Accelerating Our Transition

FY21 TCFD Report

agl

Progress for life

Contents

Important information

This report considers a number of different scenarios. These scenarios are not predictions of what is likely to happen or what AGL Energy would like to happen. Rather they explore the possible implications of different judgements and assumptions concerning the nature and pace of the energy transition in Australia. Further, the scenarios do not provide a comprehensive description of all possible outcomes. The scenarios cover a range of possible outcomes to assist in the formation of judgements about the uncertainty surrounding the energy transition in Australia. AGL Energy also considers a wide range of other analysis and information when forming its long-term strategy.

CEO Statement

I am pleased to present AGL Energy's FY21 report 'Accelerating Our Transition', which has been prepared in line with the Task Force on Climate-related Financial Disclosures (TCFD) framework. This report is central to the ongoing delivery of one of the five commitments in our Climate Statement - "**Be transparent**" – and provides a comprehensive account of our strategy and performance in relation to climate-related risks and opportunities for our business.

When we launched our Climate Statement on 30 June 2020, it represented the next step in our decarbonisation journey, committing us to a target of net zero emissions by 2050 and paving the way for us to deliver more sustainable, affordable and reliable services to our customers. Now, as we embark upon the proposed demerger of AGL Energy into two independently listed businesses, Accel Energy and AGL Australia, we are taking even greater steps to lead Australia's accelerating energy transition.

Climate transition statements for each proposed business have been developed, both of which recognise that the need to take action on climate change is intensifying. These statements, which can be found in this report, signal our intention for the new businesses to deliver detailed climate change roadmaps with specific decarbonisation targets. Transparency remains a central tenet, with both businesses maintaining commitments to continue leading practice in terms of reporting and openly engaging with stakeholders on their transition journeys. To further reinforce this commitment, we recently announced that shareholders will be provided with an opportunity to have their say on the climate reporting for both Accel Energy and AGL Australia at the first Annual General Meeting for each organisation. AGL Energy has a proven track record of market leading disclosure, and this commitment ensures that this legacy of transparency and engagement will be a foundation of both new entities.

As we transition to a low carbon future, the management of climate-related risks is a major consideration. This year, our TCFD report has focused on providing a comprehensive breakdown of transition and physical risks and how those risks translate to the proposed Accel Energy and AGL Australia businesses. It also includes a high-level assessment of the physical risks to our operated electricity generation assets arising from a warming climate.

We have also reflected on the extensive scenario modelling which was undertaken in FY20. In particular, we have considered how the rapid changes we have seen in the market over the last year arising from wholesale energy price changes, government policy directions and stakeholder expectations, as well as the COVID-19 pandemic, are affecting the dominance of the modelled scenarios. These changes show that the pace of the climate transition is accelerating, and we recognise that this may affect the operating profiles and closure dates of our thermal assets.

The accelerating transition also brings with it exciting opportunities for growth. For AGL Australia this includes driving the continued uptake and integration of decentralised energy services, electric vehicles, broader demand-side participation, and the development of new flexible generation. For Accel Energy, this includes our plans to redevelop our core generation sites as industrial energy hubs to provide new sources of energy storage and supply.

We recognise the need to work harder to ensure that our stakeholders understand that our future emissions profile is largely defined by the operating profiles, rather than the final closure dates, of our thermal power stations. We also need to be clear that due to the significant role we play in the market, we cannot make unilateral commitments about significantly advancing the closure dates of our power stations. Effective frameworks which protect affordability and system security are necessary to support the accelerated energy transition, and both Accel Energy and AGL Australia will work with their stakeholders to drive sustainable market change.

In early August 2021, the Intergovernmental Panel on Climate Change (IPCC) released the first instalment of the Sixth Assessment Report (AR6) which is due to be completed in 2022. The IPCC findings demonstrate the important role industry, regulators and governments all have in lowering emissions and driving Australia's energy transition.

The increasing expectations surrounding climate action is one of the key drivers for our proposed demerger, and we are excited to take the next steps in creating two leading businesses which can focus on their different but important roles within Australia's transition to a new energy future.

Graeme Hunt
Managing Director & CEO

1. Executive Summary

Over the course of FY21, the transition to a low-carbon economy has continued to gain momentum, both at national and global levels. As the transition of Australia's energy sector accelerates, a confluence of climate-related factors including the rapid evolution of renewables and decentralised energy technologies, and the evolving needs and expectations of customers and the community, have brought AGL Energy to an inflection point. AGL Energy's Board carefully considered these factors and confirmed in June 2021 that AGL Energy should move forward as two separately listed leading energy companies.

PROPOSED DEMERGER

Following an initial indication to the market in March 2021 of a proposed structural separation, in June 2021 AGL Energy announced its intention to undertake a demerger to create two leading energy businesses with separate listings on the Australian Securities Exchange. Under the demerger proposal, AGL Energy will become Accel Energy Limited (**Accel Energy**), an electricity generation business focused on the accelerating energy transition. Accel Energy will demerge a new entity, AGL Australia Limited (**AGL Australia**), a multi-product energy-led retailing and flexible energy trading, storage and supply business. AGL Australia will retain the AGL brand.

AGL Energy intends to hold a scheme and general meeting to enable shareholders to vote on the proposal, and to complete the demerger in the fourth quarter of the financial year ending 30 June 2022 (FY22) subject to final AGL Energy Board, Australian Tax Office (ATO) and relevant regulatory, court and shareholder approvals.

Further details regarding the strategic rationale for the proposed demerger are included in Section 4. Throughout this report we have considered how both scenario analysis (Section 4.2) and risks (Section 5) may be affected by the proposed demerger.

The proposed demerger is intended to provide greater clarity of purpose for both AGL Australia and Accel Energy, positioning each company to better manage opportunities and challenges presented by the accelerating energy transition, and to deliver on their different but important roles in Australia's energy transition. AGL Australia will support the energy transition and will be carbon neutral for scope 1 and 2 emissions from day one, with a pathway to full carbon neutrality for all sources of electricity. Accel Energy will transition its core generation sites into industrial energy hubs which will provide alternative sources of energy storage and supply whilst creating sustainable regional economic development and contributing to site rehabilitation. Both companies have outlined their respective positions in climate statements, which are included in Section 4.

In our FY20 TCFD report[1], we provided detailed scenario analysis of potential future carbon reduction pathways to understand the long-term implications for AGL Energy's generation fleet, customers, and the National Electricity Market (NEM) more broadly. This year, we have examined the FY20 scenario analysis in the context of the rapidly changing market environment, and considered the implications of the scenario analysis for the proposed Accel Energy and AGL Australia businesses. The four scenarios that were modelled remain relevant, however changes arising from lower wholesale electricity prices, government policy directions and the COVID-19 pandemic over FY21 indicate that a faster climate transition pathway is now becoming the most dominant scenario. The emissions trajectories under the modelled scenarios remain materially similar for AGL Energy and the proposed Accel Energy business, while AGL Australia's emissions would be significantly reduced and largely a function of more variable peaking generation assets.

This year's report expands upon the previous assessment of climate-related risks facing our business, providing details of Tier 2 climate-related risks, and an analysis of the risks faced by each company under the proposed demerger. The transitional impacts facing Accel Energy would largely remain materially similar to those for AGL Energy. It is anticipated that the proposed demerger will provide greater strategic focus and enable a more targeted risk management and advocacy program, such that Accel Energy will be better placed to manage the transition risks it faces.

One of the key transition risks facing our thermal generation operating sites portfolio relates to rehabilitation provisions: the faster decarbonisation scenarios could see asset closures brought forward, which may result in rehabilitation obligations occurring sooner. In FY21 AGL Energy undertook asset rehabilitation scenario analysis, in the context of the proposed demerger. It is anticipated that Accel Energy could face greater risk than AGL Energy arising from earlier closure scenarios, however the capital structure being considered for Accel Energy is specifically designed to mitigate the risks presented by the potential for earlier occurrence of rehabilitation obligations, especially in the case of early closure scenarios.

Following the proposed separation, the climate risk profile for AGL Australia is expected to improve. The most material transition risk to remain for AGL Australia is expected to be increasing reputational risk posed by changing customer and other stakeholder sentiment. The proposed demerger would enable AGL Australia to better manage this risk through its climate commitments.

This report also includes a more detailed assessment of physical risks and their impact upon the NEM as well as location-specific risks across our generation portfolio. The physical impacts of climate change will increasingly be felt across the energy sector. The geographic distribution of AGL Energy's asset portfolio provides increased resilience to the impacts of location-specific impacts. Technological diversification adds an additional element of resilience. The key risks facing AGL Energy's thermal coal fleet are direct impacts from extreme heat and fire events, as well as physical impacts on water security. However, AGL Energy holds highly secure, low-risk water licences at each of its material thermal generation assets. Water security is also a key risk facing AGL Energy's hydro assets. In addition to extensive operational expertise, the geographic distribution and diverse water sourcing strategies across the hydro portfolio provide resilience.

1. AGL Energy, Pathways to 2050 FY20 TCFD Report, published August 2020

2. Background

AGL Energy is a leading integrated energy business and essential services provider with a heritage of more than 185 years. We operate Australia's largest private electricity generation portfolio, with a total installed capacity of 10,984 MW, which accounts for approximately 20% of the total generation capacity within Australia's National Electricity Market. We are an active participant in gas and electricity wholesale and retail markets, and we are expanding our connection with customers with over 4.2 million services to customers[2], including electricity, gas, broadband and mobile.

As Australia's largest electricity generator, we are also Australia's largest greenhouse gas emitter. Our operated scope 1 emissions account for approximately 8% of Australia's total emissions. Over 95% of AGL Energy's scope 1 emissions come from the combustion of coal for the generation of electricity for our customers. As the global community responds to the risks of climate change, AGL Energy recognises the large part that we must play in the transition to a low carbon economy. AGL Energy accepts the science as outlined by the Intergovernmental Panel on Climate Change (IPCC) and remains committed to the objectives of the Paris Agreement. AGL Energy also notes that we cannot make or alter energy policy unilaterally.

The IPCC's Fifth Assessment Report (IPCC-AR5) (released in 2014) identified the need for the electricity sector to decarbonise globally, by limiting atmospheric concentrations of carbon dioxide equivalent (CO_2e) to a level consistent with achieving a 66% chance of restricting warming to 2 degrees Celsius or less above pre-industrial levels.

In 2015, the 21st Conference of Parties to the United Nations Framework Convention on Climate Change (COP21) was held in Paris. The parties reached an agreement to address climate change, with the central aim of this agreement being to limit warming this century to well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit warming even further to 1.5 degrees Celsius above pre-industrial levels (Paris Agreement).

During FY21 an increasing number of governments have made significant decarbonisation commitments, including the world's two largest emitters (China and the United States), indicating growing momentum towards more rapid decarbonisation policies globally. To date, over fifty countries have communicated net-zero targets[3]. Table 2.1 includes a selection of recent decarbonisation commitments.

Table 2.1: Examples of recent global decarbonisation commitments

Country	New commitment	Previous commitment
USA	50-52% reduction from 2005 levels by 2030,	26-28% reductions from 2005 levels by 2025
UK	78% reductions on 1990 levels by 2035	68% reductions from 1990 levels by 2030
Japan	46-50% reductions on 2013 levels by 2030	26% reductions on 2013 levels by 2030
Canada	40-45% reductions on 2005 levels by 2030	20% reductions on 2005 levels by 2030
China	Peak emissions by 2030, net zero by 2060	-

In the Australian context, during FY21 the Federal Government made the following funding announcements:

- A $566 million investment to build strategic international research partnerships to commercialise low emissions technologies[4]; and
- $539 million to establish hydrogen and carbon capture and storage hubs[5].

While the Federal Government has not made a commitment to achieving net zero by 2050, each state and territory government has made a net zero commitment.

The impacts of climate change, and of global, national and state-based responses to climate change, represent material risks and opportunities for AGL Energy. AGL Energy was one of the first companies in Australia to commit to and make its disclosures in accordance with the TCFD framework. While use of the TCFD framework is currently voluntary in Australia, there is an increasing expectation from investors, governments, customers and the community that businesses assess and disclose climate-related risks.

In addition to these expectations, the Australian Securities and Investment Commission (ASIC) recognises (through Regulatory Guide RG247 - Effective Disclosure in an Operating and Financial Review) that "Climate change is a systemic risk that could have a material impact on the future financial position, performance or prospects of entities", and as such, financial disclosures made by listed entities should consider climate as part of the requirement for disclosure of "risk[s] that could affect the entity's achievement of the financial prospects disclosed."

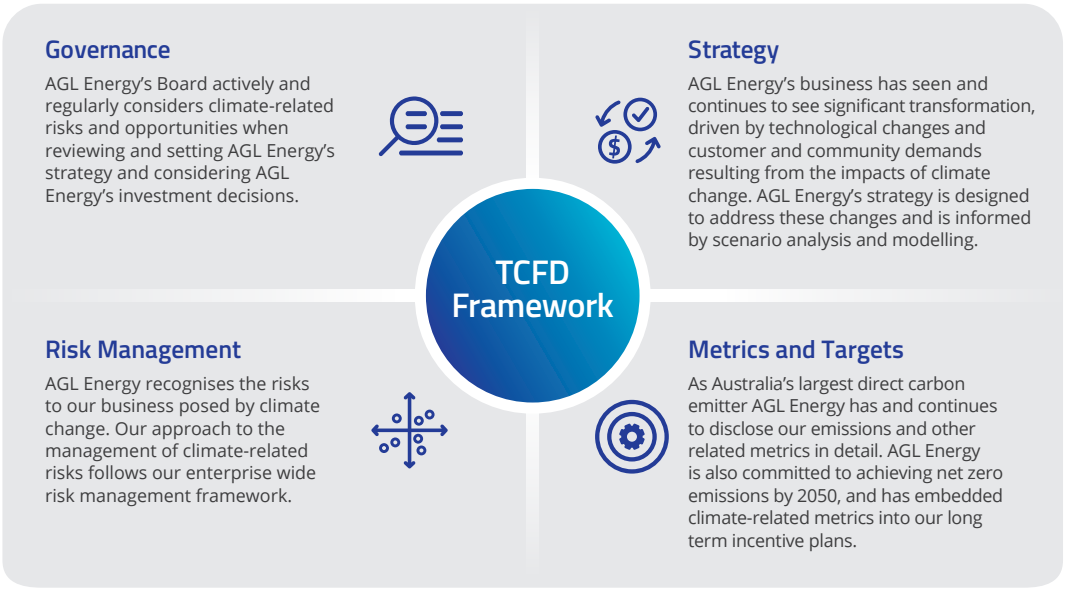
As a result of these requirements, and the ongoing and growing expectations of key stakeholders, AGL Energy is committed to ongoing disclosure of climate risk in accordance with the recommendations of the TCFD framework.

The TCFD framework recommends disclosures in four key areas as shown in Figure 1.

