carbon abatement programs), renewable energy obligations, energy efficiency schemes and infrastructure reliability standards representing significant costs, risks and business opportunities for AGL and its customers. Any major acquisitions or investments in new electricity generation and natural gas infrastructure may have useful lives of several decades, so consideration must be given to longer term policy trends (including climate change mitigation and adaptation) which could either enhance or constrain the value of new assets over time.

The Board-endorsed AGL GHG Policy serves not only to inform stakeholders of AGL's policy with respect to addressing climate change, but also plays a key role in the business's short and long-term strategy (see attached AGL GHG Policy, also available at www.agl.com.au/Downloads/Greenhouse%20Gas%20Policy.pdf)

Over the past decade AGL has integrated responses to climate change (and related policies) into its broader business strategy, positioning AGL favourably for likely energy market reforms and providing products and services relevant and valuable to our customers.

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.

This policy underpins a multifaceted approach to climate change and the 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.

A clear example of the impact of this strategy and as a result of the 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. This announcement was made despite there being no government policy to do so and as such represents the removal of optionality on the service of our generating facilities.

AGL is one of 12 Australian organisations to adopt commitments under the We Mean Business Coalition. Specifically:
Responsible corporate engagement on climate policy
Reporting climate change information in mainstream corporate reports as a fiduciary duty
Aligning with the UN Global Compact's Business Leadership Criteria on Carbon Pricing

In August 2016, AGL released to the market its report "Carbon Constrained Future", which provides an economic analysis of AGL's operations within 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.

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.

AGL continues to invest in the New Energy business unit that aims to focus on the distributed generation and new technology space, increasing the presence of AGL in the distributed generation and associated technology field, with a goal of embedding AGL into more than 1 million homes with these services by 2020. The New Energy business includes a unit dedicated to energy efficiency for commercial and industrial customers, assisting them to improve their energy productivity and minimise their energy costs (and associated greenhouse gas emissions).

AGL's new brand launched recently and is focused on our commitment to get out of coal. This commitment is based in our greenhouse gas policy and our understanding that as Australia's largest greenhouse emitter we have a responsibility to take a leading role in emissions reduction. For further information: https://content.agl.com.au/

In addition to embedded risk management procedures 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. see: slide 30: https://www.agl.com.au/-/media/AGL/About-AGL/Documents/Investor-Centre/AGL-Investor-Day-2016---Master-Presentation---2717FINAL.pdf?la=en

CC2.2b

Please explain why climate change is not integrated into your business strategy

CC2.2c

Does your company use an internal price on carbon?

Yes

CC2.2d

Please provide details and examples of how your company uses an internal price on carbon

As outlined in the AGL Greenhouse Gas Policy, an internal carbon price is utilised in the assessment of strategic decisions. The price used reflects approximately the average price paid through the initial ERF auction in Australia. (2016 - $12.10 – see http://www.cleanenergyregulator.gov.au/ERF/Auctions-results/april-2016)

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.

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 carbon pricing mechanism, projections of carbon prices based on a range of political (national and international) outcomes, forward trajectories from government and market institutions and internal modelling.

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.

CC2.3

Do you engage in activities that could either directly or indirectly influence public policy on climate change through any of the following? (tick all that apply)

Direct engagement with policy makers
Trade associations
Funding research organizations
Other

CC2.3a

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, and 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.
Clean	Support	AGL has actively participated in each review of the Australian Mandatory Renewable Energy Target over the past decade (2004,	AGL believes that renewable energy policy should be considered in two time frames and within the context of the broader energy market. In

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
energy generation	with minor exceptions	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 (due to policy uncertainty); declining electricity demand; and the design of the National Electricity Market (being an energy-only market). See http://www.sciencedirect.com/science/article/pii/S0313592615000156. While AGL has actively supported increased investment in Clean Energy generation through the development of the Powering Australian Renewables Fund (see: https://www.agl.com.au/about-agl/what-we-stand-for/sustainability/powering-australian-renewables-fund) AGL understands that current market design requires evolution to enable an effective market to support investment where higher penetration of renewables are 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: http://aglblog.com.au/wp-content/uploads/2015/10/AGL_SAClimateStrategy_Submission_Oct2015.pdf. AGL economists have also published extensively on this issue to facilitate constructive debate with the latest publication here: http://www.sciencedirect.com/science/article/pii/S1040619016300306	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. See: http://www.sciencedirect.com/science/article/pii/S0313592615000156 and http://onlinelibrary.wiley.com/doi/10.1111/1759-3441.12114/abstract. The AGL GHG policy also has further information here: available at http://www.agl.com.au/~/media/AGL/About%20AGL/Documents/Media%20Center/Corporate%20Governance%20Policies%20Charter/1704015_GHG_Policy_Final.pdf It is AGL's view that there is considerable merit in policy makers supporting and working closely with the Australian Energy Market Commission (AEMC), the Australian Energy Market Operator (AEMO) and other academics and technical experts to investigate whether any regulatory responses may be required to address market changes, including the significant intermittent renewable generation (including growing quantities of small-scale, non-scheduled, distributed generation) This could range from the evolution of the regulatory environment to provide for greater competition in stability related services, co-investment in solutions that involve large scale storage, coordinated management of distributed energy generation and storage capability and demand management services. AGL economists have also published extensively on this issue to facilitate constructive debate with the latest publication here: http://www.sciencedirect.com/science/article/pii/S1040619016300306
Cap and trade	Support with major	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	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

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
	exceptions	targeted regulation are required to develop the appropriate outcomes. Further information on AGL's views is available about the AGL GHG Policy at http://www.agl.com.au/~/media/AGL/About%20AGL/Documents/Media%20Center/Corporate%20Governance%20Policies%20Charter/1704015_GHG_Policy_Final.pdf	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 › emissions standards for all new power stations; › regulation which drives the progressive closure of older, emissions-intensive power stations or retrofitting with CCS technology; and › 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 blog (www.aglblog.com.au) with a recent example: http://aglblog.com.au/2017/06/agl-responds-to-finkel-blueprint/
Climate finance	Support	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. Desgined 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.	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: http://www.emeraldinsight.com/journals.htm?articleid=17035902&show=abstract& AGL has taken internal steps to encourage renewable energy investment through the development of the Powering Australian Renewables Fund - https://www.agl.com.au/about-agl/what-we-stand-for/sustainability/powering-australian-renewables-fund
Energy efficiency	Support	AGL has consistently supported the amalgamation of existing state based energy efficiency schemes into a national energy efficiency initiative. For example, in this submission: http://aglblog.com.au/2014/02/agl-makes-submission-to-nsw-review-of-energy-efficiency-programs-for-low-income-households/ AGL has also developed an Affordability Initiative that seeks to use energy efficiency and solar projects to improve energy affordability for low-income	Amalgamation of existing Australian state based activities into a National Energy Efficiency Initiative.

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
		customers. Further information is available at: http://www.sacoss.org.au/sites/default/files/public/documents/Lauren%20Solomon%20SACOSS%20H%26A%202015%20(Consumer%20Protection).pdf and https://www.youtube.com/watch?v=RtNgOSBG0RE	
Other:	Support	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: http://aglblog.com.au/2014/08/agl-highlights-importance-integrated-approach-alternative-transport-policy/ and http://aglblog.com.au/wp-content/uploads/2015/12/AGL-Submission-VIC-Govt-New-Energy-Technologies-Sector.pdf	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 Australian electricity industry supply association (esaa) by Energeia - see http://energeia.com.au/wp-content/uploads/2016/03/Energeia-Report-for-ESAA_-Optimal-AFV-Policy-Targets-and-Settings-for-Australia.compressed.pdf .

CC2.3b

Are you on the Board of any trade associations or provide funding beyond membership?

Yes

CC2.3c

Please enter the details of those trade associations that are likely to take a position on climate change legislation

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
Clean Energy Council (CEC)	Consistent	The CEC is the peak body representing Australia's clean energy sector, 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 all clean energy technologies, recognising their unique barriers, circumstances and stages of development; and - reduce the cost and improve the efficiency of clean energy technologies ensure the safety and reliability of clean energy technology.	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.
Business Council of Australia (BCA)	Consistent	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/	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.
Energy Retailers Association of Australia (ERAA)	Consistent	The Energy Retailers Association of Australia (ERAA) represented the organisations who provide electricity and gas to almost 10 million Australian households and businesses. The ERAA had the following positions on energy efficiency schemes: Any energy efficiency policies should aim to directly address market failures, such as principle agent problems or information asymmetries. These policies should be directed at	AGL was a full and active member of the ERAA until the merger and continues to provide input to policy discussions and submissions on these areas via the newly formed AEC.

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
		where the greatest opportunities for improvements lie. Where energy efficiency schemes are already operating, policy makers should attempt to harmonise these schemes across state borders. NOTE the ERAA and ESAA merged in 2015/16 to form the Australian Energy Council - see entry below	
Energy Supply Association of Australia (esaa)	Consistent	The esaa was the peak industry body representing the stationary energy sector in Australia including generation, transmission and distribution assets. The esaa supports the implementation of a well-designed emissions trading scheme achieving least cost abatement, along with adequate industry assistance and long term policy certainty. The esaa also favoured the amendment of Australia's Renewable Energy Target so that it represented 20 percent of Australia's electricity consumption, taking into account broader energy market conditions. NOTE the ERAA and ESAA merged in 2015/16 to form the Australian Energy Council - see entry below	AGL was a full and active member of the ESAA until the merger and continues to provide input to policy discussions and submissions on these areas via the newly formed AEC.
Australian Industry Group (Ai Group)	Consistent	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.	While not on the Board, AGL is an active member of the Ai Group, and as such provides input to policy discussions and submissions.
Australian Energy Council (AEC)	Consistent	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	AGL Executive General Manager for Energy Markets sits on the Board of the AEC and AGL is an active member and as such provides input to policy discussions and submissions.

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
		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/	
Sustainable Business Australia (SBA)	Consistent	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.	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.

CC2.3d

Do you publicly disclose a list of all the research organizations that you fund?

Yes

CC2.3e

Please 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 such as the Finkle Review.

AGL recognises the substantial work in the Finkel blueprint. AGL has long been advocating for changes in the electricity market that better support and integrate renewable energy generation and deliver more reliable and affordable energy for customers. While we have advocated for an Emissions Intensity Scheme (EIS) we believe a Clean Energy Target (CET) is a viable policy option and will unleash the necessary new investment in the national electricity market.