2. Excludes the approximately 300,000 services to customers of ActewAGL, in which AGL Energy owns a 50% equity stake of the retail operations.
3. Climate Watch, Net Zero Tracker, accessed July 2021
4. FY22 Budget announcement, April 2021
5. Minister for Energy and Emissions Reduction, 2021 Australian Hydrogen Conference Keynote Address, May 2021

2. Background (continued)

Figure 1: TCFD Framework



From 2016 onwards, AGL Energy's annual corporate disclosures have incorporated both risk and strategy disclosures, and from 2018 these disclosures have been made in alignment with the TCFD framework. The scenarios and modelling have evolved over time to meet business and stakeholder needs:

- **Carbon Constrained Future report (2016):** This report disclosed the results of modelling a scenario aligned with Australia's Nationally Determined Contribution (NDC) under the Paris Agreement, along with a scenario which assumed that emissions were limited to a level consistent with limiting global warming to below 2 degrees Celsius above pre-industrial levels. This report was the first analysis of its kind for an Australian energy company.
- **Powering a Climate Resilient Economy report (2018):** This report detailed AGL Energy's climate-related risks and opportunities, our approach to climate risk management and governance, along with climate-related metrics in alignment with the TCFD recommendations.
- **Carbon Scenario Analysis report (2019):** This report detailed the results of modelling three scenarios aligned with possible electricity policy frameworks:
  - Slow Change Scenario: A slow adaption of the market to carbon constraints;
  - State Targets Scenario: A pathway detailing current government policies; and
  - Deep Renewable Scenario: A pathway detailing a 50% renewable energy target by 2030.
- **Pathways to 2050 (2020):** This report detailed scenario analysis of four potential future carbon reduction pathways to understand the long-term implications for AGL Energy's generation fleet, customers, and the NEM more broadly.
  - Scenario A – National Targets: 2020 industry commitments and policy settings are maintained over the medium to long term without material change.
  - Scenario B – Response 2020: Policies and technology allow for a steady, market led decarbonisation from 2020.
  - Scenario C – Response 2030: Limited action over the short to medium term prior to stronger policy intervention for rapid decarbonisation from 2030.
  - Scenario D – 1.5 Degree Limit: Coordinated, cooperative and immediate decarbonisation approach with combined government intervention, policy and market approaches to achieve rapid decarbonisation.

3. Governance and Risk Management

3.1 Governance Approach

The AGL Energy Board recognises that strong corporate governance is an integral part of ensuring that the interests of AGL Energy are safeguarded and are fostering sustainable value creation while considering the reasonable interests of shareholders, employees, customers, the communities in which AGL Energy operates and other relevant stakeholders.

The Board reviews and approves AGL Energy's strategic direction and provides oversight of management. This includes monitoring AGL Energy's approach to the management of both financial and non-financial risks, such as exposure to environmental risks, safety risks and potential damage to AGL Energy's reputation and the interests of broader stakeholders.

The Board actively considers climate-related risks and opportunities when reviewing and setting AGL Energy's strategy and when considering AGL Energy's investment decisions. In April 2015, the Board approved the publication of AGL Energy's Greenhouse Gas Policy, and in April 2020 the Board approved AGL Energy's Climate Statement.

The Board has established four standing committees of its members:

- the Audit & Risk Management Committee (ARMC);
- the People & Performance Committee;
- the Safety, Customer & Corporate Responsibility Committee; and
- the Nominations Committee.

The committee with the highest level of direct responsibility for climate change is the ARMC, which operates under a formal charter and comprises four non-executive and independent directors.

The ARMC meets five times per year and its remit includes the responsibility to review and recommend AGL Energy's risk management policies and material strategic risks ('Tier 1 Strategic Risks') to the Board for approval. The ARMC reviews and monitors the implementation of policies and procedures for identifying, assessing, monitoring, and managing risk.

The ARMC also reviews AGL Energy's annual corporate disclosures (including the Annual Report and the climate-related strategies and performance data contained therein). The ARMC has overseen the development of this TCFD report during FY21.

More information about the role of the Board and the ARMC can be found in the **FY21 Corporate Governance Statement**.

In FY20 the Board committed (as part of AGL Energy's Climate Statement) to include carbon transition metrics in AGL Energy's long-term incentive (LTI) plan for its executive key management personnel from FY21. The carbon transition metrics that apply in FY21 (for vesting in FY24) comprise the emissions intensity of AGL Energy's controlled generation fleet, the proportion of controlled renewable and storage electricity capacity, and the share of AGL Energy's total revenue derived from green energy and carbon neutral products and services. Performance against these metrics is communicated to the Board and Executive on a monthly basis. Section 6 contains performance data for each of these metrics for FY21. The same carbon transition metrics will also be applied to the LTI plan in FY22; the FY25 targets are outlined in the Remuneration Report within AGL Energy's FY21 Annual Report.

Periodic director education sessions are included as part of the Board's annual timetable. In FY21, directors participated in a tailored information session on the physical risks of climate change, focusing on the electricity network. The information session was delivered by senior representatives from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Australian Energy Market Operator (AEMO) and included discussion of the work which these organisations are currently undertaking through the Electricity Sector Climate Information Project (ESCI), which is anticipated to be critical to our evolving understanding and assessment of physical risk at both an asset and a network level.

3.2 Risk Management Approach

AGL Energy recognises the risks and opportunities to our business posed by climate change. Our approach to the management of climate-related risks is embedded in our Climate Statement and follows our enterprise-wide risk management framework. This risk management framework, which is aligned with the principles and requirements of the international standard for risk management (ISO 31000), is detailed in the FY21 Corporate Governance Statement. Through this framework, we identify factors that are critical to the successful delivery of our strategy and our ability to create value into the future.

AGL Energy's Risk Management Policy, which has been approved by AGL Energy's Board, mandates that AGL Energy management utilises risk management principles in decision-making, and requires all AGL Energy people to consider their functions and roles and how to manage risks arising from their business decisions and activities. AGL Energy's Statement of Risk Appetite, reviewed annually by the ARMC, sets out AGL Energy's risk appetite in relation to strategic, financial, market and operational risks, as well as AGL Energy's risk tolerance (which in turn identifies activities for which AGL Energy has no appetite).

Under the AGL Energy risk management framework, all risks are ranked in terms of their potential consequence and the likelihood of that consequence occurring, to calculate their inherent risk rating (extreme, very high, high, moderate, or low).

Any controls, processes, or governance practises in place at AGL Energy that serve to reduce either the likelihood or the severity of consequences (in relation to the above categories) associated with each risk are also assessed, allowing the calculation of the residual risk rating (extreme, very high, high, moderate, or low).

3. Governance and Risk Management (continued)

The appropriateness of the control environment at AGL Energy, and any further actions required, are regularly reviewed and are the subject of monitoring and reporting to AGL Energy management and/or the Board. The determined level of residual risk triggers requirements to notify the risk to different levels of management or the Board – for example, the Board, the ARMC, the relevant Executive General Manager (or delegate), the relevant General Manager (or delegate) or the relevant Manager.

AGL Energy undertakes a comprehensive annual process to assess the key risks to achieving our strategic priorities, defined as Tier 1 Strategic Risks. To determine the Tier 1 Strategic Risks, an extensive consultation process across each division of AGL Energy is undertaken involving key senior management representatives and operational managers, to gain an understanding of strategic risks relevant to each area of the business.

Tier 1 Strategic Risks undergo a full review annually; and material and emerging risks are identified, monitored, and reviewed regularly and proactively, with reporting to the ARMC and Executive Team twice per year. During FY21 there were 12 Tier 1 Strategic Risks under management. One of the Tier 1 Strategic Risks identified for FY21 was 'Climate change response: AGL is unable to meet expectations and/or deliver on its commitments to transition to a low carbon future within an acceptable timeframe'.

At a more granular level, AGL Energy's climate-related risks can be categorised into two main areas: transition risk and physical risk. As shown in Figure 2, the TCFD framework breaks transition risk into four subcategories (policy and legal risk, technology risk, market risk and reputation risk) and physical risk into two subcategories (acute risk and chronic risk). Details of the specific risks and opportunities for AGL Energy (as well as those that may arise for Accel Energy and AGL Australia following the proposed demerger) are included in Section 5.

Figure 2: Categories of climate-related risks

TRANSITION RISKS				PHYSICAL RISKS	
Policy and Legal	**Technology**	**Market**	**Reputation**	**Acute**	**Chronic**
Risks arising from policy or legal interventions that attempt to constrain actions that contribute to the adverse effects of climate change or actions that seek to promote adaptation to climate change.	Risks arising from the technological changes which are occurring to support the transition to a low carbon economy and the disruption they can cause to markets and businesses.	Risks associated with changing supply and demand for commodities and other products and services.	Risks arising from changing customer and community perceptions of organisations due to their action on climate change, with impacts to reputation leading to reduced customer trust and participation with a business.	These risks refer to those that are event-driven, including increased severity of extreme weather events, such as cyclones, hurricanes, droughts or floods.	These risks refer to longer-term shifts in climate patterns (e.g., sustained higher temperatures) that may cause sea level rise or chronic heat waves.

4. Strategy

The social, community and technological landscape that AGL Energy operates in has changed significantly in recent times, particularly on issues such as government responses and community expectations relating to climate action and the pace of the energy transition. This has led to a reconsideration by AGL Energy during FY21 of its structure and strategic imperatives, and in June 2021, in response to the shaping forces of customer, community and technology, AGL Energy announced its intention to undertake a demerger to create two leading energy businesses with separate listings on the Australian Securities Exchange. Under the demerger proposal, AGL Energy will become Accel Energy Limited (Accel Energy), an electricity generation business focused on the accelerating energy transition. Accel Energy will demerge a new entity, AGL Australia Limited (AGL Australia), a multi-product energy-led retailing and flexible energy trading, storage and supply business.

The proposed demerger will provide greater clarity of purpose for each entity and will enable each business to focus on the respective strategic opportunities and challenges presented by the accelerating energy transition. Further information about each of these businesses, as well the climate statements for each business, are provided below.

Figure 3: Demerger rationale

		DEMERGER RATIONALE
CUSTOMER	• Demand for distributed energy services accelerating rapidly • Demand for carbon neutral products and services • Continued role of baseload supply to meet industrial demand	• Energy requirements of consumer and business users increasingly different from industrial customers • AGL Australia energy needs are aligned with increasing customer demand for distributed energy and carbon neutral products • Accel Energy empowered to contract directly with large energy users, industrial partners in energy hub projects
COMMUNITY	• Government intervention via default retail offers and underwriting of generation • Demand for accelerated action on climate change • Need for adequate compensation for providing system security	• Reducing benefits of integration of retail with baseload generation relative to costs and complexity • AGL Australia able to use customer scale to underwrite flexible generation and new renewables projects • Accel Energy to focus on vital role of assets in providing system security, repurposing of sites as energy hubs
TECHNOLOGY	• Rapidly falling costs for renewables and storage driving policy action to increase supply ahead of demand • Strong funding support for renewables and storage development from non-industry capital providers • Risk/return expectations for new generation development structurally lower than in the past	• New entities with different funding sources able to attract and deploy capital in more targeted manner • AGL Australia more attractive to capital providers • Accel Energy opportunity to repurpose sites using new technology attractive for transition capital providers

Accel Energy

Accel Energy will be Australia's largest electricity generator, and will be well positioned to support the energy transition. It will prioritise the responsible operation of the Loy Yang A, Macquarie and Torrens Island power stations, and facilitate their accelerated transition to low-carbon industrial energy hubs. Accel Energy will also be Australia's largest operator of wind energy via the Macarthur, Hallett, Wattle Point and Oaklands Hill wind farms, with the potential to develop 1,600 MW of new wind projects.

Accel Energy will work with governments and other key stakeholders and policy decision-makers to advocate for the establishment of effective frameworks to enable an accelerated energy transition that protects affordability and system security, as well as the fair economic interests of its workforce and capital providers. This will require a market design that recognises the value of existing infrastructure, the support required for new generation and system security services, and the benefits that can be derived from incentives to accelerate industrial decarbonisation.

ACCEL ENERGY'S CLIMATE COMMITMENTS AND TARGETS

Accel Energy has Australia's most crucial role in the energy transition and is committed to the acceleration of decarbonisation while ensuring energy remains stable and affordable

At Accel Energy, we know the need to take action on climate change is intensifying as demand for energy grows – and we are committed to playing a positive role as the pace of transition accelerates. As Australia's largest emitter of greenhouse gases and largest electricity generation company, we embrace the responsibility and opportunities this brings to reinvent our business as the community's reliance on thermal power reduces and, ultimately, ends. We believe we have a unique opportunity to drive the accelerating transition while creating a sustainable future for our business and the communities in which we operate beyond the life of coal-fired power.

1. We welcome the community expectations and technological developments that are driving change and believe these forces will result in coal-fired power stations operating less and closing earlier.
2. We will rejuvenate our unique power station sites into industrial energy hubs to provide new sources of energy storage and supply and extend the sites' lives long beyond that of coal-fired power.

4. Strategy (continued)

ACCEL ENERGY'S CLIMATE COMMITMENTS AND TARGETS

3. We will continue to run our coal-fired power plant safely and responsibly, recognising their critical role in supporting renewables while alternative sources of energy storage and supply are fully developed.
4. We will work in partnership with First Nations people, our workforce, communities, governments, regulatory bodies and commercial partners to achieve our ambitions.
5. We will publish a detailed climate change roadmap including specific decarbonisation targets showing clear progress relative to our existing emissions reduction trajectory (the baseline of which is a 23% reduction in CO2-e emissions by 2024, 60% reduction by 2036 and 100% by 2050, on FY20 levels[1]).

AGL Australia

AGL Australia will be Australia's largest multi-product energy retailer, leading the transition to a low carbon future. AGL Australia will own and operate Australia's largest private hydro generation fleet, as well as fast-start gas-fired power stations and a growing battery development portfolio, with capabilities across wholesale and decentralised electricity and gas trading, storage and supply. AGL Australia will also own AGL Energy's 20% equity investment in Powering Australian Renewables (PowAR) and 50% investment in ActewAGL's retail operations.

AGL Australia will be carbon neutral for scope 1 and 2 emissions, with a clear pathway to carbon neutrality for all electricity supply following the cessation in the late 2020s of the initial electricity offtake arrangements it will establish with Accel Energy. AGL Australia will work with stakeholders to advocate for reforms that drive the continued uptake and integration of decentralised energy services, electric vehicles, broader demand-side participation, and the development of new flexible generation.

AGL AUSTRALIA'S CLIMATE COMMITMENTS AND TARGETS

AGL Australia has an important role to play in supporting the development of Australia's renewable generation

At AGL Australia, we accept the climate science behind this vision. By 2050, we believe that Australia has the opportunity to be carbon neutral and an energy superpower. We will play our part in achieving this. We acknowledge the need to reduce scope 3 emissions, we will deliver a detailed climate change roadmap including specific decarbonisation targets showing clear progress relative to our existing emissions reduction trajectory.

As Australia's largest energy retailer we recognise that the pace of the energy transition is accelerating and we are well positioned to support this acceleration. We will list as carbon neutral for scope 1 and 2 emissions, with a clear pathway to carbon neutrality for all sources of electricity.