(http://aglblog.com.au/2017/06/agl-responds-to-finkel-blueprint/)

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 (aglblog.com.au).

AGL has a detailed stakeholder engagement process including our Stakeholder Advisory Council which is outlined in the 2016 AGL Sustainability Report (http://agl2016.sustainability-report.com.au/how-we-operate/stakeholder-engagement). 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. To 30 June 2016, AGL has published around 50 working papers which can be accessed on the AGL Blog (http://aglblog.com.au/category/working-papers/). AGL is increasingly using social media to communicate and engage with the community. The AGL Blog 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. The AGL Climate Change Council includes representatives from AGL and NGOs such as WWF-Australia, Australian Conservation Foundation and The Climate Institute. The Climate Change Council meets regularly 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 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.

Throughout FY16 AGL undertook a comprehensive engagement strategy in the lead up to the COP21 conference in Paris.
Key engagement activities in FY16:
AGL CEO Andy Vesey signed a public statement on the importance of a robust outcome at the COP21 conference and did this in conjunction with seven other leading corporate organisations within Australia (BHPBilliton, GE, Mirvac, Wesfarmers, Westpac, Santos and Unilever).
CEO Andy Vesey spoke on climate change issues at events including Clean Energy Council CEO Forum, We Mean Business Climate Summit, and the Committee for Economic Development (CEDA) energy series.
AGL management spoke at the Investor Group on Climate Change (IGCC) conference and the Australian Conservation Foundation 2 degree investment forum.
In addition AGL engaged internally on the importance of the COP21 program and coordinated a delegation to COP21 where AGL CEO Andy Vesey presented at the Carbon Market Institute - Australia Day and the International Emission Trading Association session on Carbon Pricing.

CC2.3f

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: http://www.agl.com.au/~/media/AGL/About%20AGL/Documents/Media%20Center/Corporate%20Governance%20Policies%20Charter/1704015_GHG_Policy_Final.pdf).

Compliance with the greenhouse gas policy is assured by 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 Blog site (aglblog.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 reviewed its memberships of trade associations and think tanks in FY2016. As a consequence of this review, it was decided to withdraw from the Minerals Council of Australia (MCA) and the Australian Petroleum Production and Exploration Association (APPEA). These associations had different views on climate change related policy to AGL. AGL also incorporated additional details around the groups that it is a part of within theFY2016 Sustainability Report (refer to http://agl2016.sustainability-report.com.au/how-we-operate/stakeholder-engagement).

AGL has also made the following public commitments for FY2017 within the FY2016 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 Blog; 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% Achievement of 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 and this is actively monitored by the Economic Policy and Sustainability Team

CC2.3g

Please explain why you do not engage with policy makers

Further Information

Page: CC3. Targets and Initiatives

CC3.1

Did you have an emissions reduction or renewable energy consumption or production target that was active (ongoing or reached completion) in the reporting year?

Absolute target

CC3.1a

Please provide details of your absolute target

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions covered by target (metric tonnes CO2e)	Target year	Is this a science-based target?	Comment
Abs3	Scope 1	78.7%	100%	2016	34054514	2050	No, and we do not anticipate setting one in the next 2 years	In FY2015 AGL committed in it's Greenhouse Gas Policy to close all conventional coal power stations by 2050.
Abs1	Scope 1	17.5%	100%	2016	7585578	2022	No, and we do not anticipate setting one in the next 2 years	In FY2015 AGL committed in it's Greenhouse Gas Policy to close all conventional coal power stations by 2050. This target represents the closure of the Liddell Power Station
Abs2	Scope 1	36.8%	100%	2016	15912788	2035	No, and we do not anticipate setting one in the next 2 years	In FY2015 AGL committed in it's Greenhouse Gas Policy to close all conventional coal power stations by 2050. This target represents the closure of the Bayswater Power Station

CC3.1b

Please provide details of your intensity target

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions covered by target	Target year	Is this a science-based target?	Comment

CC3.1c

Please also indicate what change in absolute emissions this intensity target reflects

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comment

CC3.1d

Please provide details of your renewable energy consumption and/or production target

ID	Energy types covered by target	Base year	Base year energy for energy type covered (MWh)	% renewable energy in base year	Target year	% renewable energy in target year	Comment

CC3.1e

For all of your targets, please provide details on the progress made in the reporting year

ID	% complete (time)	% complete (emissions or renewable energy)	Comment
Abs3	2.94%	0%	This represents the closure of all of AGL's coal fired power stations under the AGL GHG policy. No closure has yet occurred. Closure of the final of AGL's coal-fired power stations, AGL Loy Yang, will occur in 2048 (following the closure of Liddell in 2022 and Bayswater in 2035).
Abs1	16.65%	0%	This represents the closure of coal fired power stations under the AGL GHG policy. The closure of Liddell will occur in 2022
Abs2	5.26%	0%	This represents the closure of coal fired power stations under the AGL GHG policy. The closure of Bayswater will occur in 2035 (following the closure of Liddell in 2022)

CC3.1f

Please explain (i) why you do not have a target; and (ii) forecast how your emissions will change over the next five years

CC3.2

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

CC3.2a

Please 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	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
Product	AGL Carbon offset product (Future Forests) - This is a new product which will allow customers to offset their emissions from their energy use for a flat fee.	Avoided emissions	Other: Gold Standard VERS	0.01%	Less than or equal to 10%	For More information see https://refer.agl.com.au/future-forests/
Product	Greenpower - AGL purchases a specified percentage of the customer's electricity usage from an accredited renewable electricity generator. These products allow customers to avoid indirect greenhouse gas emissions.	Avoided emissions	Other: National GreenPower	0.01%	Less than or equal to 10%	For more information see https://www.agl.com.au/residential/energy-plans/electricity-and-gas-plans/green-energy
Product	Sale and installation of solar PV systems to external clients	Avoided emissions	Other: Internal Methodology	0.10%	Less than or equal to 10%	For more information see https://aglsolar.com.au/

Level of aggregation	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
Product	Sale and installation of battery systems to external clients	Avoided emissions	Other: Internal Methodology	0.01%	Less than or equal to 10%	For more information see https://aglsolar.com.au/
Product	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.	Avoided emissions	Other: Internal Methodology	0.02%	Less than or equal to 10%	For more information see https://www.agl.com.au/business/agl-energy-services/building-optimisation/operational-energy-management

CC3.3

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

Yes

CC3.3a

Please identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	6	
To be implemented*	6	878750
Implementation commenced*	3	77000
Implemented*	5	171260
Not to be implemented	1	

CC3.3b

For those initiatives implemented in the reporting year, please provide details in the table below

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
Low carbon energy installation	Installation of the 53MW Broken Hill Solar farm	105840	Scope 1	Voluntary	5040000	77000000	16-20 years	>30 years	The payback period has been calculated as a simple payback; ie the total cost divided by the annual savings amount.

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
Energy efficiency: Processes	Turning off idiling conveyors at the Loy Yang Mine	15000	Scope 1	Voluntary	195000	4000000	21-25 years	Ongoing	The payback period has been calculated as a simple payback; ie the total cost divided by the annual savings amount.
Energy efficiency: Processes	Air Heater seal overhauls to reduce leakage and improve efficiency at Bayswater Power Station	6000	Scope 1	Voluntary	78000	10000	<1 year	Ongoing	The payback period has been calculated as a simple payback; ie the total cost divided by the annual savings amount.
Low carbon energy installation	LED lighting upgrades at Loy Yang Mine	250	Scope 1	Voluntary	3000	800000	>25 years	Ongoing	The payback period has been calculated as a simple payback; ie the total cost divided by the annual savings amount.
Energy efficiency: Processes	Optimise sootblowing at lower loads, reduce steam losses and improve heat rate at Loy Yang power station	44170	Scope 1	Voluntary	574000	700000	1-3 years	Ongoing	The payback period has been calculated as a simple payback; ie the total cost divided by the annual savings amount.

CC3.3c

What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Financial optimization calculations	To ensure that the financial risks and opportunities associated with the introduction of future regulations in relation to climate change are addressed, AGL has developed a strategy and carbon valuation model that incorporates the introduction of a National Electricity Market (NEM) wide carbon price. The model forecasts likely carbon constraints and determines the least cost pathway for achieving them. In this way, carbon prices can be determined and incorporated into business decisions. The details of this model are commercially sensitive, however the following considerations are incorporated: - Current political party policies and stakeholder positions around the introduction of constraints; - Climate science and likely emission reduction targets; - Likely timing of carbon constraints being introduced; - Likely carbon constraint and price; - Eligibility of assets in any trading schemes, including permit allocation; and - Impact of carbon prices on wholesale electricity. AGL has used this model to estimate the NPV impacts on asset values as a result of climate change policy and uses these principles to evaluate assets at the time of new acquisitions. A carbon price is also used for internal asset maintenance capital budget decision making.
Financial optimization calculations	During FY2016 AGL announced the creation of the Powering Australian Renewables Fund. AGL will provide approximately $200 million in cornerstone equity, and new pricing models for purchasing the output produced by the Fund's assets. We will leverage our extensive development pipeline and management expertise to create assets in diverse locations, providing scale and maximising returns. The Fund will invest in around 1,000 plus megawatts of large-scale renewable energy, with a value of approximately $2 to $3 billion dollars. This fun has already invested in the 200MW Silverton Windfarm.
Compliance with regulatory requirements/standards	During FY2010 the Renewable Energy Target (RET) was introduced and refined to create two distinct markets for renewable energy: the Large Scale Renewable Energy Target (LRET) and the Small Scale Renewable Energy Scheme (SRES). The target is that 33,000 GWh of Australia's electricity supply will come from renewable sources by 2020. It is estimated that meeting the 33,000 GWh target by 2020 will require around $30 billion of investment in new renewable energy generation. As an energy retailer with around 15 percent market share of Australia's electricity load, AGL's developments are poised to make a significant contribution to meeting this target. AGL has a number of renewable projects in development or construction to support AGL's position in meeting the target.
Other	Where markets are emerging, AGL is making investments in new products and services. AGL created a new business unit in FY2015. AGL New Energy is designed to capitalise on the emerging opportunities in carbon reduction. This business focuses on battery storage and "beyond the meter" type services. In FY2016 this Business Unit developed the Virtual Power Plant which works through distributed battery storage and will be able to provide up to 5MW of power. AGL is proactively seeking opportunities to exploit new technologies in metering infrastructure and related load management. The business unit has committed to supplying over 1 million homes with new energy services by 2020.