1. Offer customers the option of carbon neutral prices across all our products - Our customers' demand for carbon neutral products is a significant force for accelerating the decarbonisation of the energy system. We will seek to match this with viable carbon neutral supply options for households, business and industrial customers.
2. Continue investing in new sources of electricity supply - Both through direct investment and offtake agreements, we will support the development of new renewable energy sources and flexible generation capacity the market needs to support greater penetration of intermittent renewable energy.
3. Support the evolution of Australia's voluntary carbon markets - We will seek to supply tradeable products to underpin delivery of the carbon neutral services our customers require. This will include investments in carbon reduction in our own operations, complemented with enhanced trading capability.
4. Responsibly transition our energy portfolio - We will support our people and local communities through change and remain flexible to how customers, community and technology shape the pace of the energy transition.
5. Be transparent - We will engage openly with stakeholders and be transparent in disclosing our decarbonisation strategy, carbon emissions, risks and mitigation activities. Using scenario analysis, we will regularly update our forecasts for the pace and impacts on our business of this transition.

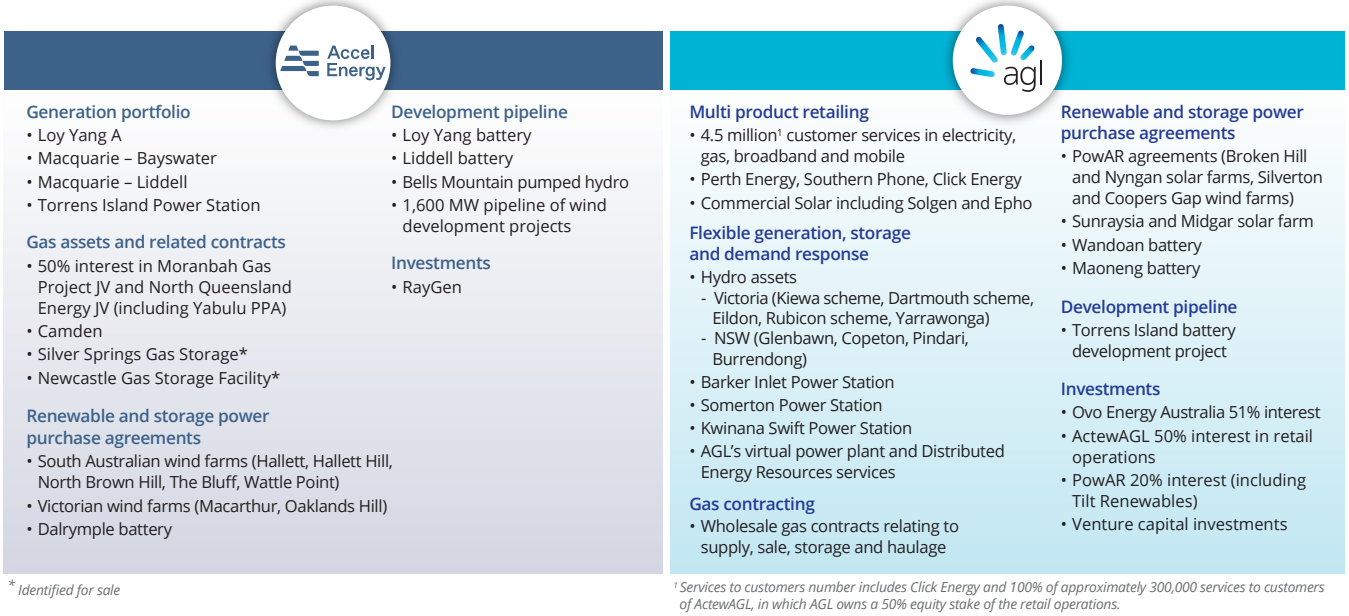
1. Baseline emissions reduction trajectory reflects 'Scenario A' of AGL Energy's FY20 Taskforce for Climate-Related Financial Disclosures report, Pathways to 2050.

4. Strategy (continued)

Asset allocation

The ownership of assets by each of the proposed businesses is outlined in Figure 4. When considering the implications of the proposed demerger on scenario analysis (Section 4.2.3) and physical risk (Section 5.3.2), assets are allocated in accordance with which business has operational control of the asset.

Figure 4: Asset allocation



Further information about the demerger proposal is available at agl.com.au/marketupdate.

4. Strategy (continued)

4.1 Policies and Commitments

AGL Energy's climate commitments are documented through the AGL Climate Statement, released in June 2020. The Climate Statement, which builds upon AGL Energy's Greenhouse Gas Policy (2015), includes our goal of achieving net zero emissions by 2050 and sets out five key climate commitments. As discussed above, following the proposed demerger, AGL Australia and Accel Energy would both have roles in delivering and building on the commitments made in AGL Energy's Climate Statement.

A summary of the progress which AGL Energy has made against each commitment during FY21 is included in Table 4.1.1.

Table 4.1.1: Progress against Climate Statement commitments

Climate Statement commitments	Progress during FY21
Offer customers the option of carbon neutral prices across all our products.	AGL now offers carbon neutral options across all of our products – including electricity, gas, business energy solutions, mobile, internet, and solar and battery products certified by Climate Active. As of 30 June 2021, AGL had over 260,000 carbon neutral services, including more than 65,000 carbon neutral energy services. This includes services to 35 commercial and industrial customers.
Support the evolution of Australia's voluntary carbon markets.	AGL Energy has onboarded over 59 organisations to trade carbon offsets with, enabling the purchase and retirement of offsets from emissions reduction projects around the world. For example, AGL Energy is sourcing offsets through the Carbon Conscious Carbon Capture Project in Western Australia, which establishes permanent plantings of native trees to provide protective habitat for native species.
Continue investing in new sources of electricity supply.	AGL Energy contributed $A357.6 million to fund its portion of the acquisition of Tilt Renewables Ltd's (Tilt) Australian business by PowAR. AGL Energy has a 20% interest in PowAR. The acquisition increased PowAR's installed renewable capacity to 1,313 MW. For AGL, PowAR's acquisition of Tilt will complement AGL's participation in the PowAR platform, which includes a significant development pipeline with more than 3,500 MW of renewables.
Responsibly transition our energy portfolio.	AGL Energy has committed to continue to operate our existing generation assets responsibly and safely while they are needed to supply affordable and reliable electricity. To facilitate the energy transition, in March 2021 AGL Energy announced that construction would start in 2021 on a 250 MW one-hour duration grid-scale battery at Torrens Island. In addition, AGL Energy lodged a planning application to the Victorian Minister for Planning and the Department of Environment, Water, Land and Planning for a 200 MW, four-hour duration grid-scale battery at the Loy Yang A Power Station site in the Latrobe Valley. In preparation for the closure of Liddell Power Station in 2022-2023 and the transition of the site to a future energy hub, AGL Energy engaged Delta Group for the first stage of closure, decommissioning and demolition planning. AGL Energy is also participating in the world-first Hydrogen Energy Supply Chain (HESC) Project which aims to safely produce and transport clean liquid hydrogen from Australia's Latrobe Valley in Victoria to Kobe in Japan. A key objective of the pilot project is to demonstrate an end-to-end supply chain between both countries. AGL Energy has made a $5 million equity investment in RayGen. RayGen is an Australian solar power and renewable energy storage company that aims to develop Australia's largest, most innovative and lowest-cost renewable energy storage project. RayGen is in the construction phase of its first project at Carwarp in Victoria and AGL has agreed to be the offtaker and dispatcher of the plant's output and storage. In addition, we are undertaking a pre-feasibility to locate a project on the Liddell Power Station site. AGL Energy also continues to invest in its orchestration business to support the uptake of decentralised renewable energy. In September 2020 AGL announced further expansion of its Virtual Power Plant (VPP) with the launch of solar battery sales and installations for residential customers in Queensland, New South Wales and Victoria. In August 2020, AGL Energy became the first Australian company to join EV100, a global initiative coordinated by The Climate Group, which brings together leading industries in a commitment to transition company fleets to electric vehicles (EVs). As a signatory to EV100, AGL Energy will transition its fleet of 400 corporate vehicles to 100% electric by 2030, up from 10% today.
Be transparent.	AGL Energy has continued to disclose climate-related risks facing our business, along with scenario analysis, in alignment with the TCFD recommendations. AGL Energy continued to include carbon transition metrics within our FY22 LTI plan applicable to our key management personnel.

4. Strategy (continued)

4.2 Scenario Analysis

The scenario analysis undertaken by AGL Energy in FY20 comprised significant modelling of the Australian electricity market under four potential climate transition pathways (Section 4.2.1). AGL utilises these scenarios to enable robust decision making.

The four scenarios that were modelled remain relevant, however changes arising from lower wholesale electricity prices, government policy directions and the COVID-19 pandemic over FY21 (Section 4.2.2) indicate that a faster climate transition pathway is now becoming the most dominant scenario.

The pressures currently observed in the energy market align less with the climate transition pathway modelled in Scenario A and show more alignment to the pathways modelled in scenarios B and D in the short term. However, given the constantly changing nature of the market, the relative dominance of each scenario is expected to continue to change.

These challenges also impact upon the way in which AGL Energy operates, and as discussed in Section 4, AGL Energy has determined that the most appropriate way to ensure ongoing value to all stakeholders is to undertake a demerger to create two leading energy businesses. This demerger will allow for AGL Australia and Accel Energy to manage the risks and opportunities associated with the transition of the energy market more effectively (Section 4.2.3).

4.2.1 Summary of FY20 modelling

In FY20, AGL Energy developed four scenarios representing potential future carbon reduction pathways and modelled these to better understand the long-term implications for AGL Energy's generation fleet, customers, and the NEM more broadly. This scenario analysis was published in August 2020 in the '**Pathways to 2050**' report which is available on our website.

The four FY20 scenarios were modelled to 2050 and are summarised in Table 4.2.1.1.

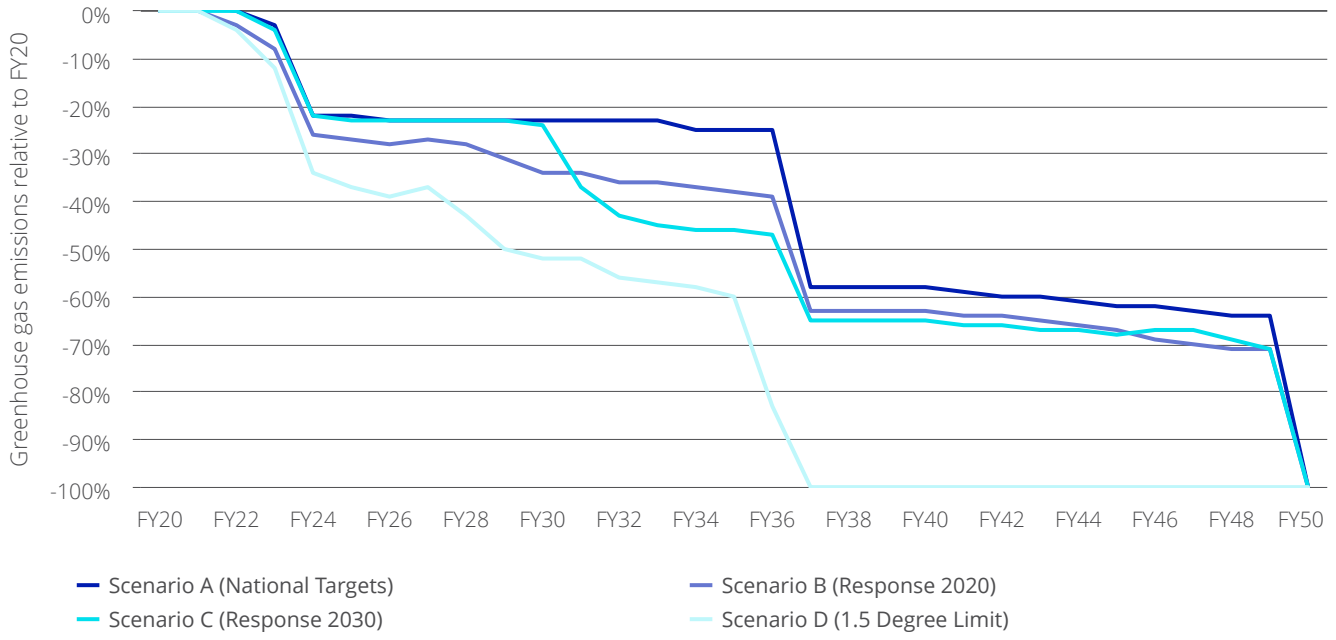
Table 4.2.1.1: AGL scenarios

Scenario	Description	Decarbonisation pace		Temperature outcome (degrees Celsius warming above pre-Industrial levels)
		Australia v. rest of world	Energy industry v. rest of economy	
Scenario A – National Targets	FY20 industry commitments and policy settings are maintained over the medium to long term without material change. This scenario assumes Australia meets its Paris commitments of reducing emissions by 26 to 28% of 2005 levels by 2030.	Not assessed	Not assessed	Not assessed
Scenario B – Response 2020	Policies and technology allow for a steady, market-led decarbonisation.	Parallel	Leading	1.7 – 3.2
Scenario C – Response 2030	Delayed action over the short to medium- term prior to reactionary policy intervention for rapid decarbonisation from 2030.	Parallel then leading post 2030	Leading	1.7 – 3.2
Scenario D – 1.5 Degree Limit	Coordinated, cooperative and immediate decarbonisation approach with combined government intervention, policy and market approaches to achieve rapid decarbonisation.	Leading	Leading	0.9 – 2.3

As shown in Figure 5, the emissions trajectories for AGL Energy assets in the NEM would decline under all scenarios, and AGL Energy would reach net zero emissions from NEM assets by FY50 under all scenarios as a result of generator retirements.

4. Strategy (continued)

Figure 5: Emissions trajectories for AGL Energy assets in the NEM by financial year, all scenarios



The modelling results show that emissions from AGL Energy assets in the NEM would decline under all scenarios as a result of lowered capacity factors and asset retirements (either at or earlier than scheduled closure dates). There is a significant reduction in emissions near the start of the projection in 2024 resulting from the closure of the Liddell Power Station.

Under Scenario D, emissions would reduce to near zero in 2036 as a result of the retirement of all AGL Energy's coal assets. A small number of residual emissions from the gas-fired Barker Inlet Power Station would be present from 2036 until 2045.

Under scenarios A, B and C, AGL Energy's emissions in the 2040s would arise predominantly from Loy Yang A Power Station until its retirement in 2048. The variance in emissions between these scenarios from 2040 arises from varying load factors at Loy Yang A Power Station driven by the carbon constraint in each scenario.

It is important to note that these results reflect AGL Energy's NEM asset base as of January 2020 and do not include the development or construction of any new assets. Additionally, all contracts (e.g., power purchase agreements) are assumed to cease at current end dates.

4.2.2 Implications of market changes on scenarios

Since the modelling was undertaken in early 2020, there have been a series of significant changes to AGL Energy's operating environment. These include:

- The global COVID-19 pandemic, which has impacted load profiles and demand volumes in the NEM;
- Depressed current and forward wholesale electricity prices, arising from the multiple challenges in the period accelerating the existing transition of the market to higher variable renewable penetration; and
- Changes to government policy and intervention, including the NSW Electricity Infrastructure Roadmap which is intended to further accelerate the penetration of renewable generation in the NEM.

AGL Energy considers that the four scenarios explored in FY20 remain relevant as they were developed to be broad enough to consider possible changes in the electricity market. The pressures that AGL Energy is currently facing through lower wholesale prices, changes to government policies and the ongoing pandemic, while not explicitly included in the models, can be accounted for as they predominantly affect which scenario is more likely to be dominant.

Given these considerations, it is expected that the long-term scenario outcomes, if remodelled, would be broadly similar. The challenges do however change which scenario is most representative of the current environment.

The slow initial pace of change in scenarios A and C do not align with what has been experienced in the market over the past 12 months, whilst scenarios B and D more closely align with the observed pace of transition. The announced policy changes in NSW further supports this analysis.

Notwithstanding this, the volatility and pace of policy change in the market make it difficult to assert with any certainty that a particular scenario will no longer occur. However, as current trends align more closely with scenarios B and D, AGL Energy recognises that coal-fired power stations in the NEM will operate under lower operating load profiles into the future. The earlier date for closure of the Yallourn Power Station (announced in March 2021) is indicative of this changing nature of the electricity market.

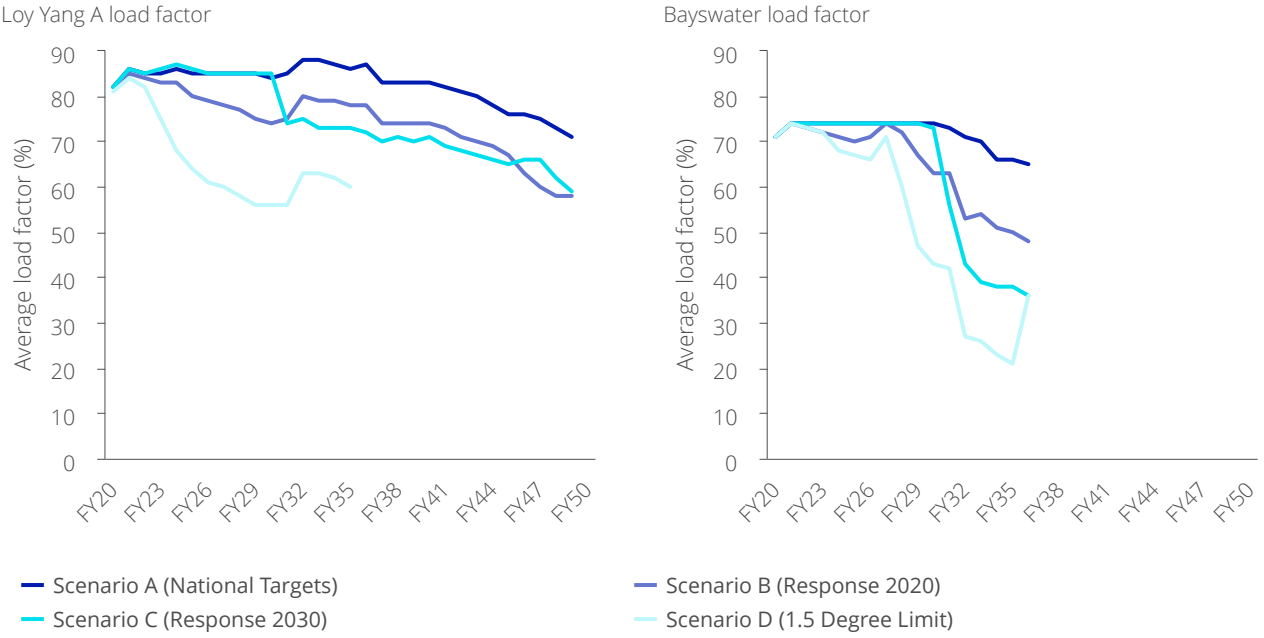
4. Strategy (continued)

Similarly, these changed underlying conditions have led AEMO to indicate its view to the Australian Energy Regulator (AER) that Australia is moving away from the 'central case' scenario which it modelled in its 2020 Integrated System Plan towards its 'fast change' or 'step change' scenarios, with consequential changes in industry and consumer responses likely to result. AEMO's central case, fast change and step change scenarios were used as the Australian reference scenarios in AGL Energy's scenarios A, B and D (respectively), with AGL Energy's Scenario C representing a blend of AEMO's central case and fast change scenarios.

In both scenarios B and D, the FY20 modelling showed a significant change in emissions due to changed operating profiles of thermal coal plants. Under both these scenarios this outcome is caused by the implementation of a carbon constraint changing the dynamics of the market to, in effect, increase renewable energy demand and production whilst decreasing demand for higher emissions energy sources. These are the same dynamics we see in the current market due to changes in wholesale electricity price forecasts, policy and regulatory reform and changes in technology costs.

For AGL Energy we see this in the modelled outputs of the Bayswater and Loy Yang A power stations. This is most clearly visible in the mid 2030s in Scenario D, where both power stations have significantly reduced load factors and Loy Yang A's closure is brought forward to 2035. Figure 6, below, shows the changing load factor for each scenario for each station.

Figure 6: Load factors for Loy Yang A and Bayswater power stations, all scenarios



There is a direct correlation between load factor and generation output of power stations. As such, for the Bayswater and Loy Yang A power stations, in line with the trajectories shown in Figure 6, generation output decreases under each scenario as the transition progresses. The decrease in generation output leads to a proportional decrease in emissions.

As scenarios B and D become more dominant it becomes more likely that large baseload power stations will operate at lower load factors in the future.

In fact, the combination of lower load factors and depressed wholesale prices during certain periods of the year has led AGL Energy to consider new modes of asset operation, including options such as longer-term mothballing or seasonal shutdowns during periods of low demand and low prices. Given market conditions, AGL Energy has assessed and put in place controls to ensure growth capex is not spent where the market returns do not warrant the investment and it is proposed that Accel Energy would remain focused on reducing the cash running cost of its plants.

While AGL Energy recognises that our generating plant will operate with lower load profiles into the future, there is a continued need to ensure that affordable and reliable energy supply remains available to the market. Keeping plant ready as standby capacity is not incentivised by the current market structure of the NEM, however the Energy Security Board's (ESB) Post 2025 Market Design program has been developed to address market reforms that are required to adapt to issues such as these. For example, through this program, the ESB has focused on managing concerns associated with the early exit of thermal plant, as well as opportunities for thermal plant to earn additional revenue through the development of new markets for essential system services such as emergency reserves, inertia, and system strength.

As immediate reforms, the ESB has proposed three exit mechanisms to deal with reliability risks caused by unexpected generator closures:

- Requiring extra information on seasonal shutdowns and mothballing;
- Expanding notice of closure requirements to restrict mothballing; and
- Introducing a new System and Market Impact Assessment (SMIA) to allow timely state government intervention if closure risks are too great.

The proposals include requiring generators to access exemptions from the existing closure rule if they are seeking to mothball or otherwise not run their plant. Options being considered include preventing participants from not running units or taking them out of the market, even when that would be the most economic course of action.

As further initial reforms, the ESB is also exploring new options to enhance the existing retailer reliability obligation (RRO). The proposed changes broadly fall into two categories:

- Modifications to the existing RRO. This includes proposals, such as: mandating higher levels of contracting (e.g. towards POE10, 1 in 10 year demand); or having the RRO 'always on' (i.e. not just subject to a trigger in response to material forecast shortfalls); and
- The development of a physical RRO. This more substantial reform would establish an obligation for retailers to source a level of 'physical generation certificates' from eligible dispatchable generation. This market would operate in parallel to existing arrangements, providing additional revenue for firm generators during periods of tight demand.

A great deal of uncertainty surrounds the detail of these policy reforms and their impact on the operation of generation facilities. While it is anticipated that the development of new markets could improve some revenue streams for thermal assets, other proposals may have the effect of limiting the optionality of plant operations, which in practical terms may also have the impact of affecting closure dates due to the increased risk associated with not being able to change plant operations as a station approaches end of life. At the same time, governments may have more levers to keep plants operating for longer if system risks are judged to be too great following other plant closures.

In addition to the ESB reform program, state governments are also looking at additional reforms to incentivise the right levels of firm and dispatchable capacity into the future; for example, through the NSW Energy Security Target component of the NSW Electricity Infrastructure Roadmap, and through the Victorian Government's agreement with the Yallourn generator. These state government initiatives highlight the willingness for governments to intervene in the market to incentivise standby capacity.

The proposed ESB market reforms and state government initiatives are likely to go some way to providing additional incentives for standby capacity, but also add to uncertainty in the market. Some of the proposed reforms may also limit operational decisions and materially affect the ability of AGL Energy to be firm about closure dates for thermal assets. Depending on which of the proposed reforms are adopted, and the mechanisms by which they are implemented, thermal assets may therefore be required to close earlier than currently anticipated or may be required to operate to the end of technical life. The revenue implications of policy proposals may also have implications for decisions about the ongoing viability of plant into the future.

AGL Energy has been engaging with state governments and the ESB throughout the Post 2025 Market Design program to understand the risks and issues associated with any reform proposals, and will continue to engage with governments and market bodies such as the AEMC and AER in order to develop reforms that provide long-term certainty to the market. Throughout this process, we have been transparent about the potential impacts of reforms on thermal generators in order for governments to be able to make informed decisions about policies with substantial impacts for energy market participants. Importantly, the direction of these proposals and policies could make it more difficult for participants such as AGL Energy to independently make commitments such as the earlier closure of thermal generating plant.

Should the market reforms be implemented, any future scenario analysis will need to be adjusted to take new market parameters into account. These changes could impact on both the outcomes and dominance of the scenarios.

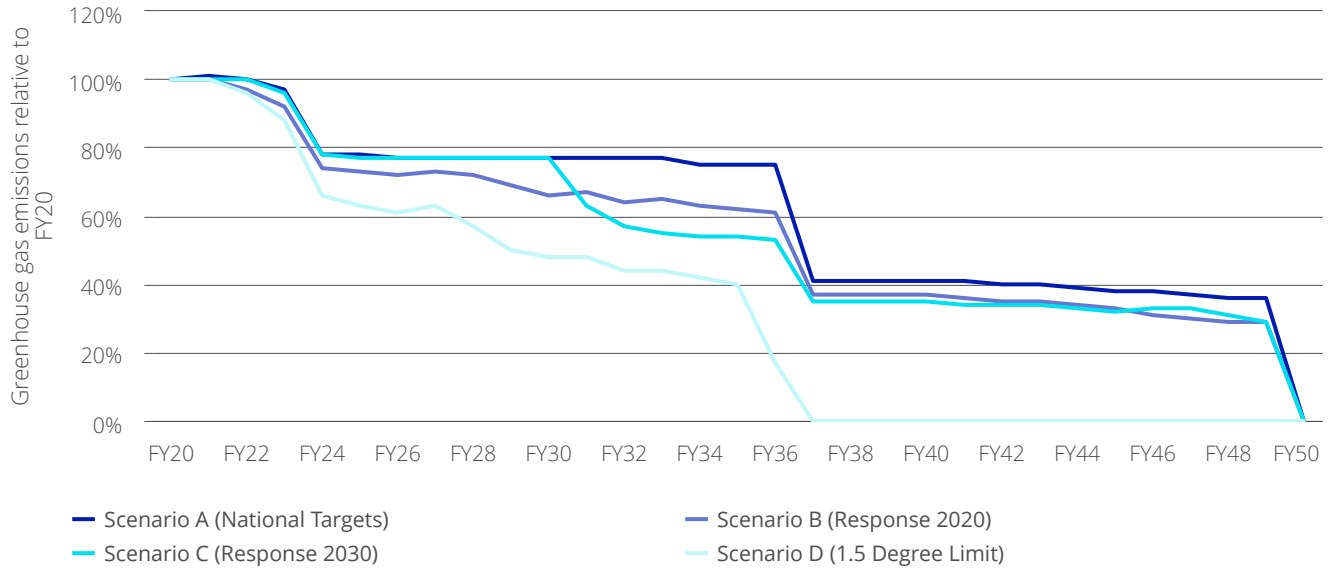
4.2.3 Implications of proposed demerger for scenarios

The graphs below show the outcome of AGL Energy's FY20 modelling on the operated emissions profiles for Accel Energy and AGL Australia, based upon the allocation of assets to each business under the proposed demerger as outlined in Section 4.

The emissions profile of Accel Energy, seen in Figure 7, and the subsequent scenario modelling implications, would be materially similar to that of AGL Energy. This results from coal-fired power stations dominating the emissions profile of both AGL Energy and Accel Energy. Under all scenarios, Accel Energy's operated emissions would reduce by 100% by FY50. Total emissions in FY20 for the assets proposed to be operated by Accel Energy were 42.3 $MtCO_2e$ for operated generation assets, and 42.5 $MtCO_2e$ for the total portfolio.

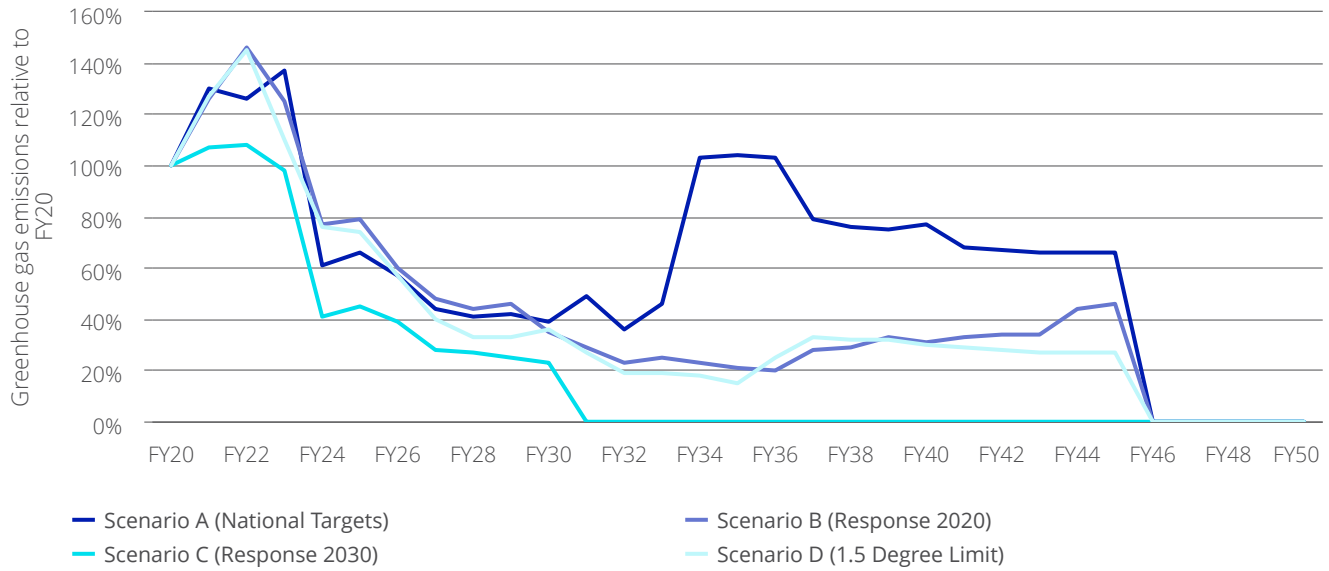
4. Strategy (continued)

Figure 7: Scenario analysis emissions trajectories for Accel Energy assets in the NEM



The emissions trajectories for AGL Australia (Figure 8), would be more variable than those of Accel Energy. Emissions would be driven by the output of natural gas peaking generation plants, with the remaining emissions coming from office and other retail business operations. The increase in emissions in the early 2020s under all scenarios is a result of increased generation from Barker Inlet Power Station as the AGL Torrens A station is decommissioned. In Scenario A, modelling of the NEM shows that in the 2030s coal plant retirements and reduced coal-fired generation drives increased output from baseload gas and incentivises further build out of baseload gas. As a result, the emissions trajectory for AGL Australia increases from around FY34 in Scenario A. Total emissions in FY20 for assets proposed to be operated by AGL Australia totalled 268 $ktCO_2e$; emissions from generation assets accounts for 251 $ktCO_2e$ of this total.