CC3.3d

If you do not have any emissions reduction initiatives, please explain why not

Further Information

Page: CC4. Communication

CC4.1

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	Status	Page/Section reference	Attach the document	Comment
In voluntary communications	Complete	AGL Sustainability Report - 'Greenhouse & Energy' and 'Renewable Energy' section (pages 2-6 in the attached)	https://www.cdp.net/sites/2017/51/351/Climate Change 2017/Shared Documents/Attachments/CC4.1/FY 2016 Sustainability Report - Environment Chapter.pdf	AGL's FY2016 Sustainability Report was prepared in accordance with the Global Reporting Initiative (GRI) G4 guidelines and AA1000 standard. The report contains comprehensive greenhouse gas data, which has been prepared in accordance with Australia's NGER legislation. Greenhouse gas data is also presented using both 'operational control' and 'equity share' reporting boundaries. AGL also estimates the greenhouse gas emissions associated with the production, transportation and consumption of gas and electricity for and by our customers ('Energy Supply Footprint'). Link: http://agl2016.sustainability-report.com.au/
In voluntary communications	Complete	Carbon Constrained Future Report (p1-13)	https://www.cdp.net/sites/2017/51/351/Climate Change 2017/Shared Documents/Attachments/CC4.1/Carbon Constrained Future.pdf	AGL released the 'Carbon Constrained Future' report on 10 August 2016, to coincide with the release of AGL's full year financial results. This report outlines how AGL is positioning its business for a carbon constrained future, and provides the results of economic modelling of the impacts of various carbon constraints on Australia's National Electricity Market and the AGL generation portfolio. Link: http://agl2016.sustainability-report.com.au/files/carbon_constrained_future.pdf AGL is only one of two companies to adequately report on carbon risks under ACCR guidelines

Publication	Status	Page/Section reference	Attach the document	Comment
In mainstream reports (including an integrated report) but have not used the CDSB Framework	Complete	AGL Annual Report (p7-9)	https://www.cdp.net/sites/2017/51/351/Climate Change 2017/Shared Documents/Attachments/CC4.1/FY 2016 Annual Report.pdf	AGL's response to climate change is an integral part of Chairman and CEO Reports within the FY2016 Annual Report . Link: https://www.agl.com.au/-/media/AGL/About-AGL/Documents/Investor-Centre/160828_AR_1587084.pdf?la=en
In mainstream reports (including an integrated report) but have not used the CDSB Framework	Complete	(p8-10; p44)	https://www.cdp.net/sites/2017/51/351/Climate Change 2017/Shared Documents/Attachments/CC4.1/FY 2016 Full Year Results Presentation.pdf	AGL's response to climate change (including initiatives such as the Powering Australian Renewables Fund (PARF) and the world's largest virtual power plant) is articulated in the FY2016 Financial Results disclosures. The carbon intensity of AGL's assets is reported on p44. Link: https://www.agl.com.au/-/media/AGL/About-AGL/Documents/Investor-Centre/160810_ResultsInvestorPResentatio580439.pdf?la=en
In voluntary communications	Complete	AGL Greenhouse Gas Policy (whole document)	https://www.cdp.net/sites/2017/51/351/Climate Change 2017/Shared Documents/Attachments/CC4.1/AGL Greenhouse Gas Policy.pdf	AGL's response to climate change is documented in AGL's Greenhouse Gas Policy. Link: https://www.agl.com.au/-/media/AGL/About-AGL/Documents/Media-Center/Corporate-Governance-Policies-Charter/1704015_GHG_Policy_Final.pdf?la=en&hash=F86B1AC3D9B22C0748E190A3364136FF6BD3E194

Further Information

Module: Risks and Opportunities

Page: CC5. Climate Change Risks

CC5.1

Have you identified any inherent climate change risks that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

Risks driven by changes in regulation
Risks driven by changes in physical climate parameters
Risks driven by changes in other climate-related developments

CC5.1a

Please describe your inherent risks that are driven by changes in regulation

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Renewable energy regulation	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 though the purchase of Large Scale Generation Certificates (LGCs	Increased operational cost	3 to 6 years	Direct	Virtually certain	High	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	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	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

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	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						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.	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	approximately $5.1 billion overall in order to meet its share of the mandated scheme.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	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							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.	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	consequently investment								
Product efficiency regulations and standards	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.	Increased operational cost	Up to 1 year	Direct	Virtually certain	Low-medium	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.	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.	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.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	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.								
Emission reporting obligations	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	Increased operational cost	1 to 3 years	Direct	Very unlikely	Medium	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.	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	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).

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	AGL is a liable entity.							and Risk Management Committee on AGL's state of compliance.	
International agreements	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	Increased capital cost	>6 years	Direct	Likely	High	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	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	Risks are managed as part of business as usual operations, through policy engagement and AGL's energy market research program.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	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%)						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.	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 • Launched world's largest Virtual Power Plant – installing 1000 residential batteries into South Australian solar households and connecting through Sunverge	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								management platform to operate as a 5MW solar peaking plant feeding energy and services into the grid • Released to the market: "Carbon Constrained Future" an economic analysis of AGL operations within a carbon constrained future, specifically the current Australian NDC and a two degree constraint.	
Other regulatory drivers	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	Increased operational cost	1 to 3 years	Direct	Unlikely	Medium	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	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.	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.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	intended to set an emissions baseline which is not to be exceeded. As a generator, AGL risks penalties if we breach this baseline.						exceeds this individual baseline AGL may be subject to a penalty for the emissions above this baseline.		

CC5.1b

Please describe your inherent risks that are driven by changes in physical climate parameters

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in temperature extremes	Demand for electricity in Australia is heavily dependent	Increased operational cost	1 to 3 years	Direct	Virtually certain	Medium	Peakier electricity load provides potential upsides and downsides for AGL. As owner of generation assets that	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	The costs associated with these actions are relativ

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	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						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.	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	ely 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

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	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								average of around $50/MWh to $14,100 in half an hour (an increase of 25,000%).

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	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								

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	demand in winter. In summary, electricity demand is likely to become peakier with increased summer air-conditioning load and residential gas demand in winter is likely to fall.								

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in precipitation extremes and droughts	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	Increased operational cost	1 to 3 years	Direct	About as likely as not	Medium	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.	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	The costs associated with these actions are relatively minor (compared to business as usual)

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	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								

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	to cost effectively supply retail customers).								
Change in precipitation pattern	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	Inability to do business	Unknown	Direct	Unknown	Medium-high	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	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	The costs associated with these actions are relatively minor (compared to business as usual)

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	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.						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.		

CC5.1c

Please describe your inherent risks that are driven by changes in other climate-related developments

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Changing consumer behavior	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.	Reduced demand for goods/services	1 to 3 years	Direct	Very likely	Medium-high	Growing awareness is driving consumer purchasing decisions. Generous subsidies have driven the uptake of over 4 GW of new solar PV in Eastern Austra	AGL has developed a business unit (New Energy) 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. The business has a target of supplying more than 1 million homes with behind the meter energy services by 2020. AGL has made a US$20 million investment in leading US-based energy storage and management company, Sunverge Energy Inc. (Sunverge), to enhance its energy storage management capabilities and help accelerate the adoption of energy storage in the Australian market. As part of the strategic agreement, AGL is the exclusive channel partner for the sales of Sunverge's intelligent energy storage systems in Australia. AGL has developed the Virtual Power Plant which combines the energy storage capabilities of Sunverge with household rooftop solar panels to create a 5MW distributed virtual power plant. (https://www.agl.com.au/about-agl/media-centre/article-list/2016/august/agl-launches-world-largest-solar-virtual-power-plant)	AGL considers the increasing interest of customers in energy efficiency and distributed generation as a business opportunity, with the

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							lia. Lower aggregate demand for electricity acts to suppress wholesale electricity prices which affects the value of electricity produced by AGL's power generation assets.		AGL New Energy offerings designed to build shareholder value (rather than a risk management cost). AGL's investment in leading US-based ener

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
									gy storage and management company, Sunverge Energy Inc. (Sunverge) cost US$20 million.
Reputation	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	Other: Fewer investors holding emissions intens	>6 years	Direct	Likely	Medium	Investor perception influences the cost of capital for AGL,	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/170404015_GHG_Policy_Final.pdf Examples of this strategy •The Powering Australia Renewables Fund, a $2-$3 billion fund to invest alongside institutional organisations in ~1,000 MW of large scale	Costs associated with these actions The costs

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	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. AGL actively engages with analysts and the investment community to provide education about how carbon regulation will impact	ive industry equities or debt instruments					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	renewable projects providing innovative financing solutions and risk diversification •The world's largest Virtual Power Plant – installing 1000 residential batteries into South Australian solar households and connecting through Sunverge management platform to operate as a 5MW solar peaking plant. •Released the: Carbon Constrained Future an economic analysis of AGL operations within a carbon constrained future, specifically the current Australian NDC and a two degree constraint. AGL's new brand is focused on our commitment to exit coal. This commitment is based in our GHG policy and our understanding that as Australia's largest greenhouse emitter we have a responsibility to take a leading role in emissions reduction. (https://content.agl.com.au/)	associated with these actions are relatively minor (compared to business as usual)

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	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 2016 AGL published Carbon Constrained Future" an economic analysis of AGL operations within a carbon constrained future, specifically the current Australian NDC and a two degree constraint. This scenario analysis looks at the impact on AGL operations and the role of potential policies in impacting the economic value to AGL. AGL has performed numerous engagements talking to investors and other organisations on our Carbon Constrained Future Report as a positive example of ESG reporting and leading thinking on scenario analysis.						AGL to build or acquire new generation and gas assets, in comparison to its competitors.		
Uncertainty in	At present the South Australian Energy market is undergoing a rapid change in the generation stock serving	Increased opera	Up to 1 year	Direct	Very likely	Medium-high	As a large retailer and	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	The costs associate

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
market signals	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.	tional cost					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	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.	d with these actions are relatively minor (compared to business as usual).

Risk driver	Description	Potential impact	Timeframe	Direct / Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							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.		

CC5.1d

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC5.1e

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC5.1f

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

Further Information

Page: CC6. Climate Change Opportunities

CC6.1

Have you identified any inherent climate change opportunities that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

Opportunities driven by changes in regulation
Opportunities driven by changes in physical climate parameters
Opportunities driven by changes in other climate-related developments

CC6.1a

Please describe your inherent opportunities that are driven by changes in regulation

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Other regulatory drivers	The introduction of a domestic fund for the purchase of abatement under the current government Direct Action Plan provides opportunities for companies like AGL to identify and develop carbon abatement opportunities.	New products/business services	Up to 1 year	Direct	Virtually certain	Medium-high	AGL was able to bid landfill gas generation projects into the Government's ERF auction process, and will provide around 1 million tonnes of abatement over 7 years. The commercial aspects of the transaction remain confidential.	AGL's integrated business strategy has prepared the business for a carbon constrained future. AGL business procedures will seek out and identify opportunities to develop abatement projects or aggregation services to facilitate bidding into the Government	Given the voluntary nature of the program, costs can be considered economic as the viability of a project is assessed before a decision to participate is made.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								ERF program into the future.	
Renewable energy regulation	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 though the purchase of Large Scale Generation Certificates (LGCs, known previously as RECs). AGL has several new renewable generation development opportunities which could be developed	New products/business services	1 to 3 years	Direct	Likely	Medium	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 .	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	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

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	when market conditions support new investment. With increased certainty regarding the LRET target following recent negotiation of a reduced target AGL has announced an innovative method to encourage 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							under the LRET.	commenced construction in 2017 and the up to 460 MW Coopers Gap wind farm is under tender.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	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.								
Product efficiency regulations and standards	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	New products/business services	Up to 1 year	Direct	Virtually certain	Low-medium	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	These schemes provide AGL with opportunity to strengthen its customer interface and secure new customers. As these schemes effectively require liable entities such	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

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	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.						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.	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.	energy efficiency schemes a source of competitive advantage, where our approach offers the opportunity to achieve lower costs than the market average.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Renewable energy regulation	The Small-scale Renewable Energy Scheme (SRES) provides for upfront subsidies for the installation of new embedded solar PV at homes and businesses.	New products/business services	Up to 1 year	Direct	Likely	Medium	The Renewable Energy Target provides AGL with the regulatory support to maximise the value of its New Energy business.	AGL's integrated business strategy balances the risk between the upstream supply of energy and our customers' demand for energy. The New Energy business unit provide solar products and energy management products including batteries to enable consumers to take control of their energy demand.	The cost of management of this opportunity is the operational cost of the New Energy business.
Other regulatory drivers	Recent developments with the cessation of thermal power have increased the need for system security,	New products/business services	1 to 3 years	Direct	Virtually certain	Medium-high	Increasing focus on alternative sources of grid management services will enable AGL to better integrate cost	AGL's integrated business strategy balances the risk between the upstream supply of energy and	The current economics have required Federal assistance to maintain commercial viability and as such are cost

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	reliability and management services - these have increased the potential need for innovative integrated battery systems to assist in grid management						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	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. In June 2017 AGL announced it would develop a 210 MW gas fired peaking power station in South Australia.	neutral in the current environment, given a maturing process and technology the investment will ensure further investments in these areas are increasingly economic. In June 2017 AGL announced it would invest $295 million to develop a 210 MW gas fired peaking power station in South Australia.

CC6.1b

Please describe your inherent opportunities that are driven by changes in physical climate parameters

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in temperature extremes	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	New products/business services	1 to 3 years	Direct	Very likely	Medium	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. AGL has made a US$20 million investment in leading US-based energy	AGL has developed new businesses aimed at reducing risks associated with supplying customers with energy. This includes AGL's New Energy business as well as residential and small business customer offerings that incorporate energy efficiency advice, in-home demand management and coordinated provision of solar battery systems supported by the My AGL IQ website and app that allows customers to track their energy use, set goals access advice. In 2016, AGL was focused on the launch of the	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

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	allow AGL to provide services to allow customers to cost effectively address changes in temperature extremes.						storage and management company, Sunverge, to enhance its energy storage management capabilities and help accelerate the adoption of energy storage in the Australian market. As part of the strategic agreement, AGL is the exclusive channel partner for the sales of Sunverge's intelligent energy storage systems in Australia.	world's largest Virtual Power Plant – which will install 1000 residential batteries into South Australian solar households and connecting through Sunverge management platform to operate as a 5MW solar peaking plant feeding energy and services into the grid. In addition AGL launched an innovative $1 a day to charge your electric car as a way to encourage the uptake of electric vehicles.	

CC6.1c

Please describe your inherent opportunities that are driven by changes in other climate-related developments

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Other drivers	Climate change policies, higher energy prices and changing consumer patterns have provide opportunities for AGL to be an early mover in being more than a suppli	New products /business services	Up to 1 year	Direct	Very likely	Medium	The market for distributed energy and "beyond the meter" advisory services has grown significantly in Australia. AGL's New Energy business has been established to embrace this change.	AGL has developed new businesses aimed at reducing risks associated with supplying customers with energy. This includes AGL's New Energy business as well as residential and small business customer offerings that incorporate energy efficiency advice, in-home demand management and coordinated provision of solar battery systems supported by the My AGL IQ website and app that allows customers to track their energy use, set goals access advice. In 2016, AGL was focused on the launched of the world's largest Virtual Power Plant – which will install 1000 residential batteries into South Australian solar households and connecting through Sunverge management platform to operate as a 5MW solar peaking plant feeding energy and services into the grid. In addition AGL launched an innovative $1 a day to charge your electric car as a way to encourage the uptake of electric vehicles.	AGL considers New Energy services to be a source of growth of shareholder value.

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	er of energy. AGL's a New Energy business unit is designed to capitalize on these opportunities. This business will focus on distributed generation and "beyond the meter" type services.								

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	AGL is proactively seeking opportunities to exploit new technologies in metering infrastructure and related load management services. In some jurisdictions of Australia, smart								

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	metering technology has commenced rollout.								
Reputation	Climate change is an increasing issue in the minds of civil society and consumers. The ability to be a constructive leader in the develo	New products /business services	1 to 3 years	Direct	Virtually certain	High	Customers are increasingly concerned about climate change and are looking to be associated with organisations that are pursuing constructive approaches to	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 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 •The world's largest Virtual Power Plant – installing 1000 residential batteries into South Australian solar households and connecting through Sunverge management platform to operate as a 5MW solar peaking plant •Released the: "Carbon Constrained Future" an economic analysis of AGL operations within a carbon constrained future, specifically the current Australian NDC and a two degree constraint. AGL's new brand is focused on our commitment to exit coal. This commitment is based in our greenhouse gas policy and our understanding that as Australia's largest greenhouse emitter we have a responsibility to take a leading role in emissions reduction. For further information: https://content.agl.com.au/	AGL does not expect there to be costs other than business as usual costs with these actions.

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	pment of coherent and constructive policy will enable AGL to increase its standing within the community. With a material footprint AGL has the opportunity to demonstrat						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		

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	e 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 gover						timeframes required under a 2 degree scenario.		

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	nment, 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								

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	supported 2 degree goal.								
Other drivers	AGL recognises that as energy prices increase customers are becoming more aware of the value that energy efficiency products and	New products /business services	1 to 3 years	Direct	Virtually certain	Medium	New product and service offerings allow AGL to both diversify revenue streams and to strengthen its customer interface and as a point of differentiation to secure	AGL's response to these changing consumer trends is to launch integrated offerings for residential and small business customers incorporating energy efficiency advice, products, appliances and services online and in-home - including the My AGL IQ website and mobile app that allows customers to track their energy usage, set goals and access advice. AGL Solar also installs solar PV units for residential and small business customers. Through the AGL New Energy Services Business Unit AGL also provides solar products and energy management products including batteries to enable consumers to take control of their energy demand.	AGL considers the increasing interest of customers in energy efficiency as a business opportunity, with the AGL New Energy and the AGL Energ

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	services can provide.						new customers. One of AGL's key business objectives in the short to medium term is to grow its customer base and providing an excellent customer experience is critical to achieving this goal.		y Services offerings designed to build shareholder value (rather than a risk management cost).

CC6.1d

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1e

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1f

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

Further Information

Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading

Page: CC7. Emissions Methodology

CC7.1

Please provide your base year and base year emissions (Scopes 1 and 2)

Scope	Base year	Base year emissions (metric tonnes CO2e)
Scope 1	Sun 01 Jul 2012 - Sun 30 Jun 2013	20236411.02
Scope 2 (location-based)	Sun 01 Jul 2012 - Sun 30 Jun 2013	314526.81
Scope 2 (market-based)	Sun 01 Jul 2012 - Sun 30 Jun 2013	309616.11

CC7.2

Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

Please select the published methodologies that you use
Australia - National Greenhouse and Energy Reporting Act
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

CC7.2a

If you have selected "Other" in CC7.2 please provide details of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

For all data presented in this report, AGL has utilised the relevant reporting and calculation methodologies set out in the NGER Measurement Determination 2008 (as amended for relevant reporting period). The approach and methodologies published under the NGER Act 2007 are broadly consistent with the Greenhouse Gas Protocol and industry approaches for calculating greenhouse gas emissions on an operational control basis. Data relating to Scope 1, 2 and 3 emissions is collected regularly from the business units and greenhouse gas emissions are calculated at a corporate level.

AGL has developed reporting templates for each facility. These are populated with the relevant activity data (namely greenhouse emissions, energy consumption and energy production) and other information.

This data is also used for a variety of reporting purposes including the AGL Sustainability Report, details of which are supplied in 'further information' section below. No operated parts of the business or sources of greenhouse gas emissions have been excluded from AGL's greenhouse reporting. It is important to note that this data is prepared in accordance with legislative requirements (NGER) and is subject to external assurance audits annually (on a voluntary basis).