Figure 8: Scenario analysis emissions trajectories for AGL Australia assets in the NEM



The decarbonisation pathway outlined for AGL Australia shows a significant reduction in scope 1 and 2 emissions in the short term which correlates with a reduction in direct transition risk. AGL Australia would however continue to be faced with the ongoing energy transition risks, particularly from a customer expectation and energy contracting perspective.

Accel Energy, however, would continue to face significant transition risks due to the magnitude of its overall emissions profile and the continued inclusion of coal in its generation mix, despite reducing its emissions by around 60% by FY37 under all scenarios. These risks are discussed in Section 5.2.

Both companies would also be exposed to various aspects of physical risk, further discussion of which is included in Section 5.3. As outlined in Section 5.2, a benefit of the structural separation arises from the ability of the separate entities to better manage their individual risks.

4. Strategy (continued)

4.3 Capital allocation

While AGL Energy has a responsibility to continue to invest in our current assets to ensure the reliable supply of baseload power to the NEM, our future investment program is dominated by projects that support the energy mix of tomorrow.

Figure 9 shows the allocation of investing cash flows for FY21, whereas Figure 10 shows new investment pipeline initiatives identified in FY21, alongside currently committed future investments as well as potential development pipeline investments.

Figure 9: FY21 investing cash flows

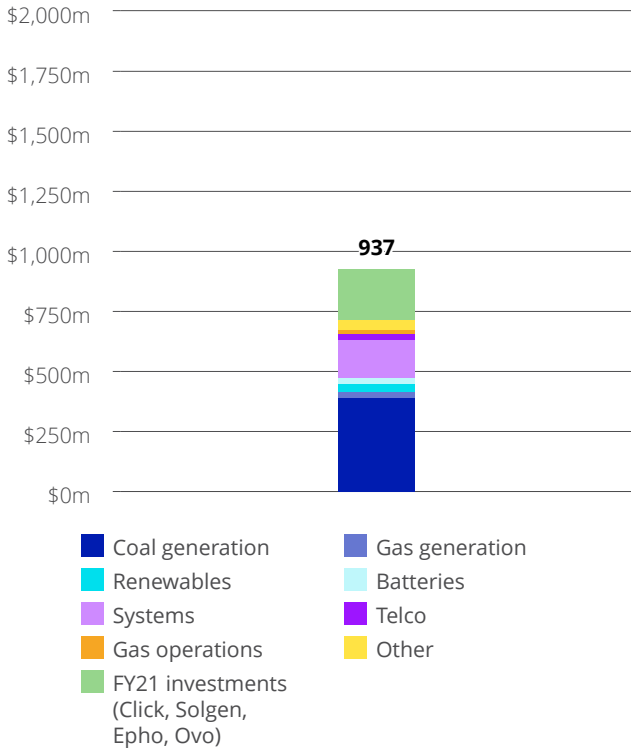
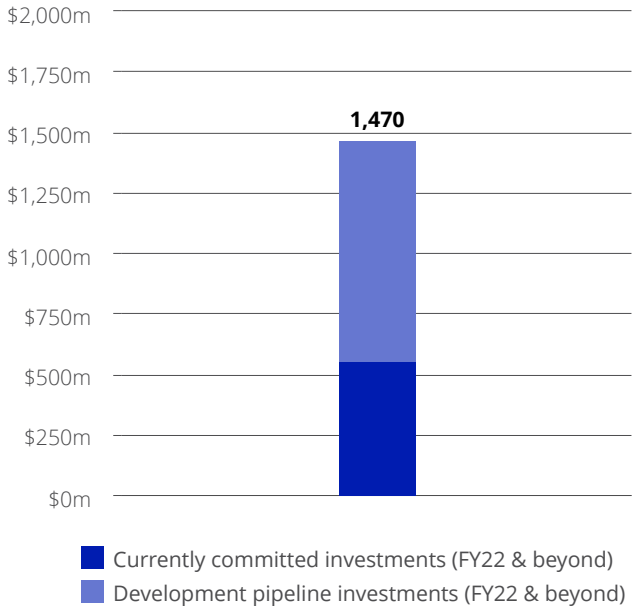


Figure 10: New investment pipeline as of FY21



The investing cash flows for FY21 (Figure 9) remain dominated by investments needed to keep our thermal assets running safely, efficiently and reliably. During FY21, AGL Energy has assessed and put in place controls to ensure growth capex is not spent where the market returns do not warrant the investment. This includes the optimisation of maintenance and contractor spend across all generating sites in the short term (which is expected to reduce both growth and sustaining capex by approximately $100 million by the end of FY23), and the consideration of longer-term changes to asset management plans and operating profiles for our thermal fleet.

Figure 9 also demonstrates that AGL Energy's discretionary "growth" investing cash flows for FY21 are increasingly being directed to other areas. This includes the acquisition of Click Energy, Solgen and Epho, as well as the joint venture with Ovo.

Currently committed future investments (Figure 10) include our $358m contribution to the acquisition of Tilt Renewables through PowAR, the Torrens Island battery ($180m) and the Broken Hill contingency generation infrastructure ($20m). Potential development pipeline investments include large-scale battery and capacity asset projects at Liddell, AGL Loy Yang, Torrens Island (Stage 2) and Broken Hill, and the Bowmans Creek Wind Farm project at AGL Macquarie. These projects are subject to planning approval as well as final investment decisions, and would be distributed between Accel Energy and AGL Australia.

In addition to capital being allocated to new projects and existing AGL Energy assets, we also contribute significant amounts of cash to renewables through offtake agreements. Over FY21, cash spent through Power Purchase Agreements (PPAs) for renewable assets amounted to $225m.

5. Climate-related Risks

This section provides an overview of climate-related risks at AGL Energy, and comprises:

- A list of AGL Energy's Tier 1 Strategic Risks, and the climate-related impacts associated with each of these risks (Section 5.1);
- An overview of AGL Energy's transition risks (Section 5.2); and
- A high-level assessment of physical risks, including an overview of risks for each of AGL Energy's operated electricity generation assets[2] (Section 5.3).

5.1 Tier 1 Strategic Risks

AGL Energy's Tier 1 Strategic Risks for FY21 (as discussed in Section 3.2) are outlined in Table 5.1.1 below. These Tier 1 risks are comprised of multiple Tier 2 and Tier 3 risks which represent more specific threats analysed in more detail, underlying the 'Climate Change Response' Tier 1 risk.

While climate change response has been identified as a Tier 1 Strategic Risk in its own right, as climate change has a broad impact on AGL, there are climate-related impacts associated with a number of AGL Energy's other Tier 1 Strategic Risks. These are also summarised in Table 5.1.1.

2. This excludes the Camden gas production facility as it is scheduled for closure in FY23, and the Sliver Springs and Newcastle gas storage facilities as these assets have been identified for sale.

5. Climate-related Risks (continued)

Table 5.1.1: Relationship between Tier 1 Strategic Risks and climate change

Tier 1 Strategic Risk[1]	Climate change link	TCFD risk type
Wholesale market pricing and volatility: AGL is unable to effectively mitigate the volatility of the wholesale market.	The rapid transition towards renewable energy to reduce carbon emissions may lead to wholesale market volatility. **Mitigation:** AGL continues to invest in storage and firming capacity to ensure limited volatility in the wholesale market.	Transition risk – market risk Physical risk
Government intervention: AGL is not able to effectively anticipate, plan or respond to increasing uncertainty regarding government policy.	Governments may intervene in energy markets to limit the impact of climate change or to manage the impacts of a transitioning energy market. **Mitigation:** AGL continues to engage productively and transparently with all levels of government on energy and climate policy.	Transition risk – policy and legal risk
Climate change response: AGL is unable to meet expectations and/or deliver on its commitments to transition to a low carbon future within an acceptable timeframe.	Inherent climate change risk. **Mitigation:** AGL's Climate Statement (released in June 2020) commits the business to continue to work towards a goal of net zero emissions by 2050.	Transition risk – reputation risk Transition risk – market risk
Regulatory intervention: AGL is not able to effectively anticipate or plan for regulatory intervention, or added restrictions and diversion of resource puts wider business objectives at risk.	Possibility of increased regulatory compliance obligations and limitations on greenhouse gas emissions. **Mitigation:** AGL continues to engage productively and transparently with all regulatory bodies on energy and climate policy and regulations.	Transition risk – policy and legal risk
Resilience of generation/critical infrastructure: AGL is unable to generate and maintain a resilient energy supply from generation assets and related critical infrastructure.	The physical impacts of climate change may affect the operations of AGL's generation facilities. **Mitigation:** AGL continues to improve our understanding of potential future physical impacts of climate change on our business to ensure reliability of our generation assets.	Physical risk
Organisational culture and capability: AGL is unable to foster a resilient, agile organisation that is built on strong and ethical behaviours, talented people, a focus on safety, and a customer-centric mindset.	AGL's purpose - 'Progress for Life' - encourages employees to engage in improving the impacts of the organisation. Responsibly managing the energy transition is a key component of this. **Mitigation:** AGL transparently engages with our people on the issue of climate change and its transition plan.	Transition risk – reputation risk
Market disruption: AGL does not (or cannot) adequately or appropriately respond to changing customer expectations and preferences regarding energy sources, prices and related products and services.	Climate change may increase customer demand for clean/renewable energy, rooftop solar, behind-the-meter batteries and electric vehicles. **Mitigation:** AGL offers carbon neutral options for all products and services and continues to develop innovative behind-the-meter products and services for customers, including an electric vehicle offering.	Transition risk – technology risk, Transition risk - market risk Transition risk - reputation risk
Stakeholder trust: AGL's strategy to deliver on its social licence to all stakeholders is unclear, inconsistent, and/or poorly executed.	AGL's position on climate change is a component of how all stakeholders including customers perceive AGL. **Mitigation:** AGL continues to engage with stakeholders on climate change in a transparent manner. Transparency is one of the central tenets of AGL's Climate Statement. Accountability is also driven through the incorporation of carbon transition metrics in AGL's LTI plans for key management personnel.	Transition risk – reputation risk
Access to gas: AGL is unable to source enough gas to meet its future demand.	Climate change may lead to increased gas demand in the short term as a transition fuel. **Mitigation:** AGL continues to explore opportunities to secure gas supply in Australia.	Transition risk – market risk
Cybersecurity and resilience: AGL's critical systems, platforms and technology infrastructure are compromised by a cyber, vendor or internal event.	N/A	N/A
Investment planning and execution: AGL's major investment decisions do not deliver on their intended benefits or outcomes for shareholders, customers and the community.	Climate change may alter NEM demand profile. **Mitigation:** AGL continues to monitor and assess the requirements of the NEM and make appropriate investment decisions.	Transition risk – technology risk
Compliance and privacy: AGL fails to comply with laws, regulations or other commitments made, including its privacy obligations.	N/A	N/A

1. In addition to the 12 Tier 1 risks under management as set out above, AGL Energy identified two additional new/emerging risks over FY21, being the risks of 'COVID-19 Operational Response' and 'Separation Execution'.

5. Climate-related Risks (continued)

During FY21, as part of the annual review, climate change response was confirmed as a continuing Tier 1 Strategic Risk with an extreme risk rating and will continue to be monitored and actively managed during FY22.

5.2 Transition Risk

Transition risk arises from the changes to systems and business functions which are necessary to address climate change.

AGL Energy has identified eight Tier 2 transition risks which contribute to the Tier 1 Strategic Risk of climate change response. Table 5.2.1 outlines these Tier 2 risks, their current risk trend and the implications for each risk following the proposed separation of AGL Energy into AGL Australia and Accel Energy. The shaded implications for AGL Australia and Accel Energy represent where a material risk resides post separation.

Table 5.2.1: Tier 2 climate-related risks

Risk	Description	Risk trend	Implications for AGL Australia	Implications for Accel Energy
Government policy change	**Policy and Legal risk:** Potential for accelerated or poor implementation of carbon policy impacting AGL Energy's business model.		AGL Australia would face a lesser impact from and lower likelihood of climate-related policy intervention in the short term.	**Accel Energy would be likely to face a similar impact to AGL Energy, however would be better placed to advocate for policy outcomes.**
Change in regulations	**Policy and Legal risk:** Increasing and changing environmental and reporting regulations requiring further action and or disclosures on climate change by AGL Energy.		AGL Australia would face a lesser impact from and lower likelihood of climate-related regulatory intervention in the short term.	**Accel Energy would be likely to face a similar impact to AGL Energy, however would be better placed to handle the changes and advocate for regulatory outcomes.**
Change in customer sentiment	**Reputation Risk:** Actions taken (or not taken) by AGL Energy undermine AGL Energy's credibility with customers regarding climate change, leading to direct (or indirect) negative action by customers.		**While customer expectations would remain high and continue to evolve, AGL Australia would be better placed to meet those expectations.**	Accel Energy would not be directly exposed to retail customer expectations and would be better placed to manage wholesale customer expectations.
Change in community expectations	**Reputation Risk:** Community expectations change or are not met leading to reputational impacts or otherwise influencing AGL Energy's climate change or corporate strategy.		AGL Australia would be less directly exposed to operational communities.	**This would remain a significant risk for Accel Energy; however, the business would be better placed to work with the communities and advocate on their behalf.**
Change in capital market requirements	**Market Risk:** Potential for debt and equity investors to restrict funding for AGL Energy as a result of climate change.		AGL Australia would be better placed to meet capital market expectations regarding climate change.	**This would remain a significant risk for Accel Energy; however, the business would be better placed to work with capital markets' stakeholders.**
Shareholder and other stakeholder activism	**Market Risk:** Potential for shareholders and other activists to target AGL Energy and impact its climate change policy decisions or cause significant disruption.		AGL Australia would be better placed to meet shareholder and other activists' expectations on climate change.	**This would remain a significant risk for Accel Energy; however, the business would be better placed to work with shareholders and other stakeholders.**
Stranded assets and/or investment	**Technology Risk:** AGL Energy assets and investments are not able to meet a viable economic return, and as such are likely to see their economic life curtailed due to a combination of technology, regulatory and/or market changes.		The asset profile of AGL Australia would be more resilient to climate-related risks.	**This would remain a significant risk for Accel Energy, as coal assets are competing in an evolving market. However, it would be better placed to transition these assets.**
Emissions management strategy	**Reputation Risk:** AGL Energy's asset management strategies do not meet expected emissions outcomes of stakeholders.		AGL Australia would have a reduced direct emissions profile and greater control over indirect emissions.	**This would remain a significant risk for Accel Energy, as it would continue to operate coal assets, however, it would be better placed to transition these assets.**

Key Significant increase Increasing No change

Following the proposed separation, the climate risk profile for AGL Australia is expected to improve. The most material transition risk to remain for AGL Australia is expected to be increasing reputational risk posed by changing customer and other stakeholder sentiment. AGL Australia would be better positioned to manage this risk through the offsetting of its scope 1 and 2 emissions, continuing investment in/contracting renewable energy and by offering carbon neutral and green products to its customers. The transition to becoming a carbon neutral business could occur faster for AGL Australia than under AGL Energy's current structure.

5. Climate-related Risks (continued)

For Accel Energy, the material transition risks would be similar to those of AGL Energy, apart from not being directly exposed to a reputational risk from retail customer expectations. The remaining risks tend to arise from the rapid transition of the electricity market in Australia, and particularly are attached to the large emissions sources that will form part of Accel Energy's asset base.

Being independent from a direct retail customer base and brand would allow Accel Energy to engage effectively with markets and policy makers to ensure a stable operating environment. Effective frameworks which protect affordability and system security are necessary to support the accelerated energy transition, and Accel Energy is committed to working with government and other key stakeholders and policy decision-makers to advocate for sustainable market change.

5.2.1 Rehabilitation of thermal assets

An additional transition risk facing AGL Energy is associated with the rehabilitation provisions for our coal-fired power stations. In a faster decarbonisation scenario AGL Energy could face earlier closure dates for these generation assets. Earlier asset closure would in turn lead to the rehabilitation obligation occurring sooner, and an additional risk that AGL Energy may not be able to recover the carrying value of the asset.

In FY21, AGL Energy conducted analysis of various rehabilitation scenarios for the thermal assets within our portfolio. Following that analysis, we are confident that AGL Energy, as an integrated business, will have sufficient liquidity to meet estimated funding obligations as and when they arise.

Following the proposed demerger, the ageing thermal power stations would be owned by Accel Energy. The capital structure being considered for Accel Energy is specifically designed to mitigate the risks presented by the potential for earlier occurrence of rehabilitation obligations, especially in the case of early closure scenarios. Accel Energy's debt structure, combined with the maturation of onerous contracts on legacy wind farm offtake arrangements, will result in the company having materially lower non-rehabilitation related financial obligations post FY30. This will balance risk as environmental restoration cash flows begin to increase in future years with the closure of the Bayswater, Torrens Island and Loy Yang A power stations. It is anticipated that Accel Energy will seek to leverage significant demand from capital providers to fund attractive energy transition projects in line with its strategy to redevelop these sites as low-carbon industrial energy hubs. Subject to the successful execution of these strategies, it is anticipated that the timing of some rehabilitation cash flows may be able to be reshaped, or the cost of rehabilitation may decrease, as the economic life of operating sites is extended beyond that of thermal generation.

During the year, AGL completed a review of our long-term rehabilitation obligations, in line with commitments made in the 2017 Rehabilitation Report. At the same time, the discount rate used to derive the present value of the estimated cash flows was reduced from 10% to 3%. The review resulted in an increase in the provision for environmental restoration of $1,112 million (comprising $799 million from the reduction in discount rate and $313 million arising from an increase in estimated future expenditure), which was reflected in AGL Energy's financial statements for the period ended 31 December 2020.

The updated provision accounts for an increase in the scope and cost of progressive rehabilitation activities, as well as for additional works that are now required to meet AGL Energy's end-state compliance obligations, which have increased due to a combination of both updated regulatory requirements and the establishment of formal closure plans as some assets approach the end of their lives. These additional works will result in an increase in the cost to deliver AGL Energy's rehabilitation program.

The key drivers of increases in the estimated costs are as follows:

- an increase in the lake level, shoreline and associated mine battering for the Loy Yang Mine, in line with AGL Energy's latest rehabilitation plan and the Latrobe Valley Regional Rehabilitation Strategy;
- an increase in the estimated area and restoration efforts required for both the Liddell ash dam and Ravensworth void at AGL Macquarie in line with committed rehabilitation plans;
- an increase in the estimated work required to decommission gas wells at both Camden and in the Surat Basin, aligning to Codes of Practice in NSW and Queensland; and
- inclusion of additional project management costs to align with an owner led delivery model, ensuring that AGL Energy oversees delivery of its obligations.

A more granular breakdown of the costs and updated provision amount as at 30 June 2021 is provided in Table 5.2.1.1 below, for each major generation site and AGL Energy's upstream gas portfolio. For completeness, other smaller assets in the portfolio, as well as joint venture assets, have been included as "Other".

Table 5.2.1.1: Rehabilitation provisions

Asset	Planned closure date	Provision amount ($m)	Rehabilitation costs Nominal FY21 ($m)	Rehabilitation costs Real FY21 ($m)
AGL Loy Yang	2048	404	1,053	465
AGL Macquarie (Liddell and Bayswater)	2022 - 2035	663	947	702
AGL Torrens	2035	68	122	74
Upstream Gas Assets	2023 - 2033	180	252	192
Other	Various	137	223	145
		1,452	**2,597**	**1,578**

5. Climate-related Risks (continued)

5.3 Physical Risk

Physical risks associated with climate change are likely to affect all parts of our economic system. Physical climate hazards can be broken into two categories:

- **Acute physical hazards**, defined as extreme events associated with direct damage to facilities or infrastructure. Examples of acute physical hazards include cyclones and bushfires. Acute hazards tend to have large-scale impacts over a short duration.
- **Chronic physical hazards**, defined as gradually emerging aspects of physical risk such as changes to annual average sea level, temperature, and rainfall. Chronic hazards tend to have lower-scale impacts over a long duration.

These physical climate hazards can additionally have both primary and secondary effects. The primary effects are the direct impacts on assets such as power stations, infrastructure, and offices. The secondary effects are impacts on supply chains, distribution networks, customers, and markets.

In a recent demonstration of the material risk physical hazards can pose to generation assets, major flooding in the Latrobe Valley in June 2021 drove Yallourn Power Station to temporarily close three of its four units and suspend coal mining, prompting the Victorian government to declare an energy emergency, and caused significant damage to the facility.[3]

For this FY21 analysis, we have focused on the primary effects on our assets and the network from both acute and chronic physical risks, with impacts assessed as at 2030 to limit the uncertainties in the outcomes, and to ensure the impacts on operational assets are covered.

5.3.1 Impacts on electricity network

The interconnected nature of Australia's east coast electricity network provides both resilience and risk from the physical hazards of climate change. As a result of this interconnectedness, primary physical impacts to a generator, load or network infrastructure can have far reaching implications for other aspects of the system.

To properly assess the impacts of these hazards and how best to manage the associated risks, a full understanding of the entire network is required. It is not practicable for AGL Energy to undertake this form of detailed analysis across the NEM, as it would require information which may be commercial in confidence to our competitors in the electricity sector. However, an assessment of these impacts is being undertaken through the Electricity Sector Climate Information (ESCI) project[4], which is being undertaken by the CSIRO and the Bureau of Meteorology (BOM) in collaboration with AEMO. The project is funded through the Department of Industry, Science, Energy and Resources, and is expected to be completed in FY22.

The ESCI Project outlines that the most important climate hazards for the electricity system are (in order of priority): increasing temperature, bushfires, wind, and precipitation/dam inflows. Additionally, the increasing frequency and intensity of compound weather events has been identified as an area of concern. Compound risks occur where multiple hazards occur at the same time or in quick succession, the most common Australian example being the co-incidence of heatwaves and bushfires.

A high-level overview of the impacts from physical hazards to the electricity sector as determined by the ESCI project is outlined in Table 5.3.1.1 below.

3. Renew Economy article, June 2021
4. https://www.climatechangeinaustralia.gov.au/en/projects/esci/

5. Climate-related Risks (continued)

Table 5.3.1.1: Electricity sector physical climate risk matrix (source: ESCI Project[1])

Impacts from climate change	Energy sector issues: Underlying customer demand	Embedded generation & storage	Networks-ratings	Networks-failures	Generation markets	Customer impact from outage
Extreme heat	Changing mean and extreme weather influences customer behaviour	Higher temperatures reduce panel and inverter performance	Equipment may de-rate at higher temperatures, particularly plant and transmission lines, due to sagging	Equipment under stress may fail more frequently	Generation plant may reduce output at higher temperatures	Higher fatality rate, higher discomfort
Destructive events (wind, heavy rainfall, flooding)	Minor regional change to customer behaviour	Minor regional change to availability	De-rating due to expected failure	Circuits and equipment may be damaged or trip with exposure	Circuits and equipment may be damaged or trip with exposure	Desire for rapid restoration times
Reduced streamflow					May reduce hydro generation and cooling water availability	
Bushfires	Minor regional change to customer behaviour	Minor regional change to availability		Circuits and equipment may be damaged or trip with fire exposure	Regional changes to availability and possible plant damage	Increased severity and frequency of network outages caused by bushfires
Increased dust or smoke		Reduction in rooftop solar	De-rating caused by dust and smoke	Increase in pole-top fires and arcing		
Sea level rise	Minor regional change to customer behaviour	Minor regional change to availability		Relocation of some transmission assets may be required	Some generation assets may be in low lying areas	
Extreme cold	Changing mean and extreme weather influences customer behaviour		Ice may result in de-rating	Equipment under stress may fail more frequently	May reduce hydro generation	Higher fatality rate, higher discomfort
Droughts	Changing agricultural viability influence regional population and economies					
High levels of wind variation	May influence felt experience				May reduce wind generation	

1. ESCI Project, Report for the First Weather and Climate Risk Scenario, May 2019, Figure 1 - Weather and climate - NEM interaction inventory, available at climatechangeinaustralia.gov.au

Key	High linkage	Moderate linkage	Some linkage	No linkage

The ESCI project is intended to provide specific climate-related data and case studies for use by market participants in Australia to assist with understanding and assessing the impacts to specific businesses. AGL Energy intends to utilise this data as it continues to be released.

5. Climate-related Risks (continued)

5.3.2 Site-specific physical impacts

During FY21, AGL Energy completed a desktop assessment of primary physical risks for our operated electricity generation assets under a high warming scenario.

To assess the impact of climate risks on the AGL Energy assets, the RCP 8.5 scenario assessment undertaken by the Climate Measurement Standards Initiative (CMSI) published in September 2020 has been used[5]. This assessment is considered the high end of physical impacts representing an above 4 degrees Celsius increase in global temperatures by 2100. The CMSI report breaks down the impacts of this scenario analysis across multiple physical hazards in specific Australian locations. This has been utilised by AGL Energy to determine potential risks which could affect each asset under a high warming scenario.

Tables 5.3.2.1 and 5.3.2.2 below outline how risks to generation availability changes over the period from 2020 to 2030 for each asset as a result of each physical hazard identified in the CMSI report. The allocation of each asset (or groups of assets) to either Accel Energy or AGL Australia through the proposed demerger is also shown.

Risks to plant efficiency arising from physical hazards, while measurable in the timeframe, are less material than both the availability risks and the impacts resulting from physical hazards affecting other areas of the electricity system (as discussed in Section 5.3.1 above) and have not been included in these tables. These risks will continue to be monitored and reported on where they are assessed as having a material impact on operations.

Table 5.3.2.1: Change in risk from 2020 to 2030 for impacts on availability - thermal assets

Physical hazard	AGL Macquarie power stations	Torrens Island Power Station	Barker Inlet Power Station	Loy Yang A Power Station	Somerton Power Station	Kwinana Swift Power Station
	Accel Energy	Accel Energy	AGL Australia	Accel Energy	AGL Australia	AGL Australia
Extreme wind events	⊖	⊖	⊖	⊖	⊖	⊖
Extreme rainfall and floods	⊖	⊖	⊖	⊖	⊖	⊖
Extreme fire weather days	↗	↗	↗	↗	↗	↗
Extreme heat wave events	↗	↗	↗	↗	↗	↗
Storm surge and coastal flooding	⊖	↗	↗	⊖	⊖	⊖
Extended drought periods	↗	⊖	⊖	↗	⊖	⊖

Key ↗ Increasing risk ↗ Small increase in risk ⊖ Stable risk

Table 5.3.2.2: Change in risk from 2020 to 2030 for impacts on availability - renewable assets

	Qld. wind	NSW wind	Vic. wind	SA wind	NSW hydro	Vic. hydro	NSW solar
	AGL Australia	AGL Australia	Accel Energy	Accel Energy	AGL Australia	AGL Australia	AGL Australia
Extreme wind events	↗	↗	↗	↗	⊖	⊖	⊖
Extreme rainfall and floods	⊖	⊖	⊖	⊖	⊖	↗	⊖
Extreme fire weather days	↗	↗	↗	↗	↗	↗	↗
Extreme heat wave events	↗	↗	↗	↗	⊖	⊖	↗
Storm surge and coastal flooding	⊖	⊖	⊖	⊖	⊖	⊖	⊖
Extended drought periods	⊖	⊖	⊖	⊖	↗	↗	⊖

Key ↗ Increasing risk ↗ Small increase in risk ⊖ Stable risk

The asset portfolio is resilient to direct physical risks in part through its geographic distribution, which acts to dilute the impact of location-specific acute impacts. The generation fleet is also technologically diverse, which provides increased resilience to the impact of temperature increases on generation efficiency. In addition, water rights and supply security allow for certainty even in extensive drought conditions (refer to Section 5.3.3).

5. *Scenario analysis of climate-related physical risk for buildings and infrastructure: climate science guidance,* Climate Measurement Standards Initiative, September 2020

5. Climate-related Risks (continued)

As outlined in Table 5.3.2.1, the key direct risks faced by AGL Energy's thermal coal fleet are consistent across all assets and include increasing frequency of extreme heat and fire events, as well as water security. The increasing duration and magnitude of heatwaves can reduce generator and network capacity as well as increase failure rates and maintenance costs. As thermal plant capacity decreases under all scenarios, it is anticipated that the portfolio growth for both Accel Energy and AGL Australia will be in various renewable and storage technologies thus reducing the impacts of lowered thermal efficiencies.

Water security at thermal coal assets is also an increasing risk. Thermal coal assets use considerable quantities of water and as droughts increase with rising temperatures, water availability and security become increasing risks. Further detail on water security for these assets is provided in Section 5.3.3.

In general, natural gas-fired stations face similar increasing temperature-related risks to AGL Energy's thermal coal assets. The Torrens Island and Barker Inlet power stations are located in a low-lying area of South Australia at Torrens Island in Adelaide. This location makes them more vulnerable to storm surges and coastal flooding. This was taken into consideration during the construction of the Barker Inlet Power Station.