Emissions from non-operated assets and operations that are not reported as part of NGER are voluntarily disclosed in AGL's annual sustainability reports as part of the 'Equity Footprint' and 'Energy Supply Footprint'. Refer to AGL's 2016 Sustainability Report for further details (http://agl2016.sustainability-report.com.au/environment/climate-changegreenhouse-and-energy)

CC7.3

Please give the source for the global warming potentials you have used

Gas	Reference
CO2	Other: National Greenhouse and Energy Reporting Act 2007
CH4	Other: National Greenhouse and Energy Reporting Act 2007
N2O	Other: National Greenhouse and Energy Reporting Act 2007
HFCs	Other: National Greenhouse and Energy Reporting Act 2007
PFCs	Other: National Greenhouse and Energy Reporting Act 2007
SF6	Other: National Greenhouse and Energy Reporting Act 2007

CC7.4

Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data at the bottom of this page

Fuel/Material/Energy	Emission Factor	Unit	Reference
Other:		Other:	NGER Measurement Determination Schedule 1

Further Information

Question 7.1 In addition to information provided for Question 7.1, AGL's Sustainability Report publishes three approaches or "footprints" to fully describe the annual greenhouse impacts of AGL's operations and the energy supplied to our 3.6 million customers. The report can be accessed at http://agl2016.sustainability-report.com.au/. The three approaches are: • The ""Operational Footprint"" which accounts for emissions from assets and activities over which AGL has operational control (including our corporate operations). This is the approach used under the National Greenhouse and Energy Reporting (NGER) Act 2007 as described above in Question 7; • The ""Equity Footprint"", which includes the emissions from assets which AGL owns completely or in part, assessed by percentage ownership. This approach is broadly consistent with the Financial Control boundary under the Greenhouse Gas Protocol; and • The ""Energy Supply Footprint"", which estimates the emissions associated with the entire supply chain of the electricity and natural gas sold to AGL's 3.6 million customers. This footprint includes emissions from fuel extraction and processing, electricity generation, transmission and distribution, and use of the energy by AGL's customers. AGL has compiled and published annual greenhouse gas emission inventories on a voluntary basis since 1997 - initially as part of the Australian Government's Greenhouse Challenge Program, and subsequently as part of AGL's broader sustainability strategy and reporting. Question 7.3 The National Greenhouse and Energy Reporting Act 2007 and related legislative framework are prescriptive about the values of global warming potentials (GWP) that should be used for a given reporting year. These values are included in Regulations published (and revised) by the Commonwealth Department of Environment. According to the regulations, the global warming potentials for each gas are sourced from the IPCC - specifically, the Intergovernmental Panel on Climate Change in Climate Change 1995: The Science of Climate Change (Cambridge, UK: Cambridge University Press, 1996). Question 7.4 The emission factors used in AGL's greenhouse gas emissions reporting are sourced from or calculated in accordance with, the National Greenhouse and Energy Reporting Act 2007 - Measurement Determination Schedule 1 as attached. AGL uses two different types of emission factors: • Method 1: Emission factors that are published each year by the Australian Government for use in NGER reporting. These are 'average' factors that provide a reasonably accurate estimate of emissions from different types of activities in Australia. The comprehensive list of all Method 1 emission factors is included in the NGER Measurement Determination 2008 (as amended for each reporting year). AGL uses Method 1 emission factors to calculate emissions from fairly minor emissions sources within our operational footprint - such as the vehicle fleet. • Method 2: More accurate emission factors that are used by AGL to calculate emissions from large emission sources within the operational control boundary. Method 2 emission factors are calculated on a monthly basis from fuel composition data. They are therefore not based on a national average, but are specific to the exact fuel (or mix of fuels) in use at each facility, and are sensitive to changes in the fuels over time. Around 99% of AGL's operational emissions are calculated from Method 2 factors. The methodologies used for calculating Method 2 emission factors are included in the NGER (Measurement) Determination 2008 (as amended for each reporting period). For AGL's other greenhouse footprints (Equity Footprint and Energy Supply Footprint), emission factors that are not provided in the NGER Measurement Determination 2008 are sourced from other Australian Government publications (such as the National Greenhouse Accounts (NGA) Factors) or industry specific reports and analysis. In some cases AGL applies estimates for equity and supply chain emissions where more accurate information is not available.

Page: CC8. Emissions Data - (1 Jul 2015 - 30 Jun 2016)

CC8.1

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

CC8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e

43258798

CC8.3

Please describe your approach to reporting Scope 2 emissions

Scope 2, location-based	Scope 2, market-based	Comment
We are reporting a Scope 2, location-based figure	We are reporting a Scope 2, market-based figure	

CC8.3a

Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e

Scope 2, location-based	Scope 2, market-based (if applicable)	Comment
526700	526294.70	Market-based scope 2 emissions were calculated by netting out 100% green power purchases from our Eastwood and Burwood offices (372 MWh), and using state-based emissions factors for the remaining electricity consumption.

CC8.4

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

CC8.4a

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of location-based Scope 2 emissions from this source	Relevance of market-based Scope 2 emissions from this source (if applicable)	Explain why the source is excluded

CC8.5

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	Less than or equal to 2%	Metering/ Measurement Constraints	The uncertainty of Scope 1 emissions has been estimated to the 95% confidence interval using methodologies prescribed by the NGER Act. In emissions calculations, several data sources and calculation methodologies are used, each having accuracy, assumption and measurement limits. These are aggregated to estimate the overall uncertainty at the source, facility and corporate group levels. For each emission source, uncertainty is calculated by adding the uncertainties from the measurement of activity data, energy content of fuels and emission factors. The key uncertainty sources are: (a) Use of published average emission and energy content factors: applying average factors to specific fuel use activities will not provide an exact measure of emissions; (b) Measurement accuracy of meters and other measurement equipment: AGL relies on data from fuel measurement and electricity meters, and fuel composition data provided by laboratories and instruments such as gas chromatographs to calculate emissions. Each of these has defined accuracy levels which introduces uncertainty into the emission calculations. AGL’s material datasets are complete, so data gaps and extrapolation do not add significant uncertainty to the emissions inventory. The uncertainties for different AGL facilities vary widely. AGL's largest facilities, Bayswater, Loy Yang, Liddell Power Stations and Torrens have an aggregate uncertainty of 1%. This includes a 50% uncertainty in the published factor used to calculate fugitive emissions from the Loy Yang Mine. AGL's gas-fired electricity generators utilise high quality metering and continuous fuel sampling. The aggregate uncertainty for these sites is low (<5%). Facilities where a high proportion of emissions arise from contractor activities have higher uncertainties (up to 45%) due to the increased difficulty of capturing data from third parties and higher incidence of fugitive emissions that are inherently difficult to quantify. The facilities with highest uncertainties are AGL's biogas and biomass electricity generators (over 50%). AGL calculates these emissions using published fuel energy content and emission factors, which each have associated uncertainties of 50%. Given the renewable nature of these fuels, the total emissions are low, and the high uncertainties have little impact on the corporate group uncertainty total.
Scope 2 (location-based)	More than 5% but less than or equal to 10%	Other: Published Emission Factors	The activity data that is used to calculate AGL's Scope 2 emissions is sourced from invoices, network metering (e.g. at power stations) and AGL's own billing IT systems, which all have low associated uncertainty. The dominant source of uncertainty associated with Scope 2 emissions is the use of published state average emission factors (as prescribed by the NGER legislative framework). These factors are estimated based upon market data (from the Australian Energy Market Operator) to represent the 'primary electricity grid' of the state. Significant sources of uncertainty arise from: - Reliance upon static estimates of emissions intensities of power stations (intensities can vary significantly over time due to weather conditions and fuel quality and composition); - Interconnectivity of different states in the National Electricity Market (NEM) which have different generation technologies installed and therefore very different emissions intensities (i.e. electricity consumed in Tasmania,

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
			where the generation technologies are low emissions hydro power, could have been imported from a brown coal generator in Victoria with a sent out intensity of 1.5 tCO2e/MWh); and - Factors are averaged over three years to minimise annual volatility, and there is a natural time lag between the period when data is collected to calculate a factor and the reporting period to which the emission factor is applicable. Although the uncertainty associated with the published state average emission factors is not published by the Australian Department of Climate Change and Energy Efficiency, AGL estimates that it is likely to be between 5 and 10% for each state (due to the estimates, and spatial and temporal limitations outlined above).
Scope 2 (market-based)	More than 5% but less than or equal to 10%	Other: Published Emission Factors	Due to the uses of the same location based factors and data sources as in the location-based scope 2 emissions calculations, the error is essentially identical.

CC8.6

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance process in place

CC8.6a

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Annual process	Complete	Limited assurance	https://www.cdp.net/sites/2017/51/351/Climate Change 2017/Shared Documents/Attachments/CC8.6a/Deloitte Limited Assurance Opinion_AGL NGER 30 June 2016 19102016.pdf	pages 1,4 & 7	ASAE3000	100

CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emission Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission

CC8.7

Please indicate the verification/assurance status that applies to at least one of your reported Scope 2 emissions figures

Third party verification or assurance process in place

CC8.7a

Please provide further details of the verification/assurance undertaken for your location-based and/or market-based Scope 2 emissions, and attach the relevant statements

Location-based or market-based figure?	Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Location-based	Annual process	Complete	Limited assurance	https://www.cdp.net/sites/2017/51/351/Climate Change 2017/Shared Documents/Attachments/CC8.7a/Deloitte Limited Assurance Opinion_AGL NGER 30 June 2016 19102016.pdf	pages 1,4 & 7	ASAE3000	92

CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
Year on year emissions intensity figure	AGL's greenhouse gas data presented in the 2016 AGL Sustainability Report has been subject to Limited Assurance including: operational footprint, equity footprint, energy supply footprint, and the greenhouse gas emission intensity of AGL's electricity generation portfolio.

CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

Yes

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

60241.32

Further Information

In addition to reporting greenhouse gas emissions using an operational control approach, AGL also publicly reports greenhouse gas emissions using an "Equity Footprint" approach. AGL's Equity Footprint (as outlined in AGL's Sustainability Report) sets out AGL's share of the emissions from our fully and partially owned entities (by percentage ownership). The AGL Equity Footprint includes AGL's interests in upstream gas production and retail activities. In FY2016, AGL's Equity Footprint was estimated to be 44 MtCO2e. AGL also discloses its energy supply footprint, which estimates the total supply chain emissions from supplying AGL's 3.6 million customers with electricity and natural gas. In FY2016, AGL's Energy Supply Footprint was estimated to be 49.2 MtCO2e. Questions 8.6 & 8.7: AGL engaged Deloitte to conduct a voluntary limited assurance audit of AGL's largest five facilities as reported under the NGER Act for FY2016 against the NGER Audit Determination. This assurance (and subsequent unqualified assurance opinion) covered over 90% of the energy consumed, energy produced and Scope 1 & 2 greenhouse gas emissions from facilities where AGL had operational control for all or part of FY2016 (as reported to the Australian Government in AGL's Annual Report under the NGER Act 2007). Additionally, AGL engaged Deloitte to undertake a limited assurance of AGL's Operational, Equity and Energy Supply footprints reported in AGL's 2016 Sustainability Report against the ASAE3000 standard. This assurance covered the Scope 1, 2 and 3 greenhouse gas emissions included in each of the three footprints. Question 8.9: The estimates provided in relation to the emissions of carbon dioxide from the combustion of biologically sequestered carbon are not included in AGL's greenhouse gas emissions footprints. AGL operates a number of facilities that generate electricity from sewage biogas, biomass and landfill gas. These fuels are considered renewable as the biogenic carbon they contain is absorbed from the atmosphere and re-released during combustion within a short time period; therefore they do not increase net greenhouse gas emissions. Under standard greenhouse gas accounting principles, these emissions of carbon dioxide are therefore set to zero. The figure provided represents an estimate of emissions released when these bio-fuels are combusted.

Page: CC9. Scope 1 Emissions Breakdown - (1 Jul 2015 - 30 Jun 2016)

CC9.1

Do you have Scope 1 emissions sources in more than one country?

No

CC9.1a

Please break down your total gross global Scope 1 emissions by country/region

Country/Region	Scope 1 metric tonnes CO2e

CC9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

By business division
By GHG type
By activity

CC9.2a

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)
AGL Loy Yang	18141719
AGL Macquarie	23500014
New Energy Services	52
Distributed Energy Services	45404
Gas and Renewables	1571300
Operations Support	309

CC9.2b

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude

CC9.2c

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CO2	43093049
CH4	34189
N2O	130734
SF6	826

CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
Coal Electricity Generation	41640092
Natural Gas Electricity Generation	1544714

Activity	Scope 1 emissions (metric tonnes CO2e)
Wind Electricity Generation	796
Hydro Electricity Generation	115
Large Scale Solar Electricity Generation	162
Small Scale Generation (Predominantly Biogas and Biomass)	7624
Cogeneration (Electricity & Steam)	18881
Corporate Offices	806
Other Activities	106
Oil and Gas Exploration, Production & Storage	45502

Further Information

Question 9.2 In addition to reporting greenhouse gas emissions using an 'operational control approach', AGL also reports greenhouse emissions using an 'equity' approach. AGL's Equity Footprint (as outlined in AGL's Sustainability Report) sets out AGL's share of the emissions from our fully and partially owned entities, by percentage ownership. The Equity Footprint indicates to AGL shareholders the greenhouse gas impacts associated with their investment. The AGL Equity Footprint includes AGL's interests in upstream gas production and retail activities. In FY2016, AGL's Equity Footprint was estimated to be 44.2 Mt CO2e (scope 1 and 2). Further detail is provided in the 2016 AGL Sustainability Report (http://agl2016.sustainability-report.com.au/data-centre/environment). Note that the values for each breakdown category for 9.2a, 9.2c and 9.2d may not sum exactly to the total scope 1 emissions due to rounding.

Page: CC10. Scope 2 Emissions Breakdown - (1 Jul 2015 - 30 Jun 2016)

CC10.1

Do you have Scope 2 emissions sources in more than one country?

No

CC10.1a

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes 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)

CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By business division
By activity

CC10.2a

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
AGL Loy Yang	259704	259704
AGL Macquarie	213850	213850
New Energy Services	40	40
Distributed Energy Services	3833	3833
Gas and Renewables	46763	46763

Business division	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Operations Support	2510	2104.70

CC10.2b

Please break down your total gross global Scope 2 emissions by facility

Facility	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)

CC10.2c

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Coal Electricity Generation	472110	472110
Natural Gas Electricity Generation	17812	17812
Wind Electricity Generation	4477	4477
Hydro Electricity Generation	9225	9225
Large Scale Solar Electricity Generation	1031	1031
Small Scale Electricity Generation (Predominantly Biogas & Biomass)	2345	2345
Cogeneration (Electricity & Steam)	77	77

Activity	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Corporate Offices	3280	2874.70
Other Activities	320	320
Oil and Gas Exploration, Production & Storage	16023	16023

Further Information

Location-based scope emissions have been calculated using the relevant state average emission factor, as prescribed by the legislative framework of the National Greenhouse and Energy Reporting Act 2007. Market-based scope 2 emissions were calculated by netting out 100% green power purchases from our Eastwood and Burwood offices (372 MWh), and using state-based emissions factors for the remaining electricity consumption. Since all renewable generation is taken into account when calculating state-based emission factors, the market-based calculation results in double counting.

Page: CC11. Energy

CC11.1

What percentage of your total operational spend in the reporting year was on energy?

More than 60% but less than or equal to 65%

CC11.2

Please state how much heat, steam, and cooling in MWh your organization has purchased and consumed during the reporting year

Energy type	MWh
Heat	0
Steam	0
Cooling	0

CC11.3

Please state how much fuel in MWh your organization has consumed (for energy purposes) during the reporting year

134795112.45

CC11.3a

Please complete the table by breaking down the total "Fuel" figure entered above by fuel type

Fuels	MWh
Bituminous coal	71611310.28
Brown coal	54034752.78
Other: Coal Seam Methane	180856.39
Crude oil	425.00
Diesel/Gas oil	193734.44
Distillate fuel oil No 1	57258.89
Other: Welding Gas	32.50
Motor gasoline	3417.22
Wood or wood waste	69.44
Landfill gas	183061.11
Liquefied petroleum gas (LPG)	372.22
Natural gas	8386750.78
Lubricants	1039.44
Sludge gas	141438.89
White spirit/ SBP	51.67
Other: Hydrogen	541.39

CC11.4

Please provide details of the electricity, heat, steam or cooling amounts that were accounted at a low carbon emission factor in the market-based Scope 2 figure reported in CC8.3a

Basis for applying a low carbon emission factor	MWh consumed associated with low carbon electricity, heat, steam or cooling	Emissions factor (in units of metric tonnes CO2e per MWh)	Comment
Energy attribute certificates, Guarantees of Origin	350.86	0.56	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 0.56 metric tonnes CO2e per MWh. is for South Australia, and the low carbon consumption is for the Eastwood site.
Energy attribute certificates, Guarantees of Origin	15.64	0.84	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 for NSW (used for the Bathurst site calculation) is 0.84 metric tonnes CO2e per MWh.

CC11.5

Please report how much electricity you produce in MWh, and how much electricity you consume in MWh

Total electricity consumed (MWh)	Consumed electricity that is purchased (MWh)	Total electricity produced (MWh)	Total renewable electricity produced (MWh)	Consumed renewable electricity that is produced by company (MWh)	Comment
3419827.71	455917.62	48500623.35	4210900.35	72591.39	Renewable energy generation includes wind, solar, hydro and biogas generation. A number of these assets consume auxiliary power generated on-site.

Further Information

Question 11.1: As an energy utility, the majority of AGL's operational spend is used to purchase energy, including from the wholesale electricity and gas markets, to supply electricity and gas to more than 3.6 million customers (i.e. energy represents the majority of AGL's supply chain). This figure has been estimated by summing the revenue AGL received during FY2016 from the sales of electricity and natural gas, subtracting related gross margins, and dividing the result by AGL's operating expenses for the year. This data can be found in the attached FY2016 Annual Report. Questions 11.2 & 11.3: All 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 included in Question 11 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).

Page: CC12. Emissions Performance

CC12.1

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

Increased

CC12.1a

Please 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

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
Emissions reduction activities			
Divestment			
Acquisitions	12.73	Increase	FY2016 was the first full financial year of Macquarie Generation running, since its acquisition by AGL in September 2014.
Mergers			
Change in output			
Change in methodology			
Change in boundary			
Change in physical operating conditions			
Unidentified			
Other			

CC12.1b

Is your emissions performance calculations in CC12.1 and CC12.1a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

CC12.2

Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per unit currency total revenue

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator: Unit total revenue	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
0.0039	metric tonnes CO2e	11150000000	Location-based	7.95	Increase	FY2016 was the first full financial year of Macquarie Generation running, since its acquisition by AGL in September 2014.

CC12.3

Please provide any additional intensity (normalized) metrics that are appropriate to your business operations

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator	Metric denominator: Unit total	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
0.96	metric tonnes CO2e	megawatt hour (MWh)	45535060	Location-based	0.44	Decrease	This is an indicator of the greenhouse gas emissions intensity of AGL's operated generation fleet, calculated by dividing AGL's total Scope 1 and Scope 2 emissions from operated electricity generation assets by the total sent out megawatt-hours of generation from these facilities. In FY2016 the total sent out generation increased by 13.7% compared to FY2015, whilst electricity generation emissions increased by 13.2%. The FY2016 intensity figure has decreased slightly due to the increase in lower intensity black coal (c.f. brown coal) generation as well as an increase in renewable generation.

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator	Metric denominator: Unit total	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
13039	metric tonnes CO2e	full time equivalent (FTE) employee	3358	Location-based	18.77	Increase	Emissions increased by 12.73% from FY2015 to FY2016, as FY2016 was the first full year of operation of Macquarie Generation. Full time employee count slightly decreased by 5.09% from FY2015 to FY2016, due to a company restructure and particularly reduction in the size of the upstream gas business unit.
6.44	metric tonnes CO2e	Other: Oil & Gas Sales (TJ)	6309.69	Location-based	0.6	Decrease	This is an indicator of the greenhouse gas emissions intensity of AGL's upstream oil and gas sales, calculated by dividing the total Scope 1 and Scope 2 emissions from AGL's operated oil and gas operations (Including exploration, testing and production) by the total sales of oil and gas products (TJ). From FY2015 to FY2016, emissions from oil and gas production & exploration have increased by 94.66%, whilst sales of oil & gas have decreased by 11.75%.

Further Information

Following the acquisition of Macquarie Generation in September 2014, AGL has become Australia’s largest scope 1 greenhouse gas emitting business. Due to the timing of the acquisition, FY2016 is the first financial year to fully capture the emissions from AGL Macquarie.

Page: CC13. Emissions Trading

CC13.1

Do you participate in any emissions trading schemes?

No, and we do not currently anticipate doing so in the next 2 years

CC13.1a

Please complete the following table for each of the emission trading schemes in which you participate

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO2e	Details of ownership

CC13.1b

What is your strategy for complying with the schemes in which you participate or anticipate participating?

CC13.2

Has your organization originated any project-based carbon credits or purchased any within the reporting period?