All wind farms in AGL Energy's portfolio tend to face similar physical impacts, however their geographical separation would likely result in impacts not affecting all assets at the same time. Wind assets face derating (i.e., a decrease in available capacity) in extreme heat events. AEMO has noted a correlation between extreme heat events and derating of wind farms due to the turbines needing to cool their gearboxes to ensure there is no failure of the equipment. Investment in new renewable technologies will help mitigate this issue. Wind generation is also sensitive to any reduction in average wind speed as well as to increases in the frequency and magnitude of destructive gusts. In the situation of severe wind gusts, turbines will turn out of the wind to avoid the potential destructive impact of the gusts on their operations. AGL Energy has faced wind related derating from both wind drought and extreme winds in the past, and we consider our broad geographical range of assets to be an effective mitigation strategy of this risk.

The hydro assets also face water security issues. The changing climate has caused a reduction in average rainfall in much of the NEM, reducing water available for hydro generation and thermal generation cooling consumption as well as increasing power requirements for desalination. At the same time, extreme rainfall events and flooding have increased. Water availability is a key physical risk which is discussed in further detail in Section 5.3.3.

These risks are not unique to AGL Energy and are faced across the energy sector. As the sector continues to transition, the physical impacts of climate change resulting from the effects of existing greenhouse gas emissions will continue to increase. Over the coming decades, all businesses in the sector will need to continue to adapt to and mitigate these physical impacts.

5.3.3 Water security: Thermal generation assets

In the near term, water security is a key physical risk for thermal generation assets in AGL Energy's portfolio. AGL Energy's thermal assets are in a good position, with the supply of water licenced either in perpetuity or while electricity is being generated at the facility. The risk of these licences changing or being withdrawn is assessed as minimal.

The power stations at AGL Macquarie are zero liquid discharge sites which receive water from the Hunter River regulated system. This water source is used for all process, domestic and cooling water uses on site, as well as power generation. AGL Macquarie holds a high security water licence which places its water security at the same level as domestic water for the Hunter region. While it has been determined that AGL Macquarie is in an area which is at increasing risk of drought, modelling has calculated a high chance that there will be no effect to generation from water supply due to drought over the next five years even in the worst-case scenario.

AGL Loy Yang receives its low-quality water, used for cooling, from the Blue Rock Dam. The dam is part of the Latrobe river system and was constructed by the Victorian State Electricity Commission to store water for the Yallourn, Loy Yang A and Loy Yang B power stations. High quality water used for process and domestic water on site is supplied by Gippsland Water from Moondarra Reservoir. Both these licences are held in perpetuity, providing significant water security. While drought is considered an increasing risk, the impact of any drought conditions are expected to be minimal on the operations of the Loy Yang A Power Station in the short term.

Torrens Island Power Station has a secure water supply with all process, domestic and cooling water sources being specific to the station or from the ocean. There are no scenarios where the station's operations could be constrained from generation by water supply other than equipment failure.

5.3.4 Water security: Hydro assets

AGL Energy's portfolio of hydroelectric power stations extends throughout Victoria and New South Wales. These assets are dependent on local environmental conditions including rainfall events, irrigation patterns and seasonal run-of-river releases in determining their generation output. Each of the individual stations has a licence agreement or entitlement to generate electricity from the water released by the storage or passing on the river. Kiewa, Dartmouth and Eildon have considerable discretion on water release timing and therefore generation, and can call on additional water for generation in times of high demand.

With current dam water storage capacity and forecasting of local climate conditions there is an expectation that there will be no immediate water supply impacts for the hydro power stations. The existing water licence conditions for irrigation releases and run-of-river release are unlikely to change, with the release profile and usage being well understood from operational history. This includes experience of managing the power stations in periods of high rainfall as well as through drought. Annual forecasting of rainfall helps project the dam's capacity to increase in water storage and the potential to generate at each power station year on year.

5. Climate-related Risks (continued)

Independent statutory authorities (Environment Water Holders) own a significant portion of water, having acquired entitlements/licences over the last decade. Operationally this has brought new challenges, as the Environment Water Holders can be unpredictable and call for water releases outside of irrigation season. This can mean more generation opportunities, however it can also make scheduling maintenance more challenging, as the opportunity to take a hydro power station offline gets more difficult to synchronise with a period of no releases being required from the dam.

To fully understand the long-term risks associated with water availability arising from particular climate scenarios, detailed long-term physical risk scenarios will need to be modelled.

An overview of each asset/scheme and the water release arrangements which they operate under is described in Table 5.3.4.1.

Table 5.3.4.1: Water release arrangements for AGL's hydro fleet

Asset/Scheme	Details
Kiewa Scheme (Bogong, McKay Creek, Clover and West Kiewa power stations), Victoria	The Kiewa hydroelectric scheme is the largest in Victoria, and comprises McKay Creek Power Station (160 MW), Bogong Power Station (140 MW), Clover Power Station (29 MW) and West Kiewa Power Station (62 MW). These power stations are positioned at sequentially lower elevations to allow the water to be used repeatedly for generation before being discharged into the Kiewa River via the Mt Beauty Regulating Pondage. The catchment area is within the Alpine National Park. The Kiewa Scheme diverts and utilises water from the Rocky Valley and Pretty Valley branches of the East Kiewa River, which rise on the Bogong High Plains, and the West Kiewa River, which rises near Mount Hotham. The scheme utilises water from around 310 square kilometres of the Kiewa River catchment. Additional water is transferred into the scheme from adjacent catchments via a network of open channels, with much of the water coming from snow melt, which covers the area for up to five months each year. AGL Energy holds rights to water entitlements under the Water Act 1989 Bulk Entitlement (Kiewa Southern Hydro LTD) Conversion Order 1997. Bulk water entitlements exist if required to be called on. For around five decades, the Kiewa Scheme operator has provided snow depth and density data to BOM on a regular basis. This data is used by the BOM for a range of purposes, including tracking climatic changes.
Dartmouth and Banimboola power stations, Victoria	The Dartmouth Power Station has a single 180 MW unit whilst Banimboola Power Station has three generators capable of a total output of 12.2 MW. Water is sourced for the Dartmouth Power Station from the Dartmouth Dam which flows into the Dartmouth Regulating Pond, which is where the Banimboola Power Station sources its water. AGL Energy has an entitlement to draw a quantity of water each year to generate electricity. Dartmouth Power Station generates primarily from irrigation releases made during the irrigation season but also has the ability to generate from entitlement water outside of the irrigation season. The Murray Darling Basin Commission controls releases from the dam to meet irrigation requirements with water generally only released to meet summer irrigation requirements.
Eildon Power Station, Victoria	Eildon Power Station is located at the base of Eildon Dam on the Goulburn River. The station consists of two 60 MW generators and two 7.5 MW generators. The station operates mainly during the summer when irrigation water is released from the Eildon Dam, however there is provision for limited output in winter.
Rubicon Scheme (Royston, Rubicon, Lower Rubicon and Rubicon Falls power stations), Victoria	The Rubicon Scheme has a total generation capacity of 13.4 MW and is made up of the Royston Power Station (900 kW), Rubicon Power Station (9.5 MW), Rubicon Falls Power Station (260 kW) and the Lower Rubicon Power Station (2.8 MW). The Royston Power Station is supplied by Royston Dam with a capacity of 26.3 ML. Rubicon Power Station is supplied by Rubicon Dam with a capacity of 18 ML. Rubicon Falls Power Station is supplied by Rubicon Falls Dam with a capacity of 6 ML. Lower Rubicon Power Station water is supplied via the Lower Rubicon raceline, which delivers water diverted from the Rubicon and Royston rivers, and water discharged from Rubicon Power Station. AGL Energy holds rights to water entitlements under the Water Act 1989 Bulk Entitlement (Kiewa Southern Hydro LTD) Conversion Order 1997.
Yarrawonga Power Station, Victoria	The Yarrawonga Power Station (9.5 MW) is located on the Murray River, on the south side of the Victorian/NSW border. Water for the station is sourced from releases from Lake Mulwala. Generation is based on irrigation and flood releases governed by Goulburn-Murray Water.
Cairn Curran Power Station, Victoria	The Cairn Curran Scheme is a 2 MW power station built at the 174 GL Cairn Curran Reservoir on the Loddon River, near Castlemaine, Victoria. The station is reliant solely on irrigation releases for water for generation. This station is in the early stages of decommissioning owing to it being at the end of its technical life, with the economics of the power station not supporting an upgrade.
Pindari Power Station, New South Wales	The Pindari Power Station is located on the Pindari Dam, near Inverell, on the Severn River in northern NSW. The power station has a maximum output of 5.7 MW. The station typically generates power in summer using irrigation and flood mitigation flows when the Pindari Dam discharges into the Severn River.
Copeton Power Station, New South Wales	The Copeton Power Station is AGL Energy's largest hydroelectric power station in New South Wales, located 340 metres downstream from the 1,364 GL Copeton Dam. The station is capable of a maximum output of 20 MW. The station typically generates power in summer using irrigation and flood mitigation flows. Dam releases required by WaterNSW are made to assist in wildlife conservation in downstream areas, especially in the lower reaches known as the Watercourse country.
Burrendong Power Station, New South Wales	The Burrendong Power Station is located at the foot of the 1,190 GL Burrendong Dam on the Macquarie River in central New South Wales. The station is capable of a maximum output of 18 MW. AGL has a lease for the site for 30 years from November 1996, with three 10-year extension options.
Glenbawn Power Station, New South Wales	The Glenbawn Power Station was built within the Glenbawn Dam wall structure on the Hunter River about 15 kilometres southeast of Scone in New South Wales, and has a maximum generation capacity of 5.5 MW. The power station typically generates power in summer using irrigation and flood mitigation flows.

6. Metrics and Targets

AGL Energy is committed to transparent disclosure of a range of metrics and targets to ensure investors and other stakeholders can better assess our emissions and risk exposure profiles as well as our progress in mitigating or adapting to these issues.

We use several metrics to measure our greenhouse gas emissions and impact and disclose publicly to investors and other stakeholders through our Annual Report, ESG data centre, and by responding to the CDP climate change survey. We also report emissions to the Clean Energy Regulator to meet the requirements of Australia's National Greenhouse and Energy Reporting Act 2007 (NGER Act).

6.1 Operated Scope 1 and 2 Emissions

Of AGL Energy's operated greenhouse gas emissions, the most material are those arising from the combustion of coal and gas to produce electricity. The scope 1 emissions from our material coal-fired and gas-fired power stations contribute to over 99% of AGL Energy's total scope 1 emissions.

Scope 1 and 2 emissions across the business totalled 40.8[1] $MtCO_2e$ in FY21, which has decreased from FY20 due to increased unplanned outages primarily affecting Liddell Power Station's output and to a lesser degree Bayswater Power Station, and the mothballing of units A2 and A4 at AGL Torrens.

Total historical scope 1 and 2 emissions from AGL Energy's operated facilities as reported under the NGER scheme are summarised in Table 6.1.1. Further breakdowns of FY21 emissions will be available in the ESG data centre towards the end of 2021.

Table 6.1.1: AGL Energy historical emissions by generation source

AGL total carbon emissions	FY20 ($MtCO_2e$)	FY19 ($MtCO_2e$)	FY18 ($MtCO_2e$)	FY17 ($MtCO_2e$)	FY16 ($MtCO_2e$)
Scope 1: black coal generation	24.0	22.6	21.5	23.0	23.5
Scope 1: brown coal generation	16.7	18.5	19.9	18.7	18.1
Scope 1: natural gas generation	1.5	1.6	1.7	1.7	1.6
Other scope 1 emissions	0.0	0.0	0.1	0.1	0.1
Total scope 1 emissions	42.2	42.7	43.1	43.4	43.3
Total scope 2 emissions	0.5	0.5	0.5	0.5	0.5
Total scope 1 & 2 emissions[1]	42.7	43.2	43.6	43.9	43.8

1. Figures may not sum due to rounding

A breakdown of FY20 emissions according to the asset allocation for the proposed demerger is shown in Table 6.1.2 to provide an indication of the emissions profile for the two proposed businesses. It should be noted that FY21 will be the first full year of operation of Barker Inlet Power Station; this is expected to add around 70 $ktCO_2e$ to the emissions profile of AGL Energy in FY21. After the proposed demerger, the emissions from this asset would be attributable to AGL Australia.

Table 6.1.2: Operated scope 1 and 2 emissions associated with the proposed new businesses

Emission source/ type	FY20 emissions from operations associated with the proposed **Accel Energy** ($MtCO_2e$)	FY20 emissions from operations associated with the proposed **AGL Australia** ($MtCO_2e$)
Scope 1: black coal generation	23.98	0.00
Scope 1: brown coal generation	16.68	0.00
Scope 1: natural gas generation	1.26	0.25
Other scope 1 emissions	0.05	0.00
Total scope 1 emissions	41.98	0.25
Total scope 2 emissions	0.50	0.02
Total scope 1 & 2 emissions	42.47	0.27

6.2 Generation Portfolio Metrics

AGL Energy has heavily invested and continues to invest in renewable energy generation. Table 6.2.1 below outlines the changes in the proportion of generation and capacity from renewables.

Table 6.2.1: AGL Energy proportion of generation output and capacity from renewables

Metric	FY21 (%)	FY 20 (%)	FY19 (%)	FY18 (%)	FY17 (%)
Operated renewable energy generation output	12.0%	10.0%	9.8%	8.8%	7.9%
Controlled renewable energy generation output	12.0%	10.0%	9.8%	8.8%	7.9%
Operated renewable and electricity storage capacity	23.0%	22.5%	19.9%	18.4%	18.4%
Controlled renewable and electricity storage capacity	23.0%	22.5%	19.6%	18.4%	18.4%

1. FY21 emissions are calculated from measured emissions from material sources, which make up approximately 99% of total scope 1 and 2 emissions, with estimates for minor emissions sources.

6. Metrics and Targets (continued)

A breakdown of the renewable and electricity storage capacity and output according to the asset allocation for the proposed demerger is shown in Table 6.2.2 to provide an indication of the generation profile for the two proposed businesses.

Table 6.2.2: Generation profile associated with the proposed new businesses

Metric	FY21 performance associated with the proposed **Accel Energy** (%)	FY21 performance associated with the proposed **AGL Australia** (%)
Operated renewable energy generation output	5.5%	85.1%
Controlled renewable energy generation output	5.5%	85.1%
Operated renewable and electricity storage capacity	10.5%	76.2%
Controlled renewable and electricity storage capacity	10.5%	76.6%

6.3 Generation Intensity Metrics

AGL Energy's emissions intensities by generation type and as a whole are shown in Table 6.3.1. Additional breakdowns of generation intensity for FY21 will be available in the ESG data centre in late 2021.

Table 6.3.1: Emissions intensity of AGL Energy assets and the NEM

...	FY21 (tCO_2e/MWh)	FY20 (tCO_2e/MWh)	FY19 (tCO_2e/MWh)	FY18 (tCO_2e/MWh)	FY17 (tCO_2e/MWh)
Operated black coal generation intensity	Not available	0.96	0.95	0.95	0.96
Operated brown coal generation intensity	Not available	1.26	1.28	1.30	1.30
Operated natural gas generation intensity	Not available	0.61	0.62	0.61	0.61
Total operated generation intensity	0.95[1]	0.94	0.95	0.97	0.98
Total controlled generation intensity	0.95[1]	0.93	0.95	0.96	0.97
NEM intensity	0.70	0.72	0.77	0.82	0.88

1. FY21 generation intensity is calculated on measured emissions from material sources and measured electricity generation, with estimates for minor emissions sources. These metrics will be updated later in 2021 and may change.