Yes

CC13.2a

Please provide details on the project-based carbon credits originated or purchased by your organization in the reporting period

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits canceled	Purpose, e.g. compliance
Credit origination	Landfill gas	AGL's landfill gas projects: Gosnells, Rockingham, Glenorchy, Hobart, Kincumber, Shoalhaven, Woy Woy, Green Point & Wagga Wagga.	Other: Carbon Farming Initiative (Kyoto ACCUs)	153627	153627	Yes	Voluntary Offsetting

Further Information

Page: CC14. Scope 3 Emissions

CC14.1

Please account for your organization's Scope 3 emissions, disclosing and explaining any exclusions

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Purchased goods and services	Not relevant, explanation provided				The emissions from the extraction, production and transportation of all good and services purchased in the

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
					financial year are accounted for in the other categories below.
Capital goods	Not relevant, explanation provided				No capital good purchased in FY16.
Fuel-and-energy-related activities (not included in Scope 1 or 2)	Relevant, calculated	10485669	This is calculated by totaling the emissions form 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.	0.00%	
Upstream transportation and distribution	Relevant, calculated	72	Upstream transportation of Solar PV panels from suppliers in Korea. 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.	00%	
Waste generated in operations	Relevant, calculated	6188	Total waste broken down by type multiplied by the type emissions factor as per the Australian National Greenhouse Account Factors.	0.00%	
Business travel		1262	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.	0.00%	
Employee commuting	Relevant, calculated	7497	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		

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
			developed and emissions calculated using average fuel consumption for cars and NGER factors along with average emissions per journey for other methods of transport.		
Upstream leased assets	Not relevant, explanation provided				All leased assets are accounted for in the scope 1 and 2 emissions reported in the financial year
Downstream transportation and distribution	Not relevant, explanation provided				All products sold by the company which were provided to customers in the financial yer were transported and distributed by vehicles under the operational control of AGL, and emissions were therefor reported as scope 1 emissions
Processing of sold products	Not relevant, explanation provided				There was no processing of intermediate products by AGL in the reporting year.
Use of sold products	Relevant, calculated	9800000	Calculated by multiplying the total natural gas sales to customers by the Standard NGER emissions factors	0.00%	
End of life treatment of sold products	Relevant, calculated	3060	End of life emissions from the total number of PV systems sold in FY16. Assuming 0.3 tCO2e/kW of PV systems sold	0.00%	
Downstream leased assets	Not relevant, explanation provided				AGL does not own and lease assets to entities over which it does not have operational control.
Franchises	Not relevant, explanation provided				AGL did not operate any Franchises in the reporting period
Investments	Relevant, calculated	422000	Includes the emissions from all assets which AGL has an equity stake	0.00%	

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Other (upstream)					
Other (downstream)					

CC14.2

Please indicate the verification/assurance status that applies to your reported Scope 3 emissions

Third party verification or assurance process in place

CC14.2a

Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 3 emissions verified (%)
Annual process	Complete	Limited assurance	https://www.cdp.net/sites/2017/51/351/Climate Change 2017/Shared Documents/Attachments/CC14.2a/Assurance Opinion - Release 2.pdf	whole document	ASAE3000	99

CC14.3

Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?

Yes

CC14.3a

Please identify the reasons for any change in your Scope 3 emissions and for each of them specify how your emissions compare to the previous year

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Capital goods	Change in physical operating conditions	100	Decrease	No capital good purchased in FY16
Fuel- and energy-related activities (not included in Scopes 1 or 2)	Change in output	14	Decrease	Reduction in purchased electricity sold to customers in the financial year due to an increase in own generation
Upstream transportation & distribution	Change in output	29	Increase	Increase in sales of photovoltaic panels in FY16

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Waste generated in operations	Acquisitions	11	Increase	First full year of operation of AGL Maqcuarie
Business travel	Change in physical operating conditions	47	Decrease	
Use of sold products	Change in output	6	Decrease	Reduction it total gas sales to customers in FY16
End-of-life treatment of sold products	Change in output	30	Increase	Increase in sales of photovoltaic panels in FY16
Investments	Change in output	9	Decrease	Reduction in output from generators in which AGL has an equity stake

CC14.4

Do you engage with any of the elements of your value chain on GHG emissions and climate change strategies? (Tick all that apply)

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

CC14.4a

Please give details of methods of engagement, your strategy for prioritizing engagements and measures of success

Engagement with customers:
AGL has prioritised providing energy efficiency solutions for our customers, and has focused significant efforts on providing customers with the enabling technology to be able to manage their energy usage efficiently, for example, through the entry of AGL's wholly-owned subsidiary, Active Stream, into the contestable digital metering market.

During FY2016 we delivered energy productivity solutions that helped our larger customers make their businesses more productive and successful, while also saving energy and money, through services including the following:

- AGL Insight - a Cloud-based software platform that enables customers to access their electricity and gas billing data, and capture emissions, water and

pollutant data for reporting purposes.

- AGL Electroserv - an AGL business that focuses on electrical efficiency, and provides energy productivity services to AGL's commercial and industrial customers.

- Energy productivity studies - AGL worked with commercial building customers to undertake site assessments and makes recommendations to assist them in optimizing energy use across key equipment.

- Other projects - including building optimisation analytics; lighting upgrades; solar PV systems; and the delivery of HVAC (heating, ventilation and air-conditioning) solutions.

We also make energy-saving tips readily available to our residential customers, including by providing information on our website on practical ways to conserve energy at home.

AGL also offers a range of accredited GreenPower electricity products that allow consumers to elect to have a proportion of their electricity supplied from renewable sources, as well as 'AGL Future Forests', which allows customers to offset the greenhouse gas emissions association with their electricity consumption.

Engagement with suppliers:
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 Suppler 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.

Engagement with lenders:

AGL has commenced 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".

Metrics:

In FY2016, AGL set the following target in relation to engagement with Suppliers: "AGL Supplier Agreements signed in FY2017 to include the AGL Supplier Code of Conduct: 100%" (Ref: FY2016 Sustainability Report).

AGL has also set a target to have 1 million smart connections by 2020 (covering the number of premises with solar PV, batteries and/or digital meters (Ref: FY2016 Sustainability Report). While not solely related to engagement with customers about climate change, this target implicitly requires engagement with customers

around energy efficiency, renewables and/or emissions avoidance.

CC14.4b

To give a sense of scale of this engagement, please give the number of suppliers with whom you are engaging and the proportion of your total spend that they represent

Type of engagement	Number of suppliers	% of total spend (direct and indirect)	Impact of engagement
Active engagement	75	97%	During the FY2016 reporting year, the total number contracts between AGL and suppliers was 91, with a total value of $321 million. Of these, a total of 75 contracts with a value of $311 million included the Supplier Code of Conduct clause, representing 97% of contract spend. In calculating the number of contracts that have the Supplier Code of Conduct (SCOC) clause between July 1 2015 to June 30 2016, there have been 75 contracts with the new clause totalling $311M from a total of 91contracts valued at $321M – representing 97% of contract spend.

CC14.4c

Please explain why you do not engage with any elements of your value chain on GHG emissions and climate change strategies, and any plans you have to develop an engagement strategy in the future

Further Information

Module: Sign Off

Page: CC15. Sign Off

CC15.1

Please provide the following information for the person that has signed off (approved) your CDP climate change response

Name	Job title	Corresponding job category
Lisa Harrington	Executive General Manager Stakeholder Relations	Other C-Suite Officer

Further Information

As Executive General Manager Stakeholder Relations, Lisa reports to the CEO and Managing Director Andy Vesey, and is responsible for corporate affairs, government and community relations, policy, sustainability and regulation.

Module: Electric utilities

Page: EU0. Reference Dates

EU0.1

Please enter the dates for the periods for which you will be providing data. The years given as column headings in subsequent tables correspond to the "year ending" dates selected below. It is requested that you report emissions for: (i) the current reporting year; (ii) one other year of historical data (i.e. before the current reporting year); and, (iii) one year of forecasted data (beyond 2021 if possible).

Year ending	Date range
2016	Wed 01 Jul 2015 - Thu 30 Jun 2016
2013	Sun 01 Jul 2012 - Sun 30 Jun 2013

Year ending	Date range
2030	Sun 01 Jul 2029 - Sun 30 Jun 2030
2050	Thu 01 Jul 2049 - Thu 30 Jun 2050

Further Information

Page: EU1. Global Totals by Year

EU1.1

In each column, please give a total figure for all the countries for which you will be providing data for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emission intensity (metric tonnes CO2e/MWh)
2013	5398	20173	20446310	1.01
2016		45261	43703655	0.96
2030		39600	37107000	0.94
2050		8600	1607000	0.19
2017		45000	44000000	0.96

Further Information

The data presented in Question EU1.1: - Covers the relevant period of 1 July 2012 to 30 June 2013, 1 July 2015 to 30 June 2016, 1 July 2016 to 30 June 2017, 1 July 2029 to 30 June 2030 and 1 July 2049 to 30 June 2050 (as indicated); - Includes all electricity generation facilities where AGL has operational control; - Electricity production is represented on a 'sent out' basis; - Reported greenhouse gas emissions include all Scope 1 and Scope 2 emissions from facilities where the

primary function is electricity generation during FY2016. AGL operates gas fired cogeneration facilities which combust natural gas to produce both electricity and steam. Using the methodology set out by the Greenhouse Gas Protocol, AGL estimates the greenhouse gas emissions from these facilities which relates to the production of steam (as opposed to electricity), and these emissions are not included in the figures reported in EU1.1 (emissions associated with electricity generation are included); - The greenhouse gas emissions intensity of AGL's sent out generation is calculated by dividing the total Scope 1 and Scope 2 emissions from AGL generation facilities (proportion relating to electricity generation) by the total sent out generation from the generation facilities (including both electricity provided to the transmission and distribution networks or directly to AGL customers); - All generation, emissions and emissions intensity information provided for 2017, 2030 and 2050 are projections only. The 2017 estimate is based upon the 2016 results. The 2030 projection is based upon the sale of the Moranbah Power Station by 2020 and the closure the Liddell coal fired power station (as detailed in the AGL GHG Policy). AGL also has a number of additional renewable generation projects at various stages of approval and development, although at this stage firm commitments have not been made to proceed with construction. - The FY2050 estimate is based on the continuing operation of AGL's existing assets (as per the 2030 target), with the closure of all coal fired generators as detailed in the AGL GHG Policy. Such an assessment does not include the likely significant growth of distributed and larger scale low emission assets (e.g. new wind/solar farms) that AGL is likely to pursue in coming years. Refer to AGL's website which includes some of these development opportunities (For example, Coopers Gap Wind Farm: http://www.agl.com.au/about-agl/how-we-source-energy/renewable-energy/coopers-gap-wind-farm).