The intensity of AGL Energy's fossil fuel generation fleet has been generally steady over the last five years, however we continue to invest in efficiency projects and upgrades to improve the performance of these assets. The overall operated generation intensity is trending down from a peak of over 1 tCO_2e/MWh in FY13. The downward trajectory is partly being driven by increased generation volumes from low or zero emissions technologies.

The increase in intensity in FY21 is due to the increase in output from Loy Yang A after an extended unit outage in FY20; this was partly offset by significantly reduced output from Liddell Power Station in FY21 due to unplanned outages and increased renewable output.

The controlled intensity includes assets for which AGL Energy has contracted for generation output but does not operate, in addition to assets which are operated by AGL Energy.

A breakdown of FY21 performance according to the asset allocation for the proposed demerger is shown in Table 6.3.2 to provide an indication of the emissions intensity for the two proposed businesses.

Table 6.3.2: Generation intensity associated with the proposed new businesses

...	FY20 generation intensity of the operations associated with the proposed **Accel Energy** (tCO_2e/MWh)	FY20 generation intensity of the operations associated with the proposed **AGL Australia** (tCO_2e/MWh)
Total operated generation intensity	0.99	0.10
Total controlled generation intensity	0.99	0.10

6.4 Scope 3 Emissions

AGL Energy's scope 3 emissions are dominated by the emissions associated with the supply and end use of the products that AGL sells.

As the energy sector decarbonises, scope 3 emissions from the supply of electricity to customers and the end use of coal sold to the (non-AGL operated) Loy Yang B Power Station will decline. In a fully decarbonised electricity market, these emissions will be reduced to zero. This trend can be seen in Table 6.4.1 where AGL Energy's scope 3 emissions from the supply of electricity to customers continues to decrease as our supply to customers remains relatively consistent with last year.

The energy transition is also anticipated to involve significant electrification and conversion of natural gas users to alternative fuel sources (such as renewable hydrogen) over the long-term. As this occurs, scope 3 emissions from the supply of natural gas to customers and the end use of natural gas is expected to decline.

6. Metrics and Targets (continued)

AGL Energy's Climate Statement included a commitment to offer carbon neutral options for all products and services offered. A product is considered carbon neutral when the net greenhouse gas emissions associated with an activity are equal to zero.

Carbon neutral products are intended to empower customers to drive change in the market. As of 30 June 2021, AGL Energy now has over 260,000 carbon neutral services, including more than 65,000 carbon neutral energy services. This includes services to 35 commercial and industrial customers.

AGL Energy considers a number of different sources of carbon offsets and undertakes a rigorous selection process when it comes to the carbon offsets purchased. The eligible carbon offsets bought meet the Carbon Neutral Standard integrity requirements set by Climate Active.

Initially, AGL Energy's obligations have been secured with certificates from the following projects:

- **Westmere Regeneration Project in NSW**: this native forest regeneration program generates Australian Carbon Credit Units and supports our local graziers.
- **BURN Stove project in Kenya**: each cook stove produced for Kenyan families cuts 1.4 tonnes of greenhouse gases each year – the equivalent to a flight from London to New York.
- **Carbon Conscious project in WA**: helps provide a protective habitat for native flora and fauna and reduces wind and water erosion.

AGL Energy's material scope 3 emissions for FY21 are in Table 6.4.1. Other scope 3 emissions data will be available later in 2021.

Table 6.4.1: AGL Energy scope 3 emissions

Scope 3 emissions source	FY21 ($MtCO_2e$)	FY20 ($MtCO_2e$)	FY19 ($MtCO_2e$)	FY18 ($MtCO_2e$)	FY17 ($MtCO_2e$)
Supply of electricity to customers (emissions associated with the transmission and distribution of electricity as well as from upstream activities including generation where AGL is short, e.g., Queensland)	6.9	6.6	7.3	8.0	7.2
Supply of natural gas to customers (emissions associated with the production, transportation and distribution of natural gas sold)[1]	1.7	1.8	2.0	2.0	2.4
End use of natural gas by customers	6.8	6.5	7.0	7.6	10.1
End use of coal sold to Loy Yang B	9.9	10.6	9.7	10.2	9.8
Other (emissions from staff travel, waste, investments etc.)	Not available	0.8	0.3	0.4	0.3
Total scope 3 emissions		26.1	26.3	28.2	29.9

1. Scope 3 emissions for supply of natural gas to customers in FY21 is based on preliminary data; this will be updated later in the year and may change. The FY20 figure has been updated from 1.7 to 1.8 $MtCO_2e$.

Scope 3 emissions for Accel Energy will be materially lower than that of AGL Energy, with the most material source of scope 3 emissions from the end use of coal by Loy Yang B Power Station. Based on previous years data this will contribute approximately 10 $MtCO_2e$ per year.

AGL Australia's scope 3 emissions will be dominated by the supply and use of customer products and services, predominantly natural gas and electricity. Based on previous years data this will increase to above 20 $MtCO_2e$ due to the accounting methodology whereby AGL Energy's current scope 3 emissions do not include the scope 1 and 2 emissions associated with operating power stations that supply our customers.

6.5 Revenue-related Metrics

The emissions intensity of revenue (Table 6.5.1) has been relatively consistent over the past five years, indicating a consistent link between revenue and carbon emissions over this period. As both electricity generation and revenue sources diversify it is anticipated that this metric will decline.

The increase in the intensity in FY21 is due to decreasing wholesale electricity prices driving revenue down.

Table 6.5.1: AGL Energy's emissions intensity of revenue

	FY21 ($ktCO_2e/\$m$)	FY20 ($ktCO_2e/\$m$)	FY19 ($ktCO_2e/\$m$)	FY18 ($ktCO_2e/\$m$)	FY17 ($ktCO_2e/\$m$)
Emissions intensity of revenue	3.7[1]	3.5	3.3	3.4	3.5

1. FY21 emissions intensity of revenue is calculated on measured emissions from material sources and measured electricity generation, with estimates for minor emissions sources. This metric will be updated later in 2021 and may change.

AGL Energy recognises that managing carbon risk involves managing both direct and indirect emissions and that customer preferences will continue to be a key driver for low to zero carbon products and services. Table 6.5.2 outlines the proportion of total revenue derived from green energy and carbon neutral products and services. The increase in FY21 is driven by residential solar revenue and carbon neutral products.

6. Metrics and Targets (continued)

Table 6.5.2: AGL Energy's proportion of revenue derived from green energy and carbon neutral products and services

...	FY21 (%)	FY20 (%)	FY19 (%)
Revenue from green energy and carbon neutral products and services	13.4%	11.5%	10.8%

6.6 Targets

AGL Energy has committed in our 2020 Climate Statement to pursue the goal of net zero emissions by 2050. In addition, we have included carbon transition metrics in the long-term incentive (LTI) plan for our executives, with share performance rights for FY24 performance being issued in FY21. These metrics comprise the emissions intensity of AGL Energy's controlled generation fleet, the controlled proportion of renewable and electricity storage capacity, and the share of total revenue derived from green energy and carbon neutral products and services.

Table 6.6.1 outlines historical performance on these three metrics. For further details and the associated targets see the Remuneration Report within the FY21 Annual Report.

Table 6.6.1: Long-term Incentive plan metrics

Metric	FY21	FY20	FY19	FY18	FY17
Controlled generation intensity (tCO_2e/MWh)	0.95[1]	0.93	0.95	0.96	0.97
Controlled renewable and electricity storage capacity (%)	23.0%	22.5%	19.6%	18.4%	18.4%
Revenue from green energy and carbon neutral products and services (%)	13.4%	11.5%	10.8%	Not reported	Not reported

1. FY21 generation intensity is calculated on measured emissions from material sources and measured electricity generation, with estimates for minor emissions sources. This metric will be updated later in 2021 and may change.

The controlled generation intensity has increased in FY21 due to the increased proportion of generation from the Loy Yang A Power Station. This has resulted from forced outages at the Liddell Power Station as well as the recovery of Loy Yang A Unit 2 after an extended outage in FY20. This has resulted in the controlled intensity of emissions trending away from the target set in the LTI plan.

The percentage of controlled renewable and electricity storage capacity continued to increase in FY21 as two units of the Torrens Island A Power Station were decommissioned.

The percentage revenue from green energy and carbon neutral products and services continued to grow in FY21 with the uptake of our carbon neutral products.

In 2015, we committed via our Greenhouse Gas Policy not to extend the life of our coal-fired power plants. The closure of these plants at their end of lives will result in significant decreases in operated scope 1 emissions. The first of these closures will be the closure of the Liddell Power Station in 2023. The closure of the Liddell Power Station is the equivalent of AGL Energy ceasing to emit approximately 8 $MtCO_2e$ annually. Similarly, the closure of all AGL Energy's coal-fired power stations is the equivalent of ceasing to emit over 40 $MtCO_2e$ annually.

As discussed in Section 4, climate commitments for both AGL Australia and Accel Energy have been developed as part of the proposed demerger. These statements are intended to deliver and build upon AGL Energy's climate commitments. Following the demerger, Accel Energy intends to publish a detailed climate change roadmap including specific decarbonisation targets showing clear progress relative to AGL Energy's existing emissions reduction trajectory (the baseline of which is a 23% reduction in CO2-e emissions by 2024, 60% reduction by 2036 and 100% by 2050, on FY20 levels[2]). AGL Australia will list as carbon neutral for scope 1 and 2 emissions, and following the demerger also intends to deliver a detailed climate change roadmap.

2. Baseline emissions reduction trajectory reflects 'Scenario A' of AGL Energy's FY20 Taskforce for Climate-Related Financial Disclosures report, Pathways to 2050.

7. Next Steps

Significant changes lie ahead of AGL Energy in the coming financial year. The proposed demerger intends to create two leading energy businesses, that will have different roles to play in Australia's energy transition. Both companies will continue to uphold AGL Energy's commitment to transparent engagement on climate risk, and the approach to reporting under the TCFD framework will continue to evolve.

As Australia's largest greenhouse gas emitter and largest electricity generator, recognition of our crucial role in the energy transition and commitment to the acceleration of decarbonisation while maintaining reliable and affordable energy will continue to be a core focus. The proposed Accel Energy business will be committed to publishing a detailed climate change roadmap including specific decarbonisation targets that demonstrate clear progress on AGL Energy's emissions reduction trajectory under scenario A of the scenario analysis presented in this and last year's TCFD reports. Further analysis of physical risks in the context of its asset portfolio will also be a key focus for Accel Energy.

The proposed AGL Australia business will be committed to engaging openly with stakeholders and being transparent in disclosing its decarbonisation strategy, emissions, risks and mitigation activities. AGL Australia will utilise scenario analysis to regularly update forecasts for the pace and impacts of the transition.

AGL Energy is monitoring a number of key recent and future publications that may be considered in future scenario analysis exercises. These include the 2022 AEMO ISP (to be released June 2022), the IPCC's Sixth Assessment Report (to be released in May 2022), the ESCI Project (June 2021), and the International Energy Agency (IEA)'s Net Zero by 2050 Flagship report (May 2021).

Utilising the robust governance and risk management systems and processes outlined in this report, we will continue to assess climate-related forces and pursue strategic directions that are responsive to and resilient in the face of the energy transition, and in the best interests of shareholders. AGL Energy believes climate-related forces will present significant opportunities in a post-demerger scenario: as Accel Energy transitions its portfolio it will pursue a development pipeline focused on low-carbon energy hubs; AGL Australia will pursue a pathway to full carbon neutrality for electricity supply, as well as growing its portfolio of flexible generation and storage assets. These and other climate-related opportunities will be elaborated on in future disclosures.

Glossary

AASB	Australian Accounting Standards Board
AEMO	Australian Energy Market Operator
AR5	Fifth Assessment Report of the Intergovernmental Panel on Climate Change, released in 2014
AR6	Sixth Assessment Report of the Intergovernmental Panel on Climate Change, yet to be released
ARMC	Audit and Risk Management Committee, an AGL Energy Board subcommittee
ASIC	Australian Securities and Investment Commission
BOM	Bureau of Meteorology
CMSI	Climate Measurement Standards Initiative
CO_2e	Carbon dioxide equivalent
Controlled boundary	AGL Energy's controlled boundary includes all electricity assets (generation and/or storage) for which AGL Energy has: ownership; and/or operational control as defined by the National Greenhouse and Energy Reporting Act 2007; and/or contracted rights to control the dispatch of electricity of the asset.
COP21	21st Conference of Parties to the United Nations Framework Convention on Climate Change, held in 2015 in Paris
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DER	Distributed energy resources
Derating	Decrease in available capacity
ESB	Energy Security Board
ESCI	Electricity Sector Climate Information project, being undertaken by the CSIRO and BOM in collaboration with AEMO
ESG	Environmental, social and governance
EV	Electric vehicle
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
ISP	AEMO Draft Integrated System Plan 2020 (2019)
LTI	Long-term incentive
MW, GW, TW	Megawatt, gigawatt, terawatt
MWh, GWh, TWh	Megawatt hours, gigawatt hours, terawatt hours
NDC	Nationally Determined Contribution (under the Paris Agreement)
NEM	National Electricity Market
Net zero	The modelling process used a 'net zero' rather than 'absolute zero' approach to emissions reduction by 2050. For the purposes of this report net zero emissions is the point at which emissions have reached a level where they are able to be offset through existing commercially available technologies.
NGER	National Greenhouse and Energy Reporting Act 2007
Operated boundary	The AGL Energy operated generation boundary includes electricity assets for which AGL Energy has operational control as defined by the National Greenhouse and Energy Reporting Act 2007.
PowAR	Powering Australian Renewables, an investment vehicle formerly known as PARF.
Paris Agreement	An agreement made at COP21 to address climate change, with the central aim of this agreement being to limit warming this century to well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit warming even further to 1.5 degrees Celsius above pre-industrial levels.
PPA	Power Purchase Agreement
RCP	Relative Concentration Pathways, concentration pathways for greenhouse gases and aerosols, demonstrating possible future emissions and radiative forcing (i.e. temperature intensity) scenarios for the world until 2100, as defined by the IPCC.
SBTi	Science-Based Targets Initiative
Scope 1 emissions	Direct greenhouse gas emissions
Scope 2 emissions	Indirect greenhouse gas emissions arising from the consumption of purchased electricity, heat or steam
Scope 3 emissions	Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g. transportation and distribution losses) not covered in scope 2, outsourced activities, waste disposal, etc.
SLL	Sustainability Linked Loan
SSP	Shared Socioeconomic Pathways, which describe how socioeconomic trends around the world may evolve over time, as defined by the IPCC (2017).
TCFD	Task Force on Climate-related Financial Disclosures
VPP	Virtual Power Plant