Page: EU2. Individual Country Profiles - Australia

EU2.1

Please select the energy sources/fuels that you use to generate electricity in this country

Coal - hard
Lignite
Oil & gas (excluding CCGT)
Waste
Hydro
Other renewables

EU2.1a

Coal - hard

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2013	0	0	0	0
2016		24560	23710786	0.97
2030		17000	16000000	0.94
2050	0	0	0	0
2017		25000	24000000	0.97

EU2.1b

Lignite

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2013	2210	14851	19127314	1.3
2016	2210	14401	18401416	1.3
2030	2200	14000	20000000	1.4
2050	0	0	0	0
2017	2210	14000	18000000	1.3

EU2.1c

Oil & gas (excluding CCGT)

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2013	1447	2124	1311709	0.62
2016	1497	2522	1584416	0.63
2030	1500	2500	1600000	0.63
2050	1500	2500	1600000	0.63
2017	1507	2500	1600000	0.63

EU2.1d

CCGT

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)

EU2.1e

Nuclear

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)

EU2.1f

Waste

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2013	19	103	7137	0.07
2016	19	100	6983	0.07
2030	19	100	7000	0.07
2050	19	100	7000	0.07
2017	19	100	7000	0.07

EU2.1g

Hydro

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)
2013	796	964

Year ending	Nameplate capacity (MW)	Production (GWh)
2016	796	1164
2017	788	1200
2030	790	1200
2050	790	1200

EU2.1h

Other renewables

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)
2013	925	2130
2016	1080	2875
2017	1080	2900
2030	1100	5000
2050	1100	5000

EU2.1i

Other

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)

EU2.1j

Solid biomass

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2013	1	1	150	0.15
2016	0	0	0	0
2017	0	0	0	0
2030	0	0	0	0
2050	0	0	0	0

EU2.1k

Total thermal including solid biomass

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2013	3677	17079	20446310	1.01
2016	8366	41583	43703655	1.05
2017	8376	42000	44000000	1.10
2030	6400	34000	37000000	1.1
2050	1500	2600	1600000	0.62

EU2.1l

Total figures for this country

Please enter total figures for this country for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2013	5398	20173	20446310	1.01
2016	10241	45621	43703655	0.96
2017	10244	46000	44000000	0.96
2030	8244	40000	37000000	0.94
2050	3400	8600	1600000	0.19

Further Information

The data reported above: - Covers the relevant period of 1 July 2012 to 30 June 2013, 1 July 2015 to 30 June 2016, 1 July 2016 to 30 June 2017, 1 July 2029 to 30 June 2030 and 1 July 2049 to 30 June 2050 (as indicated); - Includes all electricity generation facilities where AGL has operational control; - Electricity production is

represented on a sent-out basis; - Reported greenhouse gas emissions include all Scope 1 and Scope 2 emissions from electricity generation; - The greenhouse gas emissions intensity of AGL's sent out generation is calculated by dividing the total Scope 1 and Scope 2 emissions from the relevant operated generation facilities (proportion relating to electricity generation) by the total sent out generation from those facilities (including both electricity provided to the transmission and distribution networks or directly to AGL customers). - All generation, emissions and emissions intensity information provided for 2017, 2030 and 2050 are projections only. Furthermore, these projections are based upon the mothballing of a 480MW unit at AGL Torrens in 2017, the closure of Suncoast Biomass in 2015, the sale of the Moranbah Power Station by 2020 and the closure of all coal fired generation by 2050 (as detailed in the AGL GHG Policy). AGL assets as at 30 June 2016 included in the 'Coal' category comprise: • 2000 MW Liddell Power Station; and • 2640 MW Bayswater Power Station AGL assets as at 30 June 2016 included in the 'Lignite' category comprise: • 2210 MW Loy Yang A Power Station. AGL assets as at 30 June 2015 included in the 'oil and gas' category comprise: • 1280 MW Torrens Island Power Station; • 150 MW Somerton Power Station; • 50 MW Hunter Valley Gas Turbines; • 12 MW Moranbah coal seam gas power station; • 4 MW Coopers cogeneration facility; and • Wilpena diesel generator. AGL assets as at 30 June 2016 included in the 'waste' category comprise: • 10 MW Werribee biogas generator; and • Seven landfill gas generators across New South Wales, Tasmania and Western Australia totalling 9MW. AGL assets as at 30 June 2016 included in the 'other renewables' category comprise: • 420MW Macarthur Wind Farm; • 132 MW Hallett 4 Wind Farm; • 102 MW Nyngan Solar Farm; • 95 MW Hallett 1 Wind Farm; • 91 MW Wattle Point Wind Farm; • 71 MW Hallett 2 Wind Farm; • 67 MW Oaklands Hill Wind Farm; • 53 MW Hallett 5 Wind Farm; and • 0.1 MW Wilpena solar power station. Figures provided in EU2 may not sum to totals due to rounding.

Page: EU3. Renewable Electricity Sourcing Regulations

EU3.1

In certain countries, e.g. Italy, the UK, the USA, electricity suppliers are required by regulation to incorporate a certain amount of renewable electricity in their energy mix. Is your organization subject to such regulatory requirements?

Yes

EU3.1a

Please provide the scheme name, the regulatory obligation in terms of the percentage of renewable electricity sourced (both current and future obligations) and give your position in relation to meeting the required percentages

Scheme name	Current % obligation	Future % obligation	Date of future obligation	Position in relation to meeting obligations
Australia – renewable energy target	12.75%	20%	2020	Large Scale Renewable Energy Target: AGL is currently Australia's largest private owner/operator of renewable energy generation. To meet legislated renewable energy obligations, AGL acquires Large Scale Renewable Energy Certificates (LGCs formerly known as RECs) from a diverse range of sources. LGCs are purchased from the market, acquired from self-build generation assets, and also

Scheme name	Current % obligation	Future % obligation	Date of future obligation	Position in relation to meeting obligations
				bundled into power purchase agreements (PPAs) with third party providers. In addition to regulatory obligations on renewable electricity generation, AGL has entered into substantial supply contracts for voluntary purchases of renewable generation. Such contracts assist in underwriting new investment, and minimise exposure to legislative risk on renewable energy settings. AGL currently has sufficient LRECs to meet its consumer market and existing contracts for business customers for approximately five years.
Australia – renewable energy target	9.68%		2020	Small Scale Renewable Energy Target: To meet legislated renewable energy obligations, AGL acquires Small Scale Technology Certificates (STCs) from the market, or from the installation of solar PV and other small scale renewable technologies through the AGL Smarter Living offering. The percentage is set each year by the regulator in order to effectively clear the generated certificates.

Further Information

Question EU 3.1a Australian electricity retailers are required to procure renewable energy for two schemes: the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES). Each scheme requires electricity retailers to procure a prescribed percentage of power from renewable sources (by acquiring and surrendering certificates). The current obligations presented above for the small and large scale Renewable Energy Targets are for the 2016 calendar year. The Small Scale Technology Percentage under the SRES is set each year in regulations based upon supply conditions, there is no longer term target (i.e. the scheme is uncapped). Further information on the Renewable Energy Target and current obligations can be found here: http://ret.cleanenergyregulator.gov.au/about-the-schemes Large scale renewable power percentage: http://ret.cleanenergyregulator.gov.au/About-the-Schemes/About-the-renewable-power-percentage/About-the-renewable-power-percentage Small Scale Technology Percentage: http://ret.cleanenergyregulator.gov.au/About-the-Schemes/About-the-small-scale-technology-percentage/About-the-small-scale-technology-percentage At the time of writing government has made a commitment to reduce the LRET target to 33,000 GWh by 2020.

Page: EU4. Renewable Electricity Development

EU4.1

Please give the contribution of renewable electricity to your organization's EBITDA (Earnings Before Interest, Tax, Depreciation and Amortization) in the current reporting year in either monetary terms or as a percentage

Please give:	Monetary figure	%	Comment
Renewable electricity's contribution to EBITDA	175400000	10.40%	As an integrated energy company, AGL manages its overall wholesale cost of electricity from purchases and own generation of electricity on a portfolio basis. The process of portfolio optimisation involves the management of AGL's exposure to electricity pool price movements through a mix of hedge contracts, weather derivatives and own generation. It is therefore difficult to establish the precise EBITDA contribution from renewable electricity. Furthermore, AGL does not publicly disclose this information. 9.1% of FY16 output was sourced from renewables. To arrive at the estimated percentage, 9.1% of AGL's wholesale electricity markets EBIT has been attributed to renewables. When contrasted with total EBITDA, 10.4% is obtained as an estimate.

EU4.2

Please give the projected contribution of renewable electricity to your organization's EBITDA at a given point in the future in either monetary terms or as a percentage

Please give:	Monetary figure	%	Year ending	Comment
Renewable electricity's contribution to EBITDA	385800000	22.80%	2020	As an integrated energy company, AGL manages its overall wholesale cost of electricity from purchases and own generation of electricity on a portfolio basis. The process of portfolio optimisation involves the management of AGL's exposure to electricity pool price movements through a mix of hedge contracts, weather derivatives and own generation. It is therefore difficult to establish the precise EBITDA contribution from renewable electricity. Furthermore, AGL does not publicly disclose this information. AGL has estimated the 2020 EBITDA contribution by considering the significant investments required to meet the 2020 20% renewable energy target and the operation of Bayswater, Liddell power stations and the Loy Yang A Power Station and mine from FY2016.

EU4.3

Please give the capital expenditure (capex) planned for the development of renewable electricity capacity in monetary terms and as a percentage of total capex planned for power generation in the current capex plan

Please give:	Monetary figure	%	End year of capex plan	Comment
Capex planned for renewable electricity development	200000000	20.16%	2018	Slide 20 of AGL's FY2016 full year financial results shows the forecast capital expenditure for FY2017. This shows that renewable energy (namely continuing construction on AGL's 155 MW solar flagships projects) is estimated to account for around $50 million, or 20% of total AGL FY2017 capex. https://www.agl.com.au/-/media/AGL/About-AGL/Documents/Investor-Centre/160810_ResultsInvestorPResentatio580439.pdf?la=en

Further Information

CDP